

Public Health Policy in Maryland: Lessons from Recent Alcohol and Cigarette Tax Policies

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Executive Summary

Taxing some consumer products is a public health policy strategy that has the potential to improve the public's health. Over the past decade, the Maryland General Assembly has passed legislation that increased taxes on two consumer products – alcohol and cigarettes – both of which are associated with large burdens of injury and disease. In this report, we examine two laws affecting these products: The Sales and Use Tax – Alcoholic Beverages – Tax Rates Supplementary Appropriation Act of 2011, and the Transportation and State Investment Act of 2007. We consider the public health benefits of these tax laws and analyze the revenues generated by them and how those revenues were spent.

While the alcohol excise tax had been stable for over 45 years, the 2011 law increased the sales tax rate to 9 percent. Following the alcohol sales tax increase, binge drinking by Maryland adults decreased; the 17 percent reduction seen in Maryland between 2011 and 2016 was greater than the 6 percent reduction nationally. Among Maryland high school students, between 2011 and 2015, there was a 26 percent reduction in the percentage of students who consumed alcohol in the preceding 30 days, a 28 percent reduction in binge drinking, and a 31 percent reduction in students riding in a vehicle operated by a driver who had been drinking alcohol. Published research also documented a decrease in alcohol-positive drivers and in sexually transmitted infections in Maryland following the 2011 alcohol sales tax increase.

Maryland's state tax per pack of cigarettes increased incrementally from 1961 to 2008 and has been stable for the last 10 years. Following the \$1.00 per pack cigarette tax increase in 2008, smoking by Maryland adults decreased by 26 percent among current smokers between 2011 and 2016. Among Maryland high school students there was a 47 percent reduction in students who reported smoking a cigarette in the preceding 30 days, as well as a decline in frequent smoking between 2007 and 2015.

We conclude that these public health impacts, documented both by the published evidence and experts we interviewed, occurred from relatively modest tax increases. Based on this research, we provide four recommendations for maximizing public health gains through state policy:

1. Consider taxes an effective policy strategy to improve the public's health.
2. Monitor the public health impacts of tax policy.
3. Ensure transparency for bills that generate revenue.
4. Employ effective advocacy strategies when promoting public health policy initiatives.

Introduction

Each year during the 90-day legislative session, the Maryland General Assembly approves thousands of bills that the governor decides whether to sign into law. Many of these laws support public health goals, including health promotion, disease and injury prevention, healthy and safe schools, vaccine uptake, and the realization of smoke-free environments. After these laws are enacted, researchers evaluate many of them to determine how they, in fact, have affected the public's health.

Two consumer products, alcohol and tobacco, are associated with large burdens of injury and disease among Marylanders and have also been the subject of legislation that addresses those burdens through taxes. In this report, we examine how these tax increases are affecting Marylanders' health, based on published evaluations and interviews with subject matter experts. The focus of this report is on the following two laws: the Sales and Use Tax – Alcoholic Beverages – Tax Rates Supplementary Appropriation Act of 2011, which increased the sales and use tax rate for alcoholic beverages from 6 percent to 9 percent, effective July 1, 2011 [Maryland General Assembly, 2011]; and the Transportation and State Investment Act of 2007, which increased the excise tax on a pack of 11-20 cigarettes from \$1.00 to \$2.00, effective January 1, 2008 [Maryland General Assembly, 2007].

The proposals to raise taxes on alcohol and cigarettes were, in large part, driven by the significant public health impacts these products have on Marylanders. For example, in 2016, 582 people died from alcohol intoxication in Maryland; most involved the concurrent use of other drugs [Maryland Department of Health and Mental Hygiene, 2017]. Drinking alcohol is also associated with both short-term health effects, including unintentional injuries, violence, overdose, and risky sexual behavior, as well as long-term effects such as heart disease, stroke, liver disease, dementia, and several types of cancer [CDC, 2015d; Cook, 2016].

Smoking has been causally linked to multiple negative health conditions including several types of cancer, cardiovascular disease, diabetes, and respiratory diseases such as chronic obstructive pulmonary disease [U.S. Department of Health and Human Services, 2014]. Each year, approximately 7,500 Marylanders die from a smoking-related disease [CDC, 2017]. These conditions are costly, with estimates of \$3.5 billion for 2015 and \$4.5 billion projected for 2020 [Maryland Department of Health and Mental Hygiene, 2014; Maryland Department of Health and Mental Hygiene, 2016].

Organization and Methodology of this Report

This report includes three sections.

Section I begins with an overview of the public health problems that the tax increases sought to address, and outlines important contextual background information that preceded passage of the laws. This is followed by a review of the evidence about the public health impacts associated with the laws. We also include a description of impacts hypothesized by interviewees that have not been examined through empirical study.

Section II describes the revenues generated through the laws and how that revenue has been used to advance the public health goals specified by each law.

The final section presents recommendations for maximizing public health gains through state policy based on lessons learned from this review. This research does not describe in detail how these laws were passed; others have documented these efforts [Pertschuk, 2010].

We compiled this report based on a review of the proposed bills, accompanying fiscal notes, and the two codified laws – including all subsequent modifications – through the 2017 legislative session. We also conducted a literature review to document the impacts of

these laws, primarily comparing the differences in risk factors before and after each law.

For adults, these data are from the annual national Behavioral Risk Factor Surveillance System (BRFSS), a survey conducted by the Centers for Disease Control and Prevention (CDC) that queries a sample of adults in each state. It is important to note that because of a change in how the survey was administered and analyzed in 2011, the federal government cautions that small increases for health-risk indicators, such as tobacco use and binge drinking, are likely due to changes in survey methodology [CDC, 2013]. Thus, shifts in observed prevalence from 2010 to 2011 for BRFSS measures may reflect true trends in risk-factor prevalence or the new methods of measuring risk factors [CDC, 2012]. As a result, for data on adults, we compare data from 2007 with 2010, and then data from 2011 with 2016 (the most recent data available).

For youth, data are from the Youth Risk Behavior Surveillance System (YRBSS), which is a national survey of thousands of high school students conducted by the CDC. It measures the prevalence of high-risk behaviors among youth, including tobacco, alcohol, and drug use [Eaton, 2012]. Data from the YRBSS did not undergo the same methodological change as the BRFSS survey of adults; however, the data from this biennial survey are only reported through 2015, which are the latest available data. All prevalence numbers in the report have been rounded to the nearest whole number. These rounded numbers were used to calculate the percent change in prevalence over time for each specific health-risk behavior. These percent changes were also rounded to the nearest whole number.

We searched the internet to identify stakeholder organizations and potential key informants for each issue and complemented that search with recommendations for additional interviewees we gained from those original key informants. This process yielded a sample of 10 people highly knowledgeable about the two laws from advocacy organizations, academic institutions, and state government agencies who we

interviewed between July and November 2017. These interviews allowed us to capture a robust and comprehensive account of the public health impacts for each case. Several interviewees requested that their names not be included in this report. We respected these requests and, therefore, do not include any interviewees' names.

We collected financial information about the laws and the revenue they generated from the Maryland Comptroller's Alcohol and Tobacco Tax Annual Reports for the years 2006 to 2016. We also reviewed the 2016 Comprehensive Annual Financial Report, as well as the 2016 Department of Legislative Services Fiscal Briefing [Franchot, 2016a; Franchot, 2016b]. We searched the comptroller's website for information about the sales and use taxes, the Health Department's website for budget information, and the Department of Budget and Management's website to access the list of Special Funds [Department of Budget and Management, 2017]. In addition, the Governor's "Maryland Budget Highlights FY2016" [Hogan, 2015] contained information we used to further understand the Cigarette Restitution Fund.

I. Alcohol and Cigarette Tax Increases: Public Health Problem, Legislative Background, and Public Health Impacts of the Laws

The Alcohol Tax Increase

Public Health Problem Prior to the 2011 Tax Increase

The sales tax on alcohol increased in July 2011. Prior to the alcohol tax increase taking effect, the prevalence of binge drinking (on a single occasion, five or more drinks for men and four or more drinks for women) among Maryland adults was 13 percent in 2007 and 15 percent in 2010 [CDC, 2015b]. In 2011, the prevalence of binge drinking was 18 percent for Maryland adults [CDC, 2015b]. However, as previously

described, the CDC changed its methodology for analyzing adult BRFSS survey responses in 2011. Therefore, the adult survey results from 2010 and prior years cannot be compared with 2011 and subsequent years [CDC, 2012]. The higher prevalence number in 2011 is likely explained by changes in how the CDC collected and analyzed these data, as opposed to real changes in the prevalence of binge drinking.

Among Maryland high school students surveyed in 2007, 43 percent reported drinking alcohol at least once in the preceding 30 days [Eaton, 2008; CDC, 2007-2015]. In 2011, the year of the tax increase, 35 percent of Maryland high school students reported drinking alcohol in the prior 30 days [Eaton, 2012]. When asked about binge drinking alcohol (five or more drinks in a row within a couple of hours), 24 percent of Maryland high school students reported the behavior in 2007 compared to 18 percent in 2011 [Eaton, 2008; Eaton, 2012; CDC, 2007-2015]. Evidence of other risky drinking behaviors over time is seen in the percentage of Maryland students who reported riding in a car with an alcohol-positive driver (29 percent in 2007 and 26 percent in 2011) [Eaton, 2008; Eaton, 2012; CDC, 2007-2015]. In addition, 9 percent of students reported driving after drinking alcohol in 2007 compared to 8 percent in 2011 [Eaton, 2008; Eaton, 2012].

In addition to the risky behaviors documented through surveys, the impact of alcohol on the public's health is also defined in terms of costs. At an estimated \$2.22 per drink and \$860 per person, the total annual cost of consuming alcohol was approximately \$4.9 billion in 2010 [Sacks, 2015; CDC, 2015c]. We were unable to locate post-law estimates of the cost of alcohol consumption in Maryland.

Legislative Background

Excise taxes are charged per unit (e.g., gallon) of an item while sales taxes are a percentage of the sale. An excise tax can have the effect of decreasing the quantity of the item that is sold and consequently its consumption. Maryland alcohol excise taxes have been stable for over 45 years without any adjustments for inflation, which is shown in Table 1. Federal excise taxes are additional taxes: \$13.50 per gallon of distilled spirits, \$1.07 per gallon of wine, and \$0.58 per gallon of beer [Maryland General Assembly, 2011; Xu, 2011].

Maryland also imposes a sales tax on alcohol as well as on most other consumer products; it is added at the point of purchase and is not included in the shelf price of the product. In January 2008, the General Assembly passed a bill that increased the general sales tax from 5 percent to 6 percent [Franchot, 2016a]. A special tax increase went into effect in

Table 1. Maryland's excise tax rates on alcoholic beverages

Alcoholic beverage	Initial tax per gallon (year tax imposed)	Current tax per gallon (years tax rate in effect)
Distilled spirits	\$1.10 (1933)	\$1.50 (1955 – present)
Wine	\$1.10 (1933); reduced to \$0.20 (1935)	\$0.40 (1972 – present)
Beer	\$0.02 (1936)	\$0.09 (1972 – present)

Source: Franchot, 2016b.

According to the state tax data document, per capita consumption of beer decreased by 11 percent between fiscal year 2010 and fiscal year 2016 (from 18 gallons in 2010 to 16 gallons in 2016).

July 2011 and raised the sales tax on alcoholic beverages to 9 percent [Maryland General Assembly, 2011].

This additional 3 percent sales tax on alcoholic beverages reflected a determination to raise the long stagnant tax. In 2011, advocates supporting the alcohol tax increase, known as the Lorraine Sheehan Alcohol Tax Coalition, proposed a dime-a-drink increase in the excise tax on beer, wine, and liquor distributors, with the proceeds to fund public health initiatives including drug and alcohol abuse prevention and treatment, mental health programming, support for people with developmental disabilities, and health care coverage. Near the end of the 2011 general assembly session, it became clear that the excise tax would not pass at the dime-a-drink level. Instead, legislative leaders proposed increasing the state sales tax—on alcoholic beverages only—from 6 percent to 9 percent. This translated to a nickel-a-drink excise tax, which was an acceptable compromise for the advocates. Legislative leaders preferred this approach because it would keep Maryland's alcohol tax at the same rate as the District of Columbia, which has the same excise tax as Maryland and a similar alcohol-specific sales tax.

As enacted, the alcohol sales tax law earmarked some of the funds for the Developmental Disabilities Administration (\$15 million) and dedicated about \$72 million (amount cited by an interviewee) to projects including school aid and construction in the first year, with those proceeds going to the general fund in subsequent years. Although the advocates would have preferred the money to be allocated as they had originally proposed, they agreed to the compromise for

two reasons. First, they were confident that regardless of how the money was spent, it would lead to a significant drop in alcohol abuse and underage drinking. Second, they planned to work closely with the Governor and General Assembly to ensure that most of the proceeds from the alcohol sales tax increase were allocated for the purposes originally identified by the Lorraine Sheehan Coalition after the first year.

While advocates originally proposed an excise tax rather than a sales tax, there are advantages to the sales tax. The alcohol sales tax is a value-based tax on the advertised price of the alcohol and therefore adjusts with inflation and does not diminish with time [Lavoie, 2017]. Unlike the sales tax, the excise tax is a flat, volume-based tax that is part of the advertised price. Importantly, its value decreases over time due to inflation [Lavoie, 2017]. Between 1970 and 2009, inflation is estimated to have decreased the real-dollar value of the average state excise tax on beer by 70 percent [Naimi, 2016]. In addition, several interviewees noted that the sales tax is progressive in that the largest increases are on expensive cocktails at high-end bars and restaurants.

In reflecting on this legislative process, one interviewee pointed out that there was no significant public opposition following either the 2008 general sales tax increase or the 2011 alcohol-specific sales tax increase.

Public Health Impacts of the 2011 Law

The 2011 Maryland alcohol sales tax increase is associated with decreases in alcohol consumption. According to the state tax data

The relationship that is evident across these studies is clear: As the price of alcohol increases, death and injury decrease, with specific declines in alcohol-related diseases, violence, traffic crashes, and crime.

document, per capita consumption of beer decreased by 11 percent between fiscal year 2010 and fiscal year 2016 (from 18 gallons in 2010 to 16 gallons in 2016) [Franchot, 2016b].

This decline in alcohol consumption is seen especially in the adult population. Binge drinking among Maryland adults decreased from 18 percent in 2011 to 14 percent in 2015 but rose slightly to 15 percent in 2016 [Kanny, 2013; CDC, 2015b]. Thus, in Maryland, the prevalence of adult binge drinking was 17 percent lower in 2016 than it was in 2011. This decline is greater than the national trend in which there was only a 6 percent reduction in adult binge drinking between 2011 and 2016 (U.S. prevalence: 18 percent in 2011, 16 percent in 2015, and 17 percent in 2016) [CDC, 2015b].

Declines in alcohol consumption among youth are also documented after the law took effect. Comparing the YRBSS from 2011 with 2015, the percentage of Maryland high school students who had consumed alcohol at least once in the preceding 30 days decreased from 35 percent in 2011 to 26 percent in 2015, a reduction of 26 percent [Eaton 2012; Kann 2016; CDC, 2007-2015]. In comparison, there was a 17 percent reduction among students nationwide over the same time period (from 36 percent in 2011 to 30 percent in 2015) [Eaton 2012; Kann 2016]. In addition, the percentage of Maryland high school students who reported binge drinking on at least one day in the preceding 30 days decreased from 18 percent in 2011 to 13 percent in 2015 [Eaton 2012, Kann 2016; CDC, 2007-2015]. This decrease of 28 percent in binge drinking reported by Maryland youth from the YBRSS is

similar to that seen in the country as a whole (the U.S. median for high school student binge drinking decreased by 27 percent, from 22 percent in 2011 to 16 percent in 2015) [Eaton, 2012; Kann, 2016; CDC, 2007-2015].

The public health benefit of this reduced consumption is evident in studies that examine the relationship between the 2011 alcohol sales tax increase and reductions in alcohol-related automobile deaths and injuries. Self-reports of Maryland high school students who rode in a vehicle driven by a driver who had been drinking alcohol decreased by 31 percent between 2011 and 2015 (26 percent in 2011 and 18 percent in 2015) [Eaton 2012; Kann 2016; CDC, 2007-2015], although the percentage who reported driving after drinking was similar for both years: 8 percent in 2011 and 7 percent in 2015 [Kann, 2016].

Further, a 2017 study evaluated motor vehicle crash reports involving Maryland drivers who tested positive for alcohol. The study compared crashes with alcohol-positive drivers for the 127 months prior to the sales tax increase with the 29 months following the law's effective date [Lavoie, 2017]. The authors documented a 6 percent reduction in alcohol-positive drivers of all ages, and a 12 percent reduction among alcohol-positive drivers ages 15-34 years after the sales tax increase took effect [Lavoie, 2017]. The authors posit that this decrease resulted from lower levels of drinking among younger drivers, who are more price-sensitive. Unlike younger drivers, crash rates among those 55 years and older increased among alcohol-positive drivers involved in crashes [Lavoie, 2017]. The findings for the younger drivers are

consistent with an evaluation of Illinois' alcohol tax increase, which measured a 26 percent decrease in fatal motor vehicle crashes for all drivers, and a 37 percent reduction among drivers under 30 years of age [Wagenaar, 2015].

One other public health benefit described by interviewees, and supported by the literature and the CDC, is a decline in risky sexual behavior explained as a consequence of reduced alcohol consumption [Chesson, 2000; CDC, 2015d]. Alcohol intoxication can lead to unprotected sex and sexually transmitted infections (STIs), and may explain a recent finding in Maryland that the mean monthly rate of gonorrhea cases decreased from 11 cases per 100,000 before the tax increase (January 2003 to June 2011) to nine cases per 100,000 after the tax increase (July 2011 to December 2012) [Staras, 2016]. This is a 24 percent reduction, or almost 1,600 cases

avoided every year [Staras, 2016]. In contrast, there was a non-statistically significant increase in the incidence of chlamydia from a mean monthly rate of 35 cases per 100,000 before the tax increase (January 2003 to June 2011) to 39 cases per 100,000 after the tax increase (July 2011 to December 2012) [Staras, 2016]. The different outcomes for gonorrhea and chlamydia may be because detection of chlamydia is dependent on screening. It is often asymptomatic, while the gonorrhea rate more closely reflects its prevalence in the population. These authors conducted a similar analysis using Illinois data and found there were fewer cases of both gonorrhea and chlamydia in Illinois following an increase in alcohol taxes [Staras, 2014]. A systematic review of the literature has also established that increases in the price of alcohol have

Table 2. Summary of impact of alcohol sales tax in Maryland

Positive impacts of sales tax on alcohol consumption in Maryland			
Population	Parameter	Prevalence (year)	Change in prevalence
Youth ^{1,2,3}	Drinking in last 30 days	35% (2011) vs. 26% (2015)	26% reduction
	Drinking ≥ 5 drinks in a row	18% (2011) vs. 13% (2015)	28% reduction
	Riding in vehicle with alcohol-positive driver	26% (2011) vs. 18% (2015)	31% reduction
Adults ⁴	Binge drinking	18% (2011) vs. 15% (2016)	17% reduction
General	Decreased alcohol-positive drivers ⁵		
	Health impacts (e.g., decreased risky sexual behavior and sexually transmitted infections ^{6,7})		

Sources: ¹Eaton, 2012; ²Kann, 2016; ³CDC, 2007-2015; ⁴CDC, 2015b; ⁵Lavoie, 2017; ⁶Staras, 2016; ⁷CDC, 2015c. All prevalence numbers in the report have been rounded to the nearest whole number (0.5 and higher numbers were rounded up; 0.4 and lower numbers were rounded down). These rounded numbers were used to calculate the percentage change in prevalence over time for the health-risk behavior. The calculated percentages for prevalence change were also rounded to the nearest whole number.

a small inverse relationship with STIs [Wagenaar, 2010].

Maryland's 2011 alcohol-specific sales tax increase, like similar alcohol tax increases in other states, has had the expected public health benefit of reducing alcohol abuse, particularly among high school students. These Maryland findings are consistent with the national literature demonstrating public health benefits associated with increasing alcohol taxes, with particular gains noted among adolescents and young adult populations [Wagenaar, 2010; Xu, 2011]. The relationship that is evident across these studies is clear: As the price of alcohol increases, death and injury decrease, with specific declines in alcohol-related diseases, violence, traffic crashes, and crime [Wagenaar, 2010]. The Task Force on Community Preventive Services, a respected national body that identifies evidence-based interventions, recommends increasing alcohol taxes and projects that the resulting public health benefits will be proportional to the size of the tax increase [U.S. Task Force on Community Preventive Services, 2010]. Table 2 summarizes the impacts reviewed in this section.

Perceived Unintended Consequences and Contradictory Outcomes

Interviewees recalled that during the alcohol sales tax increase policy debate, opponents described Marylanders' ability to purchase alcohol through alternative venues such as the internet and neighboring states with lower taxes. Such a shift in purchasing could result in a false underestimation of alcohol consumption that would affect impact measures and decrease revenue for the state. Products bought over the internet by Maryland residents may not be subject to the sales tax if the retailer is located out of state. Cross-border shopping has been the subject of a few studies, one of which shows that this occurs when the tax savings compensate for the transportation costs of traveling to

the jurisdiction with lower taxes [Leal, 2010]. Interviewees were unable to cite any evidence showing that these impacts hypothesized by bill opponents actually occurred, and we are unaware of any evidence that supports this concern being realized. While such evidence does not exist to assess whether Maryland is losing alcohol tax revenues to other states, Maryland's 2011 alcohol sales tax increase raises approximately \$70 million in additional tax revenue for the state every year.

Finally, alcohol-related intoxication deaths have increased in Maryland over the last several years from 187 deaths in 2007 to 582 deaths in 2016 [Maryland Department of Health and Mental Hygiene, 2017]. The role of alcohol in these deaths is only one part of the story. In fact, the total number of intoxication deaths from alcohol and/or drugs occurring in Maryland has increased significantly from 815 deaths in 2007 to 2,089 deaths in 2016 [Maryland Department of Health and Mental Hygiene, 2017]. The increase in alcohol-related deaths is related to the use of opioids; approximately half of these deaths (49-54 percent) were combined with heroin or fentanyl intoxication in 2016 [Maryland Department of Health and Mental Hygiene, 2017].

The Cigarette Tax Increase

Public Health Problem Prior to the 2008 Tax Increase

Smoking causes multiple negative health conditions including several types of cancer, cardiovascular disease, diabetes, and respiratory diseases such as chronic obstructive pulmonary disease [U.S. Department of Health and Human Services, 2014]. Smoking is also a leading cause of mortality. Each year approximately 7,500 Marylanders die from a smoking-related disease [CDC, 2017].

In 2007, before the cigarette tax increase, 17 percent of Maryland adults identified as current smokers [CDC, 2015b]. Smoking was also common among Maryland youth. Data from the

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2007 YRBSS reported that 17 percent of Maryland high school students had smoked a cigarette at least once in the preceding 30 days while 5 percent reported smoking daily [Eaton, 2008; CDC, 2007-2015]. Among these high school smokers, 10 percent reported smoking more than 10 cigarettes per day in 2007 [Eaton, 2008; CDC, 2007-2015].

Legislative Background

Tobacco tax increases are considered the most effective policy for reducing tobacco use [Chaloupka, 2017]. The Maryland government first taxed cigarettes in 1958 at \$0.03 per pack [Franchot, 2016b]. The state tax per pack of cigarettes increased incrementally from 1961 to 2002 and reached \$1.00 in 2002 where it held steady until 2008 [Franchot, 2016b].

In 2007, the Maryland General Assembly passed The Transportation and State Investment Act of 2007, which increased the cigarette tax from \$1.00 to \$2.00 per pack of 11-20 cigarettes, effective January 1, 2008. The combined federal and state tax per pack of cigarettes is now \$3.01 compared with \$1.39 in 2007 [Orzechowski and Walker, 2017]. The average cost per pack of cigarettes in Maryland was \$6.72 in 2016, an increase from \$4.28 in 2007 [Orzechowski and Walker, 2017]. Of the total price of cigarettes in 2016, almost half (45 percent) is taxes. This is an increase from 2007 when taxes comprised 33 percent of the retail price [Orzechowski and Walker, 2017].

The main goals of the cigarette tax increase, as described by the experts we spoke with, were twofold: 1) to reduce tobacco use and related negative health conditions, especially lung cancer; and 2) to fund an expansion of health care coverage for low-income Marylanders not eligible for Medicaid; this extended coverage

included tobacco cessation services. During the same time the bill was being considered, there was a separate bill to expand Medicaid to include parents up to 116 percent of the Federal Poverty Level. The Working Families and Small Business Health Care Coverage Act of 2007 preceded the federal Affordable Care Act (ACA). During a Special Legislative Session in 2007, called by the Governor to resolve the state's budget deficit, the Maryland General Assembly passed these two bills that established the cigarette tax increase (\$1.00 per pack) and expanded Medicaid, with the revenue from the tax being used to support expanded health care coverage. Experts we spoke with emphasized that the Medicaid expansion would not have occurred without the cigarette tax increase, as the additional revenue from the tax increase was needed to pay for expanded health care coverage. One interviewee shared that initially many advocates wanted the proceeds from the tax to fund tobacco prevention programs. However, the most politically viable use of the proposed revenue was to fund expansion of the Maryland Medicaid program.

Public Health Impacts of the 2008 Law

There is strong evidence of an inverse association between cigarette prices and sales. Cigarette pack sales in Maryland have declined with each cigarette tax increase [Health Care for All, 2013; Health Care for All, 2017; Orzechowski and Walker, 2017]. In 2007, Maryland retailers sold 269 million cigarette packs compared to 182 million in 2015 [Maryland Department of Health and Mental Hygiene, 2016]. Also, between 2007 and 2016, per capita cigarette consumption decreased

by 38 percent, from 48 packs per person to 30 packs [Orzechowski and Walker, 2017]. Most of this decline occurred in the years immediately following the tax increase and is consistent with decreased consumption patterns following previous cigarette tax increases in Maryland that occurred between 1998 and 2012 [Health Care for All, 2013; Orzechowski and Walker, 2017]. Reductions in cigarette sales and smoking rates were key public health goals of the cigarette tax legislation.

In 2010, two years after the cigarette tax increase went into effect, 15 percent of Maryland adults were current smokers, a decrease of 12 percent compared with the 17 percent smoking prevalence in 2007 [CDC, 2015b]. As previously noted, the CDC changed the methodology for collecting and analyzing adult BRFSS data in 2011, thus limiting comparison of pre-2011 adult data with subsequent years [CDC, 2012]. Under the revised methodology, 19 percent of Maryland adults were identified as current smokers in 2011 [CDC, 2015a; CDC, 2015b]. This prevalence declined to 15 percent in 2015 and to 14 percent in 2016 [CDC, 2015b]. Comparing 2016 with 2011, there has been a 26 percent decrease in the prevalence of adult current smokers in Maryland.

The ability of the law to impact youth smoking was also a goal of the cigarette tax, in part because reducing smoking among youth is an effective strategy for preventing youth from becoming adult smokers. An estimated 90 percent of current smokers began smoking before the age of 18 years [Farber, 2016]. The impact of price on smoking is particularly strong among youth, making tax interventions an important strategy for preventing youth smoking. Several studies document declines in smoking among youth after a tobacco tax increase, noting that youth price sensitivity impacts decision-making [Chaloupka, 2011; Ross, 2001].

High school student cigarette smoking rates in Maryland declined between 2007 and 2009 and have also decreased when 2007 is compared with 2015. More specifically, the percentage of Maryland high school students who reported smoking a cigarette at least once in the preceding 30 days was 17 percent in 2007, 12 percent in 2009, and 9 percent in 2015 [CDC, 2007-2015]. This corresponds to a 29 percent decrease between 2007 and 2009, and a 47 percent decrease between 2007 and 2015. These declines are higher than the national trend, where the prevalence dropped by 3 percent between 2007 and 2009 and by 45 percent between 2007 and 2015 (U.S. prevalence: 20 percent in 2007, 19.5 percent in 2009, and 11 percent in 2015) [CDC, 2007-2015].

Comparing YRBSS Maryland high school student data from 2015 with 2007, there was a 71 percent decline in the prevalence of students who had smoked cigarettes on 20 or more days in the preceding month (Maryland prevalence: 7 percent in 2007 and 2 percent in 2015) [CDC, 2007-2015]. There was also a 60 percent decline in the prevalence of Maryland high school students who smoked cigarettes daily from 5 percent in 2007 to 2 percent in 2015 [CDC, 2007-2015]. The YRBSS data from the same time period also revealed a 10 percent increase in the prevalence of Maryland high school smokers who smoked more than 10 cigarettes a day in the preceding month (10 percent in 2007 and 11 percent in 2015) [CDC, 2007-2015].

Another public health goal of the increased tax was the potential for the cigarette tax to lead to decreases in other illegal substance use by youth. Adolescent smokers are more likely to use illegal drugs than nonsmokers, 55 percent versus 6 percent [Farber, 2016]. National data from the YRBSS revealed that youth who reported smoking cigarettes were 2.6 times more likely to drink alcohol, 3.5 times more likely to use marijuana, and 3.8 times more likely to have four or more sexual partners [Demissie,

Table 3. Summary of impact of cigarette tax in Maryland

Positive impacts of cigarette tax on smoking in Maryland			
Population	Parameter	Prevalence (year)	Change in prevalence
Youth ^{1,2,3}	Smoked cigarette in last 30 days	13% (2011) vs. 9% (2015)	31% reduction
	Smoked cigarettes for >20 days in last 30 days	4% (2011) vs. 2% (2015)	50% reduction
	Smokers who smoke >10 cigarettes a day	6% (2011) vs. 11% (2015)	83% increase
Adults ⁴	All current smokers	19% (2011) vs. 14% (2016)	26% reduction
General	Fewer youth smokers can potentially decrease prevalence of adult smokers in the future. ⁵		
	Health impacts (e.g., decreased smoking-related morbidity and mortality, and potentially decreased health care costs ^{6,7})		

Sources: ¹Eaton, 2012; ²Kann, 2016; ³CDC, 2007-2015; ⁴CDC, 2015b; ⁵Farber, 2016; ⁶CDC, 2014; ⁷Maryland Department of Health and Mental Hygiene, 2014. All prevalence numbers in the report have been rounded to the nearest whole number (0.5 and higher numbers were rounded up; 0.4 and lower numbers were rounded down). These rounded numbers were used to calculate the percentage change in prevalence over time for the health-risk behavior. The calculated percentages for prevalence change were also rounded to the nearest whole number.

2017]. In Maryland, according to the Youth Tobacco and Risk Behavior Survey of 2013, high school smokers are three times more likely to currently drink alcohol, five times more likely to currently use marijuana, nine times more likely to currently abuse prescription drugs, and six times more likely to ever use other illegal drugs [Maryland Department of Health and Mental Hygiene, 2014]. Specifically, 79 percent of high school cigarette smokers reported consuming alcohol, and 67 percent reported using marijuana in the prior 30 days [Maryland Department of Health and Mental Hygiene, 2014]. This is higher than for nonsmokers (24 percent reported consuming alcohol, and 13 percent reported using marijuana in the prior 30 days).

Interviewees also expected the tax would reduce exposure to secondhand smoke and benefit nonsmoking adults and children, although

the individuals who mentioned this specific impact recalled that it received less attention during the policy debate than the direct health impacts to smokers themselves. Few studies have examined this impact, and we were unable to identify any data to support this association. However, an association between the District of Columbia's cigarette excise tax and declines in periodontal disease, which is highly correlated with secondhand smoke exposure, is reported in the literature [Sander, 2013; Sutton, 2012].

Interviewees also described the potential impact on low birthweight babies because of the connections between a pregnant woman's tobacco use and prenatal outcomes [Windham, 2000]. Baltimore has experienced dramatic decreases in infant mortality since

the Baltimore City Health Department launched the B-More for Healthy Babies initiative in 2009 [B'more for Healthy Babies, 2017]. Interviewees were careful not to attribute the declines to the increase in cigarette prices; however, given the relationship between cigarette taxes and smoking, and smoking and low birthweight, interviewees who mentioned this impact explained that the tobacco tax likely amplified the effects of the initiative.

Maryland's 2008 cigarette tax increase, like similar cigarette tax increases across the country, has reduced cigarette use, especially among young people, and can reduce death and disease caused by tobacco use [Chaloupka, 2017]. Table 3 summarizes the impacts reviewed in this section.

Perceived Unintended Consequences and Contradictory Outcomes

Interviewees raised potential unintended consequences in considering the impacts of the tax, many of which opponents highlighted during the policy debate. The most prominent concern was that the cigarette tax could cause youth to switch to more affordable tobacco products such as little cigars, smokeless tobacco, and e-cigarettes. In 2015, among high school students in Maryland, 10 percent had smoked cigars, cigarillos, or little cigars, and 20 percent used electronic vapor products at least once in the past 30 days [Maryland Department of Health, 2014].

At the time the cigarette tax bill was being considered, there were inconsistencies across taxes and policies for cigarettes compared to other tobacco products. Beginning in 2012, the Maryland General Assembly passed several bills that prohibit e-cigarette sales and their components to minors [Maryland General Assembly, 2012a; Maryland General Assembly, 2015], and increased the tax on little cigars and smokeless tobacco [Comptroller of Maryland, 2012]. Although the increased taxes for these tobacco products were not as large as the

cigarette tax, it did bring these products more in-line with cigarette prices. Interviewees hypothesized that increasing the costs of these other products could address concerns about tobacco users switching products because of the cost. In support of this perspective, there was a reported 14 percent decline in cigar smoking in Maryland (from 14 percent in 2010 to 12 percent in 2013) by adolescents after this tax increase went into effect [Maryland Department of Health and Mental Hygiene, 2016].

A second unintended consequence interviewees raised was that the higher tax would result in a new market for smuggled cigarettes from states with lower taxes, particularly neighboring Virginia, West Virginia, Delaware, and Pennsylvania. This was a prominent argument raised by the tobacco industry. After the cigarette tax took effect, the Tax Foundation reported that the percentage of cigarettes smuggled into Maryland increased from 10 percent in 2006 to 20 percent in 2013 [Drenkard, 2015], resulting in lost tax revenue for the state. Interviewees questioned the accuracy of these data and referenced a report from Tobacco-Free Kids that concluded there is a net increase in cigarette tax revenue for Maryland and every other state that has passed a cigarette tax of 50 cents or more since 2008 [Tobacco-Free Kids, 2018]. While smuggling may have increased, Maryland's overall revenues from the cigarette tax increased following the effective date of the new tax. Regardless of the size of the smuggling problem, continued law enforcement actions to address this activity are important.

Another potential unintended consequence interviewees raised, and that was emphasized by the tobacco industry during the policy debate, was the differential impact of the tax on low-income individuals who are spending an increasing proportion of their resources on cigarettes as a result of the tax. Interviewees shared that while there was support for the potential benefits of the tax, a common

Maryland's 2008 cigarette tax increase, like similar cigarette tax increases across the country, has reduced cigarette use, especially among young people, and can potentially reduce death and disease caused by tobacco use.

concern centers around equity, [Dinno, 2009; Franks, 2007; Gospodinov, 2009], and that low-income individuals would be disproportionately impacted by the tax.

One final unintended consequence mentioned was the impact of the cigarette tax on participation in the Supplemental Nutrition Assistance Program (SNAP) among eligible low-income households. One expert mentioned this association, which is supported by a few studies. Rozema and colleagues demonstrated that the likelihood that smokers who are eligible for SNAP benefits actually enroll in SNAP increased between 10 percent and 15 percent after a cigarette tax was passed [Rozema, 2017]. The hypothesized mechanism for this association is that low-income families experience greater financial strains from the higher taxes but cannot easily stop using cigarettes because of their addictive quality. In order to cover the price increase, some may be more likely to obtain governmental assistance to help ease the new tax burden [Rozema, 2015].

II. Revenues from the Alcohol and Cigarette Tax Increases: How Much and What Has it Been Used For?

Revenue Created by the 2011 Alcohol Sales Tax Increase

Of the \$1.13 billion in sales tax collected from food and beverages in fiscal year 2016, alcohol sales generated \$283 million [Comptroller's office, personal communication]. One hundred percent of these alcohol sales tax and excise tax revenues go to the general fund. Further, the alcohol tax revenue is projected to increase by 3.5 percent annually [Maryland General Assembly, 2017]. Thus, the

estimated revenue from the sales tax on alcohol for fiscal year 2017 is \$289 million and \$306 million for fiscal year 2018 [Maryland General Assembly, 2016; Maryland General Assembly, 2017].

The 2011 bill that increased the alcohol sales tax mandated certain appropriations for the following fiscal year, specifically schools and school construction, and the Developmental Disabilities Administration. For fiscal year 2012, the law required that \$15 million be appropriated to the Waiting List Equity Fund for the Developmental Disabilities Administration and \$47.5 million be appropriated to the Public School Construction Financing Fund [Maryland General Assembly, 2011; Maryland General Assembly, 2012b]. The Waiting List Equity Fund provides money for community services to disabled individuals [Maryland General Assembly, 2011]. The Public School Construction Financing Fund is administered by the Board of Public Works for construction projects for public schools [Maryland General Assembly, 2012b; Maryland General Assembly, 2012c].

Appropriations were not specified for subsequent fiscal years, though interviewees noted that they met with the Governor several times to discuss allocation. Perhaps as a result of these meetings, the Governor proposed in his budget for fiscal year 2013 that \$64 million of the approximately \$70 million raised annually from the 2011 alcohol sales tax increase be allocated for the original goals of the Lorraine Sheehan Alcohol Sales Tax Coalition, which included funding for drug and alcohol prevention, support for people with mental health and developmental disabilities, and health care needs such as funding for

Experts emphasized that the Medicaid expansion would not have occurred without the cigarette tax increase, as the additional revenue from the tax increase was needed to pay for expanded health care coverage.

health enterprise zones and home- and community-based long-term care.

Revenue Created by the 2008 Cigarette Tax Increase

The cigarette tax increase became effective on January 1, 2008, during the 2007 fiscal year. According to the Comptroller's office, the revenue from this tax was \$271 million for fiscal year 2006 and \$268 million for fiscal year 2007. It subsequently increased to \$340 million for fiscal year 2008 and \$394 million for fiscal year 2009 [Franchot, 2016b]. Revenue remained between \$394 and \$397 million for fiscal year 2010 through fiscal year 2012. Since fiscal year 2013, cigarette tax revenues have been declining, by about \$11 million annually, to \$357 million in 2015. However, between fiscal year 2015 and fiscal year 2016, revenue increased by \$3 million, according to the report from the Comptroller [Franchot, 2016b]. In general, state revenues following the tax increase remain substantially higher than before the increase took effect.

A review of the legislation revealed that the law did not specifically allocate the revenue for public health purposes. This was confirmed by the experts we spoke with, and, in fact, our interviewees noted that they advocated for revenue to support tobacco prevention programs. However, a couple of experts we spoke with recalled that at the time, the Governor and state policy leaders, in response to strong advocacy efforts, agreed that the revenue would be used to support health care expansion through the Working Families and Small Business Health

Care Coverage Act of 2007, which expanded Medicaid coverage to adults making less than 116 percent of the federal poverty level – about 100,000 Marylanders.

While the cigarette tax revenue goes into the general fund, funds can be earmarked for specific uses. For example, even though the law did not specifically designate the revenue for cigarette-related purposes, to at least one expert we spoke with, it is clear that the revenue is doing what it was intended to do – expanding health care coverage. An additional 100,000 Maryland adults have health care through the Working Families and Small Business Health Care Coverage Act, which, as previously noted, was paid for by the cigarette tax revenue. Thus, although advocates were disappointed that the revenue did not specifically go to tobacco cessation or prevention, a few noted that with the expanded health care coverage, adults could have access to smoking cessation programs through Medicaid.

One interviewee we spoke with noted that these efforts to raise taxes have continued in Maryland in hopes of having additional state money allocated for tobacco prevention in Maryland. The CDC has recommended levels for funding tobacco prevention and cessation programs for each state [CDC, 2014]. For Maryland, based on its population and prevalence of tobacco use, the CDC recommends spending \$48 million to support interventions, mass-reach health communications, cessation programs, and surveillance. According to Tobacco-Free Kids, Maryland is falling short in meeting

recommended funding levels for tobacco prevention, cessation, and treatment. In fiscal year 2017, Maryland spent less than \$11 million on tobacco prevention, even though the state received an estimated \$554 million in tobacco settlement payments and taxes [Tobacco-Free Kids, 2016]. Of note, tobacco companies spent an estimated \$127 million in Maryland on advertising in 2014 [Tobacco-Free Kids, 2016].

III. Recommendations

We propose the following four recommendations for advocates, researchers, funders, and concerned citizens to consider. Based on findings from the literature review and interviews with experts familiar with the policy debate surrounding these two laws and their subsequent implementation, these recommendations are intended to help maximize public health gains through state policy.

1. Consider taxes an effective policy strategy to improve the public's health.

By increasing cigarette and alcohol taxes, policymakers can realize the tremendous public health benefits associated with price increases. It is remarkable that the impacts documented by the evidence, as well as described by interviewees, occurred from relatively modest tax increases. Because of the public health benefits associated with even a modest tax increase, policymakers stand to see more impressive declines in key health indicators by pursuing a higher tax. Moreover, despite anticipated resistance to the bills, interviewees noted the lack of public backlash once the laws were passed.

2. Monitor the public health impacts of tax policy.

The two laws reviewed benefitted from the wealth of existing research documenting how each tax policy could achieve public health goals.

This research was not only critical for developing evidence-based policies for the advocacy

campaigns, which were central to the debates surrounding those bills, but also illustrative for highlighting public health impacts. To fully understand the various ways laws can improve the public's health, continued support for research documenting the impacts of tobacco and alcohol taxes is needed. Additional research to further illuminate the long-term public health impacts of state tax policy, and any unintended consequences for health, as well as disproportionate impacts on certain segments of the population, is crucial to fully understanding these tax policies.

3. Ensure transparency for tax bills that generate revenue.

Information about the revenue generated from these laws is insightful. Although the revenues generated through these laws become part of the general fund, a number of experts who we spoke with were unable to provide clear details about how these funds have been spent. Assuring that funds generated through public health policies are strategically spent to advance public health goals should be standard procedure. At the very least, we recommend that language be included in legislation that requires transparency so that the public can identify how funds are being used.

4. Employ effective advocacy strategies.

Utilizing effective public health advocacy strategies to support policy change was key to the passage of these two tax laws [Pertschuk, 2010]. These efforts indicate the importance of citizen involvement when it comes to informing policy action on matters that impact the public's health. Without strong advocacy for public health policies, it is unlikely that the cigarette and alcohol tax policies highlighted in this report would have been realized. Advocating for evidence-based public health policies with deliberate, strategic, and proven strategies is critical, and should remain a priority in Maryland.

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**Public Health Policy in Maryland:
Lessons from Recent Alcohol and Cigarette Tax Policies**

**by Keshia Pollack Porter, PhD, MPH, Shannon Frattaroli,
PhD, MPH, Harpreet Pannu, MD, MPH**

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The Abell Foundation is dedicated to the enhancement of the quality of life in Maryland, with a particular focus on Baltimore. The Foundation places a strong emphasis on opening the doors of opportunity to the disenfranchised, believing that no community can thrive if those who live on the margins of it are not included.

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