Magnitude and Prevention of College and Underage Drinking Problems

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National Institute on Alcohol Abuse and Alcoholism

5th Annual Dartmouth Symposium on Substance Abuse:
An Examination of the U.S. Minimum Legal Drinking Age

Hanover, NH
May 1, 2009
Alcohol and Global Health

- In 2002, harmful alcohol use caused:
  - 2.3 million premature deaths
  - 3.7% of global mortality
  - 4.4% of global burden of disease (after controlling for protective effects of low-moderate alcohol consumption)

- Harmful use of alcohol is the 3rd leading risk factor for death and disability in developed countries

Source: World Health Organization, 2009
Alcohol and Health in the Americas

- Alcohol surpasses smoking as the most important risk factor for burden of disease
- Alcohol consumption averaged more than 50% higher than worldwide
- Alcohol consumption contributed to:
  - 279,000 deaths
  - 4.8% of all deaths
  - 9.7% of all disability years of life lost
- Intentional and unintentional injuries accounted for:
  - 50% alcohol-related deaths
  - 38% alcohol-related disease burden

Alcohol Attributable Deaths in the United States, Annual Average, 2001-2005

- 79,696
- 3rd leading cause of preventable deaths
- Injury (including poisoning): 43,731
- Chronic disease: 35,915

Source: CDC, ARDI, 2009
Disability Adjusted Life Years (DALYs)

- Alcohol is the 5th leading cause of DALYs among males
  - Ischemic heart disease
  - Road traffic injury
  - Lung cancer
  - HIV/AIDS
  - Alcohol

- Alcohol is the 11th leading cause of DALYs among women

Alcohol Attributable Deaths:
Acute Conditions 43,731

<table>
<thead>
<tr>
<th>Condition</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motor Vehicle Traffic</td>
<td>13,819</td>
</tr>
<tr>
<td>Homicide</td>
<td>7,787</td>
</tr>
<tr>
<td>Suicide</td>
<td>7,235</td>
</tr>
<tr>
<td>Falls</td>
<td>5,532</td>
</tr>
<tr>
<td>Poisoning (Not alcohol)</td>
<td>5,416</td>
</tr>
<tr>
<td>Poisoning (Alcohol)</td>
<td>370</td>
</tr>
<tr>
<td>Fire Injuries</td>
<td>1,158</td>
</tr>
<tr>
<td>Drowning</td>
<td>868</td>
</tr>
<tr>
<td>Other</td>
<td>1,546</td>
</tr>
</tbody>
</table>

Source: CDC: ARDI, 2009
Alcohol Attributable Deaths: Chronic Disease 35,915

Alcohol Liver Disease 12,219
Liver Cirrhosis, Unspecified 7,055
Alcohol Dependence Syndrome 3,857
Alcohol Abuse 2,382
Stroke 2,451
Hypertension 1,363
Pancreatitis 924
Other 5,664

Source: CDC: ARDI, 2009
Alcohol-attributable injury deaths more often involve younger people than do chronic disease deaths.

Alcohol injury deaths account for twice as many years of life lost as chronic alcohol disease deaths.

(Source: CDC, ARDI, 2009)
- 2,227 alcohol attributable deaths are ages 18-20
  - <3% of total
  - <4% of preventable years of life lost

- 9,625 alcohol attributable deaths are ages 25 or younger
  - 12% of deaths
  - ¼ of preventable years of life lost

Source: CDC: ARDI, 2009
# Low-Risk Drinking Limits

<table>
<thead>
<tr>
<th>Low-risk drinking limits</th>
<th>MEN</th>
<th>WOMEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>On any single DAY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 drinks on any day</td>
<td></td>
<td>3 drinks on any day</td>
</tr>
<tr>
<td>AND</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14 drinks per week</td>
<td></td>
<td>7 drinks per week</td>
</tr>
</tbody>
</table>

Source: NIAAA, Rethinking Drinking: Alcohol and Your Health, 2009
9% of people age 18 and older exceed both daily and weekly limits for low-risk drinking as established by the National Institute on Alcohol Abuse and Alcoholism (20 million people)

The problem is greater among youth ages 18-24

<table>
<thead>
<tr>
<th></th>
<th>Percent</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 18-20</td>
<td>24%</td>
<td>2,984,000</td>
</tr>
<tr>
<td>Ages 21-24</td>
<td>25%</td>
<td>4,193,000</td>
</tr>
<tr>
<td>Total 18-24</td>
<td></td>
<td>7,177,000</td>
</tr>
</tbody>
</table>

Youth 18-24 are 16% of the population age 18 and older, but more than 1/3 of that population who exceed both daily and weekly limits

Sources: NIAAA, Rethinking Drinking: Alcohol and Your Health, 2009; National Epidemiologic Survey on Alcohol and Related Conditions
Youth Ages 18-24 Are Most Likely to Experience Alcohol Dependence

- 4% of the adult U.S. population met alcohol dependence criteria in the past year, representing 7.9 million people
- Youth are most affected
  - 12.5% of persons ages 18-20 (1.6 million)
  - 11% of persons ages 21-24 (1.8 million)
  - Total ages 18-24 (3.4 million)
- Youth 18-24 are:
  - 16% of the population age 18 and older
  - 43% of that population who met alcohol dependence criteria in the past year

Source: NIAAA, NESARC, 2002
A CALL TO ACTION: 
CHANGING THE CULTURE OF DRINKING AT U.S. COLLEGES

The comprehensive reports released by the National Institute on Alcohol Abuse and Alcoholism’s (NIAAA’s) Task Force on College Drinking turned a national spotlight on the problem of harmful drinking among college students. The central report, A Call to Action: Changing the Culture of Drinking at U.S. Colleges, has proven influential in the college alcohol and other drug (AOD) prevention and treatment field. Statistics first introduced in the report are now routinely used to convey the magnitude of college drinking problems and their consequences. Policymakers, legal experts, and organizations that provide college programming assistance have modified their efforts to reflect the Task Force recommendations.

College drinking research remains a high priority for NIAAA, and ongoing projects continue to yield important new information. This bulletin summarizes these recent findings with updated statistics, analysis, and recommendations.

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1 College Drinking and Its Consequences: New Data
2 Interventions—What Is the New Research Telling Us?
3 Defining Binge Drinking
4 Are College Students at Higher Risk?
5 Treatment for Alcohol Problems: An Unmet Need
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7 Ongoing Research and Collaborative Efforts
8 Tracking Students’ Drinking Patterns
9 A Word on Alcohol Poisoning
10 Questions Campus Leaders Should Ask
11 Keep an Eye on . . .

What Colleges Need to Know Now 
An Update on College Drinking Research

College Drinking and Its Consequences: New Data

As national headlines attest, students continue to be seriously injured or die as a result of drinking. Are these attention-grabbing headlines designed to simply sell newspapers, or is the problem as extensive today as it was in 2002 when the NIAAA Task Force first reported its findings?

The news is mixed. Among college students and other 18- to 24-year-olds, binge drinking (see the textbox, page 2, for a definition) and, in particular, driving while intoxicated (DWI), have increased since 1998. The number of students who reported DWI increased from 2.3 million students to 2.8 million (1). The number of alcohol-related deaths also have increased. In 2001, there were an estimated 1,700 alcohol-related unintentional injury deaths among students 18–24, an increase of 6 percent among college students (that is, per college population) since 1998 (1). In addition, it is estimated that each year, more than 696,000 students between the ages of 18 and 24 are assaulted by another student who has been drinking, and more than 97,000 students between the ages of 18 and 24 are victims of alcohol-related sexual assault or date rape (1). Clearly, alcohol-related problems on campus still exist (1).

Another line of research is examining how becoming intoxicated at a young age is linked to later drinking problems during the college years. The results showed that college students who first became intoxicated prior to age 19 were significantly more likely to be alcohol dependent and continued on page 2.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES • NATIONAL INSTITUTES OF HEALTH
NATIONAL INSTITUTE ON ALCOHOL ABUSE AND ALCOHOLISM
Magnitude of Alcohol Problems on U.S. College Campuses

Hingson et al. (2002) *J. Studies on Alcohol*
Numbers of College Students 18-24 Experiencing Alcohol Problems 2001

Alcohol Related Injury Deaths 1,700
Injured under influence of alcohol 599,000
Assaulted by another college student 690,000
Sex assault/date rape 97,000

Full time 4 year college students 6.4 million

Sources: College Alcohol Survey, National Household Survey on Drug Use and Health
Alcohol: Trends in 2-Week Prevalence of 5 or More Drinks in a Row among College Students vs. Others 1-4 Years Beyond HS

Source: Monitoring the Future, 2007
Percentage Binge Drinking, Ages 18-20 & 21-25 in College and Not in College

National Household Survey on Drug Use and Health, 2007
Percentage Drove Under the Influence of Alcohol, Ages 18-20 & 21-25 in College and Not in College

National Household Survey on Drug Use and Health, 2007
Consumption of 10+ Drinks or More or 21+ Drinks on an Occasion in Past Year by U.S. 18-20 and 21-24 Year Olds, 1991-92 vs. 2001-02

In College


Not In College

Alcohol-Related Traffic Fatalities, Rate per 100,000, Ages 18-20 vs. 21-24, United States, 1982-2007

Source: U.S. Fatality Analysis Reporting System, 2009; U.S. Census Bureau, 2009
Proportion of Fatal Crash Deaths in the U.S. that were Alcohol-Related, Ages 18-20 vs. 21-24, United States, 1982-2007

Ages 18-20 ↓39%
73% (n=4,733)
69% (n=3,867)

Ages 21-24 ↓22%
57% (n=2,583)
42% (n=1,520)

U.S. MLDA Age 21 law MLDA 21 in all 50 states

Source: U.S. Fatality Analysis Reporting System, 2009
Homicides, Suicides, and Unintentional Nontraffic Injuries, Rates per 100,000, Persons Ages 18-20 vs. 21-24, United States, 1990-2005

- Homicides
- Suicides
- Unintentional Nontraffic Injuries

Ages 18-20
Ages 21-24

% Decrease:
- Homicides: 29%
- Suicides: 29%
- Unintentional Nontraffic Injuries: 19%

1990: 22.84
1992: 21.64
1994: 15.57
1996: 13.94
1998: 8.72
2000: 6.05
2002: 5.55
2004: 16.22
Poisoning Deaths, Rate per 100,000, Ages 18-20 vs. 21-24, United States, 1982-2007

Source: CDC WISQARS, 2009; CDC WONDER, 2009; U.S. Census Bureau, 2009
## Alcohol Related Behaviors and Consequences of 18-24 Year Olds in the U.S. 2005 (Estimates)

<table>
<thead>
<tr>
<th>Category</th>
<th>College</th>
<th>Non College</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drank 5+ on an occasion past month</td>
<td>4.4 million (45%)</td>
<td>7.9 million (40%)</td>
<td>12.3 million</td>
</tr>
<tr>
<td>Past year drove under the influence of alcohol</td>
<td>2.8 million (29%)</td>
<td>4.5 million (23%)</td>
<td>7.3 million</td>
</tr>
<tr>
<td>Died of alcohol-related unintentional injury</td>
<td>1,825</td>
<td>3,575</td>
<td>5,500</td>
</tr>
</tbody>
</table>
College Alcohol Study

The younger college students were when first drunk, the more likely they will experience in college:

- Alcohol Dependence
- Drive after drinking
- Alcohol related injury
- Unplanned and unprotected sex after drinking

Adolescents Drink Less Frequently than Adults But More Per Occasion

Source: SAMHSA National Survey on Drug Use and Health 2005
<table>
<thead>
<tr>
<th>BAC</th>
<th>Key Driving Functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>.10</td>
<td>Concentrated Attention, Speed Control, Braking, Steering, Gear Changing, Lane Tracking, Judgement</td>
</tr>
<tr>
<td>.09</td>
<td></td>
</tr>
<tr>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>.07</td>
<td></td>
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<td>.06</td>
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<td>.05</td>
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<td>.03</td>
<td></td>
</tr>
<tr>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>.01</td>
<td></td>
</tr>
<tr>
<td>BAC</td>
<td></td>
</tr>
</tbody>
</table>

- Key driving functions are impaired at levels as low as .02-.04%.

Source: National Highway Traffic Safety Administration
The risk of fatal crash increases more with each drink among young drivers than drivers age 20 and older.

Source: Simpson, H. 1989
Increased Risk of Driver Single Vehicle Crash Death at Blood Alcohol Concentration of .08% - .10% Relative to Sober Drivers

<table>
<thead>
<tr>
<th>Age</th>
<th>Relative Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-20</td>
<td>51.4</td>
</tr>
<tr>
<td>21-34</td>
<td>13.4</td>
</tr>
<tr>
<td>35+</td>
<td>11.4</td>
</tr>
</tbody>
</table>

Source: (Zador P., Krawchuck S., Voas R., *J. Studies on Alcohol*, 2000)
28% of high school students start to drink before age 13.

They are 7 times more likely by age 17 to binge frequently (5 or more drinks/6 or more times per month).

There are over 1 million frequent bingers in high school.
Youth Risk Behavior Survey 2003

There are 1 million high school students who consumed 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 injured in a fight
- Be injured in a suicide attempt
- Be forced to have sex
- Had sex with 6 or more partner
- Have unprotected sex
- Been or gotten someone pregnant
- Use Marijuana/cocaine
- Ever injected drugs
Youth Risk Behavior Survey 2003

- Frequent binge drinkers compared to abstainers in high school were much more likely in the past month to:
  - Drink at school: 31% vs. 0%
  - Use marijuana at school: 29% vs. 1%
  - Earned mostly D’s and F’s in school within the past year: 13% 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 indicates 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 brain activity. Not surprisingly, she does better on the test.

Cover story

Teen drinking, thinking don’t mix

Alcohol appears to damage young brains, early research finds

By Kathleen Stolarz
USA TODAY

Teenagers who drink heavily face a host of hazards, ranging from accidental injuries to death by alcohol poisoning. If early research is verified, scientists might see another danger to that list: some brain damage.

Preliminary studies indicate that heavy, regular drinking can damage the developing brains of teens and young adults and perhaps destroy brain areas vital to learning and memory.
Conclusion

In the U.S. there is an urgent need to expand and improve prevention, screening and treatment programs and policies to reduce alcohol related harm

– Persons under 21
– Among college students
– Persons of similar ages not in college
109TH CONGRESS
2d Session

H. R. 864

AN ACT

To provide for programs and activities with respect to the prevention of underage drinking.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

Sec. 1. Short title.
Sec. 2. Findings; purpose.
Sec. 3. Definitions.
Sec. 4. Programs and activities.
Sec. 5. Authorization of appropriations.

Sec. 1. Short title. This Act may be cited as the "Underage Drinking Prevention Act of 2007".

Sec. 2. Finding and purpose. (a) Findings. The Congress finds that:

(1) the term "underage drinking" means the practice of an individual under the age of 21 years consuming alcoholic beverages;

(2) the term "alcoholic beverage" means an alcoholic beverage as defined in section 2251 of title 22 of the United States Code; and

(3) the term "program" means the programs and activities described in section 4 of this Act.

(b) Purpose. The purpose of this Act is to provide for programs and activities with respect to the prevention of underage drinking.

Sec. 3. Definitions. In this Act:

"Every 2d session of Congress.

Title II—Intervention

Sec. 201. General provisions.

Title III—Additional Research

Sec. 301. Authorization of appropriations.

The Surgeon General's Call to Action
To Prevent and Reduce Underage Drinking

2007

U.S. Department of Health and Human Services
United States Alcohol and Non-Alcohol Related Traffic Fatalities Per 100,000 Population 1982-2007

Sources: Fatality Analysis Reporting System, National Highway Traffic Safety Administration; U.S. Census Bureau
From 1982-2001 in the U.S, 153,168 lives were saved by decreased drinking and driving. This is more than the combined numbers of lives saved, 149,318, by increased seat belt use (129,207), airbag prevalence (4,305), increase use of motorcycle helmets (6,475) and by increased use of bicycle helmets (239).

Interventions

- Individually oriented
- School
- Family
- Environmental
- Comprehensive Community Interventions
Gentilello
Brief Motivational Alcohol Intervention in a Trauma Center
Annals of Surgery, 1999

- 46% of injured trauma center patients age 18 and older screened positive for alcohol problems.
- Half (N=336) randomly allocated to receive 30 minute brief intervention to reduce risky drinking and offers links to alcohol treatment
Gentilello

Brief Motivational Alcohol Intervention in a Trauma Center

Annals of Surgery, 1999

- Reduced alcohol consumption by an average 21 drinks per week at 1 year follow up
- 47% reduction in new injuries requiring treatment in ED
- 48% reduction in hospital admissions for injury over 3 years
- 23% fewer drunk driving arrests
Nilsen et al.
Systematic Review of Emergency Care Brief Alcohol Intervention
*J. Substance Abuse Treatment, 2007*

- Reviewed 14 studies of brief intervention (BI) delivered in emergency care settings
- Of 12 studies with pre-post BI comparisons, 11 observed a significant effect on some outcome
  - Alcohol intake
  - Risky drinking practices
  - Alcohol-related negative consequences
  - Injury frequency
- 7 studies showed differences between treatment conditions
Monti

Brief Intervention For Harm Reduction with Alcohol Positive Older Adolescents in a Hospital Emergency Department,

*J. Consulting and Clinical Psychology*, 1999

- 94 ED patients, mean age 18.4, injured after drinking
- Half randomly allocated to a 35-40 minute motivational intervention (MI) to reduce drinking and related risky behaviors such as DWI
- 89% followed at 6 months, no difference between groups: follow up rate, age, gender

Results:
- MI group had ¼
  - Drinking driving occasions
  - Alcohol-Related injury
  - 60% fewer other alcohol-related problems
U.S. Annually

- **2¼ million trauma center admissions**
  - Gentilello, personal communication, 2008

- **Over 40% alcohol-related**

- **Peak ages 15-25**
  - National Trauma Data Bank, Annual Report, 2008

- **8 million alcohol-related emergency department visits (most for injuries)**
  - McDonald et al., *Arch Internal Med*, 2004)

- **Peak ages for injuries: 15-25**

- **85% of population sees a physician at least once per year (Health United States, 2005, CDC)**
“Results make alcohol screening and counseling one of the highest ranking preventive services among 25 effective services.”

Similar score as screening for:
- hypertension
- colorectal cancer
- vision for adults age 65 and older
Strong Support for Individual Level Interventions Among College Students

- Reduce drinking and related problems
    - Review of 18 experimental studies of brief interventions
  - Carey et al., *Addictive Behaviors*, 2007
    - Meta-analysis of 62 controlled studies
    - Face-to-face interventions most effective
      - Motivational interview
      - Personalized normative feedback
Implementation Gap

- 19% of College Students 18-24 met DSM IV Alcohol Abuse or Dependence Criteria
- 5% of them sought treatment in the past year
- 1.5 million 12-17 year olds need treatment
- Only 14% have received treatment

Source: National Epidemiologic Study of Alcohol Related Conditions 2002; National Household Survey of Drug Use and Health, 2005
Barriers to Screening

- Time to ask questions
- Time to respond to questions
- Lack of training
- Lack of treatment centers for referral
- Reimbursement issues
Insurers' Liability for Health/ Sickness Losses Due to Intoxication ("UPPL") as of January 1, 2008

Legend
- Denial of Benefits Permitted
- Denial of Benefits Prohibited
- No Health/Sickness Exclusion Law
- Denial of Benefits Both Permitted and Prohibited
States that Have Implemented Screening and Brief Intervention Reimbursement Codes For Medicaid as of August 2008

Sources: SAMHSA and ONDCP (September 2008).
School Based 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)

Sources: NIAAA, Alcohol and Development in Youth: A Multidisciplinary Overview, 2005; Spoth et al., 2008
Family Influences on Youth Drinking 12-20

- Children of parents who binge, compared with abstainers, are twice as likely to
  - Binge (20% vs. 10%)
  - Meet alcohol dependence/abuse criteria (10% vs. 5%)

Source: SAMHSA, Findings From the 2002-2006 National Surveys on Drug Use and Health, 2008
Family Interventions

Iowa Strengthening Families Program

Goals:
- Improve parent/child relations
- Strengthen family communication skills
- Increase child coping skills

Implementation:
- 7 sessions at school
- 13 hours total
- Parent and child separately and together
Family Interventions

A randomized controlled trial with families of 6th graders:

- Iowa Strengthening Families Program (ISFP) (206 families)
- Preparing for Drug Free Years Program (PDFYP) (221 families)
- Control (221 families)

Lifetime Drunkenness Through 6 Years Past Baseline:

Logistic Growth Curve

Combined Family Interventions & School Based Life skills Program

Randomized controlled trial of 7th graders from 36 rural schools:
- ISFP Plus Life Skills Training (n=549)
- Life Skills Training Only (n=517)
- Control (n=453)

Results: 2 ½ Years Later
- Weekly drunkenness rate among intervention students 1/3 lower
  - Strengthening Family plus Life Skills (p=.03)
  - Life Skills Training (p=.08)

Conclusion: Family and school interventions combined are more effective than school interventions only

Environmental Interventions

- Legislation to reduce drinking & driving
  - Criminal per se laws
  - Administrative license revocation laws
  - Mandatory assessment & treatment laws
  - Primary safety belt laws
  - Ignition interlock for first offenders
  - Lower legal blood alcohol limits for convicted offenders
  - 0.08% criminal per se BAC level laws
  - Zero tolerance laws

- Enhanced enforcement - publicized sobriety checkpoints
Environmental Interventions (cont.)

- Legislation to reduce availability of alcohol
  - Minimum legal drinking age
  - Reduce alcohol outlet density
  - Increase price
    (Wagenaar et al., *Addiction*, 2009; Institute of Medicine, 2004)
Environmental Interventions

- When might it be justified to use laws to change behavior to promote health?
  - Problem is important
  - Behavior harms other people
  - Law is effective
  - Law is minimally intrusive
  - No equally effective, less intrusive alternative
  - Public supports the law
To what extent do you support or oppose the following possible school policies or procedures?

<table>
<thead>
<tr>
<th>Alcohol Policy</th>
<th>% Supportive Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crack down on underage drinking</td>
<td>67</td>
</tr>
<tr>
<td>Enforce rules more strictly</td>
<td>65</td>
</tr>
<tr>
<td>Crack down on drinking in Greek houses</td>
<td>60</td>
</tr>
<tr>
<td>Prohibit kegs</td>
<td>60</td>
</tr>
<tr>
<td>Hold hosts responsible for problems</td>
<td>55</td>
</tr>
</tbody>
</table>
Environmental Approaches

WARNING
CRIMINAL VIOLATION

ANY PERSON UNDER 21 YEARS

• WHO - PURCHASES ALCOHOLIC BEVERAGES
• WHO - PROCURES OR ATTEMPTS TO PURCHASE
  ALCOHOLIC BEVERAGES IN ANY WAY
• WHO - WILLFULLY MISREPRESENTS HIS OR HER AGE
• WHO - ALTERS, DEFACES OR FALSIFIES IDENTIFICATION
  WITH INTENT TO PURCHASE ALCOHOLIC BEVERAGES
• WHO - LIES ABOUT ANOTHER PERSON'S AGE WITH INTENT
  TO PROCURE ALCOHOL

SHALL BE PUNISHED BY A FINE OF $300.00

M.G.L. Ch. 138 § 34A LIQUOR CONTROL ACT
MASSACHUSETTS ALCOHOLIC BEVERAGES CONTROL COMMISSION

Federal 21 drinking age
Drinking age 21 in all States

Source: Monitoring the Future, 2007
Alcohol- vs. Non-Alcohol-Related Traffic Fatalities Per 100,000 Population, Ages 16-20, United States, 1982-2007

- Alcohol-Related: ↓64%
  - U.S. MLDA Age 21 law: 25.58 (n=5,244)
  - MLDA 21 in all 50 states: 13.36 (n=2,738)
- Non-Alcohol-Related: ↑17%
  - U.S. MLDA Age 21 law: 9.27 (n=1,987)
  - MLDA 21 in all 50 states: 15.64 (n=3,351)

Sources: U.S. Fatality Analysis Reporting System, 2008; U.S. Census Bureau, 2009
Drivers in Fatal Crashes with Positive Blood Alcohol Concentrations, Rate per 100,000, Ages 18-20 vs. 21-24, United States, 1982-2007

Ages 21-24: ↓ 46%

Ages 18-20: ↓ 63%

Sources: U.S. Fatality Analysis Reporting System, 2009; U.S. Census Bureau, 2009
Proportion of Drivers in Fatal Crashes with Positive Blood Alcohol Concentrations, Ages 18-20 vs. 21-24, 1982-2007

Sources: U.S. Fatality Analysis Reporting System, 2009
Drivers in Fatal Crashes with Positive Blood Alcohol Concentrations, Rate per 100,000, Ages 18-20 vs. 21-24, 1982-2007, States adopting MLDA 21 Before 1984 vs. in 1984 or Later

States adopting MLDA 21 in 1984 or Later (N=32+ DC)

States adopting MLDA 21 Before 1984 (N=18)

Sources: U.S. Fatality Analysis Reporting System, 2009; U.S. Census Bureau, 2009
Legal Drinking Age Changes

- CDC reviewed 49 studies published in scientific journals
- Alcohol-Related Traffic Crashes:
  - Increased 10% when the drinking age was lowered
  - Decreased 16% when the drinking age was raised

Figure 3. Percent change in aggregated crash outcomes after changes in the MLDA. The “a” and “b” in study names refer to the first or second study by the same author in that year, included in this review. Listed studies for which the author name and year are identical come from a single paper. 

Source: Shults et al., American Journal of Preventive Medicine, 2001
O’Malley & Wagenaar
Effects of Minimum Drinking Age Laws on Alcohol Use
Related Behaviors and Traffic Crash Involvement
Among American Youth: 1976-1987
*J Stud Alcohol*, 1991

- **Methods:**
  - Analysis of Monitoring the Future surveys and the Fatality Analysis Reporting System

- **Key Findings:**
  - Persons who grew up in states with drinking ages of 21 drank less both when they were younger than age 21 and between ages 21 and 25
  - College students who were high school seniors in states with a minimum drinking age of 18 drank more in college than counterparts who were high school seniors with a drinking age of 21
Methods

- Analysis of the Fatality Analysis Reporting System from 1982-2004
- Examined the effects of the minimum legal drinking age of 21 on the ratio of drinking to non-drinking drivers under age 21 in fatal crashes
- Controlled for:
  - Zero Tolerance Laws
  - Graduated License Night Restrictions
  - Use/Lose laws
  - Administrative License Revocation
  - .10, .08 BAC per se
  - Mandatory seat belt laws
  - Per capita beer consumption
  - Unemployment rate
  - Vehicle miles traveled
  - Frequency of sobriety checkpoints
  - Number of licensed drivers
  - Ratio of drinking to non-drinking drivers
  - Age 26+ in fatal crashes
  - Ratio of drinking to non-drinking drivers age 26+ in fatal crashes
Fell et al., *Alcohol Clin Exp Res, 2009* (cont)

**Results**

- Minimum legal drinking age was independently associated with a 16% decline in the ratio of drinking to non-drinking drivers in fatal crashes under age 21.

- Other laws that independently predicted lower involvement of drinking drivers under age 21 in fatal crashes:
  - Use/Lose laws ↓5%
  - Zero tolerance laws ↓5%
  - 0.08% BAC limit ↓8%
  - 0.10% BAC limit ↓7%
  - Administrative license ↓5% revocation (ALR)
  - Seat belt laws ↓3%

**Conclusions**

- Minimum legal drinking age of 21 reduced involvement of drinking drivers under 21 in fatal crashes (16%).

- Zero tolerance laws and Use/Lose laws targeted drivers under 21 also produced reductions.

- Laws targeting drinking drivers of all ages also reduced involvement of drinking drivers under 21 in fatal crashes (0.08% and .10% BAC limits, ALR, seat belt laws).
Cumulative Estimated Number of Lives Saved by the Minimum Drinking Age Laws 1975-2007

Source: National Highway Traffic Safety Administration
10 Reasons for Legal Drinking Age of 21

- Alcohol-related traffic fatalities and injuries
- Other unintentional injuries (falls, drownings, burns)
- Homicide and assault
- Sexual assault

- Suicide
- STDs, HIV/AIDS
- Unplanned pregnancy
- Alcohol dependence
- Teen drug use
- Poor academic performance
Prevalence of Lifetime Alcohol Dependence According to Age of Drinking Onset

<table>
<thead>
<tr>
<th>Age Started Drinking</th>
<th>N</th>
<th>%</th>
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<tr>
<td>&lt;14</td>
<td>1131</td>
<td>45</td>
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<tr>
<td>14</td>
<td>844</td>
<td>41</td>
</tr>
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<td>17</td>
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<tr>
<td>20</td>
<td>2082</td>
<td>11</td>
</tr>
<tr>
<td>21+</td>
<td>7324</td>
<td>10</td>
</tr>
</tbody>
</table>

Source: Grant and Dawson (1997)
Early Drinking Onset and Alcohol Dependence: Twin Study Results

- Early age of starting to drink is significantly associated with the development of alcohol dependence comparing twins when one began to drink earlier than the other (even among monozygotic "identical" twins, thus fully controlling for genetics)

J. Grant et al. *Psychological Medicine*, 2006
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 Adolescent Medicine*
Hingson, Heeren and Winter 2006 *Pediatrics*
Purpose is to assess whether earlier drinking onset is related to

- Motor vehicle crashes
- Unintentional injuries
- Physical fights after drinking
Figure 1. In a Motor Vehicle Crash Because of Drinking According to Age of Drinking Onset

Source: Hingson et al., Accident Analysis and Prevention, 2002

P < .001
Figure 2. Injured Under the Influence of Alcohol According to Age of Drinking Onset

Source: Hingson et al., *Journal of the American Medical Association*, 2000
Figure 3. In a Physical Fight While or After Drinking According to Age Started Drinking, National Longitudinal Alcohol Epidemiologic Study

Source: Hingson et al., Pediatrics, 2001
Ever in a Physical Fight While or After Drinking According to Age of Drinking Onset, National Longitudinal Alcohol Epidemiologic Survey

Controlling for age, gender, black, non hispanic, Hispanic, other, education, marital status, current, past, never smoke current, past, never use drugs, family history of alcoholism, current, past, never alcohol dependent, frequency drank 5+ during respondent’s period of heaviest drinking.
Age of Drinking Onset and Suicide

- Preteen drinkers were 3.0 (1.7, 5.6) times more likely to have attempted suicide (controlling for age, gender, race/ethnicity, heavy episodic drinking, other substance use, peer drinking, depression, impulsivity, peer delinquency, and parental monitoring).

Early Age of Drinking Onset also Associated with:

- Injuring other people in traffic crashes and other ways after drinking

- 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

Source: SAMHSA, Underage Alcohol Use: Findings from the 2002-2006 National Surveys on Drug Use and Health, 2008
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

Source: Centers for Disease Control and Prevention
Why Are These Findings Important?

Alcohol is involved in over 50,000 injury deaths annually* (Nearly 44,000 attributable to alcohol)

- 40% unintended injury deaths 39,000
- 47% Homicides 8,000
- 29% Suicides 8,500

Alcohol is the leading contributor to injuries, the leading cause of death among young people in the United States

* Over half under age 44

Sources: G. Smith et. al 1999; CDC, 2009
Key Unanswered Legal Drinking Age Questions

- In all 50 states and the District of Columbia it is illegal:
  - For a person under 21 to **possess** alcohol.
  - To **furnish** alcohol to a person under 21.
  - To use a false ID to **obtain** alcohol.
  - For a person under age 21 to **drive** with a BAC ≥ 0.02 g/dl.
Key Unanswered Legal Drinking Age Questions

- But, it’s more complicated. For example, depending on the state it **CAN** be legal:
  - For persons under 21 to **possess** alcohol with parental/guardian consent and/or presence (24 States)
  - For a parent or guardian to **furnish** alcohol to a person under 21 (31 states)
  - In fact, only 31 States and DC **explicitly** prohibit **consumption** of alcohol by a person under age 21
  - In 47 states, people under 21 **can serve** alcohol

Key Unanswered Questions
Explore Effects of:

1) Removing loopholes and exceptions in age 21 MLDA laws
2) Keg registration laws
3) Social host liability laws
4) Minimum legal age children can be provided alcohol by parents
5) Raising age youth can serve alcohol
Underage Youths Easily Buy Beer and Their Traffic Deaths Go Up

Clerks in liquor stores and other merchants 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 sixpack, young men 25 and 26 years of age were successful, although the legal alcohol purchase age is 21 throughout the nation.

“Let’s be clear,” 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
- Court Enforcement
- Public Education
  - Who: Minors, Alcohol Outlets
  - What: Reasons for Law, Enforcement
- General Legal Deterrence
  - Reduction in Drinking & Driving after Drinking
  - Changes in Public Perception about Alcohol

Fatal and Night Fatal Crash Reductions
How can you further reduce drinking and related injuries and deaths in your community?

Comprehensive Community Interventions

- Involve multiple departments of city government and private citizens
- Use multiple program strategies
  - Education
  - Media advocacy
  - Community organizing
  - Environmental policy change
  - Heightened enforcement
  - Expand alcohol treatment
Successful Comprehensive Community Interventions

- Saving Lives Program, Hingson (1996)
- Communities Mobilizing for Change, Wagenaar (2000)
- Community Trials, Holder (2000)
- Fighting Back, Hingson (2005)
- Sacramento Neighborhood Alcohol Prevention Project, Treno (2007)
Communities Mobilizing for Change

- Interventions to Reduce Availability:
  - Merchants record underage buy attempts
  - Beer kegs prohibited at University Homecoming
  - Policies to discourage motels from permitting underage drinking parties
  - Security at high school dances
  - Model local ordinances to restrict underage access to alcohol
  - Compliance checks

Source: Wagenaar et al., J. Studies on Alcohol, 2000
Communities Mobilizing for Change

Results:
- 17% increase in outlets checking age ID
- 24% decline in bar and restaurant sales
- 25% decrease in the proportion of 18-20 year olds attempting alcohol purchase
- 17% decline in the proportion of older teens providing alcohol to younger teens
- 7% decrease in the percent under 21 who drank
- 14% decline in alcohol traffic injuries, drivers 18-20

Source: Wagenaar et al., J. Studies on Alcohol, 2000
College/ Community Partnerships

Environmental strategies to reduce drinking problems:

- Keg registration
- Mandatory responsible beverage service
- Police wild party enforcement
- Substance free residence halls
- Advertising bans
AMOD achieved reductions among college students in

- Binge drinking
- Driving after drinking
- Alcohol related injuries
- Being assaulted by other drinking college students
Fighting Back Program
Selected Interventions

Limit Alcohol Availability
- Youth access compliance check surveys
- Responsible beverage service training
- Monitoring and closing problem liquor outlets
- Bill board restrictions

Expand Treatment
- Sales tax increase for expanded treatment
- New treatment programs - courts, jails, health care agencies, public housing
- Emergency department screening/brief interventions
- New inpatient, outpatient and recovery programs

Source: Hingson et al., Injury Prevention, 2005
Greater Relative Reduction in Alcohol-Related Fatal Crashes VS Fatal Crashes with Zero BAC

Pooled Effects  
BAC .01%+ VS Zero BAC

Drivers All Ages 16-20

5 FB sites VS controls
22% 26%  P=.01  P=.08

Communities: Kansas City, MO, *Milwaukee, WI, San Antonio, TX, *Santa Barbara, CA, and *Vallejo, CA

Source: Hingson et al., Injury Prevention, 2005
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

- Interventions targeting multiple levels are more effective
Conclusions

- 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
Key Unanswered Questions: Comprehensive Community Interventions to Reduce Youth Alcohol Problems

1) Will a combination of
   - environmental interventions to reduce alcohol availability and enforce alcohol policy, e.g. DWI and drinking age laws
   - increased alcohol screening and early intervention achieve greater problem reduction than either alone?

2) Are programs that target both underage youth and young adults more effective in reducing youth alcohol problems than underage oriented programs only?
Key Unanswered Questions: Comprehensive Community Interventions to Reduce Youth Alcohol Problems

3) Will programs that reduce youth consumption produce carry over alcohol problem reduction in adult life?

4) How can effective comprehensive community interventions be sustained over time?

5) What types of community interventions are most effective in reducing youth alcohol problems with the least cost?
Alcohol- vs. Non-Alcohol-Related Traffic Fatalities Per 100,000 Population, Ages 16-20, United States, 1982-2007

Sources: U.S. Fatality Analysis Reporting System, 2008; U.S. Census Bureau, 2009