

A New Scale of the U.S. Alcohol Policy Environment and Its Relationship to Binge Drinking

Timothy S. Naimi MD, MPH, Jason Blanchette, MPH, Toben F. Nelson, ScD, MPH,
Thien Nguyen, MPH, Nadia Oussayef, JD, MPH, Timothy C. Heeren, PhD,
Paul Gruenewald, PhD, James Mosher, JD, Ziming Xuan, ScD, SM

Appendix A

Alcohol policy experts who nominated policies, rated policy efficacy, and provided input to develop the implementation ratings for 29 alcohol policies in the U.S.

Policy panelist	Affiliation and title	Areas of expertise
Thomas Babor, PhD	Professor and Chair, Dept. of Community Medicine, University of Connecticut School of Medicine	International alcohol use, cultural factors related to alcohol and drug problems
Robert Brewer, MD	Lead Epidemiologist, Alcohol Program, CDC	Binge drinking, alcohol epidemiology, alcohol-impaired driving
Frank Chaloupka, PhD	Professor, Department of Economics, University of Illinois at Chicago	Economic analysis of substance use and abuse, impact of tax and price policies on alcohol consumption and harms
Paul Gruenewald, PhD	Scientific Director/Senior Research Scientist, Prevention Research Center, Berkeley CA	Social, economic, and physical availability of alcohol, alcohol use, and alcohol-related problems
Harold Holder, PhD	Senior Research Scientist (retired), Prevention Research Center, Berkeley CA	Environmental strategies for the prevention of substance abuse; multicomponent policy intervention studies
Michael Klitzner, PhD	Principal Social Scientist, The CDM Group, Bethesda MD	Public policy and systems science, adolescent health, traffic safety, alcohol and drug problems
James Mosher, JD	Senior Policy Advisor, The CDM Group, Inc. & Consultant, Alcohol Policy Consultations, Felton CA	Alcohol law, alcohol policy analysis, public health law
Rebecca Ramirez, MPH	Program Director, Pacific Institute for Research and Evaluation, Calverton MD	Alcohol beverage control agency activities, alcohol law enforcement, law enforcement practices and evaluation
Robert Reynolds, MA	Retired Director of Alcohol Policy Initiatives, Pacific Institute for Research and Evaluation, Calverton MD	Community-based interventions, community mobilization for policy implementation, policy advocacy
Traci Toomey, PhD	Professor, Division of Epidemiology and Community Health, University of Minnesota	Alcohol policy effectiveness research, intentional and unintentional injury prevention, underage drinking

Appendix B

Efficacy Ratings and Implementation Indices for 29 Policies with Policy Scores

Note: Efficacy ratings ranged from 1 (low efficacy) to 5 (high efficacy); implementation indices could range from 0 to 1 for any state-year; policies are presented in alphabetical order.

ABC's present, functional, adequately staffed:

Average expert efficacy rating for reducing binge drinking among adults: 3.375

Implementation rating index:

Any functional state-level or complete county-level (e.g., Hawaii and Maryland, in 2010) alcohol agency that does licensure, adjudication, regulation or enforcement AND has agents or police dedicated to enforcement of alcohol laws, regardless of whether they are housed in ABC agency= +0.3; the ratio of agents per licensed outlet was rescaled to a range from +0.0 to +0.7, with states that have more agents per licensed outlet receiving a higher score; having no ABC agency, or a state without any agents dedicated to alcohol regulation or enforcement= 0.0.

Administrative license revocation:

Average expert efficacy rating for reducing binge drinking among adults: 2.575

Implementation rating index:

State has administrative license revocation (ALR) for driving-under-the-influence (DUI) offense and ALR for refusing implied consent chemical test (not preliminary breath test)= +0.2; state has preliminary breath-test law= +0.1; minimum length of ALR for DUI offense if failed but did not refuse to take test: (minimum 3+ months= +0.5, else minimum 1–2+ months= +0.3, else minimum <1 months= +0.0); minimum length of ALR for refusing implied consent chemical test (preliminary breath test): (minimum 6+ months= +0.2, or minimum 3+ months= +0.1, or minimum <3 months= +0.0).

Blood alcohol concentration 0.08/per se laws:

Average expert efficacy rating for reducing binge drinking among adults: 2.75

Implementation rating index:

State has 0.08 per se law= +0.5; if state has no ALR for failing test, then minimum mandatory license suspension ≥ 30 days for first violation; if state has ALR for failing test, then mandatory minimum postconviction suspension for first violation exceeds mandatory minimum ALR suspension for first violation and is of at least 30 days duration= +0.1; any mandatory minimum fine or jail time for first offense= +0.1; anti-plea bargaining statute and/or mandatory adjudication= +0.1; preliminary breath-test law= +0.1; any mandatory substance abuse assessment and/or treatment provision (no credit for mandatory education)= +0.1.

Days of sale restriction (Sunday sales):

Average expert efficacy rating for reducing binge drinking among adults: 2.875

Implementation rating index:

Any ban= +0.6; no local option exception= +0.3; no exception for permitting 3.2 beer= +0.1; no Sunday sales ban= 0.0.

Dram shop/commercial liability laws:

Average expert efficacy rating for reducing binge drinking among adults: 3.275

Implementation rating index:

Dram shop/commercial liability for serving to intoxicated patrons, must include adults (adult score was added to score for serving to youth): [a policy holding individuals liable for serving alcohol to intoxicated patrons within common law only, or common law in combination with statutory law if no restrictions and/or common law not abrogate= 0.7 (for adult score); a policy holding individuals liable for serving/selling alcohol to intoxicated patrons within statutory law, liability must apply to both on- and off-premises establishments, and liability is not limited to situations where damage was caused by patron's driving= +0.1; limits on damages within statutory law (no limits= +0.25, limits \geq \$1 million= +0.15, limits $<$ \$1 million= +0.0); statute does not establish evidentiary standards that limit the ability of plaintiffs to establish liability of defendant (negligence and preponderance of the evidence do not limit and therefore receive full credit. Standards that do limit include knowledge, recklessness, criminal negligence, clear and convincing evidence, or beyond a reasonable doubt)= +0.2; no dram shop policy for serving to intoxicated adults =0.0 (for adult score)].

Dram shop/commercial liability for serving to youth (youth score was added to score for serving to intoxicated adults): [a policy holding individuals liable for serving alcohol to youth within common law only, or common law in combination with statutory law if no restrictions and/or common law not abrogated =0.3 (for youth score); a statutory policy exists without limits on damages= +0.1; a statutory policy exists that does not establish evidentiary standards limiting the ability of plaintiffs to establish liability of defendant (negligence and preponderance of the evidence do not limit and therefore receive full credit. Standards that do limit include knowledge, recklessness, criminal negligence, clear and convincing evidence, or beyond a reasonable doubt)= +0.1; no policy for youth dram shop= 0.0 (for youth score)].

Youth and intoxicated/adult scores were added together to establish dram shop final score.

False ID laws:

Average expert efficacy rating for reducing binge drinking among adults: 1.075

Implementation rating index:

Driver's license suspension (+0.4 for administrative suspension, +0.2 for judicial suspension, +0.0 for no suspension); penalties for selling/lending/transferring IDs= +0.15; incentivizing use of scanners= +0.1; permission for retailers to seize false IDs= +0.05; affirmative defense (specific= +0.3, none= +0.2, general= +0.0).

Fetal alcohol syndrome warning signs:

Average expert efficacy rating for reducing binge drinking among adults: 1.6

Implementation rating index:

Warning signs required at both on-sale and off-sale establishments= 1.0; required off-sale but no on-sale= 0.6; required on-sale but not off-sale= 0.4; required neither on-sale nor off-sale= 0.

Furnishing alcohol to minors prohibited:

Average expert efficacy rating for reducing binge drinking among adults: 1.275

Implementation rating index:

Provisions aimed at social (noncommercial) sources of alcohol, parental exceptions: (no parental exceptions= +0.5, else exception for parent/guardian in parent/guardian's home only= +0.4, else exception for parent/guardian in any private residence= +0.2, else exception for parent/guardian in any

private location= +0.1, else exception for parent/guardian without regard to location= +0.0); provisions aimed at commercial sources of alcohol: (no affirmative defense= +0.5).

Graduated driver license laws:

Average expert efficacy rating for reducing binge drinking among adults: 1.225

Implementation rating index:

Unsupervised nighttime driving prohibited in intermediate stage (9PM or earlier or sunset= +0.3, 10PM= +0.2, 11PM= +0.1, after 11PM= +0.0); minimum age when nighttime restrictions can be lifted (18 years= +0.1, 17 years= +0.05); driving with nonfamily passengers aged <19 years restricted in the intermediate stage during hours when driving is not required to be supervised (no underage passengers allowed= +0.3, no more than one underage passenger allowed= +0.1, two or more underage passengers allowed or no restrictions on passengers= +0.0); minimum age when passenger restriction can be lifted (18 years= +0.1, 17 years= +0.05); minimum age of licensing is 16 years (+0.2).

Home delivery and direct shipment of alcohol to consumers restricted:

Average expert efficacy rating for reducing binge drinking among adults: 1.825

Implementation rating index:

Home delivery from retailers to consumers (home delivery score added to direct shipment score for final score): [home delivery is banned for all beverage types= 0.7 (for home delivery score); home delivery of spirits (banned= +0.3, no law= 0.15, allowed= +0.0); home delivery of beer (banned= +0.3, no law= +0.15, allowed= +0.0); home delivery of wine (banned= +0.1, no law= +0.05, allowed= +0.0)].

Direct shipment of alcohol from producers to consumers (direct shipment score added to home delivery score for final score): [banned for all beverage types, or mandatory trip to producer is required for all beverage types= 0.3 (for direct shipment score); banned for beer and spirits but exception allowed for wine with mandatory age verification at point of delivery= 0.2 (for direct shipment score); exception for wine only but without mandatory age verification at point of delivery, or an exception for both wine and beer with mandatory age verification at point of delivery= 0.1 (for direct shipment score); no ban for any beverage type, or exception for wine and beer without mandatory age verification at point of delivery= 0.0 (for direct shipment score)].

Home delivery and direct shipment scores were added together to establish final score.

Hours of sale restrictions:

Average expert efficacy rating for reducing binge drinking among adults: 3.225

Implementation rating index:

Off-premises: (\leq 16 hours of sales and closing time is midnight or earlier= +0.5, else \leq 16 hours of sales and close after midnight= +0.4, else $>$ 16 hours of sales and close at midnight or earlier= +0.2, else $>$ 16 hours of sales and close after midnight= +0.0, else local option= +0.25); on-premise: (\leq 19 hours of sales and close at 2AM or earlier= +0.5, else $>$ 19 hours of sales and close at 2AM or earlier= +0.4, else \leq 19 hours of sales and close after 2AM= +0.2, else $>$ 19 hours of sales and close after 2AM= +0.0, else local option= +0.25).

House party laws, criminal liability:

Average expert efficacy rating for reducing binge drinking among adults: 1.625

Implementation rating index:

Any policy= +0.3; evidentiary standard (negligence= +0.3, else knowledge= +0.1, else overt act or recklessness= +0.0); applies to all property types= +0.1; specific to underage parties= +0.1; no leniency for preventive actions= +0.1; type of violation includes possession= +0.1.

Ignition interlock laws for driving-under-the-influence offenders:

Average expert efficacy rating for reducing binge drinking among adults: 2.1

Implementation rating index:

Mandatory interlocks for specific types of offenders: (mandatory interlocks for all offenders= +0.7, else mandatory interlocks for high-BAC first-time offenders and multiple offenders= +0.4, else mandatory interlocks for multiple offenders only= +0.2); minimum length of interlock for first applicable offense: (≥ 12 months= +0.3, 6–11 months= +0.15, <6 months or not specified= +0.0); discretionary interlock use only (i.e., not mandatory for any offender) or NO interlock law at all= 0.0.

Keg registration laws:

Average expert efficacy rating for reducing binge drinking among adults: 1.5

Implementation rating index:

Complete ban on kegs= 1.0; state has any policy on keg registration (short of ban)= +0.1; applies to all kegs ≥ 4 gallons= +0.2; $\geq \$20$ dollar deposit required= +0.1; penalty for label destruction or having unregistered or unlabeled keg= +0.1; must provide address of consumption location= +0.1.

Local option permissible:

Average expert efficacy rating for reducing binge drinking among adults: 2.975

Implementation rating index:

Proportion of counties that exercised local option: States without counties that exercised local option= 0.0; the proportion of counties that exercised local option was used directly as the score.

Minimum age of server/seller:

Average expert efficacy rating for reducing binge drinking among adults: 1.85

Implementation rating index:

Minimum age of seller for off-premise establishment is 21 years for beer/wine/liquor sales= +0.8, else if minimum age is not 21 years for sellers in off-premises establishments, then manager must be present= +0.3; minimum age of seller for on-premises establishment is 21 years for beer/wine/liquor sales= +0.2, else if minimum age is not 21 years for servers and bartenders in on-premises establishments, then manager must be present= +0.1.

Minimum legal drinking-age laws:

Average expert efficacy rating for reducing binge drinking among adults: 2.175

Implementation rating index:

Internal possession and consumption permutations (internal possession prohibited for those aged <21 years= +0.5, else in states where no internal possession laws exist, consumption prohibited by those aged <21 years= +0.2, else possession of alcohol by those aged <21 years is prohibited but neither consumption nor internal possession are prohibited= +0.0); private location exceptions (no exception for possession in a private location or a private residence= +0.5, else an exception exists for possession in a private location or a private residence but only in combination with parent/guardian consent= +0.3, else +0.0).

Open-container laws, automobiles:

Average expert efficacy rating for reducing binge drinking among adults: 1.95

Implementation rating index:

Any policy present= +0.2; prohibition applied to passenger area of any motor vehicle= +0.2; prohibition applied to all alcoholic beverages= +0.2; prohibition applied to all occupants= +0.2; prohibition applied to any public highway or right of way= +0.2.

Outlet density:

Average expert efficacy rating for reducing binge drinking among adults: 3.825

Implementation rating index:

The ratio of licensed outlets per capita was rescaled to a range from 0 to 1.

Responsible beverage service training:

Average expert efficacy rating for reducing binge drinking among adults: 2.85

Implementation rating index:

Any mandatory responsible beverage service (RBS) training= +0.4; law applies to managers and server/sellers= +0.1; law applies to all new and existing establishments= +0.2; law applies to on-premises establishments= +0.2; law applies to off-premises establishments= +0.1; voluntary RBS or no policy= 0.0.

Retail price restrictions:

Average expert efficacy rating for reducing binge drinking among adults: 3.6

Implementation rating index:

Prohibit free beverages= +0.1; prohibit reduced price (prohibit reduced price at any day or time= +0.4, or prohibit reduced price at specified day or time= +0.2, or no restrictions= +0.0); prohibit unlimited beverages—fixed price, fixed time= +0.2; prohibit increased volume without increasing the price= +0.1; prohibit selling two alcoholic beverages for the price of one= +0.2.

Sales or service to intoxicated patrons prohibited:

Average expert efficacy rating for reducing binge drinking among adults: 2.975

Implementation rating index:

Presence of policy= +0.3; presumptive evidence based on BAC= +0.3; evidentiary standard: (negligence= +0.4, else silent in evidentiary standard= +0.2, else criminal negligence= +0.1, else knowledge= +0.0).

Sobriety checkpoints:

Average expert efficacy rating for reducing binge drinking among adults: 2.6

Implementation rating index:

Allowed under state law, no need for repeated judicial review, able to stop cars avoiding checkpoints= 1.0; checkpoints legally allowed but cannot stop cars avoiding checkpoints= 0.7; legally allowed but must obtain court permission before each roadblock (e.g., New Hampshire)= 0.5; illegal under state law= 0.0.

Social host laws (civil liability):

Average expert efficacy rating for reducing binge drinking among adults: 2.9

Implementation rating index:

Social host/civil liability for serving to youth (youth score was added to score for serving to intoxicated adults): [a policy holding individuals liable for serving alcohol to youth within common law if no restrictions on evidentiary standards or damage limits, and host liability is not limited to situations where damage was caused by guest's driving= 0.6 (for youth score); a statute holding individuals liable for serving to underage guests, and policy was not limited to situations where damage was caused by guest's driving= +0.1; statutory law exists without limits on damages for serving to youth= +0.2; statutory law exists without limits on standards for evidence, or statute specifies negligence, and no need to prove intoxication= +0.3].

Social host/civil liability for serving to intoxicated guests, must include adults (adult score was added to score for serving to youth): [a common law policy holding individuals liable for serving alcohol to intoxicated guests if no restrictions on evidentiary standards or damage limits, and host liability is not limited to situations where damage was caused by guest's driving= 0.4 (for adult score); evidentiary standards for a statutory policy holding individuals liable for serving to intoxicated adult guests (statute does not establish any evidentiary standards, with exception of negligence standard= +0.2, else statute establishes reckless standard and/or clear and convincing evidence= +0.1); a statutory policy holding individuals liable for serving to intoxicated guests without limits on damages (policies with knowledge evidentiary standard will not get this point)= +0.1; a statutory policy holding individuals liable for serving to intoxicated guests, and the policy does not limit host liability to damage caused by the guest's driving (policies with knowledge evidentiary standard will not get this point)= +0.1].

Youth and intoxicated/adult scores were added together to establish social host/civil liability final score.

State alcohol control systems (monopoly):

Average expert efficacy rating for reducing binge drinking among adults: 3.975

Implementation rating index:

Control State or not (i.e., any monopoly system)= +0.3, not a control state= 0.0; state sells liquor at the retail level= +0.2; the range of retail (shelf) price among states that sell liquor at the retail level were rescaled into quartiles so the states with the highest prices received the highest scores from +0.0 to +0.3; states control wholesale wine sales (in addition to liquor)= +0.1; states sell wine at retail level= +0.1.

Taxes (beer only for the purposes of 50-state analysis):

Average expert efficacy rating for reducing binge drinking among adults: 4.65

Implementation rating index:

The range of state composite beer taxes (sum of volume-based, ad valorem and sales taxes for beer) was rescaled to a range from 0 to 1.

Use alcohol/lose license (youth):

Average expert efficacy rating for reducing binge drinking among adults: 1.45

Implementation rating index:

Any use/lose policy= +0.3; type of violation, whether mandatory, age to whom mandatory law applies: includes possession, mandatory suspension for all ages until age 21= +0.6, else involves possession and mandatory suspension for ages 18 until 21 but non-mandatory until age 18= +0.4, else involves possession and mandatory suspension for those up to ages 18 or 19 only but non-mandatory until age 21=

+0.3, else includes possession, but non-mandatory for all ages until age 21 +0.1, else +0.0; minimum length of suspension \geq 90 days +0.1; no law = 0.0.

Wholesale price restrictions:

Average expert efficacy rating for reducing binge drinking among adults: 3.6

Implementation rating index:

Ban on volume discounts (complete ban on volume discount= +0.6, else volume discounts are restricted= +0.2, else no restrictions on volume discount= +0.0); minimum markups required or ban on sale below cost= +0.1; post and hold requirements (if hold is \geq 30 days= +0.2, else if hold is between 8 and 29 days= +0.1, else if hold is $<$ 8 days or no post and/or hold requirements= +0.0); credit restrictions exist= +0.1.

Zero-tolerance laws:

Average expert efficacy rating for reducing binge drinking among adults: 1.4

Implementation rating index:

Mandatory ALR or suspension: (revocation for all (i.e., including first) offenses= +0.6, else revocation for multiple offenses only= +0.2, else suspension for all (i.e., including first) offenses= +0.5, else suspension for multiple offenses only= +0.1); minimum length of ALR for earliest offense to which ALR applies \geq 90 days= +0.3; any mandatory criminal sanctions including jail, fine, community service= +0.1.

Appendix C

Data sources for provisions of 29 alcohol control policies, 1999–2011

Data source	Policies informed by the data source, and whether it was the primary or a secondary data source for a policy
Alcohol Policy Information System (APIS), National Institutes for Alcohol Abuse and Alcoholism; www.alcoholpolicy.niaaa.nih.gov/	Primary: alcohol taxes; minimum legal drinking age; keg registration; house party laws; minimum age of server/seller; state monopoly; false ID laws; restrictions on days of sale; responsible beverage service training; use alcohol/lose license for youth; open container; furnishing alcohol to minors; fetal alcohol syndrome warning signs Secondary: blood alcohol concentration 0.08 laws
Substance Abuse and Mental Health Services Administration; Sober Truth on Preventing Underage Drinking Act, <i>Report to Congress on the Prevention and Reduction of Underage Drinking</i> , 2011	Primary: wholesale price restrictions; retail price restrictions; social host/civil liability for serving to youth; dram shop/commercial liability for serving to youth; direct shipment and home delivery
National Highway Traffic Safety Administration (NHTSA); <i>Digests of Impaired Driving</i> , (formerly <i>Digest of State Alcohol-Highway Safety Related Legislation</i>); Years 1999–2002, 2006, 2007, 2010, 2011	Primary: administrative license revocation; blood alcohol concentration of 0.08; zero-tolerance driving laws for youth Secondary: ignition interlocks; social host/civil liability; dram shop/commercial liability
Alcohol policy consultations; data collected for the CDC	Primary: dram shop/commercial liability for serving to intoxicated adults; sales to intoxicated patrons prohibited
National Alcohol Beverage Control Association (NABCA) <i>Survey Books</i> ; Years 1999, 2002–2011	Primary: alcohol beverage control agencies; local option permissible Secondary: outlet density; minimum age of server/seller
The Beverage Information Group; <i>Fact Books</i> , Years 1999, 2001, 2003, 2005, 2007, 2009, 2010, 2011	Primary: outlet density; restrictions on hours of sales Secondary: taxes
Insurance Institute for Highway Safety; <i>DUI/DWI</i> , June 2010, January 2011, and December 2011 www.iihs.org/laws/dui.aspx	Primary: ignition interlocks Secondary: administrative license revocation
Insurance Institute for Highway Safety; <i>Effective Dates of Graduated Licensing Laws</i> , May 2011	Primary: graduated driver licensing
Insurance Institute for Highway Safety; <i>State Court Decisions on the Constitutionality of Sobriety Checkpoints</i> . Website accessed July 2011: www.iihs.org/laws/checkpoints.html	Primary: sobriety checkpoints
National Highway Traffic Safety Administration; <i>NHTSA Research Report: Preventing Over-Consumption of Alcohol – Sales and “Happy Hour” (Drink Special) Laws</i> , 2005	Secondary: retail price restrictions
National Restaurant Association Educational Foundation; <i>Servsafe Alcohol®, Key Laws and Regulations</i> , 2005; www.servesafe.com	Secondary: dram shop
National Alcohol Beverage Control Association; unpublicized NABCA data	Secondary: state monopoly
National Highway Traffic Safety Administration; <i>NHTSA Legal Research Report: Laws Prohibiting Alcohol Sales to Intoxicated Persons</i> , 2007	Secondary: sales to intoxicated patrons prohibited
Mothers Against Drunk Driving; <i>Status of Ignition Interlock Laws</i> ; website accessed July 2011; www.madd.com	Secondary: ignition interlocks
Tax Foundation; <i>State Sales, Gasoline, Cigarette, and Alcohol Tax Rates by State, 2000–2010</i> , 2011. www.Taxfoundation.org	Secondary: taxes
Federation of Tax Administrators; <i>State Tax Rates on Distilled Spirits, Wine, and Beer</i> , Years 2000, 2003, 2004, 2006, 2007, 2008, 2010; www.taxadmin.org ; data hosted at Tax Policy Center: www.taxpolicycenter.org	Secondary: taxes

Data source	Policies informed by the data source, and whether it was the primary or a secondary data source for a policy
<i>The Tax Burden on Tobacco, Historical Compilation, Volume 46, 2011; www.nocigtax.com</i>	Secondary: taxes
Federation of Tax Administrators; <i>States Sales Tax Rates, 2011; www.taxadmin.org</i>	Secondary: taxes
Thomson Reuters; WestlawNext; next.westlaw.com	Secondary: tax; wholesale price restrictions; retail price restrictions; keg registration; social host; dram shop; minimum age of server/seller; responsible beverage service training; sales to intoxicated patrons prohibited; zero-tolerance driving laws for youth; administrative license revocation; ignition interlocks; blood alcohol concentration of 0.08; direct shipment and home delivery; fetal alcohol spectrum syndrome warning signs