

Underage Drinking in Florida: Who Drinks? Who Binges? How do we Prevent It?

Lee A. Crandall, Ph.D.
Marsha S. Stevens, M.P.H.
University of Miami

Evaluation and Technical Assistance from the University of Miami

- State-level evaluation (SPF-SIG)
- State and County Drug Epidemiology data
- Local prevention program evaluation
 - Outcomes (PEI)
 - instrument development & data analysis
 - GPRA Pre & Post Measures
 - Process evaluation through KIT Solutions
 - Formative Evaluation – Technical Assistance
 - Logic Models & Manuals
 - Research Design
 - Program Implementation
 - PEI Administration

Florida's State Epidemiology Workgroup

- Identified 2 areas of concern statewide in its initial report
 - Underage drinking
 - Middle school inhalant use
 - Later added methamphetamine use in selected communities

Why Care About Underage Drinking?

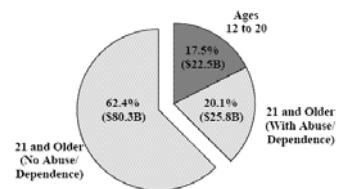
- Early alcohol use, independent of other risk factors, contributes to the risk of developing future alcohol problems.
 - The odds of future alcohol abuse or dependence are estimated to be 7% greater for each year of age, below age 21, that alcohol consumption begins (Grant et al, 2001).
 - Recent research shows that those who begin drinking in their early teens are at greater risk of developing alcohol dependence at some point in their lives, are at greater risk of developing dependence more quickly and at younger ages, and of developing chronic, relapsing dependence (NIH News, 2006).
- Underage alcohol use has also been shown to be a strong contributing factor to youth violence and delinquency, teen pregnancy, and school dropout.

University of Maryland, College Park

Alcohol Expenditure Study Concludes That Alcohol Industry Has Compelling Financial Interest in Underage Drinking

"Early initiation of alcohol use provides substantial financial value to the alcohol industry," according to an analysis of the quantity and cash value of drinking in the United States. Of the estimated \$128.6 billion spent on alcohol in 2001, \$22.5 billion (17.5%) was attributable to underage drinking. In addition, because underage drinkers are more likely to become adult drinkers with alcohol abuse and dependence (almost all—96.8%—of the adult drinkers with alcohol abuse and dependence began drinking prior to the age of 21 years), early initiation also results in a long-term cash value to the alcohol industry. Slightly more than \$25 billion was linked to alcohol consumed by adult drinkers with alcohol abuse or dependence. The authors conclude that "with at least 37.5% of sales linked to underage drinking and adult abusive and dependent drinking, the alcohol industry has a compelling financial motive to attempt to maintain or increase rates of underage drinking" (p. 477).

U.S. Expenditures on Alcohol Attributable to Drinking by Underage Persons (Ages 12 to 20) and Adults, 2001

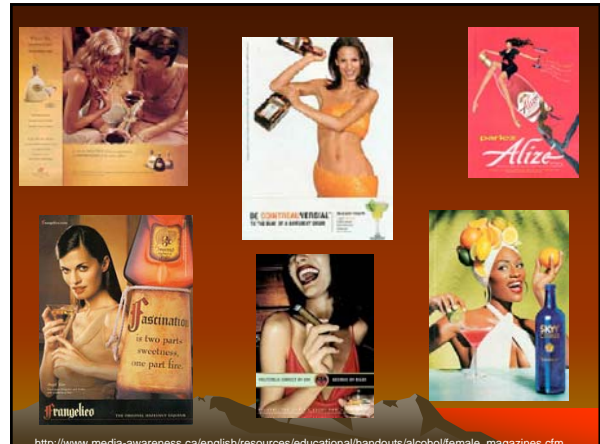


SOURCE: Adapted by CESAR from Foster, S.E., Vaughan, R.D., Foster, W.H., and Calliano, J., Jr. "Estimate of the Commercial Value of Underage Drinking and Adult Abusive and Dependent Drinking to the Alcohol Industry." *Archives of Pediatric and Adolescent Medicine* 160(5):473-478, 2006. For more information, contact Susan Foster at sfoster@cassacolumbia.org.

Interest in alcohol among youth is not an accident!

- Twenty-two percent of the alcohol ads aired on TV in 2002 were more likely to be seen by youth 12-20 years of age than adults. These 66,218 ads were also more likely to be seen by youth ages 12-20 than by young adults ages 21-34.
- According to a 1998 advertising agency study, youths six to 17 years of age identified Budweiser's cartoon ads as their favorite, more popular than any ads for Pepsi, Barbie, Snickers, or Nike.
- A 1996 survey of children ages nine to 11 found that children were more familiar with Budweiser's television frogs than with Kellogg's Tony the Tiger, the Mighty Morphin' Power Rangers, or Smokey Bear.
- American young people heard more radio advertising for beer and distilled spirits than did people of legal drinking age in 2001 and 2002.
- Magazine ads for alcoholic beverages reached more youth 12 – 20 years of age than adult readers in 2001.

http://www.marininstitute.org/Youth/alcohol_ads.htm



http://www.marininstitute.org/Youth/alcohol_ads.htm



Consumption Measures and Consequences

- Consumption by age group
 - All Florida Youth under 21
 - Teens 13 -17
 - Preteens under 13
- Types of consumption
 - any use
 - heavy use
 - binge drinking
- Consequences for youth?
 - alcohol-related MVAs
 - other drug use
 - delinquency
 - teen pregnancy & STDs
- Cirrhosis deaths – decades later

Underage Drinking

- Middle and High School
 - Programs for teens and preteens attempt to enforce an age-specific abstinence norm
 - Often combined with other behavioral goals
- College Students
 - % of undergraduate students are below the legal drinking age but relatively few abstain totally
 - the focus of college campaigns is typically “renorming” to limit binge drinking and reduce short term consequences
 - law enforcement around college drinking is often lax.
- Out of School Populations
 - Data show high school dropouts drink more than students still in school
 - Relatively little local data on drinking among 18-20 year olds not on campus

Abstinence for <21

- Abstinence is consistent with law enforcement goals
- Some recent medical findings suggest developmental risks to alcohol use up to age 22
- However, social norms are not clearly supportive of abstinence in the post high school population

Underage Drinking in Florida

- General rate of recent drinking among ages 12-17 in Florida exceeds the national average.
- This has not declined as other substance use prevalence has declined in Florida since 2000.

Consumption Measures and Consequences

- Consumption by age group
 - All Florida Youth under 21
 - Teens 13 -17
 - Preteens under 13
- Types of consumption
 - any use
 - heavy use
 - binge drinking

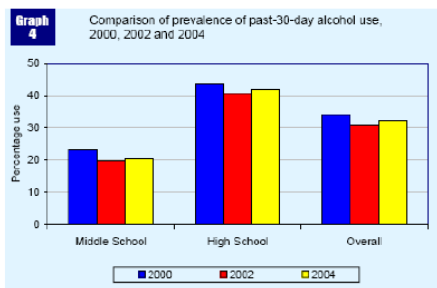
Alcohol use/abuse Consequences for youth?

- “Stupid stuff” – risk taking/judgment
 - alcohol-related MVAs
 - other drug use
 - delinquency
 - teen pregnancy & STDs
- Disease?
 - Alcoholism – years later for most
 - Cirrhosis deaths → decades later

Lots of Kids in Florida Drink Alcohol

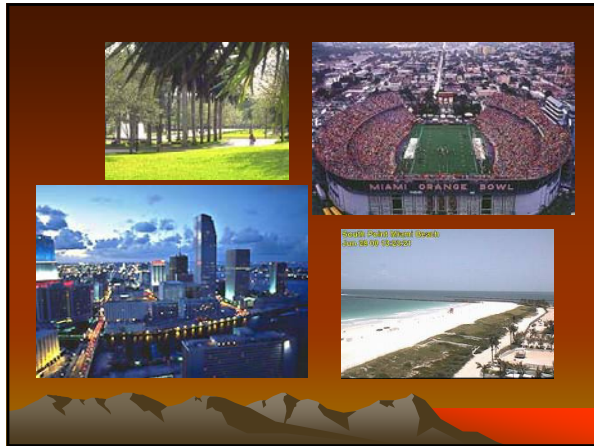
- FYSAS 2004 showed *greater* 30 day prevalence for all age groups than the national average
 - 28.8% of eighth graders versus 19.7% nationally
 - 40.5% of tenth graders versus 35.4% nationally
 - 51% of twelfth graders versus 47.5%

Figure 1: Comparison of Prevalence of Past 30 Day Alcohol Use 2000, 2002 and 2004
2004 Florida Youth Substance Abuse Survey State Report



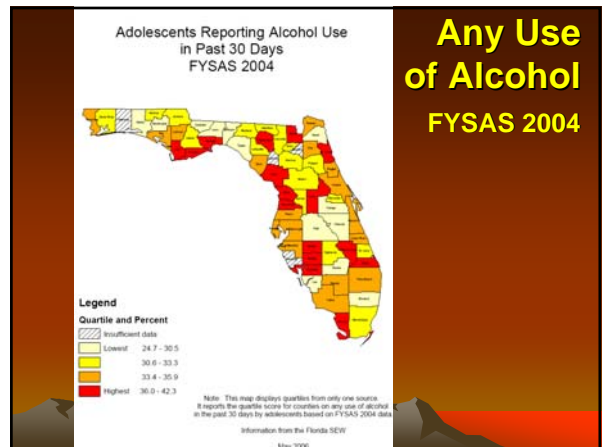
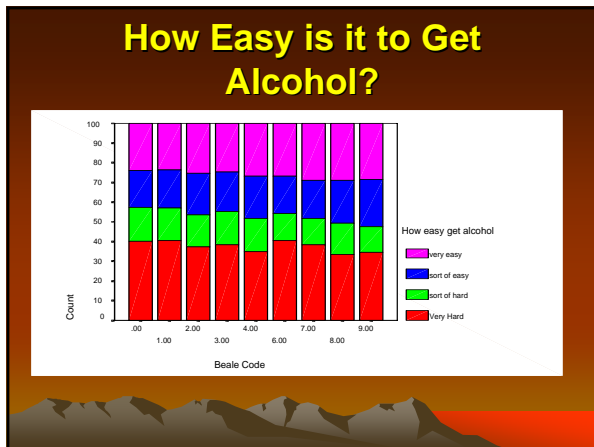
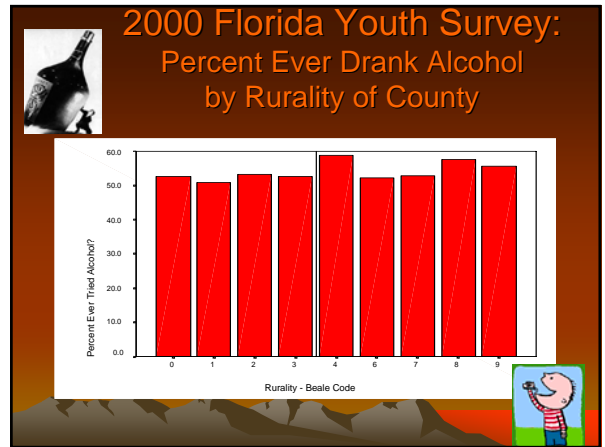
Which Groups Report 30 Day Use?

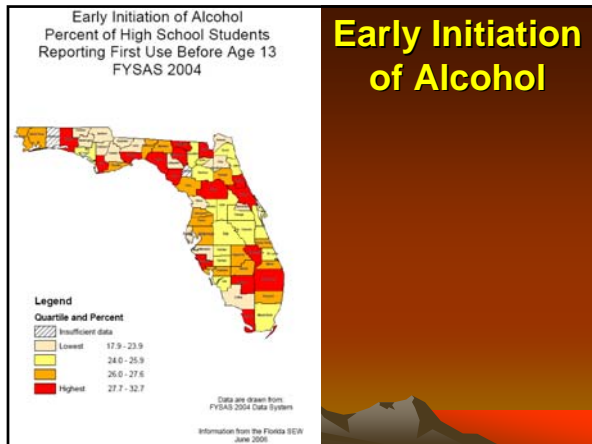
- Ethnicity
 - Whites (37.9%)
 - Hispanics (33.6%)
 - But only (20.8%) of Blacks
- Gender
 - 58.7% of females versus 56.3% of males
 - Rural versus Urban?



Which Groups Report 30 Day Use?

- Rural Versus Urban
 - Beale codes (urban density codes)
 - Few differences as one moves from most urban to most rural (left to right) on the following slides





- ### Consequences of Early Drinking in Florida
- UM analysis of data from FYSAS 2004
- The 25 percent of Florida high school students who report that they first drank alcohol before the age of 13 were:
 - twice as likely as other high school students to have been arrested at least once (18% versus 9%)
 - half again as likely to have been suspended from school at least once (39% versus 26%)
 - more than half again as likely to have tried marijuana (49% versus 30%)
 - twice as likely to report having used an illicit drug other than marijuana (32% versus 16%)

- ### Definition of Binge Drinking
- High-risk drinking? Excessive drinking? Abusive drinking? Problem drinking? Heavy episodic drinking?
 - In numbers, it's 5 or more drinks for men, 4 or more drinks for women (based on **the Five/Four Measure**) in any one "occasion".
 - Occasion being defined by an evening, an afternoon, or more obviously, a morning (particularly if your morning starts at noon).
- www.hardkorepub.com

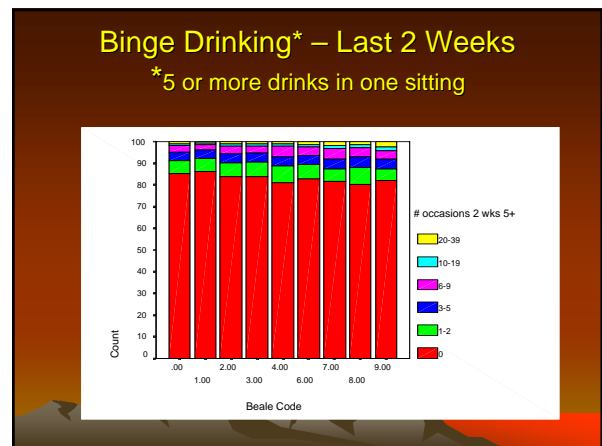
Binge Drinking

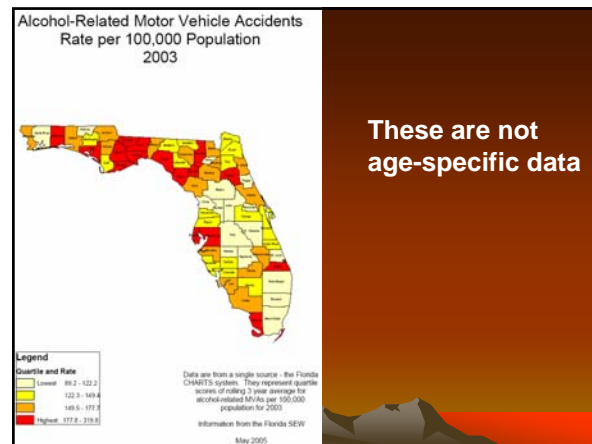
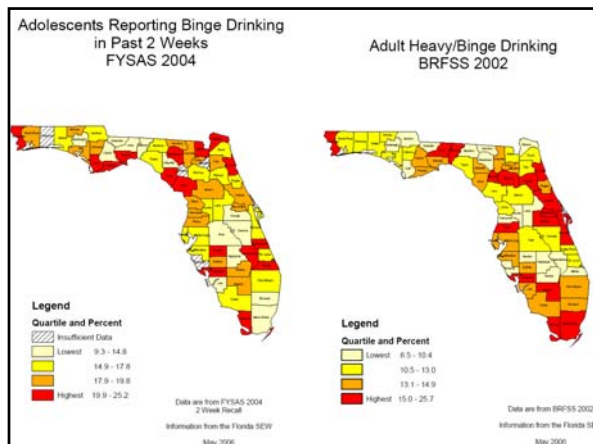
Percent Reporting Binge Drinking by Grade
USA Versus Florida 2004

Grade	USA	Florida
8	11.4%	12.5%
10	22.0%	21.6%
12	29.2%	27.9%

- Despite a higher overall portion of Florida adolescents who have consumed alcohol recently, there does not appear to be a comparable greater rate of binge drinking.

- ### Who Binges?
- FYSAS 2004
- Males (17.2%) were slightly more likely than females (14.9%) to report binge drinking in the past 2 weeks.
 - Whites (19.4%) were more likely than Hispanics (17.1%) and especially Blacks (9.0%) to report binge drinking in this survey.





Mixed Signals

- Adolescent population- abstinence programs only
- College population- the programs target the more immediate harms of alcohol abuse (motor vehicle accidents, violence, date rape and sexual assault)
- College administrators feel abstinence messages will be dismissed by their student bodies, and serious consequences can be dramatically reduced by the messages
- The messages emphasize harmful consequences of excessive use and thereby attempt to "renorm" college drinking without reference to the legal age.

Issues with marketing high school alcohol abstinence programs

- Problems with the messages:
 - "Alcohol is bad" (You say that about everything...and you drink!)
 - "Alcohol is harmful" (I'm invincible!)
 - "Abstinence is best" (Then why do the most popular kids drink?)
 - "You're too young." (My drinking demonstrates my adult status!)

Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G. & Breen, R. (2003) Longer-term primary prevention for alcohol misuse in young people: a systematic review. *Addiction* 98 (4), 397-411.

- Fifty-six studies were selected for inclusion in a systematic (Cochrane process) review.

Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G. & Breen, R. (2003) Longer-term primary prevention for alcohol misuse in young people: a systematic review. *Addiction* 98 (4), 397-411.

- was the study properly controlled?
- what methods of randomization or allocation to intervention groups were used?
- were the groups comparable at baseline?
- were steps taken to maximize the validity of self-reported behaviour?
- were adjustments made for confounding?
- what was the attrition rate?
- did the unit of analysis correspond to the unit of randomization?

Methods

- Used intention to treat analysis
- two major methodological limitations:
 - in most of the studies the unit of allocation (usually class, school or community) and the unit of analysis (usually individuals) were different
 - high levels of attrition in some of these studies, especially those with longer-term follow-up

Short Term Findings

- *Interventions with short-term follow-up (up to 1 year)* Most interventions combined social skills training with knowledge-based education.
- Fifteen studies reported partially effective short-term interventions. Many of these studies reported some effective and some ineffective outcomes, and it is difficult to know what to make of such mixed results.
- Twenty-four interventions with only a short-term follow-up reported some non-significant outcomes and there were no clear or systematic differences between those judged partially effective and those judged ineffective. Indeed, some interventions reported both significant and non-significant effects, depending on the outcome variable used.
- Four studies reported interventions which appeared to increase drinking behavior (relative to control groups) in the short term. The interventions carried out in these studies did not appear to be characteristically different from the studies described above as partially effective or ineffective

Medium Term Findings

- *Interventions with medium-term follow-up (from 1 to 3 years)*
- Of the 12 studies reporting medium-term partially effective interventions few were convincingly effective, and most were marred by methodological shortcomings.
- Studies worth noting are (a) the Start Taking Alcohol Risks Seriously (STARS) school and family intervention (Wérch *et al.* 2000b), based in two schools, comprising a strong design, low attrition and significant effects on alcohol use and misuse, although the effect sizes seem small; (b) Botvin *et al.* (1995b) culturally focused intervention evaluation, although design limitations hamper generalizability; and (c) Scaggs's (1985) PhD work based on the 'self-in-situation theoretical model', although with this study differential attrition is a problem.
- Nineteen studies that carried out a medium-term follow-up found no evidence of intervention effectiveness. Several of these had reported previously some short-term significant effects, and this suggests that any early reductions in drinking behavior achieved by the intervention had eroded in the medium-term.
- Two interventions were found to possibly increase drinking behavior in the medium term. Duryea & Okwumabua (1988) reported that the intervention group (knowledge and social skills programme; US teenagers) reported more excessive drinking than a control group 3 years later. Hopkins *et al.* (1988) found evidence of a negative effect of an intervention (social skills and affective education; US teenagers) in 10% of alcohol-related variables.

Long Term Findings

- *Interventions with long-term follow-up (over 3 years)*
- Three studies reported effective longer-term interventions:
- Botvin *et al.* (1995a) followed-up several thousand US teenagers 6 years after initial administration of a life skills training (LST) intervention. They reported significantly less self-reported drunkenness in those teenagers who received the intervention compared with a control group. They also reported more convincing results for those teenagers who attended at least 60% of the intervention sessions.
- Schinke *et al.* (2000) reported a long-term follow-up of a culturally focused school and community intervention with Native Americans. A skills-based intervention group were around 7% less likely than a control group to be weekly drinkers 3.5 years after baseline measurement. This was statistically significant, although the public health impact of this effect is difficult to judge.
- Spoth *et al.* (2001a, 2001b) conducted an evaluation of a family-based intervention using a strong design, and although there was a moderate attrition rate, there was also a consistent pattern of effectiveness across the three drinking behavior variables they reported. Importantly, the effectiveness of this intervention seemed to increase over time, reflecting the developmentally orientated intervention outcome model on which the intervention is based. This intervention deserves further consideration and study on the basis of these results.

Long Term Findings

- Five other studies reported long-term follow-ups.
- Ellickson & Bell (1990) reported from a large sample study of US teenagers in a trial of **Project ALERT**, which incorporated information and social skills education. Early signs of partial effectiveness were not repeated over the long-term—by the end of high school (5-year follow-up) no effects of the intervention remained.
- Longer-term outcome results from **Project Northland** (Perry *et al.* 1996) showed that at 4-year follow-up there were no significant effects of the Project Northland intervention over the control group.
- Wynn *et al.* (1997) reported a longer-term follow-up of the **Alcohol Misuse Prevention Study** (AMPS) of Dielman and colleagues (Dielman *et al.* 1986) and stated that there was no significant effect of the AMPS curriculum on 10th-grade alcohol misuse.
- Clayton *et al.* (1991) followed-up a **Drug Abuse Resistance Education (DARE)** intervention after 5 and 10 years (when participants were 20 years old), and found that DARE status was unrelated to alcohol use at follow-up.
- The evaluation of a **brief home-based family intervention** by Loveland-Cherry *et al.* (1999) showed a mixed pattern of results. There was a significant but very small positive effect of the intervention on alcohol use, no significant effect on alcohol misuse, and the authors also showed in a *post-hoc* subgroup analysis that those individuals in the intervention group who were already drinkers at baseline were less likely to use and misuse alcohol at follow-up compared with similar controls.

Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G. & Breen, R.

Programs not *proven* effective

"For many interventions, however, it is probably reasonable to say that the evidence base does not support their continued use in the primary prevention of alcohol misuse for young people, other than in further research studies. These interventions are:"

'DAPPER' (Allison *et al.* 1990),
'Alcohol Education in Schools' (Bagnall 1990),
'A Drug Abuse Prevention Programme' (Beaulieu & Jason 1988),
'It's your decision' (Bremberg & Arborelius 1994),
'DARE' (Clayton *et al.* 1991; Ringwalt *et al.* 1991),
'AMPS' (Dielman *et al.* 1986; Shope *et al.* 1996a, 1996b),
'Multi-component Inoculation Programme' (Durrant 1986),
'Project ALERT' (Ellickson & Bell 1990),
'HLAY' (Hopkins *et al.* 1988),
'Shifting Gears' (Klepp *et al.* 1995),
'A Drug Education Course' (Moskowitz *et al.* 1984),
'RPDD' (Newman *et al.* 1992),
'PALS' (Palinkas *et al.* 1996), 'MPP' (Pentz *et al.* 1989a),
'Project Northland' (Perry *et al.* 1996),
'PASS' (Sheehan *et al.* 1996),
'Stay SMART' (St Pierre *et al.* 1992)
'Towards No Drug Abuse' (Sussman *et al.* 1998).

Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G. & Breen, R.

Community Interventions

Community interventions have attracted much interest recently as a more theoretically robust approach than individually orientated interventions (Gorman 2001)

- One community trial (Holder 1997) has demonstrated a 10% annual reduction in alcohol-related crashes among all drivers (not specifically youth) across three communities. A cost-effectiveness analysis estimated that for each \$1 spent on the interventions there was a saving of \$2.88. In the same trial, a greater reduction in the number of retail outlets selling alcohol to apparent under-age buyers was found in the intervention communities (around 30%) than in the control communities (12%) in the first year of follow-up. However, it is unclear whether changes in under-age sales will result in reduced alcohol use and misuse.
- The second large community trial reported recently is the **Communities Mobilizing for Change on Alcohol** program (Wagenaar *et al.* 2000). This study has reported 3-year follow-up results, but there have been no clear statistically significant effects in the intervention communities compared to the control communities for under-age retail sales, self-reported drinking or heavy drinking. There were around 30 fewer arrests for drunk driving per 100 000 population across the intervention communities than in the control communities.
- **Project Northland** (Perry *et al.* 1996) although this intervention is predominantly school-based with strong parental and community involvement. Phase II of the intervention study, currently under way, increases the community aspect significantly. The phase I evaluation included in this systematic review found significant effects of the intervention on drinking behavior while the intervention was ongoing, but this effect dissipated once the intervention halted.

Foxcroft, D. R., Ireland, D., Lister-Sharp, D. J., Lowe, G. & Breen, R. (2003) Longer-term primary prevention for alcohol misuse in young people: a systematic review. *Addiction* 98 (4), 397-411.

Conclusions of the review article:

- Twenty of the 56 studies showed evidence of ineffectiveness.
- No firm conclusions about the effectiveness of prevention interventions in the short- and medium term were possible.
- Research into important outcome variables needs to be undertaken
- The methodology of evaluations needs to be improved
- Over the longer term (>3 years), the **Strengthening Families Program (SFP)** showed promise as an effective prevention intervention for this age group.
- One study also highlighted the potential value of culturally focused skills training over the longer-term (NNT = 17 over 3.5 years for 4+ drinks in the last week)

Some Florida perspectives

- Why no long-term differences?
 - Program effects wane?
 - Or
 - Contamination of comparison group from other prevention programs
- What about short-term effects
 - Prevent developmental harms (remember the data on early drinking!)

Post High School Prevention

- 18-20 was legal drinking age until 1986 – 88
 - Reagan administration reform
 - States threatened with loss of federal highway \$
- Social Norms still ambivalent despite public health data on harms
 - "Draft beer, not students!"



Dr. David J. Hanson State University of New York at Potsdam*

Hanson is characteristic of those who argue against the increase in drinking age to 21. His policy proposals?

- Encourage moderate use of alcohol among those who choose to drink. Moderate drinking and abstinence should be presented as equally acceptable choices.
- Make systematic efforts to clarify and promote the distinctions between acceptable and unacceptable drinking. Effective education is based on much more than telling people what not to do.
- Firmly penalize unacceptable drinking, both legally and socially. While the criminal justice system has an important role to play in this effort, the most essential role is played by individual peers. Intoxication must never be humored and never accepted as an excuse for "bad behavior."
- End the current reduction-of-consumption approach to dealing with alcohol abuse. This approach wrongly assumes that the substance of alcohol is the necessary and sufficient cause of all drinking problems and that the availability of alcohol determines the extent to which it will be consumed and abused.
- Finally, end all attempts to stigmatize beverage alcohol as a "dirty drug," as a poison, as inherently harmful. Demonizing alcohol serves no practical purpose, contributes to cultural emotionalism and ambivalence, and exacerbates the problems it seeks to solve.

The only person who ever gave me a "C" in a sociology class!

What about Hanson's judgment

- He may have a point about college drinking
- Most college programs emphasize "responsible drinking" regardless of age
- His ideas are not appropriate for social policy toward younger adolescents

*(The "C" was definitely bad judgment!...but he was an insecure first year professor)

Alcohol 101 Plus™

- An innovative, interactive CD-ROM that aims to help college students make safe and responsible decisions about alcohol. Set on a "virtual campus," the new program combines the best features of the original award-winning Alcohol 101 with new content designed to address the problems of specific at-risk populations in college settings: First-year students, Greeks, Athletes, Judicial policy offenders
- Each segment explores special issues and decisions regarding alcohol for students in each of these groups from the challenges of hosting safe and responsible parties in a Greek setting, to the special peer pressures that athletes and first year students face.
- Sponsor – The Century Council

The Century Council

- The Century Council, launched in May 1991 and funded by America's leading distillers, is a national not-for-profit organization dedicated to fighting drunk driving and underage drinking and to promoting responsible decision-making regarding beverage alcohol.
- Since 1991, The Council's funding companies have invested close to \$130 million in programs that fight against the misuse of their products.
- The Century Council is headquartered in Washington, DC and is chaired by the Honorable Susan Molinari. The President and CEO is www.centurycouncil.org
- An independent Advisory Board comprised of distinguished leaders in business, government, education, medicine and other relevant disciplines assist The Council in development of programs and policies.



- Alcohol 101+ developer Dr. David Anderson serves as an Associate Professor and Director, Center for the Advancement of Public Health, Department of Health, Fitness and Rehabilitation Resources, Graduate School of Education, at George Mason University in Fairfax, Virginia

An argument in favor of "Harm Reduction" in college alcohol prevention

- Overall, empirical studies have demonstrated that harm reduction approaches to alcohol problems are at least as effective as abstinence-oriented approaches at reducing alcohol consumption and alcohol-related consequences. It is important to individualize alcohol prevention and intervention to accommodate the preferences and needs of the targeted person or population.
- In recognizing the multifaceted nature of behavior change, harm reduction efforts seek to meet the individual where he or she is at and assist that person in the direction of positive behavior change, whether that change involves abstinence, moderate drinking, or the reduction of alcohol-related harm.

Harm reduction approaches to alcohol use: Health promotion, prevention, and treatment G. Alan Marlatt*, Katie Witkiewitz [Addictive Behaviors 27](#) (2002) 867-886

Out of School Youth

- "Disconnected Youth"
– Ages 16-21
 - Not in school, workforce, military
- Military
– "Old enough to kill, but not that beer you're totin." (apologies to Barry McGuire)
- Employed
– Often part time, uninsured, first fired, etc.

Out of School Youth

- Military offers some services and prevention
- Civilian population:
 - Virtually never individually targeted for prevention
 - Drug Courts
 - Enforcement of laws regarding sale to minors
 - Community approaches.

For Discussion

- What are the *realistic* goals for underage drinking programs:
 - Middle school
 - High school
 - College ages 18 -20
 - Workforce ages 18-20
 - Military ages 18-20
- How do the goals differ?