



# The Role of Law and Policy in Reducing Deaths Attributable to Alcohol to Reach Healthy People's Substance Abuse Goals in the United States



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## Acronym List

Acronym	What it stands for
ABV	Alcohol by Volume
ACA	Patient Protection and Affordable Care Act
AMA	American Medical Association
APIS	Alcohol Policy Information System
BAC	Blood Alcohol Content
BC	British Columbia
CDC	Centers for Disease Control and Prevention
CPSTF	Community Preventive Services Task Force
DWI	Driving While Impaired
FARS	Fatality Analysis Reporting System
FDA	Food and Drug Administration

Acronym	What it stands for
FIW	Federal Interagency Workgroup
GRAS	Generally Recognized as Safe
HBSC	Health Behavior in School-Aged Children
HHS	Department of Health and Human Services
HP2020	Healthy People 2020
HVE	High Visibility Enforcement
ICCPUD	Interagency Coordinating Committee on the Prevention of Underage Drinking
MLDA	Minimum Legal Drinking Age
National Academies	National Academies of Sciences, Engineering, and Medicine
NHTSA	National Highway Traffic Safety Administration
NTSB	National Transportation Safety Board
NVDRS	National Violent Death Reporting System
ODPHP	Office of Disease Prevention and Health Promotion
SA	Substance Abuse
SAMHSA	Substance Abuse and Mental Health Services Administration

Acronym	What it stands for
TAM	Transdermal Alcohol Monitoring Devices
TTB	Alcohol and Tobacco Tax and Trade Bureau
U.S.	United States
U.K.	United Kingdom
WHO	World Health Organization
YRBS	Youth Risk Behavior Survey

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### Preface

Legal and policy interventions play an important role in improving public health and creating a society in which all individuals live long, healthy lives. However, many people are unaware of the precise impact these tools can have on population health. For 40 years, each decade the Healthy People initiative has established a comprehensive set of 10-year national objectives with measurable targets that provide a strategic framework to motivate, guide, and focus action to improve the Nation’s health, along with communicating a vision for achieving health equity. The ability to reach Healthy People targets is vital to our Nation—it means lives saved, illnesses avoided, and injuries averted; it means stronger and more resilient public health and healthcare systems. It also creates alignment across sectors and geography to create and sustain environments where all can achieve their full potential for health and well-being across the lifespan.

This report is part of the Healthy People 2020 Law and Health Policy Project (henceforth referred to as “the Project”), which seeks to increase awareness about the role law and policy play in improving health. The Project includes this series of reports, as well as other products and webinars related to a diverse set of Healthy People 2020 (HP2020) national health objectives. Most of these will continue to be areas of focus in Healthy People 2030 (HP2030) and demonstrate how such approaches can improve health for individuals, families, and communities. Each report highlights the practical application of law and policy across various settings and is intended for diverse audiences including community and tribal leaders, government officials, public health professionals, healthcare providers, lawyers, and social service providers. As HP2020—the current iteration of the initiative—comes to a close and HP2030 comes to the fore, the Project continues to provide information about the role that evidence-based legal and policy interventions plays to improve public health and to help reach critical public health goals.

The Project is a collaborative effort. Within the U.S. Department of Health and Human Services (HHS), the Office of Disease Prevention and Health Promotion (ODPHP) in the Office of the Assistant Secretary for Health leads the Law and Health Policy Project with guidance and support from the Centers for Disease Control and Prevention (CDC). The Project was launched by the CDC Foundation with funding from the Robert Wood Johnson Foundation (RWJF).

The reports in the series discuss legal or policy strategies supported by empirical evidence that can help achieve specific HP2020 targets or objectives. This particular report concentrates on substance use and misuse, and how legal and policy approaches across state, tribal, and local settings can reduce the number of deaths attributable to alcohol. The reports also focus on community, and practice examples of Laws and Policies in Action or “Bright Spots” that illustrate how communities use law and policy to meet their health improvement goals and achieve Healthy People targets. Up to 4 co-authors work on each report with assistance from a working group of experts from varying disciplines and practice areas relevant to the report; all parties involved are selected based on their background and subject matter expertise. Other groups provide input and support for these reports during their development, including the Healthy People 2020 Federal Interagency Workgroup (FIW)—the lead entity guiding the HP2020 process—the HP2020 topic area workgroups, and other project partners.

While these reports were written focusing on the HP2020 targets, the lessons, laws, and policies discussed should be relevant to Healthy People 2030 goals, as well as to addressing future public health challenges. Healthy People 2030 will build on the work of the current decade and focus on creating a society in which all people can achieve their full potential for health and well-being across the lifespan. Law and policy will continue to be important tools to help achieve this vision.

## Introduction

Healthy People provides an agenda and 10-year national goals and objectives for the nation's health; it also provides a guide to areas of health for measurable progress by the end of the decade.<sup>1</sup> Substance abuse (SA) is 1 of 42 topic areas in the current iteration, HP2020. The goal of the topic area is to “[r]educe substance abuse to protect the health, safety, and quality of life for all, especially children.”<sup>2</sup> This report, rather than including all substances, focuses on alcohol, which is a leading cause of death and injury.<sup>3</sup> Specifically, the report is focused on the HP2020 objective directed at reducing the number of deaths attributable to alcohol (SA-20). There are several evidence-based and population-based policy interventions that address multiple SA objectives that can help to reduce alcohol-attributable deaths. The baseline for HP2020 objective SA-20 is from 2001-2005, when an average of 79,646 deaths in the United States (U.S.) each year were linked to excessive alcohol use.<sup>4,5</sup> The HP2020 objective targets the reduction in the average annual number of deaths by 10% (or to 71,681).<sup>6</sup>

Alcohol use is common across the U.S. population; over 70 percent of adults surveyed for the 2018 National Survey on Drug Use and Health reported consuming a drink in the past 12 months.<sup>7</sup> Also, variation in patterns of alcohol consumption exists across age, gender, and racial/ethnic groups, as well as urban or rural residence.<sup>8,9</sup> Alcohol contributes to incidences of illness and death, including injuries resulting from violence; traffic crashes; falls; fires and drownings; suicidality; liver diseases; and cancers of the breast, mouth, throat, esophagus, liver and colon.<sup>10,11</sup> Alcohol use also exacerbates societal problems, such as crime, problems in school, and relationship issues.<sup>12</sup> In the U.S., excessive alcohol use\* is a leading cause of preventable death, contributing to thousands of deaths each year.<sup>13,14,15</sup> Excessive alcohol use accounts for 1 in 10 deaths among working age adults (20-64 years), shortening life expectancy by 30 years.<sup>16,17</sup> The economic

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\* Healthy People defines excessive alcohol use, either in the form of heavy drinking (drinking more than 2 drinks per day on average for men or more than 1 drink per day on average for women), or binge drinking (drinking 5 or more drinks during a single occasion for men or 4 or more drinks during a single occasion for women).

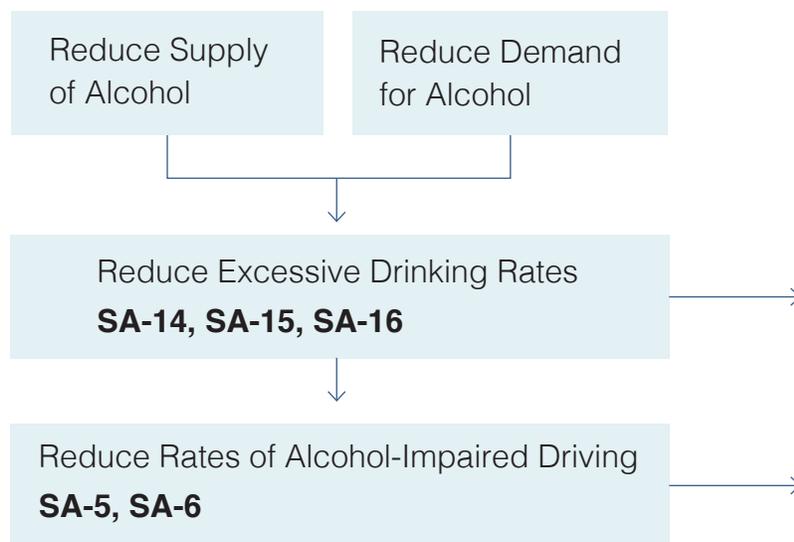
costs of excessive alcohol consumption in 2010 were estimated at \$249 billion.<sup>18,19</sup> The costs on the country's criminal justice system alone, based on research from the Centers for Disease Control and Prevention (CDC), are estimated at over \$24.25 billion dollars each year, including costs for corrections (\$15.9 billion), alcohol-related crimes (\$2.2 billion), violent and property crimes (\$5.9 billion), and private legal expenses (\$228.1 million).<sup>20</sup>

Addressing these problems through effective policy and legal interventions supports healthier, safer, and more livable communities. Implementing alcohol-related, evidence-based interventions to reduce alcohol consumption can prevent injuries and illnesses, reduce the number of premature deaths, and decrease crime, leading to a better educated and more productive workforce.<sup>21</sup> Additional benefits include reduced costs for healthcare, law enforcement, and the judicial system, allowing resources to be redirected to other priority areas, such as addressing other health problems and developing new community assets. Achievement of this vision also requires strategically implementing effective policies for change at the population level.

This report focuses on reviewing policy and legal interventions that may reduce the number of deaths attributable to alcohol (SA-20).<sup>22</sup> It suggests that a single policy intervention might be insufficient to accomplish this goal but instead requires effective implementation of multiple policies. Possible policy interventions to reduce deaths include those that affect drinking rates or patterns, as well as those that focus on specific types of alcohol-related problems (e.g., deaths due to traffic crashes or violence). Policy interventions that reduce binge drinking rates or change drinking patterns can reduce deaths from a range of alcohol-attributable deaths (e.g., traffic crashes, homicides, cancer).<sup>23, 24</sup>

**Figure 1: Conceptual Model**

Alcohol consumption can negatively influence a variety of health conditions and outcomes addressed through Healthy People objectives. This report specifically focuses on how legal and policy approaches can reduce the supply of and demand for alcohol and the impact of these approaches in reducing alcohol-related traffic and other fatalities. The conceptual model also identifies several other critical Healthy People objectives where a reduction in excessive alcohol consumption could yield health benefits. However, this is not an exhaustive list, and additional alcohol-attributable harms are identified in the Alcohol-Related Disease Impact (ARDI) application, which provides national and state-level estimates of alcohol-related health impacts.



Reduce Number of Deaths Attributed to Alcohol | **SA-20**

**Primary Objectives**

Reduce Alcohol-Related Traffic Crashes **SA-17**

Reduce Other Alcohol-Related Fatalities **SA-11, IVP-2**

**Related Objectives**

**Injury and Violence Prevention**

Prevent an increase in fall-related deaths **IVP-23**

Reduce drowning deaths **IVP-25**

Reduce residential fire deaths **IVP-28**

**Cancer**

Reduce overall cancer death rate **C-1**

Reduce the female breast cancer death rate **C-3**

Reduce the colorectal cancer death rate **C-5**

Reduce the oropharyngeal cancer death rate **C-5**

### **Substance Abuse Objectives (in order of mention)**

- SA-14 Reduce the proportion of persons engaging in binge drinking of alcoholic beverages
- SA-15 Reduce the proportion of adults who drank excessively in the previous 30 days
- SA-16 Reduce average annual alcohol consumption
- SA-6 Increase the number of States with mandatory ignition interlock laws for first and repeat impaired driving offenders
- SA-5 (Developmental) Increase the number of drug, driving while impaired (DWI), and other specialty courts in the U.S.
- SA-20 Reduce number of deaths attributable to alcohol
- SA-17 Decrease the rate of alcohol-impaired driving (0.08+ blood alcohol content {BAC})
- SA-11 Reduce cirrhosis deaths

### **Injury and Violence Prevention Objective**

- IVP-2 Reduce fatal and nonfatal traumatic brain injuries

Three of these objectives focus on reducing average annual alcohol consumption, excessive drinking, and binge drinking.<sup>22</sup> As indicated in Figure 1, addressing these three health objectives can decrease the rate of alcohol-impaired driving fatalities. Reductions in these areas can also address HP2020 objectives from other topic areas, such as injury and violence prevention (e.g., reduce fatal and non-fatal injuries and violence)\* and cancer (i.e., secondary objectives not directly focused on in this report). The other 2 primary objectives focused on in this report address a specific alcohol-attributable cause of death—alcohol-impaired driving fatalities.<sup>23,24</sup> The laws and policies discussed directly related to reducing alcohol-related traffic crashes include lowering the Blood Alcohol Content (BAC) limit to 0.05, and increasing the number of states with mandatory ignition interlock laws for first and repeat impaired driving offenders.\*\*<sup>25</sup>

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\* Relevant Healthy People 2020 objectives from the Injury and Violence Prevention topic area include: IVP-1: Reduce fatal and nonfatal injuries; IVP-12: Reduce nonfatal unintentional injuries; IVP-13: Reduce motor vehicle crash-related deaths; IVP-14: Reduce nonfatal motor vehicle crash-related injuries; and IVP-29: Reduce homicides. From the Cancer topic area: C-1: Reduce the overall cancer death rate; C-3: Reduce the female breast cancer death rate; C-5: Reduce the colorectal cancer death rate; and C-6: Reduce the oropharyngeal cancer death rate.

\*\* Ignition interlock devices are breathalyzer devices installed in cars. Before starting a car, the driver must blow into the device to ensure that they are not intoxicated.



### State, local, and tribal governments use many laws and policies to regulate alcohol

State, local, and tribal governments use a variety of laws and policies to regulate the sale and consumption of alcohol. For example, 7 states prohibit happy hours, 8 states ban the sale of alcohol on Sundays, and 31 states have keg registration laws.

## Legal Framework

Most of the legal authority to enact laws governing manufacture, sale, and possession of alcoholic beverages within the U.S. exists at the state level. The 21<sup>st</sup> Amendment, which ended Prohibition, granted most authority over alcohol regulation/control to the states and reserved only limited authority to the federal government. States vary in the degree to which they grant power to localities to engage in alcohol policy within their jurisdictions. In some cases, there is even variation between jurisdictions in a single state. Some alcohol-related laws address issues such as underage drinking, BAC levels, taxation, retail sales, pricing, and consumption while pregnant.<sup>25</sup> The Alcohol Policy Information System (APIS) website tracks 35 such policies nationally and for each state, though not for localities. Tribal laws, which are also not tracked by APIS, vary since tribes are domestic, dependent sovereignties with the right to self-govern and enact their own alcohol-related laws. While these policies are not systematically tracked for tribes, because they are broad-based policies, they still impact those populations.

### Federal-Level Alcohol Regulation

At the federal level, Congress regulates the importation and taxation of alcoholic beverages. However, this power is limited by the 21<sup>st</sup> Amendment to the U.S. Constitution, which grants states the majority of the power over alcohol regulation. As a result, Congress cannot mandate that states pass certain alcohol-related laws, though it may provide financial and tax incentives to promote certain policies. For example, the National Minimum Drinking Age Act of 1984 requires the federal government to withhold 10% of federal highway funding from states that do not prohibit individuals under 21 years of age from purchasing or publicly possessing alcoholic beverages.<sup>26</sup> Although every state and the District of Columbia meet this standard, laws vary on particulars and exceptions.

Two federal agencies are involved in alcohol regulation in the U.S. The Alcohol and Tobacco, Tax and Trade Bureau (TTB), an agency of the U.S. Department of the Treasury, is responsible for enforcing alcohol-related sections of the Internal Revenue Code and the Federal Alcohol Administration Act, including authority over alcohol labeling. The Food and Drug Administration (FDA), an agency of the U.S. Department of Health and Human Services (HHS), enforces the Federal Food, Drug and Cosmetic Act (FD&C Act). The FDA has authority to take action with respect to adulterated food products, including alcoholic beverages. Under the FD&C Act, a product can be adulterated for several reasons, including if it was prepared, packed, or held under unsanitary conditions; contains a poison or deleterious substance which may render the food injurious to health; or if it contains an unapproved food additive. A Memorandum of Understanding (MOU) recognizes the partnership between TTB and FDA in regards to alcoholic products.<sup>27</sup>

### State-Level Alcohol Regulation

Though individual states have the power to control the transportation, importation, and possession of alcoholic beverages within their states,\* diversity exists in approaches towards alcohol policy in the U.S. For example, of the laws that APIS tracks, 3 focus on whether states allow, restrict, or prohibit happy hours; allow Sunday alcohol sales; and require keg registration.<sup>28</sup> As of January 1, 2019, 9 states allow but restrict happy hours, 7 states prohibit happy hours, and all other states allow them.<sup>29</sup> Eight states ban the sale of alcohol on Sundays, while all others permit it.<sup>30</sup> And, as of January 1, 2019, 31 states had keg registration laws, which require a recorded identification number, tag, or sticker to be attached to kegs over a certain capacity. Utah bans the use of kegs entirely.

Some states hold a monopoly over aspects of the sale or distribution of alcohol within the state. “Control Jurisdictions,” which include 17 states and a few local jurisdictions, manage the sale of distilled spirits or liquor, and occasionally wine and beer at the wholesale or the retail level.<sup>31</sup> The 13 jurisdictions that control the sale of alcohol at the retail level utilize government-operated package stores or designated agents.

Jurisdictions regulate off-premises consumption, such as alcohol sold in liquor stores. No states maintain a state-run system of retail sale for on-premises consumption, such as sales in a restaurant or bar.

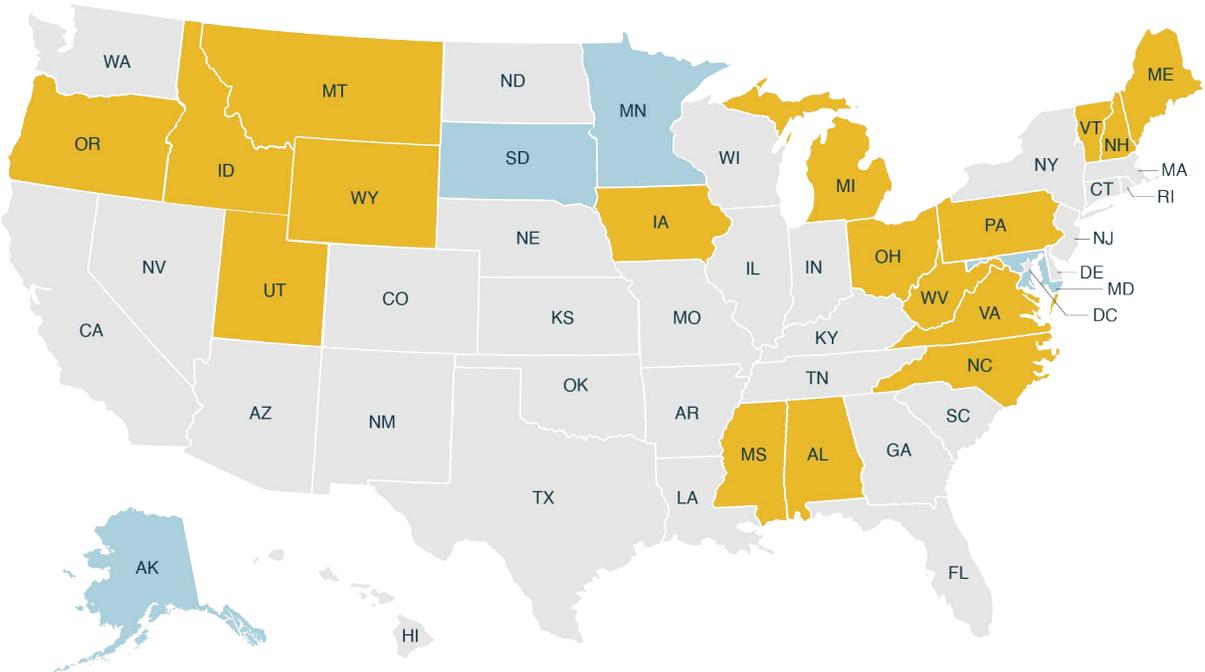
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\* The 21st Amendment both repealed Prohibition and granted states these powers.

## Map of Control State Jurisdictions

There's a lot of diversity in how state and local jurisdictions regulate wholesale alcohol sales—and many don't regulate sales at all.

While 17 states regulate some or all wholesale alcohol sales and 4 states have at least one local jurisdiction that regulates some or all sales, 29 states have no government control over wholesale alcohol sales.



### Control State Jurisdictions

- States regulate some or all of wholesale alcoholic beverage sales
- At least one local jurisdiction regulates some or all wholesale alcoholic beverage sales

### Local-Level Alcohol Regulation

The preemption doctrine refers to a legal concept where the legislation of higher levels of government (e.g. federal or state government) supersedes that of lower levels of government (e.g. state or local government), and is generally a factor for localities when enacting laws. The federal government is limited in its ability to preempt state action by the 10th Amendment of the Constitution. Under the 10<sup>th</sup> Amendment, all authority not expressly granted to the federal government is reserved for the states.<sup>32</sup> Nonetheless, states and localities can only enact laws to the extent they are not preempted. With regards to alcohol, 4 categories of state preemption generally apply, with each varying on the amount of control held by the state versus the local authority. The categories include: “Exclusive or near-exclusive state control”; “Exclusive state licensing authority, local regulatory authority”; “Joint local/state licensing and regulatory powers”; and “Exclusive local licensing, with minimum state standards.”<sup>33</sup>

State preemption is a critical issue in the alcohol policy field. Although sometimes there is a need for or benefit to consistent legal or regulatory approaches to alcohol policies, having state laws that create a baseline, or “floor,” allow local jurisdictions to address their own communities’ needs. Setting this kind of “floor” prevents situations where state law limits cities, counties, or municipalities from adopting more restrictive alcohol control policies within their borders. Non-preempted localities have enacted a wide range of policies, including restricting alcohol billboards, increasing local alcohol taxes, and limiting the number, location, and type of alcohol outlets.

### Tribal-Level Alcohol Regulation

As “sovereign nations that maintain a government-to-government relationship with the United States,”<sup>34</sup> the 573 federally recognized American Indian and Alaska Native tribes in the contiguous U.S. and Alaska set their own laws regulating alcohol.<sup>35</sup> Approximately 11 percent of the codes collected in the Tribal Public Health Law Database<sup>36</sup> relate to alcohol, tobacco, and substance control. Like alcohol laws within states, these codes vary between tribes. For example, some tribal nations ban all alcohol, whereas others only allow it in gaming facilities.

### Limitations to the 21<sup>st</sup> Amendment

Post-Prohibition, the Supreme Court repeatedly upheld state alcohol laws as constitutional under the 21<sup>st</sup> Amendment. However, over the last several decades, the Supreme Court has begun to give less deference to the 21<sup>st</sup> Amendment when it conflicted with other Constitutional provisions.<sup>37</sup> A tension now exists between states' authority under the 21<sup>st</sup> Amendment and limits to that authority created by these other Constitutional provisions. As a result, states currently are more limited in their ability to enact alcohol-related laws that withstand judicial scrutiny. The lesson from recent Supreme Court cases<sup>38,39</sup> is that simply stating a law's rationale as "benefiting public health and safety" is no longer sufficient justification for the Court to uphold the law. Instead, specific research and data on individual state and local laws are required to justify their effectiveness.

### Policy Interventions to Change Alcohol Consumption Patterns

Two general approaches, demand-side and supply-side, are used to change alcohol use.<sup>40</sup> A demand-side approach employs strategies to educate, persuade, and motivate individuals to change drinking patterns. A supply-side approach focuses on reducing the availability of alcohol or making it more difficult to obtain, which lowers drinking rates.<sup>41</sup> The supply-side approach focuses on population-level change, which targets the entire population of drinkers contributing to alcohol-related harms and hence helps the Nation meet HP2020 objectives. This includes those who meet diagnostic criteria for substance use disorders, in addition to individuals who drink alcohol excessively but do not meet diagnostic criteria. Excessive drinkers contribute to more alcohol-attributable deaths than those diagnosed with substance use disorders.<sup>42,43,44</sup> Demand-side interventions may be more effective if implemented in conjunction with supply-side interventions.<sup>45</sup>

Evidence-based and effective policy interventions addressing the supply can reduce the availability of alcohol. Three broad categories of alcohol availability include legal availability, physical availability, and economic availability. This report addresses these 3 categories and provides specific evidence-based policy interventions that may impact each of them.

### Legal Availability

Policy interventions that address legal availability restrict access to alcohol for some groups of people (e.g., certain age groups, intoxicated adults). In the U.S., a prime example is the minimum legal drinking age (MLDA). Most states promoted an age-21 MLDA following the end of Prohibition.\* In 1971, the 26<sup>th</sup> Amendment lowered the voting age from 21 to 18, leading many states to also decrease the MLDA to age 18, 19, or 20.<sup>46</sup> These decreases led to an increase in traffic crash deaths among 18 to 20-year olds,<sup>47</sup> thus leading some states to adjust the MLDA to age 21 by the late 1970s and early 1980s.<sup>48</sup>

In 1984, the National Minimum Legal Drinking Age Act was passed to decrease the number of traffic crashes resulting from underage youth crossing borders to obtain alcohol from states with a lower MLDA.<sup>49</sup> The policy pressured states to raise the MLDA to age 21 or lose a portion of federal highway construction funds. By 1988, all states had an age-21 MLDA, though variability and exceptions exist across states. For example, in Minnesota, an individual under age 21 can possess alcohol in their own home with a parent's consent, while in New Jersey, an underage person can legally possess alcohol in any private residence without parental approval.<sup>50,51</sup>

The preponderance of research evidence shows that increases in the MLDA were associated with fewer traffic crash deaths,<sup>52</sup> as well as decreases in homicides<sup>53,54</sup> suicides,<sup>55</sup> and unintentional injuries<sup>56,57</sup> among 18- to 20-year-olds. Using data from the Fatality Analysis Reporting System (FARS), the National Highway Traffic Safety Administration (NHTSA) estimated that MLDA-21 laws

\* Merriam Webster's Dictionary states that "Prohibition refers to the period of time from 1920 to 1933 in the U.S. when it was illegal to make or sell alcohol."

have helped reduce alcohol-related traffic fatalities and saved an estimated 31,417 lives between 1975 and 2016,<sup>58</sup> with an additional 538 lives saved in 2017.<sup>59</sup> Despite strong research supporting the MLDA-21, proposals to lower the MLDA have emerged in many states since 1988. Arguments for lowering the drinking age include: (1) the age-21 drinking age is not working—youth are still drinking, (2) if 18-20 year-olds can serve in a war, they should be able to drink alcohol, and (3) European countries have a lower drinking age and youth in those countries drink less heavily and have fewer alcohol-related problems.<sup>60,61</sup>

However, research does not support these arguments. While some studies suggest otherwise, the overwhelming evidence shows that when an age-21 drinking age is in effect, fewer youth under the age of 21 drink and experience alcohol-related harms.<sup>62,63</sup> Economic research also supports maintaining the MDLA of 21, finding that returning to a MDLA of 18 would result in greater alcohol-related harms.<sup>64</sup> Additionally, alcohol use in the military is a significant concern. Underage military members experience injuries and death resulting from excessive alcohol use, including binge drinking, at disproportionate rates. Youth from many European countries drink more excessively than youth in the United States.<sup>65</sup> Researchers and government agencies consider the MLDA-21 strategy one of the most successful alcohol policies in the U.S.<sup>66</sup>

Additional strategies can strengthen the impact of MLDA laws, particularly by reducing access by underage youth; and effective enforcement by states and communities can magnify the laws' impact. A recent National Academies of Sciences, Engineering, and Medicine report on reducing alcohol-related traffic fatalities discussed the success of MLDA-21 laws in the 1980s and recommended focusing on new and additional policies to reduce sales of alcohol to underage persons.<sup>67</sup> Related to this recommendation, the Community Preventive Services Task Force (CPSTF)—whose findings are published in “The Guide to Community Preventive Services” (Community Guide)—recommends enhanced enforcement of laws prohibiting sale of alcohol to minors based on the evidence of effectiveness of limiting underage alcohol purchases.<sup>68,69</sup> Regular compliance

checks, in which underage youth attempt to purchase alcohol under law enforcement supervision with penalties for the license holder and server, are an effective method for preventing illegal sales from licensed alcohol establishments.<sup>70</sup> However, since effects dissipate over time, checks should be conducted more than once or twice per year.

Additional policy and enforcement strategies have been identified to address non-commercial sources of alcohol.<sup>71</sup> Though some strategies have been evaluated such as keg registration and social host laws, the effects of those strategies are not fully understood.<sup>72,73,74</sup> The MLDA-21 laws vary across states;<sup>75</sup> states may choose to address loopholes in current laws to further strengthen them. A recent study suggests that if states enacted 9 policies aimed at reducing alcohol availability for youth, youth demand for alcohol, and alcohol-impaired driving, they would save an additional 210 lives each year.<sup>76</sup>

### Physical Availability

Policy interventions that impact physical availability restrict individuals' ability or ease in obtaining alcohol. This category includes a broad range of policy interventions, including the number and concentration of alcohol retailers (such as bars, restaurants, liquor stores) in an area,<sup>77</sup> government control of alcohol distribution systems, limiting days and hours of alcohol sales, and increased liability for illegal alcohol sales. CPSTF conducted systematic reviews of each of these interventions<sup>78,79,80,81,82</sup> and recommended strategies based on the research.\* Two of these policy strategies are described in more detail in this report: 1) restricting alcohol outlet density; and 2) maintaining government control of the wholesale alcohol market, as well as having tiers to prevent privatization of retail outlets.

\* *Strategizers* or guidelines for planning, implementing and evaluating alcohol density and commercial-host-availability policies are available at: [http://www.camy.org/action/Outlet\\_Density/preemption-data-tool.html](http://www.camy.org/action/Outlet_Density/preemption-data-tool.html) and <http://www.camy.org/action/commercial-host-liability/>.

### Restricting outlet density

High alcohol outlet density, which is defined as a “high concentration of retail alcohol outlets in a small area,” is an environmental risk factor for drinking excessively.<sup>83</sup> Excessive drinking is associated with poor individual health outcomes; neighborhoods located in and around a high density of alcohol outlets face a number of related harms, including disorderly conduct, noise, neighborhood disruption, public nuisance, property damage, alcohol-impaired driving, pedestrian injuries, domestic violence, and child abuse and neglect.<sup>84</sup>

The CPSTF recommends limiting outlet density based on the evidence of positive associations between on- and off-premise outlets and excessive alcohol consumption and its related harms.<sup>85</sup> This recommendation follows the World Health Organization’s (WHO)<sup>86</sup> and National Academies’<sup>87</sup> reviews identifying outlet density control as an effective tool. A review by HHS’s Substance Abuse and Mental Health Services Administration (SAMHSA) also reports a medium level of evidence for controlling outlet density to reduce alcohol-related harms.<sup>88</sup>

Policies can focus directly on density, such as limiting the number of licenses per population in a state, county, city, or local area. Using zoning ordinances, they can also limit the locations of outlets in relation to schools, residential areas, and other alcohol retail. For example, residents in the Buckhead area of Atlanta requested that the mayor and city officials establish and enforce restriction on alcohol retail sales in response to concerns about crime in the neighborhood.<sup>89</sup> These new regulations led to a 3% relative reduction in alcohol outlet density in Buckhead, and this reduction was associated with a “2-fold greater reduction in exposure to violent crime than occurred” in either control area.<sup>90</sup> More information about how the Buckhead community leveraged legal and policy strategies to address high alcohol outlet density is detailed in a Law and Health Policy Project “Bright Spot” or community example.



### Keeping state control of alcohol sales—and preventing private control—helps reduce alcohol-related harms

In states that control the sale of alcohol (control states), fewer stores sell alcohol. These stores close earlier and have fewer selling hours, which can decrease drinking and alcohol-related harms—and they're less likely to sell alcohol to minors compared to other states.

#### **Maintaining government control of wholesale and retail tiers (preventing privatization)**

Preventing privatization of alcohol distribution systems is currently an effective policy approach. In 17 states and 1 Maryland county, some portion of wholesale and/or retail sales of alcohol is run by the government.<sup>91</sup> However, the trend in the past few decades has been to privatize these systems, moving from state-controlled systems (control states) to privately-owned wholesale and retail systems (license states).

When compared to license states, control states have fewer stores on average that sell distilled spirits or liquor; they close earlier, and they have fewer selling hours.<sup>92</sup> An economic study of Pennsylvania focused on the number of stores and locations found that the state Liquor Control Board operated more stores than the number that would be expected from a hypothetical private profit maximizing monopoly. In particular, these additional stores were located in lower population areas indicating a focus on access for all residents rather than profit maximization. In contrast, stores in license states tend to cluster in densely populated areas.<sup>93</sup> Both alcohol outlet density and the hours and days of sales have been

found to increase drinking and alcohol-related harms, including violent acts such as assaults, homicides, and child abuse and neglect.<sup>94,95,96,97</sup> One U.S. study found that persons living in areas with a high density of off-premise alcohol outlets, such as liquor stores, had double the risk of being shot in an assault compared to those in lower outlet density areas.<sup>98</sup>

In addition, control-system store employees may also have more experience and better oversight, resulting in fewer sales to minors. A U.S. study found that states with retail control had significantly fewer youth reporting drinking and binge drinking during the past 30 days and 9.3% fewer alcohol-impaired deaths than youth in other states.<sup>99</sup> A similar study of retail stores' compliance with minimum purchase age restrictions in Norway and Finland found that control states' stores were less likely to sell to minors than private stores.<sup>100</sup> Moreover, products with inappropriate listings, packaging, or marketing are not sold in control states, and prices are monitored to prevent excessive temporary discounting on particular brands.<sup>101</sup>

States with government control can also raise public revenue through taxes and mark-ups on controlled beverages. This applies to states with only wholesale control, as well as those with both retail and wholesale control. Government control can occur at any or all of the 3 tiers of alcohol distribution—production, wholesale, and retail. In the U.S., there are no government-controlled producers. Only 4 states control wholesale (though not retail) liquor distribution; and 2 states control only wholesale wine distribution.<sup>102</sup> Prices tend to be higher in control states with a 2012 comparison finding a 7% difference in cost.<sup>103</sup> Revenues in control states are sometimes higher per gallon of ethanol sold, since they include profits that would have gone to wholesalers and retailers. In 2012, average revenues per gallon of spirits sold were over \$50 in control states, compared to approximately \$13 in license states.<sup>104</sup>

Comparisons of tax rates between control and license states are difficult to assess. Producer prices differ considerably by state for the same brand, and control states employ specific pricing procedures that include percentage mark-ups, volume-based

taxes, and container-based fees; hence any estimates of tax rates are based on certain assumptions. Given a number of reasonable assumptions, average tax rates on typical beverages are similar between control and license states for spirits.<sup>105</sup> Tax rates on wine appear somewhat higher in control states, due to a greater reliance on ad valorem taxes—those imposed based on a percentage of value, and higher prices per standard drink for popular wines. There are no control states for beer, and beer taxes are usually the lowest of the 3 beverage types in all states.

Research suggests that direct state control over alcohol sales, both in the U.S. and in countries such as Canada, Sweden, and Finland, reduces the availability of the controlled spirits, wine, and beer); along with overall alcohol consumption. Studies of the real and potential effects of alcohol privatization suggest that modifying and/or eliminating the government's monopoly status could increase consumption and alcohol-related harms, such as assault, motor vehicle crashes, and deaths from other alcohol-related causes.<sup>106,107,108</sup>

In general, privatization results in higher alcohol outlet density, greater physical availability, and longer and later hours of sale.<sup>109</sup> It also results in new elements in the marketing and sales processes, such as a greater commercial orientation towards alcohol sales and additional economic vested interests.<sup>110</sup> These changes may result in increased sales to underage and intoxicated patrons. There is some evidence of short-term increases in alcohol prices with privatization, but the real price of alcohol declines in the long term.<sup>111,112</sup>

Most studies of individual U.S. states show a significant increase in sales of privatized beverages or those newly allowed to be sold through private retail—usually wine—along with a small increase in alcohol sales overall.<sup>113,114</sup> Wine, a relatively less popular beverage in the U.S., currently accounts for about 17% of ethanol sales.<sup>115</sup> One of the few case studies of spirits privatization (Iowa) occurred at the retail level with the state retaining control over the wholesale tier. This change increased spirits consumption by 10% and overall alcohol consumption by 5%.<sup>116,117</sup> In Washington State, evaluation of privatization was complicated by a large reduction in beer taxes 1 year after privatization and the legalization of marijuana several

months later. Spirits prices rose following privatization, while the number of outlets selling spirits for off-premise use—including supermarkets, drug stores, and department stores—increased from 328 to over 1,500.<sup>118</sup> Per capita apparent consumption of ethanol from both spirits and in total did not change from 2012 to 2015 in Washington, nor did population surveys find a change alcohol consumption volume, indicating no overall impact on consumption in the first years following privatization.<sup>119</sup> People who took surveys of spirit-purchasing behaviors and opinions suggested that while liquor purchasing was more convenient after privatization, the selection of different spirit brands was recalled as better and their prices lower under the government-controlled system.<sup>120</sup> Further, Washington voters who had supported the privatization initiative later regretted their votes at a much higher rate than voters who opposed, to the extent that a re-vote based on actual experience of privatization would not pass the initiative.<sup>121</sup> Studies of longer-term impacts on consumption and alcohol-related harms are needed to further evaluate this privatization effort.

Experience from Canada also shows similar privatization results. An analysis of the long-term effects of privatization in Alberta, Canada, found higher prices due to increased costs and excess capacity. However, there were also more stores and greater availability, which resulted in more consumption despite the higher prices. The province also collected significantly lower overall alcohol tax revenues (estimated at \$500 million less) between 1994 and 2003 than would have been collected under government control.<sup>122,123</sup> Additionally, a study of mortality trends in Alberta linked this privatization to increased suicide rates.<sup>124</sup>

In British Columbia (BC), Canada, a partial privatization resulted increased numbers of stores. However, the government continued control of the wholesale tier and maintained most retail outlets, so prices did not decline. In BC, there is also a minimum retail price for each alcoholic beverage type. Nonetheless, consumption increased along with more stores and higher density of private stores in an area.<sup>125</sup> Further analyses of this privatization showed that the density of private liquor stores increased alcohol-related deaths by 3.25% for each 20% increase in density for an area.<sup>126</sup>

Thus, reviews of research on the effect of privatization of alcohol sales show that such policies correlate to higher outlet density, increased price, and increased consumption. However, at least in the U.S., studies have not detailed the types of outlets, how privatization affects economic and public health interests, and the underlying causes of increased consumption. A study using data from the Health Behavior in School-Aged Children (HBSC) and Youth Risk Behavior Survey (YRBS)— in addition to crash death data from the Fatality Analysis Reporting System (FARS)— compared rates of drinking and alcohol-impaired driving deaths for those under 21 years of age between states with and without retail control systems. Results showed that retail control states had significantly fewer youth reporting drinking and binge drinking in the past 30 days, and had rates of alcohol-impaired driving deaths that were 9.3% lower than those in license states.<sup>127</sup> Although the cross-sectional nature of this study cannot support conclusions of a causal relationship, these results suggest retail control systems may afford underage persons reduced access to alcohol.

A 2012 systematic review conducted by the CPSTF and published in the Community Guide included 17 studies of the impact of privatization on alcohol sales or consumption. Results indicated that privatization in U.S. states, Canadian provinces, and Nordic countries led to substantial increases in the sales of privatized beverage types, in addition to small reductions in the sales of non-privatized beverages. The review concluded that strong evidence existed that privatization of retail alcohol sales leads to increases in excessive consumption.<sup>128</sup> Based on this review, the CPSTF recommends against privatization of government-controlled retail sales of alcoholic beverages in U.S. states where these systems are in place.<sup>129</sup>

Maintaining existing systems and regulations will not significantly reduce alcohol consumption and mortality rates attributable to alcohol. However, privatization that results in increased spirits availability and lower prices, in addition to the loss of other important features of retail government control, could counteract other efforts to reduce alcohol-related deaths and other harms in the U.S.



### Taxes reduce alcohol consumption and related harm

Taxes on alcohol can effectively reduce alcohol consumption and related harm, including driving while intoxicated, accidents, injuries, death, and violent crime. Unit taxes (a tax per gallon or unit of volume) and ad valorem taxes (a tax based on value) are proven tools to reduce alcohol consumption.

### Economic Availability

Economic availability policy interventions support increased alcohol prices, which lead to decreased consumption and related harms.<sup>130</sup> Policies addressing economic availability include taxes; regulated pricing, such as minimum prices; price posting; uniform pricing requirements; quantity discounts; minimum mark-ups; industry structure-related policies, such as the mandated 3-tier system; government control of production, wholesaling, and/or retail tiers; prohibitions on central warehousing by retailers; tied-house rules and prohibitions that require retailers to sell alcohol only from specific producers; interstate and within-state shipping-to-home restrictions; and outlet density and type restrictions.

Some restrictions that focus primarily on physical availability may also impact prices. Economic availability also addresses affordability, where prices are considered in relation to the population income distribution. As the mean, median, and other income measures rise, alcohol consumption is expected to increase given a fixed tax or price level. Over time, the impact of a given tax rate or other price policy will erode; in part this decay is due to the effects of inflation on taxes over time

### Focus on taxation

Taxation is the most studied and effective economic availability policy in reducing alcohol consumption and alcohol-related harms, including mortality.

### Basis for taxation

Most of the current alcohol taxes in the U.S. are based on beverage volume, rather than alcohol volume. In the U.S., a standard drink contains 0.5 ounces of pure alcohol. Generally, this amount is found in 12 ounces of beer, 8 ounces of malt liquor, 5 ounces of wine, or 1.5 ounces of 80 proof distilled spirits or liquor.<sup>131</sup> Most states levy excise taxes at the wholesale level on the volume of beer, wine, or spirits. In some cases, categories are defined by percentage alcohol by volume (ABV), with higher rates on stronger beverages, such as fortified wine, though categories tend to be broad. Exceptions include the federal tax on spirits that is determined per gallon of ethanol, while federal taxes on beer and wine are levied on beverage volume. Until 2018, when new federal legislation passed as part of the comprehensive tax reform bill, the federal tax per standard drink (0.6 ounces of ethanol) was 12.7 cents for spirits, 4.2 cents for wine (at 12% ABV), and 6.05 cents for beer (at 4.5% ABV).<sup>132</sup>

Many state taxes are also levied on beverage volume.<sup>133</sup> These taxes may create incentives to drink brands with higher percentages of alcohol within a beverage type, as the tax per ounce of pure alcohol declines as the ABV percentage rises. This provides the opposite incentive from the approach used in some countries, where taxes increase with ethanol concentration. Additionally, the recent U.S. federal tax policies now provide varying tax rates for some types of beverages and producers and manufacturers.<sup>134</sup> These include tax breaks for small and craft brewers and distillers, which might reduce the tax rates for some drinks. The impact of this federal tax policy change should be followed and analyzed to determine any negative impacts on consumers' purchasing, consumption patterns, and any potentially related impact on injuries and mortality.<sup>135</sup>

### Key Tax Terms

**Unit tax** - a tax per gallon or standard drink of the beverage

**Ad valorem tax** - amount is based on the value of a transaction or of property (in this case alcoholic beverages).

Across all alcohol beverages, taxing the unit of alcohol or ethanol as a user fee could have both public health and economic benefits.<sup>136</sup> The federal spirits tax is levied on this basis. A tax system that is assessed directly on the volume and ABV percentage, either in general or by beverage type, fits this criterion. The rate can be increased for beverages sold at higher concentrations. In Australia, tax incentives for lower (relative to higher) alcohol content beer was implemented to encourage consumption of the lower strength product, leading to increases in market shares.<sup>137</sup>

Erosion of real tax rates and revenues occurs over time when tax rates are applied on a unit basis targeting either beverage volume or alcohol volume. Over long periods and during times of high inflation, this effect can be dramatic.<sup>138</sup> Raising tax rates in the U.S. is politically very difficult,<sup>139</sup> so the effects of inflation in the design of the tax structure should be addressed. Tax rates can be indexed to inflation and automatically raised each year through a set formula. Alternatively, tax increases can be set to occur periodically on a fixed schedule, such as rates rising by 5% every 2 years. This type of structure could also be used to gradually implement higher rates.

If revenues are the goal of alcohol taxes, then ad valorem taxes on alcohol, in which taxes are a percentage of the price rather than per unit of beverage, may be a better strategy. Revenues from ad valorem taxes rise with both inflation and quality-upgrading, and thus would tend to rise over time in both nominal and real terms. Several states, including Maryland and Kansas, utilize retail-level ad valorem taxes—or those added based on a percentage of the overall value in addition to excise taxes.<sup>140</sup> Ad valorem taxes are often viewed as a less regressive alternative (i.e., they do not disproportionately fall on the poor), since the tax is based on the amount spent rather than volume of alcohol consumed. However, even if ad valorem taxes increase prices, they can encourage downgrading to a lesser-priced product having the same amount of alcohol, which is the source of alcohol-related problems.

A combination of unit taxes—a tax per gallon or standard drink of the item—and ad valorem taxes can be used to mitigate the disadvantages of each type. Excise taxes applied to alcohol content, potentially with an increasing rate structure with percent ABV, would serve to directly tax the source of harms and to discourage harmful drinking. An ad valorem tax would raise additional revenues, make alcohol less affordable without changing relative prices across quality levels, and would partially maintain real tax rates over time.

### **Tax rates and structure across beverage types**

Nearly all countries currently and historically have chosen to tax distilled spirits at higher rates than beer or wine, including at state and federal levels in the U.S. Analyses of beverage-specific associations with alcohol-related mortality causes have found that spirits are the type most strongly associated with mortality rates for cirrhosis, ischemic heart disease, and head and neck cancers in the U.S.<sup>141</sup> However, very high tax rates (relative to average incomes) placed on spirits after Prohibition and updated through the 1950's have eroded over time due to inflation.<sup>142</sup> Beverage types also have differential costs of production and distribution. Distilled spirits are more complicated to produce than beer or wine, but all 3 products use modern mass production methods resulting in very low-cost production. Alcohol in the form of spirits is more concentrated than wine, while wine is more concentrated than beer. This results in potentially lower costs of packaging, shipping, storage, and other aspects of bringing the product to market. For spirits in the U.S., the lowest priced brands most likely have the lowest cost per unit of alcohol. This is followed by the lowest priced brands of wine. This is true at the low tax rates currently in effect in the U.S.,<sup>143</sup> in which the price difference is greater with equivalent tax rates. Alternative tax structures could equalize the price per standard drink across the beverage types, or to make higher alcohol concentration beverages more expensive. Many developed countries, including the United Kingdom (U.K.), Australia, and Sweden, tax spirits by alcohol content and at a much higher rate than beer or wine.<sup>144</sup>

**Tax pass-through to prices, level of tax assessment, market structure and salience**

Tax pass-through refers to the degree to which taxes and tax changes are ultimately paid by the consumer; and depends on the market power of producers, wholesalers, retailers, and consumers. In a competitive market, less than the full amount of the tax would be reflected in retail prices. Studies have addressed the issue of tax pass-through through several methods, such as pre-post price comparisons and cross-sectional comparisons. While a pre-post design might seem most relevant, some studies have found producers use the tax increase as an opportunity to raise prices more than the amount of the tax increase.<sup>145,146</sup> However, it is difficult to know how the tax impacts prices over time, since future price increases can be delayed. A recent U.S. study comparing prices across states found that the tax pass-through rate was closer to the full pass-through of the tax.<sup>147</sup> Similar to some results for cigarettes, a study in the U.K. found that tax pass-through rates depend on product price and quality level. The cheapest beer and spirits had tax pass-through rates of approximately 0.85 of the tax, while more expensive products had rates greater than the tax.<sup>148</sup> This suggests that while taxes may be generally passed through to the consumer on the cheapest products, which are disproportionately favored by heavy drinkers<sup>149,150</sup> they are subsidized through greater impacts on more expensive products.

One study examined whether taxes were included in posted prices or added at the register, as with most sales taxes in the U.S. The study found that including sales taxes in posted prices reduced purchases by 8% as compared to adding taxes at the register. Additionally, changes in alcohol excise taxes reduced alcohol consumption significantly more than increased sales taxes.<sup>151</sup> These results suggest that wholesale excise taxes have a greater impact on alcohol use than retail ad valorem taxes at a comparable rate.

### Impact of taxes on consumption and harm (tax and price elasticity)

Beer, wine, spirits, and total alcohol separately and all together have been consistently found to have negative price elasticity of demand, meaning that higher prices lead consumers to reduce their consumption. A meta-analysis found a mean price elasticity estimate of -0.5, which means that a 10% increase in prices would result in a 5% reduction in alcohol use or consumption.<sup>152, 153</sup> All types of beverages were responsive to price changes, with spirits the most responsive and beer the least. Findings show that even alcohol dependent drinkers are responsive to price changes.<sup>154</sup> Additionally, alcohol-impaired driving,<sup>155</sup> cirrhosis mortality rates,<sup>156,157</sup> and alcohol-related mortality rates<sup>158,159</sup> are also responsive to tax changes. This builds a strong case for the effectiveness of taxes in reducing alcohol-related harm. A study comparing the 1991 federal excise tax increases on all 3 beverage types with crime rates and motor vehicle and other injury mortalities found an injury mortality reduction by at least 4.7%. A reduction in crime rates was also noted, with a particularly strong impact on violent crimes.<sup>160</sup> A systematic review of literature on alcohol-related morbidity and mortality summarized the results of 50 studies, finding significant impacts of alcohol taxes and prices on alcohol-related disease and injury, violence, traffic crashes, sexually transmitted diseases, and crime.<sup>161</sup> Another review on price effects concluded that alcohol taxes are highly effective in reducing alcohol abuse and related consequences.<sup>162</sup> This review further confirms the effectiveness of alcohol taxes and prices on the general population, heavy drinkers, and youth in reducing drinking, heavy drinking, crime, alcohol-related mortality, and other outcomes.

### Differential impacts across sub-groups

Few studies have addressed the issue of differential impacts of taxation across socioeconomic or racial/ethnic subgroups.\* In the U.S., a recent study found that, given even a large hypothetical

\* A tool from the Center on Alcohol Marketing and Youth provides estimated consumer costs and job impacts from state alcohol tax increases for all 50 states and D.C. It is available at: <http://www.camy.org/research-to-practice/price/alcohol-tax-tool>.

tax, the impact on non-excessive drinkers would be minimal, and that excessive drinkers would pay up to 6.8 times as much as non-excessive ones per capita, while paying at least 72% of the aggregate costs of a tax increase.<sup>163</sup> Additionally, those drinkers with higher household incomes and non-Hispanic white drinkers would pay the highest per capita costs. An analysis of the impact of beer taxes on self-reported alcohol consumption found a significant effect of about -0.5 elasticity (e.g., 10% increase in price causes a 5% reduction in consumption), but a smaller effect in Black and Hispanic sub-groups.<sup>164</sup>

In Finland, an evaluation of a 2004 price reduction of 33% for spirits and 13% for beer showed that the reduction resulted in increased drinking and heavy drinking among only those aged 45 and older. Increases in drinking and heavy drinking among men occurred only in the lowest educational attainment group, while increases in drinking and heavy drinking among women were seen in all groups.<sup>165</sup> Further research found greater impacts in the lowest socioeconomic group.<sup>166</sup> Though few in number, these studies suggest the potential for differential impacts, establishing this as a priority area for future research.

### **Quality substitution issues**

An important and understudied area is the degree to which different types of drinkers respond to price increases by substituting beverages of lower quality or price, rather than reducing the quantity consumed. Considerable variability exists in the unit price of U.S. alcohol, particularly between consumption on-premise (bars and restaurants) and off-premise (places where alcohol is sold legally, such as liquor stores, but consumed elsewhere). A study using data from the Swedish alcohol monopoly found that quality substitution was a major price response, while quantity response was greatest for price increases in the lowest quality brands.<sup>167</sup> This suggests that a lack of opportunity to substitute for lower quality/price is an effective tax policy for drinkers already choosing the lowest quality. Hence policies mandating a minimum alcohol price, usually by beverage type, may increase the effectiveness of tax policy.<sup>168,169</sup> Other evidence that the heavy drinkers spend far less per drink than moderate ones suggests heavy drinkers are disproportionately

present among low-quality consumers, supporting findings of price responsiveness in this group.<sup>170,171</sup> Thus, alcohol taxes should be considered as part of the overall tax system.

### **Is alcohol taxation regressive?**

Alcohol excise taxes are often described as regressive, meaning that they impact those with lower incomes at higher rates.<sup>172</sup> While this is generally true, several factors mitigate this.<sup>173</sup> In the U.S., lower income groups include higher proportions of both abstainers and heavy drinkers, as compared to higher income groups.<sup>174</sup> This means many low-income households pay no alcohol tax, and the tax burden falls mostly on heavy drinkers. Among higher income groups, the tax burden is more distributed.

Because excessive drinkers account for most U.S. alcohol-related harms, their increased tax payments relative to non-excessive drinkers appears justifiable, and reflects the skewed distribution of alcohol consumption in the United States. More than half of the alcohol consumed by U.S. adults is in the form of binge drinks. Meanwhile, binge drinkers were responsible for about three-quarters of the \$249 billion economic costs due to excessive drinking in the United States in 2010.<sup>175</sup>

### **Increasing alcohol beverage taxes to reduce harmful alcohol consumption, alcohol-related mortality and other harms**

State tax rates per standard drink average approximately 6 cents for spirits (ranging from 1 cent to 38 cents), 4 cents for wine (ranging from 0.4 cents to 26 cents), and 3 cents for beer (ranging from 0.2 cents to 10 cents).<sup>176</sup> Federal taxes average approximately 13 cents for spirits, 4 cents for wine and 6 cents for beer.<sup>177,178</sup> While alcoholic beverages vary greatly in price from as little as 30 cents per drink for the cheapest spirits to hundreds of dollars for luxury wines or spirits, a typical off-premise drink costs about \$1. At this price, the average tax rates range from 8% for wine to 19% for spirits. Assuming that price elasticity is 0.5 and that 100% of taxes levied are passed through to the retail price, a 10% reduction in per capita consumption of alcohol requires a 20%, and 20 cent, increase in price. To achieve this, a 20-cent-per-drink tax increase on each beverage type would be needed,

roughly doubling spirits taxes and increasing beer and wine taxes by 2.5 times. A 2012 study found that a hypothetical 25-cent-per-drink tax would reduce alcohol consumption by 9.2% and heavy drinking by 11.4%.<sup>179</sup> This study estimated that the tax would generate nearly \$8 billion in revenues per year, most of which paid by higher-risk drinkers.<sup>180</sup>

In summary, reviews including those by the CPSTF and the National Academies consensus report found strong evidence for the effectiveness of alcohol taxes for reducing excessive alcohol consumption and related harms.<sup>181,182</sup> As previously mentioned, these harms were estimated to cost the US almost \$250 billion per year in 2010, with 40% of the cost paid by governments.<sup>183</sup> A 20-25 cent tax per standard drink—or a 20-25% ad valorem tax rate—could achieve a significant impact on alcohol consumption, heavy drinking, and alcohol-related mortality and other harms. Substantial revenues would also be raised through these taxes. Because specific excise taxes lose their real value over time due to general inflation,<sup>184</sup> and ad valorem taxes rise with price rather than alcohol content, a strategy employing both types of taxes may be warranted. For example, raising taxes by 15 cents per standard drink on all beverage types and adding a new 10% ad valorem tax on all alcoholic beverages would strongly impact lower-priced beverages and partially maintain real values over time. While indexing tax rates to inflation or periodically updating rates might be theoretically preferable, frequent tax increases would be difficult both politically and practically.

## Policy Interventions to Change Rates of Alcohol-Impaired Driving Fatalities

Implementing policy interventions that focus on and ultimately reduce excessive alcohol use will likely also decrease alcohol-impaired driving, related injuries, and deaths. However, alcohol-impaired driving can also be directly affected through policy interventions that focus specifically on alcohol-impaired driving fatalities. While the number of deaths attributed to alcohol-impaired driving has decreased by 52% since 1982, most of these reductions occurred by the early 1990s.<sup>185</sup> In 2017, nearly 3 in 10 of total U.S. motor vehicle traffic fatalities, or 10,874 deaths,

still involved alcohol-impaired driving.<sup>186</sup> As discussed above, the National Academies recently released a consensus study report, “Getting to Zero Alcohol-Impaired Driving Fatalities;” much of their recommendations focus on the policy interventions discussed below including reducing the allowable BAC for drivers and ignition interlock laws.<sup>187</sup> These policies are also included in the recommendations in the NHTSA’s report, “Countermeasures that Work: A Highway Safety Countermeasure Guide for State Highway Safety Offices.”<sup>188</sup>

Current policy interventions that are effective in addressing alcohol-impaired driving include illegal BAC\* *per se* limits for drivers, and sustained enforcement of alcohol-impaired driving laws. A violation of the *per se* law occurs if an individual drives with a BAC level that exceeds the legal limit. Other laws criminalize alcohol-impaired driving even if the driver’s BAC level is below 0.08.<sup>189,190</sup>

Following the passage of the U.S. Department of Transportation’s (DOT) Appropriations Act in 2000, all states have a 0.08 BAC *per se*\*\* law, which has been associated with decreases in traffic crash fatalities.<sup>191</sup> This legislation required states to enact a 0.08 BAC law for the general population by 2004 to avoid loss of federal highway construction funds. All states have now set a lower BAC *per se* limit for underage drivers (0.00-0.02) and commercial drivers (0.04). Details about state BAC laws can be found on the APIS website and NHTSA’s Digest of Impaired Driving and Selected Beverage Control Laws.<sup>192,193</sup>

To increase driver compliance with alcohol-impaired driving laws, these laws must be regularly enforced by state and local law enforcement agencies. Individuals are more likely to comply when a high certainty of consequences exist through a penalty that is both quick and severe.<sup>194,195,196,197</sup> High visibility enforcement (HVE) combines visible enforcement in a specific area with publicity efforts to increase public awareness and compliance with the law.<sup>198</sup> Well-publicized sobriety checkpoints, where law enforcement

\* Blood Alcohol Content refers to the percent of blood that is concentrated with alcohol.

\*\* Drivers with a blood-alcohol concentration at or above 0.08 percent are considered to be impaired. No further evidence is needed to demonstrate alcohol-impaired-driving.

agents restrict traffic flow in a designated area and check drivers for signs of alcohol impairment, are an effective enforcement strategy recommended by the CPSTF.<sup>199, 200</sup> NHTSA has developed guidelines on implementing checkpoints.<sup>201</sup> While many U.S. enforcement agencies already conduct sobriety checkpoints, these evidence-based guidelines and recommendations may encourage others to begin checkpoints or initiate more frequently to sustain effects.<sup>202,203,204,205,206,207</sup> Currently, 11 states prohibit enforcement agencies from conducting sobriety checkpoints.<sup>208\*</sup>

While the 0.08 per se BAC limit and sobriety checkpoints are effective policies addressing alcohol-impaired driving, additional interventions may be needed to further reduce alcohol-impaired driving and its consequences. A 0.05 BAC illegal per se limit and ignition interlock laws are 2 other alcohol-impaired driving policy interventions, which are not fully implemented in the U.S. but show promising effectiveness.

### Alcohol-Impaired Driving

#### **Penalties for exceeding a per se limit of 0.05 BAC while operating a motor vehicle**

Until December 2018, all U.S. states had laws establishing a BAC of 0.08 milligrams per deciliter (mg/dl) as per se intoxication in relation to driving a motor vehicle, with varying criminal penalties. Research showed the decrease from previous limits (0.10 BAC or higher, to 0.08) significantly reduced alcohol-related traffic crashes and fatalities.<sup>209,210,211,212,213</sup> Yet many countries have established illegal per se limits of 0.05 mg/dl BAC or lower, reducing crashes and fatalities. In December 2018, Utah became the first U.S. jurisdiction to reduce the per se intoxication limit to 0.05 mg/dl BAC.<sup>214,215</sup> In addition, many jurisdictions impose lower BAC limits for individuals convicted of impaired driving. For example, since 1995 Maine has prohibited such individuals from driving with any measurable BAC level for a year following reinstatement of a driver's license; an evaluation of this policy found this law effectively reduced fatal crashes of convicted

\* These states are: Idaho, Iowa, Michigan, Minnesota, Montana, Oregon, Rhode Island, Texas, Washington, Wisconsin, and Wyoming.

impaired drivers.<sup>216,217</sup> Trends in U.S. alcohol-impaired driving drawn from roadside surveys in 1996, 2007, and 2013-14 show reductions, though this behavior remains dangerously prevalent. In 2013-14, 8.3% of nighttime drivers had a positive BAC, 1.6% were above 0.05 BAC, and 1.5% drivers were above 0.08 BAC.<sup>218</sup> These percentages were reduced from 12.4%, 4.4%, and 2.2% respectively in 2007; and 16.7%, 7.4%, and 4.1% in 1996.<sup>219</sup>

Even a 0.05 BAC should not be a great deterrent to those who do not drink excessively. A 180-pound male needs to consume more than 2 alcoholic drinks in an hour to reach a 0.05 BAC limit, while a 120-pound female needs to have more than 1 drink in an hour to be above the limit.<sup>220</sup> Nonetheless, these numbers of drinks are clearly above the recommendations in the 2015-2020 Dietary Guidelines for Americans, which states if alcohol is consumed, it should be consumed in moderation (up to 1 drink per day for women, 2 drinks per day for men) and only by adults of legal drinking age.<sup>221</sup>

At 0.05 BAC, nearly all drivers are impaired with regard to driving performance, and the risk of being involved in a crash increases significantly.<sup>222</sup> Lower levels of alcohol impairment, even below 0.05 BAC, have been found to impede vigilance and increase drowsiness. Lower levels can also impair psychomotor skills, such as braking ability and information processing, leading to delayed reaction time. Each of these is relevant to traffic-crash risk.<sup>223</sup> At 0.05 BAC or above, the majority of drinkers are significantly impaired in their ability to operate a motor vehicle, including those drinking alcohol on a regular basis. The risk of death in a single vehicle crash for drivers with BAC levels between 0.05 and 0.079 is 7 times that for with drivers with no alcohol. The relative risk of any crash is elevated to 1.38 at 0.05 BAC and rises to 2.69 at 0.08 BAC.<sup>224</sup>

Numerous studies in other countries show that mandating lower BAC limits for driving typically reduces the proportion of alcohol-impaired drivers in fatal crashes at all BAC levels.<sup>225</sup> Studies show that the change from the 0.08 to the 0.05 BAC limit reduces fatal and injury crashes; crashes were typically reduced by 4-8%, and some by as much as 18%. Studies of lower per se BAC limits, such as 0.02, also indicate further reductions in crashes

and fatalities. Reducing the BAC limit from 0.06 to 0.02 in the Brazilian state of São Paulo was found to reduce fatalities by 7.2%, with a stronger impact of 16% in the city of São Paulo.<sup>226</sup> Chile similarly saw a reduction in alcohol-related crashes following the implementation of a 2012 law that reduced BAC limits from 0.1% to 0.08% for impaired drivers, and from 0.05% to 0.03% for driving under the influence.<sup>227</sup>

Most European countries, such as Germany, Spain, Italy, and Denmark, set per se limits at 0.05 BAC. Others, such as Japan, Russia, and Poland, have limits of 0.03 BAC; and Sweden, Norway, and Ukraine have set limits of 0.02 BAC. Studies of countries implementing 0.05 BAC illegal per se limits have shown effectiveness in the Netherlands, France, Austria, Australia, Japan, and Sweden.<sup>228</sup> An evaluation of Japan's former 0.05 BAC law in 1972, which included other complementary measures such as increased fines and greater likelihood of license revocation, led to immediate and sustained reductions in alcohol-related crashes, as well as alcohol-impaired driving arrests.<sup>229</sup>

Canada and Australia—at both the province and state level with some variations—have administrative penalties for 0.05 to 0.079 BAC and criminal penalties for 0.08 BAC and above. Administrative penalties typically include a driver's license suspension for 1 to 3 months and varying fines. Evaluation of administrative penalties for exceeding 0.05 BAC in Canada found a significant reduction of 3.7% in fatally injured drivers with a BAC level above 0.05. The evaluation also found significant reductions of about 3% in drivers above 0.08 and 0.15.<sup>230</sup>

Immediate and certain penalties act as key aspects of deterrence. Individuals who choose to drive impaired have a strong present orientation which leads them to heavily discount future penalties, even if severe.<sup>231</sup> A recent U.S. study surveyed 1,634 adults across 8 US cities and found that the 695 respondents who reported drinking and driving were relatively knowledgeable about the laws in their state. They were, however, more impulsive and less prone to planning drinking-related events, such as selecting a designated driver in advance. The study also found evidence of hyperbolic discounting<sup>232</sup> among drivers who drink—selecting

smaller more immediate rewards rather than larger long-term gains—confirming the present orientation of this group.<sup>233</sup> Immediate and certain penalties are likely to be most effective: license revocation, car seizure, and arrest for those found to have BAC>0.05 or greater. Penalties for alcohol-impaired driving and speeding offenses in British Columbia, Canada, implemented in 2010, included significant fines, potential vehicle impoundment, and increasing penalties for repeat offenses for those exceeding 0.05 BAC. More immediate penalties for exceeding 0.08 BAC and increased penalties for speeding and street racing were also implemented. A later evaluation of these penalties found a 21% reduction in fatal crashes and a 52% reduction in alcohol-related fatal crashes, suggesting that the penalty changes were responsible for the results.<sup>234</sup>

The major criticisms of establishing a criminal or administrative per se limit of 0.05 BAC for the U.S. have been addressed in other studies.<sup>235</sup> A substantial body of scientific evidence supports a reduction in the per se BAC limit, and both the National Transportation Safety Board (NTSB), and the recent National Academies report recommend it.<sup>236,237</sup> The first states adopted a 0.08 BAC limit 32 years ago, and some state legislative interest exists in reducing the BAC limit to 0.05. Utah's adoption and implementation of the 0.05 BAC limit will be an important legal model to follow and presents an opportunity to evaluate whether the positive effects of this change seen in nearly 100 other countries will apply in the U.S.<sup>238,239</sup>



### Ignition interlock policies reduce alcohol-impaired driving

Currently, 28 states require ignition interlocks in vehicles for people who have been convicted of impaired driving. Ignition interlocks prevent people from driving with a blood alcohol content (BAC) level above a set threshold, which helps lower re-arrest rates for alcohol-impaired driving. Studies show that installing ignition interlocks can help decrease re-arrest rates by nearly 70%.

#### Ignition interlocks

One of the Healthy People 2020 objectives focused on in this report is to increase the number of states with mandatory ignition interlock laws for first and repeat impaired driving offenders.<sup>240</sup> Ignition interlocks are devices installed on motor vehicles to prevent individuals from driving with a BAC level at or above a set level (usually 0.02-0.04%). These devices are installed on vehicles driven by individuals convicted of driving while impaired (DWI), into which drivers blow to measure their BAC level. Research shows that while the ignition interlocks are installed on a car, re-arrest rates for alcohol-impaired driving significantly decrease.<sup>241,242</sup> In addition, mandatory ignition interlock laws for all impaired driving offenders reduces alcohol-involved fatal crashes.<sup>243,244</sup> As a result, a number of scientific organizations, including the CPSTF, the NTSB, a National Academies consensus report, and the Insurance Institute for Highway Safety recommend ignition interlock for those convicted of alcohol-related driving.<sup>245,246,247</sup> Since re-arrest rates increase after the devices are removed, states should consider using performance-based exit

requirements that require offenders to remain in the program with the ignition interlock device installed until the offender completes a specified amount of time without an excessive BAC level detected.<sup>248</sup>

The use of ignition interlocks for offenders may be an underutilized tool. In 2013, only 21% of people arrested for alcohol-impaired driving had interlocks installed.<sup>249</sup> The number of installed devices varies greatly across states, partially due to policy differences. Currently, 28 states require ignition interlocks for all drivers convicted of impaired driving, including first-time offenders.<sup>250</sup> Although mandatory laws increase the likelihood of requiring ignition interlock devices, additional measures are needed to ensure the devices are actually installed in their vehicles.<sup>251</sup> States may need to monitor the interlock installation, or reduce or eliminate costs for individuals who cannot afford installation. Additionally, some offenders may avoid using ignition interlocks by denying they have a car, and then continuing to drive with a suspended driver's license. States may need to increase penalties for these individuals. States can also mandate alternative penalties, such as transdermal alcohol monitoring devices (TAM) for those who opt out of ignition interlock programs. This could provide greater incentives to have an ignition interlock installed.<sup>252</sup>

As states adopt and improve ignition interlock policies, consideration should be given on how to make the policies more effective. Toward this end, NHTSA (2013) developed "Model Guidelines for State Ignition Interlock Programs,"<sup>253</sup> which present key program features to strengthen ignition interlock programs. These include legislation, education, program administration, and criminal and administrative sanctions, along with practical strategies to help with implementation. Ignition interlock devices should include features to prevent drivers from circumventing use, such as using a combination of breathing and humming into the device and requiring drivers to conduct random retests.<sup>254</sup>

The effectiveness of these state ignition interlock policies is also influenced by how they are written and implemented. A panel of experts outlined 8 key steps around program design, management, and support that can improve effectiveness of state ignition interlock policies and programs:<sup>255</sup>

8 key steps to writing and implenting effective state ignition interlock policies

<p>Program Design</p>	<ol style="list-style-type: none"> <li>1. <b>Requirements:</b> A requirement or strong incentive for all DWI offenders to install an interlock. Typical incentives include reduction of hard suspension periods, fines, or other penalties.</li> <li>2. <b>Penalties:</b> Swift, certain, and appropriately severe penalties for offenders who are required or elect to install interlocks if they drive vehicles that do not have operating interlocks.</li> </ol>
<p>Program Management</p>	<ol style="list-style-type: none"> <li>3. <b>Monitoring:</b> Careful monitoring after interlocks are ordered or required to assure that offenders install the devices and do not later circumvent the requirement after interlocks are installed.</li> <li>4. <b>Uniformity:</b> Uniform interlock program operations statewide.</li> <li>5. <b>Coordination:</b> Close coordination and communication across all agencies involved in interlock program operations, including law enforcement, prosecutors, judges, probation, licensing, alcohol treatment, and interlock vendors.</li> <li>6. <b>Education:</b> Thorough education on interlock program requirements and procedures for the public and for all program staff and management.</li> </ol>
<p>Program Support</p>	<ol style="list-style-type: none"> <li>7. <b>Resources:</b> Adequate staff and funding to operate the program effectively and efficiently.</li> <li>8. <b>Data:</b> Accurate, accessible, and up-to-date record systems to determine which offenders are required or eligible to install interlock.</li> </ol>

## Achieving the Targeted Policy Interventions

An ongoing focus on, and implementation of, multiple policy interventions can create long-term reductions in excessive alcohol use and related harms. Grassroots or direct action community organizing has long been used for public health efforts to mobilize and build leadership among individuals, along with advocating for policy interventions to solve community problems.<sup>256,257</sup> Alternatively, a coalition of organizations can provide geographic representation, and share resources and ideas, benefiting from multiple organizations interested in solving specific problems.<sup>258</sup> These methods have been successfully used to influence alcohol policy interventions at institutional, local, tribal, and state levels.<sup>259,260,261,262,263,264,265,266,267</sup> State task forces have also influenced state impaired-driving laws and reductions in alcohol-impaired driving.<sup>268</sup>

Addressing alcohol-related harms aligns with the missions and goals of multiple governmental agencies. Collaboration between agencies helps coordinate and sustain financial and supportive materials, increase resources, minimizes duplication, creates motivation, and supports synergistic effects. Toward this end, a precedent has been set for interagency coordination addressing underage drinking. Under the Consolidated Appropriations Act of 2004, HHS developed the Interagency Coordinating Committee on the Prevention of Underage Drinking (ICCPUD). ICCPUD includes 15 federal member agencies and provides an annual report that summarizes the collaborative work in preventing underage drinking.<sup>269</sup> ICCPUD helps to coordinate this work across agencies.<sup>270</sup>

## Emerging Trends and Issues

Seven emerging issues may impact excessive alcohol consumption within the U.S. in the future:

1. new products that are especially attractive to youth;
2. medical amnesty laws;
3. healthcare reform;
4. innovative models to reduce alcohol-related harms;
5. new approaches to identify impaired drivers
6. supportive data policies; and
7. new business models.

### New Products That Are Especially Attractive to Youth

The alcohol industry is constantly expanding and creating new products. In some cases, these products are especially attractive to youth. For example, in 2015, the TTB approved labels for “Palcohol”—a powdered alcohol product where alcohol has been absorbed by a sugar derivative.<sup>271,272</sup> The TTB approved labels for 5 types of Palcohol: Rum-flavored, Vodka-flavored, Cosmopolitan, Lemon Drop, and Powderita. Once the 1-ounce packet of powder is mixed with water, it creates a 200 milliliters (approximately 7 ounces) beverage that is 58 percent alcohol by weight and 12 percent ABV.<sup>273</sup> Comparatively, a 5-ounce glass of wine typically has an ABV between 11 and 13%, whereas a 12-ounce bottle of beer typically has an ABV of around 5%. Public health professionals and state government officials expressed concerns about Palcohol. The American Medical Association (AMA) adopted a policy urging states and legislators to ban powdered alcohol and “prevent [it] from being manufactured, distributed, imported, and sold in the U.S.”<sup>274</sup> These concerns stem from research showing that other new products, such as flavored alcoholic beverages or high alcohol content grain alcohol, are especially popular among young people, with excessive drinkers often consuming the most dangerous products.<sup>275</sup> Powdered alcohol may be especially appealing to underage drinkers due to the convenience of the packets, the different flavors, and the ease of concealment and transport.<sup>276</sup>

In response to these concerns, many states introduced and enacted legislation to regulate or ban the sale of powdered alcohol. As of February 2018, 35 states and the District of Columbia had enacted a ban on the sale of powdered alcohol. Four states expanded their statutory definition of alcohol so that powdered alcohol products could be regulated under existing state statutes.<sup>277</sup> As a result of these policy interventions, powdered alcohol has not become available for purchase in the U.S., and it is unclear if it will.

Although there are currently no powdered alcohol products being sold in the U.S., other new products have come to market which are also attractive to youth. For example, retail stores throughout the country currently sell alcohol-infused whipped cream, alcohol-infused ice cream, alcohol Jell-O shooters, high-alcohol-content grain alcohol, and cannabis-infused alcohol. It is important for the public health community to monitor the future sale and consumption of these and similar products to ensure it does not contribute to increased rates of underage drinking or alcohol-related injuries or deaths.

### Medical Amnesty Laws

In order to combat high rates of underage and excessive drinking at colleges and universities, many campuses have begun implementing “Medical Amnesty” or “Good Samaritan” policies. These policies are based on the assumption that students do not call for help when an individual suffers the symptoms of alcohol poisoning for fear of getting in trouble.<sup>278</sup> A medical amnesty policy protects both the student requesting assistance and the intoxicated student from sanctions.

Although many colleges and universities have implemented these policies, there is little research assessing their impact. Cornell University conducted a study that found that more students reported calling for help for an intoxicated person after the school implemented its medical amnesty policy.<sup>279</sup> However, the increase was not statistically significant. More research is needed on how many colleges and universities have adopted medical amnesty policies and their effectiveness in reducing alcohol consumption and related harms on college and university campuses.

## Healthcare Reform

Coverage of mental health or substance use disorders by health insurance plans can have a major impact on health. The Paul Wellstone and Pete Domenici Mental Health Parity and Addiction Equity Act of 2008 (MHPAEA) ensures that when coverage for mental health and substance use conditions is provided, it is generally comparable to coverage for medical and surgical care. However, MHPAEA did not apply to the individual market plans; therefore, the coverage for substance use disorder or mental health services has been generally not comparable to the coverage for medical and surgical care.

Then, in 2010, Congress passed the Patient Protection and Affordable Care Act, commonly called the Affordable Care Act (ACA),<sup>280</sup> which went into effect on January 1, 2014. Prior to this legislation, 47.5 million Americans lacked health insurance coverage, with approximately 25 percent having a mental health condition, a substance use disorder, or both.<sup>281</sup> Of those who did have health insurance coverage through the individual market, nearly one-third had no coverage for substance use disorder services. The Affordable Care Act incorporated MHPAEA and required that all new small group and individual market plans cover mental health and substance abuse services as 1 of the 10 Essential Health Benefit categories.<sup>281</sup> It created parity protections ensuring that limits to these services could not be more restrictive than limits applied to medical and surgical services. This included financial requirements, such as deductibles and coinsurance; quantitative treatment limitations, such as the number of days or visits covered; and non-quantitative treatment limitations, such as requiring prior authorization for treatment. The ACA also required that plans cover people with pre-existing mental health or substance use disorder conditions, precluding insurers from charging higher rates for that coverage.<sup>282</sup> Despite the aims of the ACA and other laws, many barriers to treatment still exist for individuals with mental health and substance use disorders.<sup>283</sup>

Since 2017, HHS has extended the implementation date for some of the Affordable Care Act provisions, including those around grandfathered plans. It has also allowed states to request waivers

of the Medicaid regulations under Section 1115 of the Social Security Act to allow for experimental projects instituting reforms expected to better serve their Medicaid populations.<sup>284</sup> In many cases, these plans allow more flexibility in their coverage of the Affordable Care Act requirements—including the 10 Essential Health Benefits and behavioral health services and treatment. As a result, reviewing individual states' plans regarding coverage for substance use disorder issues will be necessary. Also treatment and health outcomes should be monitored closely to ensure that these plans have their desired impact. However, health coverage alone does not always guarantee access, and communities must also address issues related to workforce, location of providers, financing, and quality.<sup>285</sup>

The continued national focus on substance use disorder issues and opioid abuse demonstrates the importance of parity, affordability, and access for mental health and substance use disorder treatment services.

### **Innovative Models to Reduce Alcohol-Related Harms**

States are testing various models to potentially reduce alcohol-related harms and injuries, and to keep offenders from repeating their offenses. One example is the 24/7 Sobriety Program implemented in South Dakota.<sup>286</sup> The program requires its participants to abstain from using alcohol and to participate in twice-daily alcohol testing with specific, immediate consequences for violations. The program's aim is to reduce crime and keep alcohol-involved offenders in the community. Studies focused on its implementation showed a reduction in all deaths. The studies also suggested that such programs may be promising public health interventions and should be further studied and analyzed to learn more about their potential impact.<sup>287,288</sup>

### **New Approaches to Identifying Impaired Drivers**

In addition to policy interventions targeting rates of excessive alcohol use and types of alcohol-related harms, states and communities are trying to address emerging challenges from the opioid epidemic, and in some jurisdictions, the legalization of marijuana.<sup>289</sup> Breathalyzers can test for BAC (when appropriately

calibrated and maintained), but they do not screen for prescription or other drug impairment, such as from marijuana. Hence, states are adopting a number of approaches to address these concerns.<sup>290</sup> For example, methods for testing for drug impairment from marijuana include blood saliva and urine testing. One approach adopted by at least 10 states allows police trained as phlebotomists to draw blood from suspected impaired drivers on site to be tested.<sup>291,292</sup> These issues should be followed to see whether the impact of alcohol combined with other drugs increases the risks of traffic crashes, as well as whether it's possible to successfully monitor and enforce this behavior.

### Supportive Data Policies

In addition to policy interventions targeting rates of excessive alcohol use and types of alcohol-related harms, additional policies may be needed to provide data that can be used to evaluate the effectiveness of other kinds of policy interventions in this area. Though there is a nationwide system (FARS) for tracking alcohol-involved fatal traffic crashes,<sup>293</sup> and ARDI tracks alcohol-attributable deaths,<sup>294</sup> no comparable tracking system exists for other alcohol-related harms, such as deaths due to unintentional and intentional causes. In 2002, CDC established the National Violent Death Reporting System (NVDRS) to track homicide victims and deaths from suicide in some states.<sup>295</sup> As of late 2016, 30 states tested the BAC levels of 80% or more of acute deaths. As of 2018, NVDRS system includes data from all 50 states.<sup>296</sup> Policy changes could also be used to create tracking systems for other alcohol-related problems.

### New Business Models

The public health community should also pay attention to the emergence of craft breweries and distilleries, and other recent attempts to dismantle the 3-tier system. The Brewers Association for Small and Independent Craft Brewers defines a “Craft Brewer” as “a small and independent brewer.”<sup>297</sup> Similarly, “Craft or Micro Distilleries” are defined as small-batch, independently-owned distillers.<sup>298</sup> These are rapidly growing industries. In 2013, there were 2,898 craft breweries in the U.S. By 2017, a mere 4 years

later, that number had more than doubled.<sup>299</sup> Between 2016 and 2017, the number of craft distilleries in the U.S. rose by 26%, and the total number now exceeds 1,500.<sup>300</sup>

In many states, craft breweries and distilleries are exempted from the 3-tier system. Instead of having to first sell to a wholesaler, these beer and spirits producers are allowed to sell directly to consumers. As discussed throughout this report, the 3-tier system is crucial to reducing alcohol-related public health harms. However, when Congress passed the Craft Beverage Modernization and Tax Reform Act in December 2017, it lowered the Federal Excise Tax on craft beverages, decreasing prices and increasing availability and thus likely contributing to increased consumption and alcohol-related public health harms.<sup>301</sup>

Numerous legal challenges have been issued to current alcohol laws and regulations throughout the U.S. For example, the Supreme Court decided *Granholm v. Heald* (2005), finding it unconstitutional for a state to permit in-state wineries to ship wine directly to consumers but to prohibit out-of-state wineries from doing the same thing.<sup>302</sup> As a result, many more states now allow direct shipment from wineries (both in-state and out-of-state) to consumers than were allowed previously. In June 2019, the Supreme Court decided *Tennessee Wine & Spirits Retailers Association v. Thomas*, finding that Tennessee's durational residency requirements for issuing retailer permits was unconstitutional.<sup>303</sup> Moving forward, state courts will have to decide how to interpret this U.S. Supreme Court decision, especially given that states will likely be faced with more challenges to alcohol-related public health laws as a result of the *Thomas* decision. The public health community should monitor the many other similar cases currently processing through state courts as the alcohol industry continues to use the legal system to challenge and dismantle current alcohol laws and regulations intended to protect public health and safety.

### **Future research priorities**

Alcohol policy research literature has grown significantly in the past few decades. Important developments include assessing the effects of measuring combinations of alcohol policies as a whole, versus focusing on one policy at a time.<sup>304</sup> However, more research still is needed, including identifying the most efficient and effective methods for implementing and enforcing the alcohol policy interventions discussed in this report. Further work may be needed to determine effectiveness of additional policies and interventions to reduce excessive alcohol use and related harms, such as traffic crashes. These evaluations should include identification of unintended consequences and their effectiveness in addressing health disparities. They should also identify a system-based modeling of alcohol policies, behaviors, and outcomes that can capture complex interaction and dynamics over long-term horizons.

It is important to capture and track the variation and evolution of the alcohol policy environment across the U.S. in formats accessible to legal and public health researchers and practitioners. For example, data systems such as the Alcohol Policy Information System, Prescription Drug Abuse Policy System, and the legal epidemiology datasets available in LawAtlas currently provide useful information allowing researchers and policy-makers to assess the effects of public policy decisions on health outcomes.

### Conclusion

Evidence-based strategies and tools exist to achieve the HP2020 objective focused on reducing the number of deaths attributable to alcohol. These include the 6 policy interventions presented that will help meet this objective, as well as other alcohol-related HP2020 objectives. The 6 interventions are:

1. prevent a reduction in and increase enforcement of the age-21 MLDA laws,
2. regulate density of alcohol outlets,
3. prevent further privatization of existing state-controlled systems,
4. increase alcohol taxes,
5. lower the illegal BAC to 0.05, and
6. mandate ignition interlocks for all offenders including first-time offenders, and create systems to ensure implementation of this policy intervention.

Public health and substance abuse practitioners, stakeholders, and partners can work together to implement these effective interventions.

Strong evidence supports each of the legal and policy approaches and interventions discussed in this report. However, further research is needed on these and other alcohol and impaired-driving policies to understand how to make each of these policies most effective, in addition to identifying additional policy interventions to meet and exceed the HP2020 goals.

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