Alcohol: Trends in 2-Week Prevalence of 5 or More Drinks in a Row among College Students vs. Others 1-4 Years Beyond HS, and High School Seniors, 1980-2018

Source: Monitoring the Future, 2018
Alcohol- vs. Non-Alcohol-Related Traffic Fatalities, Rate Per 100,000, Ages 16-20, United States, 1982-2017

Sources: U.S. Fatality Analysis Reporting System, 2018; U.S. Census Bureau, 2018
Key Underage Drinking Facts

- Alcohol is the leading contributor to injury deaths under age 21
  - 4,300 alcohol injury and overdose deaths
  - Far exceeding opioid deaths (1,034)

- 58% of opioid overdose deaths involve other drugs or alcohol

Sources: Centers for Disease Control and Prevention, 2018; Kandel et al., Drug and Alcohol Dep, 2017
Youth Risk Behavior Surveys 2009 and 2015

- Nearly 1 million high school students and nearly 2 million 12-20 year olds consume 5 or more drinks 6 or more times per month. They are much more likely to
  - Ride with a drinking driver
  - Drive after drinking
  - Never wear safety belts
  - Carry weapons/guns
  - Be bullied
  - Be injured in a fight
  - Be injured in a suicide attempt
  - Be forced to have sex
  - Have had sex with 6 or more partners
  - Have unprotected sex
  - Use marijuana/cocaine
  - Have ever injected drugs
Youth Risk Behavior Survey 2009

- Frequent binge drinkers compared to abstainers in high school were much more likely in the past month to:

  - Drink at school: 32% vs. 0%
  - Use marijuana at school: 24% vs. 1%
  - Earned mostly D’s and F’s in school within the past year: 14% vs. 4%
Two 20-year-old women take a memory test. One of them abused alcohol. The MRI scan on the left is her brain, the lack of color indicating a sluggish mind. In contrast, the scan on the right is of the woman who doesn’t have a drinking problem. The colors show less of brain activity. Not surprisingly, she does better on the test.

**Teen drinking, thinking don’t mix**

Alcohol appears to damage young brains, early research finds

Prevalence of Lifetime Alcohol Dependence According to Age of Drinking Onset

Source: Grant and Dawson (1997) J. Substance Abuse
Earlier Age Drinking Onset Also Related to:

- More rapid development of dependence
- Dependence by age 25
  - Of ever dependent
  - 47% before age 21
  - 2/3 before age 25
- Chronic Relapsing Dependence
  - Longer episodes
  - Multiple episodes
  - Past year dependence
  - More symptoms
  - Early dependents less likely to seek help

Hingson, Heeren and Winter 2006 *Archives Pediatric and Adol Med*
Hingson, Heeren and Winter 2006 *Pediatrics*
Early onset of drinking is related to:
(Observations in the Surgeon General’s Call to Action, 2007)

- Other substance use problems in adolescence (Hawkins et al., 1997; Schweinsburg, 1996)
- Risky sexual behavior (Grunbaum)
- Car crashes after drinking
- Physical fights after drinking
- Unintentional injuries after drinking (Hingson et al., 2000, 2001)
Early Age of Drinking Onset also Associated with:

- **Suicide**

- **Violent behavior, including predatory violence**

- **Dating violence/victimization**
  - Ramisetty-Mikler et al., *J Sch Health*, 2006

- **Criminal behavior**

- **Prescription drug misuse**
  - Hermos et al., *J. Addict Med.*, 2008

- **Unplanned and unprotected sex after drinking**
  - Hingson et al., *Pediatrics*, 2003

- **Adults injuring oneself and others after drinking**
Why Are These Findings Important?

Injuries are the leading cause of death among youth 1-44

- Unintentional injuries #1 1-44
- Intentional injuries #2 8-34
- Alcohol is the leading contributor
- 49,000 injury deaths annually attributable to alcohol misuse

Sources: Centers for Disease Control and Prevention, 2014; Smith et. al 1999
Interventions

- Individually oriented
- Family
- School
- Web-Based
- Environmental
- Comprehensive Community Interventions

New Research Findings Since the 2007 Surgeon General’s Call to Action to Prevent and Reduce Underage Drinking: A Review

RALPH HINSON, SC.D., M.P.H., and AARON WHITE, Ph.D.

Division of Epidemiology and Prevention Research, National Institute on Alcohol Abuse and Alcoholism, Bethesda, Maryland

ABSTRACT: Objective: In 2007, the U.S. Department of Health and Human Services issued The Surgeon General’s Call To Action To Prevent And Reduce Underage Drinking, a publication documenting a problem linked to nearly 5,000 injury deaths annually and poor academic performance, potential cognitive deficits, risky sexual behavior, physical and sexual assaults, and other substance use. This report reviews subsequent underage drinking and related traffic fatality trends and research on determinants, consequences, and prevention interventions. Method: New research reports, meta-analyses, and systematic literature reviews were examined. Results: Since the Call to Action, reductions in underage frequency of drinking, heavy drinking occasions, and alcohol-related traffic deaths that began in the 1980s when the drinking age nationally became 21 have continued. Knowledge regarding determinants and consequences, particularly the effects of early-onset drinking, parental alcohol provision, and cognitive effects, has expanded. Additional studies support associations between the legal drinking age of 21, zero tolerance laws, higher alcohol prices, and reduced drinking and related problems. New research suggests that use/lose laws, social host liability, internal possession laws, graduated licensing, and night driving restrictions reduce traffic deaths involving underage drinking drivers. Additional studies support the positive effects of individually oriented interventions, especially screening and brief motivational interventions, web and face-to-face social norms interventions, college web-based interventions, parental interventions, and multicomponent community interventions. Conclusions: Despite reductions in underage alcohol consumption and related traffic deaths, underage drinking remains an enduring problem. Continued research is warranted in minimally studied areas, such as prospective studies of alcohol and brain development, policy studies of use/lose laws, internal possession laws, social host liability, and parent–family interventions. (J Stud Alcohol Drugs, 73, 158–169, 2014)
Effective School Programs

- Classroom Centered Intervention; Lalongo 2011, Furholden 2001, Liu 2013
- Project Northland; Perry 2001, Klepp 1995, Perry 2002
- Project Star- Midewestern Prevention Project; Pentz 1989, 1993; Chou 1998, Riggs 2009
- Keeping it Real Hecht 2003, 2006; Kules 2007, Marsiglia 2012
- Pre-adventure Adventure, Conrad 2010, 2011, 2013; Mahu 2015
Effective School Programs

- Programs that rely primarily on increasing knowledge about consequences of drinking are not effective.
- School only program effects are generally small.
- Most Effective Programs:
  - Address social pressures to drink and teach resistance skills.
  - Include developmentally appropriate information.
  - Include peer-led components.
  - Provide teacher training.
  - Are interactive.
  - Include community and family components (e.g. Pentz, 1989; Perry et al., 1996, 2002; Spoth et al., 2001, 2004).

Sources: NIAAA, Alcohol and Development in Youth: A Multidisciplinary Overview, 2005; Spoth et al., Pediatrics, 2008
## State Underage Implementation Effort

<table>
<thead>
<tr>
<th>Number of States</th>
<th>Implementation Effort</th>
</tr>
</thead>
<tbody>
<tr>
<td>39</td>
<td>Interagency coordinating committee</td>
</tr>
<tr>
<td>25</td>
<td>Strategic plan to prevent underage drinking</td>
</tr>
<tr>
<td>37</td>
<td>Conduct compliance checks</td>
</tr>
<tr>
<td>16</td>
<td>Cops in shops</td>
</tr>
<tr>
<td>10</td>
<td>Shoulder taps</td>
</tr>
<tr>
<td>23</td>
<td>Party patrols</td>
</tr>
</tbody>
</table>

Source: SAMHSA, 2018 State Performance & Best Practices Report
## State Laws to Prevent Underage Drinking and Related Problems

<table>
<thead>
<tr>
<th>Alcohol Illegal for Persons &lt;21 to:</th>
<th>No.</th>
<th>Exceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Possess</td>
<td>51</td>
<td>32</td>
</tr>
<tr>
<td>Furnish alcohol to minors</td>
<td>51</td>
<td>31 (family)</td>
</tr>
<tr>
<td>Use fake ID</td>
<td>51</td>
<td>41 (suspend driver’s license)</td>
</tr>
<tr>
<td>Zero Tolerance</td>
<td>51</td>
<td>---</td>
</tr>
<tr>
<td>Graduated driver’s license</td>
<td>51</td>
<td>Full license (17/20 states, 18/15 states)</td>
</tr>
<tr>
<td>Prohibit sales or service to minors</td>
<td>51</td>
<td>28 defined penalty guidelines</td>
</tr>
<tr>
<td>Alcohol tax constant over time</td>
<td>51</td>
<td>Beer: $0.02-1.29/gallon&lt;br&gt;Wine: $0.20-2.50&lt;br&gt;Liquor: $1.50-14.25</td>
</tr>
<tr>
<td>Attempt purchase</td>
<td>47</td>
<td>---</td>
</tr>
<tr>
<td>Dram shop liability</td>
<td>45</td>
<td>---</td>
</tr>
<tr>
<td>Responsible Beverage Service Training</td>
<td>39</td>
<td>13 mandatory</td>
</tr>
<tr>
<td>Consumption illegal</td>
<td>37</td>
<td>22</td>
</tr>
<tr>
<td>Prohibited retail interstate alcohol shipping</td>
<td>33</td>
<td>---</td>
</tr>
</tbody>
</table>

Source: SAMHSA, 2018 *State Performance & Best Practices Report*
### State Laws to Prevent Underage Drinking and Related Problems (cont.)

<table>
<thead>
<tr>
<th>Alcohol Illegal for Persons &lt;21 to:</th>
<th>No.</th>
<th>Exceptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compliance checks</td>
<td>36</td>
<td>15 no formal written protocol</td>
</tr>
<tr>
<td>Social host liability</td>
<td>34</td>
<td>---</td>
</tr>
<tr>
<td>Distance limits for alcohol outlets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schools</td>
<td>31</td>
<td>---</td>
</tr>
<tr>
<td>Colleges</td>
<td>12</td>
<td></td>
</tr>
<tr>
<td>Keg registration</td>
<td>30</td>
<td>---</td>
</tr>
<tr>
<td>Minimum legal drinking age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Off-premise sellers</td>
<td>10</td>
<td>---</td>
</tr>
<tr>
<td>On-premise bartenders</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Home delivery</td>
<td>8</td>
<td>---</td>
</tr>
<tr>
<td>Internal possession</td>
<td>9</td>
<td>---</td>
</tr>
<tr>
<td>Direct sales from producers</td>
<td>7</td>
<td>---</td>
</tr>
<tr>
<td>Use/lose</td>
<td>39</td>
<td>10 age 18; 1 age 19</td>
</tr>
</tbody>
</table>

Source: SAMHSA, 2018 *State Performance & Best Practices Report*
Is Passing Laws Enough?

Underage Youths Easily Bury Beer and Their Traffic Deaths Go Up

Clerks in liquor stores and other retailers in Washington, D.C., rarely seek identification from 19- and 26-year-old youths who try to purchase beer, a new study by the Insurance Institute for Highway Safety reveals.

In 97 out of 100 attempts to buy a six-pack, young men 19 and 26 years of age were successful, although the legal alcohol purchase age is 21 throughout the nation.

“This is not an isolated problem,” says Brian O’Neill, Institute president. “It’s time to crack down and enforce the 21 drinking age laws.” Alcohol-related fatalities among underage drivers are now on the rise following years of decline.
Potential Process of Change After a Drinking Age Increase

Legal Drinking Age Increase

Police and Enforcement

General Legal Deterrence

Court Enforcement

Reduction In Drinking & Driving After Drinking

Public Education

Who
- Minors
- Alcohol Outlets

What
- Reasons for Law
- Enforcement

Changes in Public Perception about Alcohol

Alcohol-Related Fatal Crash Reductions
Successful Comprehensive Community Interventions

- Saving Lives Program, Hingson (1996)
- Project Northland, Perry (1996)
- Communities Mobilizing for Change, Wagenaar (2002)
- Community Trials, Holder (2000)
- Fighting Back, Hingson (2005)
- Sacramento Neighborhood Prevention, Treno, (2007)
- State Coalitions to Reduce Underage Drinking, Wagenaar (2007)
- Neighborhoods Engaging with Students (NEST), Saltz (2009)
- College community program, McCartt et al. (2009)
- Communities That Care, Hawkins et al. (2009)
- Safer California Universities, Saltz et al. (2010)
- Study to Prevent Alcohol Related Consequences (SPARC), Wolfson et al. (2011)
- Cherokee Nation, Komro et al. (2017, 2018)
- California Native American, 2019 (Moore)
Comprehensive community interventions address college age and underage drinking at multiple levels

- Coordinate multiple city departments
- Clear measurable Objectives and Strategic Plans
- Combine Education and Law Enforcement
- Include screening and early interventions
- Use Data to Plan and Evaluate
- Involve Private Citizens – Be Inclusive
- Involve Youth

### Methods:
- 13 communities matched with 13 comparison communities for state, population size, racial/ethnic diversity, and economic indicators.
- Surveyed student in 5th through 8th grade in 2004-2007 (N=4,407) (half in intervention and half compared).

### Intervention:
- Coalition members were trained to use data from surveys in 1998, 2000, and 2002.
  - To prioritize risk factors for preventive action.
  - To use evidence-based programs targeting youth grades 5-9 (age 10-14).
Hawkins et al. (cont.)

Evidence-Based Programs:

<table>
<thead>
<tr>
<th>School-Based Programs</th>
<th>Community Youth Programs</th>
<th>Family Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>- All Stars</td>
<td>- Participate and Learn Skills</td>
<td>- Strengthening Families</td>
</tr>
<tr>
<td>- Life Skills Training</td>
<td>- Stay Smart</td>
<td>- Parents Who Care</td>
</tr>
<tr>
<td>- Lion’s Quest Skills</td>
<td>- Big Brothers/Sisters</td>
<td>- Family Matters</td>
</tr>
<tr>
<td>- Project Alert</td>
<td>- Academic Tutoring</td>
<td>- Parenting Wisely</td>
</tr>
<tr>
<td>- Olweus Bullying Prevention Program</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hawkins et al. (cont.)

- Results:
  - Intervention students 60% less likely to initiate alcohol use by grade 8
  - Intervention less likely to start smoking
  - Intervention students 41% less likely to initiate delinquent behavior
  - By grade 8 in intervention, communities lower:
    - Alcohol use
    - Smokeless tobacco use
    - Binge drinking
    - Delinquent behavior
  - By grade 10, differences persist
    - Alcohol use: 67% vs. 75%
    - Cigarette use: 44% vs. 52%
    - Marijuana use: 33% vs. 37%
    - Delinquent behavior: 62% vs. 70%
Results (cont.)

• By grade 12, intervention more likely to:
  – Abstain from alcohol: 32% vs. 23%
  – Abstain from drugs: 25% vs. 18%
  – Abstain from cigarettes: 53% vs. 48%
Project Summary: Komro et al., Cherokee Nation: Alcohol Youth Prevention, *Am J Pub Health*, 2017, 2018

- Partnership between Cherokee Nation Behavioral Health and prevention scientists
- Trial takes place in rural communities in NE Oklahoma within boundaries of Cherokee Nation
- Implement and evaluate two evidence-based interventions
- Prevent and reduce alcohol use and related problems among high school students
Universal SBI Intervention

- **Goals**
  - In-school support
  - Increase motivation to not use or reduce use
  - Shift alcohol cognitions and norms
  - Ultimately, reduce youth alcohol consumption and related problems

- **Strategies**
  - SBI sessions each semester
  - School-based SBI with NIAAA guidelines and MI
  - CONNECT media campaign
Community Organizing Intervention

- **Goals**
  - Reduce alcohol sales to youth
  - Reduce social sources of alcohol
  - Reduce community tolerance of underage drinking and adult provision of alcohol to youth
  - Ultimately, reduce youth alcohol consumption and related problems

- **Strategies**
  - Community organizing
  - Evidence-based strategies
    - Commercial sources
    - Social sources
    - Enforcement
Implementation

What did we do?

- **Media strategies**
  - Letters to the editor, Op-eds, social media

- **Law enforcement strategies**
  - Reporting parties, asking follow-up questions
  - Increased hot-spot policing
  - Compliance checks

- **Ordinances & Policies**
  - Social Host enforcement, compliance checks, county-wide response plan

- **Vendor training**
  - RBS, How to spot a fake ID
FIGURE 2—Past Month Heavy Episodic Alcohol Use by Study Condition: Northeastern Oklahoma, 2012–2015

Note. Survey wave 1 was used in the imputation models and in estimating inverse probability weights and therefore is not displayed here.
## Other Substance Use Outcomes

<table>
<thead>
<tr>
<th></th>
<th>CMCA</th>
<th>Connect</th>
<th>Combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chewing tobacco</td>
<td>-35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marijuana use</td>
<td>-39%</td>
<td>-26%</td>
<td>Significant but not synergistic reductions</td>
</tr>
<tr>
<td>Prescription drug misuse</td>
<td>-48%</td>
<td>-31%</td>
<td></td>
</tr>
</tbody>
</table>
Methods:
• A comprehensive literature search yielded 185 experimental studies of brief alcohol interventions (universal, selective, or indicated) aimed at reducing alcohol use or alcohol-related problems among adolescents, ages 11-18, and young adults, ages 19-30.

Results:
• Overall, brief alcohol interventions significantly reduced:
  – Alcohol consumption
  – Alcohol-related problems
• Effects persist up to one year
• Effects:
  – Did not differ by:
    ▪ Intervention length
    ▪ Intervention format
• Benefits greater with risky adolescent drinkers
Scott-Sheldon et al. Efficacy of Alcohol Interventions for First-Year College Students, J Clin Consult Psych, 2014

Methods

- Reviewed 41 studies with 62 individual or group interventions

Results: Compared to control subjects

- Recipients of interventions reduced alcohol consumption and related problems up to 4 years past intervention
- Individual and group interventions yielded comparable results on most outcomes
- Individual reduced heavy drinking more than group interventions
- Computer and face-to-face were equally effective
- Effective interventions components:
  - Personalized feedback
  - Protective strategies to moderate drinking
  - Setting alcohol-related goals
  - Challenging alcohol expectancies
- Interventions with 4 or more components were most effective
- Recommend routine screening of all incoming college students
Twenty literature reviews covering thousands of individuals: “provide significant and strong support for the effectiveness of both clinical and brief motivational interventions in reducing drinking with alcohol misusing:

- Adults
- College students
- Adolescent students

Brief motivational interventions for marijuana seems to have substantial support for effectiveness in reducing use (7 reviews and 2 of brief interventions).

The evidence is insufficient to make solid conclusions about efficacy of motivational interventions with opiate and methamphetamine use.
Young Adults at Risk for Excess Alcohol Consumption are Often Not Asked or Counseled About Drinking

- 2/3 of 18-39 year olds nationwide saw a physician in the past year
- Only 14% of them (12% 18-20 year olds):
  - Were asked about their alcohol consumption and
  - Given advice about what drinking patterns pose risk to health
- Persons 18-25:
  - Were most likely to exceed low-risk drinking guidelines (68% vs. 56%)
  - Were least likely to have been asked about their drinking (34% vs. 54%), especially those under age 21 (26%)

Source: Hingson et al., *J Gen Intern Med*, 2012

Helen Marie Witty
Next Generation Health Study, Wave 1, National Survey (N=2,519 10th graders average age 16)

- 82% saw a doctor in the past year
- At their last MD visit:

<table>
<thead>
<tr>
<th>All Respondents</th>
<th>Drinking alcohol</th>
<th>Smoking</th>
<th>Other Drug use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor asked about</td>
<td>54%</td>
<td>57%</td>
<td>55%</td>
</tr>
<tr>
<td>Advised about related health risks</td>
<td>40</td>
<td>42</td>
<td>40</td>
</tr>
<tr>
<td>Advised to reduce or stop</td>
<td>17</td>
<td>17</td>
<td>17</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Frequent Substance Users</th>
<th>Drunk</th>
<th>Smoking</th>
<th>Other Drug use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor asked about</td>
<td>60%</td>
<td>58%</td>
<td>56%</td>
</tr>
<tr>
<td>Advised about related health risks</td>
<td>52</td>
<td>46</td>
<td>54</td>
</tr>
<tr>
<td>Advised to reduce or stop</td>
<td>24</td>
<td>36</td>
<td>42</td>
</tr>
</tbody>
</table>

- Drunk, smoking 6+ times past month: 7%, 9%
- Drugs 6+ times past year: 5%

Source: Hingson et al., *Pediatrics*, 2013
Conclusions

- Research indicates reductions in underage and college age drinking and related problems can be achieved with interventions that focus on
  - Individuals
  - Families
  - Schools
  - Environmental Changes/Legislation
  - Community

- Interventions targeting multiple levels are more effective