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Adolescent Substance Use:
America's #1 Public Health Problem

June 2011

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Accompanying Statement by Former Congressman Jim Ramstad Chair, CASA's National Advisory Commission on Substance Use among America's High School Age Teens

This report is a wake-up call to every adult in America. If we could substantially improve the chances that our children would avoid accidents, injuries, a range of medical and mental health problems, unintended pregnancies, criminal involvement and even death, and that they would do better academically and professionally, would we do it? If we could help cut their chances of acquiring a lifetime chronic and debilitating health condition from one in four to one in 25 or less, would we do it? I suspect that every parent, health care provider, policymaker and other concerned adult would say, "of course--tell me how!"

This report tells you how … and why.

The 'how' is to prevent or delay the onset of substance use--be it tobacco, alcohol, controlled prescription or other drugs--as long as possible.

This is why: Adolescence is *the* critical period both for starting to smoke, drink or use other drugs and for experiencing more harmful consequences as a result. The teen brain is primed to take risks including experimenting with these substances and, because it is still developing, it is more vulnerable to their harmful effects. Some teens are at even greater risk because of genetics, family history, trauma and mental health or behavioral problems.

Three-fourths of high school students (75.6 percent, 10.0 million) have smoked cigarettes, drunk alcohol or used another drug, and nearly half of high school students (46.1 percent, 6.1 million) are current* users.

* Used in the past 30 days.

Teens who use these drugs greatly increase their risk of addiction, a complex brain disease affecting both the structure and function of the brain. One in eight high school students (11.9 percent, 1.6 million) have a diagnosable clinical substance use disorder involving nicotine, alcohol or other drugs. Nine out of 10 people who meet the clinical criteria for substance use disorders began smoking, drinking or using other drugs before they turned 18. For those who started using any of these substances before age 18, one in four are addicted, compared with one in 25 who first started to smoke, drink or use other drugs at age 21 or later.

The consequences of teen substance use are staggering in both financial and human terms. Teen use also threatens the health and lives of those who don't use. And because teens who use these substances are likelier to become dependent than those who start as adults, the costs too often follow them for a lifetime--adding each year to the taxpayer bill for health care, developmental disabilities, criminal and family courts, prisons and jails, welfare and unemployment. At last count, this tab to government was almost $1,500 per year for every person in America.

The encouraging messages adolescents hear to smoke, drink and use other drugs help drive this problem and are created, in large part, by adults. Tobacco and alcohol advertisers and marketers ply teens with their wares. Many communities are dense with alcohol and tobacco outlets. Prescription drugs are advertised as a cure for every ill. Marijuana is marketed as medicine. The entertainment industry largely portrays teen substance use as fun and without adverse consequences. And, many parents shrug off teen substance use as a normal rite of passage or show by their own actions that it takes tobacco, alcohol or another drug to calm down, relax or socialize.

The combination of adolescence, American culture which glorifies and promotes substance use, and easy access to tobacco, alcohol and other drugs is the wellspring of our current public health epidemic. We no longer can justify writing off adolescent substance use as bad behavior, as a rite of passage or as kids just being kids. The science is too clear, the facts are too compelling, the consequences are too devastating and the costs are simply too high.

It is time to rethink teen substance use in the light of 21st century evidence. The problem is not that we don't know what to do. The CASA report contains a full list of specific recommendations and includes the steps that we collectively must take to educate people about this health problem, help to delay substance use as long as possible, look for signs of trouble, and intervene as we would with any other health condition.

The problem is that we are failing to act. It is time to muster the motivation and will to recognize substance use as a public health problem and addiction as a treatable medical disease and respond accordingly. In these times of severe fiscal constraints, addressing this health problem is one extraordinary opportunity to both improve the future prospects for our children and significantly reduce the enormous costs this problem places on American taxpayers.

Susan E. Foster, MSW, CASA's Vice President and Director of Policy Research and Analysis, was the principal investigator and staff director for this effort. The project manager was Emily Feinstein, JD, and the senior research manager was Linda Richter, PhD. The data analysis was conducted by CASA's Substance Abuse and Data Analysis Center (SADAC℠), headed by Roger Vaughan, DrPH, CASA Fellow and Professor of Clinical Biostatistics, Department of Biostatistics, Mailman School of Public Health at Columbia University, and associate editor for statistics and evaluation for the *American Journal of Public Health*. He was assisted by Elizabeth Peters and Sarah Tsai. Others who worked on the project are: Nina Lei and Mark Stovell, research assistants; Akiyo Kodera; and CASA's librarian David Man, PhD, MLS. Jennie Hauser managed the bibliographic database and Jane Carlson handled administrative details.

For financial contributions toward this work, we thank Legacy®, the Conrad N. Hilton Foundation, the Carnegie Corporation of New York and the Michael Alan Rosen Foundation.

To guide its research, CASA assembled a distinguished panel of experts. The *CASA National Advisory Commission on Substance Use among America's High School Age Teens,* which I chaired, advised CASA as they planned and conducted their research and shaped the recommendations for policy and practice. I want to thank the esteemed members of the Commission for volunteering their time and expertise to guide and help inform the work contained in this report.

While many individuals and institutions contributed to this effort, the findings and opinions expressed herein are the sole responsibility of CASA.

Chapter I
Introduction and Executive Summary

This report finds that adolescent smoking, drinking, misusing prescription drugs and using illegal drugs is, by any measure, a public health problem of epidemic proportion, presenting clear and present danger to millions of America's teenagers and severe and expensive long-range consequences for our entire population. This report is a wake-up call for all of us, regardless of whether we seek to win the future by investing in our youth or seek to cut public spending to avoid a back-breaking financial burden on our children and grandchildren. The findings and recommendations in this report offer common ground and opportunity to help achieve both objectives.

This report finds that:

- Three-fourths of high school students (75.6 percent, 10.0 million)[*] have used addictive substances including cigarettes, alcohol, marijuana or cocaine.[1]

- Almost half of high school students (46.1 percent, 6.1 million) are current[†] users of these substances.[2]

- Of high school students who have ever smoked a cigarette, had a drink of alcohol or used other drugs, 19.4 percent have a clinical substance use disorder,[‡] as do 33.3 percent of current users.[§] [3]

And these estimates are low; none includes adolescents who are incarcerated in the juvenile justice system or the large numbers of

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[*] Estimated numbers are based on Census population estimates.
[†] Used in the past 30 days.
[‡] Meet clinical criteria for nicotine dependence or alcohol or other drug abuse or dependence; also referred to in this report as addiction.
[§] Among all high school students, 11.9 percent have a substance use disorder.

adolescents who have dropped out of high school.[*] [4] Rates of substance use and substance use disorders are even higher in these populations than among high school students generally.[5]

Teen users are at significantly higher risk of developing an addictive disorder compared to adults, and the earlier they began using, the higher their risk. Nine out of 10 people who meet the clinical criteria for substance use disorders involving nicotine, alcohol or other drugs began smoking, drinking or using other drugs before they turned 18. People who begin using any addictive substance before age 15 are six and a half times as likely to develop a substance use disorder as those who delay use until age 21 or older (28.1 percent vs. 4.3 percent).[6]

Alcohol is the most preferred addictive substance among high school students:[7]

- 72.5 percent of high school students have drunk alcohol,[8]
- 46.3 percent have smoked cigarettes,[9]
- 36.8 percent have used marijuana[10] and
- 14.8 percent have misused controlled prescription drugs.[†] [11]

Two-thirds (65.1 percent) of high school students have used more than one substance.[12]

The fact that 75.6 percent of high school students have used addictive substances and 46.1 percent are current users dwarfs the prevalence rates of many other risky health behaviors considered to be of epidemic proportion among teens in the U.S.[13] For example, 34.2 percent of teens[‡] are overweight or obese;[§] [14] 18.3 percent[**] have ever experienced symptoms of depression;[15] and 28.1 percent of 9th graders and 19.9 percent of 12th graders have been victims of bullying.[††] [16] Substance use also frequently co-occurs with these and other heath problems that teens face.[‡‡]

The Consequences

The immediate consequences of teen substance use are devastating, ranging from injuries and unintended pregnancies; to medical conditions such as asthma, depression, anxiety, psychosis and impaired brain function; to reduced academic performance and educational achievement; to criminal involvement and even death.

And, these consequences extend beyond teen users to those who breathe in their cigarette smoke; those assaulted, injured or killed by teens who are drunk or high; those who contract sexually transmitted diseases or experience unplanned pregnancies; and to babies born to teen mothers who smoke, drink or use other drugs during pregnancy.

It does not take heavy or dependent use to experience life-altering and potentially fatal consequences. Driving a car under the influence of alcohol or other drugs can lead to disability or death. One occasion of drinking or other drug use can result in a dangerous fight or having unprotected sex. It can take as few as one or two episodes of smoking to show symptoms of nicotine dependence[17] or one dose of cocaine to die from a heart attack.[18] And all of these tragic outcomes also create substantial costs to society.

The financial costs of teen substance use and addiction[§§] include, for example, an estimated

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[*] Twenty-nine percent of students nationwide and 47 percent of students in the nation's 50 largest cities drop out of school.

[†] The Youth Risk Behavior Survey puts this percentage at 20.2, but does not provide trend data on this measure or a measure of current prescription drug misuse. (See Appendix A.)

[‡] Ages 12-19.

[§] Past year.

[**] Students ages 18 and younger.

[††] Those who report having been victims of such behavior at school in the past six months in 2005.

[‡‡] See Chapter VII.

[§§] In this report, we have used the general term addiction interchangeably with substance use

$68.0 billion associated with underage drinking alone[19] and $14.4 billion associated with substance-related juvenile justice programs annually.[20] In the long run, the consequences of adolescent substance use and addiction place enormous burdens on our health care, criminal justice, family court, education and social service systems.

Total costs to federal, state and local governments of substance use among the entire U.S. population are at least $467.7 billion per year--almost $1,500 for every person in America[21]--driven primarily by those who began their use as teens. These costs are the result of accidents, diseases, crimes, child neglect and abuse, unplanned pregnancies, homelessness, unemployment and other outcomes of our failure to prevent substance use and treat this health condition. Addiction, whether to nicotine, alcohol or other drugs, is a complex brain disease[22] that can be treated, but when left untreated, the consequences and their costs escalate.

> *It is time for America to deal with our Nation's number one public health problem: substance abuse and addiction. While we must provide treatment for those in need, the best cure is prevention.*[27]
>
> --Jim Ramstad
> Former Member of Congress (MN-3)

The Making of an Epidemic

This report finds that the tragedy is not that we don't know what to do; rather, it is that we simply fail to do it. We know that risky substance use and addiction is the leading cause of preventable death and disability in the United States,[23] and in most cases it begins in the teen years.[24] Adolescence is, in fact, *the* critical period for the onset of substance use and its potentially debilitating consequences for two reasons:

- The regions of the brain that are critical to decision making, judgment, impulse control, emotion and memory are not yet fully developed in adolescence, making teens more prone than adults to taking risks, including experimenting with tobacco, alcohol and other drugs.[25]

- Because the teen brain is still developing, addictive substances physically alter its structure and function faster and more intensely than in adults,[*] interfering with brain development, further impairing judgment and heightening the risk of addiction.[26]

While adolescence itself increases the chances that teens will use addictive substances, American culture further increases that risk. Teens are highly vulnerable to the wide-ranging social influences that subtly condone or more overtly encourage their use of these substances. These influences include the acceptance of substance use by parents, schools and communities; pervasive advertising of these products; media portrayals of substance use as benign or even glamorous, fun and relaxing; and the widespread availability of tobacco, alcohol, marijuana and controlled prescription drugs. Our teens are awash in a sea of addictive substances, while adults send mixed messages at best, wink and look the other way, or blatantly condone or promote their use. In so doing, we normalize behavior that undermines the health and futures of our teens.

Adding to the recipe for teen substance use, many teens have other challenges in their lives that make them more inclined to use addictive substances, more vulnerable to the ubiquitous cultural influences promoting use or that hike the risk of progression from substance use to addiction. These challenges include being the victim of neglect, abuse or other trauma, suffering from mental health disorders that

---

disorders, defined as those who meet clinical criteria for nicotine dependence or alcohol or other drug abuse or addiction.

[*] As with other health research, the research on the neurological effects of addictive substances on the adolescent brain primarily has been conducted on animals.

frequently co-occur with substance use and inheriting a genetic predisposition to addiction.

The science of addiction and evidence of its consequences is clear enough to conclude that there is no recommended level of safe use of addictive substances by teens.

The CASA Study

This report documents the nature and origin of the largest preventable[28]--and most costly--health problem in America.[29] It reveals the latest information about how substance use and addiction affect the teen brain and neurochemistry; lays out the extent of the problem of teen substance use and addiction; and describes the health, safety and social consequences. It examines the broad factors within American culture that drive adolescent substance use and explores the range of individual factors that compounds these risks for many vulnerable teens. It summarizes what research demonstrates can be done to prevent and reduce the problem; describes the chasm between this knowledge and what health care providers, parents, schools, communities and policymakers are actually doing; and explores the barriers to bridging this gap and implementing effective substance use prevention and control policies. Finally, it provides concrete and evidence-based recommendations for health care professionals, parents, policymakers, educators, the media, researchers and teens themselves to act in the face of the body of knowledge presented in this report.

CASA's work for this report involved nationally representative online surveys of 1,000 high school students, 1,000 parents of high school students (75 percent from the same households as the student respondents) and 500 school personnel (including teachers, principals, counselors and coaches); extensive in-depth analyses of seven national data sets; interviews with approximately 50 leading experts in a broad range of fields related to this report; five focus groups with students, parents and school personnel; and a review of more than 2,000 scientific articles and reports.[*]

Other Key Findings

Despite considerable declines in overall reported rates of current substance use since 1999, progress appears to have stalled and rates may once again be on the rise. The use of smokeless tobacco has been increasing since 2003.[30] Declines in past 30 day cigarette smoking are slowing significantly, and national data suggest that current use of marijuana and controlled prescription drugs may be inching up.[31]

The overall decline in substance use rates also may obfuscate dangerous patterns of substance use; for example, high school students drink more drinks when they drink (4.9 drinks per day) than any other age group, including 18-25 year olds (4.4 drinks per day).[32]

While most teens responding to CASA's survey of high school students conducted for this study report that they believe substance use to be very dangerous,[33] almost half of them are current users.[34] Further, a quarter of them (24.7 percent) see marijuana as a harmless drug and 16.9 percent think of it as a medicine.[35] Teens who hold favorable views of the benefits of substance use--such as being cool or popular, weight control, self-medication, stress relief or coping--are more likely to smoke, drink and use other drugs than those who hold less favorable beliefs or stronger perceptions of risk.[36]

Adolescent Substance Use Hikes the Risk of Addiction

One in eight high school students (11.9 percent, 1.6 million) have a diagnosable clinical substance use disorder involving nicotine, alcohol or other drugs.[37] Because the adolescent brain is more sensitive to the addictive

[*] See Appendix A for an overview of the key components of the study. Appendices B through D present the survey instruments and frequency data for parents, students and school personnel, respectively, and Appendix E presents the names and affiliations of the key informants interviewed for this study.

properties of nicotine, alcohol and other drugs, the younger a person is when he or she begins to use addictive substances, the greater the risk of developing the disease of addiction.[38]

Every year that the onset of substance use is delayed until the mid-20s--about the time when the human brain is more fully developed[39]--the risk of developing a substance use disorder is reduced.[40] One in four people who used *any* addictive substance before they turned 18 have a substance use disorder, compared with one in 25 who first used any of these substances at age 21 or older.[41]

> *Adolescent substance use and its often tragic consequences, including addiction, can be prevented. Parents should be outraged that we are letting this happen to our children.*[50]
>
> --Senator Leticia Van de Putte
> Texas State Senate

Teen Substance Use Compromises Academic Performance, Safety and Health

Teen substance use contributes to some of the most glaring barriers to health and productivity facing the current generation of teenagers in the United States. For example:

- Teen tobacco, alcohol and marijuana users are at least twice as likely as nonusers to have poor grades[42] and teen marijuana users are approximately twice as likely as non-users to drop out of high school.[43]

- In 2009, one in 10 (9.7 percent) high school students reported driving after drinking alcohol in the past month.[44]

- More than one in five (21.6 percent) sexually-active high school students report having used alcohol or other drugs before their last sexual experience;[45] one in five teens and young adults report having unprotected sex after drinking or using other drugs.[46]

- In 2009, 32.0 percent of all substance-related reports in emergency department visits made by patients ages 12 to 17 were alcohol related and 18.7 percent were marijuana related.[47]

- Substance use is a major contributor to the three leading causes of death among adolescents--accidents, homicides and suicides[48]--and increases the risk of numerous potentially fatal health conditions, including cancers, heart disease and respiratory illnesses.[49]

- Smoking is related to impaired lung growth, asthma-related symptoms and declines in lung function in adolescence;[51] regular cigarette smoking increases the risk of lung cancer, breast cancer, emphysema, bronchial disorders and cardiovascular diseases.[52]

- Alcohol-induced damage has been observed in the brains of binge-drinking teens.[53] Teens with alcohol use disorders have more self-reported health problems (including problems with sleep, eating and vision) and more abnormalities during physical examinations (including in the abdominal region as well as in their respiratory and cardiovascular systems) than those without alcohol use disorders.[54]

- Heavy or chronic marijuana use is associated with a host of cognitive impairments and with structural and functional brain changes.[55] Regular use of marijuana can hike the risk of respiratory illnesses including chronic cough, bronchitis and lung infections.[56]

Even relatively low levels of substance use can have disastrous consequences for teens, including accidents, violence, unsafe sexual activity, cardiac and respiratory problems and even death.

The consequences of adolescent substance use extend to all teens, even those who are not using. A significant proportion of high school students reports knowing someone personally who has

gotten into trouble with parents, their school or the authorities (41.0 percent); who has gotten into an accident (26.8 percent); whose ability to perform school or work activities has been disturbed (24.5 percent); who has been injured or harassed (19.4 percent each); who has had an unintended pregnancy (13.8 percent); who has experienced physical abuse (11.1 percent); and who has been sexually assaulted or raped (7.0 percent) due to someone else's substance use.[57]

> *As parents, siblings, neighbors and leaders, we must work together and remain vigilant in our efforts to generate greater awareness about the dangers of substance misuse and the suffering, violence and death that far too often results when our children use alcohol and other drugs. We must encourage our teens to make the right choices, resist peer pressure and recognize that substance use by teens can have life-altering and tragic consequences.*[58]
>
> -- Lucille Roybal-Allard
> Congresswoman (CA-34)

American Culture Drives Teen Substance Use

Strong parental disapproval of substance use can help offset cultural messages promoting substance use, but too many parents by their own attitudes or behaviors further increase the chances that their teens will use:[59]

- Nearly half (46.1 percent) of children under age 18 (34.4 million) live in a household where someone age 18 or older engages in risky substance use;[*] 45.4 percent (33.9 million) live with a *parent* who is a risky substance user.[60]

- More than one in six (17.8 percent) children under age 18 (13.3 million) live in a household where someone age 18 or older has a substance use disorder;[†] 16.9 percent (12.6 million) live with a *parent* who has the disorder.[61]

- Less than half (42.6 percent) of parents list refraining from smoking cigarettes, drinking alcohol, using marijuana, misusing prescription drugs or using other illicit drugs as one of their top three concerns for their teens, and 20.8 percent characterize marijuana as a harmless drug.[62]

Disapproval from the larger community in which teens live also can help protect teens;[63] however, substance-related images are pervasive in neighborhood-based advertising and retail sales across the country, sending the message that substance use is a normal part of life. Greater numbers of tobacco and alcohol retail outlets in a community relate to increased risk of adolescent substance use.[64]

Depictions of smoking and drinking in television shows and movies popular with teens also are pervasive.[65] The odds of becoming a tobacco user are more than doubled by exposure to tobacco marketing and media images of tobacco use.[66] Alcohol advertising is related to young people's attitudes and expectations regarding drinking[67] and to their risk of alcohol use.[68]

If teens exposed to these messages decide to try smoking, drinking or using other drugs, they have little trouble obtaining these products. The majority of 10th graders say that it would be easy for them to get cigarettes (76.1 percent), alcohol (80.9 percent) or marijuana (69.3 percent).[69] The

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[*] Risky substance use is defined for the purpose of these analyses as: current smokers of any age, underage drinkers, adults who engaged in binge drinking one or more times in the past 30 days, adult drinkers who exceed the U.S. Department of Agriculture (USDA) guidelines of no more than one drink per day for women or two drinks per day for men, current users of any illicit drug and/or current misusers of any controlled prescription drug. Among children exposed to adult risky substance users, 31.7 percent are exposed to current smokers, 25.7 percent are exposed to excessive and/or binge drinkers and 7.6 percent are exposed to current users of other drugs.

[†] Including those who meet clinical criteria for past month nicotine dependence (11.1 percent), past year alcohol abuse or dependence (7.3 percent) and/or past year other drug abuse or dependence (2.5 percent).

most common sources of tobacco, alcohol and other drugs are friends and family.[70]

Some Teens Face Personal Challenges that Compound Their Risk of Substance Use and Addiction

These include:

- A genetic predisposition toward developing an addiction[71] or a family history of substance use disorders,[72]
- Adverse childhood events, such as abuse, neglect or other trauma,[73]
- Co-occurring mental health problems,[74]
- Peer victimization or bullying, and[75]
- Engagement in other health- and safety-risk behaviors such as early or unsafe sex, unhealthy weight control behaviors, risky driving or violent or aggressive behavior.[76]

Not only are these teens more likely to use addictive substances and to develop substance use disorders, but many of them also are more likely to start using substances at a young age,[77] to use multiple addictive substances[78] and to progress more quickly to heavy use[79] and addiction.[80]

Certain sub-groups of adolescents--such as those who are in the child welfare system, drop out of high school,[81] are involved with the criminal justice system[82] or have a minority sexual identity[83]--also are at elevated risk for substance use, addiction and their health and social consequences.

Prevention: We Know What Works but Fail to Act

As with any other behavioral health problem, effective prevention starts at home. Teens at reduced risk for substance use live in homes where parents model healthy behavior, create a nurturing family environment, play an active role in their children's lives, communicate openly and honestly about substance use and set and enforce clear rules.[84] They also have the companionship and guidance of positive adult role models,[85] strong attachments to their schools or communities[86] and goals for the future.[87] Those who participate in clubs, community service or volunteer activities[88] or are involved in religious or spiritual practice are at reduced risk as well.[89]

Beyond the family, key public health measures are critical to prevent adolescent substance use, including:

- Helping the public understand that teen substance use is a health concern and understand the consequences of adolescent substance use, factors that increase the risk that teens will use, the link between early use and addiction, ways to prevent adolescent substance use and how best to respond if a problem is identified.
- Incorporating screening and early intervention into routine health care practice and into health services offered through schools, child welfare programs and juvenile justice systems.
- Reducing underage access to addictive products including increasing the cost of smoking and drinking through higher tobacco and alcohol taxes.
- Limiting teens' exposure to pro-substance use advertising and media messages.
- Providing targeted prevention and intervention services to teens at high risk for substance use.

In spite of this knowledge about what works, many parents and other adults continue to think of teen substance use as an inevitable and relatively harmless rite of passage and continue to send teens mixed messages about the acceptability of substance use. Addictive substances remain easily available to teens. Pro-substance use media messages bombard young people through print, electronic, visual and

audio media. Public policy efforts to curb use are limited and often pale in comparison with competing efforts by the tobacco and alcohol industries. Schools and communities frequently implement prevention programs that are not effective or enforce policies that compound the problem. And, the health care profession misses a critical opportunity to screen, identify and intervene with teen substance users before their use progresses to addiction and to offer quality treatment to those who already have a substance use disorder.

Treatment: We Know What Works but Fail to Provide Care

A range of effective treatments for adolescent substance use disorders have been developed, including cognitive-behavioral techniques and motivational enhancement therapies.[90] Programs more likely to be effective are built on strong evidence, are family-oriented, are developmentally appropriate and are delivered by qualified health care professionals.[91] Yet programs to treat teens with substance use disorders are few and far between and, of the programs that do exist, few are tailored to the unique needs of teens. Access to treatment is constrained further by cost, limited insurance coverage and an inadequate referral stream from health care providers who are not well informed of appropriate and effective treatment options.[92]

Of the 13.2 million high school students in the United States, 1.6 million meet clinical criteria for an alcohol or other drug use disorder involving nicotine, alcohol or other drugs, yet only 99,913 (6.4 percent of those with an alcohol or other drug use disorder[*]) have received treatment[†] in the past year.[93] Even the 28.0 percent of treatment facilities nationwide that offer specialized programs for adolescents[94] generally provide sub-optimal care.[95]

Teen substance use disorders are in most cases only addressed after teens are deeply into trouble: a common source of referral to addiction treatment is through the criminal justice system (48.2 percent of referrals). Only 11.2 percent of adolescents referred to treatment are referred by schools and only 4.7 percent are referred by a health care professional.[96]

Recommendations and Next Steps

The first challenge to implementing effective prevention and treatment strategies is helping Americans understand that teen substance use is a preventable public health problem and addiction is a treatable disease. A widespread misunderstanding of the problem of adolescent substance use leaves parents in the dark about how to keep their teens safe, results in insufficient training of health care professionals and contributes to the lack of insurance reimbursement.

The economic interests of the tobacco, alcohol and pharmaceutical industries too often overshadow the public health concern, and the self-interest of groups resisting smoking restrictions or promoting the decriminalization or legalization of marijuana for personal use or the lowering of the minimum legal drinking age further national ambivalence about adolescent substance use.

It is well past time to put into action reasonable and practical solutions. In the face of the abundance of evidence regarding what works in prevention and treatment, CASA presents the following recommendations to help our nation make a dramatic shift in how we think about and address teen substance use and addiction:[‡]

Parents

Parents are the single strongest influence--for better or worse--on their teens' choices to smoke, drink or use other drugs. Parents must recognize that substance use is a real and present threat to their teens' health, safety and future and take steps to prevent it. Parents set rules and

[*] Comparable data on treatment for nicotine dependence are not available.

[†] Including formal treatment at hospitals, rehabilitation facilities or mental health centers.

[‡] More detailed recommendations are provided in Chapter XI.

expectations to protect their children from many harms, such as requiring that they wear seat belts, not text while driving, be sexually abstinent or avoid unprotected sex, or limit their junk food intake. Requiring their teens to refrain from tobacco, alcohol or other drug use is just as important and could have significant lifesaving outcomes.

Parents should get the facts; set a good example; restrict access to addictive substances; communicate clear, consistent no-use messages; consistently enforce rules; monitor their teens; require that their health care providers address this issue in the context of routine professional care; and get help fast at the earliest signs of trouble. Parents should set the norms of behavior for their teens and for other parents as well.[97]

Health Care Professionals

Health care professionals have an obligation to address a public health problem that affects three quarters of teens and a medical condition that affects one in eight of them by integrating addiction services into mainstream health care. As with all other health conditions that teens face, the role of health care professionals related to teen substance use is to educate, prevent, screen, diagnose, treat or refer for specialty care. To effect this change, health care professionals also should work to expand treatment capacity in the medical system, require education and training in addiction services and press government and private health care insurers to reimburse for adolescent substance use screenings, brief interventions and treatment.

By taking these actions, health care providers can help change cultural norms about the acceptability of adolescent tobacco, alcohol and other drug use, interrupt the progression from use to addiction and reduce the enormous health and social consequences.

Policymakers

Policymakers can reduce the cultural influences that drive adolescent substance use by implementing public awareness campaigns; curbing teen access to addictive substances by raising taxes on tobacco and alcohol products, expanding tobacco bans and raising the minimum age for purchase of tobacco products to 21; and by limiting adolescents' exposure to tobacco and alcohol advertising. They also can use the leverage of government systems to expand access to quality prevention and treatment services for adolescents--particularly those at high risk; fund research on prevention and treatment for teens; and improve reporting requirements and data collection for substance-related accidents and mortality.

Only by effectively preventing and treating substance use disorders in the teen population can policymakers prevent many of the health and social consequences and their enormous costs that fall to government. In fact, preventing teen substance use and treating teen addiction present one of the few opportunities where both goals of protecting the public health and closing severe budgetary shortfalls can be addressed simultaneously.

Educators and Community Organizations

Next to the home, school is the place where teens spend the most time. Schools and communities in which teens reside can reinforce the health message--educating parents, students and community members that teen substance use is a preventable public health problem and addiction is a treatable disease. Schools and community partners can look for signs of trouble and get help for those students who need it. They can implement comprehensive and age-, gender- and culturally-appropriate prevention programs and put in place fair and consistent substance use policies that connect teens with needed health services.

The Media

Understanding the extent to which media messages can result in unhealthy behavior among teens, media organizations have an obligation to help promote healthy, rather than destructive, youth behavior. They can do this by finding creative yet profitable ways to craft messages that discourage adolescent substance use, eliminating marketing efforts to adolescents that make addictive substances appear attractive, and using new technology to counteract pro-substance use media and advertising messages.

Researchers

Increasing our understanding of the causes and consequences of teen substance use and developing and evaluating innovative approaches to address this health issue are of critical importance. Researchers can add to this knowledge in many ways, including developing and conducting studies on the effectiveness of promising prevention programs, early interventions and treatments tailored to high school-age teens, exploring best practices for implementation and finding a cure for addiction.

Teens

Teens have a personal stake and responsibility in assuring their own health and future opportunities. They can do this by equipping themselves with accurate information about the causes, effects and consequences of substance use and about the nature of addiction; by encouraging their friends and peers to be healthy and safe; and by intervening early with friends in need of help.

Chapter II
Understanding Teen Substance Use and Addiction

Recent advances in brain research have confirmed a dangerous link between adolescence and substance use, clarifying the fact that adolescence is *the* critical period of risk for both substance use and its consequences.

Adolescents are more vulnerable to addictive substances than adults because the parts of the brain responsible for judgment, decision making, emotion and impulse control are not yet fully developed. This developmental process will not be complete until the mid-20s. Therefore, teens are:

- More likely than adults to take risks, including experimenting with addictive substances and engaging in dangerous behaviors while under their influence, and highly susceptible to external social influences to engage in risky behaviors;

- More likely to experience physiological consequences from their use of addictive substances,[*] including damage to the parts of the brain responsible for higher level cognitive functions such as decision making, memory, impulse control and the exercise of good judgment; and

- More susceptible to the development of addictive disorders.

The Adolescent Brain Is Primed for Engaging in Risky Substance Use

The adolescent brain differs from that of a child or an adult in its form and function. These structural and functional differences correspond with observations about teen behavior and development,[1] including teens' tendency to exhibit a reduced ability to control their

[*] As with other health research, the research on the neurological effects of addictive substances on the adolescent brain primarily has been conducted on animals.

emotions and behavior and an increased proclivity for taking risks.[2]

> *Brain science reveals how alcohol and other drugs affect the adolescent brain differently than the adult brain: the young brain is more easily addicted. Damage done to the brain can be more severe on a dose for dose basis. Teens tend to underestimate risk and ignore warning signals leading to more treacherous consequences.*[7]
>
> --David Walsh, PhD
> Former President and CEO
> National Institute on Media and the Family
> Author, *Why Do They Act That Way? A Survival Guide to the Adolescent Brain for You and Your Teen*

During adolescence, the part of the brain associated with higher level cognitive functions such as judgment, decision making, long-term planning and impulse control--the prefrontal cortex--undergoes dramatic changes that allow the brain to develop into a fully matured state. The prefrontal cortex regulates the impulses from the part of the brain responsible for generating emotions and memories[3]--the limbic system--which matures earlier. As the brain matures, the connections between these two areas increase[4] and serve as the "wiring" or "brake" system that results in better judgment and self-control and more goal-oriented behavior.[5] Because these neural connections are not fully formed in adolescents, their behavior and decisions are disproportionately influenced by their emotions and impulses.[6]

The reward pathways of the brain also undergo developmental change during adolescence.[8] The brain reinforces the satisfying of needs such as hunger, thirst and the drive for sex[9] by producing feelings of pleasure, which in turn motivate the individual to continue to seek the reward. Over time, through a process called reinforcement, humans learn that specific behaviors produce pleasurable rewards and are compelled to engage in these behaviors more frequently.[10] On a neurological level, this reinforcement is a process carried out by chemical messengers--neurotransmitters--in the reward circuits of the brain. The sensation of pleasure or reward is created by a flood of neurotransmitters which trigger such responses.[11] The primary neurotransmitter responsible for signaling pleasure and reward is dopamine.[12] The release of dopamine in the brain increases the likelihood that the behavior will be repeated.[13]

Dopamine receptors in various sections of the brain increase during early adolescence and then decrease by a third as teens mature into adults.[14] Dopamine levels in the prefrontal cortex are higher during early adolescence than during any other developmental period.[15] Because dopamine plays a critical role in the brain's reward circuitry, the spike in dopamine activity in the prefrontal cortex that occurs during adolescence may lead to an increase in sensation-seeking and risk-taking behaviors.[16]

The result is that the parts of the brain that seek pleasure and motivate risky behavior are fully engaged while the parts of the brain that regulate behavior through judgment and self-control remain underdeveloped. There also is some evidence to suggest that the adolescent brain is more sensitive to the perceived rewards of addictive substances and less sensitive to their aversive properties[*] than the adult brain.[17] Compounding these neurological influences, the teen years are marked by a move towards independence from parents and heighted receptivity to social pressures.[18] Recent research suggests that the mere presence of peers influences a teen's brain chemistry, increasing the chances that teens will take risks.[19] All of these circumstances increase the risk for engaging in risky behavior,[20] including smoking, drinking and using other drugs.[†] [21] In the mid-20s--about the time when the human brain is more fully developed[22]--the risk of initiating substance use declines dramatically.[23]

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[*] Specifically, the unpleasant physical effects such as nausea or lightheadedness.

[†] See Chapter V for a full discussion of the social influences on adolescent substance use.

The Adolescent Brain Is More Vulnerable to the Effects of Addictive Substances

During adolescence, when the reward pathways in the brain are continuing to develop, they are readily influenced by external experiences and stimuli, including exposure to addictive substances.[24] A growing body of evidence suggests that due to this increased sensitivity, addictive substances physically alter the reward centers of the brain faster and more intensely in adolescents than in adults, heightening their vulnerability to addiction.[*] [25]

Addictive substances also adversely affect brain development and maturation in the areas related to motivation, judgment, inhibition and self-control.[26] As a result, addictive substances impair the judgment of teens in the face of potential rewards, leading not only to their engagement in risky behaviors--such as driving while under the influence of alcohol or other drugs or participating in unsafe sexual practices--but also to continued use of addictive substances despite negative consequences.[27]

For these reasons, adolescence is a "critical period"[†] with regard to teens' encounters with addictive substances.[28] Research suggests that the extensive structural and functional changes that the brain undergoes during adolescence allow addictive substances to exert a more powerful influence on the adolescent than the adult brain.[29] The result of the increased sensitivity of the adolescent brain to the damaging and addictive properties of nicotine, alcohol and other drugs is twofold. First, addictive substances may have a greater and longer-lasting effect on the adolescent brain, producing deficits in attention, learning, memory, decision making and other functions related to academic performance.[30] Second, adolescents who use these substances may be more susceptible to developing addiction and a lifetime of substance-related problems.[31]

> *The teen brain is a work in progress, making it more vulnerable than the mature brain to the physical effects of drugs. The potential for developing substance abuse and dependence is substantially greater when an individual's first exposure to alcohol, nicotine and illicit drugs occurs during adolescence than in adulthood.*[32]
>
> --Laurence Steinberg, PhD
> Distinguished University Professor
> Laura H. Carnell Professor of Psychology
> Temple University
> Author, *You and Your Adolescent: The Essential Guide for Ages 10 to 25*

Addiction Is a Complex Brain Disease

One of the potential consequences of adolescent substance use is addiction. Addiction, whether to nicotine, alcohol or other drugs, is a complex brain disease[33] and a medical problem.

All addictive substances increase dopamine levels in the reward circuitry of the brain.[34] In fact, addictive substances release more dopamine and the corresponding sensations of pleasure in a more intense and often longer-lasting manner than the pleasures associated with other rewards such as eating or sex.[35] The reward can be so powerful that it teaches the individual to seek it again and again.[36] What determines whether certain people will respond to this pleasure by wanting more is a complex function of the maturity of their brains, their genetic inheritance, their biological responses to the reward, their past adverse experiences and other social influences.[‡]

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[*] In this report, we have used the general term addiction interchangeably with substance use disorders, defined as those who meet clinical criteria for nicotine dependence or alcohol or other drug abuse or addiction.

[†] Critical periods are time-limited phases of development when the brain is optimized to learn specific skills. For example, infants and young children are thought to experience a critical or sensitive period for language acquisition, when their brains are most primed to learn this skill.

[‡] See Chapters V-VII for a detailed discussion of the risk factors for substance use and addiction.

For teens who continue to use these substances, the pleasure associated with the dopamine release that results from the ingestion of an addictive substance can become overvalued by the brain over time to the point where the value of most other natural rewards fade in comparison. The brains of substance-using individuals adapt to the unnaturally high levels of dopamine that result from continued substance use and respond by reducing the normal release of dopamine as well as the number of dopamine receptors in the brain.[*] [37] Some research indicates that, compared to non-substance-using individuals, the brains of chronic substance users have lower baseline levels of dopamine, making it difficult for them to achieve feelings of pleasure from behaviors that once were pleasurable.[38]

As the function and structure of the brain are altered by exposure to addictive substances, the drive to seek the reward becomes stronger, resulting in compulsive behavior aimed at obtaining and using the substance.[39] Addictive substances essentially hijack[†] [40] the brain, explaining, in part, why people with substance use disorders often seek out addictive substances almost to the exclusion of other basic physical and relational needs.[41] When these brain changes occur, the individual may need more of the substance to experience the same effect (tolerance) and may experience withdrawal symptoms when the substance is not present.[42]

Continued use of addictive substances can dramatically alter behavior through these changes in brain systems and structures.[43] The cognitive control of an addicted individual is so affected by the neurological changes, that even when he or she wants to cut down or altogether stop using the addictive substance, it becomes extremely difficult to do so.

The memory of the reward that is created by the dopamine release can be triggered by substance-related cues in the environment (e.g., coffee as a cue to smoke or a bar where one used to drink as a cue to drink).[44] Such signals or cues initiate craving for the substance and the association can persist for years, remaining powerful long after the individual stops using the addictive substance.[45]

Despite the considerable body of evidence documenting that addiction is a disease, public understanding has not caught up with the science. CASA's survey conducted for this study found that only about one third of respondents see nicotine, alcohol or other drug addiction primarily as a physical health problem (33.6 percent of students and 33.4 percent of parents) or a mental health problem (33.5 percent of students and 31.9 percent of parents). In contrast, about four in 10 see it primarily as a behavioral problem (44.7 percent of students and 38.1 percent of parents) and a half to two-thirds see it primarily as an emotional crutch in response to negative life events (61.5 percent of students and 59.4 percent of parents) or as a problem of willpower or self control (62.9 percent of students and 53.8 percent of parents).[46] (Figure 2.A)

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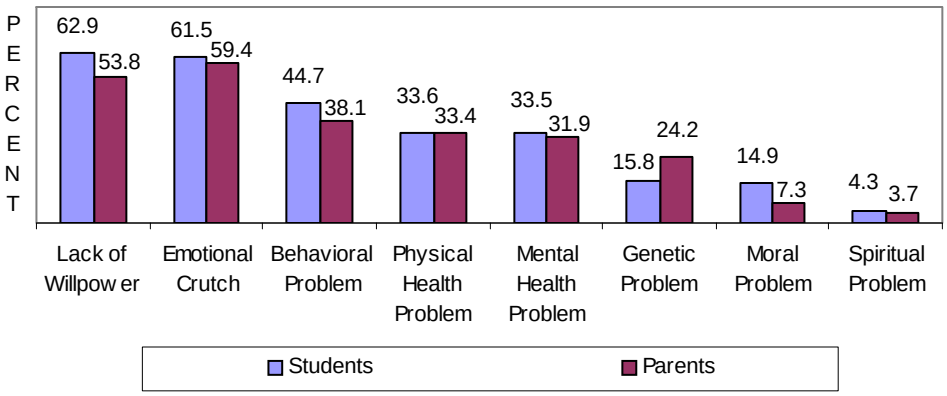
[*] In the case of smoking, these changes can occur after the first cigarette is smoked.

[†] This metaphor was often used by Dr. Alan Leshner, former director of the National Institute on Drug Abuse, to help explain the impact of addictive substances on behavior.

Figure 2.A

Students' and Parents' Characterizations of Addiction to Nicotine, Alcohol or Other Drugs



Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel,* 2010.

Addiction Can Be a Chronic Disease

Once an individual develops a substance use disorder, he or she continues to be vulnerable to substance-related environmental cues; as such, the risk of relapse remains high even after cessation of use of the substance, helping to explain why addiction can be a chronic disease. Indeed, addiction shares some of the key defining characteristics of other chronic diseases such as heart disease, hypertension, diabetes and asthma, including a clear biological basis, a behavioral component, environmental influences, unique and identifiable signs and symptoms, a predictable course and outcome and the need for continued management to reduce the risk of relapse.[47]

Like other chronic conditions, those with substance use disorders can have symptom-free periods and periods of relapse.[48] Some individuals learn to manage their disease after a single treatment episode but many relapse several times before achieving effective disease management.[49] Few individuals with chronic diseases--whether they have addiction, hypertension, diabetes or asthma--see their illnesses disappear after a single course of medication or other treatment or a single attempt to alter their lifestyle or behavior.

Because people with severe substance use disorders often experience it in a chronic way, addiction frequently is characterized as a disease where relapse following treatment is virtually inevitable. However, this perception might be due to the focus of research studies on those with the most severe manifestations of the disorder, who experience multiple episodes of relapse and co-existing health and social problems over the course of many years or even a lifetime. Furthermore, very few people with substance use disorders actually receive effective, evidence-based treatment. High rates of relapse may be due to inadequate or ineffective interventions, some of which are better classified as supports for maintaining recovery rather than actual treatment of a disease.[50]

Teen Substance Use Is a Public Health Problem

The hallmark of a public health problem is that it occurs frequently throughout a population and can be prevented through population-based interventions designed to modify individual behaviors, reduce exposure to harmful influences and detect and treat people who are at risk of or already suffering from the problem. Classic examples of public health problems are communicable diseases such as tuberculosis and polio; more modern examples are HIV/AIDS and obesity.

Teen substance use is, in fact, more prevalent than many other risky health behaviors facing teens today, including being overweight, experiencing symptoms of depression and being

a victim of bullying.[*] It also often co-occurs with other recognized public health issues facing the current generation of teenagers: stress, depression, suicide, bullying and violence, unplanned pregnancies, sexually transmitted diseases, accidents, injuries and poor health and nutrition.[†] Like other public health problems, it can be prevented and reduced through a range of population-based interventions.[‡]

In 2007, the Surgeon General released a call to action to prevent and reduce underage drinking, calling it "a major societal problem with enormous health and safety consequences" that "demands the Nation's attention and committed efforts to solve."[51] While alcohol is the most commonly-used substance, the Surgeon General's call holds true for young people's use of any addictive substance, including nicotine and other drugs.

Because of the particular vulnerability of teens to substance use and its often horrific consequences and the widespread prevalence of teen substance use, it is a critical public health concern deserving of national attention.

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[*] See Chapter III for a more detailed discussion of the relative prevalence of teen substance use.
[†] See Chapter VII.
[‡] See Chapters IX and X for a more detailed discussion of prevention and intervention options.

Chapter III
How Big Is the Problem?

Substance use is endemic to the world of teens. The vast majority of high school students (75.6 percent, 10.0 million[*]) have used one or more addictive substances;[†] by 12th grade, 82.3 percent have done so.[‡] Nearly half of all high school students--46.1 percent (6.1 million)--are current[§] users.[1]

There is some good news, however. Since 1999, the percent of high school students who have ever smoked cigarettes has dropped 34.2 percent; alcohol use has declined by 10.5 percent and marijuana use by 22.0 percent.[2] Since 2002, the misuse of controlled prescription drugs declined by 15.5 percent.[3] Despite these declines, rates of adolescent substance use remain unacceptably high, and gains made in the past decade appear to have stalled. Declines in current cigarette smoking are slowing down significantly and current use of smokeless tobacco has been increasing since 2003.[4] National data also suggest that current use of marijuana and the misuse of controlled prescription drugs may be inching up.[5]

High school students also engage in dangerous patterns of use. For example, although they drink less frequently than adults, when they do drink they consume more drinks per day (4.9 drinks) than any other age group including 18- to 25-year olds (4.4 drinks).[6]

The average age at which teens begin using these substances is between 13- and 14-years old. While any use is problematic during

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[*] Estimated numbers are based on Census population estimates.

[†] Includes cigarettes, alcohol, marijuana and/or cocaine. See the section, *A Note on Methodology*, on the next page.

[‡] Unless otherwise noted, the prevalence data presented in this chapter are national averages. There may be regional and local variations in prevalence rates for high school students, as well as gender and racial/ethnic differences.

[§] Used in the past month.

adolescence, early use is a sign of increased likelihood of using other drugs and is particularly dangerous because it hikes the risk of addiction.[*] [7] Nearly one in eight high school students (11.9 percent, 1.6 million) has a clinical substance use disorder;[†] by senior year, more than one in six (17.7 percent, 765,248) meet clinical criteria for this disorder.[8]

The fact that 75.6 percent of high school students have used addictive substances and 46.1 percent are current users dwarfs the prevalence of many other risky health behaviors considered epidemic among teens in the U.S.[9] For example, approximately 34.2 percent of adolescents[‡] are considered to be overweight or obese;[§] [10] approximately 18.3 percent of high school students ages 18 and younger have ever experienced symptoms[**] of depression;[11] and 28.1 percent of 9th graders and 19.9 percent of 12th graders have been victims of bullying.[††] [12]

A Note on Methodology

Three national surveys track adolescent health and substance use over time--the *Youth Risk Behavior Surveillance System* (YRBS) conducted by the Centers for Disease Control and Prevention, the *National Survey on Drug Use and Health* (NSDUH) conducted by the U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration (SAMHSA), and *Monitoring the Future* (MTF), conducted by the Institute for Social Research at the University of Michigan and supported by the National Institute on Drug Abuse (NIDA). The most recent data available from the YRBS and NSDUH data sets are from the 2009 surveys; the data from MTF are from 2010.

Unless otherwise indicated, the prevalence data presented in this chapter are derived from the YRBS. The term "substance user" includes high school students in grades 9 through 12 (most are ages 14 through 18) who use cigarettes, alcohol, marijuana and/or cocaine. The YRBS provides consistent data on these four substances as well as more limited data[‡‡] on other substances. The YRBS offers the advantage of more accurate prevalence rates for teens compared to the NSDUH which tends to underestimate actual rates of adolescent substance use because it is administered in the home and teens may be less likely to respond honestly about such issues with a parent or other adult nearby.[13] The YRBS also has other advantages including its data on the entire high school population rather than just 10th and 12th graders as provided in the MTF study and its longer period of trend data than the NSDUH.

Limiting our analysis of high school-age teens to high school students who have ever used one or more addictive substances somewhat understates the prevalence of substance use in this population for two reasons. First, it excludes those who are not in school because they have dropped out or because they are institutionalized. In Chapter VII, we provide an examination of two high-risk groups of high school-age teens who are not regularly attending high school: dropouts and those in the justice system. There is no national data set that includes the full high school-age population. Further, limiting our analysis of high school students to the four substances consistently reported in the YRBS slightly understates the prevalence of substance use in the high school population. CASA's analysis of the NSDUH suggests that our underestimation of teen substance use resulting from using the YRBS

[*] See Chapter IV for a more complete discussion of the link between early substance use and addiction.
[†] Including those who meet clinical diagnostic criteria for past month nicotine dependence, past year alcohol abuse or dependence and/or past year drug abuse or dependence.
[‡] Ages 12-19.
[§] Past year.
[**] Respondents to the *National Survey on Drug Use and Health* (NSDUH) who reported experiencing at least one of nine symptoms of depression; a major depressive episode is defined by the NSDUH as reporting five or more of the nine symptoms.
[††] Reported having been victims of such behavior at school in the past six months in 2005.

[‡‡] e.g., lifetime or current use only.

data is 4.2 percent for measures of lifetime use and 2.8 percent for measures of current use.[*]

Since the NSDUH reports on more types of teen substance use than the YRBS, specific data on the misuse of controlled prescription drugs,[†] over-the-counter cold and cough medicine and poly-substance use are derived from NSDUH data.[‡] We also have used the NSDUH for measures of the frequency and quantity of substance use and substance use disorders since these measures are not available in the YRBS. Data presented on daily substance use come from the MTF because they are not available from the YRBS or the NSDUH. (See Appendix A for more details on the secondary data analyses conducted for this report.)

[*] CASA's analysis of NSDUH data finds that an additional 4.2 percent of high school students have ever used tobacco products, heroin, hallucinogens, inhalants, controlled prescription drugs and/or over-the-counter cold medicine, but have never smoked cigarettes, drunk alcohol or used marijuana or cocaine; 2.8 percent of high school students currently use tobacco products, heroin, hallucinogens, inhalants, controlled prescription drugs and/or over-the-counter cold medicine, but did not smoke, drink alcohol or use marijuana or cocaine in the past 30 days.

[†] Prescription drugs listed in U.S. Drug Enforcement Administration Schedules II through V of the Controlled Substances Act; these include opioid pain relievers like OxyContin and Percocet; CNS depressants including tranquilizers or sedatives like Valium, Xanax and Nembutal; and CNS stimulants like Ritalin and Adderall. Misuse occurs when a controlled prescription drug is taken by someone for whom it was not prescribed or in a manner not prescribed solely for the experience or feeling it causes.

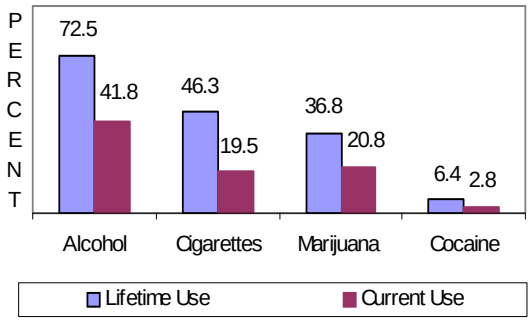
[‡] This data set includes all adolescents; however, CASA's analyses were limited to high school students ages 18 and younger in order to be comparable to the other data sets analyzed for this study.

Prevalence of Substance Use Among High School Students

Any Substance Use

At least three out of four high school students in America (75.6 percent) have used one or more addictive substances.[§ 14] Nearly three-quarters (72.5 percent) have drunk alcohol, nearly half (46.3 percent) have smoked cigarettes,[**] more than a third (36.8 percent) have used marijuana and 6.4 percent have used cocaine. By 9th grade, two-thirds (67.0 percent) of students have used at least one substance; by 12th grade, 82.3 percent have done so.[15] (Figure 3.A) Other national data[††] indicate that 14.8 percent of high school students have misused a controlled prescription drug.[16]

Figure 3.A
Use of Addictive Substances Among High School Students



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Nearly half of all high school students (46.1 percent, 6.1 million) are current[‡‡] substance users.[17] Four in 10 (41.8 percent) drink alcohol; 26.3 percent use tobacco[§§] (19.5 percent smoke

[§] Includes cigarettes, alcohol, marijuana and cocaine.

[**] Comparable data are not available for other forms of tobacco use.

[††] These analyses were conducted using 2009 data from the NSDUH.

[‡‡] Used in the past month.

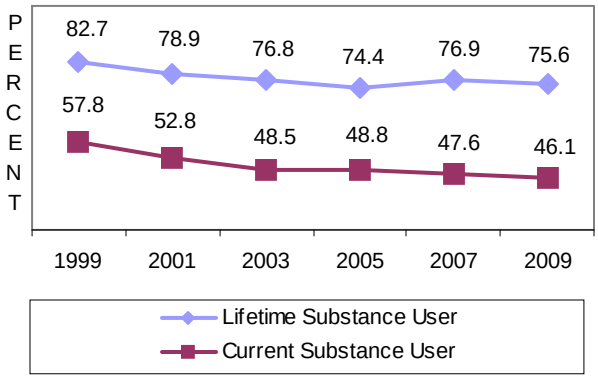
[§§] YRBS collects data on use of cigarettes, cigars and smokeless tobacco only.

cigarettes, 14.0 percent use cigars* and 8.9 percent use smokeless tobacco); 24.2 percent binge drink; 20.8 percent use marijuana; and 2.8 percent use cocaine. (Figure 3.A) More than a third (35.3 percent) of 9th graders and 56.6 percent of 12th graders are current substance users.[18] Other national data† indicate that 4.0 percent of high school students misused a controlled prescription drug in the past 30 days.[19]

The percent of students who say they have ever used cigarettes, alcohol, marijuana or cocaine has fallen over the past decade, from 82.7 percent in 1999 to 75.6 percent in 2009. Likewise, the percent of students who report current use of these substances decreased from 57.8 percent in 1999 to 46.1 percent in 2009.[20] (Figure 3.B)

Figure 3.B

Trends in Substance Use* Among High School Students

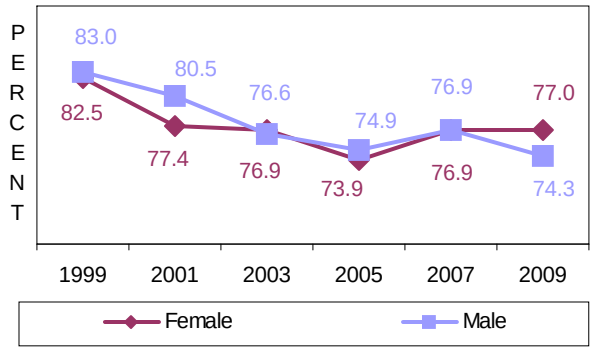


Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.
* Uses cigarettes, alcohol, marijuana or cocaine.

Gender Differences. The percent of high school students who have ever used addictive substances has decreased among both male and female students since 1999, but the decline has been greater among males; among female students, rates have been increasing again since 2005. (Figure 3.C) Current substance use rates also have declined over the past decade for both male and female students; as of 2009, males and females are equally likely to be current users of addictive substances (46.1 percent vs. 46.0 percent).[21]

Figure 3.C

Trends in Lifetime Substance Use,* by Gender



Source: CASA analysis of *Youth Risk Behavior Survey* (YRBS), 2009.
* Ever used cigarettes, alcohol, marijuana or cocaine.

Racial/Ethnic Differences. White students are more likely to report being current substance users (48.8 percent) than Hispanic students (46.4 percent), black students (39.8 percent) and students of other races/ethnicities (36.9 percent).[22]

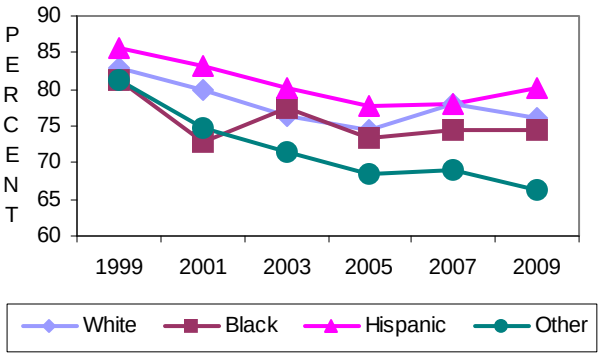
The percent of students who have ever used addictive substances has declined since 1999 for all racial/ethnic groups, but most dramatically for students of "other" races and ethnicities.‡ Since 2005, however, the percent of those who have ever used addictive substances increased for white, black and Hispanic students.[23] (Figure 3.D)

* Including cigarillos (little cigars).
† These analyses were conducted using 2009 data from the NSDUH.

‡ "Other" races/ethnicities include American Indian/Alaska Native, Asian, Native Hawaiian/Other Pacific Islander and multi racial non-Hispanic. These races/ethnicities were combined for purposes of analysis because there are too few respondents to calculate meaningful prevalence data for each category separately. The "other races/ethnicities" category is reported as a group despite the fact that substance use prevalence rates vary among the racial/ethnic group in this category; however, due to the limited number of respondents in these sub-categories, these differences are not statistically significant.

Figure 3.D

Trends in Lifetime Substance Use,* by Race



Source: CASA analysis of *Youth Risk Behavior Survey* (YRBS), 2009.
* Ever used cigarettes, alcohol, marijuana or cocaine.

Rates of students reporting that they currently use addictive substances also have declined among students of all races/ethnicities since 1999.[24]

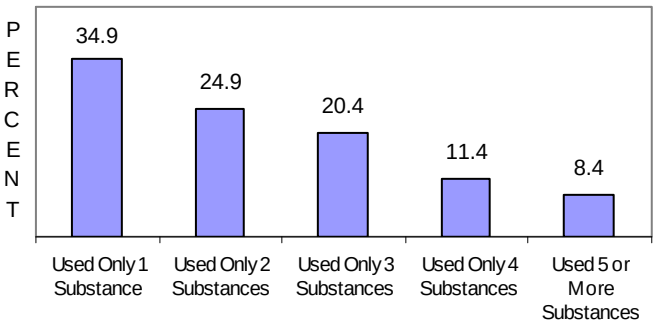
Variations in rates of substance use among racial and ethnic groups may be attributable to various factors, including: differences in racial identity or in parenting practices (primarily protective factors for black students who tend to have a strong racial identity and more strict parents);[25] acculturation (primarily a risk factor for Hispanic children of immigrant parents who move away from their parents' values and influences and toward those of their American peers);[26] and familial, lifestyle, geographic and socio-economic factors.

Poly Substance Use

National data indicate that most high school students (65.1 percent) who have ever used any addictive substance have used more than one--24.9 percent have used two substances, 20.4 percent have used three, 11.4 percent have used four and 8.4 percent have used five or more.[27] (Figure 3.E)

Figure 3.E

Prevalence of Poly Substance Use Among Lifetime Users of Any Substance



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Among high school students who currently use any addictive substance, nearly half (46.9 percent) use more than one--25.2 percent use two substances, 14.7 percent use three, 5.0 percent use four and 2.0 percent use five or more.[28]

Tobacco

Almost half (46.3 percent) of all high school students have smoked cigarettes; 26.3 percent are current tobacco users--19.5 percent smoke cigarettes, 14.0 percent smoke cigars and 8.9 percent use smokeless tobacco.* The likelihood that a teen will have at least tried smoking increases steadily between the start and end of high school.[29] (Table 3.1)

Smoking tobacco out of a water pipe, also called a hookah, has become popular among some high school students. Although the prevalence of hookah use is not measured by national datasets, one study in Arizona found that 5.4 percent of high school students had smoked tobacco from a hookah in the past 30 days.[30]

* Comparable data on lifetime use are not available in the YRBS for smokeless tobacco or cigar use, or for a general measure of tobacco use that includes all forms of tobacco.

Table 3.1
High School Students Who Have Ever Smoked Cigarettes (by Grade)

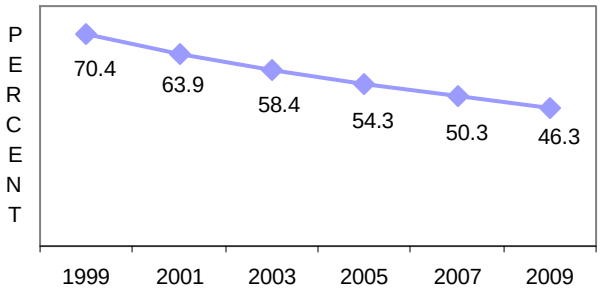
Grade	Percent
9th Grade	37.6
10th Grade	44.0
11th Grade	50.0
12th Grade	55.2

Source: CASA analysis of the *Youth Risk Behavior Survey*, (YRBS), 2009.

Among high school students who have ever smoked a cigarette, 92.3 percent have used another addictive substance: 87.9 percent have used alcohol, 62.1 percent have used marijuana, 32.7 percent have misused controlled prescription drugs and 30.3 percent have used another illicit drug.* Among current smokers, 73.3 percent currently use another drug, including alcohol (61.6 percent), marijuana (47.6 percent), controlled prescription drugs (15.3 percent) or other illicit drugs (10.6 percent).[31]

Trends. The percent of high school students who have ever smoked a cigarette has decreased by 34.2 percent since 1999.[32] (Figure 3.F)

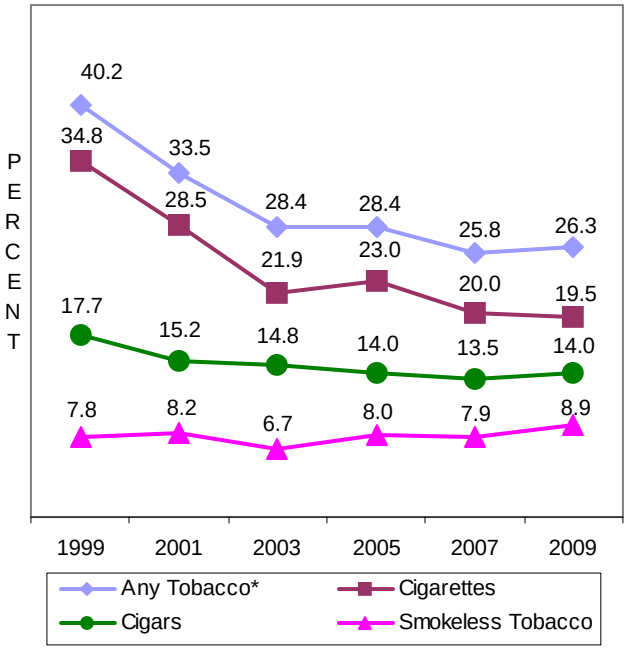
Figure 3.F
Trends in Lifetime Cigarette Use Among High School Students



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Current cigarette use among high school students also has been declining, although the rate of decline has slowed in recent years. And, since 2003, the use of smokeless tobacco† increased by a third (32.8 percent), from 6.7 percent to 8.9 percent.[33] (Figure 3.G)

Figure 3.G
Trends in Current Use of Tobacco Products Among High School Students



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.
* Does not include pipe or hookah use.

Gender Differences. Prevalence of cigarette use does not differ significantly by gender, and declines in lifetime and current cigarette use among both boys and girls have paralleled the overall trend. Boys and girls are equally likely to have ever smoked a cigarette (46.3 percent vs. 46.1 percent) and to be current cigarette smokers (19.8 percent vs. 19.1 percent). However, prevalence rates differ significantly for smokeless tobacco and cigars: male students are nearly seven times as likely to use smokeless tobacco as female students (15.0 percent vs. 2.2 percent) and twice as likely to smoke cigars (18.6 percent vs. 8.8 percent). The overall increase in smokeless tobacco use is attributable

* These analyses were conducted using 2009 data from the NSDUH.

† Trend data are not available for cigar/cigarillo use.

mainly to the rise in smokeless tobacco use among male students, from 11.0 percent in 2003 to 15.0 percent in 2009.[34]

Racial/Ethnic Differences. Hispanic students are more likely to have ever smoked (51.0 percent) compared to white students (46.1 percent), black students (43.5 percent) and students of other races/ethnicities (39.4 percent). However, white students are more likely to be current smokers (22.5 percent) compared to Hispanic students (18.0 percent), students of other races/ethnicities (16.4 percent) and black students (9.5 percent). White students also are twice as likely to currently use smokeless tobacco (11.9 percent) as students of other races/ethnicities (5.7 percent) or Hispanic students (5.0 percent) and three and a half times as likely to use it as black students (3.3 percent).[35] Lifetime and current cigarette smoking have decreased among students of all races/ethnicities over the past decade, although following the overall trend, current use rates increased slightly in 2005 for all but black students.

Frequency and Quantity of Smoking.[*] CASA's analysis of national data indicates that, on average, high school students who smoked did so on 14.9 days in the past month, smoked 4.2 cigarettes on the days that they smoked and smoked an average of 94.6 cigarettes in the past month.[36]

The frequency and quantity of smoking among high school students declined from 2002[†] to 2009 including the number of days they smoked in the past month (down from 16.4 days in 2002) and the estimated number of cigarettes they smoked in the past month (down from 127.7 cigarettes in 2002).[37] Other national data[‡] show significant declines in the rate of daily smoking among high school seniors between 1999 and 2010 (from 23.1 percent to 10.7 percent).[38]

Declines in smoking frequency and quantity among girls since 2002 are small, including the average number of days smoked in the last month (from 15.7 days to 15.3 days), the number of cigarettes smoked per day (from 4.7 to 4.4) and the number of cigarettes smoked in the past 30 days (from 112.4 to 102.2). During the same period, smoking among boys decreased more significantly with regard to each of these measures: from smoking 17.1 days per month to 14.6 days per month, from smoking 5.9 cigarettes per day to 4.1 cigarettes per day and from smoking 143.4 cigarettes per month to 87.9 cigarettes per month.[39]

While frequency and quantity of smoking decreased for white and Hispanic students, black students smoked slightly more cigarettes in the past month in 2009 compared to 2002 (55.4 vs. 52.2). High school students of races/ethnicities other than white, black and Hispanic smoked on more days in the past month in 2009 than 2002 (14.9 days vs. 12.9 days) and smoked more cigarettes in the past month (82.4 vs. 77.3).[40]

Age of Initiation of Cigarette Smoking. The earlier teens start to smoke, the greater the likelihood of using other addictive substances and of nicotine dependence.[§ 41] One in 10 (10.7 percent) high school students smoked a whole cigarette before age 13.[42] CASA's analysis of national data[**] finds that average age of smoking initiation among high school students who have smoked is 13.6 years old.[43] Compared to those who began smoking after age 21, those who first smoked before age 15 are:

- More likely to have ever drunk alcohol (96.1 percent vs. 90.9 percent);
- Nearly twice as likely to have ever used marijuana (68.7 percent vs. 35.4 percent);
- More than twice as likely to have ever misused controlled prescription drugs (35.2 percent vs. 16.7 percent); and

[*] These analyses were conducted using 2009 data from the NSDUH.
[†] Because of changes in the NSDUH survey in 2002, comparable trend data are only available from 2002 onward.
[‡] The *Monitoring the Future* study.

[§] See Chapter IV.
[**] From the 2009 NSDUH.

- More than twice as likely to have ever used other illicit drugs (42.2 percent vs. 17.0 percent).[44]

Alcohol

Alcohol is the most commonly used addictive substance among high school students. Nearly three-quarters (72.5 percent) of high school students have ever had a drink. Four in 10 (41.8 percent) are current drinkers. The likelihood of using alcohol increases between the start and end of high school: two-thirds of 9th grade students (63.4 percent) have used alcohol and by 12th grade, eight out of 10 (79.6 percent) have done so.[45] (Table 3.2)

Table 3.2
High School Students Who Have Ever Used Alcohol (by Grade)

Grade	Percent
9th Grade	63.4
10th Grade	71.1
11th Grade	77.8
12th Grade	79.6

Source: CASA analysis of the *Youth Risk Behavior Survey*, (YRBS), 2009.

In 2009, one-quarter (24.2 percent) of high school students were binge drinkers, having five or more drinks of alcohol in a row (i.e., within a couple of hours) on at least one day in the past 30 days.* The likelihood that a student will be a binge drinker more than doubles between the start and end of high school.[46] (Table 3.3)

Table 3.3
High School Students Who Binge Drink (by Grade)

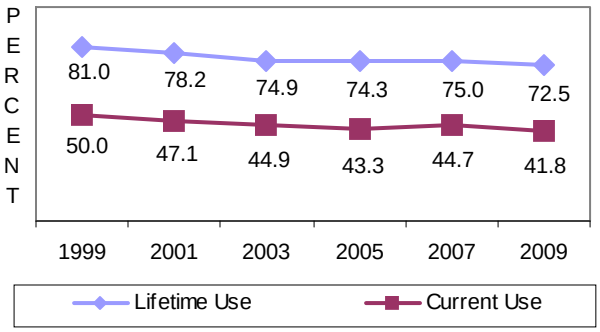
Grade	Percent
9th Grade	15.3
10th Grade	22.3
11th Grade	28.3
12th Grade	33.5

Source: CASA analysis of the *Youth Risk Behavior Survey*, (YRBS), 2009.

Among high school students who have ever had a drink of alcohol, 67.9 percent have used another addictive substance: 52.0 percent have smoked a cigarette, 44.9 percent have used marijuana, 24.3 percent have misused prescription drugs and 21.7 percent have used other illicit drugs.† Half (51.8 percent) of high school students who have ever had a drink are currently using other substances: 37.0 percent smoke, 34.0 percent use marijuana, 11.0 percent misuse controlled prescription drugs and 7.9 percent use other illicit drugs.[47]

Trends. Alcohol use among high school students has been decreasing in recent years. The percent of high school students who have ever used alcohol declined by 10.5 percent, from 81.0 percent in 1999 to 72.5 percent in 2009. The percent currently using alcohol declined by 16.4 percent, from 50.0 percent in 1999 to 41.8 percent in 2009.[48] (Figure 3.H)

Figure 3.H
Trends in Alcohol Use Among High School Students



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Rates of binge drinking also decreased between 1999 and 2009, from 31.5 percent to 24.2 percent, and these declines occurred across ages and for both boys and girls.‡ [49]

* Comparable data on lifetime binge drinking are not available in the YRBS.
† These analyses were conducted using 2009 data from the NSDUH.
‡ Trends in current binge drinking by race/ethnicity are not available.

Gender Differences. Girls are slightly more likely than boys to have ever had a drink and to have had a drink in the past 30 days. Since 1999, girls have been slightly more likely than boys to have used alcohol; in 2009, 74.2 percent of girls and 70.9 percent of boys reported ever having had a drink. Prior to 2003, males were slightly more likely than females to be current drinkers but by 2009, the gender differences had reversed with girls being slightly more likely than boys to be current drinkers (42.9 percent vs. 40.8 percent). Yet boys consistently binge drink at slightly higher rates than girls; in 2009, 25.0 percent of boys and 23.4 percent of girls binge drank in the past 30 days.[*] [50]

Racial/Ethnic Differences. Compared to white students, fewer black students drink alcohol, and those who do drink, consume less of it than white students.[51] As of 2009, Hispanic students are more likely to have ever used alcohol (76.6 percent) than white students (73.8 percent), black students (67.6 percent) and students of other races/ethnicities (63.2 percent). However, white students are more likely to be current drinkers (44.7 percent) than Hispanic students (42.9 percent), black students (33.4 percent) and students of other races/ethnicities (32.6 percent). White students also are more likely to be current binge drinkers (27.8 percent) than Hispanic students (24.1 percent), students of other races/ethnicities (17.6 percent) or black students (13.7 percent). High school students of all races/ethnicities are drinking less today than in 1999.[52]

Frequency and Quantity of Alcohol Use. Teens tend to drink less frequently than adults, but drink larger amounts when they do drink. CASA's analysis of national data[†] indicates that high school students who drink consume, on average, 4.9 drinks per day on the days they drink, compared to 4.4 drinks per day for 18- to 25-year olds, 3.3 drinks per day for adults ages 26- to 34-years and 2.5 drinks per day for adults ages 35 and older.[53]

Between 2002 and 2009, the frequency of drinking among high school students decreased with regard to the number of days they used alcohol in the past year (41.4 days to 36.0 days) and the number of days they used alcohol in the past month (5.0 days to 4.4 days). Other indicators of frequency of drinking include the number of drinks students consumed per drinking day (5.0 in 2002, 4.9 in 2009), the number of drinks they consumed per month (31.6 in 2002, 29.1 in 2009) and the number of days they binge drank in the past month (2.5 days in 2002, 2.3 days in 2009).[54] Other national data[‡] indicate that in 2010, 2.7 percent of high school seniors drank alcohol every day--down from 3.4 percent in 1999.[55]

Despite overall declines in the frequency and quantity of alcohol use among high school students between 2002 and 2009, the number of drinks girls drank per month increased slightly (23.4 drinks vs. 24.2 drinks); the number of days per month on which they binge drank was 1.9 days in 2002 and 2.0 days in 2009.[§] [56]

Between 2002 and 2009, white students drank on fewer days in the past month (5.1 to 4.5, though drinks per day remained steady at 5.3). Black students decreased both the number of days they drank in past month (5.0 to 3.3) and the number of drinks per day (3.2 to 2.2). Hispanic students drank on the same number of days in the past month (4.7), but drank more drinks per day (from 4.3 to 5.1), while students of other races/ethnicities drank on more days in the past month (3.8 days vs. 4.3 days), but drank fewer drinks per day (4.2 to 3.5).[57]

Age of Initiation of Alcohol Use. The younger and more often teens drink, the more likely they are to engage in other substance use and the higher their risk of developing an alcohol use disorder.[**] [58] One in five (21.1 percent) high school students had their first drink of alcohol

[*] The YRBS does not contain data on the prevalence of lifetime binge drinking by gender.
[†] These analyses were conducted using 2009 data from the NSDUH.
[‡] The *Monitoring the Future* study.
[§] During this time, the number of drinks boys drank per month decreased from 39.3 drinks to 33.5 drinks; the number of days per month on which they binge drank decreased from 3.1 days to 2.5 days.
[**] See Chapter IV.

(more than a few sips) before age 13.[59] CASA's analysis of national data[*] finds that the average age of alcohol initiation among high school students who have tried alcohol is 14.0 years old.[60] Compared to those who began drinking alcohol after age 21, those who first drank before age 15 are:

- One and a half times as likely to have ever smoked a cigarette (83.6 percent vs. 55.3 percent);
- Four times as likely to have ever used marijuana (71.9 percent vs. 17.4 percent);
- Nearly five times as likely to have ever misused prescription drugs (41.0 percent vs. 8.7 percent); and
- Nine times as likely to have ever used other illicit drugs (49.7 percent vs. 5.4 percent).[61]

Marijuana

Marijuana is the most commonly used illicit drug in the United States,[62] ranking just behind alcohol and tobacco as the most commonly used addictive substance by teens. More than one-third (36.8 percent) of high school students have ever used marijuana. One in five (20.8 percent) high school students are current marijuana users. By 9th grade, one-quarter (26.4 percent) have tried marijuana; by 12th grade, nearly half (45.6 percent) have done so.[63] (Table 3.4)

Table 3.4
High School Students Who Have Ever Used Marijuana (by Grade)

Grade	Percent
9th Grade	26.4
10th Grade	35.5
11th Grade	42.0
12th Grade	45.6

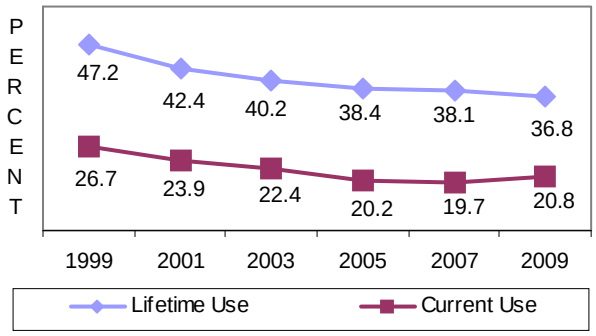
Source: CASA analysis of the *Youth Risk Behavior Survey*, (YRBS), 2009.

[*] From the 2009 NSDUH.

The vast majority (96.8 percent) of marijuana users have used other addictive substances.[†] Among high school students who have ever used marijuana, 93.0 percent have used alcohol, 76.1 percent have smoked a cigarette, 36.8 percent have misused controlled prescription drugs and 33.7 percent have used another illicit drug. Among current marijuana users, 84.9 percent reported current use of another addictive substance: 69.7 percent drink, 58.6 percent smoke, 18.5 percent misuse prescription drugs and 14.2 percent use other illicit drugs.[64]

Trends. Since 1999, the percent of high school students who report ever having used marijuana has declined steadily, by 22.0 percent overall. The percent of those currently using marijuana has declined from a high of 26.7 percent in 1999, but appears to have inched upward slightly in 2009.[65] (Figure 3.I)

Figure 3.I
Trends in Marijuana Use Among High School Students



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Gender Differences. As of 2009, more boys than girls report ever having used marijuana (39.0 percent vs. 34.3 percent). Rates of lifetime marijuana use have declined steadily among boys and girls, although boys consistently use at higher rates than girls. In recent years, current marijuana use increased slightly from 22.1 percent in 2005 to 23.4 percent in 2009 among boys and from 17.0 percent in 2007 to 17.9 percent in 2009 among girls.[66]

[†] These analyses were conducted using 2009 data from the NSDUH.

Racial/Ethnic Differences. Black students (41.2 percent) and Hispanic students (39.9 percent) are somewhat likelier to report ever having used marijuana than white students (35.7 percent) and students of other races/ethnicities (29.2 percent). Black students also are slightly more likely to be current marijuana users (22.2 percent) than Hispanic students (21.6 percent), white students (20.7 percent) and students of other races/ethnicities (17.0 percent).[67]

Since 1999, the percent of high school students who have ever used marijuana fell consistently among white students and students of other races/ethnicities, while the percent of Hispanic and black students who have ever used marijuana increased slightly in recent years. Rates of current marijuana use have been inching up across all races/ethnicities.[68]

Frequency of Marijuana Use. On average, high school students who use marijuana use it on more days than students use alcohol--10.5 days per month for marijuana compared with 4.4 days per month for alcohol. CASA's analysis of national data[*] indicates that high school students report using marijuana one day less per month in 2009 than in 2002 (10.5 days vs. 11.6 days).[69] Other national data[†] show that between 1999 and 2010, the rate of daily marijuana use among high school seniors fluctuated, remaining steady at around 6.0 percent from 1999 through 2003, then dropping to 5.0 percent between 2005 and 2007 and increasing again to 6.1 percent in 2010.[70]

Between 2002 and 2009, the frequency of use among male students declined (13.6 days to 11.2 days per month) while the frequency of use among female students increased slightly (9.0 days to 9.7 days per month).[71]

During this same period, the frequency of current marijuana use increased slightly among black students from 10.7 days per month in 2002 to 11.1 days per month in 2009; among students of races/ethnicities other than black, white or Hispanic, current use was 10.5 days per month in 2002 and 10.4 days per month in 2009.[72]

Age of Initiation of Marijuana Use. The younger and more often teens use marijuana, the more likely they are to engage in other substance use and the higher their risk of developing a substance use disorder.[‡] [73] Among high school students, 7.5 percent used marijuana for the first time before the age of 13.[74] CASA's analysis of national data[§] finds that the average age of initiation of marijuana use among high school students is 14.3 years old.[75] Compared to those who began using marijuana after age 21, those who first used it before age 15 are:

- More likely to have ever smoked a cigarette (93.3 percent vs. 86.4 percent);
- More than twice as likely to have ever misused controlled prescription drugs (56.5 percent vs. 22.9 percent); and
- Two and a half times as likely to have ever used other illicit drugs (70.2 percent vs. 27.8 percent).[**] [76]

Controlled Prescription Drug Misuse

The fourth most commonly misused type of addictive substance among teens in the United States is controlled prescription drugs. In 2009, 14.8 percent of high school students[††] had misused a controlled prescription drug in their lifetime[‡‡] and 4.0 percent were currently misusing these drugs.[§§] The likelihood of misusing controlled prescription drugs nearly

[*] These analyses were conducted using 2009 data from the NSDUH.
[†] The *Monitoring the Future* study.

[‡] See Chapter IV.
[§] These analyses were conducted using 2009 data from the NSDUH.
[**] There is no difference in prevalence of lifetime alcohol use between those who first used marijuana before age 15 (98.5 percent) and those who first used marijuana after age 21 (98.5 percent).
[††] Ages 18 and younger.
[‡‡] The YRBS puts this percentage at 20.2, but does not provide trend data on this measure or a measure of current prescription drug misuse. (See Appendix A.)
[§§] These analyses were conducted using 2009 data from the NSDUH.

doubles between the start and end of high school.[77] (Table 3.5)

Table 3.5
High School Students Who Have Ever Misused Controlled Prescription Drugs (by Grade)

Grade	Percent
9th grade	9.5
10th grade	15.5
11th grade	15.6
12th grade	19.1

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Most high school students (90.8 percent) who have misused controlled prescription drugs also have used other addictive substances. Among high school students who have ever misused prescription drugs, 86.1 percent have drunk alcohol, 68.5 percent have smoked a cigarette, 63.1 percent have used marijuana and 46.6 percent have used another illicit drug. Among students who are current misusers of controlled prescription drugs, 72.7 percent currently use another addictive substance: 60.0 percent drink, 50.2 percent smoke, 49.5 percent use marijuana and 20.4 percent use other illicit drugs.[78]

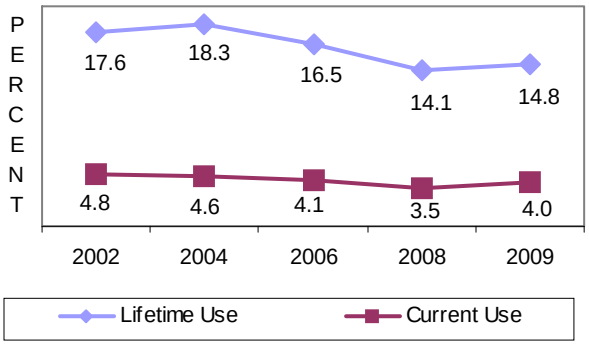
Trends. The percent of high school students reporting that they have ever misused a controlled prescription drug has declined since 2002. However, in 2009 there was a slight uptick in the misuse of these drugs from a low of 14.1 percent in 2008. Current misuse of any controlled prescription drug also declined through 2008 and then showed a slight uptick in 2009.[79] (Figure 3.J)

Between 2002 and 2009, rates of lifetime misuse of controlled prescription drugs declined among high school students:

- Opioids, from 14.6 percent to 12.9 percent;[80]
- Stimulants, from 5.6 percent to 3.1 percent;[81]
- Tranquilizers, from 4.6 percent to 4.1 percent;[82] and
- Sedatives, from 1.1 percent to 1.0 percent.[83]

High school students also report misusing prescription opioids and stimulants on fewer days in the past year between 2002 and 2009; a decline from 37.8 days to 33.6 days for opioids and from 43.8 days to 41.2 days for stimulants.[84]

Figure 3.J
Trends in Prescription Drug Misuse Among High School Students



Source: CASA analysis of *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Prescription Opioids/Narcotics/ Pain Relievers. Prescription opioids, such as morphine, codeine, oxycodone (e.g., OxyContin, Percocet) and hydrocodone (e.g., Lortab, Vicodin), are the most widely misused controlled prescription drugs among high school students, constituting 86.9 percent of prescription drug misuse. One in eight (12.9 percent) high school students has misused prescription opioids in their lifetime; 3.4 percent currently misuse these drugs. The percent of students who report ever having misused opioids nearly doubles between the start and end of high school from 8.3 percent of 9th graders to 16.3 percent of 12th graders.[85]

Prescription Stimulants. In 2009, 3.1 percent of high school students reported ever misusing prescription stimulants, such as methylphenidate (e.g., Ritalin, Concerta), amphetamine-dextroamphetamine (e.g., Adderall), dextroamphetamine (e.g., Dexedrine) and sibutramine hydrochloride monohydrate (e.g.,

Meridia). Less than one percent (0.7 percent) say they have misused prescription stimulants in the past 30 days. The percent of those who have ever misused prescription stimulants more than doubles between the start and end of high school, from 1.8 percent of 9th graders to 4.7 percent of 12th graders.[86]

Prescription Sedatives. One percent of high school students have misused prescription sedatives and barbiturates,[*] such as mephobarbital (e.g., Mebaral) or pentobarbital (e.g., Nembutal); 0.2 percent did so in the past month. Those reporting ever misusing these drugs increases between the start and end of high school, from 0.8 percent of 9th graders to 1.3 percent of 12th graders.[87]

Prescription Tranquilizers. In 2009, 4.1 percent of high school students reported ever having misused prescription tranquilizers, such as diazepam (e.g., Valium), alprazolam (e.g., Xanax), chlordiazepoxide HCl (e.g., Librium), clonazepam (e.g., Klonopin) and lorazepam (e.g., Ativan). Less that one percent (0.9 percent) report currently misusing tranquilizers. The percent of those who have ever misused prescription tranquilizers more than doubles between the start and end of high school, from 2.5 percent of 9th graders to 6.1 percent of 12th graders.[88]

Gender Differences. Female high school students are more likely to have ever misused controlled prescription drugs than male high school students (15.8 percent vs. 13.9 percent), including: prescription opioids (13.4 percent vs. 12.4 percent), stimulants (3.8 percent vs. 2.6 percent), sedatives (1.2 percent vs. 0.8 percent) and tranquilizers (4.9 percent vs. 3.3 percent). Girls also are likelier than boys to currently misuse these drugs (4.7 percent vs. 3.4 percent).[89]

In 2002, 17.9 percent of female students had misused a controlled prescription drug; that number increased to 19.2 percent in 2004 and then decreased steadily to 15.8 percent in 2009. The trend for male students was similar, though rates were slightly lower, from 17.2 percent in 2002, to a high of 17.5 percent in 2004 and then down to 13.9 percent in 2009.[90]

Racial/Ethnic Differences. White students (15.9 percent) are likelier to have ever misused controlled prescription drugs than Hispanic students (14.1 percent), students of other races/ ethnicities (13.1 percent) or black students (12.1 percent). White students (4.3 percent) also are more likely to be current misusers of these drugs compared to black students (4.0 percent), Hispanic students (3.5 percent) and students of other races/ethnicities (3.2 percent).[91]

The percentage of those who have ever misused prescription drugs fell between 2004 and 2008 and then increased between 2008 and 2009 for white (15.5 percent to 15.9 percent), black (10.0 percent to 12.1 percent) and Hispanic (12.2 percent to 14.1 percent) students. For students of other races/ethnicities, lifetime misuse reached a high of 16.9 percent in 2006 then declined steadily to 13.1 percent in 2009. Following a similar trend, current misuse declined from 2004 to 2008 and then increased between 2008 and 2009 for black students (from 2.1 percent to 4.0 percent), Hispanic students (from 2.2 percent to 3.5 percent) and students of other races/ethnicities (from 2.8 percent to 3.2 percent). Among white students, the current rate of misuse was 4.4 percent in 2008 and 4.3 percent in 2009.[92]

Age of Initiation of Controlled Prescription Drug Misuse. The earlier high school students misuse controlled prescription drugs, the more likely they are to use illicit drugs and the likelier they are to develop a substance use disorder.[†] Approximately fifteen percent (15.3) of high school students who have misused controlled prescription drugs began before age 13. The average age of initiation of the misuse of controlled prescription drugs among high school

[*] The NSDUH asks about the use of sedatives or barbiturates, often called "sleeping pills" or "downers."

[†] See Chapter IV.

students is 14.2 years old.[93] Compared to those who began misusing prescription drugs after age 21, those who first misused them before age 15 are:

- Less likely to have ever smoked cigarettes (78.5 percent vs. 83.7 percent);
- Less likely to have ever used alcohol (88.5 percent vs. 95.9 percent);
- Slightly likelier to have ever used marijuana (71.4 percent vs. 70.8 percent); and
- More likely to have ever used other illicit drugs (68.3 percent vs. 50.3 percent).[94]

Other Drugs[*]

Although alcohol, tobacco, marijuana and prescription drugs are the most commonly used substances among adolescents, some high school students use other addictive substances, including inhalants, over-the-counter medications, steroids and other illicit drugs like ecstasy, methamphetamines, cocaine and heroin.[†]

Inhalants. Inhalants are carbon-based substances like glue, aerosol gases, lighter fluid, cleaning fluids and paint products that produce intoxication along with other effects similar to those produced by alcohol when inhaled (e.g., slurred speech, an inability to coordinate movements, dizziness, confusion and delirium).[95] They are readily available, relatively cheap and legal for young people to purchase. One in 10 (11.7 percent) high school students report having used inhalants.[96] Inhalants are most popular among younger teens,[97] with rates of use decreasing as students age.[98] (Table 3.6)

Table 3.6
High School Students Who Have Ever Used Inhalants (by Grade)

Grade	Percent
9th Grade	13.0
10th Grade	12.5
11th Grade	11.6
12th Grade	9.1

Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

The prevalence of inhalant use has fluctuated over the past decade, from a high of 14.7 percent in 2001 to a low of 11.1 percent in 2003, then up to 13.3 percent in 2007 and down slightly in 2009. Girls are likelier than boys to have used inhalants (12.9 percent vs. 10.6 percent), and use is higher among Hispanic students (14.0 percent) and students of other races/ethnicities (13.2 percent) than among white (11.5 percent) and black (8.3 percent) students.[99]

Ecstasy. In 2009, 6.7 percent of high school students reported that they had ever used Ecstasy.[100] Ecstasy use increases between the early and later years of high school.[101] (Table 3.7)

Table 3.7
High School Students Who Have Ever Used Ecstasy (by Grade)

Grade	Percent
9th Grade	5.0
10th Grade	5.2
11th Grade	8.7
12th Grade	8.0

Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

[*] Rates of current use are not available for all drugs in the YRBS; therefore, prevalence rates of other drug use are presented for lifetime use only. Data on the link between age of initiation of other drug use and the likelihood of lifetime use of other addictive substances are not provided due to the small sample size of users of illicit drugs other than marijuana.
[†] In addition to these substances, there are other drugs (e.g., ketamine, Salvia) that some teens use but for which national data are not available.

Since 2001,* when 11.1 percent of high school students reported ever having used Ecstasy, rates of use have decreased by 39.6 percent. Overall, male students are likelier to have ever used Ecstasy than female students (7.6 percent vs. 5.5 percent), and Hispanic students (8.2 percent) are more likely than students of other races/ethnicities (7.3 percent), white students (6.4 percent) and black students (5.1 percent) to have used Ecstasy.[102]

Cocaine. Among high school students, 6.4 percent report ever having used cocaine. Reported use of cocaine increases between the start and end of high school.[103] (Table 3.8)

Table 3.8
High School Students Who Have Ever Used Cocaine (by Grade)

Grade	Percent
9th Grade	4.5
10th Grade	5.6
11th Grade	7.7
12th Grade	7.9

Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

The percent of students who say they have ever used cocaine declined from 9.5 percent in 1999 to 6.4 percent in 2009. High school boys are likelier than high school girls to have ever used cocaine (7.3 percent vs. 5.3 percent). Black students (2.9 percent) are much less likely than Hispanic students (9.4 percent), white students (6.3 percent) and students of other races/ethnicities (5.8 percent) to have ever used cocaine.[104]

Methamphetamines. In 2009, 4.1 percent of high school student reported ever having used methamphetamines. Eleventh graders are somewhat likelier to have ever used this drug than students in other grades.[105] (Table 3.9)

Table 3.9
High School Students Who Have Ever Used Methamphetamines (by Grade)

Grade	Percent
9th Grade	3.3
10th Grade	3.7
11th Grade	5.2
12th Grade	4.1

Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

The percent of high school students who have ever used methamphetamines decreased significantly between 1999 and 2009 (9.1 percent to. 4.1 percent). Methamphetamine use is higher among male (4.7 percent) than female (3.3 percent) students, and among Hispanic students (5.6 percent) than among students of other races/ethnicities (4.8 percent), white students (3.7 percent) and black students (2.7 percent).[106]

Over-the-Counter Cold and Cough Medications.† Some high school students misuse over-the-counter drugs, such as cold and cough medicine, to get high. Overall, 4.0 percent of high school students have ever misused non-prescription cold or cough medicines for this purpose.[107] Misuse of these drugs tends to increase as students age.[108] (Table 3.10)

Table 3.10
High School Students Who Have Ever Misused Over-the-Counter Cold or Cough Medicine (by Grade)

Grade	Percent
9th Grade	3.4
10th Grade	3.7
11th Grade	3.9
12th Grade	5.2

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

* Data prior to 2001 are not available.

† Statistics regarding differences in rates of use by race/ethnicity are not available due to small sample sizes.

Female students are likelier than male students to have ever misused over-the-counter cold or cough medicine (4.7 percent vs. 3.4 percent).[109]

Steroids. Some students misuse anabolic steroids for purposes of athletic competitiveness or body sculpting.[110] Anabolic steroids are manufactured drugs that mimic the naturally occurring male hormone testosterone. Overall, 3.3 percent of high schools students have misused steroids. The rate of steroid misuse remains relatively stable throughout high school.[111] (Table 3.11)

Table 3.11
High School Students Who Have Ever Misused Steroids (by Grade)

Grade	Percent
9th Grade	3.2
10th Grade	3.4
11th Grade	3.4
12th Grade	3.1

Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

The percent of high school students who report having ever misused steroids increased from 3.7 percent in 1999 to 6.1 percent in 2003 and has declined steadily since. Steroid misuse is more common among male students than female students (4.3 percent vs. 2.2 percent), and is slightly more common among Hispanic students (3.9 percent) and students of other races/ethnicities (3.8 percent) than among white students (3.1 percent) or black students (2.8 percent).[112]

Heroin. Two and a half percent of high school students report ever having used heroin. Heroin use is more common among 11th graders than among students in other grades.[113] (Table 3.12)

Table 3.12
High School Students Who Have Ever Used Heroin (by Grade)

Grade	Percent
9th Grade	2.1
10th Grade	2.2
11th Grade	3.2
12th Grade	2.5

Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

The percent of high school students who report ever having used heroin was 2.4 percent in 1999 and 2.5 percent in 2009. In 2009, heroin use was higher among male students than among female students (3.2 percent vs. 1.7 percent).[114] Black and white students (2.2 percent each) are less likely to have ever used heroin compared to Hispanic students (3.3 percent) and students of other races/ethnicities (3.2 percent).[115]

Prevalence of Substance Use Disorders Among High School Students

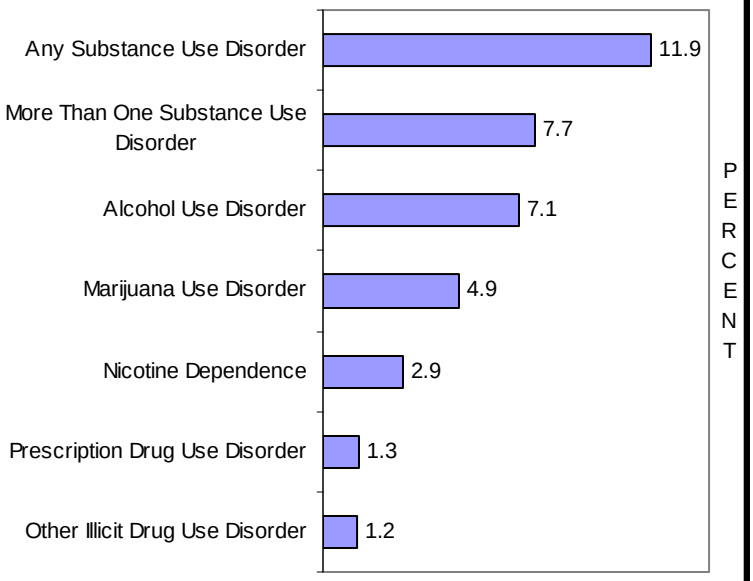
Substance use disorders are medical conditions involving nicotine dependence[*] or alcohol or other drug abuse or dependence.[†] One in eight

[*] Defined as meeting the Nicotine Dependence Syndrome Scale (NDSS) criteria for dependence for respondents who reported smoking cigarettes in the past month.

[†] According to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV), substance abuse is defined as a maladaptive pattern of substance use leading to clinically significant impairment or distress, as manifested by one or more of the following four symptoms occurring within a 12-month period: recurrent use resulting in failure to fulfill major role obligations at work, school or home; recurrent use in physically hazardous situations; recurrent use resulting in legal problems; or continued use despite persistent or recurrent social or interpersonal problems. Substance dependence is manifested by three or more of the following seven symptoms occurring within a 12-month period: tolerance; withdrawal; taking the substance in larger amounts or over a longer period than intended; a persistent desire or unsuccessful efforts to cut down

high school students (11.9 percent, 1.6 million) already meet the clinical diagnostic criteria for a substance use disorder.[116] (Figure 3.K)

Figure 3.K
Substance Use Disorders Among High School Students



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Of high school students ages 18 and younger who have *ever used* tobacco, alcohol or other drugs, two in five (19.4 percent) have a substance use disorder, as do one third (33.3 percent) of *current users* of these substances, and many more who begin to use these substances as teens will develop the disorder as adults. Among 14-year old high school students, 5.3 percent currently meet the criteria for substance use disorders. The number rises dramatically as high school students age, to 20.2 percent of 18 year-olds.[117] (Table 3.13)

Table 3.13
High School Students Who Have Substance Use Disorders (by Age)

Age	Percent
14-years old	5.3
15-years old	9.0
16-years old	12.3
17-years old	15.6
18-years old	20.2

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

The good news is that rate of substance use disorders has declined among high school students between 2002 and 2009 (15.4 percent to 11.9 percent), yet remains dangerously high.[*] In 2009, girls were slightly more likely than boys to have a substance use disorder.[118] (Table 3.14)

Table 3.14
Trends in Percent of High School Students Who Have a Substance Use Disorder (by Gender)

	Total	Females	Male
2002	15.4	14.5	16.2
2004	14.8	15.3	14.4
2006	13.6	13.4	13.8
2008	12.8	13.2	12.4
2009	11.9	12.3	11.4

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

In 2009, Hispanic high school students were more likely to have a substance use disorder than white students, students of other races/ethnicities or black students.[119] (Table 3.15)

or control use; a great deal of time spent to obtain or use the substance, or recover from its effects; important social, occupational or recreational activities given up or reduced because of substance use; or continued use despite knowledge of persistent or recurrent physical or psychological problems likely due to the substance use. Data regarding substance use disorders are derived from the *National Household Survey on Drug Use and Health* (NSDUH) which measures symptoms of these disorders in accordance with the DSM-IV criteria but uses slightly different wording. Prevalence rates are measured among high school students ages 18 and younger.

[*] Because of changes in the *NSDUH* in 2002, comparable data only are available from 2002 onward.

Table 3.15
Trends in Percent of High School Students Who Have a Substance Use Disorder (by Race)

	White	Black	Hispanic	Other
2002	17.8	8.5	14.4	8.4
2004	17.0	9.3	14.0	8.5
2006	15.6	8.5	12.1	10.9
2008	14.3	8.0	12.8	10.7
2009	12.7	7.0	14.0	9.5

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Nicotine Dependence

In 2009, 2.9 percent of high school students ages 18 and younger met clinical diagnostic criteria for nicotine dependence,* down from 4.7 percent in 2002. Rates of nicotine dependence increase significantly during the teen years.[120] (Table 3.16)

Table 3.16
High School Students Who Are Nicotine Dependent (by Age)

Age	Percent
14-years old	0.5
15-years old	1.8
16-years old	2.5
17-years old	4.2
18-years old	6.7

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Girls are likelier than boys to be nicotine dependent (3.4 percent vs. 2.4 percent). White high school students (3.8 percent) are the most likely to be nicotine dependent, followed by students of other races/ethnicities (1.9 percent), Hispanic students (1.5 percent) and black students (1.2 percent).[121]

Alcohol Use Disorders

In 2009, 7.1 percent of high school students met clinical diagnostic criteria for an alcohol use disorder, down from 9.1 percent in 2002. The rate of alcohol use disorders increases more than four-fold between the ages of 14 and 18.[122] (Table 3.17)

Table 3.17
High School Students Who Have an Alcohol Use Disorder (by Age)

Age	Percent
14-years old	2.7
15-years old	5.8
16-years old	7.0
17-years old	9.4
18-years old	12.4

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Girls are likelier than boys to have an alcohol use disorder (7.8 percent vs. 6.5 percent), and Hispanic high school students (9.0 percent) are more likely to have this disorder than white students (7.7 percent), students of other races/ethnicities (6.0 percent) and black students (2.8 percent).[123]

Marijuana Use Disorders

In 2009, 4.9 percent of high school students met clinical diagnostic criteria for a marijuana use disorder--down from 6.3 percent in 2002. The rate of marijuana use disorders among high school students more than triples between the ages of 14 and 18.[124] (Table 3.18)

* According to the Nicotine Dependence Syndrome Scale (NDSS), the only full scale that the *NSDUH* used to measure nicotine dependence. Because NDSS was developed for adults, the actual prevalence of nicotine dependence among high school students may be higher. See Appendix A.

Table 3.18
High School Students Who Have a Marijuana Use Disorder (by Age)

Age	Percent
14-years old	1.9
15-years old	3.6
16-years old	5.9
17-years old	6.8
18-years old	6.7

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Male students are more likely than female students to have a marijuana use disorder (5.3 percent vs. 4.5 percent), and Hispanic students (6.0 percent) are likelier to have this disorder than white students (4.9 percent), black students (4.4 percent) or students of other races/ ethnicities (3.8 percent).[125]

Prescription Drug Use Disorders

In 2009, 1.3 percent of high school students met clinical diagnostic criteria for a prescription drug use disorder, down slightly from 1.6 percent in 2002. The rate of prescription drug use disorders increases slightly throughout the teen years.[126] (Table 3.19)

Table 3.19
High School Students Who Have a Prescription Drug Use Disorder (by Age)

Age	Percent
14-years old	1.0
15-years old	1.2
16-years old	1.4
17-years old	1.5
18-years old	1.5

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Girls are likelier than boys to have a prescription drug use disorder (1.6 percent vs. 1.0 percent). High school students of other races/ethnicities are the most likely to meet diagnostic criteria for a prescription drug use disorder (2.4 percent), followed by white (1.4 percent), Hispanic (1.3 percent) and black (0.4 percent) students.[127]

Other Drug Use Disorders

In 2009, 1.2 percent of high school students had a drug use disorder involving substances other than tobacco, alcohol, marijuana or controlled prescription drugs.[*] Although rates of such disorders among high school students are low, they almost double between the start and end of high school.[128] (Table 3.20)

Table 3.20
High School Students Who Have an Other Drug Use Disorder (by Age)

Age	Percent
14-years old	1.1
15-years old	0.8
16-years old	1.5
17-years old	1.1
18-years old	2.0

Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Between 2002 and 2009, the percent of high school students with this type of drug use disorder decreased slightly (from 1.4 percent to 1.2 percent). Girls are slightly more likely than boys to have this type of drug use disorder (1.3 percent vs. 1.1 percent). High school students of other races/ethnicities are the most likely to have this type of drug use disorder (1.8 percent), followed by Hispanic (1.6 percent), white (1.2 percent) and black (0.4 percent) students.[129]

[*] Includes cocaine, heroin, hallucinogens and inhalants.

Chapter IV
Consequences of Teen Substance Use

The health, social and financial consequences of teen substance use are staggering in both the short and long term.* Teen substance users are at risk for mental and physical health problems, including addiction; death from substance-related accidents, homicides and suicide; other dangerous behaviors such as risky driving, unsafe sex and violence; poor academic and career achievement; and impaired social functioning. The more teens use any of these substances, the greater the consequences. Typically, teens who engage in substance use will use more than one addictive substance, further compounding their risk of negative outcomes.

The health, social and safety risks of teen substance use extend beyond the substance user to peers, family members and neighbors--those who breathe in their cigarette smoke; those assaulted, injured or killed by a teen who is drunk or high; those who contract sexually transmitted diseases or experience unplanned pregnancies; and babies born to teen mothers who smoke, drink or use other drugs during pregnancy.

Life-altering and potentially fatal outcomes can affect not only those teens who develop a substance use disorder but occasional users as well. A teen impaired even once by alcohol or other drugs may drive a car, have unprotected sex or get into a dangerous fight--all with devastating consequences. It can take one or two episodes of smoking to show symptoms of nicotine dependence, one episode of high-dose marijuana use to develop short-term yet

* Whereas some of the research presented in this chapter quantifies the amount or extent of use that is associated with a particular consequence, much of the research simply refers to substance use without specifying the amount or extent of use that poses a risk. Whenever possible, we attempt to quantify the level of use that is associated with the particular consequence.

frightening psychotic symptoms or one dose of cocaine to die from a heart attack.

> *Injuries are the leading cause of death in the United States among those ages 1-44. Alcohol misuse is the greatest single contributor to those injuries. Our concern about teen substance use is not just that early use increases the chances of dependence; any teen use can result in horrific and costly consequences like traffic fatalities, rapes and other assaults, suicides, homicides, and unintended injuries to the drinkers, drug users, and others. These negative consequences are more likely to occur among early substance users not only during their adolescence but in their adult years as well. We have to prevent both.*[1]
>
> --Ralph Hingson, ScD, MPH
> Director
> Division of Epidemiology and Prevention Research
> National Institute on Alcohol Abuse and Alcoholism

In addition to the human toll, all of these tragic outcomes pose a significant financial burden to society. The financial costs of teen substance use and addiction include, for example, an estimated $68.0 billion per year associated with underage drinking[2] and $14.4 billion per year associated with substance-related juvenile justice programs.[3] In the long run, the consequences of adolescent substance use and addiction burden our criminal justice and family court systems and our health care, education and social service systems. Total costs to federal, state and local governments of substance use among the entire U.S. population are at least $467.7 billion per year--almost $1,500 for every person in America[4]--driven primarily by those who began their use as teens. These costs are the result of crimes, diseases, accidents, child neglect and abuse, unplanned pregnancies, homelessness, unemployment and other outcomes of our failure to prevent substance use and treat this health condition effectively.

Substance use often goes hand in hand with other problems. In some cases, substance use appears to precede other social, behavioral and health problems (the majority of the findings presented in this chapter). Other times, substance use may result from these problems or co-occur with them (the findings presented in Chapters V, VI and VII). Regardless of the direction of the relationship, teen substance use is a marker of risk for a broad array of social, behavioral and health problems threatening America's teens.

> *Understanding the consequences of teen substance use is a big deal. It affects the child, the parent, the school and our tax bill. We need to face these consequences squarely and do all we can to prevent them.*[5]
>
> --Darrell Thompson
> Former NFL Running Back, Green Bay Packers
> Executive Director, Bolder Options

Impaired Health: Substance Use Disorders

Because the adolescent brain is more sensitive to the addictive properties of nicotine, alcohol and other drugs, adolescence is considered a critical period of vulnerability to addiction. Use of addictive substances during adolescence significantly increases the risk of substance use disorders in young adulthood and later in life;[6] even those with lower levels of use[*] are more likely to have substance-related problems[†] later in life than those who never used.[7]

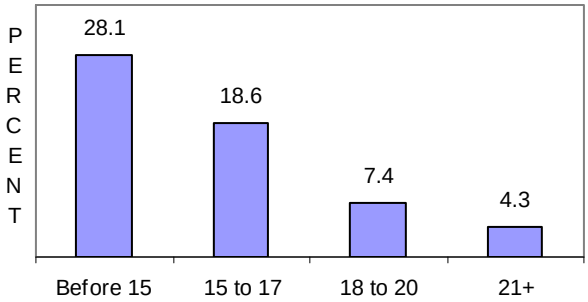
When initiation of substance use occurs in preadolescence or early in adolescence, the risk of addiction is magnified.[8] CASA's analysis of national data finds that individuals[‡] who first used any addictive substance before age 15 are six and a half times as likely to have a substance use disorder as those who did not use any addictive substance until age 21 or older (28.1 percent vs. 4.3 percent).[9] (Figure 4.A)

---

[*] Such as smoking one or two cigarettes a year, smoking marijuana once or twice a year or binge drinking once a month or less.
[†] Such as problems with work, friends and other relationships.
[‡] Ages 12 and older.

Figure 4.A

Substance Use Disorders Among Persons 12 and Older, by Age of First Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Each year that the onset of substance use is delayed until the mid-20s--about the time when the human brain is more fully developed[10]--the risk of developing a substance use disorder is reduced.[11] Among people who used any of these substances before age 18, one in four have a substance disorder, compared with one in 25 who started to smoke, drink or use other drugs at age 21 or later.[*] [12]

Nine out of 10 (91.0 percent) people who meet clinical criteria for a substance use disorder involving nicotine, alcohol or other drugs began using one or more addictive substances before age 18.[†] [13]

Nicotine Dependence

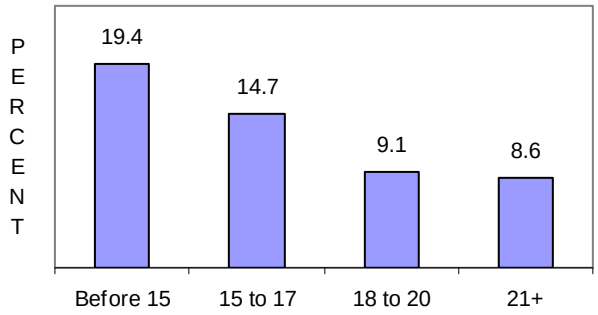
CASA's analysis of national data finds that 2.9 percent of high school students meet clinical criteria for past month nicotine dependence.[‡] [14] Among high school students who have ever smoked a cigarette, 9.2 percent are nicotine dependent; among high school students who are current smokers, 21.5 percent are nicotine dependent.[15]

The vast majority of smokers who are dependent on nicotine began smoking or using other drugs in adolescence or early adulthood:[16] 91.4 percent of individuals ages 12 and older who meet clinical criteria for nicotine dependence began using one or more addictive substances before age 18; 83.6 started smoking before the age of 18, and nearly all of them (95.0 percent) smoked before age 21.[17]

Young smokers are particularly at risk: those who began smoking before age 15 are more than twice as likely to become nicotine dependent as individuals who began smoking at age 21 or older (19.4 percent vs. 8.6 percent).[18] (Figure 4.B)

Figure 4.B

Nicotine Dependence Among Persons 12 and Older, by Age of First Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

The road to nicotine dependence can be very short for young smokers. Although adults tend to smoke more than teens, teens experience higher rates of nicotine dependence than adults at the same levels of cigarette use.[19] A

[*] 23.6 percent of individuals who used any addictive substance before age 18 currently have a substance use disorder as do 6.3 percent of those who used any addictive substance at age 18 or older; 20.5 percent of individuals who used any addictive substance before age 21 currently have a substance use disorder as do 4.3 percent of those who used any addictive substance at age 21 or older.

[†] That is, of all individuals ages 12 and older with a substance use disorder, more than 90 percent began using any addictive substance before age 18.

[‡] Respondents who reported smoking cigarettes in the past month who met the Nicotine Dependence Syndrome Scale (NDSS) criteria for dependence. See Appendix A for more details regarding NDSS.

longitudinal study of 12- to 13-year-old smokers found that 40 percent developed symptoms of nicotine dependence after just trying smoking. Of those who reported symptoms, fully half developed them by the time they were smoking only two cigarettes one day a week, and two-thirds had symptoms by the time they were smoking one cigarette a day.[20] Another study found that 63 percent of 7th graders who had ever smoked at least two cigarettes within a two-month period demonstrated symptoms of nicotine dependence; nearly a quarter (22 percent) of those who had smoked monthly had symptoms of nicotine dependence within one month of initiating monthly smoking.[21] A study of 6th graders found that 53 percent of those who had ever inhaled from a cigarette experienced symptoms of nicotine dependence.[22]

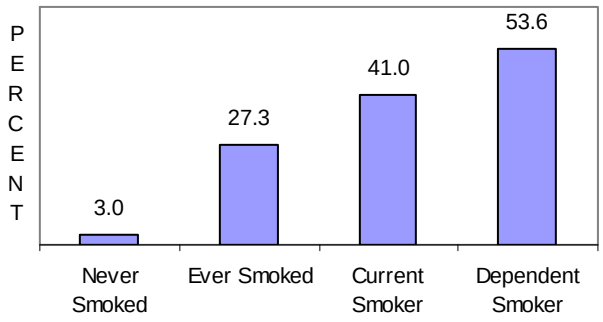
CASA's survey of high school students found that 20.9 percent of those who have ever smoked believe they will become addicted to nicotine.[23]

Other research finds that menthol cigarettes--used by 43.1 percent of high school current smokers, including 84.8 percent of black smokers[*] and 46.9 percent of girls who smoke[†]--significantly increase the risk of nicotine dependence among young people.[24] Menthol cigarettes are less harsh and easier for new smokers to inhale and, because the menthol suppresses the breath response, smokers tend to hold the tobacco in their lungs for longer, increasing the level of absorbed nicotine.[25] Menthol also has other physiological effects that increase the absorption of nicotine and hike the risk of nicotine dependence.[26]

Smoking Linked to Other Substance Use Disorders. Adolescent smoking is associated not only with nicotine dependence but with the development of alcohol[27] and other drug[‡] [28] use disorders as well. CASA's analysis found that compared to high school students who have never smoked:

- Those who have ever smoked are nine times as likely to have an alcohol or other drug use disorder (27.3 percent vs. 3.0 percent);
- Those who currently smoke are more than 13 times as likely to have an alcohol or other drug use disorder (41.0 percent vs. 3.0 percent); and
- Those who are nicotine depenent[§] are almost 18 times as likely to have an alcohol or other drug use disorder (53.6 percent vs. 3.0 percent).[29] (Figure 4.C)

Figure 4.C
Alcohol and Other Drug Use Disorders, by Cigarette Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

When the initiation of smoking occurs early in adolescence, the risk of alcohol and other drug use disorders is magnified. CASA's analysis of national data of individuals ages 12 and older finds that those who began smoking before age 15 are twice as likely to have an alcohol use disorder as those who first smoked at age 21 or older (12.5 percent vs. 6.2 percent). They also are about seven times as likely to have a marijuana use disorder (3.5 percent vs. 0.5 percent), three times as likely to have a prescription drug use disorder (2.1 percent vs. 0.7 percent) and nearly six times as likely to

[*] Compared with high school students who are Hispanic (56.4 percent), Asian (43.6 percent) or white (37.6 percent) who are current smokers.
[†] Compared with 39.4 percent of male high school students who are current smokers.
[‡] Illicit and controlled prescription drug use disorders.
[§] In the past 30 days.

have other* illicit drug use disorders (1.7 percent vs. 0.3 percent).[30]

It is difficult to determine the extent to which the development of other substance use disorders among smokers is due to smoking itself or to other genetic and environmental factors that underlie the risk of all forms of substance use. Nevertheless, there is biological research that suggests a distinct neurological link between early nicotine use and later alcohol and other drug use.[31]

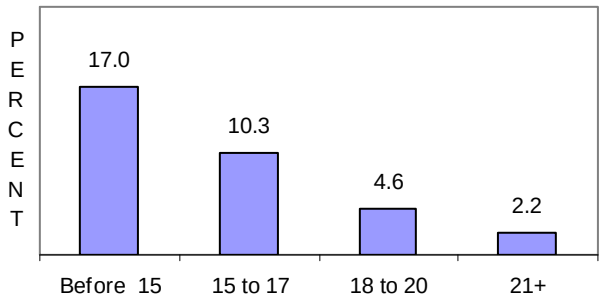
Alcohol Use Disorders

CASA's analysis of national data found that 7.1 percent of high school students meet clinical criteria for an alcohol use disorder.† Among high school students who have ever drunk alcohol, 13.5 percent have an alcohol use disorder; among high school students who are current drinkers, 24.2 percent have an alcohol use disorder.[32]

The majority (91.6 percent) of individuals ages 12 and older who meet clinical criteria for an alcohol use disorder began using one or more addictive substances before the age of 18; 83.5 started drinking by age 18 and 96.0 percent started drinking before age 21.[33]

The younger a person is when he or she begins drinking alcohol, the higher the risk of alcohol use disorders.[34] CASA's analysis of national data of individuals ages 12 and older finds that those who began drinking before age 15 are more than seven times as likely to have an alcohol use disorder as those who began drinking at age 21 or older (17.0 percent vs. 2.2 percent).[35] (Figure 4.D)

Figure 4.D
Alcohol Use Disorders Among Persons 12 and Older, by Age of First Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Other research finds that the likelihood of developing clinical symptoms of alcohol abuse decreases seven percent and the likelihood of developing clinical symptoms of alcohol dependence decreases nine percent for each year that drinking onset is delayed.[36]

Individuals who initiate alcohol use at younger ages also are likelier to experience multiple episodes of relapse.‡ Those who began drinking before age 14 are 3.1 times as likely to experience two or more episodes of relapse and 2.6 times as likely to have had an episode that lasted more than one year compared to individuals who did not begin drinking until age 21 or older.[37]

Alcohol Use Linked to Other Substance Use Disorders. Adolescent alcohol use is associated with the development of nicotine dependence[38] and other drug use disorders. CASA's analysis of national data finds that compared to high school students who never consumed alcohol:

- Those who have ever tried alcohol are 10 times as likely to be nicotine dependent (5.0 percent vs. 0.5 percent);

* Other than marijuana or controlled prescription drugs.
† Met clinical criteria for alcohol abuse or dependence in the past year.

‡ In this study, episodes were separated by at least one year when the respondent either stopped drinking or did not experience any alcohol-related symptoms.

- Those who are current drinkers are more than 16 times as likely to be nicotine dependent (8.2 percent vs. 0.5 percent); and

- Those who have an alcohol use disorder* are 27 times as likely to be nicotine dependent (13.6 percent vs. 0.5 percent).[39]

CASA's analysis also finds that compared to high school students who never consumed alcohol:

- Those who have ever used alcohol are 18.5 times as likely to have an other drug use disorder† (11.1 percent vs. 0.6 percent);

- Those who are current drinkers are almost 30 times as likely to have an other drug use disorder (17.7 percent vs. 0.6 percent); and

- Those who have an alcohol use disorder are more than 60 times as likely to have an other drug use disorder (37.3 percent vs. 0.6 percent).[40]

Initiation of drinking early in adolescence further hikes the risk of nicotine dependence[41] and other drug use disorders.[42] CASA's analysis of national data of individuals ages 12 and older finds that those who began drinking before age 15 are more than three times as likely to be nicotine dependent as those who first drank at age 21 or older (16.4 percent vs. 5.2 percent).[43]

Early drinkers also are more than 24 times as likely to have a marijuana use disorder (4.9 percent vs. 0.2 percent), 20 times as likely to have a prescription drug use disorder (2.6 percent vs. 0.1 percent) and more than 22 times as likely to have other‡ illicit drug use disorders (2.5 percent vs. 0.1 percent).[44]

* Past year.
† Includes marijuana, other illicit drugs and controlled prescription drugs.
‡ Other than marijuana or controlled prescription drugs.

Other Drug Use Disorders

CASA's analysis of national data found that 6.1 percent of high school students meet clinical criteria for an illicit or controlled prescription drug use disorder.§ Among high school students who have ever used illicit drugs or misused controlled prescription drugs, 17.7 percent have a drug use disorder; among high school students who are current drug users, 35.2 percent have a drug use disorder. CASA's analysis indicates that 4.9 percent of high school students meet clinical criteria for a marijuana use disorder; among those who have ever used marijuana, 19.4 percent have a marijuana use disorder. Few high school students (1.3 percent) meet clinical criteria for a prescription drug use disorder; but among those who have ever misused prescription drugs, 8.7 percent have a prescription drug use disorder. Likewise, few high school students (1.2 percent) meet clinical criteria for other** drug use disorders; but among those who have ever used these illicit drugs, 8.9 percent have other drug use disorders.[45]

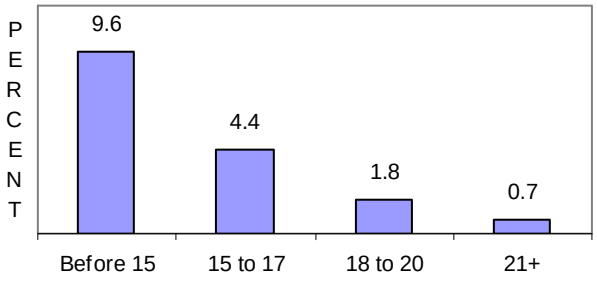
Most individuals (96.1 percent) ages 12 and older who meet clinical criteria for a drug use disorder involving illicit or controlled prescription drugs began using one or more addictive substances before age 18; 85.9 percent began using illicit or controlled prescription drugs before age 18 and 94.9 percent began using them before age 21.[46]

The younger a person is when he or she begins using illicit drugs or misusing controlled prescription drugs, the higher the risk of drug use disorders.[47] CASA's analysis of national data of individuals ages 12 and older finds that those who began using any illicit drug or misusing controlled prescription drugs before age 15 are more than eight times as likely to have a drug use disorder as those who began using these drugs at age 21 or older (12.7

§ Met the criteria for drug abuse or dependence in the past year.
** Other than marijuana or controlled prescription drugs.

percent vs. 1.5 percent). Those who first used marijuana before age 15 are almost 13 times as likely to meet criteria for a marijuana use disorder as those who began using marijuana at age 21 or older (9.6 percent vs. 0.7 percent).[48] (Figure 4.E)

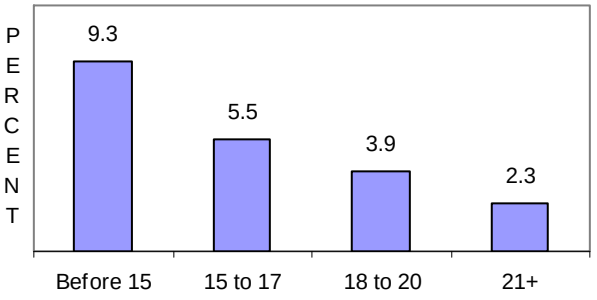
Figure 4.E
Marijuana Use Disorders Among Persons 12 and Older, by Age of First Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Those who first misused prescription drugs before age 15 are four times as likely to have a prescription drug use disorder as those who first misused these drugs at age 21 or older (9.3 percent vs. 2.3 percent).[49] (Figure 4.F)

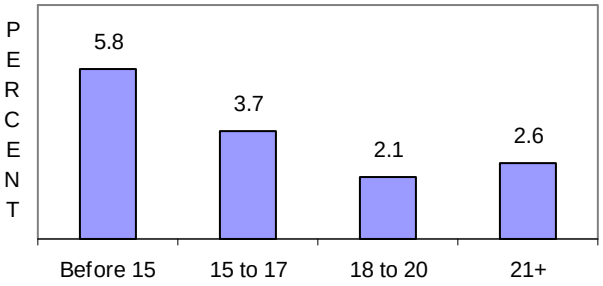
Figure 4.F
Prescription Drug Use Disorders Among Persons 12 and Older, by Age of First Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Those who used other illicit drugs* before age 15 are twice as likely to have other drug use disorders as individuals who first used these drugs at age 21 or older (5.8 percent vs. 2.6 percent).[50] (Figure 4.G)

Figure 4.G
Other Illicit Drug* Use Disorders Among Persons 12 and Older, by Age of First Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.
*Other than marijuana or prescription drugs

Drug Use Linked to Other Substance Use Disorders. Adolescent use of illicit drugs and misuse of controlled prescription drugs are associated with the development of other substance use disorders.[51] CASA's analysis of national data finds that compared to high school students who have never used an illicit drug or misused a controlled prescription drug:

- Those who have ever used an illicit drug or misused a controlled prescription drug are more than 14 times as likely to be nicotine dependent† (7.3 percent vs. 0.5 percent);
- Those who are current users of illicit drugs or misusers of controlled prescription drugs are more than 25 times as likely to be nicotine dependent (12.9 percent vs. 0.5 percent); and

* Other than marijuana or controlled prescription drugs.
† Past month.

- Those who have a drug use disorder* are almost 40 times as likely to be nicotine dependent (19.8 percent vs. 0.5 percent).[52]

CASA's analysis also finds that compared to high school students who have never used an illicit drug or misused a controlled prescription drug:

- Those who have ever used an illicit drug or misused a controlled prescription drug are nearly 10 times as likely to meet clinical criteria for an alcohol use disorder (17.3 percent vs. 1.8 percent);

- Those who are current users of illicit drugs or misusers of controlled prescription drugs are more than 15 times as likely to meet clinical criteria for an alcohol use disorder (27.4 percent vs. 1.8 percent); and

- Those who have a drug use disorder are more than 24 times as likely to have an alcohol use disorder (43.6 percent vs. 1.8 percent).[53]

Initiation of drug use early in adolescence increases the risk of nicotine dependence and alcohol use disorders. CASA's analysis of national data of individuals ages 12 and older finds that those who began using illicit drugs or misusing controlled prescription drugs before age 15 are more likely than individuals who first used these drugs at age 21 or older to be nicotine dependent (23.1 percent vs. 9.3 percent) and to have an alcohol use disorder (19.9 percent vs. 6.4 percent):[54]

- Those who began using marijuana before age 15 are likelier than those who first used marijuana at age 21 or older to be nicotine dependent (25.6 percent vs. 11.1 percent) and to have an alcohol use disorder (21.3 percent vs. 7.6 percent);[55]

- Those who began misusing prescription drugs before age 15 are likelier than those who first did so at age 21 or older to be nicotine dependent (24.7 percent vs. 15.8 percent) and to have an alcohol use disorder (22.6 percent vs. 13.5 percent);[56] and

- Those who began using other illicit drugs before age 15 are likelier than those who first did so at age 21 or older to be nicotine dependent (25.3 percent vs. 16.4 percent) and to have an alcohol use disorder (21.3 percent vs. 13.9 percent).[57]

Impaired Health: Mental Illness

Mental health problems, including anxiety disorders, depression, suicidal thoughts and personality disorders, are associated with adolescent tobacco,[58] alcohol[59] and other drug use.[60]

Tobacco

Young people who are daily smokers are likelier to have panic attacks, panic disorder and other anxiety disorders;[61] adolescents who smoke one or more packs per day are nearly 16 times as likely to have a panic disorder, nearly seven times as likely to have agoraphobia† and nearly six times as likely to have generalized anxiety disorder in young adulthood as those who smoke less.[62] Tobacco use appears to be a precursor to rather than a consequence of panic disorder, perhaps because smoking has cumulative effects on respiratory function and difficulty breathing can bring on panic attacks.[63]

Adolescent smokers also are likelier to report depressive symptoms than non-smokers.[64] CASA's survey found that high school students who have ever smoked are more likely than those who have never smoked to report feeling very sad or depressed (23.0 percent vs. 14.9 percent).[65] CASA's analysis of national data indicates that girls who are current smokers are almost twice as likely to report feeling sad or depressed as girls who have never smoked (33.4

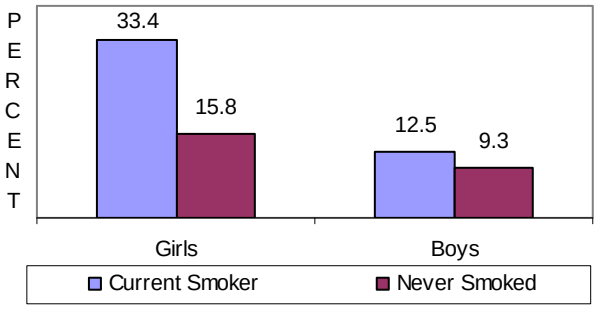
* Past year abuse or dependence on illicit drugs or controlled prescription drugs.

† An irrational fear of being in crowds, public places, or open areas, sometimes accompanied by anxiety attacks.

percent vs. 15.8 percent), as are current smoking boys compared to boys who have never smoked (12.5 percent vs. 9.3 percent).[66] (Figure 4.H)

Figure 4.H

Smokers Who Are Sad/Depressed, by Gender



Source: CASA analysis of the *National Household Survey on Drug Use and Health (NSDUH), 2009*.

CASA's analysis also finds that high school students who are current smokers are more than twice as likely as non-smokers to have experienced a major depressive episode in the past year (16.4 percent vs. 7.6 percent); for girls who smoke, the likelihood of experiencing a major depressive episode is nearly three times greater than for boys who smoke (24.8 percent vs. 8.8 percent).[67]

One longitudinal study suggests a directional relationship, finding that adolescent smokers[*] are more likely than non-smokers to be depressed[†] one year later.[68]

Adolescent smoking also is linked to suicidal thoughts among teens.[69] High school students who have ever smoked are more likely to report having thoughts or plans of suicide as those who have never smoked (18.5 percent vs. 9.6 percent), as are current smokers (18.8 percent vs. 9.6 percent) and those who are nicotine dependent (21.0 percent vs. 9.6 percent).[70] One study found that the younger the age at onset of regular smoking, the stronger the likelihood of suicidal thoughts.[71]

[*] In grades 7 through 12.

[†] Assessed with a modified version of the Center for Epidemiologic Studies Depression Scale (CES-D).

Alcohol

High school students in CASA's survey who have used alcohol in their lifetime are more likely than students who never used alcohol to report that they feel alone or isolated (24.3 percent vs. 19.2 percent), that they often feel very sad or depressed (22.8 percent vs. 12.9 percent) and that they think they will develop depression during their lifetime (37.2 percent vs. 23.0 percent).[72]

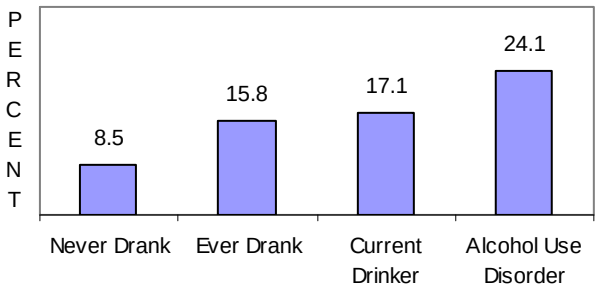
One study found that teen drinkers with sub-clinical symptoms[‡] of alcohol dependence are 1.5 times as likely to be depressed and 3.7 times as likely to have antisocial personality disorder in young adulthood as those without any symptoms of an alcohol use disorder. Those who have had an alcohol use disorder in their lifetime are 2.3 times as likely to be depressed, 6.7 times as likely to have antisocial personality disorder and 3.7 times as likely to have borderline personality disorder in young adulthood as those without an alcohol use disorder.[73]

Adolescent drinking is linked to suicidal thoughts as well.[74] High school students who have ever used alcohol are more lilely than those who have never used alcohol to report having thought or plans of suicde (15.8 percent vs. 8.5 percent); current drinkers are twice as likely to report having thoughts or plans of suicide as those who have never used alcohol (17.1 percent vs. 8.5 percent) and those who have an alcohol use disorder are almost three times as likely to report thoughts or plans of suicide (24.1 percent vs. 8.5 percent).[75] (Figure 4.I)

[‡] Have one or two symptoms but do not meet clinical criteria for an alcohol use disorder.

Figure 4.I

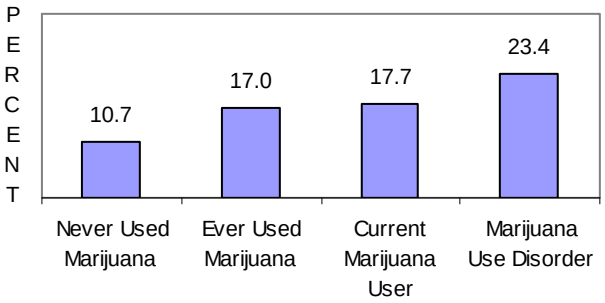
High School Students Who Have Thoughts/Plans of Suicide, by Alcohol Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Figure 4.J

High School Students Who Have Thoughts/Plans of Suicide, by Marijuana Use



Source: CASA analysis of the *National Household Survey on Drug Use and Health* (NSDUH), 2009.

Marijuana

High school students in CASA's survey who report having ever used marijuana are more likely than students who never used marijuana to report that they feel alone or isolated (26.7 percent vs. 19.9 percent), that they often feel very sad or depressed (27.9 percent vs. 14.0 percent) and that they think they will develop depression during their lifetime (41.0 percent vs. 25.4 percent).[76]

Girls who use marijuana in early adolescence are especially vulnerable to anxiety and depression in late adolescence. Teenage girls who use marijuana weekly are twice as likely as non-users, and those who use marijuana daily are four times as likely, to develop anxiety or depression in early adulthood.[77]

High school students who have ever used marijuana are more likely than those who have never used the drug to report having thoughts or plans of suicide (17.0 percent vs. 10.7 percent), as are current marijuana users (17.7 percent vs. 10.7 percent) and those who have a marijuana use disorder (23.4 percent vs. 10.7 percent).[78] (Figure 4.J)

Marijuana users may experience symptoms of delusional psychosis including hallucinations and paranoia, even after one episode of high-dose marijuana use.[79] Research also has found a link between marijuana use and the onset of psychotic disorders, including schizophrenia,[80] particularly in individuals with an underlying vulnerability to the illness.[81] One long-term study of adolescents and young adults[*] found that those who had never used marijuana and had no symptoms of psychosis at the start of the study nearly doubled their risk of future psychotic symptoms if they began using marijuana.[82]

The fact that so many adolescents continue to use marijuana today is particularly troubling because the drug has become much more potent in the past 20 years. The average potency[†] of cannabis[‡] has nearly doubled since 1998, when the average potency in seized samples of cannabis was 4.4 percent; in 2008 the average potency was 8.5 percent.[83]

Despite these facts, 20.8 percent of parents in CASA's survey of parents of high school students characterize marijuana as a harmless drug.[84]

---

[*] Ages 14 to 24.
[†] delta-9 THC content.
[‡] Unprocessed cannabis, which includes ditch weed, marijuana, sinsemilla and Thai sticks.

It is important to remind young people, their parents and others that marijuana is not a benign drug Marijuana can be addictive; it interferes with critical brain functions, like learning and memory.[85]

--Nora D. Volkow, MD
Director
National Institute on Drug Abuse (NIDA)

Other Drugs

High school students who have ever used illicit drugs (other than marijuana) or misused controlled prescription drugs are more likely to report having thoughts or plans of suicide than those who never used these drugs (23.3 percent vs. 9.4 percent). The same is true for those who are current users of these drugs (23.2 percent vs. 9.4 percent) and those who have a substance use disorder involving these drugs (37.7 percent vs. 9.4 percent).[86] Other research finds that teens who have ever sniffed glue or injected drugs in their lifetime are approximately 2.5 times as likely to have considered suicide or to have made a plan to attempt suicide as those who had never sniffed glue or injected drugs.[87]

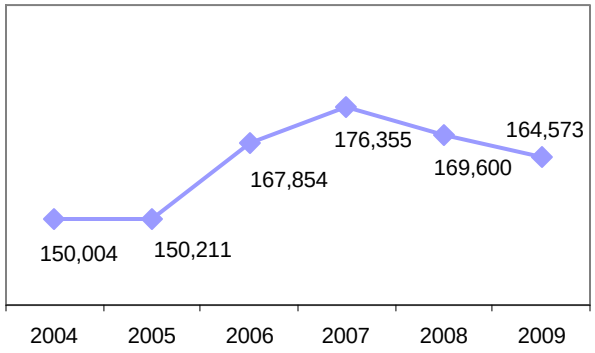
Use of cocaine and other stimulants can lead to restlessness, mood disturbances and anxiety; high levels of use may result in severe paranoia, delusions and hallucinations.[88] Similar mental health effects can result from the use of LSD[89] and PCP.[90]

Impaired Health: Other Medical Consequences

Adolescent substance use increases the risk of poor physical health, disease and damage to the brain. In 2009, there were 164,573 substance-related[*] emergency department admissions among 12 to 17 year olds, an increase of 9.7 percent from 2004 (150,004); however, the number has been declining since a peak of 176,355 in 2007.[91] (Figure 4.K)

[*] Includes alcohol, illicit drugs and controlled prescription drugs.

Figure 4.K
Number of Alcohol and Other Drug ED Admissions, Ages 12 to 17



Source: *Drug Abuse Warning Network* (DAWN), 2009.

Substance use may be even riskier for the health of girls, who have more substance-related physician and hospital visits than boys, as well as other substance-related health problems which may not require medical attention.[†] [92] Girls with substance use disorders also are at increased risk of eating disorders.[93]

Tobacco

Any exposure to tobacco smoke, even occasional smoking or exposure to environmental tobacco smoke, causes immediate damage to the body which, with continued exposure, can lead to serious illness or death.[94]

The negative health consequences of tobacco use--cancers, cardiovascular illnesses, respiratory diseases--have been well documented for more than 50 years.[95] The recent Surgeon General's report on the effects of smoking found causal relationships between smoking and impaired lung growth, smoking and asthma-related symptoms (such as wheezing) in childhood and adolescence, and smoking and decline in lung function in late adolescence and early adulthood.[96]

Cigarette smoking poses immediate health risks, including diminished lung function which can

[†] Measured by poor self-rating of health, reports of feeling really ill or perceived vulnerability and sensitivity to illness.

cause shortness of breath and nagging coughs; reduced senses of smell and taste; premature aging of the skin; and the risk of nicotine dependence.[97]

Adolescent smokers[*] experience more physical health limitations on their ability to perform daily activities than non-smokers;[98] one explanation for this might be that some teenage smokers are less likely to exercise and engage in physical activity.[99] One study found that adolescents who smoked on six or more days in the past month give lower ratings of their overall health and report more overnight hospital stays than less frequent smokers,[†] past smokers[‡] and non-smokers. Heavy smokers[§] give lower ratings of their own health than moderate smokers,[**] light smokers,[††] past smokers or never smokers. The relationships between smoking frequency and intensity and self-perceived health are stronger for girls than for boys.[100]

Nicotine can cause changes in the adolescent brain, even at low levels of exposure. Animal studies have demonstrated that the adolescent brain is more susceptible than the adult brain to nicotine-induced cell damage and to interference with synaptic activity--how information is transmitted between brain cells. These changes happen more quickly and at lower levels of exposure in adolescents than adults.[101] Research also suggests that even at relatively light levels of smoking, the reward centers of the adolescent brain may exhibit signs of heightened reactivity associated with cravings and addiction.[102] The mechanism by which nicotine acts on the dopamine reward system to create neurological changes is similar to that for cocaine.[103]

[*] Not including those who just tried smoking.
[†] Smoked on one to five days in the past 30 days.
[‡] Smoked, but not in the past 30 days.
[§] Smoke an average of 16 or more cigarettes per smoking day.
[**] Smoke an average of six to 15 cigarettes per smoking day.
[††] Smoke an average of one to five cigarettes per smoking day.

The risk for breast cancer is substantially increased for women who began smoking in early adolescence.[104] One study found that women who initiated tobacco use between ages 10 and 14 were one-and-a-half times as likely to have breast cancer in adulthood as women who never smoked.[105]

CASA's survey of high school students found that 27.7 percent of those who have ever smoked believe that they will develop cancer in the future.[106]

Alcohol

Young people who report current alcohol use give significantly lower ratings of their own health than do alcohol abstainers or past users; this relationship is stronger for girls than for boys.[107]

One study found that, for each additional drink of alcohol per day, young people[‡‡] are at 1.5 times the risk of biopsy-confirmed benign breast disease two years later. Girls who drink six or seven days out of the week are 5.5 times as likely to have this disease as those who never drink or drink less than once per week.[§§] [108]

Adolescents who drank on six or more days in the past month report having had more overnight hospital stays during the past year than less frequent drinkers.[***] [109] One study found that more than half (54 percent to 66 percent) of young people[†††] hospitalized for assault injuries had been using alcohol and/or other drugs when injured.[110]

Alcohol-induced damage has been observed in the brains of binge-drinking teens who do not meet clinical criteria for an alcohol use disorder.[111] Brain imaging studies reveal that

[‡‡] Age 16 to 23.
[§§] Those who drink three to five days out of the week are three times as likely to have benign breast disease; those who drink one to two days out of the week are 1.6 times as likely to have the disease.
[***] Drank on one to five days in the past 30 days; drank, but not in the past 30 days; or never drank.
[†††] Age 10 to 20.

teens, ages 16 to 19, who binge drink* have more structural abnormalities in the white matter of their brains compared to teens who never binge drink.[112] A longitudinal study that examined the effects of drinking on 12-14 year olds who were non-drinkers at baseline found that moderate† and heavy‡ drinkers exhibited deficits in attention and visual-spatial functioning.[113]

Animal studies demonstrate that binge drinking induces greater degeneration of the brain cells in the forebrain and hippocampus--which control learning, memory and mood--of adolescents than adults.[114] Adolescents diagnosed with an alcohol use disorder exhibit smaller volumes of their hippocampus--the brain region associated with memory--than non-drinking teens.[115]

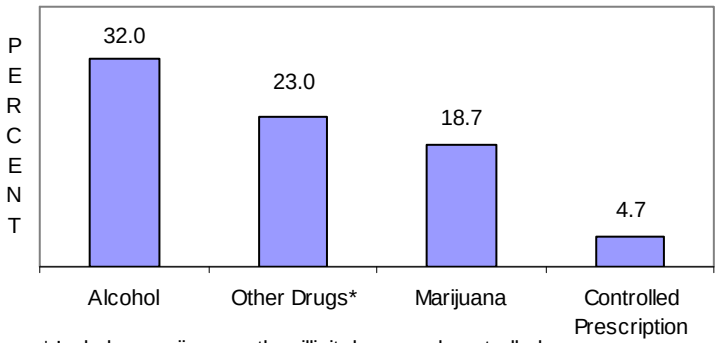
Adolescents who are chronic heavy drinkers§ are 3.7 times as likely to be overweight or obese and 3.6 times as likely to have hypertension in young adulthood** as those who do not drink heavily†† in adolescence; those who begin chronic heavy drinking in later adolescence‡‡ are 1.5 times as likely to have been ill in the past year in young adulthood as those who did not drink heavily in adolescence.[116] Heavy alcohol use§§ increases the risk of: cancer of the mouth, esophagus, pharynx, larynx, liver and breast; heart disease and other circulatory system disorders; cirrhosis of the liver; hepatitis; and pancreatitis.[117]

Teens with alcohol use disorders also have more self-reported health problems (including problems with sleep, eating and vision) and more abnormalities during physical examinations (including in the abdominal region as well as in their respiratory and cardiovascular systems) than adolescents without alcohol use disorders.[118] Girls with an alcohol use disorder are eight times as likely as those without an alcohol use disorder to have a herpes simplex virus-2 infection.[119]

In 2009, alcohol was the most frequently identified addictive substance in substance-related reports in emergency department visits made by patients ages 12 to 17, resulting in 32.0 percent of all substance-related reports for this age group; 22.8 percent of substance-related reports involved alcohol only and the remainder involved other addictive substances alone or in combination with alcohol and/or other drugs.[120] (Figure 4.L)

Figure 4.L

Emergency Department Substance-Related Reports Among 12- to 17- Year Olds, By Substance (alone or in combination)



* Includes marijuana, other illicit drugs and controlled prescription drugs.

Source: *Drug Abuse Warning Network* (DAWN), 2009.

*Other Drugs****

In 2009, 23.0 percent of all substance-related reports in emergency department visits made by patients ages 12 to 17 involved other drugs, including marijuana (18.7 percent) and controlled prescription drugs (4.7 percent).[121] (Figure 4.L)

* Defined in this study as having consumed four or five drinks in one sitting at least once during the prior three weeks.

† Drank about seven drinks per month.

‡ Drank 12 or more drinks per month.

§ Engaged in binge drinking at high levels throughout adolescence.

** Age 24.

†† Never or rarely drank heavily during adolescence.

‡‡ After age 16.

§§ For adult men, more than four drinks on any day or 14 drinks per week; for adult women, more than three drinks on any day or seven per week.

*** There is little research on the consequences of drug use, other than marijuana, among adolescents. As such, more general information on the health effects of other illicit drug use is presented.

The number of marijuana-related visits by adolescents increased by 13.9 percent between 2004 and 2009.[122]

Marijuana. Within a few minutes after ingesting marijuana, a user's heart rate increases; regular use of marijuana can hike the risk of respiratory illnesses including chronic cough, bronchitis and lung infections.[123] A high level of marijuana use[*] during adolescence and young adulthood[†] is associated with an increased risk of later[‡] respiratory problems and other physical symptoms, including acid indigestion or heartburn, stomach flu with vomiting or diarrhea, trouble sleeping, trouble getting started in the morning and loss of appetite.[124]

Marijuana use affects the parts of the brain that regulate balance, coordination, reaction time and posture and therefore can disrupt these functions, potentially affecting one's ability to drive safely, perform athletic activities or learn new skills.[125] Heavy or chronic marijuana use is associated with short- and long-term impairments in thinking, memory, attention, perception, problem solving, learning and processing speed, and with structural and functional brain changes.[126] One study found that adolescent marijuana users[§] who had been abstinent for three weeks continued to exhibit cognitive deficits--such as poorer attention, memory and planning ability--compared to non-users.[127] A recent study of 16-19 year old teens found that heavy marijuana users[**] had reduced cortical thickness in several areas of the brain relative to non-marijuana users.[128] Other research has found that reduced cortical thickness may be associated with substance dependence,[129] as well as other disorders such as schizophrenia.[130]

[*] In this study, defined as two standard deviations above the mean.
[†] Ages 14 to 22.
[‡] In the late 20's.
[§] Defined in this study as current users who had used marijuana more than 60 times in their lives.
[**] Used marijuana at least 100 times in the previous year.

Cocaine and Other Stimulants. Regardless of the method or frequency of ingestion, cocaine users can experience nausea, increased body temperature, constriction of blood vessels, high blood pressure and accelerated heart rate; cocaine users also may suffer from a heart attack, respiratory failure, stroke or seizures.[131] Regular intranasal cocaine use can cause nosebleeds, a chronically runny nose or a loss of the sense of smell. Injection of cocaine increases the risk of contracting HIV/AIDS and other blood-borne diseases.[132]

Misusing prescription stimulants, such as Ritalin or Adderall, and amphetamines, can lead to serious cardiovascular complications such as stroke and may lead to high body temperature or irregular heartbeat.[133] Any amount of methamphetamine use can produce rapid heart rate, irregular heartbeat and increased blood pressure and body temperature. Long-term or chronic use of methamphetamines can lead to extreme weight loss, insomnia and severe dental problems.[134] Those who inject the drug are at risk for infectious diseases such as HIV/AIDS and hepatitis.[135]

Heroin and Prescription Opioids. Heroin use can lead to fatal overdose, spontaneous abortion and, for injection users, infectious diseases such as HIV/AIDS and hepatitis.[136] Chronic heroin users may have collapsed veins, infections in their heart lining and valves and liver or kidney disease.[137] The misuse of prescription opioids (pain relievers)[††] can result in drowsiness, constipation and--at high doses--depressed breathing. Even a large single dose of opioids can cause severe respiratory depression or death.[138]

Inhalants. Ingesting high concentrations of inhalants--such as spray paints, glues, dry-cleaning chemicals, correction fluids and gasoline--can cause hearing loss, limb spasms, loss of sensation, bone marrow damage, liver or kidney damage, brain damage or unconsciousness. Heart failure or suffocation can occur even when using inhalants for a few

[††] Such as oxycodone and hydrocodone.

minutes, if they are used in high concentrations.[139]

Steroids. Adolescent steroid misuse can stunt growth due to premature skeletal maturation, and accelerate puberty. The misuse of steroids can increase LDL ("bad") cholesterol, decrease HDL ("good") cholesterol, and result in abnormal hormonal changes, severe acne, jaundice, high blood pressure, liver damage and increased risk of infectious diseases such as HIV/AIDS and hepatitis.[140]

Other Drugs. Ecstasy (MDMA) use can lead to nausea, chills, sweating, muscle cramping, blurred vision and--in high doses--difficulty regulating body temperature; on rare occasions, this can lead to hyperthermia which can result in liver and kidney damage, heart failure or death.[141] In high doses, ketamine can impair motor function and lead to potentially fatal respiratory problems. GHB (Gamma hydroxybutyrate) effects may include coma, seizure, poisoning, overdose and death.[142] LSD (d-lysergic acid diethylamide) may cause tremors[143] or lead to increased body temperature, heart rate and blood pressure, as well as insomnia and loss of appetite.[144] PCP (phencyclidine) can lead to shallow breathing, profuse sweating, numbness of the extremities and loss of muscular coordination. PCP also can cause users to become violent or suicidal and--when ingested in high doses--can lead to seizures, coma or death.[145]

> *The major worry of teen substance use is not addiction; it is overdose, accidents, contraction of diseases, etc. It is harder to anticipate these kinds of risks.*[146]
>
> --A. Thomas McLellan, PhD
> Director
> Center for Substance Abuse Solutions
> University of Pennsylvania

Fatalities

The top three causes of death for adolescents ages 12 to 17 are unintentional injury, homicide and suicide.[147] Although precise data on the proportions of these deaths that are attributable to substance use are not available for each cause of death, research suggests that substance use is a key contributing factor to each of these leading causes of death among teens.[*] For example, in 2005, an estimated 3,430 children and adolescents ages 19 and younger died from acute causes--including accidents, poisonings, homicides and suicides--stemming from their own or someone else's alcohol consumption.[148]

Unintentional Injuries

In 2007, 45.1 percent of teen deaths were due to unintentional injuries. Motor vehicle crashes accounted for 68.8 percent of these deaths; poisoning accounted for 8.6 percent and drowning accounted for 6.1 percent.[149]

Motor Vehicle Fatalities. CASA's analysis of national data reveals that of the 2,071 high school-aged drivers who were involved in a fatal motor vehicle crash in 2009, 23.0 percent (621) were driving under the influence of alcohol or other drugs and/or tested positive for alcohol or other drugs (15.0 percent for alcohol and 11.7 percent for other drugs). Of those 621 high school-aged drivers who were under the influence at the time of the crash, 386 lost their lives and 82 suffered incapacitating injuries.[150]

In 2008, 25 percent of drivers ages 15 to 20 who died in motor vehicle crashes had a BAC of 0.08[†] or higher. That same year, nearly three out of every four (73 percent) teen drivers killed in motor vehicle crashes after drinking and driving were not wearing a seat belt.[151]

Adolescents who drink and drive may be at greater risk of traffic fatalities than adults who do the same. Smaller increases in blood alcohol content (BAC) have been shown to have more devastating effects on young drivers--for each 0.02 percent increase in BAC, adolescents under age 21 have a much greater risk of being in a fatal motor vehicle crash than adults ages 21 and older. Young male drivers, ages 16-20, with a

[*] The Centers for Disease Control and Prevention's Alcohol-Related Disease Impact (ARDI) database generates estimates for alcohol-related fatalities.
[†] The legal level of intoxication for adults.

BAC between 0.08 and 0.10 are significantly likelier than adult male drivers ages 21 and older to be in a fatal traffic crash (51.9-fold increased risk vs. a 13.4-fold increased risk).[152]

Poisoning Fatalities. Almost eight in 10 (79.3 percent) adolescent poisoning cases involve controlled prescription drugs or illicit drugs; alcohol accounts for 7.7 percent of all poisoning deaths in this age group.[153] In 2005, 152 children ages 19 or younger died as a result of poisoning from a drug other than alcohol; the poisoning occurred while they also were under the influence of alcohol.[154]

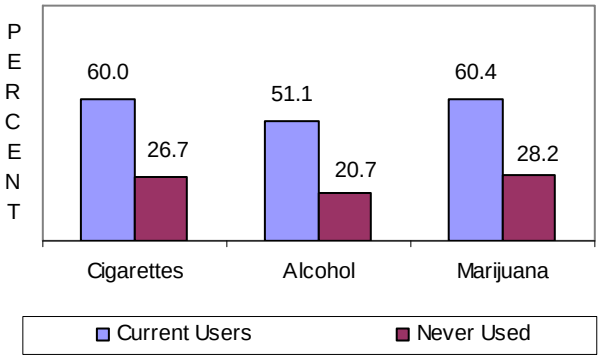
Drowning Fatalities. Alcohol also is a contributing factor to drowning deaths.[155] In 2005, 105 drowning incidents among children and teens ages 19 and younger were alcohol related.[*] [156]

Homicides

In 2007, 12.9 percent of teen deaths were due to homicide, the second leading cause of death among adolescents ages 12 to 17. Firearm deaths accounted for 83.4 percent of homicide-related deaths.[157]

Teen substance use increases the risk of violence, including carrying a weapon, being in a fight and being injured in a fight.[158] In 2005, an estimated 915 homicides involving persons under the age of 20 were attributed to alcohol use.[†] [159] CASA's analysis of national data finds that high school students who engage in substance use are more likely than those who never used addictive substances to report violent or aggressive behavior;[‡] this includes current smokers (60.0 percent vs. 26.7 percent), current drinkers (51.1 percent vs. 20.7 percent), current marijuana users (60.4 percent vs. 28.2 percent) and those who ever used other illicit drugs[§] (63.5 percent vs. 33.9 percent).[160] (Figure 4.M)

Figure 4.M
High School Students Exhibiting Violent/Aggressive Behavior, by Substance



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Suicides

In 2007, 9.7 percent of teen deaths were due to suicide, which was the third leading cause of death among adolescents ages 12 to 17.[161]

Suicide is strongly linked to teen tobacco,[162] alcohol[163] and other drug use.[164] In 2005, an estimated 365 suicides involving individuals under the age of 20 were attributed to alcohol use.[165] In 2008, 8.8 percent of substance-related emergency department visits made by adolescents involved a suicide attempt. Of these suicide attempts, the majority (95.4 percent) involved the misuse of controlled prescription drugs and 11.4 percent involved alcohol use alone or in combination with another drug. Nearly three-quarters (72.3 percent) of the visits for substance-related teen suicide attempts were made by girls.[166]

Adolescent current smokers are more than three times as likely to attempt suicide as non-current smokers. Those who have had a past-year alcohol problem[**] are 4.7 times as likely to attempt suicide as adolescents without alcohol

[*] Data on the frequency of alcohol-related drowning deaths specifically among teens are not available.
[†] Alcohol-related deaths include deaths as a result of someone else's drinking.
[‡] Carried a weapon (including to school) in the past 30 days, or, in the past 12 months, was in a physical fight (including on school property) or was injured and treated by a doctor or nurse due to a fight.
[§] Ever used cocaine, inhalants or heroin.
[**] Not defined by study authors.

problems. And, those who used illicit drugs or misused controlled prescription drugs in the past year are more than three times as likely to attempt suicide as those who had not used these drugs in the past year.[167]

Other research finds that girls who had ever sniffed glue in their lifetime are 2.5 times as likely to have attempted suicide as girls who had never sniffed glue; boys who had ever sniffed glue are 3.4 times as likely to have attempted suicide. Girls who had ever injected drugs in their lifetime are 4.8 times as likely to have attempted suicide as girls who had never injected drugs; boys who had ever injected drugs are 4.0 times as likely to have attempted suicide.[168]

Potentially Fatal Health Conditions

Substance use and addiction are the leading causes of preventable death and disability in the United States,[169] and in most cases the problem begins in the teen years.[170] It contributes to cancer, heart disease, stroke, respiratory disease, diabetes, liver disease, HIV/AIDS, infant deaths linked to prenatal substance use and to unintentional injuries.[171] Smoking claims 430,700 lives each year--20 percent of all deaths in the United States. One half of all long-term smokers will die from their tobacco use.[172] Alcohol misuse is directly or indirectly responsible for more than 100,000 deaths each year.[173]

Increased Risk of Dangerous Behaviors

Teen substance users are more likely than those who have never used to engage in risky driving, risky sex, fighting, violence and crime.[174] Even infrequent or occasional use of addictive substances can lead to behaviors that pose a threat to teens' health and safety.[*]

Risky Driving

Adolescents may experience more severe consequences from drinking than adults. They typically need to drink fewer drinks to reach the same BAC level as adults, due in large part to lower body weight.[175] The legal level of intoxication for adults ages 21 and older is a BAC of 0.08 percent, generally reached by consuming five drinks by men and four drinks by women over a two-hour period.[176] Because teens typically consume 4.9 drinks per drinking day,[†] [177] they are at greater risk for some of the more severe consequences of alcohol use, including traffic crashes, than adults who drink alcohol.

According to CASA's analysis of national data, in 2009, one in 10 (9.7 percent) high school students reported driving in the past month after drinking alcohol.[178] Other research finds that in 2006, 14.2 percent of high school seniors reported driving a vehicle at least once in the past two weeks after drinking alcohol and 9.5 percent reported doing so after binge drinking; 13.1 percent reported driving a vehicle at least once in the past two weeks after using marijuana and 3.1 percent reported doing so after using another illicit drug.[179]

Male students drink and drive more often than female students;[180] one national study found that, in 2008, 26 percent of male drivers ages 15-20 who were involved in fatal crashes had been drinking at the time of the incident, compared with 13 percent of female drivers that age who were involved in fatal crashes.[181]

High school students who are current drinkers (but not binge drinkers) are 3.5 times as likely as those who are not current drinkers to ride in a car with a driver who had been drinking; those who also binge drink are 10.8 times as likely as those who are not current drinkers to do so.[182]

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[*] Available research does not always indicate whether substance use is a cause of a risky behavior or a correlate.

[†] Compared to 4.4 drinks per drinking day for 18- to 25-year olds, 3.3 drinks for 26- to 34-year olds and 2.5 drinks for adults ages 35 and older.

Adolescents who engage in drunk driving may be at higher risk of premature death in late adolescence and early adulthood.[*] A study that followed middle and high school students for six years found that having driven drunk was associated with early mortality,[†] and that those who drove drunk were nearly three times as likely to have died prematurely as those who had not (17.7 percent vs. 6.4 percent). This association may be due to traffic fatalities, or drunk drivers may be more likely to engage in multiple risky behaviors that also are associated with premature death.[183]

Risky Sex and Unintended Pregnancy

Teens who use[‡] tobacco,[184] alcohol,[185] marijuana[186] or other drugs[187] are more likely to be sexually active, to engage in risky sexual behavior and to experience the consequences of risky sex--such as unintended pregnancy or contracting a sexually transmitted disease--than those who do not use these substances.[188]

Seven in 10 teens report having had sexual intercourse before the age of 19. A sexually-active teen who does not use contraception has a 90 percent chance of becoming pregnant within one year. Each year, nearly three quarters of a million teenage girls (ages 15 to 19) become pregnant; 82 percent of these pregnancies are unplanned.[189]

One in five young people[§] report having unprotected sex after drinking or using other drugs.[190] A national study found that 21.6 percent of sexually active high school students report having used alcohol or other drugs before their last sexual experience (25.9 percent of boys and 17.1 percent of girls).[191] Four out of five teens believe that their peers usually drink or use other drugs before having sexual intercourse.[192] The more forms of addictive substances a teen uses in his or her lifetime, the less likely that teen is to report condom use at last intercourse.[193] A fifth of teens[**] have "done more" sexually under the influence of alcohol or other drugs than they planned when sober.[194]

Tobacco. Girls who initiate smoking before age 16 are more likely to have early sex leading to pregnancy compared to those who never smoked or only experimented,[195] and girls who smoke weekly during early adolescence (ages 13-14) are more likely to engage in early sex, have a baby or have an abortion than non-smokers and those who smoked less frequently.[196]

Alcohol. Early initiation of alcohol use[††] is associated with early age at first intercourse and pregnancy at a young age.[197] High school students who are current drinkers[‡‡] are 2.2 times as likely to be sexually active, 2.3 times as likely to report drinking or using other drugs before their last sexual intercourse, 1.7 times as likely to have ever been pregnant or gotten someone pregnant and 1.6 times as likely to have forced intercourse as non-current drinkers. The association between drinking and risky sex is even stronger for binge drinkers: teen binge drinkers, compared to non-drinkers, are 5.5 times as likely to be sexually active, 10.3 times as likely to report drinking or using other drugs before their last sexual intercourse, 4.7 times as likely to have ever been pregnant or gotten someone pregnant and 3.7 times as likely to have forced intercourse.[198] Other research finds that high school students who report binge drinking in their lifetime are 1.2 times as likely as non-users to have had unprotected sex during their last sexual intercourse.[199]

Other Drugs. High school students who report ever using marijuana in their lifetime are 7.2 times as likely as non-users to have had sexual intercourse and 4.0 times as likely to have done so before age 13; they also are 7.7 times as likely to have had sex with four or more people in their lifetime; 1.3 times as likely to have not used a condom during their last sexual intercourse and 7.0 times as likely to have been pregnant or gotten someone pregnant.[200]

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[*] Between ages 18 and 26.
[†] The cause of death was unspecified.
[‡] Research cited includes current and lifetime use.
[§] Age 13 to 24.
[**] Age 15 to 17.
[††] Around age 12.
[‡‡] But not binge drinkers.

High school students who have used other illicit drugs[*] in their lifetime also are significantly likelier than non-users to have had sex before age 13,[†] to report having multiple sex partners,[‡] to engage in unprotected sex[§] and to have been pregnant or gotten someone else pregnant.[**] [201]

Fighting, Violence and Crime

In 2009, 32 percent of high school students had been in a physical fight in the past year; 18 percent had carried a weapon in the past 30 days.[202] Adolescent tobacco,[203] alcohol[204] and other drug use[205] is significantly associated with teen violence and aggression.[206]

One study found that teens who used tobacco at age 15 were more than three times as likely as nonusers to have perpetrated violence at age 19.[207] Another found that high school students who used alcohol or inhalants in the past 30 days were twice as likely to start a physical fight with a date as those who did not do so.[208] Adolescents reporting perpetrating severe dating violence[††] are likelier than those who do not report any dating violence to drink alcohol before a fight.[209] Another study found that current drinkers were more likely than teens who did not drink in the past year to take part in serious fighting at school or work (28.4 percent vs. 19.9 percent), to engage in group-against-group fighting (20.7 percent vs. 14.3 percent) and to participate in attacks against other people with the intent to seriously hurt them (10.8 percent vs. 5.8 percent).[210] One study found that 13-year olds who frequently use marijuana are 5.4 times as likely to engage in violence[‡‡] later in adolescence.[§§] [211] Sixteen percent of teens who reported that they got into a serious[***] fight at school or work in the past year used illicit drugs compared to seven percent who did not get into such fights.[212]

Victimization. Approximately half (52.4 percent) of teen tobacco users have been victims of a date fight.[†††] [213] Teens who engage in higher levels of alcohol use[‡‡‡] are at increased risk of being victimized[§§§] in the following year relative to those who engage in lower levels of use.[214] One study found that they are nearly four times as likely as teens with lower levels of alcohol use[****] to experience physical and sexual victimization. Victimization does not only occur while the victim is drinking; girls who drink are likelier to experience victimization even when sober.[215] Adolescents who are current marijuana users are nearly twice as likely to become victims of a date fight as those who are not current users.[216]

Crime. CASA's 2004 study of juvenile offenders, *Criminal Neglect: Substance Abuse, Juvenile Justice and The Children Left Behind,*

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[*] Heroin, methamphetamine, ecstasy, cocaine and inhalants.
[†] 3 to 10 times as likely, depending on the drug.
[‡] 3 to 13 times as likely, depending on the drug.
[§] 1.7 to 2.4 times as likely, depending on the drug.
[**] 3 to 16 times as likely, depending on the drug.
[††] Severe dating violence is defined as having punched or hit with something that could hurt, choked, slammed against a wall, beat up, burned or scalded on purpose, kicked or used a knife or gun (on someone else).
[‡‡] Carried a hidden weapon, strong armed, attacked with a weapon or with intent to seriously hurt or kill someone, involved in gang fights, hurt or threatened to hurt someone to force sex or actually forced sex.
[§§] Ages 14.5 to 18.5.
[***] This term was not defined in the NSDUH.
[†††] A boyfriend, girlfriend or date started a physical fight with them in the past year. Comparable data for non-smokers are not provided.
[‡‡‡] Measured by whether or not participants reported getting drunk on more than two days; drinking five or more drinks in a row; or experiencing problems with school, friends or dating on more than one occasion in the past 12 months as a result of alcohol use. A composite score of whether or not participants had engaged in any of these alcohol-use behaviors was created to determine their level of alcohol use.
[§§§] Someone pulled a knife or gun on them, someone shot them, someone cut or stabbed them, they were injured in a physical fight or they saw someone shoot or stab another person.
[****] Participants in this study reported the frequency of alcohol consumption during the previous four months on a 9-point scale ranging from never to daily and reported the number of drinks containing alcohol they consumed on a typical day when they were drinking on a 6-point scale ranging from none to 10 or more.

found that four out of every five (78.4 percent) children and teens, ages 10 to 17, in juvenile justice systems are under the influence of alcohol or other drugs while committing their crime, test positive for drugs, are arrested for committing an alcohol or other drug offense, admit having substance use or addiction problems or share some combination of these characteristics. About half (53.9 percent) of arrested juveniles test positive for drugs* at the time of their arrest.[217]

By the time young people enter the juvenile justice system, 44.0 percent already meet the clinical diagnostic criteria for a substance use disorder.[218] CASA's 2010 study of inmates with substance use problems, *Behind Bars II: Substance Abuse and America's Prison Population*, found that half (52.4 percent) of juvenile or youthful offenders incarcerated in state prisons and local jails met clinical criteria for alcohol or other drug use disorders.[219]

Other research finds that individuals under age 21 who were convicted of crimes reported using alcohol in 41.3 percent of homicides, 43.4 percent of sexual assaults and 37.3 percent of other assaults. In 18.2 percent of the homicides and 16.7 percent of the sexual or other assaults, the perpetrators were using heroin or cocaine in addition to alcohol.[220] One study found that as juvenile offenders, ages 11 to 18, increase their use of cocaine, they also report higher levels of delinquent behavior, including aggravated assault.[221]

Impaired Academic and Career Performance

Adolescent substance use serves as a significant barrier to successful academic performance, educational attainment and career advancement; clinical substance use disorders put teens at even higher risk of impaired academic and career outcomes. In part, these impairments in learning and academic performance are attributable to the direct effects of addictive substances on the parts of the brain responsible for attention, thinking, reasoning and remembering.[222] Impaired academic performance and educational attainment also are due to teen substance users' associations with peers who may consider academics a lower priority.[223]

> *President Obama has set an ambitious goal as part of his American Graduation Initiative that by 2020 America will once again have the highest proportion of college graduates in the world. We know that high-risk drinking and drug use by college students, and teens in high school preparing for college, contribute to numerous academic, social and health-related problems--and this must be addressed if we are to achieve the President's goal.*[224]
>
> --Kevin Jennings
> Assistant Deputy Secretary
> Department of Education

Academic Performance

Tobacco, alcohol and other drug users--even those who have ever used these substances[225]--tend to have worse grades[226] and poorer school attendance[227] than non-substance users. National data indicate that adolescents who ever used tobacco or alcohol are twice as likely as non-substance users† to report moderate (average C) and low (average D or below) grades in the last school semester; those who ever used marijuana are three times as likely to report moderate grades (average C) and six times as likely to report low grades (average D or below) in the last school semester. Lifetime ecstasy users are four times as likely as non-substance users to report moderate grades (average C) and 12 times as likely to report low grades (average D or below) in the last school semester.[228]

CASA's survey of high school students conducted for this study found that those who ever engaged in substance use are less likely than those who never did to believe it is very important that they get good grades; this is true of those who ever smoked (46.3 percent vs. 71.3 percent), binge drank (39.2 percent vs. 60.7

* Alcohol is not included in the standard drug tests.

† Did not use tobacco, alcohol, marijuana or ecstasy.

percent) or used marijuana (44.8 percent vs. 71.2 percent).[229]

Educational Attainment

Teens who smoke, drink alcohol, binge drink or use marijuana or other drugs--even non-heavy users--are more likely than non-users to drop out of school and less likely than non-users to graduate from high school, attend college or obtain a college degree.[230] One study found that nearly one-third of school dropouts[*] indicate that their use of alcohol or other drugs was an important contributor to their decision to leave school.[231]

Higher levels of alcohol use during adolescence and growth in use over time are associated with reduced odds of completing college.[232] Each additional year of delaying the initiation of alcohol use corresponds to a greater likelihood of attending and graduating from college.[233]

Teen marijuana users are approximately twice as likely as non-users to drop out of high school.[234] One study found that, compared to students who did not use marijuana at all in the past year, those who used marijuana less than weekly were 2.6 times as likely to be school dropouts (5.8 percent vs. 2.2 percent) and those who used marijuana at least weekly were 5.8 times as likely to be school dropouts (12.8 percent vs. 2.2 percent).[235] Students who use marijuana before age 15 are twice as likely as other students to report frequent truancy and three times as likely to leave school before age 16.[236] One study found that, by their 40s, individuals who used marijuana in adolescence and young adulthood had more than a third of a year's less educational attainment than non-users. The more frequent the marijuana use in this age group, the fewer the number of years of educational attainment achieved.[237]

Another study found that adolescents who had used illicit drugs or misused prescription drugs in their lifetime had lower educational attainment by about one year compared to those who had not used these drugs.[238] Yet another found a reduction in educational attainment[†] by age 26 of about a quarter of a year for cocaine users.[239]

Adults who had a substance use disorder in adolescence are less likely than those without an adolescent history of such disorders to have received a bachelor's degree (36 percent vs. 47 percent) or a master's degree (5 percent vs. 13 percent).[240]

Career Achievement

Little is known about the career achievement of teens who use tobacco or alcohol; one notable exception is a study that found that teen female smokers have lower incomes than experimental smokers[‡] and non-smokers at age 29.[241]

A significant body of research does exist on the link between teen marijuana use and poor career achievement. Adolescents and young adults who are more frequent users of marijuana are likelier to be unemployed in their late twenties and early thirties than those who use less frequently.[242] Marijuana users[§] who do find employment have lower earnings than non-users.[243] A study of African American and Puerto Rican youth found that adolescent marijuana users are more than twice as likely as non-users to be drunk, high or stoned at work in late adolescence/early adulthood;[244] those who initiated use in early adolescence[**] are at higher risk than non-users of being fired from a job five years later.[245]

With regard to other drug use,[††] one study found that 12th grade girls who used illicit drugs or misused prescription drugs were more likely than non-users to have lower-skill and lower-

[*] Study sample limited to white and Mexican American school dropouts in grades 7-12.

[†] Number of years of education completed.

[‡] Those who never exceeded one to two cigarettes per year.

[§] Except for those who use at relatively low levels.

[**] Average age 14.

[††] Any use of amphetamines, barbiturates, crack, cocaine, PCP, LSD, other psychedelics, crystal meth, inhalants, heroin or other narcotics.

status jobs[*] in young adulthood and boys who used drugs were more likely than non-users to have jobs with fewer benefits;[†] both the girls and boys in this study who used drugs were less likely than non-users to have employer-provided health insurance.[246]

Another study found that having an alcohol or other drug use disorder before age 19 is associated with being unemployed for more weeks in the past year at age 30.[247]

Impaired Social Functioning

Adolescent substance use is associated with short- and long-term adverse outcomes with regard to interpersonal relationships.

One study found that teens who regularly drink alcohol or regularly use marijuana are less likely to report that they expect to stay married than those who never used alcohol (49.4 percent vs. 65.0 percent) or never used marijuana (43.0 percent vs. 62.4 percent).[248]

Other research finds that marijuana use in adolescence or early adulthood is associated with less relationship cohesion (i.e., more talk about breaking up, separating or divorcing), less harmony and affection with one's significant other and more disagreement about handling financial matters.[249] Teen marijuana use also is associated with having children outside of marriage.[250]

Secondhand Effects

The health and social costs of adolescent substance use and addiction extend beyond the substance user to peers, family members and neighbors and pose a significant burden to society.

A significant proportion of high school students responding to CASA's national survey indicated that they personally know someone their age who has suffered consequences due to someone else's alcohol or other drug use. A significant number of teachers in CASA's survey also reported that their students have suffered adverse consequences from others' substance use.[251] (Table 4.1)

Table 4.1
Percent of High School Students Who Know Someone Who Experienced Consequences and Percent of Teachers with Students at Their School Who Experienced Consequences Due to Someone Else's Drinking/Other Drug Use

	Students	Teachers
Trouble with parents/ school/authorities	41.0	73.1
Accident	26.8	64.4
Ability to perform school work/activities disturbed	24.5	67.1
Injury	19.4	57.2
Been harassed	19.4	51.3
Unintended pregnancy	13.8	34.6
Sleep disturbed	12.8	41.0
Physical abuse	11.1	42.6
Sexual assault/rape	7.0	32.1

Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel*, 2010.

Tobacco

Research from the past few decades documents the extensive health consequences for non-smokers exposed to environmental tobacco smoke (ETS).[252]

Adolescent tobacco use during the first or second trimesters of pregnancy predicts reduced birth weight and length, and reduced head and chest circumferences.[253] Teens who smoke during their second and third trimesters give birth to babies with reduced APGAR five-minute scores[‡] by 0.2 points per pack per day.[254] Other prenatal effects of teen smoking during pregnancy include increased risk of attention and behavioral problems in the offspring.[255]

[*] More blue collar as opposed to white collar jobs.
[†] Employer-provided retirement benefits, paid vacation and health insurance.

[‡] The APGAR five-minute score assesses how well a newborn is adapting to its new environment. The score ranges from 1 to 10, with 10 indicating the healthiest infant.

Children exposed to ETS are at increased risk of developing acute lower respiratory infections, ear infections, asthma and chronic respiratory symptoms,[256] developing asthma in adulthood and becoming smokers as adults.[257] People of all ages who are exposed to ETS are at increased risk of lung, breast and other cancers; heart disease; stroke; and respiratory illnesses.[258]

Recently, the term "third-hand smoke" has been developed to describe the invisible but toxic gases and particles--including heavy metals, carcinogens and radioactive materials--that form a residue on smokers' hair, clothing and household items that remain for weeks or months after the second-hand smoke has cleared.[259] This third-hand smoke is a cancer risk, much like second-hand smoke, or ETS.[260]

Alcohol

In addition to the risk of being the victim of alcohol-related fights and violence,[261] non-drinking adolescents are at risk of other secondhand effects of peers' alcohol use.

National data indicate that in 2009, 28.3 percent of teens reported that, within the previous month, they had ridden with a driver who had been drinking alcohol.[262] In 2006, 20.9 percent of high school seniors reported riding at least once in the past two weeks in a car with a driver who had been drinking and 11.6 percent reported doing so with a driver who had been binge drinking.[263] In 2009, traffic crashes involving drivers ages 13 to 18 who were under the influence and/or tested positive for alcohol or other drugs resulted in 326 fatalities and 217 incapacitating injuries of persons other than the driver; 154 of these fatalities and 117 of these incapacitating injuries affected passenger or pedestrian teenagers ages 13 to 18.[264]

Girls who used alcohol at the time of first intercourse are nearly three times as likely as other girls to drink during their first trimester should they become pregnant.[265] Pregnant adolescent girls[*] who drink increase the risk of having babies with lower AGPAR five-minute scores, lower birth weights and reduced head and chest circumferences.[266]

Alcohol use by pregnant teens can affect their children later in life as well. One study found that for each additional drink per day that pregnant teens drank in the second trimester, their children's height was reduced by 1.1 inches at age six.[267] More general research on children of mothers who smoked during pregnancy reveals a range of short- and long-term health effects, not the least of which are fetal alcohol spectrum disorders (FASD), which may involve mental retardation; defects of the heart, face and other organs; and learning, emotional, psychological and behavioral problems.[268]

Other Drugs

In 2006, 20.2 percent of high school seniors reported riding at least once in the past two weeks in a car with a driver who had used marijuana and 5.1 percent reported doing so with a driver who used another illicit drug.[269]

Research on adolescent drug use during pregnancy shows secondhand effects on their children. Any marijuana use during the first trimester is associated with a reduced gestational age of seven days per marijuana joint per day. Teens who used marijuana during their second trimester are nearly four times as likely as those who did not use marijuana to have babies who are small for their gestational age.[270] For teens who used any marijuana in their second trimester of pregnancy, their children's height was reduced by 1.1 inches by age six.[271]

More general research on the effects of illicit drug use on pregnancy indicates that children born to women who used marijuana or cocaine during pregnancy are at increased risk of impaired attention, language and learning skills and behavioral problems. Methamphetamine use during pregnancy increases the likelihood of fetal growth restriction, decreased arousal and poor quality of movement in infants. Heroin use by pregnant women is associated with low birth weight.[272]

[*] Age 12 to 18.

Financial Costs

Research specific to the direct financial costs of teenage substance use and addiction is limited. However, we do know that the cost of underage drinking in 2007 was estimated at $68.0 billion. This included $45.7 billion in pain and suffering costs, $14.9 billion in lost work costs and $7.4 billion in medical costs. These staggering numbers amounted to $2,280 per year for each adolescent in the United States. Nearly $44 billion of the $68.0 billion was attributed to youth violence from underage drinking.[*] Costs associated with youth traffic crashes amounted to $10.0 billion; high-risk sex[†] among those ages 14-20, $4.8 billion; youth property crime,[‡] $3.2 billion; youth injury,[§] $2.1 billion; fetal alcohol syndrome among mothers ages 15 to 20, $1.2 billion; and poisonings and psychoses, $416 million.[273]

Alcohol detoxification and treatment costs for young people in 2007 were estimated to be $2.4 billion,[274] but in that same year fewer than eight percent of teens in need of treatment actually received it.[275]

Student substance use generates a financial burden for high schools themselves, including the need for increased staff and administration costs linked to coping with alcohol and other drug problems. Violence associated with substance use requires increased school costs for security personnel and equipment, insurance and workers' compensation, repairs and replacement of vandalized or stolen materials and associated property and liability insurance costs. In a comprehensive study of the impact of substance use on schools, CASA estimated that at least 10 percent of education spending nationally[**] is directly linked to substance use and addiction.[276]

Teen substance use also poses a financial burden on the juvenile justice system. In 2004, CASA estimated that the cost of substance use to juvenile justice programs was at least $14.4 billion annually for law enforcement, courts, detention, residential placement, incarceration, federal formula and block grants to states and addiction treatment. CASA was unable to determine the costs of probation, physical and mental health services, child welfare and family services, or the costs to victims, which together could more than double this $14.4 billion estimate.[277]

The costs of teen substance use to society are much greater, however, since this problem largely originates in the teen years and can last a lifetime if left untreated. In 2005, federal and state governments spent $207.2 billion on the burden of substance use and addiction on health care alone.[278]

CASA estimates that, in 2005, the total cost of substance use and addiction to federal, state and local government budgets was $467.7 billion--10 percent of federal spending and 16 percent of state spending. This amounts to almost $1,500 for every person in America. These costs largely are the result of crimes, diseases, accidents, child neglect and abuse, unplanned pregnancies, homelessness, unemployment and other outcomes of our failure to prevent substance use and treat the health condition of addiction. In CASA's 2009 report, *Shoveling Up II: The Impact of Substance Abuse on Federal, State and Local Budgets*, CASA found that for every dollar federal and state governments[††] spent on risky substance use and addiction in 2005, 95.6 cents went to shoveling up the wreckage and only 1.9 cents were spent on prevention and treatment, 0.4 cents on research, 1.4 cents on taxation or

[*] Alcohol-attributable murders, rapes, robberies, other assaults and child abuse and neglect.
[†] Alcohol-attributable unplanned pregnancies, HIV/AIDS and other sexually transmitted diseases due to unprotected sex or use of unreliable birth control methods.
[‡] Alcohol-attributable burglaries, larcenies and motor vehicle thefts.
[§] Alcohol-attributable burn, drowning and suicide deaths and nonfatal suicide attempts.

[**] Includes costs of teen substance use, education staff use and additional educational costs associated with fetal alcohol syndrome.
[††] This analysis does not include local spending due to data limitations.

regulation and 0.7 cents on interdiction. More than 70 percent of the costs of our failure to prevent and treat this problem are in health care and justice spending.[279]

Chapter V
Messages That Promote Teen Substance Use Pervade American Culture

The path to substance use and addiction originates in childhood or adolescence with a young person's decision to use addictive substances. This decision, however, can hardly be considered an informed choice. A teenager today may start her day hearing her father discuss the great pain medications he got after his dental surgery, downloading a provocative photo of a drunk friend partying the night before, buying coffee at a store displaying cigarette and beer ads, listening to song lyrics extolling the benefits of drug use, hearing or seeing advertisements about the attention-focusing or calming effects of certain prescription drugs or the health benefits of "medical marijuana" and watching her teacher snuff out a cigarette before walking into school--all before arriving at first period. These pervasive images and experiences make substance use feel like a normal part of daily life. As seductive as these images and messages are to the average teen, they may be even more compelling to those who are uncomfortable with their appearance, unsure of how they fit in or who feel depressed, anxious or lonely.

Once the interest in or desire to use addictive substances is primed in them, teens have little problem accessing these products. Usually it's as simple as obtaining them from friends or family. Tobacco and alcohol--the two substances most commonly used by teens--are readily available in people's homes and at social gatherings. Marijuana, the third most commonly used drug, also is relatively easy for most teens to get, while psychoactive prescription drugs, the fourth most commonly misused substance among teens, are there for the taking in the family medicine cabinet or via a friend's or family member's over-supply of pills prescribed by a family physician.

While parents, school- or community-based prevention programs and national media campaigns may instruct teens not to smoke,

drink or use other drugs, these messages too often are diluted or drowned out entirely by what teens see and hear in the media, in their communities, in their own homes and among their peers--messages that glorify relaxing with a cigarette, getting drunk or high to socialize or have fun, or relying on a drug to cure any sense of physical or emotional discomfort.

Parental Influences

Although most parents do not blatantly condone substance use among children and adolescents, the messages many parents convey through their own actions too often are of ambivalence, tolerance or tacit approval.

Parents' Views and Expectations of Teen Substance Use

The views and expectations parents communicate to their teens about tobacco, alcohol and other drugs are strongly related to their teens' use of addictive substances. In CASA's focus groups with parents of high school students, conducted for this study, nearly all parents said they strongly disapprove of their teens engaging in substance use, with parents of younger teens expressing even stronger disapproval than parents of older teens. Yet many parents of older teens say they are resigned to the idea that their child may experiment with or use addictive substances.

> *As much as I'd like my kids to never do anything that's addictive I do know it's a part of growing up and if you shun everything, then I believe a child will rebel.*
>
> --Parent Participant
> CASA Focus Group with
> Parents of High School Students

When parents believe that their teen already has initiated substance use, they begin to feel that they have little influence over it. Parents whose children are using, even if only once or twice, are about twice as likely as other parents to believe that there is very little parents can do to prevent their children from trying alcohol (50 percent vs. 21 percent) and that what they say will have little influence over whether their child will try marijuana (42 percent vs. 23 percent); they also are twice as likely to report having difficulty enforcing rules against substance use (25 percent vs. 11 percent).[1]

CASA's 2009 *Teen Survey* found that 96 percent of parents say it is important to them that their teen does not use marijuana, but only half (53 percent) believe it is realistic to expect that a teen will never try marijuana. Teens whose parents say future substance use by their child is very likely are 10 times as likely to have tried marijuana compared to teens whose parents say future substance use by their child will never happen (30 percent vs. 3 percent).[2]

Parents of high school students in CASA's survey were asked how likely it is for teens to experience a variety of consequences if they engage in binge drinking, misuse prescription drugs or use marijuana about once a month. Between approximately 30 percent and 60 percent of parents think that negative consequences are very likely to result from monthly binge drinking or prescription drug misuse; except for the danger of addiction, they see binge drinking as potentially more harmful than prescription drug misuse. Parents regard marijuana use as the least likely to result in negative consequences.[3] (Table 5.1 provides further detail.)

Despite parents' general perceptions of dangerous consequences related to teen substance use, less than half (42.6 percent) list refraining from any form of substance use (smoking cigarettes, drinking alcohol, using marijuana, misusing prescription drugs or using other illicit drugs) as one of their top three concerns for their teens.[4] (Table 5.2 provides further detail.)

Table 5.1
Percent of Parents Who Say Negative Consequences Very Likely to Result from Teen Substance Use

	Very Likely if:		
Consequences	**Binge Drinks 1X/Month**	**Misuses Rx Drugs 1X/Month**	**Smokes Marijuana 1X/Month**
Accident from DUI	60.5	46.9	39.6
Damage brain cells	56.0	52.8	44.6
Accident	54.0	39.2	31.9
Poor academic performance	53.3	50.7	44.4
Risk of addiction	50.2	57.0	41.3
Drive drunk/high or Ride with drunk/high driver	49.9	43.1	39.9
Unprotected sex	46.4	34.3	28.8
Legal problems	46.3	41.8	39.0
Overdose/death	34.3	46.1	19.1
Sexual assault	33.2	28.3	21.9
Get into a fight	31.5	26.8	20.2

Source*:* CASA *National Survey of High School Students, Parents of High School Students and High School Personnel*, 2010.

Table 5.2
Percent of Parents Who Say Concern is Among Top Three

Concerns	**Percent**
Getting good grades	52.4
Getting into college	42.5
Safe driving	27.3
Not using illicit drugs (other than marijuana)	**22.9**
Abstaining from sex	22.8
Not suffering from depression or anxiety	20.2
Eating healthy/balanced meals	19.2
Not drinking alcohol	**16.6**
Having safe sex	14.0
Getting regular exercise	10.4
Not using marijuana	**10.2**
Not smoking cigarettes	**8.3**
Being safe on the Internet	7.8
Not being picked on/bullied	6.7
Not misusing prescription drugs	**6.1**
Avoiding gangs	4.5

Source*:* CASA *National Survey of High School Students, Parents of High School Students and High School Personnel*, 2010.

Parents may recognize the risk of substance use among adolescents in general, but some do not see it in their own children.[5] For example, parents are three times as likely to believe that their children's friends drink and drive as they are to believe that their own children do so (37.0 percent vs. 10.2 percent). More than half (57.9 percent) of parents of adolescents[*] believe that their children have attended parties where there was drinking, yet only 19.4 percent think their child has ever come home intoxicated.[6]

Parents also are not very aware of what their children's friends are doing with regard to substance use, according to CASA's survey of high school students and their parents. Among students who say their friends smoke cigarettes, only a third of their parents (33.1 percent) think their friends smoke cigarettes; among students who say their friends use marijuana, only a third of their parents (32.5 percent) think their friends use marijuana; and among students who say their friends drink alcohol, only 41.5 percent of their parents think their friends drink alcohol.[7]

Some parents believe that allowing their children to drink at home, or under adult supervision, will teach their children to drink more responsibly; however, research indicates that allowing teens to drink at home actually increases the likelihood that they will drink outside of the home. A recent study of adolescents found that drinking in the 8th grade under adult supervision--either at parties or at dinner and special occasions--is significantly associated with 9th grade alcohol use and alcohol-related problems.[†] [8] A study of college freshmen found that those who reported that their parents permitted them to drink during their senior year in high school[‡] were more likely to

[*] Ages 13-20, living at home.
[†] Such as having trouble at school the next day, getting injured or having an accident or being unable to remember the night before because of drinking.
[‡] Teens reported how many (if any) drinks their parents considered to be the upper limit for consumption and reported if their parents think it's okay for them to drink outside the home on special occasions.

misuse alcohol and experience negative alcohol-related consequences in college--such as getting into physical fights when drinking and having a hangover the morning after drinking--compared to freshmen whose parents did not let them drink during their senior year in high school.[9] Girls who report that their mothers let them drink at home in high school--either at family meals or with friends--report more frequent heavy drinking[*] during their first semester in college than girls who were not allowed to drink at all.[10] Another study found that 17.8 percent of 9th graders and 8.8 percent of 12th graders who are current alcohol users report that they last drank with their parents and 13.6 percent of 9th graders and 8.0 percent of 12th graders who are current alcohol users report that they last drank with their siblings.[11]

> *I think many parents need educating themselves. I have heard of so many parents permitting underage drinking in their homes. They use the excuse, 'Well, I would rather them do it in my house than somewhere else.' This creates an atmosphere of acceptance which I believe contributes to the abuse.*
>
> --CASA Focus Group with Parents of High School Students

Teens' Perceptions of Parents' Views Regarding Addictive Substances

To teens, parental attitudes are extremely important. CASA's national survey of high school students, conducted for this study, found that one of the main reasons why students think their peers do not drink or use other drugs is because their parents would disapprove.[12]

Teens who believe adults disapprove of teen smoking, drinking, using marijuana, using other illicit drugs or misusing controlled prescription drugs are less likely to engage in substance use while those who believe parents are tolerant of substance use are at higher risk of use.[13] The greater perceived parental disapproval[†] of substance use, the less likely teens are to use.[14]

Approximately 90 percent of adolescents report that their parents would strongly disapprove of their smoking one or more packs of cigarettes a day, having one or two drinks of alcohol nearly every day or using marijuana or hashish once or twice.[15] CASA's analysis of national data found significant differences in substance use based on high school students' reports of their parents' sense of disapproval about their smoking, drinking or using marijuana:

- Students who say their parents would neither approve nor disapprove of their smoking one or more packs of cigarettes a day are five times as likely to be current cigarette smokers (46.2 percent vs. 8.9 percent) and more than 12 times as likely to be nicotine dependent (16.3 percent vs. 1.3 percent) as teens who say their parents would strongly disapprove.[16]

- Students who say their parents would neither approve nor disapprove of their having one or two alcoholic beverages almost every day are more than two-and-a-half times as likely to be current alcohol users (46.8 percent vs. 17.5 percent) and three-and-a-half times as likely to have an alcohol use disorder (18.7 percent vs. 5.3 percent) as teens who say their parents would strongly disapprove.[17]

- Students who say their parents would neither approve nor disapprove of their using marijuana or hashish monthly are more than six times as likely to be current marijuana users (46.9 percent vs. 7.2 percent) and more than seven times as likely to have a marijuana use disorder (24.8 percent vs. 3.4 percent) as teens who say their parents would strongly disapprove.[18]

[*] Drinking four or more drinks on occasion and drinking to intoxication.

[†] Degree to which youth perceived their parents felt it was wrong to use cigarettes, alcohol or marijuana.

Parent-Child Relationship

The nature of the parent-child relationship also is associated with adolescent substance use and substance use disorders; teens living in families with higher levels of parent-child conflict, poor communication, weak family bonds and other indicators of an unhealthy parent-child relationship are at increased risk.[20] One long-term study found that parents who believe that it is okay to lie to their children in order to keep their respect have adolescents who are at 1.3 times the risk of initiating substance use. Another study found that adolescents who are dishonest[*] with their parents are approximately three times as likely to become daily smokers and to end up smoking five or more cigarettes a day.[21]

Substance Use and Addiction Among Parents

What parents do may be even more important than what they say.[22] Unfortunately, CASA's analysis of national data finds that nearly half (45.4 percent, 33.9 million) of children under age 18 live with a parent who engages in risky substance use:[†]

- 30.7 percent live with a parent who is a current smoker,
- 26.1 percent live with a parent who is an excessive and/or binge drinker, and
- 6.6 percent live with a parent who is a current user of another drug.[23]

CASA's analysis also found that 16.9 percent of children under the age of 18 live with a parent who has a substance use disorder, including those who meet clinical criteria for nicotine dependence (10.9 percent), alcohol abuse or dependence (6.9 percent) and/or other drug abuse or dependence (1.8 percent).[24] Parental substance misuse has been linked to adolescent tobacco, alcohol and other drug use.[25]

> *Parents are probably the most important influence on adolescent substance use and abuse. Parents who model bad behavior at home are sending a harmful message of encouragement to their teens.*[19]
>
> --Laurence Steinberg, PhD
> Distinguished University Professor
> Laura H. Carnell Professor of Psychology
> Temple University
> Author, *You and Your Adolescent: The Essential Guide for Ages 10 to 25*

School Influences

Although schools have various programs and policies to address student substance use,[‡] the dangerous notion that it is an unavoidable part of adolescence and even a normal part of teen life is pervasive.

School Personnel's Views and Expectations of Teen Substance Use

CASA's survey of school personnel conducted for this study found that, with few exceptions,[§] teachers, like parents, generally view binge drinking as more dangerous than the misuse of controlled prescription drugs which, in turn, is seen as more risky than marijuana use. Yet teachers have slightly different views than parents about the negative consequences that can occur from binge drinking, misusing prescription drugs or smoking marijuana about

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[*] Based on responses to items such as: "Making a good impression with one's parents is more important than telling the truth"; "It's important to be honest with one's parents"; "Sometimes you must lie to your parents to keep their trust"; and "Sometimes you have to break your parents' rules to keep your friends."

[†] Risky substance use is defined for the purpose of these analyses as: current smokers of any age, underage drinkers, adults who engaged in binge drinking one or more times in the past 30 days, adult drinkers who exceed the U.S. Department of Agriculture (USDA) guidelines of no more than one drink per day for women or two drinks per day for men, current users of any illicit drug and/or current misusers of any controlled prescription drug.

[‡] See Chapter IX.

[§] Poor academic performance, increased chance of addiction, increased chance of overdose or death.

once a month. Teachers do not make as strong of a connection between students' substance use and academic performance as parents do; teachers are less likely than parents to think that poor academic performance is very likely to happen as a result of teens monthly binge drinking (31.5 percent vs. 53.3 percent), misusing prescription drugs (32.7 percent vs. 50.7 percent) or using marijuana (32.8 percent vs. 44.4 percent).[26] (Table 5.3 provides further detail on teachers' responses.)

Table 5.3
Percent of Teachers Who Say Negative Consequence Very Likely to Result from Teen Substance Use

	Very Likely if:		
Consequences	**Binge Drinks 1X/Month**	**Misuses Rx Drugs 1X/Month**	**Smokes Marijuana 1X/Month**
Drive drunk/high or Ride with drunk/high driver	66.0	44.7	52.6
Accident from DUI	65.1	46.5	44.6
Damage brain cells	65.0	46.7	48.8
Accident	51.0	28.6	17.0
Poor academic performance	31.5	32.7	32.8
Risk of addiction	52.2	56.8	33.7
Unprotected sex	59.6	35.7	33.5
Legal problems	40.7	30.8	31.6
Overdose/Death	24.1	35.9	7.0
Sexual assault	40.6	19.7	13.2
Get into a fight	42.2	20.8	13.2

Source: CASA *National Survey of High School Students, Parents of High School Students and High School Personnel*, 2010.

CASA's survey found that most teachers report that their school's administration is very or somewhat concerned about most forms of student substance use: smoking (53.0 percent), alcohol use (79.5 percent), marijuana use (76.0 percent), other illicit drug use (73.5 percent), misuse of prescription drugs to get high (67.1 percent) and misuse of prescription drugs to stay awake or focused (65.4 percent). Yet this level of concern does not seem to track with schools' priorities. Only 15.7 percent of teachers ranked preventing student smoking as one of their school's top concerns; 46.0 percent did so for alcohol use, 25.2 percent for marijuana use, 27.5 percent for other illicit drug use and 4.5 percent for the misuse of controlled prescription drugs.[27] (Table 5.4 provides further detail.)

Table 5.4
Percent of Teachers Who Say Concern is Among School's Top Three

Concerns	**Percent**
Preventing bullying	50.6
Preventing alcohol use	**46.0**
Preventing gangs	38.0
Preventing illicit drug use (other than marijuana)	**27.5**
Preventing marijuana use	**25.2**
Safe driving	24.1
Internet Safety	16.0
Preventing smoking of cigarettes	**15.7**
Preventing depression or anxiety	14.9
Promoting safe sex	14.6
Promoting abstinence from sex	9.7
Eating healthy/Balanced meals	6.3
Preventing misuse of prescription drugs	**4.5**
Promoting regular exercise	3.3

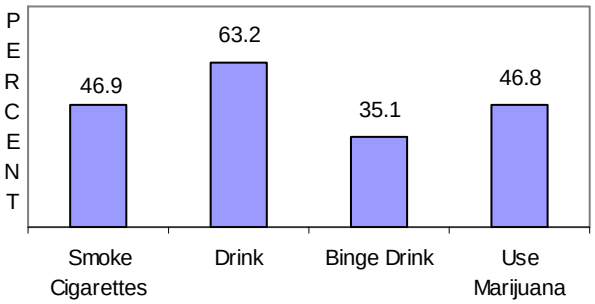
Source: CASA *National Survey of High School Students, Parents of High School Students and High School Personnel*, 2010.

School Climate

Nearly half (46.9 percent) of high school students in CASA's survey think that more than a quarter of their peers smoke cigarettes at least once a week, 63.2 percent think that more than a quarter drink alcohol at least once a month, 35.1 percent think that more than a quarter binge drink at least once a month and 46.8 percent think that more than a quarter use marijuana at least once a month.[28] (Figure 5.A)

Figure 5.A

High School Students Who Believe That More Than a Quarter of Their Classmates Do the Following at Least Once a Month



Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel,* 2010.

High school students who perceive substance use to be the norm at their school are more likely to engage in substance use.[29]

Schools in which students perceive the school climate[*] to be negative have more substance-related offenses[†] than schools in which students feel that the school climate is more positive.[30]

According to CASA's 2010 *Teen Survey*, 45 percent of high school students say that there are gangs or students who consider themselves to be part of a gang in their school. Teens in schools that have gangs are nearly twice as likely as those in schools without gangs to report that drugs are used, kept or sold on school grounds (58 percent vs. 30 percent). Students who report the presence of gangs and drugs in their schools also are more likely to have ever used tobacco (23 percent vs. 2 percent), alcohol (39 percent vs. 12 percent) and marijuana (21 percent vs. 4 percent) than students who do not report the presence of gangs or drugs in their schools.[31]

Substance Use and Addiction Among School Personnel

Among secondary school teachers, 4.7 percent report current heavy alcohol use[‡] and 4.4 percent report current use of illicit drugs[§] or misuse of controlled prescription drugs (3.3 percent report current marijuana use).[**] Nearly eight percent (7.8 percent) of secondary school teachers met clinical diagnostic criteria in the past year for an alcohol use disorder and 1.1 percent met criteria for other drug use disorders.[32]

Community Influences

Teens' perceptions of what is acceptable with regard to substance use derive not only from parents and schools, but from their community as well.

> *In high school, problems like substance abuse are contagious. A few kids get drunk, a few more tag along. It starts adding up: Norms change. Expectations change. Now, I'm a parent who has done everything right and this is a problem for my kid. Even if I'm the perfect parent, risks rise if we are not also addressing this issue as a community. This is why high school substance abuse and addiction are problems for all of us--parents, grandparents, anyone who cares about kids.*[33]
>
> --Peter Mitchell, a father and expert in behavior-change communications who was the Original Marketing Director of the *truth*® anti-tobacco campaign

[*] This measure included the level of student absenteeism, the dropout rate from the prior school year, scores from the state achievement test, school size, average class size, per-pupil expenditures, percent of non-white students, percent of teachers with master's degrees and the average number of years teaching experience the faculty had.

[†] Defined as acts of use, possession and distribution that occur on school property that are discovered, recorded by school officials and reported to the state of Florida.

[‡] Drinking five or more drinks on the same occasion (i.e., at the same time or within a couple of hours) on each of five or more days in the past 30 days.

[§] Includes marijuana/hashish, cocaine/crack, heroin, hallucinogens or inhalants.

[**] Annual averages based on 2002 to 2004 data.

National data indicate that the majority of adolescents report that adults in their neighborhood would "somewhat" or "strongly" disapprove of their trying marijuana (78.8 percent), drinking alcohol daily (70.3 percent) or smoking cigarettes daily (65.1 percent). Adolescents who report that adults in their neighborhood would not disapprove strongly of their trying marijuana once or twice are likelier to use marijuana in the past year than those who report that neighborhood adults would strongly disapprove (27.8 percent vs. 10.5 percent).[34]

Messages in the Community About Tobacco and Alcohol

Adolescents living in neighborhoods in which substance-related images are pervasive--either through the sheer number of stores selling tobacco or alcohol[*] or through tobacco and alcohol product advertising--are at increased risk of smoking[35] and drinking[36] and associated harmful consequences.[37]

One study found that, compared to other stores in the same community, stores popular among adolescents display about three times as many tobacco-marketing materials and have twice as much shelf space devoted to tobacco products.[38] Another study found that adolescent binge drinking and driving after drinking are significantly associated with the presence of alcohol retailers within 0.5 miles of their homes.[† 39]

Community Safety

Neighborhoods thought to have high levels of disorganization--characterized by crime, graffiti, violence, drug selling and people moving in and out often--are associated with the use of alcohol and other drugs by adolescents.[40] Likewise, neighborhoods characterized by problems such as vandalism and abandoned houses are associated with adolescents' use of marijuana and other illicit drugs.[41]

[*] More common in areas of economic disadvantage.
[†] Controlling for individual and family characteristics, parents' or guardians' drinking behavior and neighborhood demographics.

Among urban adolescents, perceived neighborhood risk--such as the level of gang activity and fighting--is associated with cigarette, alcohol and marijuana use, even when controlling for factors such as school performance, absenteeism, church attendance and other demographics.[42] For urban black adolescents, perceptions of violence, safety, drug use and drug availability in the neighborhood are related to increased risk of tobacco, alcohol and marijuana use.[43]

Media Influences

The media's tendency to present substance use as glamorous, fun and stress relieving, coupled with limited regulation of the advertising of tobacco and alcohol products,[‡] contribute to a culture of pervasive pro-substance use messages that bombard teens every day.

> *I believe that my drug use was a result of the culture of American youth. I did these things because they are the norm.*[44]
>
> --Eric
> A person in recovery

Tobacco and Alcohol Advertising and Adolescent Substance Use

Tobacco and alcohol advertising and promotions have been linked to increased risk of adolescent smoking[45] and drinking.[46]

Although tobacco companies were banned from advertising on television or radio in 1971 and from advertising on billboards in 1998, young people continue to report exposure to tobacco advertising in various forms of media, such as in-store displays, print advertising and the

[‡] See Chapter IX for a full discussion of government regulations and industry standards regarding restrictions on tobacco and alcohol advertising.

Internet.[*] [47] One study found that in 2004, 84.7 percent of 6th-12th graders reported seeing tobacco advertisements in stores, 81.0 percent saw images of smoking on TV or in the movies, 50.3 percent saw them in newspapers and magazines and 32.8 percent saw them on the Internet.[48]

Tobacco companies spent $12.5 billion on advertising and promotions in 2006; $243 million were spent on point-of-sale advertising (at retail locations), $169 million on merchandise, $50.3 million on magazine advertisements, $6.5 million on advertising on company Web sites and almost one million dollars on outdoor advertising. The largest promotion expenditure was $9.21 billion in price discounts paid to wholesalers and retailers in order to reduce the price of cigarettes to consumers.[49]

Teens who are receptive to tobacco advertising[†] are up to three times as likely to become smokers as other, less receptive teens.[50] One longitudinal study estimated that tobacco promotions account for one third of smoking experimentation among teens.[51] Another long-term, large-scale study found that the odds of becoming a tobacco user are more than doubled by exposure to tobacco marketing and media images of tobacco use.[‡] [52]

Alcohol advertising is related to young people's attitudes and expectations regarding drinking[53] and to their risk of alcohol use.[54] Teens who report high levels of alcohol advertising exposure--for example, those living in areas with greater per capita advertising expenditures--drink more alcohol than other teens; each additional advertisement seen is associated with a one percent increase in drinks consumed in the past month.[55]

Retail Advertising and Product Promotions. Adolescents are exposed to an average of 184.1 cigarette brand impressions every time they visit a store that sells tobacco. Stores that are popular with teens display more tobacco ads and have more shelving space devoted to tobacco products (yet they do not display more signs discouraging minors from using tobacco) than stores that are less popular with teens.[56] One study found that adolescents who were shown pictures of convenience stores saturated with tobacco ads were likelier than those who were not shown such pictures to believe that they could purchase cigarettes at convenience stores in their neighborhood and that their peers tried and approved of smoking; they also reported less support for tobacco-control policies.[57]

Ownership of tobacco promotional items or willingness to use them also is associated with adolescent smoking initiation and progression.[58] In a statewide study, adolescents ages 12-15 who reported owning or being willing to use a tobacco promotional item were 1.8 times as likely to be smokers six years later as those who did not own or were not willing to use a tobacco promotional item.[§] [59]

Adolescents' exposure to alcohol advertising at retail outlets is associated with a higher likelihood of drinking about two years later.[60] Ownership of or willingness to use alcohol promotional items also is associated with drinking initiation and binge drinking.[61] Among younger adolescents in grades 6-8, those who reported higher receptivity to alcohol marketing[*]

[*] The online sale and advertising of tobacco products is permitted, although online marketing of tobacco products to young people is prohibited.

[†] Teens who can name a favorite advertisement or brand, own promotional items or are willing to use promotional items.

[‡] Measures of exposure included, for example, asking participants to recognize a brand name or logo, recall a brand, identify a favorite brand, express appreciation of advertisements, report how many actors they had seen smoking in movies, report whether they had received a sample of tobacco or had received or would use a tobacco promotional item.

[§] Those who owned a tobacco promotional item and named a brand advertisement that appealed to them were 2.7 times as likely to become established smokers four years later than adolescents who did not own a tobacco promotional item and did not name an appealing tobacco brand advertisement.

marketing[*] were 77 percent likelier to begin drinking one year later than those who reported less receptivity to alcohol marketing.[62] Adolescents ages 10 to 14 who owned alcohol-branded merchandise were 1.7 times as likely as those who did not own alcohol-branded merchandise to be susceptible to drinking initiation and binge drinking a few months later.[63]

Print Media. Although tobacco companies have reduced advertising in magazines with youth readership over the course of the past decade,[†] they have shifted the brands advertised to focus on those most popular with young smokers, such that cigarette brands popular among teens are more likely than those popular with adults to be advertised in magazines that young people read.[64] The cigarette brands most commonly advertised in magazines that are popular among 12- to 15-year-olds are the brands teens try first and choose to smoke regularly.[65]

With regard to alcohol, the number of alcohol advertisements in magazines increases with the percent of youth readers: magazines contain 1.6 times more beer ads for every additional one million readers ages 12-19 years.[66] For each 10 percentage-point increase in readership among people ages 12-20, there are between 3.1 and 3.4 times more beer advertisements and 2.2 to 3.2 times more hard liquor advertisements in magazines.[67] Advertisements for types of alcohol that are popular among youth (e.g., premium and low-calorie beer, vodka, rum and alcopops) are most likely to be placed in magazines with higher youth readership.[68]

The Internet. A study that examined 30 smoking culture and lifestyle Web sites that promoted smoking[‡] found that none blocked access to youth using age verification, two-thirds (66.7 percent) had unrestricted access with no minimum age warning and one-third (33.3 percent) had unrestricted access with minimum age warnings.[69]

A study that reviewed 74 Web sites operated by alcohol companies found widespread use of promotional content that appeals to young people, such as games, downloads, cartoons and music. In 2003, 13.1 percent of all in-depth visits[§] to 55 alcohol Web sites were initiated by underage youth. While most Web sites required visitors to enter a birth date or otherwise affirm that they are 21 year or older, none verified the accuracy of the information provided.[70]

Alcohol companies also promote their products on social networking sites--such as Facebook, the largest of these sites in the world--which are very popular among high school students.[**] [71] In addition to advertisements, alcohol companies can promote their products on Facebook by creating fan pages that individual users can join, by creating applications with which users can interact, by promoting alcohol-related events and by creating membership groups. One study found that some alcohol advertisements and most alcohol promotions on Facebook could be accessed by persons under age 21, as could all of the 5,000 beer and 5,000 spirits groups reviewed.[72]

Television. Research suggests that adolescents who see more alcohol ads on television are more likely to drink.[73]

Despite the alcohol industry's voluntary standard of limiting alcohol advertisement placements on television programs where at least 70 percent of the audience is age 21 or older,[74] 7.5 percent of all alcohol product

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[*] Such as reporting that they owned an alcohol promotional item or identifying the brand name of their favorite alcohol advertisement.

[†] In 2004, Philip Morris eliminated all magazine advertising of its tobacco products.

[‡] Including Web sites that displayed pictures of celebrity smokers, provided information on smokers' rights or featured smoking fetish images and videos. Sites for individuals and organizations that manufacture or sell tobacco products were excluded.

[§] Visits that resulted in more than two-page views.

[**] Alcohol companies are invited to promote their products on Facebook but are asked to comply with Facebook's *Alcohol Advertising Guidelines* which require advertisers to, among other things, restrict access to their ads to persons of legal drinking age.

advertisement placements--and 9.0 percent of all such advertisements on cable television--appear on programs where the underage audience is more than 30 percent. Indeed, youth exposure to alcohol advertising on television rose 71 percent between 2001 and 2009. Much of this exposure can be attributed to increased alcohol advertising on cable TV: from 2001 to 2009, ads appearing on cable TV more than tripled. From 2004 (after the liquor industry adopted the standard) to 2009, youth exposure to distilled spirits ads on cable TV doubled.[75]

Although the alcohol industry airs "responsibility" ads against underage drinking or impaired driving, young people were 22 times as likely to see an ad for alcohol products than a responsibility add between 2001 and 2009.[76]

Exposure to Pro-Substance Use Messages in the Entertainment Media

Teens devote an average of nearly 6.5 hours a day to media use;[*] but because they are multitasking with different forms of media (such as reading while watching TV), their total average daily exposure to media messages is 8.5 hours. Children spend more time with media than with their parents or friends.[77]

Higher exposure to electronic media has been associated with adolescent substance use, early sexual activity, violence, obesity and low academic achievement.[78] Media images that glamorize tobacco, alcohol and other drug use encourage the idea that such behavior is normative and influence children's attitudes and expectations about substance use.[79] Yet few parents of high school students in CASA's survey, conducted for this study, say that they think it is "very necessary" to control or limit their teens' exposure to messages in the media and on the Internet that are related to smoking (25.4 percent), drinking (26.7 percent) or using other drugs (31.5 percent).[80]

Television. The more hours adolescents spend watching television, the higher their risk of smoking and drinking.[†] [81] The American Academy of Pediatrics recommends that parents limit total media time by children ages two and older to no more than two hours per day[82] and restrict access to television channels that are known to portray excessive images of substance use.[83] Despite this, only 46 percent of 8 to18-year olds report that their family has any rules governing TV use.[84]

A 2000 study of the top-rated prime-time shows revealed that 22 percent mention or depict tobacco, 77 percent mention or depict alcohol and 20 percent mention or depict illicit drugs. Nearly half (49 percent) of all episodes examined included humorous references to substance use; alcohol was joked about most often, in 35 percent of all episodes, and humorous references to tobacco, illicit drugs or prescription drugs were made in about 10 percent of the episodes.[85]

A recent study found that 40 percent of episodes from top-rated television shows[‡] for adolescents ages 12 to 17 years had at least one depiction of tobacco use (89 percent of which were of cigarettes).[86] A study of the 10 television shows most popular with young people ages 9-14 found that the frequency of shows depicting alcohol use (37 percent) was virtually identical to the frequency of such depictions in the top 10 fictional prime time shows, generally targeted to adult viewers (38 percent).[87]

Movies. Exposure to smoking or drinking in movies is related to adolescent smoking initiation[88] and adolescent drinking.[89]

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[*] Media includes TV, videos, movies, radios, tapes, CDs, MP3s, books, newspapers, magazines, video games, computers, e-mail, instant messaging, chat rooms, Web-surfing and graphics.

[†] It is difficult to determine the extent to which the act of television viewing, with its high levels of depictions of substance use behaviors, accounts for this link or the extent to which other factors in a teen's life--such as parental monitoring, family and peer relationships or self-confidence--account both for the extent of television watching and for the risk of substance use.

[‡] During the fall 2007 television season.

A study of 24 G-rated movies found that tobacco and alcohol* were shown at least once in three-quarters of the movies. Nearly all (91 percent) of the substance-related depictions were positive.† [90] A similar study that analyzed 81 G-rated animated movies released between 1937 and 2000 found that 43 percent showed tobacco use and 47 percent showed alcohol use. Movies that depicted health messages about the use of addictive substances were rare.[91]

An analysis of the top grossing films from 1999-2001 that focused on teens as part of the central plot of the film‡ found that 17.1 percent of the major teen characters were shown smoking cigarettes, nearly 40 percent were shown drinking alcohol and 15.1 percent were shown using other drugs. These main teen characters were unlikely to experience negative consequences from substance use.[92]

With regard to tobacco use, smoking in movies generally is associated with positive characteristics such as glamour, rebelliousness, independence, relaxation and romance; the negative consequences of tobacco use rarely are portrayed.[94] A national study found that, in 2009, 39 percent of youth-rated movies portrayed or implied tobacco use, with PG-13 movies containing the most (54 percent) incidents of smoking.[95]

> *A cigarette in the hands of a Hollywood star onscreen is a gun aimed at a 12- or 14- year old.*[96]
>
> --Joe Eszterhas
> Screenwriter

Between 1998 and 2003, 83 percent of popular movies depicted alcohol use and 52 percent contained alcohol brand appearances. Forty percent of R-rated and PG13-rated movies and 15.2 percent of PG-rated and G-rated movies depicted characters who were inebriated.[97]

Music. High school students who listen to four or more hours of music per day are nearly twice as likely as those who listen to one hour per day or less to be current smokers[98] and nearly three times as likely to have ever used marijuana.[99] On average, 15- to 18-year-olds are exposed to 84 references to substance use per day through music.[100]

A study of the content of the 279 most popular songs in 2005 revealed that 41.6 percent had lyrics that referred generally to substance use, and 33.3 percent referred explicitly to substance use. Alcohol was the most frequently referred to substance (23.7 percent of all songs analyzed), followed by marijuana (13.6 percent) and other illicit drugs (11.5 percent). Only four percent of the songs that portrayed substance use contained anti-use messages.[101]

> *When the lyrics of the music you listen to every day are telling you to get drunk and high, what are you going to do? Thought so.*[93]
>
> --Eric
> A person in recovery

Music videos also frequently portray substance use. A study of music videos played§ in 2001 on cable television channels found that evidence** of tobacco, alcohol or other drugs was depicted in 43 percent of the videos. About one-third (34.5 percent) of the music videos displayed alcohol and 10 percent showed consumption of alcohol. Tobacco use was less prevalent, with 10 percent of the music videos portraying tobacco and eight percent showing use of it. Thirteen percent of the videos had evidence of illicit drugs, though only one percent showed actual use.[102]

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* Use or appearance of these products.

† Characters reacting positively to the use of the product verbally, characters laughing and encouraging the use of the product or absence of any anti-use sentiments. Or, the context surrounding the exposure of the product was perceived as attempting to make the viewers laugh.

‡ Forty-three films were included in the sample.

§ Between 3 p.m. and 11 p.m.

** Lyrically or visually.

Despite the clear connection between music exposure and substance use in teens, only 16 percent of middle and high school students' parents monitor the content of the music their children listen to.[103]

Electronic Communication and Substance Use Risk

Research on the link between how teens use electronic communication and their risk of substance use is new and still quite limited. However, several small studies suggest that there might be an elevated risk of substance use among teens who use electronic communication frequently.

CASA's survey of high school students found that a quarter (24.6 percent) report having talked to other people online--through chatting, instant messaging, e-mailing or blogging--about drinking or using other drugs; a quarter (24.7 percent) have viewed pictures online of people drinking or using other drugs; 21.7 percent have watched videos online of people drinking or using other drugs; 18.8 percent have looked up information online about the dangers of smoking, drinking or using other drugs; 7.7 percent have looked up information online about how to use drugs or what people use drugs for; and 2.2 percent have posted pictures online of themselves or their friends drinking or using other drugs. Very few students report having visited alcohol brands' Web sites (1.8 percent) or cigarette brands' Web sites (1.4 percent).[104]

High school students who are excessive users of text messaging and social networking sites,[105] as well as those who frequently use e-mail, instant messaging and chat rooms,[106] are likelier to smoke, drink and use other drugs than those who use these forums less often.

One study found that hyper-texting[*] students are 1.4 times as likely to have ever smoked, 2.1 times as likely to have ever used alcohol and 1.3 times as likely to have ever used marijuana or misused controlled prescription drugs as those who do not hyper-text. Hyper-networkers[†] are 1.6 to 1.8 times as likely as those who are not hyper-networkers to have ever smoked, used alcohol, used marijuana or misused controlled prescription drugs. Hyper-texters and hyper-networkers are likelier than other students to be current alcohol users (1.3 times and 1.6 times as likely, respectively), binge drinkers (1.4 times and 1.7 times as likely, respectively) and marijuana users (1.3 times and 1.6 times as likely, respectively).[107]

Another study found that adolescents who e-mailed or instant messaged for one or more hours per day began smoking cigarettes at a younger age and drank more alcohol[‡] than those who emailed or instant messaged at lower levels.[108] A study of 9th graders found that boys who used chat rooms were 1.9 times as likely to smoke and 1.8 times as likely to use alcohol or other drugs in the past year as those who did not use chat rooms; girls who used chat rooms were 2.4 times as likely to use tobacco, alcohol or other drugs in the past year as those who did not use chat rooms.[109]

Accessibility of Addictive Substances for Adolescent Use

Teens generally believe that addictive substances are easily accessible. While trend data indicate that teens' perceptions of the accessibility of tobacco, alcohol and other drugs have decreased over the past decade,[110] they still report being able to get cigarettes, alcohol and other drugs quickly and easily.[111]

Friends frequently are cited as the most common source of addictive substances, although teens also gain access to these substances through their own homes. Some adolescents purchase cigarettes and alcohol in stores, either on their own or by getting someone else to do it for them.

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[*] Sending (and receiving) more than 120 text messages on an average school day.

[†] Spending three or more hours per day on social networking sites such as Facebook or MySpace.

[‡] In response to a measure of how much on an average day they usually drank beer, wine and liquor in the last six months.

Perceptions of Accessibility

Perceptions of the accessibility of cigarettes,[112] alcohol[113] and other drugs[114] are associated with use of these substances.[115]

- While the perception that cigarettes are easy to obtain has decreased considerably over the past decade, more than half (55.3 percent) of 8th graders and three-quarters (76.1 percent) of 10th graders still think that they are easy to obtain.[*] [116]

- The perception that alcohol is easy to obtain also decreased over the past decade, yet 61.8 percent of 8th graders, 80.9 percent of 10th graders and 92.1 percent of 12th graders still think that alcohol is easy to obtain.[†] [117]

- The perception that marijuana is easy to obtain also decreased over the past decade, yet 39.8 percent of 8th graders, 69.3 percent of 10th graders and 81.1 percent of 12th graders still think that marijuana is easy to obtain.[‡] [118]

CASA's 2010 *Teen Survey* found that, between cigarettes, beer, marijuana and controlled prescription drugs, 27 percent of teens believe that cigarettes are easiest to buy, 26 percent believe that beer is easiest to buy, 15 percent believe that marijuana is easiest to buy and 13 percent believe that controlled prescription drugs are easiest to buy.[119]

[*] In 1999, 71.5 percent of 8th graders and 88.3 percent of 10th graders said cigarettes are easy to obtain. Perceived accessibility was not assessed for 12th graders in this study.
[†] In 1999, 72.3 percent of 8th graders, 88.2 percent of 10th graders and 95.0 percent of 12th graders said alcohol is easy to obtain.
[‡] In 1999, 48.4 percent of 8th graders, 78.2 percent of 10th graders and 88.9 percent of 12th graders said marijuana is easy to obtain.

Sources of Access[§]

The most common source high school students cite for tobacco, alcohol and other drugs is friends.[120]

CASA's 2009 *Teen Survey* revealed that:

- Among teens who smoke, the top three sources for cigarettes are their friends (29 percent), stores (10 percent) and their family[**] (9 percent).[121]

- Among teens who have ever used alcohol, the top three sources for alcohol are their friends (34 percent), their family[††] (23 percent) and parties (6 percent).[122]

- Twenty-four percent of teens report that if they wanted to get marijuana right now, they would get it from friends; 13 percent would get it from school, seven percent from a neighbor, four percent from a drug dealer and one percent from home, parents or other family members.[‡‡] [123]

- Fifteen percent of teens report that if they wanted to get prescription drugs right now--in order to get high and not for a medical reason--they would get them from friends; 14 percent would get them from home (the medicine cabinet), six percent from school, two percent from their parents and two percent from a drug dealer.[§§] [124]

[§] Reliable information on sources of access to teens of illicit drugs other than marijuana is not readily available, in part because rates of illicit drug use are relatively low in this population.
[**] Includes the responses: parents, family members, at home.
[††] Includes the responses: parents, family members, at home.
[‡‡] 41 percent said they don't know where they would get marijuana.
[§§] 38 percent said they don't know where they would get the prescription drugs.

Another national study found that the majority (93.4 percent) of young teens, ages 12 to 14, who are current alcohol users obtained their alcohol for free the last time they drank; 44.8 percent got the alcohol for free from their family or at home.[125]

Other national data indicate that most 12th graders who report having misused controlled prescription drugs in the past year obtained them from a friend who gave it to them for free (61.7 percent of those who misused tranquilizers, 54.5 percent of those who misused amphetamines and 46.1 percent of those who misused opioids). The next most common sources of these drugs were buying them from a friend, buying them from a drug dealer or stranger or taking them from a relative or friend without asking.[126]

Although it is illegal for them to purchase, a considerable number of teens are able to obtain cigarettes from commercial sources. One study that examined cigarette purchases among current smokers found that 42 percent of 8th graders, 53 percent of 10th graders and 65 percent of 12th graders report having personally purchased cigarettes from a retail establishment during the past month.[127] Other research finds that such purchases most commonly are made at convenience stores, small grocery stores, gas stations, discount stores or drug stores.[*] [128]

Among 12th graders who have used amphetamines and tranquilizers without a prescription, 3.4 percent and 3.0 percent, respectively, bought them on the Internet; no 12th graders reported using this method to buy opioids.[129]

Gender Differences. Girls are likelier than boys to obtain cigarettes[130] and alcohol[131] from friends or relatives, while boys are likelier than girls to use commercial sources, such as vending machines or other retail outlets to buy cigarettes[132] and alcohol.[133] Girls who use marijuana are likelier than boys who use marijuana to have obtained the drug for free or shared it the last time they used (72 percent vs. 52 percent), while boys are likelier than girls to have bought it (41 percent vs. 22 percent). Among those who bought their marijuana, girls were likelier than boys to have purchased it from a friend (84 percent vs. 76 percent). Boys who purchased marijuana were likelier than girls to have bought it from someone they had just met or did not know well (19 percent vs. 10 percent).[134]

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[*] 15.6 percent of 8th graders, 10.1 percent of 10th graders and 9.3 percent of 12th graders who smoke purchased cigarettes from vending machines in the past 30 days. Fewer report purchasing cigarettes by mail (four percent of 8th graders, two percent of 10th graders and one percent of 12th graders) or through the Internet (three percent of 8th graders, two percent of 10th graders and one percent of 12th graders).

Chapter VI
Teen Perceptions and Expectations About Substance Use

The many mixed messages that teens receive about tobacco, alcohol and other drugs help shape their attitudes and beliefs about these substances and their motivations and desire to use them. These beliefs and expectations may develop in childhood and influence their substance use years later in adolescence.[1]

The likelihood of teens' smoking, drinking and using other drugs also is a function of their perceptions of their peers' use or approval of use of these substances, of their peers' actual use of these substances, and of direct pressure their peers may place on them to use addictive substances.

How Teens Think About Substance Use

Adolescents' beliefs regarding the dangers of smoking, drinking or using other drugs and of the possible consequences of such use,[2] and their perceptions of the benefits they might gain from using them--such as being cool or popular, relieving stress or coping, enhancing their mood or social or academic functioning or seeking a thrill or a high--all affect their intentions and decisions to use addictive substances.[3]

Most Teens See Substance Use as Risky

CASA's survey of high school students, conducted for this study, found that teens consider many forms of substance use and related behaviors to be very dangerous. The most dangerous, from their perspective, are driving while drunk (95.3 percent), using illicit drugs other than marijuana (91.5 percent), mixing alcohol and prescription drugs (90.0 percent) and driving while high on prescription drugs (88.1 percent). The next most dangerous, from their perspective, include using inhalants (82.0 percent), misusing pain medications (opioids) (80.0 percent), misusing tranquilizers (79.8 percent), driving while high on marijuana (79.7 percent) and binge drinking (77.6 percent).

Using marijuana was considered to be dangerous by only about half (52.1 percent) of high school students.[4] (Table 6.1)

Table 6.1
High School Students Who Say Substance Use Behavior is "Very Dangerous"

Substance Use Behavior	Percent
Driving while drunk	95.3
Using illicit drugs other than marijuana	91.5
Mixing alcohol and prescription drugs	90.0
Driving while high on prescription drugs	88.1
Using inhalants	82.0
Misusing pain medications (opioids)	80.0
Misusing tranquilizers	79.8
Driving while high on marijuana	79.7
Binge drinking	77.6
Mixing alcohol and energy drinks	64.7
Getting drunk	59.3
Smoking cigarettes	56.4
Using marijuana	52.1

Source: CASA *National Survey of High School Students, Parents of High School Students and High School Personnel*, 2010.

While many high school students appear to believe that negative consequences are likely to occur after binge drinking, misusing prescription drugs or using marijuana once a month, with few exceptions,[*] teens are likelier to view binge drinking as a precursor to negative consequences than prescription drug misuse[†] or marijuana use.[5] (Table 6.2)

CASA's survey of high school students also found that one in four (24.7 percent) see marijuana as a harmless drug and 16.9 percent think of it as medicine.[6]

Table 6.2
Percent of High School Students Who Say Consequence is Very Likely to Happen to Teens Who Use

	Very Likely if:		
Consequences	**Binge Drinks 1X/Month**	**Misuses Rx Drugs 1X/Month**	**Smokes Marijuana 1X/Month**
Accident from DUI	65.2	47.9	41.1
Drive drunk/high or Ride with drunk/high driver	60.0	44.8	48.4
Damage brain cells	57.4	52.3	48.1
Risk of addiction	55.6	57.2	45.2
Accident	54.7	41.0	34.4
Unprotected sex	52.1	35.9	35.6
Poor academic performance	50.7	45.5	44.8
Get into a fight	49.5	31.5	27.4
Legal problems	49.0	41.9	39.4
Sexual assault	38.2	30.3	25.5
Overdose/Death	38.1	47.7	23.4

Source: CASA *National Survey of High School Students, Parents of High School Students and High School Personnel*, 2010.

Lower Perceptions of Risk Equal Increased Use. Teens who perceive lower risks associated with using addictive substances are more likely to use them, and teens who have used addictive substances are less likely than those who have never used them to think that smoking, drinking or using other drugs is dangerous or risky.[7]

CASA's analysis of national data finds that:

- High school students who have ever smoked are less likely than those who have never smoked to perceive great risk from: smoking one or more packs of cigarettes a day (55.6 percent vs. 70.1 percent); binge drinking[‡] once or twice a week (28.7 percent vs. 42.9 percent); using marijuana once a month (14.6 percent vs. 30.0 percent); or using marijuana once or twice a week (22.3 percent vs. 51.2 percent).[8]

[*] Like parents, teens perceive prescription drug misuse to be riskier than binge drinking and marijuana use with regard to the risk of addiction, overdose or death. (See Table 6.2)

[†] Misuse occurs when a controlled prescription drug is taken by someone for whom it was not prescribed or in a manner not prescribed solely for the experience or feeling it causes.

[‡] Having five or more alcoholic drinks.

- Those who have ever used alcohol are less likely than those who have never used alcohol to perceive great risk from: smoking one or more packs of cigarettes per day (62.0 percent vs. 69.4 percent); binge drinking once or twice a week (31.1 percent vs. 46.7 percent); using marijuana once a month (16.9 percent vs. 34.5 percent); or using marijuana once or twice a week (28.5 percent vs. 57.4 percent).[9]

- Those who have ever used marijuana are less likely than those who have never used marijuana to perceive great risk from: smoking one or more packs of cigarettes per day (56.8 percent vs. 68.5 percent); binge drinking once or twice a week (28.1 percent vs. 42.0 percent); using marijuana once a month (8.3 percent vs. 31.0 percent); or using marijuana once or twice a week (13.0 percent vs. 52.1 percent).[10]

- Those who have ever misused controlled prescription drugs are less likely than those who have never done so to perceive great risk from: smoking one or more packs of cigarettes per day (56.7 percent vs. 67.1 percent); using marijuana once a month (16.2 percent vs. 26.8 percent); or using marijuana once or twice a week (22.3 percent vs. 45.6 percent).[11]

CASA's own national survey of high school students found similar results:

- Students who have ever smoked are less likely than those who have never smoked to say that the following are very dangerous for high school aged teens: smoking cigarettes (23.0 percent vs. 64.1 percent), getting drunk (30.9 percent vs. 66.0 percent), binge drinking (53.2 percent vs. 83.3 percent), using marijuana (18.1 percent vs. 60.0 percent) and misusing prescription pain medications (59.9 percent vs. 84.7 percent).[12]

- Those who have ever used alcohol are less likely than those who have never used alcohol to say that the following are very dangerous: smoking cigarettes (37.7 percent vs. 67.0 percent), getting drunk (38.5 percent vs. 71.0 percent), binge drinking (59.1 percent vs. 88.0 percent), using marijuana (26.8 percent vs. 66.3 percent) and misusing prescription pain medications (67.4 percent vs. 87.1 percent).[13]

- Those who have ever used marijuana are less likely than those who have never used marijuana to say that each of the following is very dangerous: smoking cigarettes (34.1 percent vs. 61.0 percent), getting drunk (30.1 percent vs. 65.4 percent), binge drinking (50.0 percent vs. 83.5 percent), using marijuana (11.0 percent vs. 60.8 percent) and misusing prescription pain medications (65.1 percent vs. 83.1 percent).[14]

Perceptions of Substance Use Among High School Student Participants in CASA's Focus Groups

[Students who smoke cigarettes are] stupid. They don't realize what it can cause, like lung cancer, and [it] is addicting. [It] doesn't make them cool.

--9th or 10th Grade Student

[Students who smoke cigarettes are] ruining their lives. Their lungs go down the drain, and when they're like 50 they'll have emphysema or something.

Cocaine isn't pot; it'll have you addicted and cause all sorts of problems later on.

[Teens who take prescription drugs for non-medical reasons are] dumb. Taking prescription drugs without a prescription can both kill you and get you addicted.

Smoking [is okay for teens to do] because that really only hurts them, [for] the other [drugs], they [teens] could get so wasted they could hurt themselves worse and other people.

--11th or 12th Grade Students

How Teens Think about Substance Use Varies Demographically. How risky teens think it is to use addictive substances varies by gender, with boys generally perceiving less risk in substance use than girls.[15] Perceptions of risk also vary by age, with older adolescents generally seeing substance use as less risky than younger adolescents.[16] Older adolescents also have more positive expectations about the effects of addictive substances than younger adolescents.[17]

There is some evidence that the extent to which teens approve of substance use is associated with racial/ethnic identity.[18] Black adolescents in grades 6-12 have stronger beliefs than white adolescents that it is wrong to use tobacco. On the other hand, white adolescents are likelier than black adolescents to believe that using marijuana is wrong; they also perceive greater harm than black adolescents in trying marijuana once or twice and in using marijuana regularly.[19]

Changing Perceptions of Risk. There are some indications that teens' favorable views about addictive substances are becoming more pervasive; for example, one national study found that 51 percent of teens in 2009 believed that "being high feels good" compared to 45 percent just one year earlier. Similarly, 66 percent of teens in 2009 agreed that "sniffing or huffing things to get high can kill you" compared to 70 percent just one year earlier.[20]

Teens' perceptions of the risks of marijuana use, in terms of its negative impact on relationships and on physical and emotional well being, decreased between 2008 and 2009. Specifically, in 2009 compared to 2008, fewer teens believed that there is great risk in using marijuana in terms of upsetting parents (62 percent vs. 67 percent), letting other people down (48 percent vs. 54 percent), making problems worse (54 percent vs. 62 percent), acting stupidly and foolishly (54 percent vs. 59 percent), becoming lazy (48 percent vs. 53 percent), getting depressed (44 percent vs. 50 percent), putting themselves or others in danger (60 percent vs. 68 percent), losing control of themselves (58 percent vs. 65 percent) or impairing their judgment (57 percent vs. 65 percent).[21]

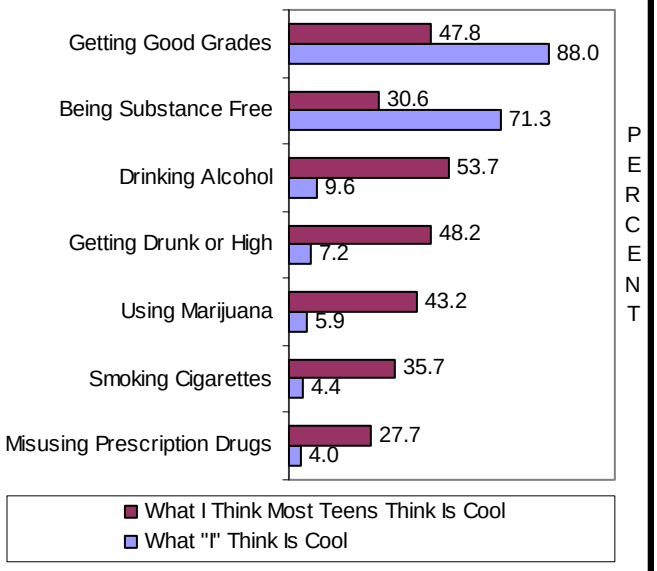
Some Teens See Benefits to Substance Use

Despite efforts to counter positive images of substance use, many young people still view it as cool or believe that their friends see substance use as cool, and teens are heavily influenced by what their peers think and do. Some teens also see other benefits to using addictive substances, including a way to relieve stress or cope with problems or a way to enhance their mood, sociability or academic performance. Teens who perceive benefits to substance use are likelier to be current users and to report that they intend to use in the future.[22]

Being Cool/Popular. CASA's survey of high school students found that the majority (71.3 percent) thinks that being substance *free* is "very" or "somewhat" cool. At the same time, almost the same proportion (69.3 percent) believes that their peers *do not* think being substance free is cool:[23] (Figure 6.A)

Figure 6.A

High School Students Who Say the Following are Very/Somewhat Cool



Source: CASA *National Survey of High School Students, Parents of High School Students, and School Personnel*, 2010.

- Just 4.4 percent report that they think smoking cigarettes is "somewhat" or "very" cool, but 35.7 percent think that most of their peers believe smoking cigarettes is cool.[24]

- Less than one in 10 (9.6 percent) report that they think drinking alcohol is "somewhat" or "very" cool, but more than half (53.7 percent) think that most of their peers believe drinking alcohol is cool.[25]

- Only 5.9 percent report that they think using marijuana is "somewhat" or "very" cool but 43.2 percent think that most of their peers believe using marijuana is cool.[26]

With regard to smoking, one study found that adolescents who had ever taken a puff of a cigarette are likelier than those who never smoked at all to think that smoking makes people look more grown up (37.9 percent vs. 24.8 percent), look cool (21.8 percent vs. 12.8 percent) and be more popular (19.5 percent vs. 12.5 percent). This study also found that adolescents who intend to smoke are likelier than those who do not intend to smoke to think that smoking makes them look more grown up (33.0 percent vs. 25.6 percent) and cool (19.6 percent vs. 12.4 percent).[27]

CASA's survey also found that, while most teens (60.6 percent) did not think that whether or not students drink is related to their popularity, more said that students who do not drink are less popular (25.5 percent) rather than more popular (13.8 percent). Likewise, 60.9 percent of student respondents characterized students who are the least likely to drink alcohol as "nerds" or "geeks."[28]

Stress Relief/Coping. Although very few students in CASA's survey reported substance use as something they typically do to relieve stress,[*] [29] other research has found stress relief or coping to be a common motivation for adolescent substance use.[30] A national survey of adolescent girls found that 66 percent reported stress relief as their main reason for smoking, 38 percent reported stress relief as their main reason for drinking and 41 percent reported stress relief as their main reason for using other drugs.[31]

In CASA's survey, high school students identified the things that they perceive to be "somewhat" or "very" stressful: [32]

- School work (69.5 percent),
- Plans for college/the future (63.8 percent),
- Appearance concerns (45.6 percent),
- Family issues (41.8 percent),
- Money pressures (41.2 percent),
- Social life/friends (39.3 percent),
- Dating/sex (31.4 percent),
- Extracurricular activities (31.4 percent) and
- Getting picked on/being bullied (21.1 percent).[33]

Teens who say that they avoid problems when dealing with stressful situations are more likely to report drinking to cope.[34] One study found that more than half (56.4 percent) of high school seniors who misused prescription opioids did so to relax or relieve tension.[†] [35] In CASA's survey of high school students, 15.9 percent report that they personally have friends who misuse controlled prescription drugs to get high, relax or relieve stress, but the vast majority (92.9 percent) thinks that there are students at their school who misuse these drugs for these reasons.[36]

[*] Smoking (4.2 percent), drinking (4.4 percent), using marijuana (3.5 percent) or misusing prescription drugs (1.4 percent).

[†] This was the most common motivation for misusing prescription opioids compared to other motivations, such as feeling good, getting high or experimenting.

Improve Mood, Sociability or Academic Performance. Some teens are motivated to use addictive substances to improve their mood, enhance their social interactions or to bolster their academic performance. One study of adolescents who were age 16 at baseline and followed for two years found that those who expected cigarette smoking to relieve negative emotions* reported increases in smoking and in symptoms of nicotine dependence over time, even after controlling for anxiety and depressive symptoms and baseline symptoms of nicotine dependence.[37] A longitudinal study showed that negative feelings in adolescents--such as feeling tense, dissatisfied, hostile or irritated--were related to increases in smoking from the 7th grade to the 10th grade.† [38]

Adolescents' beliefs regarding alcohol's ability to enhance mood or social functioning, in terms of making them feel more outgoing or having an easier time talking to people, predict higher levels of alcohol use two years later.[39] Similarly, adolescents'‡ beliefs that alcohol would bring about positive social effects and would reduce social tension were associated with alcohol use.[40]

Academic pressure can increase the risk of substance use as well. One study of students at high-performing high schools found that 8.0 percent reported misusing prescription stimulants or illicit stimulant drugs to help them stay up to study.[41] CASA's survey of high school students found that 12.6 percent personally have friends who use controlled prescription drugs to be more awake or focused, mostly to study or do schoolwork.[42]

Sensation Seeking/To Get High. In a statewide sample of high school students, higher levels of sensation-seeking--such as doing things just for the thrill of it or sometimes doing things that are a little frightening--were associated with more frequent monthly use of alcohol and binge drinking.[43] Sensation-seeking teens are more likely to be motivated to use marijuana as well.[44] Other research finds that risk-taking adolescents§ are 3.6 times as likely as adolescents with lower levels of risk-taking to misuse controlled prescription drugs.[45] Another study found that adolescents who are high sensation-seekers** are 2.3 times as likely as those who are not high sensation-seekers to misuse prescription stimulants.[46] A study of high school seniors who reported misusing controlled prescription opioids found that more than half (53.5 percent) did so to feel good or get high.[47]

Peer Influences

Whether or not teens use addictive substances is influenced by the extent to which their peers use, their perceptions of whether their peers approve of such use and the extent to which they feel pressure from their peers to engage in substance use.[48] Recent research also suggests that the mere presence of peers influences a teen's brain chemistry, increasing the chances that teens will take risks.[49]

Peer Substance Use

A recent study that analyzed national data found that teens whose peers engage in delinquent behavior--including substance use, carrying weapons or having academic and discipline problems--were at significantly increased risk of substance use themselves, even in the absence of direct peer pressure to use. Those at highest risk are teens who associate with delinquent peers; this influence is greater than the influences of family, school, community and media or of antisocial personality traits and depressive

* Agreeing with statements such as "Smoking helps me calm down when I feel nervous" and "When I'm upset with someone, a cigarette helps me cope."
† There was no relationship between initial smoking and an increase in negative feelings, suggesting a directional relationship between such feelings and later smoking.
‡ Mean age 12.6 years.

§ Participants who answered "often" when asked how often they get a real kick out of doing things that are a little dangerous.
** Participants who answered "sometimes" or "always" when asked how often they get a kick out of doing something dangerous or like testing themselves by doing something a little risky.

symptoms. The link between peer delinquency and teen substance use is even stronger for older than younger teens.[50]

Male teens tend to have more personal contacts[*] with people who use substances compared to female teens.[51] Yet girls are strongly influenced by their best friends; early adolescent girls[†] whose best friend uses substances are 5.5 times as likely to drink, 5.1 times as likely to misuse prescription drugs and 7.2 times as likely to use inhalants as girls whose best friend does not use substances.[52]

Teen Perceptions of Their Friends' Substance Use

CASA's survey finds that about half of all high school students report having friends who smoke cigarettes (53.1 percent), drink alcohol (56.0 percent) or use marijuana (45.4 percent). Fewer report having friends who binge drink (18.6 percent); use other illicit drugs (15.8 percent); misuse prescription drugs to get high, relax or relieve stress (15.9 percent); misuse prescription drugs to be more awake or focused (12.6 percent); or use inhalants (5.8 percent).[53]

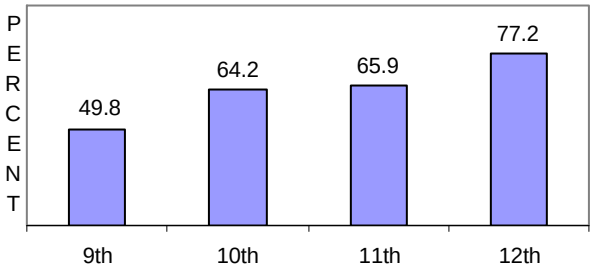
High school students' perceptions of their friends' use of tobacco, alcohol and other drugs reflect the increasing rates of use as teens age. Half (49.8 percent) of 9th graders report that they have friends who smoke, drink or use other drugs, as do two thirds of 10th graders (64.2 percent) and 11th graders (65.9 percent), and three quarters (77.2 percent) of 12th graders.[54] (Figure 6.B)

Teens are more likely to use addictive substances, and to perceive less risk from doing so, if they have friends who engage in substance use.[55] One study found that twice as many teens who have friends who smoke compared to teens without friends who smoke reported smoking themselves approximately one year later (30 percent vs. 15 percent).[56]
CASA's survey of high school students found that those who have friends who drink alcohol are four times as likely to have ever had a drink themselves as students who say they have no friends who drink (53.2 percent vs. 13.7 percent). Those who say their friends smoke, drink or use other drugs are nearly five times likelier to have had a drink than students who say none of their friends use these substances (49.6 percent vs. 10.5 percent).[57] Another study found that a 10 percent increase in the proportion of an adolescent's classmates that drinks is associated with an approximately four percent increase in the likelihood of alcohol use.[58]

One study found that twice as many teens with a marijuana-using friend began using marijuana themselves compared to teens who did not have a marijuana-using friend (19 percent versus 8 percent).[59] Teens whose close friends use other illicit drugs are more likely to have used tobacco, alcohol, marijuana and other drugs in their lifetime.[60]

Figure 6.B

High School Students Who Say That Their Friends Use Substances, by Grade



Source: CASA *National Survey of High School Students, Parents of High School Students and High School Personnel*, 2010.

[*] Defined in this study as a person's close personal contacts, or social network, including people who they have contact with at least once a month and with whom they have a "meaningful relationship."
[†] Average age 12.6.

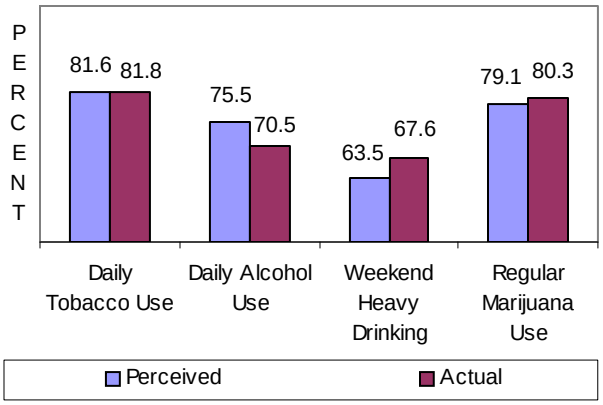
Teen Perceptions of Peer Approval of Substance Use

Teens are fairly accurate about their perceptions of their friends' attitudes about substance use. National data* indicate that among 12th graders:

- 81.6 percent believe their friends would disapprove if they smoked a pack or more of cigarettes every day (81.8 percent actually report disapproving of someone† doing this);
- 75.5 percent believe their friends would disapprove if they drank one or two drinks nearly every day (70.5 percent actually report disapproving of someone doing this);
- 63.5 percent believe their friends would disapprove if they engaged in heavy drinking on weekends (67.6 percent actually report disapproving of someone doing this); and
- 79.1 percent believe their friends would disapprove if they used marijuana regularly (80.3 percent actually report disapproving of someone doing this);[61] (Figure 6.C)
- 90.2 percent believe their friends would disapprove of cocaine use (90.8 percent actually report disapproving of someone using cocaine);
- 87.0 percent believe their friends would disapprove of amphetamine use (88.2 percent actually report disapproving of someone using amphetamines); and
- 87.2 percent believe their friends would disapprove of LSD use (88.2 percent actually report disapproving of someone using LSD).[62]

Figure 6.C

12th Graders' Perceived Peer Disapproval of Substance Use vs. Actual Peer Disapproval



Source: Johnston, LD, O'Malley, PM, Bachman, JG, & Schulenberg, JE. (2010). *Monitoring the Future national survey results on drug use, 1975-2009: Vol I, Secondary school students* .

Teens who perceive less disapproval of substance use among their peers are at higher risk of substance use than those who perceive greater disapproval.[63] One study found that adolescents who had never used addictive substances were more than one-and-a-half times as likely to initiate tobacco use, twice as likely to initiate alcohol use and nearly twice as likely to initiate marijuana use if they perceived approval of initiation of use by their close friends.[64] Teens who perceive that peers have more lenient attitudes toward substance use are likelier to misuse prescription drugs as well.[65]

CASA's survey of high school students finds that those who report that their peers think smoking is "very" or "somewhat" cool are more likely than those who report that their peers think smoking is "not at all" or "a little" cool to have ever smoked (26.9 percent vs. 14.2 percent) or had a drink (45.7 percent vs. 30.1 percent). Similarly, students who believe that their peers think drinking is "very" or "somewhat" cool are more likely than those who believe that their peers think drinking is "not at all" or only "a little" cool to have ever smoked (24.4 percent vs. 12.1 percent) or had a drink (46.5 percent vs. 23.6 percent).[66]

* From the 2009 MTF.

† Refers to disapproving of someone age 18 years old or older doing the substance use behaviors described in this section.

Peer Pressure to Use

Nearly two out of five (37.8 percent) high school students in CASA's survey say that the pressure from peers to drink is "a little," "somewhat" or "very" stressful; 25.9 percent report that it is "somewhat" or "very" difficult to choose not to drink. Students who report having used alcohol are more likely than those who have never had a drink to say that it is "somewhat" or "very" hard for high school students to choose not to drink (38.3 percent vs. 18.8 percent) and that the pressure to drink is "a little," "somewhat" or "very" stressful (53.1 percent vs. 29.2 percent). Fewer students report feeling "a little," "somewhat" or "very" stressed by the pressure to smoke cigarettes (25.6 percent) or use other drugs (28.9 percent).[67]

Girls may perceive more peer pressure than boys. CASA's survey of girls and young women conducted for its study, *The Formative Years: Pathways to Substance Abuse Among Girls and Young Women, Ages 8-22,* found that among high school seniors, 40.5 percent reported having ever been pressured to smoke; 46.4 percent, to drink; and 28.3 percent, to use other drugs.[68]

Chapter VII
Factors That Compound the Risk of Teen Substance Use and Addiction

All teens are influenced by messages from today's culture to smoke, drink or use other drugs and three-quarters have done so. A subset of teens, however, have personal characteristics or life circumstances that place them at even greater risk of using addictive substances or more prone to becoming addicted to them. These individual characteristics and circumstances include:

- A genetic predisposition toward developing an addictive disorder;
- A family history of substance misuse or addiction;
- Adverse childhood events such as abuse, neglect or other forms of trauma;
- Mental health disorders, certain temperament traits and low self-esteem;
- Having experienced peer victimization or bullying;
- Poor academic performance or substantial time spent working; and
- Divorced or single parent families.

Teens who engage in other behaviors that put their health and safety at risk, such as early or unsafe sex, unhealthy weight control, risky driving, disturbed sleeping and aggression, also are at heightened risk of substance use,[*] as are certain sub-groups of adolescents such as those in the child welfare system, who drop out of

[*] Substance use often goes hand in hand with other risky behaviors. In some cases, these behaviors may result from substance use (see Chapter IV). Other times the risky behaviors appear to increase the chance of substance use or result from common factors such as those listed above (as presented in this chapter).

high school, are involved with the justice system, have a minority sexual identity or participate in athletics. Many of the teens in these groups also have some of the characteristics listed above that place them at elevated risk for addiction.

> *Teens who are facing challenges (emotional, academic, social, etc.) are not receiving adequate support. Teens are trying to solve complicated issues through substance use rather than through learned skills.*[1]
>
> --Jerald Newberry
> Executive Director
> National Education Association
> Health Information Network

Genetic Predisposition

The genetic inheritance of teens can make them more likely to start using addictive substances, more likely to continue using them and more likely to progress from use to addiction.[*] [2]

While environmental factors--such as access to addictive substances and peer influences--appear to play a more dominant role than genetics in the initiation of substance use,[3] there is some evidence that genetics may play a more equal role when it comes to *early* initiation. One study found that genetics contributes as much as 53 percent of the risk for early initiation of alcohol use.[4]

Genetic influences are more profound on the progression from use to addiction,[5] accounting for up to 75 percent of the risk for nicotine dependence[6] and 50 to 70 percent of the risk that someone who drinks alcohol will develop an alcohol use disorder.[7]

Advances in genetic research have enabled scientists to identify individual genes associated with the tendency to become dependent on addictive substances.[8] Underscoring the important role of dopamine in addiction, genetic variations in components of the dopamine transmission system have been implicated both in the likelihood of substance use and of dependence on a variety of addictive substances.[9]

Once individuals have begun using an addictive substance, their ability to metabolize the substance--which is linked to risk of physical dependence--may be influenced by their genetic makeup.[10] With regard to smoking, adolescents without variants in the gene for the nicotine-metabolizing enzyme[†] progress to nicotine dependence faster than adolescents with variants in the gene.[11] Variation in the genes that encode for nicotinic receptor subunits[‡] are linked to increased risk of nicotine dependence and difficulty quitting smoking.[12]

Gene variations[§] also have been linked to an increased risk of alcohol addiction.[13] For example, individuals whose genetic makeup produces involuntary skin flushing and other unpleasant reactions to alcohol rarely develop an alcohol use disorder.[14] A study of college students found that students with a particular genetic profile[**] are protected to some extent from developing alcohol use disorders. These students drink less, and are likelier to experience alcohol-induced headaches and more severe hangovers than those without this particular genetic profile.[15]

A genetic vulnerability to substance use and addiction can be exacerbated by one's environment.[16] Whereas children with the long version of the serotonin transporter gene[††] appear to be protected from the long-term mental health consequences of childhood maltreatment,[17] those with a short version of the gene experience more anxiety and depression in response to stressful events, are more impulsive and are more prone to substance use,[18] but only

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[*] The information included in this section is based on studies of adolescents as well as adults.

[†] CYP2A6.
[‡] e.g., CHRNA5.
[§] Specifically, the ADH, ALDH, GABA receptor genes and the serotonin transporter gene-linked polymorphic region (5-HTTLPR).
[**] Those with an ADH1B*2 allele.
[††] The 5-HTT allele.

if they were subjected to stress during early childhood or to a negative family environment.[19] Individuals whose brain development has been altered by stress experience a stronger reaction to addictive substances, including more intense cravings.[20] Conversely, positive environments--such as no exposure to parental substance misuse or other significant stress or trauma and high levels of parental monitoring--can compensate for the genetic vulnerability for substance use and addiction.[21]

Family History of Risky Substance Use or Addiction

Nearly half (46.1 percent) of children under age 18 (34.4 million)[*] live in a household where someone age 18 or older engages in risky substance use:[†] [22]

- 31.7 percent are exposed to tobacco users,
- 25.7 percent are exposed to excessive and/or binge drinkers, and
- 7.6 percent are exposed to users of other drugs.

More than one in six (17.8 percent) children under age 18 (13.3 million) live with someone age 18 or older who has a substance use disorder:[‡] [23]

- 11.1 percent live with someone who is nicotine dependent,
- 7.3 percent live with someone who has an alcohol use disorder, and
- 2.5 percent live with someone who has an other drug use disorder.[24]

Exposure to Family Members' Risky Substance Use

Parents' or siblings' tobacco, alcohol or other drug use is associated with teens' use of these substances.[25]

Teens who have ever tried smoking cigarettes begin smoking at an earlier age if their parents or siblings are smokers than if their parents or siblings are not smokers.[26] Other research finds that boys are 91 percent likelier and girls are 75 percent likelier to smoke if their mother or stepmother smoked than if their mother or stepmother did not smoke, and girls whose fathers or stepfathers smoked are 45 percent likelier to smoke than those whose fathers or stepfathers did not smoke.[§] [27] Mothers who drink alcohol occasionally[**] are more likely to have children who use alcohol than mothers who never drink, and those who drink more often--at least weekly--are even likelier than occasionally drinking mothers to have children who use alcohol.[28] Another study found that older siblings' tobacco, alcohol or marijuana use is associated with an at least 50 percent increase in the risk of adolescent use of each of these substances.[29]

CASA's 2009 *Teen Survey* found that 34 percent of teens report that they have seen one or both of their parents drunk and four percent report that they have seen a parent high on illegal drugs.[††] Teens who have seen a parent drunk are more than twice as likely to get drunk in a typical month as teens who have not seen a parent

[*] Estimated numbers are based on Census population estimates.
[†] Risky substance use is defined for the purpose of these analyses as: current smokers of any age, underage drinkers, adults who engaged in binge drinking one or more times in the past 30 days, adult drinkers who exceed the U.S. Department of Agriculture (USDA) guidelines of no more than one drink per day for women or two drinks per day for men, current users of any illicit drug and/or current misusers of any controlled prescription drug.
[‡] Including those who meet clinical criteria for past month nicotine dependence, past year alcohol abuse or dependence and/or past year other drug abuse or dependence.

[§] Having a father/stepfather who smokes did not significantly predict boys' smoking.
[**] Once or twice a month.
[††] The survey also found that 33 percent of parents admit that their teen has seen one or both parents drunk and four percent of parents admit that their teen has seen one or both parents high on illegal drugs.

drunk; they also are three times as likely to have smoked cigarettes or used marijuana.[30]

Addiction in the Family

A history of addiction in the family has been noted for many years as a risk factor for adolescent substance use.[31] Teens who are exposed to parents' substance use disorders are three times as likely as other teens to have a substance use disorder themselves (53 percent vs. 15 percent).[*] [32] Teens with a family history of addiction also increase their substance use at a faster pace and to more intense levels than those without a family history of addiction.[†] [33]

Adverse Childhood Events

Childhood trauma and maltreatment--such as sexual, emotional and physical abuse or neglect and household dysfunction[‡]--are significant risk factors for substance use in adolescence and into young adulthood.[34] Adverse childhood events also increase the risk of addiction. A national sample of adolescents found that those who had been physically or sexually assaulted or who had witnessed violence were at higher risk of having a substance use disorder.[35] Another study found that adverse experiences increase the likelihood of early[§] initiation of illicit drug use two- to four-fold and increase the lifetime risk of an illicit drug problem[**] and drug addiction by 30 to 40 percent.[36] A longitudinal study showed an association between experiencing childhood maltreatment before age eight and a marijuana use disorder in later adolescence.[††] In this study, childhood maltreatment before age eight also was associated with behavioral problems such as aggression and with emotional problems such as feeling anxious or depressed.[37]

Girls who witness[38] or experience mistreatment or physical or sexual violence are at particularly high risk of substance use.[39] Approximately one in four (26 percent) high school-age girls report having experienced some form of abuse (compared to 17 percent of high school-age boys); this includes sexual abuse (12 percent vs. 5 percent of boys), physical abuse (17 percent vs. 12 percent of boys) or date rape (8 percent vs. 5 percent of boys).[40] More than twice as many girls as boys in treatment for a substance use disorder report current[‡‡] physical and/or sexual abuse (35.9 percent vs. 15.5 percent).[41] Girls who have been sexually or physically abused[§§] are about twice as likely as those who were not abused to smoke in the past week (26 percent vs. 10 percent), drink alcohol in the past week (22 percent vs. 12 percent) or use other drugs in the past month (30 percent vs. 13 percent).[42] In a clinical sample, sexually abused girls were approximately three-and-a-half times as likely to regularly[***] misuse controlled prescription drugs as girls who were not abused.[43]

Mental Health Disorders

Teens with behavioral disorders such as attention-deficit/hyperactivity disorder (ADHD) or conduct disorder,[44] or emotional disorders such as anxiety or depression,[45] are at increased risk of smoking, drinking and using other drugs.[46] Research suggests that behavioral disorders might be more strongly linked to substance use than emotional disorders.[47]

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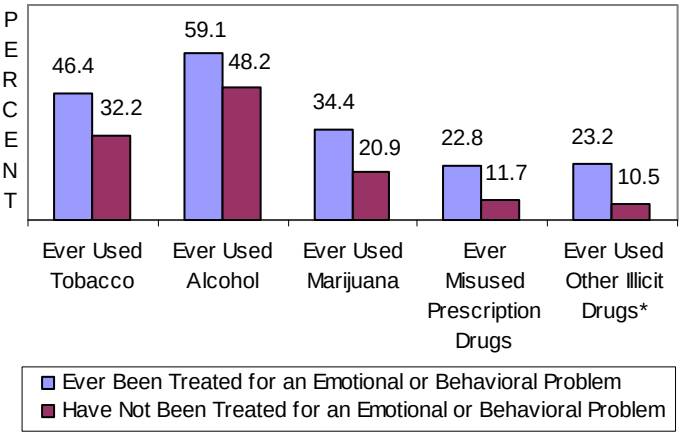
[*] Similar analysis did not find the same significant relationship between parents' and offspring's substance use disorders in children younger than 13 years.
[†] Trajectories were based on smoking frequency, alcohol use frequency and intensity and the number of illicit drugs used during the past 12 months.
[‡] Includes such measures as domestic violence, divorce, mental illness, suicide and substance use in the household.
[§] Ages 12 to 14.
[**] Respondent answered yes to the question, "Have you ever had a problem with street drugs?"
[††] Ages 15 to 18.
[‡‡] Past 30 days.
[§§] Including forced by a date to have sex.
[***] At least once a month in the past year.

CASA's analysis of national data shows that high school students who report ever having received treatment for a mental health problem* are more likely than those who have not received treatment for an such problems to have ever used tobacco (46.4 percent vs. 32.2 percent), alcohol (59.1 percent vs. 48.2 percent), marijuana (34.4 percent vs. 20.9 percent), controlled prescription drugs (22.8 percent vs. 11.7 percent) or other illicit drugs (23.2 percent vs. 10.5 percent).[48] (Figure 7A)

Figure 7.A

Substance Use Among High School Students Who Report Treatment for Emotional or Behavioral Problems



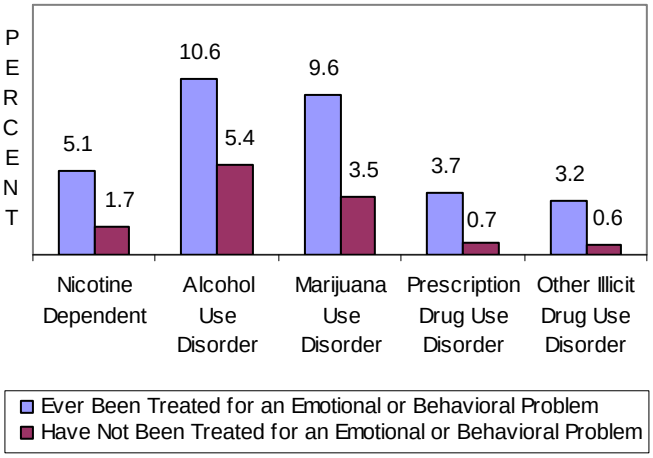
Source: CASA analysis of the *National Household Survey on Drug Abuse* (NSDUH), 2009.
* Cocaine, heroin, hallucinogens or inhalants.

These students also are more likely to be current users of tobacco (22.6 percent vs. 13.8 percent), alcohol (25.4 percent vs. 19.1 percent), marijuana (15.6 percent vs. 8.7 percent), controlled prescription drugs (7.0 percent vs. 3.1 percent) and other illicit drugs (3.7 percent vs. 1.7 percent).[49]

Students who received treatment for a mental health problem are considerably more likely than those who have not received such treatment to be nicotine dependent† (5.1 percent vs. 1.7 percent) or have an alcohol use disorder (10.6 percent vs. 5.4 percent), marijuana use disorder (9.6 percent vs. 3.5 percent), prescription drug use disorder (3.7 percent vs. 0.7 percent) or other illicit drug use disorder (3.2 percent vs. 0.6 percent).‡ [50] (Figure 7.B)

Figure 7.B

Substance Use Disorders Among High School Students Who Report Treatment for Emotional or Behavioral Problems



Source: CASA analysis of the *National Household Survey on Drug Abuse* (NSDUH), 2009.

* Defined by the NSDUH as receiving treatment or counseling from an in-home therapist or counselor for problems that were not caused by alcohol or other drug use. Examples of such problems include depression, anger issues and disordered eating.

† In the past month.
‡ In the past year.

Behavioral Disorders

Teens with behavioral disorders are at increased risk of substance use and of substance use disorders in young adulthood.[51] One study found that teens diagnosed with ADHD between ages 11 and 14 were twice as likely to use tobacco and nearly three times as likely to use illicit drugs as adolescents without ADHD.[52] A longitudinal study of teens followed through age 37 found that those with ADHD in adolescence were nearly twice as likely as those without ADHD to develop a substance use disorder in adulthood; those with a conduct disorder in adolescence were 3.5 times as likely as those without a conduct disorder to develop a substance use disorder in adulthood.[53] Those diagnosed with conduct disorder between ages 11 and 14 were four times as likely to have nicotine dependence and five times as likely to have an alcohol or marijuana use disorder by age 18 as adolescents without a diagnosed conduct disorder.[54]

Emotional Disorders

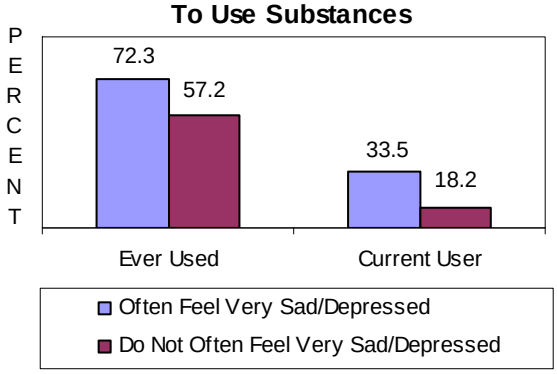
Teens who suffer from depression or bipolar disorder are at particularly high risk of substance use.[55] In some cases, teens with these conditions use addictive substances to self-medicate or elevate their negative mood and, in other cases, shared risk factors such as a difficult home environment or the experience of abuse or other trauma may increase the likelihood both of a depressive disorder and of substance use.

CASA's analysis of national data finds that high school students who have experienced a major depressive episode in their lifetime are likelier than their peers who have not experienced such episodes to have ever smoked (42.7 percent vs. 26.4 percent); used alcohol (64.0 percent vs. 47.9 percent); or used other drugs (48.6 percent vs. 29.9 percent) including marijuana (32.9 percent vs. 21.8 percent), other illicit drugs (23.6 percent vs. 11.0 percent) or controlled prescription drugs (26.7 percent vs. 11.5 percent). They also are more likely to be current smokers (17.8 percent vs. 10.8 percent); alcohol users (27.7 percent vs. 19.0 percent); or other drug users (18.8 percent vs. 11.5 percent), including marijuana (14.5 percent vs. 9.3 percent), other illicit drugs (3.3 percent vs. 1.8 percent) or controlled prescription drugs (7.5 percent vs. 3.1 percent). Similar results were found for those who experienced a major depressive episode in the past year and for those who report sub-clinical levels of depression.[*] [56]

CASA's survey of high school students finds that those who report that they often feel very sad or depressed are more likely than those who do not report feeling this way to have ever smoked, consumed alcohol or used marijuana (72.3 percent vs. 57.2 percent) and to be current smokers, drinkers or marijuana users (33.5 percent vs. 18.2 percent).[57] (Figure 7.C)

Figure 7.C

Students Who Report Often Feeling Sad/ Depressed More Likely To Use Substances



Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel,* 2010.

Depressive symptoms are a risk factor both for smoking initiation[†] and the progression from smoking initiation to regular smoking, and may increase the likelihood of nicotine dependence.[58] The link between depression and later substance use is evident even before adolescence: one study found that pre-adolescents in 4th through

[*] Including having had a period of time lasting several days or longer when most of the day they felt sad, empty, depressed or discouraged.

[†] Alleviation of depressive symptoms may be a motivating factor for cigarette smoking, as nicotine may enhance mood in the short-term.

6th grades who had higher levels of depressive symptoms smoked more in the 10th through 12th grades than those with lower levels of depressive symptoms.[59]

Depressive symptoms are linked to an increased risk of early initiation of alcohol use, alcohol intoxication, alcohol-related problems[*] and the development of alcohol dependence in young adulthood; some studies suggest that depressive symptoms may precede the onset of alcohol use.[60]

Temperament and Self-Esteem

Children and adolescents with certain temperaments, such as a tendency toward irritability and aggression, are at increased risk for substance use and addiction.[61] The risk for substance use in adolescence also is elevated among children and teens who demonstrate poor adaptability, hyperactivity, insecurity or chronic negative moods.[62] Children, preadolescents and teens who demonstrate such temperaments may have more problems interacting with peers, increasing their risk for substance use.[63]

Adolescents who are impulsive, risk-taking or sensation seeking and who have poor self-control also are at increased risk for substance use.[64] A study of high school students found that poor emotional control[†] was associated with using tobacco, alcohol and marijuana in order to calm down when feeling tense or nervous.[65] In contrast, adolescents with good self-control are protected to some extent from using substances in response to adverse life events[‡] or having peers who engage in substance use.[66]

Adolescents with generally negative feelings about themselves--characterized as low self-esteem, self-confidence, self-image or self-efficacy[§]--are at increased risk for substance use and addiction.[67] High school girls with low self-confidence are about twice as likely as those with higher self-confidence to report smoking[**] (20 percent vs. 11 percent), current alcohol use (21 percent vs. 11 percent) and current illicit drug use (31 percent vs. 13 percent).[68] A study of Hispanic adolescents in 7th through 12th grades found that those who had a poor self-image[††] reported higher rates of lifetime smoking and past-year alcohol use than those with a better self-image.[69] Among adolescents who were followed from the 7th through the 10th grades, those who had low self-efficacy had weaker drug refusal skills and drank more alcohol than those with higher self-efficacy.[70]

Peer Victimization and Bullying

In 2005, 28.1 percent of 9th graders and 19.9 percent of 12th graders reported having been victims of bullying at school in the past six months.[71] Teens who are bullied are likelier than those who have not been bullied to engage in substance use, whether the bullying is physical or mental such as rumors, teasing or threats, and whether the bullying occurs through face-to-face interactions or online.[72] One study found that teens who experience online harassment or online sexual solicitation are twice as likely as other teens to report multiple types[‡‡] of substance use.[73]

The relationship between victimization and substance use may differ for girls and boys. One study found that victimization[§§] is directly

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[*] Including having trouble in school, at home, or with the police or having health or physical problems from alcohol use.

[†] Being unable to calm down easily when excited or wound up or not planning things ahead of time.

[‡] In the family and in the adolescent's own life, such as a serious illness, a parent's job loss or getting in trouble with the police.

[§] Not believing that their actions could produce the results they wanted.

[**] Smoke several cigarettes or a pack or more in the past week.

[††] In this study, defined as feeling as if they cause trouble for their families or feeling that they are not smart.

[‡‡] Three or more substances in the past year.

[§§] How often they had been bullied at school in the past couple of months (physical, teasing, race-related, religion-related, sexual joke, exclusion, rumor, via computer or cell phone).

associated with substance use* in boys, but indirectly associated with substance use in girls; in girls, depression† explained the link between victimization and substance use.[74]

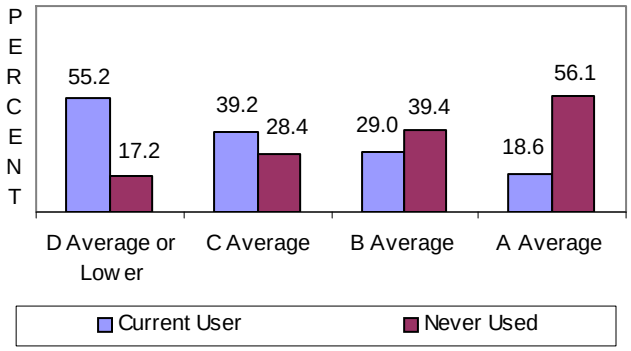
Poor Academic Performance

Low academic achievement and problems with school, such as being suspended or high absenteeism, are not only consequences of substance use‡ but can increase the risk of adolescent substance use as well.[75] CASA's analysis of national data shows that among high school students who have a D or lower average, 55.2 percent are current users of tobacco, alcohol or other drugs and 17.2 percent have never used these substances; among those with a C average, 39.2 percent are current users of tobacco, alcohol or other drugs and 28.4 percent have never used these substances. Among students with a B average, 29.0 percent are current users of tobacco, alcohol or other drugs while 39.4 percent have never used any of these substances. Among those with an A average, 18.6 percent are current users of tobacco, alcohol or other drugs and 56.1 percent have never used any of these substances.[76] (Figure 7.D)

Part-Time Employment

Despite some protective effects of part-time employment for adolescents,[77] teens who work more than about 10 to 15 hours per week are at increased risk of both poor academic performance and substance use.[78] Students working 30 hours per week are twice as likely to smoke as those working less than five hours per week.[79] A study analyzing different national data found that students working more than 10

Figure 7.D
Percent of High School Students by Grade Average Who Use Addictive Substances



Source: CASA analysis of the *National Household Survey on Drug Abuse* (NSDUH), 2009.

hours per week were three times as likely as non-working adolescents to binge drink in the past year.[80]

There are several explanations for the relationship between longer hours worked and increased risk of substance use. Youth employment disrupts parental surveillance,[81] induces role conflict and "pseudomaturity" in which adolescents engage in activities such as smoking and drinking that are associated with adult behavior,[82] and allows less time for schoolwork and other constructive activities.[83]

Divorced and Single Parent Families

Something as basic as the structure of a family can relate to children's risk: adolescents from divorced or single parent families are likelier than those from intact, original two-parent homes to engage in substance use.[84]

One study found that adolescents who live with a stepmother or stepfather are 61 percent and 37 percent likelier, respectively, to use substances than adolescents who live with both of their biological parents.[85] In the same vein, another study found that teens in single-mother families or married stepfamilies are nearly one-and-a-half times as likely, and those in cohabiting stepfamilies are 2.2 times as likely, to smoke

* Measured by the number of occasions in the past 30 days they had smoked, drank, been drunk or used marijuana.
† Measured by how often in the past 30 days they were very sad, grouchy, irritable, in a bad mood, felt hopeless about the future, felt like not eating or eating more than usual, slept a lot more or a lot less than usual or had difficulty concentrating on their schoolwork.
‡ See Chapter IV.

and drink as teens in families with two biological married parents.[86]

Boys in single-father homes are likelier to use marijuana than boys in two-parent homes and girls in single-father homes are likelier to use marijuana than girls in single-mother homes or in two-parent homes. Teens in father-only homes also use amphetamines at higher levels than those in two-parent or single-mother homes.[87] A study of black adolescents found that those whose biological fathers lived at home were less likely to drink alcohol than those who had non-biological father figures at home or those whose biological fathers did not live at home (51 percent vs. 57 percent vs. 60 percent, respectively).[88] In another study, black boys whose fathers were absent from their lives used more addictive substances, including cigarettes, alcohol and marijuana, than those whose fathers were present.[89]

Divorced or single parent families might make a teen more susceptible to substance use in several ways. The stress of a divorce on the family can reduce the bond between children and parents, making children more vulnerable to negative peer influences.[90] Single parent or stepparent families may be less cohesive and less involved in children's activities relative to intact two-parent families.[91]

Despite the increased risk of living in a divorced or single-parent home, research finds that youth substance use is affected more by family attachment and relationships than by family structure.[92] That is, children may better be able to avoid substance use when growing up in a nurturing single-parent home than in a less nurturing two-parent home.[93]

Risky Behavior Affecting Health and Safety

Unhealthy or risky behaviors, such as engaging in early or risky sexual activity, unhealthy weight loss, risky driving, poor sleeping habits and fighting and aggression are associated with substance use among adolescents and serve as markers of substance use risk since they frequently co-occur with teen substance use. These risky behaviors also might be driven at least in part by many of the circumstances discussed above, such as genetics, family history or mental health problems.

Early or Risky Sexual Activity

High school students who engage in early or unsafe sex[*] are more than twice as likely to be current substance users[†] compared to students who have not engaged in early or unsafe sex (71.0 percent vs. 32.5 percent).[94] Current substance use is more common among:

- High school students who engage in their first sexual intercourse before age 13 (74.1 percent vs. 44.7 percent), and
- High school students who have multiple sex partners[‡] (80.2 percent vs. 40.8 percent).[95]

(Figures 7.E, 7.F and 7.G provide further detail on these links.)

One longitudinal study found that, among males, each 2.4-year delay in first sexual intercourse was associated with an 18 percent decrease in the risk of developing a substance use disorder.[96]

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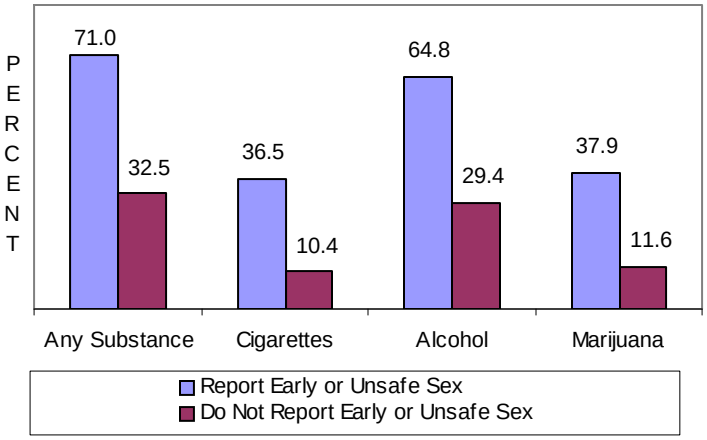
[*] Defined as having had sex before age 13, had sex with four or more people in their lifetime, had sex with one or more people in the past three months, drank/used other drugs before sex or did not use any method of birth control at last intercourse.
[†] Used tobacco, alcohol, marijuana or cocaine in the past month.
[‡] Sexual intercourse with four or more people during their lifetime.

Figure 7.E

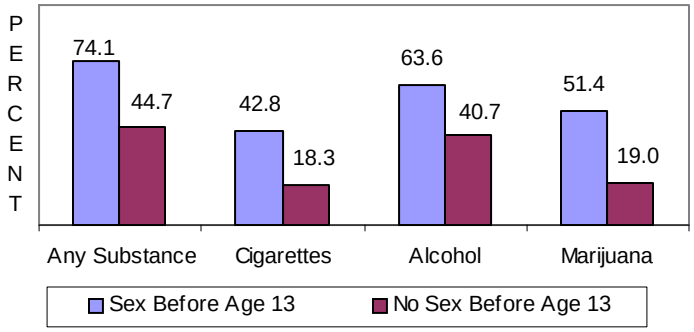
Students Who Report Early or Unsafe Sex* More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.
* Sex before 13; 4+ people in lifetime; one+ people in the past 3 months; drank/used other drugs before sex; or no condom/birth control.

Figure 7.F

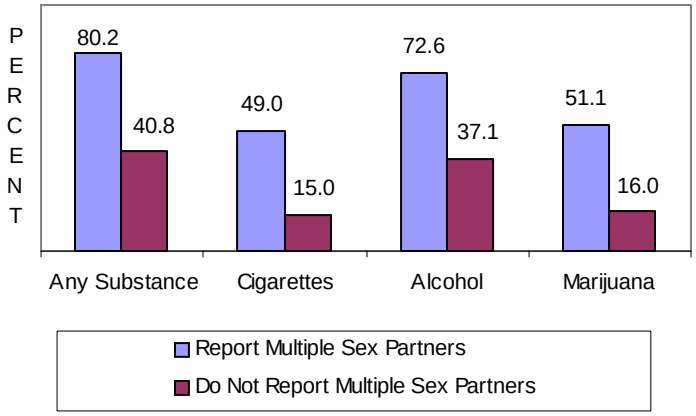
Students Who Report Sexual Intercourse Before Age 13 More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Figure 7.G

Students Who Report Multiple Sex Partners More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Unhealthy Weight Control

Some teens use addictive substances, particularly cigarettes, as a means to control or lose weight.[97] CASA's analysis of national data finds that high school students who practice unhealthy weight control behaviors[*] are likelier to be current substance users than those who do not engage in unhealthy weight control behaviors (52.1 percent vs. 41.8 percent).[98] More specifically, high school students who have engaged in the following behaviors in the past 30 days are more likely than those who have not to be current substance users:

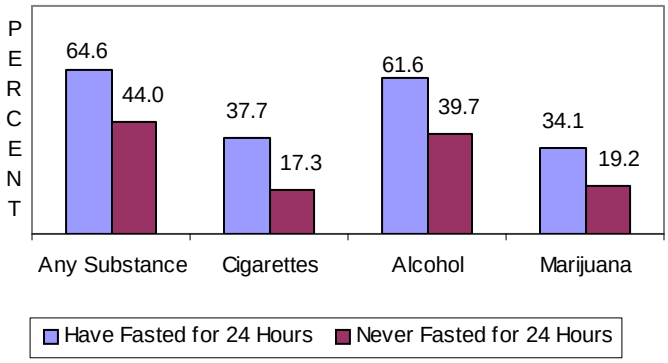
- Went without eating for 24 hours or more (64.6 percent vs. 44.0 percent),
- Took diet pills, powders or liquids without a doctor's advice (76.7 percent vs. 44.6 percent), and
- Vomited or took laxatives to lose weight or to keep from gaining weight (73.6 percent vs. 45.1 percent).[99]

(Figures 7.H, 7.I and 7.J provide further detail on these links.)

[*] Ate less food, went without eating for 24 hours or more, took diet pills or vomited to lose weight.

Figure 7.H

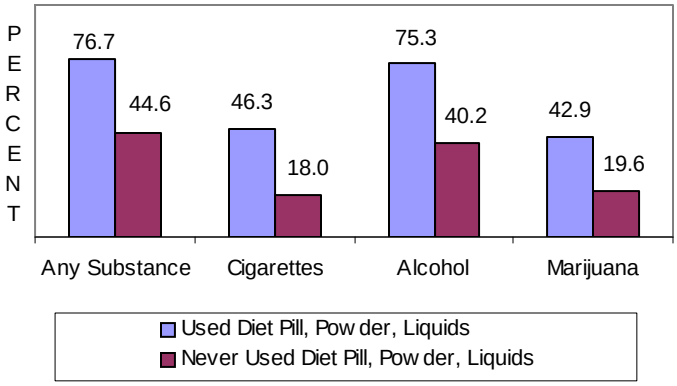
Students Who Report Fasting for 24 Hours More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Figure 7.I

Students Who Report Taking Diet Pills, Powders or Liquids More Likely To Currently Use Substances



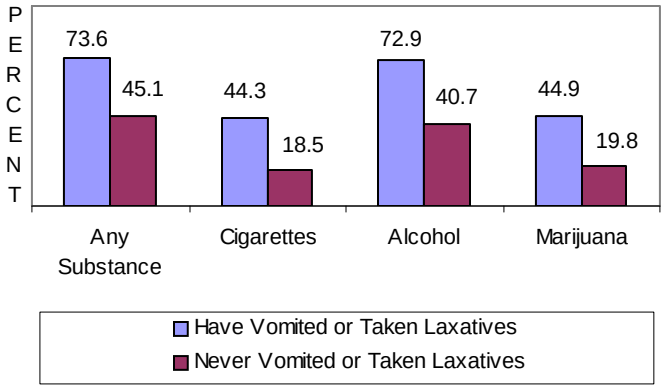
Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Analysis of national data by other researchers indicates that unhealthy weight control behaviors are more strongly associated with current tobacco use, binge drinking and inhalant use among high school girls and with current tobacco use, binge drinking, marijuana and cocaine use, and lifetime inhalant, heroin, methamphetamine, ecstasy, steroid and hallucinogen use among high school boys.[100]

Being overweight or obese also is linked to teen substance use.[101] A national study found that girls between the ages of 11 and 14 who are overweight or obese are 1.8 times as likely to be frequent* smokers, 1.6 times as likely to be frequent drinkers and 3.4 times as likely to be frequent marijuana users as normal weight girls. Those ages 15 to 17 who are obese are twice as likely to be frequent smokers and 1.8 times as likely to be frequent drinkers as normal weight girls; these relationships were not found for boys.[102]

Figure 7.J

Students Who Report Vomiting or Taking Laxatives More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Risky Driving

High school students who engage in risky driving are more likely to be current substance users than those who do not report risky driving. For example, current substance use is more common among:

- High school students who never or rarely wear a seat belt when riding in a car driven by someone else compared to those who do wear a seat belt (72.4 percent vs. 43.6 percent), and

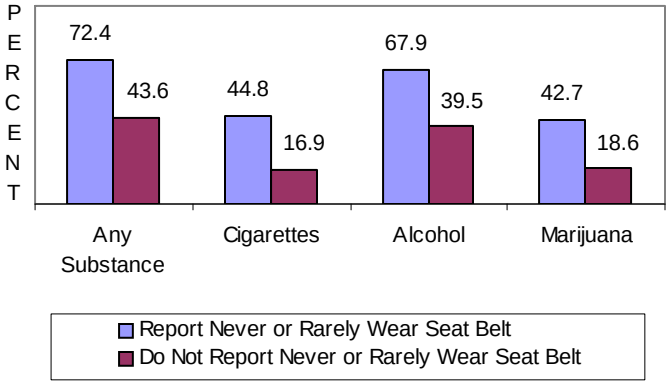
* Used the substance more than once or twice in the past 30 days.

- High school students who report riding in a car or other vehicle in the past 30 days that was driven by someone who had been drinking alcohol compared to those who have not done so (72.9 percent vs. 35.4 percent).[103]

(Figures 7.K and 7.L provide further detail on these links.)

Figure 7.K

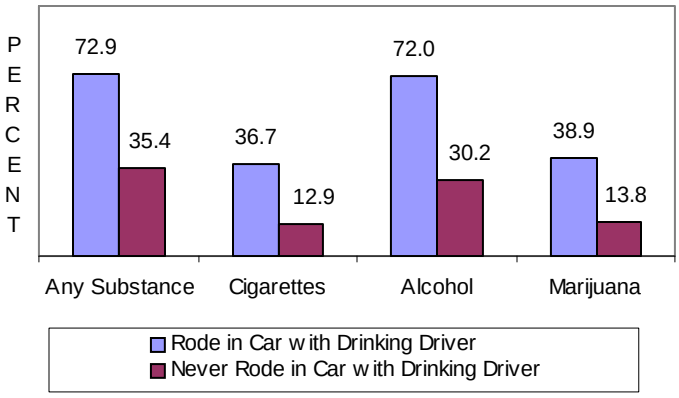
Students Who Report Never or Rarely Wearing a Seat Belt More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Figure 7.L

Students Who Report Riding in Car Being Driven by Someone Who Had Been Drinking More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Sleeping Problems

High school students who get less than eight hours of sleep per night are more likely to be current substance users than those who sleep eight hours or more (50.1 percent vs. 38.9 percent). Those students who do not get eight hours of sleep are more likely than those who sleep at least eight hours per night to be current smokers (21.9 percent vs. 15.0 percent), drinkers (45.9 percent vs. 34.0 percent) and marijuana users (22.9 percent vs. 16.5 percent) as well as lifetime users of other illicit drugs (16.4 percent vs. 10.9 percent).[104]

High school students who get the least amount of sleep on school nights report drinking more alcohol than students who get the most amount of sleep on school nights. The later adolescents go to sleep on weekend nights relative to weekday/school nights, the higher their risk of tobacco, alcohol, marijuana and other drug use. Those who have more problems[*] due to erratic sleeping also are at higher risk of using these substances.[105]

Fighting and Aggression

High school students who report violent or aggressive behavior[†] are more likely to be current substance users that those who do not report engaging in these behaviors (62.5 percent vs. 35.9 percent).[106]

CASA's analysis of national data finds that high school students who have been in a physical fight one or more times during the past 12 months are more likely than those who have not been in a fight to be current substance users (64.3 percent vs. 37.4 percent), as are students

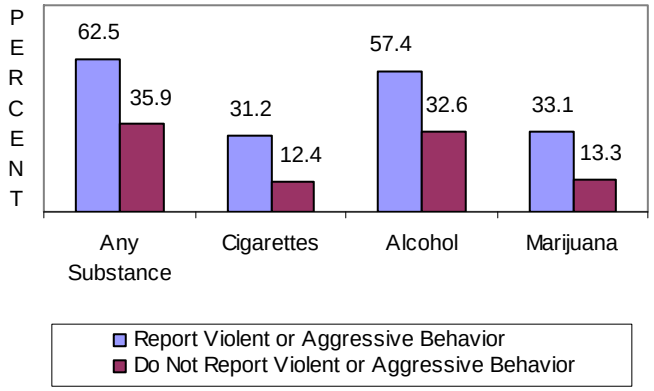
[*] Frequency of indicators of erratic sleep-wake behavior over the last two weeks, such as arrived late to class because of oversleeping, stayed up past 3:00 AM, needed more than one reminder to get up or had an extremely hard time falling asleep.

[†] Carried a weapon or a gun in the past 30 days (including to school) or had a physical fight (including on school property) or was injured and treated by a doctor/nurse because of a fight in the past 12 months.

who have been in this type of fight on school property in the past 12 months (65.5 percent vs. 43.5 percent).[107] (Figures 7.M, 7.N and 7.O provide further detail on these links.)

Figure 7.M

Students Who Report Violent/Aggressive Behavior* More Likely To Currently Use Substances

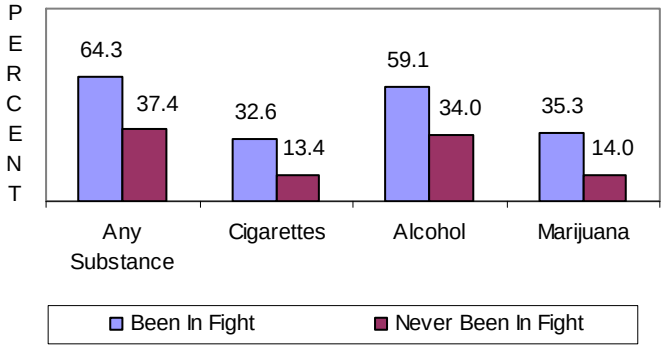


Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

* Carried weapon, in a physical fight, injured in a fight.

Figure 7.N

Students Who Report Having Been in a Physical Fight More Likely To Currently Use Substances

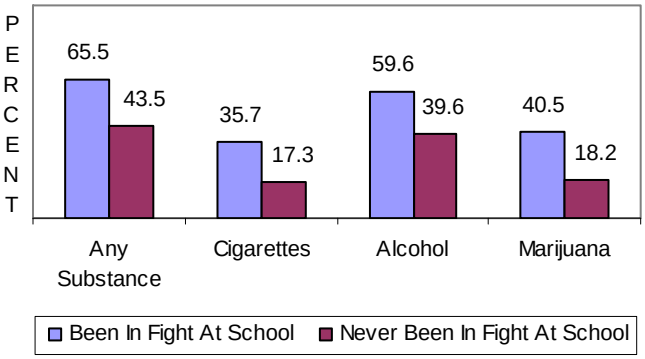


Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Other research finds that adolescents who engage in frequent violence* at age 13 are nearly two-and-a-half times as likely to report past year use of alcohol and 1.2 times as likely to report past year use of marijuana between ages 14.5 and 18.5.[108]

Figure 7.O

Students Who Report Being in a Fight on School Property More Likely To Currently Use Substances



Source: CASA analysis of the *Youth Risk Behavior Survey* (YRBS), 2009.

Specific High-Risk Sub-Groups

Certain sub-groups of adolescents are at higher risk of substance use and addiction, perhaps because of other characteristics or circumstances such as family history, adverse childhood experiences or behavioral or emotional disorders.

Adolescents in the Child Welfare System

Substance use and addiction can lead to an intergenerational cycle of child maltreatment and substance misuse.[109] Adolescents who have ever been in foster care are at least one and a half times as likely to use illicit drugs as adolescents who have never been in foster care (33.6 percent vs. 21.7 percent).[110] Other research has found that adolescents who have

* Frequency of carrying a hidden weapon, strong-arming, attacking with a weapon or with intent to seriously hurt or kill someone, gang fights, hurting or threatening to hurt someone to force sex or otherwise forcing sex or attempting to force sex.

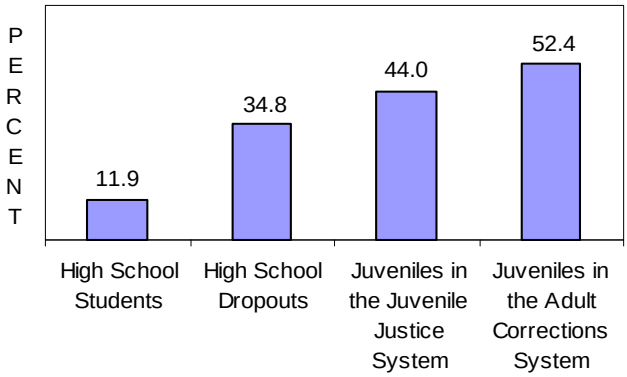
ever been in the foster care system are more likely to use alcohol, about twice as likely to use illicit drugs and between two to five times as likely to have substance use disorders as adolescents who had not been in the foster care system.[111] A community-based study found that the number of out-of-home placements was associated with lifetime use of alcohol, marijuana, cocaine and other illicit drugs, and this association was strongest for adolescents who entered the child welfare system at age 13.7 years or older.[112]

High School Dropouts

Nearly a third of students nationwide fail to graduate from high school; the high school dropout rate in the 50 largest cities in the U.S. is nearly 50 percent.[*] [113] Teens who drop out of high school are at increased risk of using tobacco, alcohol and other drugs[114] and of developing a substance use disorder in early adulthood relative to teens who remain in school.[115] CASA's analysis of national data[†] finds that teen high school dropouts are twice as likely to be current users of an addictive substance,[‡] or to have ever smoked cigarettes, used marijuana, misused controlled prescription drugs, or used illicit drugs; they are almost one and a half times as likely to have ever used alcohol.[116]

High school dropouts also have higher rates of clinical substance use disorders than high school students. One third (34.8 percent) of teen high school dropouts meet clinical criteria for nicotine dependence[§] or for an alcohol or other drug use disorder[**] (compared with 11.9 percent of high school students): 21.2 percent were nicotine dependent (compared to 2.8 percent of high school students), 12.4 percent had an alcohol use disorder (compared to 7.1 percent of high school students) and 14.4 percent had other drug use disorders (compared to 6.1 percent of high school students)--12.9 percent had a marijuana use disorder, 3.5 percent had an other illicit drug use disorder and 3.1 percent had a prescription drug use disorder.[††] [117] (Figure 7.P)

Figure 7.P
Rates of Substance Use Disorders Among High School Students, Dropouts and Juveniles in the Justice System



Source: CASA analysis of the *National Survey on Drug Use and Health* (NSDUH), 2009; CASA *Criminal Neglect: Substance Abuse, Juvenile Justice and The Children Left Behind*, 2004.

Justice System Involvement

Adolescents in the justice system have even higher rates of substance use and substance use disorders, and they are likelier than high school students to have a mental health disorder.[118] The deeper a young person's involvement with crime and the justice system, the higher his or her risk of substance use and addiction.[119] Forty-four percent of young people in the juvenile justice system meet the clinical diagnostic criteria for a substance use disorder, as do 52.4 percent of juveniles in the adult corrections system.[120] (See Figure 7.P)

[*] Forty-seven percent of students in the nation's 50 largest cities and 29 percent of students nation-wide drop out of school.
[†] From the NSDUH; the YRBS does not include data on those who have dropped out of high school.
[‡] Includes tobacco, alcohol, marijuana, controlled prescription drugs and illicit drugs.
[§] Past month.
[**] Past year.

[††] These rates may be low because the *NSDUH* is conducted in the home and therefore does not include homeless and institutionalized teens who have dropped out of high school and who tend to use at higher rates.

Juvenile offenders' continued use of substances increases their risk of recidivism.[121] One study found that adolescent female juvenile offenders with co-occurring substance use and mental health disorders were nearly four times as likely to reoffend as adolescent female juvenile offenders without these disorders.[122]

Minority Sexual Identity

Adolescents who identify as lesbian, gay, bisexual or transgender[*] (LGBT) or who report same-sex attractions and relationships are at higher risk for substance use.[123] One study found that males with attraction to both sexes[†] were 1.3 times as likely to have used alcohol by themselves; they also were 1.7 times as likely to have used illicit drugs, including marijuana, as males with other-sex attractions. Similarly, females with both-sex attraction were 2.7 times as likely to drink by themselves; they were three times as likely to have used illicit drugs as females with other-sex attractions.[124]

LGBT adolescents report a younger age of initiating alcohol use--as young as seven years old in some cases--than adolescents who identify as heterosexual;[125] they also show greater increases in their rates of cigarette and marijuana use from adolescence into early adulthood.[126]

Research suggests that lesbian and bisexual females may be at even higher risk of substance use than gay male and heterosexual adolescents.[127] For example, lesbian and bisexual girls are more than six times as likely as heterosexual girls to have smoked in the past month and nearly 10 times as likely as heterosexual girls to have smoked at least weekly in the past year.[128]

The link between minority sexual orientation and elevated risk for substance use can be explained by several factors. LGBT adolescents are more likely than heterosexual adolescents to report peer victimization, parental conflict and homelessness, which are related to substance use risk.[129]

Lesbian, gay and bisexual adolescents encounter prejudice and discrimination because of their stigmatized sexual identity which may lead to feelings of depression and isolation.[130] A nationally representative study of LGBT middle and high school students found that nearly three-quarters (72.4 percent) of students ages 13 to 21 heard homophobic remarks often or frequently at school. The majority (84.6 percent) reported being verbally harassed, 61.1 percent reported that they felt unsafe at school, 40.1 percent reported being physically harassed and 18.8 percent reported being physically assaulted in the past year because of their sexual orientation.[131] Other research finds that lesbian, gay and bisexual high school students who report high levels of at-school victimization--being threatened or injured or having had their property damaged or stolen--report higher levels of tobacco, alcohol, marijuana and cocaine use than heterosexual students who report high levels of at-school victimization.[132]

Athletes

Students who are involved in organized athletics typically are at reduced risk for many types of substance use, specifically cigarette smoking and illicit drug use.[‡] Yet teen athletes are at higher than average risk of certain other forms of substance use, including smokeless tobacco use, alcohol use and the misuse of anabolic steroids.[133] Male student athletes generally use addictive substances more heavily than female student athletes.[134]

A nationally representative study found that approximately 7.6 percent of adolescent athletes report using snuff in the past month and 6.8 percent report chewing tobacco in the past year compared to 3.8 percent and 3.7 percent of non-athletes, respectively. The same study found that students participating in organized sports have a 33 percent increased likelihood of using chewing tobacco in their lifetime and a 76 percent increased likelihood of being a current

[*] Data on the risks of substance use in transgendered adolescents are limited.

[†] Teens reported same-sex attractions rather than same-sex sexual behavior or same-sex relationships.

[‡] See Chapter VIII.

user than those who do not participate in organized sports.[135] High school athletes may use smokeless tobacco products rather than cigarettes because of a misperception of less risk to physical health and fitness.[136]

One study found that for every one percent increase in athletic activities, there is an eight percent increase in drinking.[*] [137] Among 7th to 12th graders, greater involvement in athletics also is associated with increases in alcohol-related problems.[†] [138] One study found that students who identified themselves as "jocks" were more likely to be problem drinkers than non-jocks; these students reported drinking more heavily and more often and experiencing more alcohol-related social problems than their peers.[139]

Young athletes also may use substances such as anabolic steroids and diet pills in an effort to gain competitive advantage, manipulate or sculpt their bodies and control their weight. However, steroid use remains relatively rare in the national high school population and research on its relationship to high school athletic participation is limited.[140] One study found that males involved in weight-related sports[‡] are twice as likely as males not involved in weight-related sports to have used diet pills, 3.4 times as likely to have used laxatives, 3.7 times as likely to have used steroids and 6.0 times as likely to have used diuretics in the past year. Females involved in weight-related sports are 1.3 times as likely as females not involved in weight-related sports to have used diet pills, 2.1 times as likely to have used diuretics and 2.6 times as likely to have used laxatives or steroids in the past year.[141]

---

[*] Drinking included any amount of alcohol consumption on more than one occasion.
[†] Measured as reporting problems with parents, friends or at school/work as a result of drinking; doing something regrettable while drinking; and/or drinking and driving in the last 12 months.
[‡] Defined as a sport or activity where it is important to maintain a certain weight, such as wrestling, gymnastics or ballet.

Chapter VIII
Factors That Reduce the Risk of Teen Substance Use

In the face of the many cultural and personal factors described in this report and elsewhere that increase the risk of teen substance use and addiction, it is no wonder that many adults are resigned to the belief that teens will use these substances. The reality, however, is that the risks of substance use can be mitigated, even for those at highest risk.

Parents are the most important influence. Teens who live in homes where parents model healthy behavior, create a nurturing family environment, play an active role in their children's lives, communicate openly and honestly about substance use and set and enforce clear rules are at reduced risk. And, other responsible adults can help those teens who do not have engaged parents or a nurturing family environment by providing companionship, guidance and serving as positive role models. Teens who form strong attachments to their schools or communities, participate in extracurricular activities and establish goals for the future are less likely to smoke, drink and use other drugs. And those who are involved in religion are at reduced risk as well.

Parental Engagement

CASA's survey of high school students conducted for this study found that 80.1 percent report that their parents' concerns, opinions or expectations either "very much" (50.9 percent) or "somewhat" (29.2 percent) influence whether or how much they smoke cigarettes, drink alcohol or use other drugs. Perhaps surprising to parents is that the majority (79.5 percent) of teens also say that they feel having a good relationship with their parents is "somewhat" or "very" cool.[*] [1]

[*] Teens are less likely to think that their peers share this view. Only 37.9 percent said that most people their age think it is "somewhat" or "very" cool to have a good relationship with their parents.

A significant body of evidence shows that a positive family environment and positive parenting practices related to affection, support, monitoring, rules, discipline and reward are associated with reduced risk of teen substance use.[2] Strong family ties also are important. CASA's 2010 *National Survey of American Attitudes on Substance Abuse VI: Teens* found that compared to teens with strong family ties,[*] teens in families with weak family ties are four times as likely to have tried tobacco, almost three times as likely to have tried alcohol and four times as likely to have tried marijuana.[3]

Parents and teens generally agree on some of the steps parents should take to help their children refrain from smoking, drinking or using other drugs. CASA's survey of high school students and parents conducted for this study found that to prevent their teens from using substances:

- 81.6 percent of parents say they have an open, honest relationship with their teen; 78.8 percent of students think that parents should do this.

- 76.7 percent of parents say they are actively engaged in their teen's life; 64.9 percent of students think that parents should do this.

- 73.1 percent of parents say that they set a good example or are a good role model; 69.4 percent of students think that parents should do this; and

- 70.1 percent of parents say that they explain the negative consequences of smoking, drinking and using other drugs; 61.7 percent of students think that parents should do this.[4]

CASA's focus groups with high school students suggest that it may be wise to initiate positive parenting practices early. For example, most of the younger students cited parental factors (e.g., communication, rules) as protective against substance use whereas only a few older students said the same. When asked specifically about what parents can do to prevent teen substance use, younger students said that parents should teach their children, inform them of risks and communicate with them in general. However, older students were more likely to say that there is nothing parents can do to prevent teen substance use. Younger participants in CASA's focus groups cited parents as the most influential people in their lives while older participants named their friends as most influential.

> *Parents' involvement helps more than anything else…Good influences at home [are] the best prevention.*
>
> --CASA Focus Group with School Personnel

Open Parent-Child Communication

Open and honest parent-child communication--about substance use or any issue important to teens--helps to protect adolescents from substance use.[5]

> *Open communication in our household means that we will listen and provide them a safe place to discuss anything they want to.*
>
> --CASA Focus Group with Parents of High School Students

Teens seem most comfortable talking with their mothers. CASA's survey of high school students conducted for this study found that whereas most (71.9 percent) report that they feel comfortable talking to their mothers about personal issues or problems, far fewer feel comfortable confiding in other adult figures in

[*] The bond between parents and teens, including the following factors: "has excellent relationship with biological/step mother," "has excellent relationship with biological/step father," "parents hardly ever argue with each other," "believe parents are very good at listening to them" and "has dinner with parents five or more nights a week."

their lives.[*] Just 39.4 percent said they feel comfortable talking with their fathers and 7.9 percent report that there is not any adult with whom they feel comfortable talking about personal issues or problems.[6] (Table 8.1)

Table 8.1
Which Adults Do You Feel Comfortable Talking to About Personal Issues/Problems?

Adult	Percent
Mother	71.9
Father	39.4
Relative other than parent or grandparent	22.5
Family friend	20.7
Grandparent	14.3
Religious leader	12.3
Teacher	11.8
Coach	9.7
Therapist/Health professional	9.5
None	7.9

Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel*, 2010.

CASA's 2003 survey of girls and young women, conducted for the study *The Formative Years: Pathways to Substance Abuse Among Girls and Young Women, Ages 8-22*, found that the majority of girls (61.6 percent) who reported having conversations with their parents about substance use said that the conversations made them less likely to smoke, drink or use other drugs.[7] An earlier CASA survey of teens found that nearly two-thirds (63 percent) report having had a serious discussion with their parents about the risks of using illegal drugs. Thirty-five percent of teens who have had such discussions with their parents said they learned a lot about the risks of illegal drugs from them and 30 percent said the discussion greatly influenced their decision of whether to use illegal drugs.[8]

[*] When asked which (one) adult they are *most* likely to talk to about a personal issue or personal problem, 54.6 percent said their mother, 16.6 percent said their father, 11.3 percent said a relative other than a parent or grandparent and 2.0 percent said a grandparent. Less than two percent named another adult.

Parental Monitoring

Effective parental monitoring protects against teen substance use.

The majority of parents report that they usually know[†] where their high school-age teens are most or all of the time (93.7 percent) and who they are with most or all of the time (91.9 percent). High school students generally agree: the majority report that their parents know where they are most or all of the time (92.4 percent), and who they are with most or all of the time (87.0 percent).[9] Just knowing where a teen is most of the time is necessary but not sufficient to reduce teen substance use. Monitoring teens' behavior in the context of rules and expectations is important as well. Adolescents who report that their mothers and fathers are aware of and monitor their activities and whereabouts are at reduced risk of substance use.[10]

> *It's got to be confronted. We are parents. And parents need to quit trying to keep from offending our children. We are their parents--not their buddies.*
>
> --CASA Focus Group with Parents of High School Students

One study found that teens who perceived less monitoring from their parents are likelier than teens who perceive more parental monitoring to report current drinking (26.8 percent vs. 16.8 percent) and marijuana use (26.6 percent vs. 12.1 percent).[11] Another study found that adolescent marijuana users are twice as likely to report low rather than high parental monitoring and adolescent ecstasy users are four times as likely to report low versus high parental monitoring.[12]

Effective parental monitoring of teen substance use does not involve strategies that are overly strict or authoritarian, such as severe restrictions on children's activities, lecturing them or

[†] Parent respondents indicate that it is somewhat or very true that they know where their child is most or all of the time.

contacting authorities.[13] Indeed, one study found that fathers' authoritarian parenting style is associated with a greater risk of adolescent substance use.[14] Adolescents whose parents have a moderate parenting style, rather than overly strict or overly lax, are those who have a reduced risk of substance use.[15]

As adolescents age, parental monitoring seems to decrease while teen encounters with high-risk situations, including those involving addictive substances, increase.[16] Such monitoring, however, remains important. For example, a quarter of parents (25.0 percent) never or only sometimes ask if parents would be present at parties that their children attend outside the home and 31.5 percent do not verify the information with other parents,[17] even though parents who make sure that other parents will be at teen parties are likelier to have teens who are non-drinkers.[18] One survey found that only about half (46.8 percent) of parents would forbid their teens from attending a party where alcohol would be served.[19]

Parental Rules Related to Substance Use

The link between consistent messages of parental disapproval of substance use and lower rates of children's substance use is strong.[20] Generally, adolescents who perceive higher parental sanctions[*] and lower levels of parental permissiveness[†] regarding substance use engage in less tobacco, alcohol and other drug use.[21] The top two reasons students offer for why some of their peers do not drink or use other drugs are that the parents of their peers would disapprove (52.4 percent) or would punish them (40.8 percent).[22]

One explanation frequently offered in the research literature for why black adolescents generally are at lower risk for substance use than white adolescents is that black parents report significantly more rules against substance use, and consequences for violating those rules, than do white parents.[23]

CASA's survey of parents of high school students conducted for this study found that only about two in five (42.5 percent) report that they set strict rules about not using substances in order to prevent their high school-age teens from smoking, drinking or using other drugs or say that they impose consequences if their teens do use addictive substances (40.0 percent).[24] At the same time, nearly half of all high school students responding to CASA's survey felt that setting strict rules about not using (44.9 percent) and imposing consequences if they do use (49.1 percent) are things parents *should* be doing to prevent their high school-age children from engaging in substance use.[25]

Role Models and Positive Peer Influences

Teens who have the guidance of positive adult role models and the companionship of positive peer influences[26] are at reduced risk of substance use.

Not every child has the benefit of a healthy family life. Yet there is some evidence that adolescents who have non-parental positive adult role models[‡] are significantly less likely than other adolescents to use tobacco and illicit drugs.[§] [27]

---

[*] How much parents care if their child uses alcohol, marijuana, other drugs or gets drunk; how much parents try to stop their child from using alcohol, marijuana, other drugs or getting drunk.

[†] In response to, "How often do your parents allow you to go out whenever you want to?" and "Do your parents allow you to drink alcohol at parties?"

[‡] Defined in one study by responses to questions such as: "At least one of your teachers would help you if you had a problem or were upset;" "You know at least one adult you could talk with about personal problems;" "There is an adult at this school who is concerned about your well-being;" "You know adults who encourage you often;" and "Most of the adults you know are good role models for you." Another study measures it by teen responses to the item, "You know adults that encourage you often." A third study measures it as having an adult in their life to whom they could usually turn for help and advice.

[§] Including marijuana, inhalants, methamphetamine, speed, cocaine, crack or heroin.

Who the role models are, however, can make a big difference. One study found that, compared to teens who report no role model, those who report a teacher as a role model are less likely to be current smokers, drinkers or marijuana users.* Adolescents who see athletes as their role models are more likely to be current smokers and drinkers, but are less likely to use marijuana.[28]

Peers also can serve as positive role models and help protect young people from engaging in substance use. One study found that adolescents who report that most of their friends are responsible--stay out of trouble, follow parents' rules, choose healthy behaviors and activities and do well in school--are nearly two-and-a-half times as likely to refrain from current tobacco use as those who do not have these types of friends.[29] Similarly, other research finds that adolescents who report that most of their friends are responsible are nearly two-and-a-half times as likely to refrain from alcohol use and nearly three times as likely to refrain from other drug use as those who do not say this about their friends.[30]

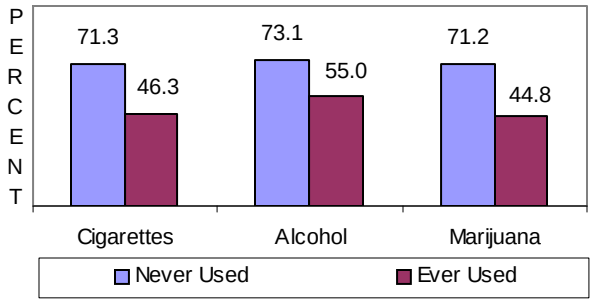
Future Goals

Teens who want to succeed in school and who have goals for the future are at reduced risk of substance use.[31]

CASA's survey of high school students found that students who have never smoked, used alcohol or used marijuana are more likely than their peers who have engaged in one or more of these behaviors to believe it is very important that they get good grades and to feel that they are able to achieve the goals they set for themselves. (Figures 8.A and 8.B)

Figure 8.A

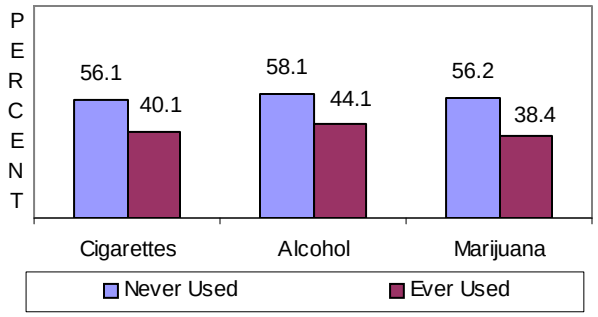
High School Students for Whom It Is Important to Get Good Grades, by Substance Use



Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel,* 2010.

Figure 8.B

High School Students Who Believe They Are Able to Achieve Their Goals, by Substance Use



Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel,* 2010.

Those who have never smoked are more likely than their peers who have smoked to feel hopeful about the future (70.0 percent vs. 59.0 percent), to feel a strong connection to their school (33.7 percent vs. 21.8 percent) and to expect to obtain a college degree (42.9 percent vs. 38.3 percent) or a graduate school/ professional degree (39.2 percent vs. 30.9 percent). Likewise, students who have never used alcohol are more likely than those who have used alcohol to say that they feel hopeful about the future (73.0 percent vs. 59.1 percent).[32]

* Analyses controlled for age, race/ethnicity, poverty level, family type and depressive symptoms, perceived body image and home and school connectedness.

School and Community Engagement and Athletic Involvement

Adolescents' participation in extracurricular activities generally is associated with reduced risk of substance use.[33] Student athletes, while at increased risk for using smokeless tobacco, alcohol and anabolic steroids, are less likely than non-athletes to smoke cigarettes or use illicit drugs, including marijuana.[34]

School and Community Engagement

Students who participate in school clubs tend to smoke cigarettes, drink alcohol and use marijuana to a lesser extent than those who do not participate in school clubs.[35] One study found that male high school students who are members of school or community clubs are less likely than non-members to drink (46.7 percent vs. 53.3 percent), binge drink (44.2 percent vs. 55.8 percent), or intend to drink (45.3 percent vs. 54.7 percent) or binge drink (43.7 percent vs. 56.3 percent) in the next six months.[36] Another found that adolescents who participate in school groups or are involved in their communities[*] are likelier than uninvolved teens to refrain from illicit[†] drug use.[37]

CASA's survey of high school students found that 62.1 percent see volunteering or doing community service as "somewhat" or "very" cool and 39.5 percent see being involved in politics or civic responsibilities as cool. Yet far fewer think their peers see volunteering or doing community service (23.9 percent), or being involved in politics or civic responsibilities (14.5 percent) as cool.[38]

[*] In response to, "You work to make your community a better place."
[†] Including marijuana, methamphetamine, speed, cocaine, crack, heroin or inhalants.

Athletic Involvement

Despite student athletes' increased risk of using smokeless tobacco, alcohol and anabolic steroids,[39] they are at reduced risk of using other substances, such as cigarettes, marijuana and other illicit drugs.[40]

Teens who play on high school athletic teams[‡] are less likely to smoke cigarettes[§] than their less active, less athletic peers.[41] Lower rates of cigarette smoking among students participating in interscholastic sports may be the result of greater self-confidence derived from these activities, lower incidence of cigarette use among peers and a greater desire to present a neat and conventional "athletic" appearance.[42]

Moderate participation in sports is protective against the use of marijuana, with athletes being 2.4 times less likely to report marijuana use than non-athletes.[43] Student athletes are less likely than non-athletes to report the use of cocaine and other illicit drugs as well.[44]

Religious Involvement

Religious involvement or religiosity--devotion to religion[45]--is associated with reduced substance use risk among adolescents.[46] Religious institutions and organizations not only view teen substance use as inappropriate and dangerous behavior, but also may create an interpersonal network of support for adolescents that helps protect them from pro-substance use influences.[47]

In CASA's survey of high school students, two-thirds reported that religion is "somewhat" or "very" important to their family (65.4 percent) and that they attend religious services at least once a month (66.0 percent). Approximately one in four (26.3 percent) attribute the decision by some of their peers to refrain from drinking or using other drugs to religion or spirituality.[48]

[‡] Medium-intensity sports (football, baseball, wrestling, track, volleyball and rodeo) and high-intensity sports (basketball, soccer, tennis and competitive swimming).
[§] Except for smoking less than one cigarette per day.

Religious involvement and spiritual practice consists both of public aspects--such as how often adolescents attend worship services or other events sponsored by religious institutions--and private aspects--such as the importance adolescents place on their religious beliefs and how often they pray.[49]

Research shows strong protective effects of public religiosity. CASA's 2010 *National Survey of American Attitudes on Substance Abuse XV: Teens and Parents* found that teens who attend religious services at least four times a month are less likely to smoke, drink or use marijuana than teens who attend religious services less frequently.[50] In a study of adolescents in grades 7-11, more frequent attendance at religious services and religious activities[*] was associated with reductions in smoking levels from regular smoking to occasional smoking, and with quitting.[51] Another study found that high school seniors who attended worship services more frequently than their peers had lower rates of past-year use of alcohol, marijuana and other illicit drugs such as LSD, cocaine and heroin.[52]

Other research on high school students finds that weekly religious activity[†] is associated with less use of cigarettes, alcohol and marijuana in the past year.[53] One study found that adolescents who attended church more frequently, felt religion was more important in their lives or prayed more frequently were less likely to smoke cigarettes in the past month, binge drink in the past two weeks or use marijuana in the past month than adolescents who were less involved in those religious behaviors.[54] Another study found that, among high school students, more fundamentalist religious beliefs[‡] are associated with less alcohol use and those who attend religious services frequently are less likely to experience problems associated with alcohol use[§] than those who attend religious services less frequently.[55]

Research also shows strong protective effects of private religiosity. A study of adolescents found that religious convictions[**] are more strongly associated with a reduced risk of initiation of marijuana use than factors associated with public religiosity (such as attendance at church services, youth group meetings or other church-sponsored activities).[56] In a sample of urban adolescents who were followed from 7th grade to 10th grade, the greater adolescents' private religiosity,[††] the less likely they were to engage in substance use.[57] Another study found that, among male adolescents, private religious coping[‡‡] at ages 12 through 14 was associated with the use of fewer types of substances, lower frequency of substance use and fewer problems associated with substance use at ages 15 and 16.[58]

[*] Such as youth groups, Bible classes or choir.
[†] Going to church/synagogue services, activities or meetings.
[‡] Defined as believing that the books of their faith were the word of God and were meant literally.

[§] Including getting into a fight during or after drinking, doing things when drinking and later regretting them, not being able to remember things that happened while drunk or being hassled by friends or family because of their drinking.
[**] Defined as doing what God or scripture dictates is right and how important religious faith is in shaping how adolescents live their daily lives and make major life decisions.
[††] Defined as the importance of believing in God, being able to rely on religious teachings when they have a problem, being able to turn to prayer when they are facing a personal problem and relying on their religious beliefs as a guide to day-to-day living.
[‡‡] Defined as doing the following when they have a problem: praying for guidance or strength, experiencing God's love and care, finding the lesson from God in the event and accepting that the situation is not in their hands but in the hands of God.

Chapter IX
Prevention Approaches and Barriers to Improvement

The public health approach to prevention aims to reduce the likelihood of harm, injury or disease in the whole population, focusing attention on those who are particularly susceptible to developing the problem. In the case of substance use and addiction, the key target group is teens because the vast majority of cases of addiction are rooted in substance use that began during the teen years, and because of the enormous range of social and health consequences associated with teen use. America's success in reducing teen smoking reinforces the notion that adolescent attitudes and behaviors related to substance use can be changed through public health interventions.

> *Prevention is the foundation of our public health system and of my work as Surgeon General. One of the greatest challenges we face is preventing teen substance use and related risky behaviors.*[1]
>
> --Vice Admiral Regina M. Benjamin, MD, MBA
> U.S. Surgeon General

Adolescent substance use can be prevented and reduced through public health approaches designed to address both the individual and cultural factors that drive it. Key public health measures for addressing adolescent substance use include:

- Incorporating screening and early intervention into health care practice;
- Reducing underage access to addictive products and limiting teens' exposure to advertising and pro-substance use messages through taxation, government regulation and enforcement;
- Educating the public about the nature of addiction, the risk factors for substance use, the link between early use and increased risk of addiction, and the consequences of substance use for adolescents; and

- Implementing effective school- and community-based prevention policies and programs for adolescents, including specific programs targeted to high risk youth.

> *We need to adopt a public health model that addresses policy [and] practice… in a concerted effort to reduce use. There are many successful models like tobacco use reduction, seat belt use, prenatal care that could be imitated. In places where all of the public health strategies were implemented, we have seen significant reduction in teen alcohol and drug use, but these efforts have been sporadic and short lived.*[2]
>
> --Kimberly Johnson, MBA
> Co-Deputy Director for Operations, NIATx
> University of Wisconsin, Madison

Screening and Brief Interventions (SBI) for Adolescents

Identifying substance use early in adolescence is critical to preventing the onset of addiction and other consequences of substance use. Although research shows that screening and brief intervention (SBI) techniques are effective among high school-age adolescents, they rarely are employed.[3]

Since substance use clearly is a public health problem and addiction a medical one, the health care system can play a much larger role than it currently does in identifying and addressing them. Schools--being the key institution through which nearly all people pass during their adolescent years--also can do much more to prevent adolescent substance use and the development of addiction. Other key opportunities to identify youth at high risk through evidence-based SBI are the child welfare and juvenile justice systems.

Screening

Health care practitioners and other professionals should routinely determine if adolescents are engaged in any use of addictive substances and intervene to prevent further use. They can screen adolescents for substance use problems using short, written or orally-administered questionnaires designed to identify individuals at risk and determine the need for treatment.[5] For adolescents who screen positive for substance use problems, further assessment may be necessary to reach a diagnosis.[6] A variety of validated screening tools are available to detect signs of substance use problems. (See Appendix F for a more detailed description of screening and assessment instruments.)

Screening and Assessment Tools Appropriate for Adolescents[4]

- The CRAFFT
- The Problem-Oriented Screening Instrument for Teenagers (POSIT)
- The Alcohol Use Disorders Identification Test (AUDIT)
- The Michigan Alcoholism Screening Test (MAST)
- The Drug Abuse Screening Test (DAST)
- Teen Addiction Severity Index (T-ASI)

Brief Interventions

Brief interventions consist of one or more short interactive sessions directed at changing a substance-using adolescent's behavior. The most promising of these techniques generally are based on motivational interviewing--a method for enhancing motivation to change by exploring and resolving the discrepancy between teens' substance use and their current and long-term goals and by supporting their ability to change.[7]

Brief interventions may be delivered by physicians, nurses, certified health education specialists or therapists who receive training in intervention techniques, and the interventions can be delivered in health care settings (such as emergency rooms, doctors' offices or clinics), in schools or in juvenile justice or child welfare

settings.[8] Health care providers who choose not to offer these services directly should assure that their patients in need receive them from another licensed health professional.[9] The type of intervention varies depending on the teen's level of risk (determined by screening instruments) and may range from simple advice for low-risk adolescents to brief or short-term counseling for those at higher risk.[10]

Health Care-Based SBI Services for Adolescents

Addiction is a disease with roots in adolescence, and because it is a medical condition, it should be screened for and addressed by health care professionals. Health care professionals are qualified and can be trained to provide these services. Health care settings are an ideal venue for conducting SBI services since anti-substance use messages may have more of an impact and greater credibility when delivered by health care professionals.

> *Addressing the current epidemic of teen substance use and its consequences will require a comprehensive program involving doctors, nurses, pharmacists, teen patients and their parents.*[17]
>
> --Robert Bazell
> Chief Health and Science Correspondent
> NBC News

There is mounting evidence that SBI can reduce substance use among adolescents,[11] particularly if interventions involve parents of substance-using students.[12] Professional medical associations recognize the importance of screening adolescent patients for substance use and promote the use of SBI techniques among their constituents.[13] The American Medical Association's (AMA) *Guidelines for Adolescent Preventive Services* recommend that physicians ask all adolescents annually about their use of tobacco products, alcohol and other drugs, including over-the-counter drugs, prescription drugs and anabolic steroids.[14] The American Academy of Pediatrics (AAP) recommends that pediatricians screen all patients for alcohol and other drug use, using screening methods that are validated, nonjudgmental and protective of confidentiality. The AAP also recommends that pediatricians deliver brief interventions in clinical settings.[15] Recently, the New York State Subcommittee on Youth and Adolescents recommended that all youth who are being evaluated for mental health disorders also be screened for substance use problems.[16]

Despite these recommendations and the facts that three-quarters of teens have used tobacco, alcohol or other drugs[18] and that effective interventions do exist,[19] the use of adolescent-focused SBI services by health care professionals typically is not part of routine health care practice. One study of adolescents in New England who were screened in a variety of primary care settings[*] found that 7.1 percent met clinical criteria for substance abuse and 3.2 percent met clinical criteria for substance dependence.[20] Another study found that although providers recommended an active intervention for 94.7 percent of adolescent patients classified with a substance use disorder, one in five patients thought to be misusing addictive substances did not receive a recommendation for an active intervention.[21]

A survey of 6th through 12th grade students found that 64.5 percent reported that in the past year, no medical doctor, dentist or nurse asked them whether they smoked cigarettes.[22] CASA's analysis of data from that survey found that, of those who smoked, only 21.4 percent said that these health professionals told them to stop smoking.[23] Yet interventions by health care professionals can have a substantial impact on student smokers: one study found that 11th graders who were advised by their doctors to quit smoking were 1.8 times likelier to plan to quit smoking within the next six months compared to those who were not screened or given advice by their doctors. The study also found that those smokers who reported that their physicians screened them for smoking made

[*] Such as an urban hospital-based pediatric practice, rural family medicine practice and school-based health centers. The screening instrument used was the CRAFFT.

more quit attempts than those who did not report physician screening.[24]

> *The opportunities to intervene with adolescents are too often spent merely looking inside the ears or measuring height instead of intervening with risk behaviors, offering guidance or opening doors to the health care system.*[25]
>
> --Charles E. Irwin, Jr., MD
> Distinguished Professor of Pediatrics
> Director, Division of Adolescent Medicine
> University of California, San Francisco

Emergency departments (ED) are an important point of access to the health care system.[26] Approximately eight percent of substance-related ED visits are made by adolescents.[27] Interventions conducted in the ED may reach adolescents who do not regularly attend school and who do not have a primary care physician.[28] By reaching adolescents in the ED, health care professionals can capitalize on a "teachable moment" to address adolescents with substance use problems.[29] Despite evidence of the effectiveness of SBI delivered in the ED to substance-using adolescents,[30] a study of adolescents admitted to hospitals following trauma injuries in which 15.5 percent screened positive for alcohol in their blood found that only 59 percent of those who screened positive were referred for intervention services.[31]

Health care providers who treat teens with emotional or behavioral disorders can play a critical role in identifying substance use problems since substance use frequently co-occurs with such disorders.[32] One study of adolescents admitted to an inpatient psychiatric unit found that 33 percent of the teens had a substance use disorder; however, not one of them was identified as having a substance use disorder prior to inpatient admission.[33] A small study that surveyed child and adolescent outpatient treatment providers[*] found that only 5.3 percent of the mental health providers formally assessed patients for substance use.[34]

Likewise, screening for co-occurring medical--including mental health--conditions should be a standard part of substance use screening and assessment services, since addressing co-occurring conditions is critical for the effective care of adolescents with substance use problems.[35]

> *The role of health care professionals in addressing teen substance use and addiction is prevention, screening, diagnosing and treating or referring--just as they do for all other health conditions.*[36]
>
> --Barbara J. Guthrie, PhD, RN, FAAN
> Professor
> Associate Dean for Academic Affairs
> Yale University School of Nursing

School-Based SBI Services

Schools are in a unique position to collaborate with health care providers to screen adolescents for substance use and its associated problems because adolescents spend a majority of their time in school. However, few school districts take advantage of this opportunity.[37]

CASA's survey of school personnel conducted for this study found that only 11.7 percent of teachers reported that their schools formally measure or assess rates of student substance use; 9.0 percent report that their schools screen particular groups of high-risk students for signs of alcohol or other drug problems and 7.4 percent screen all students for signs of alcohol or other drug problems. Some schools employ various means of detecting substance use or possession among students, including locker searches and drug tests,[38] but unlike the use of validated screening and assessment instruments, these practices typically are not designed specifically to identify those students who qualify for a brief intervention or referral to treatment.

[*] Some were substance use treatment centers and others were mental health treatment centers.

> *Teachers are given a critical task of not only educating children; we are responsible for developing caring, ethical and industrious young adults. To achieve these goals, teachers need to do everything in their power to prevent teen substance use and intervene early with those who are using.*[41]
>
> --Anthony Mullen
> 2009 National Teacher of the Year

Child Welfare System-Based SBI Services

The child welfare system is an important setting for preventing substance use in vulnerable youth and intervening early with those at risk. A study of adolescents in the child welfare system estimated that more than a third (36 percent) is at medium to high risk for substance use.[39] Despite this, most studies of substance use in child welfare systems have focused almost exclusively on the use of addictive substances among parents in those systems.[40]

Juvenile Justice System-Based SBI Services

Juvenile justice facilities are ideal venues to target substance-using adolescents through SBI services.[42] Research-based practice recommendations indicate that comprehensive assessments should be conducted for every young person who enters the juvenile justice system and that such assessments should take place within 24 hours of entry and be repeated at the various stages of progression through the system (i.e., intake, pre-adjudication, post-adjudication).[43] Yet few jurisdictions provide effective assessment,[44] even though there are several screening and assessment tools that are appropriate for juvenile offenders.[45]

One national study of juvenile residential facilities found that 15 percent of the facilities that reported information about evaluating residents for substance-related issues indicated that they did not screen at all; 64 percent reported that they screened all youth, 20 percent reported that they screened some youth and 41 percent reported using a standardized screening instrument. Larger facilities were less likely than smaller ones to report that they screened all youth for substance use problems.[46] Even those facilities that screen youth and use a standardized screening instrument do not necessarily provide appropriate interventions or treatment based on screening findings. In fact, CASA's study of substance use and the juvenile justice system found that only 3.6 percent of juvenile arrestees with substance use problems receive any form of treatment.[47]

Barriers to the Implementation of SBI

The failure of our health care providers, schools, juvenile justice and child welfare systems to screen for substance use problems among teens represents a tremendous missed opportunity to help countless young people avoid the disease of addiction and a colossal failure on the part of adults to help children live healthy lives.

Health Care System. Focus groups conducted with primary care providers reveal that the most commonly-identified barrier to screening adolescents for substance use is lack of time, followed by lack of training in how to manage a positive screen, the need to triage competing problems, parents who do not allow their adolescents privacy for confidential discussions and unfamiliarity with available screening tools.[48]

Many physicians and other health care professionals do not screen their patients for substance use problems or do so inadequately because they simply have not been properly trained to do so. Barriers to the integration of addiction-related services into graduate medical education include a lack of acceptance of the medical model for addictive diseases, lack of positive attitudes and role models among faculty and physicians for addressing these issues medically, shortcomings in the curriculum[*] and

[*] Including insufficient instruction, limited number of courses and time spent in courses on the topic of addiction medicine and disproportionate amounts of time spent on treatment relative to prevention services.

limited reimbursement for providers who perform these services.[49]

The U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration (SAMHSA) is providing financial support to address these barriers. In 2009, SAMHSA awarded $66 million over five years to help health care providers learn how to identify patients at risk for substance-related problems. SAMHSA also provided $19 million in grants over five years to teach medical residents how to provide evidence-based screening and intervention services for patients who have or are at risk for substance use disorders.[50]

The U.S. Department of Health and Human Services' Centers for Medicare and Medicaid Services (CMS) have issued billing codes that providers may use for SBI services with the general population, including adolescents.[51] However, not all states have activated the codes for Medicaid billing, and those that have may place limitations on how they can be used.[52]

Schools. CASA's survey of school personnel conducted for this study found that teachers report a lack of professionals on staff or readily available to students who have substance use problems. Only about one quarter of teachers were able to name a professional who would be available to help such students; of those, 28.0 percent said there are nurses, 23.8 percent said there are social workers, 19.9 percent said there are substance use counselors and 19.7 percent said there are student assistance counselors who are trained in addressing student substance use. Only 26.9 percent of teachers report that their schools train educators and other school staff to identify and respond to a student's substance use.[53]

In a different national survey, high school counselors reported that they received the most training in the area of substance use in discussing student substance use problems with teachers while they received the least training in providing comprehensive screening or assessment to students with substance use problems. When asked how many training opportunities related to student substance use their schools offered in the past three years, 46.0 percent reported none, 27.4 percent reported one, 14.4 percent reported two and 12.3 percent reported three or more.[54]

In a similar study, school psychologists self-reported low levels of competence in providing direct intervention services to students and developing teaching curriculum units on substance use; however, nearly half (47.6 percent) said that screening and assessment are the most important substance use-related areas in which training is needed, followed by consultation services (24.3 percent) and individual interventions (18.0 percent).[55]

Child Welfare System. Barriers to providing SBI services to adolescents in child welfare systems include budgetary restrictions; competing priorities regarding the many social service needs of this population; and differing conceptions among staff of the nature of substance use, how best to address it and how best to measure outcomes.[56] In addition, while federal privacy laws have been evoked as barriers to addressing this problem,[57] effective collaborations between child welfare agencies and treatment providers can address privacy concerns.[58]

Juvenile Justice System. By the time teens enter the juvenile justice system, the majority is troubled and in need of many services, yet few receive them. Few program interventions have been evaluated and those that show success have not been taken to scale. Juvenile correctional facilities nationwide are in dangerous disarray, with rehabilitative services virtually non-existent.[59]

Substance use is one of the problems that many juvenile offenders face. Teens entering juvenile justice systems may be struggling with emotional and psychological problems, family problems, physical and sexual abuse and learning disabilities.[60] Typically, if a young offender is assessed, it is only at the point of initial contact with the system and is limited to conduct in the hours before the delinquent act, rather than examining behavioral patterns that

have developed over the years leading up to the offense.[61] Furthermore, the assessment tools that are available for this population are not adequately tested, do not measure co-occurring mental health issues effectively and tend not to recognize important gender, age, cultural and language differences or other factors unique to the juvenile offender population.[62]

> *Preventing teen substance use is one of the best opportunities we have to both improve the future prospects for our children and significantly reduce costs to taxpayers.*[63]
>
> --Jeb Bush
> Former Governor of the State of Florida

Taxation, Government Regulation and Enforcement

Government decisions regarding tobacco and alcohol taxes; laws and regulations limiting smoking, drinking and other drug use; and the extent and ways in which such laws and regulations are enforced play an important role in the ease with which teens can access addictive substances and, consequently, the extent to which they use these substances. Despite the fact that some of the most effective ways of reducing substance use among young people include comprehensive government policies related to taxation and regulation of access,[64] these policies are not consistently implemented or enforced, in part because of incorrect assumptions about what drives youth substance use and addiction as well as commercial interests that are antithetic to the public health.

Tobacco

Policy interventions for addressing youth smoking take several forms, including higher sales taxes on tobacco products to increase their price, smoking bans, reducing youth access to tobacco products and restrictions on tobacco advertising. The American Lung Association recently issued a scorecard for state tobacco control efforts and rated 40 states with a grade of "F" for not funding tobacco control programs at recommended levels.[65] Only five states received passing grades on measures such as program spending, smoke-free air laws, cigarette taxes and cessation services.[66]

Tobacco Taxes. Increases in cigarette taxes, and the consequent increase in the cost of purchasing cigarettes, generally are related to reduced adolescent smoking[67] and to smoking cessation.[68] A recent review by a group of experts in economics, epidemiology, public policy and tobacco control found that youth tobacco use is more responsive than adult tobacco use to changes in tobacco prices and that excise taxes help to reduce the initiation of tobacco use in this population.[69]

Researchers have estimated that a 10 percent increase in the real price of cigarettes will decrease the number of adolescent and young adult smokers by approximately 3.1 percent and reduce the average number of cigarettes they smoke by 5.2 percent.[70] In another study, researchers estimated that a $1.00 increase in the tax on cigarettes would reduce smoking prevalence between 2.7 and 5.9 percentage points among high school-age teens.[71] A more recent report by the American Cancer Society estimates that a $1.00 per-pack increase in the cigarette tax in each state would help to prevent 1.7 million young people from taking up smoking.[72]

There is public support for increasing tobacco taxes. CASA's survey of parents conducted for this study found that 62.2 percent of parents are "very much" (43.3 percent) or "somewhat" (18.9 percent) in favor of increasing cigarette taxes to raise the cost of smoking.[73]

Despite evidence of their effectiveness with regard to teen tobacco control and despite public support, sales taxes on cigarettes generally are low and are not adjusted to keep pace with inflation. At the federal level, the excise tax on cigarettes increased to $1.01 per pack in April 2009.[74] Prior to that increase, federal excise taxes on tobacco were lower in real dollars than in 1963.[75] Since January 2002, 47 states, Washington, D.C. and several U.S. territories have increased their cigarette tax rates

collectively more than 100 times. In 2010, the national average state excise tax for cigarettes was $1.45 and the median tax rate was $1.34 per pack.[76] State tax policies vary widely, in part depending on the state's political and economic environment. States that produce and profit from tobacco are more likely to favor policies that increase tobacco revenues, rather than discourage tobacco use. The average tax in the major tobacco states that have extensive tobacco farming[*] and, often, cigarette manufacturing is $0.49 per pack. The average tax in non-tobacco states is $1.57 per pack.[77]

Because smoking is strongly associated with low socio-economic status, some have argued that the cigarette tax is regressive and unfair. The tobacco industry and vendors argue that tax increases will encourage a black market for cigarettes.[78] The tobacco industry also claims that raising taxes will decrease state revenues from tobacco and have no effect on youth smoking rates.[79]

These claims are unfounded. Every state that has increased cigarettes taxes has enjoyed increased revenues as a result, despite the decline in smoking rates that follow the price increase. Even states where smuggling and tax evasion are established practices, state revenues have increased after excise tax increases.[80] Lower income communities disproportionately suffer the harms of smoking, including disease, disability and death; as such; increasing cigarette taxes may discourage smoking and benefit the members of these communities. In fact, three out of four smokers who quit because of cigarette price increases have an income below 200 percent of the poverty level.[81]

Smoking Bans. Smoking bans (or clean indoor/outdoor air laws) in establishments such as workplaces, restaurants and other public places have several benefits. First, they protect nonsmokers from exposure to secondhand environmental tobacco smoke.[82] In 2006, the Surgeon General concluded that there is no risk-free level of exposure to secondhand smoke and that such exposure leads to numerous health complications.[83] Second, smoking bans help to change social norms around smoking;[84] the more teens are exposed to smoking, the more they believe it is normal and socially acceptable.[85]

National data indicate that the score for a state's clean indoor air laws[†] is inversely related to the proportion of young people who smoke in a state.[86] Adolescents who live in states with no or limited restrictions on smoking are 3.9 times as likely to be daily smokers as those living in states where smoking is restricted to separate and enclosed areas.[87] Another study found that adolescents who live in towns with strong restaurant smoking restrictions have lower odds of progressing to established smoking[‡] four years after baseline compared to those living in towns with weak regulations.[88]

Despite the evidence of effectiveness of smoking bans, as of 2010, only 27 states, plus the District of Columbia,[§] have passed comprehensive smoke-free air laws in which public places and workplaces, including restaurants and bars, are designated as smoke free.[89] A recent report by the American Cancer Society estimates that if each state that does not currently have a comprehensive smoke-free law would adopt such a law, 398,700 fewer young people would begin smoking.[90]

Access Restrictions for Youth. There are two types of laws designed to restrict youth access to tobacco. The first is based on the Synar Amendment to the *Alcohol, Drug Abuse and Mental Health Administration Reorganization Act* of 1992 which requires all states, the District of Columbia and the eight U.S. territories to enact and enforce laws prohibiting the sale or distribution of tobacco products to individuals

[*] Georgia, Kentucky, North Carolina, South Carolina, Tennessee and Virginia.

[†] The score is determined by summing each state's ratings on nine separate categories, including smoking bans in government worksites, private worksites, schools, child care facilities, restaurants, retail stores and recreational/cultural facilities along with state policies related to enforcement and violation penalties.

[‡] Smoking 100 or more cigarettes in one's lifetime.

[§] As of April 2011.

under age 18.[91] To enforce the law, states must conduct random, unannounced inspections of tobacco outlets using underage decoys and report annual findings to SAMHSA. Retailers that violate the laws generally must pay fines, and states that have a noncompliance rate of more than 20 percent lose a portion of their Substance Abuse Prevention and Treatment block grant funds.[92]

The other type of laws that restrict youth access to tobacco are purchase, use and possession (PUP) laws[93] which target adolescents themselves. As of 2009, 45 states prohibit minors from possessing and/or using tobacco products, and penalties for violation include fines, community service, suspension of driver's licenses and the requirement to attend smoking education or cessation programs.[94]

With few exceptions,[95] research on the effectiveness of youth tobacco access interventions shows weak results with regard to reducing teen tobacco use, despite reductions in the rate of illegal tobacco sales to youth and low violation rates.[96] This appears to be because teens living in communities with these laws continue to access tobacco from sources other than retail outlets, such as parents, friends or strangers, and continue to use tobacco in spite of retailer compliance with the law.[97] The few studies that have shown some positive effects of youth tobacco access laws--particularly PUP laws--on adolescent smoking, examined communities with more strict ordinances regarding youth access to tobacco products.[98]

Increasing the Minimum Legal Purchase Age for Tobacco. While the current minimum legal purchase age for tobacco in most of the U.S. is 18,[99] there have been proposals in state legislatures to increase the smoking age.[100] Raising the minimum legal purchase age for tobacco to 21 would further restrict adolescents' commercial access to cigarettes and their access to cigarettes from social sources, because minors tend to have less contact with 21-year olds than with 18-year olds in their social network.[101]

Unlike the minimum legal drinking age, which was set at one age and lowered only to be reset at the higher age after evidence linked the lower age with negative public health outcomes,[102] the minimum age of 18 for purchasing tobacco was set in 1992[103] and no state has since increased it to 21.[104] Therefore, it is not possible to evaluate the effectiveness of a higher purchase age policy in reducing youth smoking. Researchers, however, have used modeling techniques to simulate the effect of a higher tobacco purchase age[105] and found that such a change on a national level is projected to reduce smoking prevalence among teens ages 14 to 17 from 20 percent to an estimated 6.6 percent (and among those ages 18 and older from 22.1 percent to 15.4 percent) and produce a net cumulative savings of $212 billion over 50 years, largely driven by reduced health care costs.[*] [106]

Another simulation estimated that increasing the minimum legal purchase age to 21 would reduce smoking prevalence among 15- to 17-year olds from 22 percent to less than nine percent in seven years, resulting in a greater reduction in smoking rates than what would be achieved by doubling taxes. Yet this study notes that the health benefits of large tax increases would be greater and would accrue faster than increasing the minimum legal purchase age for cigarettes.[107]

Restrictions on Advertising. Following the release of the 1964 U.S. Surgeon General's report on smoking and health, which concluded that smoking is a health hazard,[108] the federal government passed the *Federal Cigarette Labeling and Advertising Act* of 1965 which required that warning labels be displayed on all cigarette packages and that the Federal Trade Commission monitor methods of cigarette advertising and promotion. As of January 1, 1971, television and radio broadcast advertising of cigarettes was banned.[109]

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[*] A similar estimate conducted for California found that increasing the legal purchasing age to 21 would reduce smoking among 14-17 year olds from 13.3 percent to an estimated 2.4 percent and save an estimated $24 billion in health care costs over the course of 50 years.

In 1998, the four major U.S. cigarette manufacturers entered into an agreement with the attorneys general of 46 states, called *The Master Settlement Agreement* (MSA). The MSA prohibits manufacturers from directly or indirectly targeting underage youth in their advertisements, promotions or other marketing of tobacco products. The MSA also bans the use of cartoons in advertising; limits sponsorships to one per year (and none at events that attract youth, like concert and sporting events); and eliminates outdoor (billboard) and transit advertising, brand name merchandise and giving gifts or free samples to underage youth.[110] Two years after the MSA took effect, several of the leading cigarette manufacturers voluntarily agreed to limit advertising to magazines that have less than 15 percent youth readership.[*] [111] By 2008, all cigarette manufacturers were in compliance with the 15 percent readership limit.[112] The American Academy of Pediatrics (AAP) recommends that tobacco advertising be banned in all media that is accessible to children.[113]

Graphic Tobacco Warning Labels. The Family Smoking Prevention and Tobacco Control Act of 2009 requires that cigarette packages and advertisements have larger and more visible graphic health warnings, and the Food and Drug Administration is requiring the implementation of these graphic warnings for cigarette packaging as of September 22, 2012.[114] Although data are limited, there is some evidence that graphic warning labels are effective in producing negative reactions to smoking and increasing intentions to quit smoking.[115] There is public support for this measure among both smoking and non-smoking adults.[116]

Alcohol

Increasing taxes on alcohol, enforcement of minimum legal drinking age (MLDA) laws and zero-tolerance blood alcohol level laws--which set the maximum legal blood alcohol level for drivers under age 21 between 0 and 0.02--are among the most effective regulatory approaches to reducing teen drinking. Other forms of alcohol regulation that have more modest evidence regarding their effectiveness include restrictions on advertising, limiting the density of retail alcohol outlets in communities and extending social host laws to parents, making it illegal for parents to serve alcohol to teens other than their own in their own homes.

Alcohol Taxes. The federal government and all state governments impose excise taxes on alcoholic beverages.[117] Federal beer, wine and spirits taxes have not increased since 1991 and have fallen by 37 percent in inflation-adjusted terms.[118] State excise tax rates for alcohol vary. States whose economies depend on alcohol production and sales impose lower taxes (e.g., California has a relatively low wine tax).[119]

Alcohol, like cigarettes and other goods, is sensitive to price; as such, higher tax rates are associated with reduced alcohol use.[120] For example, an analysis of data from 1976-2003 found that a price increase of 10 percent in beer taxes would reduce teen drinking by about an equal percentage.[121] Similarly, analysis of national data from 1982 and 1989 showed that higher beer excise taxes were related to significantly reduced frequency of drinking and the probability of heavy drinking among high school seniors; larger reductions occurred in the proportions of youth who drank frequently or fairly frequently.[122]

Higher alcohol taxes also are associated with reduced alcohol-related traffic fatalities.[123] One review suggests that the 1991 increase in the federal excise tax on beer would have reduced the number of youths killed in fatal crashes by 611 per year if it had been enacted nine years earlier.[124]

There is public support for tax increases on alcohol. A 2001 national survey of adults, conducted by CASA showed that half (54.1 percent) of the respondents supported alcohol taxes as a means of reducing underage drinking.[125] CASA's survey of parents for the present study found that 51.9 percent are "very much" (30.9 percent) or "somewhat" (21.0

[*] 18 percent for the tobacco company Lorillard, Inc.

percent) in favor of increasing alcohol taxes to raise the cost of alcohol use.[126]

The economic interests of the alcohol industry, however, differ from public health interests. In the second quarter of 2010, the alcohol industry spent more than $3.5 million in lobbying to influence Congress and government agencies on alcohol-related issues such as excise taxes.[127] The alcohol industry's key arguments are that increased taxes would reduce industry profits and, therefore, state revenue, and that such taxes are unfair because they are regressive and hurt working class people.[128]

While it is true that alcohol taxes result in a moderate reduction in consumption, this does not result in a loss of profits or jobs because the alcohol industry passes on 1.6 to 2.1 times the amount of the tax to the consumer and compensates for any lost revenue. Alcohol taxes are not regressive because alcohol use is associated with higher levels of income, not the reverse. Moreover, most individuals who drink are not excessive drinkers and, therefore, would not be affected significantly by a tax increase.[129] The individuals most affected by alcohol taxes are underage drinkers and adult heavy drinkers who incur the greatest cost to society.[130]

Access Restrictions for Youth. All states ban commercial sale of alcohol to minors but compliance with the bans and sanctions for violating the bans vary by state.[131]

Many states and localities have laws restricting where and when alcohol sales are permitted, including the number of alcohol outlets permitted in certain geographic areas and the hours and days when alcohol may be sold.[132] Higher alcohol outlet density in a community is associated with increased alcohol consumption and related harms, such as injury, crime and violence;[133] as such, limiting alcohol outlet density might help to reduce the harms associated with excessive alcohol consumption.[134] A common restriction aimed at reducing youth access is the creation of "buffer zones" or specified distances between alcohol outlets and children's facilities, such as playgrounds and schools, to make it more difficult for children and teens to obtain alcohol.[135]

Minimum Legal Drinking Age (MLDA) and Zero-Tolerance Blood Alcohol Concentration (BAC) Limit Laws. After prohibition, nearly all states set the MLDA to 21, but between 1970 and 1975, 29 states lowered it to 18, 19 or 20.[136] In 1984, the federal government passed the *Uniform Drinking Age Act* which required states to increase their MLDA or have their federal highway funding withheld, and by 1988, all states had established the MLDA at 21.[137]

A strong body of evidence shows that an MLDA of 21 is associated with reduced traffic fatalities[138] and an MLDA of less than 21 is associated with more teen drinking[139] and with the development of substance use disorders.[140] Between 1977 and 1992, an MLDA of 21 was associated with an approximately nine percent reduction in traffic fatalities and an approximately eight percent reduction in heavy[*] teen drinking.[141] In 2009 alone, it saved the lives of an estimated 623 18-20 year olds.[142]

In 1995, the *National Highway System Designation Act* required states to adopt a zero tolerance BAC law for underage youth who drive and if states did not comply, they would have their federal highway funding withheld.[143] By 1998, all states had complied. The federal law also required states to suspend the driver's licenses of underage drivers who violate the law.[144]

Analysis of national data from 1976-2003 shows that zero-tolerance BAC laws were associated with reduced drinking among high school seniors by about 2.1 percent and reduced binge drinking by about 1.6 percent.[145] Analysis of national data from 1982 to 1997 on underage drivers showed that there were substantial reductions in alcohol-involved fatal crashes associated with the enactment of MLDA and zero tolerance BAC laws.[†] [146]

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[*] Five or more drinks in a row in the past two weeks.
[†] States set the legal BAC limit to no higher than 0.02 percent for underage drivers.

Restrictions on Advertising. CASA's analysis of data from the U.S. Census Bureau, Population Division reveals that 12- to 20-year olds comprise 12.2 percent of the total U.S. population. The National Research Council and Institute of Medicine recommend that the alcohol industry limit advertising to media where no more than 25 percent of the audience is underage, and move towards a goal of a 15 percent youth audience limit.[147] The Center on Alcohol Marketing and Youth (CAMY) also recommends that the limitation be reduced to 15 percent.[148] The American Academy of Pediatrics (AAP) recommends that alcohol advertising and product placement be restricted in venues where more than 10 percent of the audience is comprised of children and adolescents,[149] and Mothers Against Drunk Driving (MADD) recommends that alcohol adverting should not be broadcast to audiences comprised of 10 percent or more underage youth.[150]

In 1996, the Distilled Spirits Council of the United States (DISCUS), the trade association for the liquor industry, decided to lift a previously standing voluntary ban on advertising liquor on broadcast television--a ban which had been in place since 1948. The major broadcast networks had their own guidelines prohibiting alcohol advertising.[151] As of 2009, the NBC network is the only TV network that runs liquor advertisements.[152] The beer and wine industries did not adopt voluntary bans on advertising on broadcast TV networks.

By 2003, the alcohol industry--including DISCUS, the Beer Institute and the Wine Institute--had adopted voluntary guidelines limiting alcohol advertisement placements in television, magazine and radio venues where at least 70 percent of the audience is age 21 or older.[153] In 2006, the Federal Trade Commission (FTC) reviewed the advertising practices of the 12 alcohol suppliers that spend the most on advertising and concluded that most of the suppliers were meeting the 70 percent standard.[154]

Twenty-two states have laws that prohibit false or misleading alcohol advertising and 11 states have laws that restrict content that is specifically attractive to minors. Eighteen states have passed laws that extend alcohol control agency jurisdiction to television and or radio advertising.[*] Eleven states prohibit images that portray or encourage intoxication. Eight states prohibit alcohol ads from portraying images of children. Seven states prohibit images or statements that associate alcohol use with athletic achievement. Seven states restrict alcohol advertising on retail outlet windows or the outside of buildings. Five states restrict outdoor advertising near schools, public playgrounds and churches and four states limit advertising on college campuses.[155]

Despite these state laws, federal and state regulation of alcohol advertising is limited, and the voluntary alcohol industry standards do not cover the full industry and do not impose penalties for violations; therefore, they are not sufficient to curb use.[156]

Social Host Laws. State laws prohibit licensed commercial alcohol vendors from selling alcohol to minors and also may impose liability on vendors who cause the intoxication of a minor who subsequently causes an injury (i.e., "Dram Shop Laws").[157] However, these laws generally do not apply when the alcohol is provided at a private party in someone's home.[158] Social host laws attempt to close this loophole by extending civil liability to adults who serve or provide alcohol to minors if that minor is killed or injured, or kills or injures another person.[159] As of January 1, 2010, 29 states have enacted social host laws related to the provision of alcohol to minors.[160] More than 150 cities or counties have adopted social host ordinances.[161] These laws and ordinances help to send a message to parents that they should not provide alcohol to adolescents or encourage substance use, and they receive strong public support.[162]

Drug-Free School Zones

In response to public concern over an increase in illegal drug use during the 1980s, the U.S.

[*] Although some of these state laws raise constitutional issues and may not be enforceable.

Congress passed legislation under the *Controlled Substances Act* designating areas around schools and other areas where youth congregate, such as playgrounds, pools and public housing facilities, as drug-free zones. The law increases penalties, including fees and prison time, for drug distribution or manufacturing within a 1,000 foot radius of a school.[163] There is little research on the effectiveness of drug-free school zones. One study in Massachusetts showed that, despite these laws, 78 percent of drug dealing cases occurred in a school zone, although most deals did not occur during school hours.[164] There is some concern that relying on the enforcement of drug-free school zone policies to curb teen substance use not only consumes a large share of state resources but disproportionately affects racial minorities, especially in urban areas where large zones are applied to densely-populated urban communities.[165]

Barriers to Effective Policy Regulation

Two key barriers to implementing effective policies to curb teen substance use are the powerful interests of the tobacco and alcohol industries and mixed messages about the dangers and benefits of substance use.

Industry Profits vs. Public Health. Underage consumption of tobacco and alcohol is highly profitable to the tobacco and alcohol industries, not only for the value of their consumption but also because of adolescents' increased chance of becoming heavy and dependent users. Also, because many heavy users of tobacco and alcohol fall ill and die prematurely from their addictions,[166] they must be replaced by new substance users to maintain industry profits.

One estimate places the number of packs of cigarettes consumed by youth in 2002 at 541 million, totaling roughly $1.2 billion in sales revenue.[167] Analysis of documents from the tobacco industry reveals that the industry had dissected the transition from teen experimental smoking to becoming a pack-a-day smoker at age 25 as a series of stages; it developed marketing strategies to encourage initial experimentation by teens and increases in smoking by integrating smoking advertisements and messages into key transitional activities and places for young adults, such as new jobs, military service and social activities.[168]

CASA estimated that the short-term cash value of underage drinking to the alcohol industry in 2001 was $22.5 billion, or 17.5 percent of total consumer expenditures for alcohol.[169] The long-term commercial value of underage drinking to the industry is linked to its contribution to adult dependent drinking.[*] [170] The combination of underage drinking and drinking by adults with alcohol use disorders that largely stem from underage use accounts for up to 48.8 percent of all consumer expenditures on alcohol.[171]

The tobacco and alcohol industries profit at the expense of the country's health. In CASA's 2009 report, *Shoveling Up II: The Impact of Substance Abuse on Federal, State and Local Budgets*, CASA estimated that for every dollar state and federal governments collected in tobacco and alcohol taxes and liquor store revenues in 2005, they spent $8.95 on the consequences of substance use and addiction.[172]

To protect their economic interests, the industries turn to the political process and donate large sums of money to individual campaigns, ballot issues and lobbying efforts. Lawmakers are in a position to support policy options--such as tax increases and advertising restrictions--that would promote the public health, but their ability to enact legislation, at times, may be undermined by political contributions from the very industries that would be affected by reduced consumption of addictive substances.[173] There are, of course, important exceptions where the government has been successful in passing laws that benefit the public health, particularly recently with regard to tobacco use.[†] [174]

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[*] The majority (91.6 percent) of those with alcohol use disorders began drinking before age 18; 96.0 percent began drinking before age 21.

[†] For example, the *Family Smoking Prevention and Tobacco Control Act* of 2009 and recent Food and Drug Administration (FDA) bans on flavored cigarettes.

The campaign finance system includes restrictions on the types and amounts of corporate contributions and how those contributions may be spent,[175] but these restrictions have been loosened in recent years.[176] Despite the loopholes and favorable rulings for corporate interests in the campaign finance system[177] and the large amounts of contributions made by the tobacco and alcohol industries each year, only a few studies have examined the impact of tobacco and alcohol industry contributions on legislators' voting records. The research that has been done, however, shows compelling evidence that industry contributions are related to favorable voting on legislative issues related to addictive substances.[178]

Tobacco. Analysis comparing the voting records of the 106th U.S. Congress from 1997 to 2000 on 49 pieces of tobacco-related legislation with tobacco industry political action committee (PAC) contributions for each member shows that the amount of PAC money received by a member of Congress was positively associated with pro-tobacco voting, controlling for political party, state and state tobacco farming.[179] Another report found that the 34 Senators whose votes generally favored the tobacco industry received on average more than seven times the amount of tobacco PAC money than the 40 Senators whose votes generally favored the public health.[180] Another study showed that in five of six states, there was a significant relationship between tobacco industry campaign contributions and legislative behavior,[*] such that the more pro-tobacco control measures legislators supported, the less money they received from the tobacco industry.[181] A study using the same index of legislative behavior, however, examined the relationship between tobacco contributions and legislative behavior in California and found that campaign contributions from the tobacco industry were not related to legislative support for the tobacco industry.[182]

In 2000, the House of Representatives voted twice on whether to fund the U.S. Department of Justice lawsuit against the tobacco companies. On the first vote, Representatives who voted to block funding for the lawsuit had taken an average of five times as much tobacco PAC money in the past two election cycles as Representatives who voted to continue funding ($9,712 vs. $1,750) and, on the second vote, the Representatives who voted to block funding had taken an average of nearly seven times as much tobacco PAC money in the past two election cycles as Representatives who voted to continue funding ($10,715 vs. $1,539).[183]

Alcohol. Unlike the research available for the influence of the tobacco industry on legislative decision making, no published, peer-reviewed studies were found that look at associations between alcohol industry contributions and legislators' voting patterns on alcohol-related policies.

Yet in 1998, the alcohol industry allied with restaurant interests and successfully lobbied against an attempt to lower the Driving Under the Influence (DUI) standard nationwide from a BAC of 0.10 to 0.08.[†] [184] In 1999, alcohol interests actively opposed legislation[‡] to allocate some of the $195 million that the federal government spends on anti-drug messages to advertisements aimed at preventing underage drinking. In fact, the amendment never made it out of the House Appropriations Committee.[185]

A study that examined alcohol industry contributions from 2001 through 2007 shows that the industry gave more than $34 million to state lawmakers nationwide. These same

[*] Legislative behavior was measured using a subjective scale that included actions such as withholding or adding amendments, influencing a procedural decision about a committee bill hearing or consideration of an amendment, or privately encouraging other legislators to vote a certain way on a bill.

[†] In 2000, the federal government required states to adopt 0.08 BAC laws for adult drivers or states would have a portion of their federal highway funding withheld.

[‡] An amendment to the Treasury, Postal Service and General Government Appropriations Bill for FY 2000 (H.R. 2490).

officials are responsible for making tax decisions that affect the alcohol trade. The alcohol industry gave more than $62 million to state-level campaigns in all 50 states* between 2001 and 2007.[186]

Inconsistent Messages about the Safety and Acceptability of Addictive Substances. In policy discussions related to substance use across the nation, conflicting messages are conveyed about the harm and desirability of substance use. These messages are no doubt confusing to teens and adults alike.

For example, using the term "medical marijuana" implies that marijuana has been determined to be safe and effective in the treatment of certain health conditions. Unlike other drugs, however, marijuana has not been subjected to the same safety and efficacy protocol tests established by the Food and Drug Administration (FDA) for bringing new drugs to the market.[187] CASA's survey of teens, parents and school personnel underscores the ambivalence about harm associated with marijuana use. Despite evidence that its potency has increased significantly over the years and that early use increases the risk of serious health problem including addiction,[188] one in four (24.7 percent) students sees marijuana as a harmless drug, as do about 20 percent of parents and school personnel. A significant proportion sees it as medicine: 32.3 percent of teachers, 21.0 percent of parents and 16.9 percent of teens.[189] (Table 9.1)

There also are debates about whether the current MLDA of 21 should be maintained or lowered; whether marijuana should be decriminalized or legalized for personal use; whether smoking bans, taxes and advertising restrictions are overly restrictive; and the extent to which controlled prescription drugs should be marketed directly to the public. Many of these debates are driven by economic interests, social agendas and convenience; as such, they obscure the facts regarding the harms of addictive substances.

* Including campaign activity such as contributions to state-level political party committees, candidates and ballot committees.

Table 9.1
Which of the Following Best Describes Your Opinion of What Marijuana is?

	Percent		
	Students	**Parents**	**Teachers**
Harmful Drug	70.3	70.0	67.8
Harmless Drug	24.7	20.8	20.5
Medicine/Prescription Drug	16.9	21.0	32.3

Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel*, 2010.

Public Awareness and Education

In the face of a widespread public health problem, one of the first steps is to alert people that the problem exists and help them understand the nature of the problem and what they can do to address it. In the case of substance use and addiction, this means educating the public about the nature of addiction, the risk factors for substance use, the link between early use and the increased risk of addiction and the consequences of substance use, particularly for adolescents.

Public health media campaigns are a well-established mechanism for educating the public and changing health-related behaviors. As a notable example, a recent report by the U.S. Surgeon General notes that tobacco-related media campaigns inform the public of the risk of smoking while preventing young people from starting to smoke and encouraging users to quit.[190]

To be effective, public health media campaigns must be based on well-conducted research and evaluated for effectiveness not only in appealing to the targeted audience but in actually reducing the health-risk behavior. Although some public awareness campaigns around the issue of substance use prevention are based in the research, others are not. With very few exceptions, most have been implemented without evidence supporting their effectiveness in curbing adolescent substance use. Some campaigns developed by the tobacco and alcohol industries might actually increase use.

Fighting addiction and substance abuse costs money, of course. But it's an investment that I, as a parent, am willing to make. Imagine if you could just go shopping and buy your kid a high school environment where substance abuse was nearly non-existent. Wouldn't you do it? Some things we can't buy as individuals. But we can do it as citizens and as members of a community.[191]

--Peter Mitchell, a father,
Original Marketing Director of the
truth® anti-tobacco campaign,
now Chief Creative Officer
at the social marketing firm Salter>Mitchell

Informing Parental Practices

Research consistently has shown that parents are the most important influence on their children's substance-related decisions and behaviors. Public awareness campaigns aimed at parents should be grounded in the abundance of evidence showing that parents can do a lot to prevent their teens from engaging in substance use, for example, by:

- Staying engaged in their children's lives, monitoring their activities[*] and having open, honest relationships with them;
- Setting clear rules about substance use and consistently enforcing those rules to send a message to teens about the risks and consequences of substance use; and
- Setting a good example by not smoking, drinking only in moderation, not misusing prescription drugs and by abstaining from illicit drugs, while conveying responsible attitudes about the risks versus benefits of substance use.

Some campaigns seek to encourage parents to talk with their children about substance use and to stay informed about their children's activities, and provide parents with tools and helpful tips for doing so; however, few of these campaigns have been fully evaluated to determine their effectiveness.[192]

Parents need to wake up and take charge. This is about the health and safety of their kids. They need to stop worrying about what other parents think and set the norms themselves.[193]

--Senator Leticia Van de Putte
Texas State Senate

Parents are first in line to prevent teen substance use; they need to understand what's at stake and to accept responsibility.[194]

--Enrique A. Carranza
Parent Activist

Changing Teen Attitudes and Perceptions

CASA's analysis of national data found that the majority (80.7 percent) of adolescents had seen or heard alcohol or other drug prevention messages in the previous year from sources outside school, such as posters, pamphlets, radio or television.[195] Few of the campaigns that present these messages have been subject to rigorous evaluations and findings regarding their effects on adolescent substance use are mixed.[196]

A rare exception is a public health campaign that targets teen smoking. In 2000, the American Legacy Foundation, which was established as part of the 1998 tobacco Master Settlement Agreement (MSA), launched the *truth*® campaign--a nationwide counter-marketing campaign that provides adolescents with facts about the harms of smoking and about the tobacco industry's marketing practices.[†] [197] Its aims were to reduce teens' openness to tobacco marketing, challenge social norms around smoking and lower teens' intentions to smoke.[198] The theory behind the *truth*® campaign was a novel one--to capitalize on the desire of teens to

[*] But avoiding overly authoritarian approaches, which may encourage rather than deter substance use.

[†] The *truth*® campaign was modeled after an anti-smoking campaign implemented in Florida in 1998.

be independent and not readily influenced by adults.[199] The campaign portrayed the tobacco companies as willfully manipulating the attitudes and behaviors of young people for the sake of profit;[200] in doing so, it attempted to generate negative attitudes among adolescents toward the tobacco companies.[201]

Research evidence suggests that the *truth*® campaign is effective at influencing adolescents' attitudes toward the tobacco industry and toward smoking.[202] These attitudes have been found to reliably predict young people's decisions about whether or not to smoke in the future.[203] According to research funded by the American Legacy Foundation (now called Legacy®), the *truth*® campaign was responsible for approximately 22 percent of the overall decline in youth smoking between 1999 and 2002[204] and, in states that have implemented antismoking campaigns based on the *truth*® model, smoking reduction rates among youth were approximately twice those in other states.[205] Other researchers, affiliated with Legacy®, have estimated that, between 2000 and 2004, exposure to *truth*® was associated with the prevention of smoking among more than 450,000 adolescents and young adults[*] nationwide.[206] An analysis by Legacy® of the cost-effectiveness of the *truth*® campaign found that not only were the costs of the campaign recovered, but there was a nearly $1.9 billion savings in medical costs; a less conservative estimation approach found the health-care cost savings to be as high as $5.4 billion.[207]

In 1998, the U.S. Office of National Drug Control Policy (ONDCP) created the *National Youth Anti-Drug Media Campaign* with the goals of educating and enabling teens to reject illegal drugs, preventing the initiation of drug use and eliminating drug use among occasional users. The campaign used a variety of media ads to show the consequences of substance use and healthier alternatives to substance use.[208] An evaluation of the campaign by the ONDCP found that there is little evidence of direct favorable campaign effects and, in some cases, higher campaign exposure was associated with weaker anti-drug attitudes among adolescents.[209] Analysis by researchers[†] of a nationally representative survey showed that, while 54 percent of adolescents recalled at least weekly exposure to specific campaign advertisements, their exposure to these ads was not related to their marijuana use.[210] However, an analysis of the same survey showed that increased awareness of the *Anti-Drug* campaign among adolescents ages 15-18 was associated with declines in current cigarette smoking and binge drinking.[211] More recently, the ONDCP created the *Above the Influence* campaign designed to support substance-free behavior through video ads, information about addictive substances, health advice and stories relating to substance use as told by teens.[212] Early evaluations of the campaign have shown some positive results for middle school students, but there is no evidence of its effectiveness in reducing substance use among high-school age students.[213]

Philip Morris's $100 million *Think. Don't Smoke* campaign aired ads between 1998 and 2002 conveying to young people that they have a choice about whether or not to smoke.[214] The idea behind the campaign was to convince young people to "just say no" to smoking; however, this approach generally has been discredited.[215] Industry-sponsored campaigns actually appear to be counterproductive to the goal of tobacco control, since exposure to them not only increases favorable attitudes toward the tobacco industry[216] and intentions to smoke,[217] but also is related to increased odds of current smoking in high school students.[218]

Barriers to Implementing and Sustaining Effective Public Awareness Campaigns

Despite evidence that certain anti-smoking campaigns are effective at reducing smoking initiation, changing attitudes and generating cost savings, these campaigns face funding shortages. Legacy® receives the majority of its funding from payments to the National Public Education Fund established by the MSA, but it received its last guaranteed payment in 2003.[219]

[*] Ages 15-24.

[†] Whose work was funded partially by a grant from Congress.

In response to budget deficits, states are diverting their tobacco-related funds--from the MSA and from revenues they generate from tobacco taxes--to other purposes rather than investing in tobacco prevention activities. In 2011, states have budgeted $517.9 million for tobacco prevention and cessation programs--just two percent of the $23.5 billion in revenue states collect from the MSA and tobacco taxes and representing just 14 percent of the $3.7 billion the Centers for Disease Control and Prevention (CDC) recommends states spend on tobacco prevention programs. States have cut funding for prevention and cessation programs by 28 percent in the past three years.[220]

Public awareness campaign efforts to curb teens' use of other substances, including alcohol, may be promising, but without funds dedicated to conducting science-based evaluations of effectiveness, it is impossible to know if these campaigns are producing any significant change in teen substance use.

School-Based Prevention Policies

School efforts to prevent and reduce substance use among students are in most cases not grounded in a public health approach. To the contrary, they have centered on policies such as the development of drug-free school zones, zero-tolerance policies and drug searches, which primarily have focused on enforcement rather than on identifying those in need of intervention or treatment.

Anti-Smoking Policies

Under the *Pro-Children Act* of 1994, reauthorized under the *No Child Left Behind Act* of 2001, all schools receiving federal funding are required to prohibit indoor smoking.[221] Yet school districts may not have comprehensive tobacco-free policies that are well-enforced and the effectiveness of these policies on reducing student smoking is not strong.[222]

To be effective, school anti-smoking policies should be consistent in their prohibition of smoking and apply to teachers and staff as well students. Allowing staff to smoke is related to a higher rate of daily cigarette smoking among high school students and with less student disapproval of cigarette use.[223]

Consistent enforcement of anti-smoking policies is critical. One study found that, among middle and high school students, higher perceived levels of enforcement of school anti-smoking policies were related to lower rates of smoking.[*] [224] Another study found that high school students were less likely to smoke if they perceived that most or all students at their school obeyed the rules against smoking.[225] Still another study found that schools with greater enforcement of tobacco policies had less student reports of observed tobacco use by students on school grounds.[226]

Schools typically take a punitive approach to the enforcement of anti-smoking policies--such as reporting student violators to the principal, calling parents or suspending the students--rather than providing the student with evidence-based interventions or a referral to treatment.[227]

Zero-Tolerance Policies

Zero-tolerance policies mandate predetermined consequences or punishments--ranging from suspensions to expulsion--for specific substance-related offenses, regardless of the severity of offense or the circumstances.[228]

Zero-tolerance policies can send a strong anti-substance use message to students and their parents and identify student substance users, giving them the opportunity to get help. However, few students receive appropriate interventions or treatment.[229] Further, because the consequences often are severe, zero-tolerance policies may discourage teachers, parents and other students from reporting instances of student substance use. After more than 20 years of implementation of zero-tolerance policies in schools, there are very few empirical studies that test the relationship

[*] Past 30-day smoking, daily smoking, smoking at school and smoking a cigarette offered by a friend.

between such policies and student behavioral outcomes--including substance use.[230]

The consequences of zero-tolerance policies, such as suspension and expulsion, tend to be applied unevenly, particularly with regard to black students who are disproportionately represented among students disciplined at school.[231] Students with disabilities[*] also are overrepresented among disciplined students.[232]

Drug Searches

Some schools conduct searches of students' possessions on school property in an effort to identify those who violate school anti-substance use policies. There are two types of drug searches: for-cause, in which students are searched on the basis of suspicion or reasonable cause, and random, in which large numbers of students are searched with no specific suspicion or cause.[233]

CASA's survey of school personnel conducted for this study found that 44.5 percent of teachers report that their schools conduct bag or locker checks with cause for suspicion only and 30.6 percent report that their schools conduct random bag or locker checks.[234]

Drug searches in public schools have raised constitutional questions about privacy. In 1985, the Supreme Court (*New Jersey v. T.LO.*) upheld the constitutionality of a public high school administrator's search of a student's purse to obtain evidence confirming a teacher's observation of the student smoking in the bathroom, in violation of school rules. The unique circumstances and setting of a school were found to support some attenuation of Fourth Amendment protection against unreasonable search and seizure.[235] The Court affirmed that schools must be granted flexibility in their practices to promote a proper educational environment.[236] More recently, in 2009, the Supreme Court (*Safford Unified School District #1 v. Redding*) ruled that a strip search of a student based on suspicion of drug possession was unconstitutional.[237] As a result of these cases, school officials may search students and their property on the grounds of reasonable suspicion that the search will turn up evidence that the student violated school policy, as long as the searches are within reasonable limits.[238]

Research on the effectiveness of drug searches in addressing student substance use is limited and inconclusive.[239]

Drug Testing

Student drug testing has been used to identify students with substance use problems and to help deter student substance use.[240] In 2002, the U.S. Supreme Court ruled that public schools may conduct random drug testing of students wishing to participate in any extracurricular activities,[241] but the Court has not addressed the constitutionality of random drug testing of all students in the student body.[242]

Data on the actual number of schools that conduct student drug testing are not available. During the 2004-2005 school year, 14 percent of high school districts reported that at least one high school in their district conducted random student drug testing.[† 243] In CASA's survey of school personnel conducted for this study, 14.7 percent of teachers report that their school conducts drug testing with cause for suspicion only, 11.4 percent report that their school conducts random tests of particular groups of high-risk students and 7.9 percent report that their school conducts random tests of all students.[244]

Several professional associations, including the American Academy of Pediatrics, the Association for Addiction Professionals and the National Association of Social Workers have questioned the effectiveness of random drug testing programs and underscored the need for greater investment in prevention and treatment.[245] More than eight in 10 physicians

[*] Such as emotional problems.

[†] Within this group of school districts, 93.4 percent of the schools tested student athletes, 64.7 percent tested students participating in other extracurricular activities and 28.4 percent tested all students.

(83 percent) do not think that all adolescents should be tested for drugs at school.[246]

Data supporting the effectiveness of drug testing in reducing substance use among students are limited and generally inconclusive due to methodological limitations.[247] Analyses of national data--which included students' self-reported substance use and administrators' self-reported school drug testing policies--found no significant difference between schools that had drug testing programs and those that did not[*] in terms of students' reports of past-year marijuana or other illicit drug use.[248]

Two studies that used randomized experimental research designs--a more rigorous approach to evaluating the effectiveness of an intervention--found mixed results. One such study in Oregon[†] found that during the second school year after drug testing was implemented, there was less reported current alcohol and other drug use among student athletes in the schools that administered drug tests than in the control schools.[249] A larger evaluation of mandatory random student drug testing programs[‡] found that self-reported rates of current substance use[§] were lower among students subject to drug testing than among comparable students in schools without drug testing (16.5 percent vs. 21.9 percent). However, no significant differences in reported substance use were found between intervention and control schools among students not participating in activities subject to testing, in students' future intentions to engage in substance use or in the number of disciplinary incidents--such as expulsions; physical attacks; fights; or the distribution, possession or use of alcohol or illicit drugs--reported by schools.[250]

Other research finds that, in the 2004-2005 school year, 14 percent of school districts reported that at least one of their high schools conducted random drug testing of students. Nearly all school districts that implemented random drug testing tested student athletes, two-thirds tested students participating in other extracurricular activities and 28 percent randomly tested all students.[251]

School Responses to Evidence of Student Substance Use

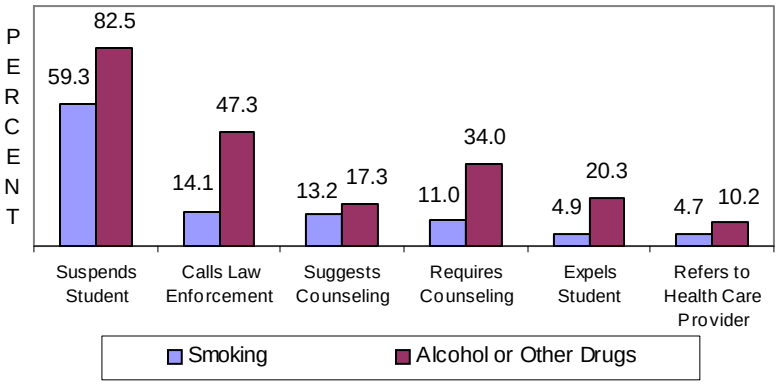
Whereas 59.3 percent of teachers in CASA's survey, conducted for this study, report that their schools suspend a student who is found[**] smoking, 14.1 percent say their schools call in law enforcement about it and 4.9 percent say their schools expel those students, only 4.7 percent say that their schools refer the student to a health care provider. When a student is found using alcohol or other drugs, 82.5 percent of teachers report that their schools suspend the student, 47.3 percent say their schools call in law enforcement, 34.0 percent say their schools require counseling, 20.3 percent say their schools expel the student, 17.3 percent say their schools suggest counseling and only 10.2 percent say that their schools refer the student to a health care provider.[252] (See Figure 9.A)

[*] The extent to which drug testing was implemented in each school was not included in the analyses.
[†] That included five intervention schools and six control schools.
[‡] Schools within districts were randomly assigned to an intervention condition in which drug testing was implemented for student athletes and those participating in other extracurricular activities or to a control condition in which schools were not permitted to implement the drug testing program until after the evaluation was completed, one year later. The program was implemented in 36 high schools (20 intervention schools and 16 control schools) in seven school districts.
[§] The substances tested for by each participating district as part of its drug testing program varied across districts but were the same within each district.

[**] Respondents were asked "Which of the following does your school do if a student is caught smoking, drinking or using other drugs?"

Figure 9.A

School Responses to Evidence of Student Substance Use



Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel* , 2010.

When asked specifically about their schools' responses when a student is identified as having a *problem* with alcohol or other drugs, 63.8 percent of teachers say that a school counselor would intervene, 31.6 percent say that their school would refer the student to professional counseling or treatment, 23.3 percent say that the student would be suspended from school, 6.5 percent say that the student would be referred to a health care provider, 4.9 percent say that the student would be transferred to a school that specializes in students with alcohol or other drug problems and 3.9 percent say that the student would be expelled.[*] [253] (See Figure 9.B)

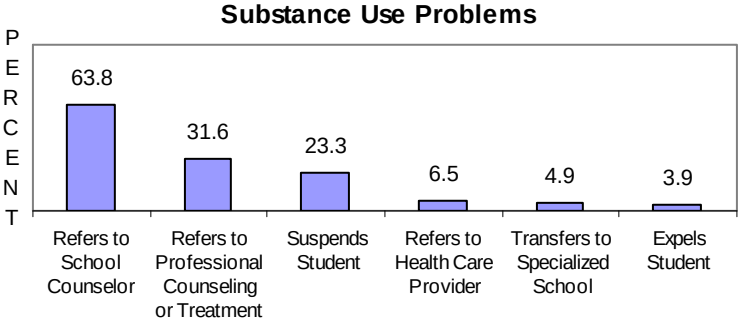
In response to positive drug tests in particular, a nationally representative sample of school districts that performed random drug testing without suspicion in high schools found that:

- 88.4 percent required parents or guardians to meet with school officials;
- 75.5 percent ordered a confirmatory test;
- 65.0 percent suspended students from one or more athletic teams;
- 60.8 percent required students to participate in an education, counseling or treatment program;
- 45.1 percent notified law enforcement officials; and
- 31.0 percent suspended students from school.[254]

These punitive measures exceed recommendations by the ONDCP, which states that the results of drug tests should be kept confidential and shared only with parents and school administrators. The ONDCP also states that drug tests should not be used merely to punish students who use drugs and that drug tests should not be the only response to drug problems in schools.[255]

Figure 9.B

School Responses to Students Identified with Substance Use Problems



Source: CASA *National Survey of High School Students, Parents of High School Students, and High School Personnel* , 2010.

Perceptions of School-Based Prevention Policies

CASA's survey finds that the majority of teachers (79.4 percent), parents (65.5 percent) and high school students (66.0 percent) think that their school's policies (rules and consequences) about student smoking, drinking or using other drugs are very or somewhat effective in preventing students from engaging in substance use at school or during school hours.[256]

[*] Respondents were able to provide more than one response to the question of what their school does if a student is though to have a problem with alcohol or other drugs, so multiple interventions may occur for the same student.

However, parents are less supportive of the school's role in addressing suspected cases of substance use, beyond informing parents of the problem. When parents were asked what a school should do if they suspected a substance use problem in their children, 96.3 percent said they would want the school to inform them; 43.6 percent would want the school to require their child to meet with a school counselor, 36.1 percent would want the school to refer their child to professional counseling or a treatment program, 13.2 percent would want the school to refer their child to a health care provider and 13.0 percent would want the school to suspend their child from school.[257]

> *I think the school should do everything it can to be aware if substances are being used on campus, but ultimately, it's not the school's job to parent my child, it's mine.*
>
> --Parent Respondent
> CASA Focus Group with
> Parents of High School Students

School-Based Prevention Programs

CASA's previous work has found that, to be effective, prevention programs should:

- Be comprehensive, targeting all the areas of influence on a teen's decision to engage in substance use;
- Employ strategies that go beyond just providing educational information about addictive substances;
- Be integrated into the larger school curriculum where students regularly are exposed to prevention messages; and
- Span all grade levels rather than consisting of sporadic interventions given to only one grade or to all students but on a very infrequent basis.[258]

In reality, the lack of prevention programming specifically for high school students is glaring, given that students entering high school are transitioning into one of the most vulnerable periods of development, with significant changes in brain development associated with increased susceptibility to addiction and reduced ability to control impulses; increased exposure to social influences to use substances and susceptibility to social pressures; reduced parental supervision; and developmentally-appropriate increases in the desire to establish an "adult" identity.

Most schools implement some form of curriculum-based programs designed to prevent student substance use. In most of these programs, young people are taught the dangers of tobacco, alcohol and other drug use, skills for resisting influences or pressure from peers and media to use these substances and ways to improve their decision-making and coping skills with regard to substance use. However, such prevention efforts typically are targeted at younger adolescents or college-age young adults, missing high school students.[259] Only several prevention programs for early adolescents continue through high school with relatively isolated follow-up or booster sessions.[260]

Furthermore, most schools' substance use prevention programs either consist of an educational subunit within a larger health curriculum, or consist of periodic school assemblies on the topic or other isolated prevention interventions--such as films, lectures, discussions or printed information about addictive substances.[261]

CASA's survey of teachers conducted for this study found that only 13.3 percent report that their school has stand-alone substance use prevention curricula for all students and 7.3 percent report that their school has such prevention curricula for particular groups of high-risk students; 43.1 percent report having a substance use prevention curriculum within a larger health curriculum at their school and 30.2 percent report that their school has school assemblies in which substance use prevention is a primary topic. Only 6.9 percent report that the prevention program is integrated into the academic curriculum across all grade levels.

The survey also found that 20.1 percent of teachers report having peer education or peer intervention programs at their school and 16.7 percent report that their school employs social norms marketing programs, in which attempts are made to correct students' misperceptions or overestimation of the actual prevalence of substance use among their peers.[*] [262]

CASA's analysis of national data found that during the past year, 64.7 percent of adolescents had films, lectures, discussion or printed information about alcohol or other drugs in one of their regular school classes such as health education. Also during the past year, 36.9 percent of students had been exposed to films, lectures, discussion or printed information about alcohol or other drugs outside of a regular class.[263]

There are three types of prevention approaches that can be used to address student substance use and addiction:[†] programs targeted to all students, programs targeted to students at high risk and programs targeted to students with identified substance use problems.[264]

Programs Targeted to All Students

Broad-based or primary prevention programs (also referred to as universal programs) are designed to prevent initiation of substance use and are targeted to all students, regardless of risk.[265] Primary prevention programs may adopt a social influence approach, helping students resist social pressures to engage in substance use, or they may adopt a competence enhancement approach in which students are taught skills for strengthening self-esteem, decision-making and communication abilities as well as adaptive coping strategies for managing stress and anxiety.[266] Most include an education component describing the effects of addictive substances. Some involve the parents of students to promote parental engagement.[267]

Programs Targeted to Students at High Risk

Prevention programs that focus on subgroups of students at high risk for substance use are referred to as secondary or selective programs. Higher-risk students may include children of parents who have substance use problems; students with emotional or behavioral disorders, poor school performance, aggression or delinquency; or students participating in extracurricular activities known to be associated with higher rates of substance use. Criteria for identifying risk status often are broad and sometimes not well substantiated. Effective secondary prevention programs involve longer duration (generally more than 45 hours of services) and greater intensity than primary prevention programs and include booster sessions.[268]

Programs Targeted to Students with Identified Substance Use Problems

Prevention programs designed to prevent the worsening of problems among students who already are engaged in substance use are referred to as tertiary, indicated or targeted programs. These programs generally are more intensive than secondary prevention programs and are conducted only with youth who have been identified as already engaging in substance use. The level of professional training generally is higher for staff members of these programs, who may be required to have clinical or counseling backgrounds.[269]

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[*] The social norms marketing approach has been utilized extensively in college student populations and only recently has been applied to high school students.

[†] CASA conducted a literature review of evidence-based substance use prevention programs. The programs highlighted in this chapter are examples of those that have been evaluated in studies published in peer-reviewed journals. The studies have acceptable methodologies and show some promising results for high school age teens.

Examples of Primary Prevention Programs[270]

Life Skills Training (LST). LST is designed to target factors that promote the initiation of risky behaviors, including substance use and violence. Its major components include drug resistance skills, personal self-management skills and general social skills.[271] It is designed for students from elementary school through high school, but studies generally examine the continuing effects of the program on high school-age teens who were exposed to the program when they were in middle school or junior high.[272] Studies conducted by program developers[273] and independent researchers[274] found positive effects of LST on substance-related attitudes, rates of change in use and consequences.

ALERT Plus. Project ALERT is a school-based program that seeks to prevent middle or junior high school students from experimenting with addictive substances and to prevent experimenters from becoming established users.[275] ALERT Plus is the high school component of the program.[276] It emphasizes the negative consequences of substance use, teaches substance use resistance skills and combats the notion that substance use is a common behavior. There is no published research on the effects of Alert Plus on a general high school student population.[*] [277]

Guiding Good Choices. (Formerly known as the Preparing for the Drug Free Years[278]) The program targets parenting behaviors, family interaction patterns and adolescent substance use.[279] Evaluations by program developers found that students from families who participated in the program had small but significant decreases or a slower rate of increase over time in substance use.[280]

Example of a Secondary Prevention Program[281]

Adolescents Training and Learning to Avoid Steroids Program (ATLAS). ATLAS is designed for high school athletes to prevent the use of anabolic steroids and promote healthy behavior. Evaluations by program developers found that intentions to use and actual anabolic steroid use were significantly lower among athletes participating in ATLAS than among athletes in the control group; however reductions in steroid use were no longer found one year later. The use of alcohol and other drugs[†] was lower among ATLAS participants relative to athletes in the control group.[282]

Example of a Tertiary Prevention Program[283]

Project Towards No Drug Abuse (TND). TND targets the use of cigarettes, alcohol, marijuana and other illicit drugs in traditional high schools and in alternative high schools (which is comprised of high-risk students who typically use addictive substances at twice the rate of students in traditional high schools).[284] The program teaches students motivational skills, social skills and decision-making skills.[285] Evidence of the effects of TND on substance use outcomes is mixed,[286] but program developers found some evidence that program participation is associated with reduced alcohol and illicit drug use (other than marijuana).[287]

Student Assistance Programs

Student Assistance Programs (SAPs) are school-based interventions that provide students with information and support for a variety of problems, including those associated with substance use. These programs can include substance use-related counseling.[288]

A recent review of studies of SAPs that address substance use in middle and high schools found some evidence of decreased substance use or risk factors for substance use among program participants.[289] Another study examined the

[*] However, one study found that at-risk girls--those who reported lifetime use of either tobacco or marijuana prior to the baseline survey in seventh grade--who participated in ALERT Plus (with a basic curriculum in grades 7-8 extended to 9th grade with booster lessons) showed less weekly alcohol and marijuana use, risky drinking and alcohol-related consequences (e.g., getting sick or into fights) following the 9th grade booster lessons compared to girls who did not participate in ALERT Plus. There were no program effects in the 9th grade for at-risk boys.

[†] Marijuana, amphetamines and narcotics.

impact of a SAP in Florida in which counselors provided prevention counseling to students who were referred for risky behaviors such as attempted suicide, running away from home and being threatened by or threatening other students. This study found that students* who were more involved in the program had a higher probability of reduced substance use than students who were less involved in the program.[290]

Effectiveness of School-Based Prevention Programs

High quality, methodologically rigorous, independent research on the effectiveness of school-based prevention programs is hard to come by.[291] One review of 25 evaluation studies of prevention programs† from the U.S. and other countries--the majority of which focused on smoking prevention and addressed social influences and resistance skills--found that most of the programs included in the analysis showed some positive effects in preventing or reducing adolescent substance use across follow-up periods ranging from two to 15 years. Program effects were less likely to wear off if the program delivered follow-up or booster sessions as supplements to the curricula. However, the quality of the methodologies used in these evaluation studies varied and many did not apply the research gold standard for testing effectiveness: a design in which students are randomly assigned to an intervention versus a comparison condition.[292]

One review of studies estimating the cost-benefits of school- and community-based prevention programs showed that the estimated savings per dollar spent ranged from $2.00 to $19.64. Savings were estimated in various categories including the prevention of smoking uptake, alcohol use disorders and alcohol-related traffic crashes as well as money saved in social systems such as welfare, education and justice. Yet this study examined just seven programs, none of which focused on high school students.[293] More comprehensive, quality research is needed on programs aimed at high school students in particular to draw conclusions about the cost-effectiveness of such programs.

> *Schools' priorities include good education, citizenship, and intellectual outcomes. These priorities are affected by substance use. Therefore, schools' core outcomes are impacted tremendously by substance use.*[294]
>
> --Wilson M. Compton, MD, MPE
> Director, Division of Epidemiology, Services and Prevention Research
> National Institute on Drug Abuse

Perceptions of School-Based Prevention Programs

CASA's survey found modest support for school prevention efforts, with 42.8 percent of teens saying that the things their school does to encourage students not to smoke, drink or use other drugs "very much" or "somewhat" affect their decisions about whether or not to use addictive substances; 26.4 percent thought the efforts were "not at all" effective.[295]

Parents had more positive views than students about the school's role in preventing substance use. CASA's survey found that 65.2 percent of parents believe that a high school can prevent or reduce student substance use. A little more than half (56.3 percent) believe that the high school's substance use prevention programs are "very" or "somewhat" effective in influencing their children's decisions about whether or not to smoke, drink or use other drugs. When asked what the school's main roles should be in preventing substance use, the number one response among parents of high school students is providing education or information to students (83.8 percent). The second most frequent

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* In grades 6-12.

† Most of the programs recruited students in middle school and followed them into later adolescence. Most of the evaluation studies included in the analysis tested the effectiveness of the programs in one school setting. The quality of the methodologies employed in the individual evaluations varies considerably.

response is informing parents when children are suspected of using (65.0 percent).[* 296]

CASA's survey found that most teachers agree that the school's main role in preventing student substance use should be providing education and information to students (77.0 percent); the second most frequent response among teachers regarding the school's main role was counseling students with symptoms of substance use (57.4 percent). Teachers also see schools playing an important role in informing parents when children are suspected of using substances (50.6 percent), teaching parents how to prevent teen substance use (27.3 percent) and educating parents about the dangers of teen substance use (26.4 percent).[† 297]

In general, teachers do not appear to be confident in their schools' prevention efforts, as only 37.2 percent say that these programs are "very" or "somewhat" effective and 18.2 percent say they are "not at all" effective.[298]

Barriers to Implementation of Effective Prevention Programs

Failure to identify and implement cost effective interventions is a reflection of our failure to recognize that teen substance use is a dangerous health problem and to respond accordingly. Instead, schools are confronting student substance use problems with efforts that have mixed evidence of effectiveness, and some of these efforts may exacerbate problems rather than alleviate them.

Schools can't deal with the problem by exception; they have to integrate substance use prevention into every aspect of education. They can't just offer a 45-minute class or hold an event once a year.[299]

--Ron Manderscheid, PhD
Executive Director
National Association of County Behavioral Health & Developmental Disability Directors

Schools are under increasing pressure to improve academic standards despite declining resources. If drug education were taught early and often enough, it might improve the situation…Too often drug and alcohol education are relegated to the Health Education unit which is usually given during a one-term course of instruction around the 9th grade.[300]

--Kenneth H. Beck, PhD
Professor
University of Maryland
School of Public Health

CASA's Key Informant Interviews

The effectiveness of prevention programs also is inherently limited because of the breadth of risk factors and motivations for substance use. There even is evidence that those students most at risk for substance use problems do not fully participate in prevention programs because of lack of school involvement and poor school attendance.[301]

In some cases, the effect of interventions is difficult to judge due to methodological limitations. For example, one review of interventions designed to prevent underage drinking found that, out of more than 400 studies screened, only 127 could be evaluated for effectiveness because they provided at least some evidence concerning the desired outcome (only 41 of these 127 showed some evidence of effectiveness).[302] Also, program evaluations often are conducted by program developers rather than independent researchers which, regardless of the soundness of the methodology, run the risk of at least the perception of bias.

[*] The third most frequent response among parents was counseling students with symptoms of substance use problems (45.0 percent); 21.1 percent said one of the main roles should be drug testing or detecting student substance use.

[†] Teachers are less likely to cite drug testing or detecting student use (21.9 percent) or screening students for health problems including substance use disorders (11.1 percent) as one of the school's main roles.

Approximately half (53.7 percent) of the teachers in CASA's survey of school personnel conducted for this study report lack of funding or financial reasons for why schools may be limited in their ability to provide better substance use prevention programming. Other reported barriers include lack of time (40.8 percent), insufficient parental support for substance use prevention (32.6 percent), insufficient state or school board support (20.0 percent) and insufficient administrative support (16.5 percent).[303]

Community-Based Prevention Programs

Community-based prevention programs are designed to target multiple stakeholders in the community--such as schools, faith-based organizations, retailers and the media--to prevent adolescent substance use. Though the idea behind such programs is promising, there is limited published research on these programs and the studies available tend to show conflicting results, with only a few programs showing some promising results for high school-age teens. Evaluations of the few community-based prevention programs that are targeted to high school students generally have the same methodological limitations as evaluations of school-based prevention programs. Rarely are they replicated in other communities or contexts, limiting the ability to generalize results from one community to another.

Examples of Community-Based Primary Prevention

Project Northland. Project Northland is a community-based alcohol prevention program that targets students in middle and high schools (the high school program is known as Class Action).[304] It includes school-based curricula, peer education and leadership, parent education and print media campaigns for retailers. It also assembles a community task force--consisting of government officials, law enforcement personnel, health care professionals, youth workers, parents and adolescents--that is involved in the passage of measures designed to prevent the sale of alcohol to underage youth and that creates partnerships with schools and local businesses in which businesses provide discounts to students who pledge to be drug free. An evaluation of the program, conducted by program developers, found that students in grades 11 and 12 in the intervention schools were less likely to report binge drinking than students in control communities.[305]

Communities that Care. The program involves assessing risk and protective factors in the community, identifying resources to address problem behaviors among adolescents and selecting interventions for implementation.[306] Research by program developers has found promising effects on substance use rates among early adolescents[307] but fewer lasting effects on substance use among high school-age teens.[308]

Chapter X
Treatment: The Evidence/Practice Gap and Barriers to Treatment

It is difficult to find a disease affecting adolescents that is as extensively undertreated as addiction. CASA's analysis of national data finds that only 6.4 percent (99,913) of high school students who meet clinical criteria for an alcohol or other drug use disorder actually received formal treatment* in the past year. Fewer teens in need of treatment receive it than any other age group, even though the disorder is a developmental one originating in adolescence.[1] Even those who receive some form of treatment rarely receive quality care.[2]

Our failure to provide addiction treatment for 93.6 percent of teens who need it is not due to a lack of evidence of effective interventions. A range of treatments has been demonstrated to work for adolescents with substance use disorders, including smoking cessation programs and psychosocial and family-based therapies for alcohol and other drug use disorders.[3]

The treatment gap is, in fact, a function of three realities:

- America's failure to understand the pediatric origin and nature of adolescent addiction and of the imperative of providing care for those in need;
- A failure of health care education and practice to address this health problem; and
- A failure to provide adequate insurance coverage for treatment services.

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* Including treatment at hospitals, rehabilitation facilities or mental health centers. The number of students who received treatment for nicotine dependence could not be included in this estimate because such data are not available in the *National Survey on Drug Use and Health* (NSDUH).

There also are vast gaps in other systems responsible for the welfare of young people--schools, juvenile justice, child welfare--that are allowing so many in need of help to fall through the cracks undetected and unaided.

Treatment for Adolescent Substance Use Disorders

Just as most health care practitioners fail to screen adolescents for signs of substance use, most do not have a plan in place for engaging adolescent patients in interventions or treatment services. According to CASA's analysis of national data, only 6.4 percent (99,913) of high school students who meet clinical criteria for a substance use disorder involving alcohol, controlled prescription drugs or illicit drugs received formal treatment in the past year. Another 1.2 percent of high school students who engage in substance use but *do not* meet clinical criteria for a substance use disorder also received formal treatment in the past year, although the reasons are unclear.[4]

An additional 3.9 percent of high school students with substance use disorders participated in mutual support programs and 0.4 percent turned to clergy or teachers for help. Among students who engage in substance use but *do not* meet clinical criteria for a substance use disorder, 0.8 percent participated in mutual support programs.[5] While these services can be important sources of support to teens with substance use disorders, they are not substitutes for treatment.

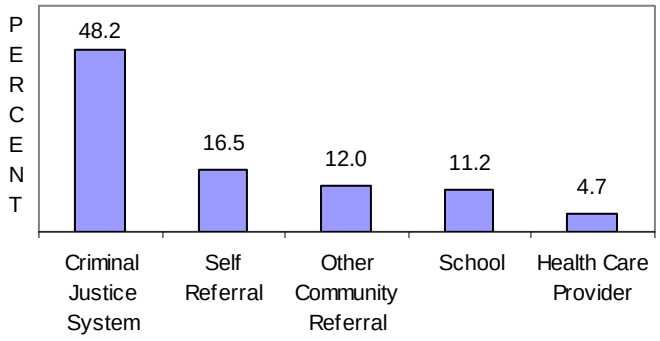
CASA's analysis of national data finds that adolescents in treatment for substance use disorders are more likely to report marijuana as their primary substance problem (68.2 percent) than all other substances combined, including alcohol. The second most frequently listed primary addictive substance of those in treatment is alcohol (19.8 percent), followed by cocaine (1.7 percent), opioids[*] and methamphetamine (1.5 percent each). Males are more likely than females to report marijuana as their primary addictive substance (74.4 percent vs. 53.8 percent) and females are more likely than males to report alcohol as their primary addictive substance (27.8 percent vs. 16.4 percent).[6]

The Evidence/Practice Gap: Referrals to Treatment

The source of referrals to treatment programs reflects America's failure to address substance use disorders as a health problem and our tendency to wait until the problem has resulted in severe and costly consequences before getting help.[7] More adolescents who receive treatment are referred by the criminal justice system (48.2 percent) than any other source. Fewer refer themselves (16.5 percent) or are referred by their school (11.2 percent) or another community referral source (12.0 percent). Only 4.7 percent are referred by a health care provider.[8] (Figure 10.A)

Figure 10.A

Sources of Referral to Treatment



Source: CASA analysis of the *Treatment Episode Data Set (TEDS), 2008.*

[*] Includes the misuse of prescription pain medications.

The Evidence/Practice Gap: Treatment for Adolescents

Because the risk factors for substance use and addiction in young people differ considerably from those of adults, as do the patterns of use and the consequences, treatment models with a strong evidence base in adult populations are not necessarily applicable to the treatment needs of adolescents with substance use disorders.[9]

> A panel of 22 experts including researchers, practitioners and federal policymakers in addiction treatment identified nine key elements of effective treatment for adolescent substance use disorders based on a review of the literature. The principles include:[10]
>
> - Assessment and treatment matching
> - Comprehensive, integrated treatment approach
> - Family involvement in treatment
> - Developmentally appropriate program
> - Engaging and retaining teens in treatment
> - Qualified staff
> - Gender and cultural competence
> - Continuing care
> - Rigorous evaluation

Smoking Cessation for Adolescents. A range of effective options exists for teen smoking cessation, including nicotine replacement therapy (NRT), educational programs that offer life skills training and counseling interventions.[11]

A meta-analysis of 48 smoking cessation program studies from 1970 to 2003 for adolescents ages 12-19 found that the odds of quitting for smokers in these programs increased by 46 percent. Higher quit rates[*] were found in programs that included motivational enhancement, cognitive-behavioral techniques and social influence approaches in which adolescents address the influences that promote or maintain smoking behavior.[12]

Adolescents who are current smokers are likelier than non-current smokers to believe that it is safe to smoke for a year or two and then quit.[13] Yet quitting successfully is difficult, even for infrequent smokers. One longitudinal study found that adolescents who smoked less than one cigarette per day had only a 46.3 percent cessation rate, those who smoked one to nine cigarettes per day had a 12.3 percent cessation rate and those who smoked 10 or more cigarettes per day had a cessation rate of just 6.8 percent.[14]

Nicotine replacement therapy (NRT) refers to medicines that are available as gum, patches, nasal spray or inhalers that are used to aid people in quitting smoking by easing withdrawal symptoms. NRT has been shown to be safe and effective in helping people stop smoking when used as part of a comprehensive smoking cessation program.[15] NRT, however, has not been widely studied in the adolescent population. One randomized trial found that adolescents[†] who had used the nicotine patch were 6.8 times as likely as those who used a placebo patch to have better cessation outcomes.[16] A survey of urban high school students found that nearly 40 percent of former smokers reported using NRT to try to quit smoking, but more than 75 percent of current smokers reported using NRT for reasons other than trying to quit smoking, suggesting that there is potential for misuse of NRT products.[17]

A statewide survey of pediatricians found that 48 percent perceived NRT to be safe for adolescent use, but 53 percent rated themselves as not confident in their ability to help adolescents effectively use NRT.[18]

Some teen smoking cessation programs are delivered technologically, via cell phones, text messaging or the Internet. Compared to clinic-based or school-based interventions, technology-based cessation programs are available full time, are anonymous and allow for more peer-based social interaction--especially if they involve real-time discussion through chatting.[19] Generally, these programs, while promising,

[*] Quit rates were measured differently across studies.

[†] Ages 13-17 who had started smoking at age 11 and had been smoking daily for more than two years.

have yet to demonstrate consistent evidence of effectiveness.[20]

There also is some preliminary evidence for the effectiveness of other cessation services that use different counseling methods, such as telephone counseling, nurse-led counseling and peer-led counseling, but the evidence base is limited.[21]

Not On Tobacco (N-O-T)

The most common smoking cessation program for adolescents is the *Not On Tobacco* (N-O-T) program, sponsored by the American Lung Association (ALA). This program is designed to help teens build skills needed to quit and to address other issues that may stand in the way, such as weight control or stress.[22] N-O-T is designed for teens ages 14-19 who are daily smokers and who volunteer to participate. Program sessions are delivered in school- or community-based settings by teachers, school nurses, counselors or other staff and trained volunteers. Program goals include helping participants quit or reduce smoking, increasing healthy lifestyle behaviors and strengthening life skills such as stress management and decision making.[23] The program typically consists of 10 weekly, hour-long sessions delivered in gender-specific small groups, and there are four optional booster sessions.[24] The N-O-T program has been evaluated by numerous studies, many of which suggest that N-O-T is successful in helping high school-age teens quit smoking or reduce their rate of smoking.[25] One study (funded by the ALA) found that high school students who participated in N-O-T were twice as likely as students in a comparison brief intervention[*] to quit.[26]

Adolescent-Specific Treatment for Alcohol and Other Drug Use Disorders. Psychosocial therapies such as cognitive behavioral therapy (CBT)[27] and family-based therapies are effective treatments for adolescents with substance use disorders.[28] Pharmacotherapy is another treatment option but not widely practiced in adolescent populations.[29] Teens who need more intensive services may be admitted to acute residential treatment (designed to stabilize patients) or residential programs (for those who require 24-hour care).

There is some evidence that group-based therapy for teen substance users that employ evidence-based interventions and that are implemented with quality assurance can be effective.[30] In one randomized study, group therapy (including cognitive behavioral therapy) was significantly associated with an increased number of days adolescents were substance free and an increased percentage of adolescents in recovery during the year after beginning the study.[† 31] However, there may be risks associated with this approach. For example, although not rigorously tested, there is some evidence that the power of peer influence for teens could make peer-group therapy approaches counterproductive compared to individual therapies or family-based therapies, potentially resulting in increased substance use and other risky behaviors.[32] This may be of particular concern when impressionable teens are put together in groups without regard to problem severity or individual members' levels of other risk-taking behavior.[33] Research suggests, however, that the potentially negative effects of peer influence can be moderated by ensuring adherence to the intervention model, including moderation of the group sessions by a competent and trained therapist, availability of effective trouble-shooting techniques and ensuring that group members' interactions are well supervised.[34]

A significant body of research confirms that treatment programs for adolescents should be based in science, developmentally appropriate, family oriented and delivered by qualified health care professionals. Treatment approaches include:

- *Cognitive-Behavioral Therapy* (CBT)--an evidence-based treatment that focuses on changing unhealthy patterns of thinking and beliefs that may contribute to the use of addictive substances. It is effective for a wide variety of problems including substance use disorders, mood disorders and

[*] The brief intervention consisted of 10-15 minutes of quitting advice and self-help brochures that are widely available to the public from the ALA and the National Cancer Institute.

[†] There was no control group in the trials.

anxiety disorders.[35] One study randomly assigned adolescent substance users to receive CBT, in which family members were integrated into the program, or to receive a psychoeducational intervention. Six months after program completion, teens in the CBT integrated program spent fewer days each month than those in the psychoeducational program using alcohol (2.0 vs. 6.1) or marijuana (5.7 vs. 13.8).[36]

- *Multidimensional Family Therapy* (MDFT)--an outpatient family-based treatment program that addresses adolescent substance use in relation to individual-, family-, peer- and community-level influences.[37] In one study, adolescent substance users who were randomly assigned to receive MDFT were likelier than those assigned to an adolescent group therapy program to complete their course of treatment (70 percent vs. 52 percent) and likelier than those assigned to the adolescent group therapy or to a family educational intervention to demonstrate reduced substance use directly following treatment completion (42 percent vs. 25 percent vs. 32 percent, respectively) and a year later (45 percent vs. 32 percent vs. 26 percent, respectively).[38]

  A study that compared CBT with MDFT found that both treatment methods were related to significant reductions in alcohol and marijuana use among adolescents during the six months following program completion; however, family therapy was better at reducing other drug use. After 12-months, 64 percent of MDFT participants and 44 percent of CBT participants had used alcohol or other drugs on only one occasion or not at all during the prior month.[*] [39]

- *Functional Family Therapy* (FFT)--a comprehensive approach to treatment based on the idea that behaviors influence and are influenced by interactions within the family. FFT programs may be implemented in the home or in clinical or school settings. The three-month program consists of engaging and motivating adolescents and families; the development and implementation of an individually-tailored, long-term behavior change plan; and an attempt to generalize positive behavior change to other areas of families' lives.[40]

  A study that randomly assigned adolescent substance users to receive CBT, FFT, combined CBT and FFT or psychoeducational group therapy[†] found that FFT and joint-program participants experienced the best treatment outcomes over the long term.[41]

- *Pharmacological therapies*--involve the use of prescription drugs to ease withdrawal symptoms, block the effects of addictive substances or produce unpleasant reactions when an addictive substance is used.[42] Although there are evidence-based and promising approaches to addiction treatment that rely on pharmacological interventions, only a few studies examine the use and effectiveness of these interventions in the adolescent population.[43] Most of the evidence points to the recommendation that pharmacological interventions be used, if at all, as a supplement to psychosocial-based therapies for adolescents with substance use disorders.[44]

  There are several barriers to the use of pharmacological therapies among adolescents, including a reluctance among health care practitioners to prescribe medications for those who have addictive disorders, a lack of adequate training in adolescent substance use disorders among researchers in addiction medicine, a lack of well-designed research trials and the perception that adolescent substance use

[*] This is in comparison to baseline reports of substance use where only seven percent and four percent of participants assigned to these groups, respectively, reported having used alcohol or other drugs on only one occasion during the past month prior to entering treatment.

[†] In which participants were provided information about alcohol and other drugs and received skills-based training.

disorders constitute a phase that adolescents will outgrow.[45]

An analysis of 15 studies evaluating substance use outcomes of treatment programs for adolescents found the most support for the effectiveness of MDFT and cognitive-behavioral group therapy compared to other interventions such as supportive group counseling.[46] In addition to the demonstrated effectiveness of CBT, a review and meta-analysis of all adolescent treatment effectiveness trials published in the last decade found that MDFT and FFT are effective treatments for adolescent substance use disorders and are more effective than "treatment as usual" control conditions.[*] [47]

One approach that is employed but that has limited and mixed evidence of efficacy is Therapeutic Communities (TCs). TCs are substance-free residential programs that rely on a community model to encourage increasing levels of personal and social responsibility. This approach aims to re-socialize the patient to a substance-free lifestyle through peer influence, personal responsibility and skills training.[48] TC programs were developed for adults but have been adapted to serve adolescents with substance use disorders by shortening the length of stay, making the programs less confrontational and better supervised and including more family involvement. Instead of a focus on vocational support, which is emphasized more in adult-oriented TC programs, TCs for teens focus on educational resources.[49]

Very few studies of these programs measure actual substance use outcomes.[50] In one study, however, adolescents who completed a TC program had better outcomes across a range of addictive substances[†] 12 months later than adolescents in a residential comparison condition, including group homes, probation camps, home probations and other types of alternative camps. Adolescents in the TC program, however, reported more frequent smoking than adolescents in the comparison condition.[51]

Treatment for Juvenile Offenders. Even though most referrals of adolescents to treatment come from the justice system, juvenile offenders rarely receive the help they need. CASA's 2004 report, *Criminal Neglect: Substance Abuse, Juvenile Justice and the Children Left Behind*, found that of the 1.9 million arrests of juvenile offenders with substance use and addiction problems, only about 3.6 percent (68,600) receive any form of addiction treatment.[52]

A national survey of directors of juvenile institutional and community corrections facilities found that addiction treatment was more common in large, state-funded residential facilities (where 66.4 percent provided some type of treatment) than in community corrections facilities and local detention centers (where 55.7 percent and 19.7 percent provided some type of treatment, respectively). But only half (51 percent) of youth with substance use problems in residential facilities were even provided with a referral to a community-based treatment provider at discharge, and only 31 percent of youth in jail with substance use problems were given a referral.[53]

Of the facilities that do provide interventions to residents with substance use problems, 89 percent offer individual counseling and 87 percent offer group counseling. Family counseling was the least likely form of intervention to be offered (43 percent)[54] despite evidence of its effectiveness in adolescent populations.[55]

Community-based adolescent treatment programs are more likely than justice facilities to have staff qualified to deliver treatment services, to involve families in treatment and to assess treatment outcomes, while institutional programs[‡] are more likely to provide a more comprehensive range of services.[56]

[*] The control conditions varied between the studies included in the analysis and were not specifically defined.

[†] Such as alcohol, marijuana, inhalants and heroin.

[‡] Treatment programs located in residential facilities.

A review of 200 studies found that, while the outcomes that were measured varied, there was an overall decrease of 12 percent in recidivism for serious juvenile offenders who received treatment interventions. The most promising interventions include individual counseling, interpersonal skills training, behavioral programs for non-institutionalized offenders and placement in community-based, family-style group homes for institutionalized offenders.[57]

One promising approach for juvenile offenders is *Multi-Systemic Therapy* (MST). MST is an intensive family- and community-based intervention program that targets substance use by addressing the individual-, family-, and community-level influences associated with serious antisocial behavior in chronic and violent juvenile offenders who engage in risky substance use.[58] MST therapists have small caseloads in order to be available to participants, and clinicians go to where the adolescent is and are on call full time.[59] Treatment generally consists of up to 60 hours of counseling over a four-month period.[60] Therapists collaborate with parents, teachers, coaches and other key people in the neighborhood who may have an impact on the teen to help support and reinforce positive behaviors and limit negative social contact, while encouraging positive academic and vocational achievements.[61] The reduced incarcerations of MST participants can offset the cost of providing such intensive services and maintaining the low caseloads required to properly provide the therapy.[62]

A randomized study of the effects of MST on juvenile offenders found that, after four years, adolescents in the MST condition were likelier than their peers receiving usual community services[*] to be abstinent from marijuana use (55 percent vs. 28 percent).[63] MST participants also engage in significantly less criminal activity;[64] one study found that adolescents who completed MST had an arrest rate of 22.1 percent compared to 71.4 percent among youth who completed individual therapy.[65] Even after nearly 14 years, individuals who completed MST were less likely than those who completed individual therapy to be arrested again (50 percent vs. 81 percent).[66]

> *Referring youth to evidence-based treatment for substance use by teens provides a benefit not only to the child but also benefits the community. By utilizing evidence-based treatment for Court-involved youth who have been diagnosed as substance dependent or abusing, our community has been able to dramatically reduce the number of commitments to state correctional facilities for youth, achieve better outcomes for children and families and decrease the likelihood of recidivism. If this treatment can have this kind of positive impact for these children, I believe that the use of these same practices upon diagnosis will prevent many children from entering the Juvenile Justice system altogether.*[67]
>
> --The Honorable Linda Tucci Teodosio
> Judge, Summit County Juvenile Court
> Akron, OH

Treatment in the Child Welfare System. One study found that nearly one in five teens (19.2 percent) in the child welfare system have a substance use disorder.[68] Another study found that only 22 percent of those in need of treatment reported receiving professional addiction treatment services within 18 months of being in the child welfare system.[69]

Children in the child welfare system can benefit from services that are provided within the same agency as well as in collaboration with their schools. The likelihood of receiving treatment is 6.6 times greater when child welfare and addiction treatment services are provided within the same agency. Adolescents in these systems are 4.5 times likelier to receive addiction treatment services when child welfare agencies and schools collaborate with one another in planning the child's care.[70]

Treatment for Co-occurring Conditions. Adolescents with substance use disorders often have co-occurring medical--including mental

[*] Which involved weekly attendance at group meetings (a 12-step mutual support program), with additional residential and inpatient services available as needed.

health[*]--conditions. In order to achieve the best outcomes possible, all co-occurring conditions must be properly treated. Health care professionals should assure that patients receive full assessment of any co-occurring disorders to determine the full range of behavioral and pharmacological treatment needs, and refer for specialty care when necessary. When integrated treatment cannot be provided by the same health care provider, providers should work collaboratively, sharing clinical data and planning interventions, to ensure a unified treatment approach that meets all of the health care needs of the patient.[71]

Recovery Support Services. Mutual support programs may be useful for assisting adolescents with substance use disorders achieve and sustain recovery.[72] Mutual support programs provide networks of 12-step and other abstinence-based groups for individuals recovering from various addictions as well as groups for family members of those with substance use disorders.[73] One study found that attendance at mutual support programs was positively associated with adolescents' motivation to attain abstinence which, in turn, was positively associated with actual abstinence rates.[74] Other studies with relatively small samples suggest that participation in 12-step and other mutual support programs are associated with reduced substance use among adolescent participants, but these studies have been conducted on adolescents in inpatient settings.[75]

Barriers to Treatment

The major barriers to teens receiving treatment for addictive disorders are a lack of understanding of the nature of the problem, a lack of education and training on this topic among health care professionals that leads to their failure to address it, a lack of available treatment options and a lack of insurance coverage for the costs of treatment.

Failure to Understand the Problem. Because most Americans do not understand that substance use disorders are medical problems that can and must be treated, we do not demand the treatment that teens may need. A substantial number of teens in need of treatment instead appear to be simply part of mainstream but troubled adolescent culture.[76] As a result, institutions and systems responsible for the welfare of young people--including schools, child welfare and juvenile justice--too often miss opportunities to intervene with young people in need of help.

This lack of understanding of the problem and of the importance of addressing it may complicate the ability to attract and retain participants in treatment. For example, smoking cessation programs report difficulty identifying smokers, obtaining active parental consent, protecting participants' privacy, respecting participants' autonomy and making participation relevant and accessible to an adolescent population.[77] Other challenges include lack of interest among students, insufficient time during the school day to recruit participants and lack of support among parents and faculty.[78]

Lack of Health Care Education. Health care providers are woefully undereducated about addiction in general[79] and about its developmental characteristics. Relatively little attention is given to this topic in medical school or residency training programs or in education and training programs for other types of health care professionals.[80] As a result, even though almost 12 percent of adolescents meet clinical criteria for the disease of addiction, most health care professionals fail to recognize or address it.[81]

Lack of Effective and Accessible Treatment Options. The fact that only 6.4 percent of adolescents in need of treatment receive it[82] also is a function of the lack of available treatment services to which health care providers could refer adolescents for specialty care.[83] There is a substantial treatment gap in the United States, with strikingly limited accessibility of treatment services compared with the considerable documented need.[84] Further, nearly half of those facilities that do exist do not admit adolescent patients at all[85] and, despite the unique treatment needs of adolescents, only 28.0

[*] See Chapter VII.

percent of facilities nationwide whose primary focus is addiction treatment services offered a specialized program for adolescents in 2009.[86] Of the 144 treatment programs for adolescents, the majority did not perform well on ratings of nine key elements of successful treatment programs. Out of a possible total score of 45 components, the mean score was 23.8 and the median was 23. Elements with the poorest overall performance were assessment and treatment matching, engaging and retaining teens in treatment, gender and cultural competence and rigorous evaluation of treatment outcomes. For this latter measure, 44 percent of the programs reported not collecting any data related to outcomes, 35 percent reported analyzing their own internally-gathered data and fewer than 10 percent have been the subject of a scientifically rigorous evaluation regarding the program's effect on patient outcomes.[87]

Making programs relevant and accessible to adolescents also is a challenge. A study of therapists and of adolescents who were in treatment for marijuana use disorders reported that barriers to treatment include lack of transportation, lack of treatment readiness and lack of relevance and compatibility of the treatment program to the patient's needs.[88]

These factors may further complicate treatment retention. According to CASA's analysis of national treatment data, 40.1 percent of adolescents under age 18 completed their treatment program. Completion rates are low for various reasons: 25.7 percent did not complete their treatment program because they left against professional advice, 16.5 percent were transferred to another facility, 7.7 percent were terminated by the facility, 2.6 percent were incarcerated, 0.1 percent died and 7.3 percent did not complete their treatment for unspecified reasons.[89]

Length of time spent in treatment is significantly related to treatment outcomes. One study found that 72.9 percent of adolescents in outpatient treatment and 41.6 percent of adolescents in residential treatment were enrolled in treatment for less than 90 days; 36.3 percent of short-term inpatient treatment participants were enrolled for less than 21 days. During the year following treatment, patients who met or exceeded the minimum time period in treatment were 1.5 times as likely as patients who did not complete the course of treatment to abstain from alcohol and other drugs, 1.3 times as likely to have average or better-than-average grades and 1.2 times as likely to refrain from criminal activity.[90]

Lack of Insurance Coverage. National data indicate that 10 percent of adolescents ages 12-17 have no health insurance and 6.4 percent have no usual source of health care.[91] The Society for Adolescent Health and Medicine has called for greater access to treatment for adolescents and young adults through nontraditional providers such as school health centers, community health centers and other public health agencies that rely primarily on public funding.[92] Such organizations often serve as primary health care access points for adolescents with no usual source of care.

In recent years, there have been significant attempts to reduce financial barriers to treatment. The Mental Health Parity and Addiction Equity Act of 2008 was designed to increase parity in coverage between general health care and mental health and addiction treatment services.[93] For adolescents who are covered under large group health insurance plans or Medicaid managed care plans that provide coverage for mental health care, the Act prohibits financial requirements and treatment limitations on mental health and addiction services that are more restrictive than those placed on medical or surgical benefits. However, the Act does not require health insurance plans to provide coverage for mental health or addiction treatment benefits.[94]

A provision in the Affordable Care Act of 2010 requires health insurance plans or policies to cover certain preventive services, such as alcohol and other drug use assessments for adolescents, at no out-of-pocket cost to the

patient[*]--if health providers already offer these services.[95] As such, whether or not these services actually are offered remains the choice of health care providers.

[*] The law requires insurance plans to cover services that are recommended by several advisory bodies as well as services listed in comprehensive guidelines supported by the Health Resources and Services Administration. This requirement applies to plans beginning on or after September 23, 2010.

Chapter XI
Recommendations and Next Steps

Adolescence is *the* critical period for preventing the far-reaching and costly health and social consequences of substance use and addiction. Doing so will first require that parents, health care professionals, policymakers, educators and other adults engaged in the lives of teens understand the facts about substance use and addiction:

- Adolescent substance use is a significant public health issue resulting in profound, costly and long-term consequences, including addiction.

- Addiction is a complex brain disease--a medical issue--most frequently originating in the use of addictive substances during the critical period of adolescent brain development.

- The adolescent brain is more vulnerable than the adult brain to the damaging and addicting properties of tobacco, alcohol, marijuana and other drugs.

- The younger a person is when he or she starts to use tobacco, alcohol or other drugs, the greater the chances of developing an addiction.

- Aspects of American culture foster teen substance use, while genetics and certain individual circumstances further compound that risk and the progression to addiction.

- Teen substance use can be prevented through established public health interventions while addiction can be treated medically.

Although each group of individuals involved in the lives of teens has a specific role to play, effective prevention of adolescent substance use and addiction amounts to five key actions:

1. Help the public understand the risks of teen substance use, the nature of addiction and its origins in adolescence.

2. Delay the onset of substance use for as long as possible through the implementation of effective public health measures.

3. Identify teens at risk for substance use through routine screenings, as we do for other public health problems.

4. Intervene early with teens who are using to prevent further use and its consequences.

5. Provide appropriate treatment to teens identified as having a substance use or co-occurring disorder.

With these overarching goals in mind, CASA presents the following recommendations:

Parents

Parents are the single strongest influence--for better or worse--on their teens' choices to smoke, drink or use other drugs. Parents must recognize that teen substance use is a real and present threat to their teens' health, safety and future and take steps to prevent it. Parents set rules and expectations to protect their children from many harms, such as requiring that they wear seat belts, not text while driving, be sexually abstinent or not have unprotected sex, or limit their junk food intake. Requiring their teens to refrain from tobacco, alcohol or other drug use is just as important and could have significant lifesaving outcomes.

Parents should set the norms of behavior for their teens and for other parents as well:

- **Know the facts.** Every year that you can delay your teen from smoking, drinking or using other drugs dramatically increases her or his chances of growing up safe, healthy and addiction free. Substance use and adolescence is a toxic combination. Addiction is a brain disease you can help prevent.

- **Set a good example.** Your own substance use sets a powerful example for your children. Don't be a risky user yourself by smoking or using other tobacco products, drinking excessively, misusing prescription drugs or using other drugs. Be careful not to send the message that it takes a cigarette, a drink or a drug to relax, relieve stress or have fun.

- **Restrict access to addictive products in the home.** A key source of addictive substances for teens is their own homes. Make sure that tobacco products, alcohol, controlled prescription medications and other drugs are not accessible to your teens or their friends at home, and dispose of unused prescription medications properly. Reducing easy access to addictive substances reduces the likelihood that teens will use them. Do not smoke, drink or use other drugs with your teens or give them prescription drugs not prescribed for them.

- **Communicate clear, consistent and persistent messages about the dangers of substance use for teens.** Teens consistently cite their parents as the main influence on their decisions of whether or not to smoke, drink or use other drugs. Even though it may seem difficult and unwanted, communicating openly and regularly with your children about the risks of substance use and addiction can have a tremendous impact on their decisions. Talk with your children about substance use from an early age and continue these conversations through young adulthood. Include in your discussions:

  - Information about the health and safety risks of substance use;

  - Suggestions for how they can deal with peer pressure and cope effectively with stress and negative moods and feelings that propel some teens to self medicate with addictive substances; and

- Your expectations regarding their behavior and the consequences you will enforce should they violate your rules.

Frequent and open conversations about substance use will help to establish a positive family environment where your children seek you out for advice rather than sources of potentially unreliable information, such as peers or the Internet.

- **Consistently enforce rules.** Rules and expectations teach children what behavior is acceptable, help them to establish boundaries for themselves and provide them with a face-saving means of resisting peer pressure. Present a clear message to your children that substance use is completely unacceptable, regardless of the type, amount or circumstances. Determine in advance the consequences for breaking rules, inform your children of those consequences and enforce the consequences consistently and fairly whenever a rule is broken. Remind your teens that this is a matter of health and safety.

- **Monitor your children's whereabouts, activities and mental health status.** Know your children's friends, where they spend their time and what is going on in their world. Keeping tabs on your children to protect them from harm is a parent's right and responsibility. Watch closely for other signs of trouble including depression, anxiety, eating disorders, academic difficulties or conduct and attention problems--each of which may co-occur with substance use, increase the risk of substance use or result from substance use.

- **Let your health care providers know that you expect them to address this issue in the context of routine professional care.** Make sure your teens' doctors and other health care providers address substance use in routine visits, explaining the health reasons for not using addictive substances and screening for the problem. Make sure they also know what to do if it occurs.

- **Get professional help at the first sign of trouble.** If your child shows signs of substance use or related health or behavioral problems, seek qualified professional help as you would for any other health condition or illness. The problem will *not* go away on its own and punishment will not cure the disease of addiction. However, early intervention and appropriate treatment can help and may prevent the most serious consequences.

Health Care Professionals

Health care professionals have an obligation to address a public health problem that affects three quarters of teens and a medical condition that affects one in eight of them by integrating addiction services into mainstream health care. As with all other health conditions that teens face, the role of health care professionals related to teen substance use is to educate, prevent, screen, diagnose, treat or refer for specialty care. To effect this change, health care professionals also should work to expand treatment capacity in the medical system, require education and training in addiction services and press government and private health care insurers to reimburse for adolescent substance use screenings, brief interventions and treatment.

By taking these actions, health care providers can help change cultural norms about the acceptability of adolescent tobacco, alcohol and other drug use, interrupt the progression from use to addiction and reduce the enormous health and social consequences.

- **Discuss the dangers of adolescent substance use with patients and their parents.** Every interaction with parents, children and adolescents is an opportunity to impart a clear message that substance use is particularly perilous for children and adolescents. Routinely discuss this issue--educating teens and their families about the health risks and consequences of substance use--reinforcing the concept that substance use is a health threat and that addiction is a disease that can be prevented by delaying

onset and, when needed, seeking professional treatment early.

- **Conduct routine substance use screenings of adolescent patients in primary care.** Given the developmental nature of addiction, it is vital that pediatricians and other primary care medical professionals who treat adolescents routinely screen all patients for substance use and related health and behavioral problems, using validated screening tools. For patients who show signs of use or who are at high risk for substance use or related health problems, conduct more extensive assessments.

- **Screen adolescent patients who seek urgent or emergency medical care.** Providing screenings in the emergency department or urgent care center may reach adolescents who already are experiencing the health consequences of substance use, who lack a primary care physician or who view themselves as too old to be seen by pediatricians but have not yet established adult medical care. Screen all adolescent patients in emergency settings for substance use and substance use disorders, with particular attention to those who present with injuries from accidents or violent incidents, mental health problems or who show other potential signs of substance use.

- **Conduct brief interventions.** For adolescents who screen positive for substance use but have not yet developed clinical disorders, conduct brief interventions using established protocols--short counseling sessions directed at changing a teen's attitudes and behavior related to substance use. These interventions can prevent future substance use-related consequences and the development of clinical disorders. Brief interventions can be administered by physicians or by other trained staff.

- **Treat or refer to specialty care.** For patients who meet clinical criteria for a substance use disorder, provide medically approved behavioral and/or pharmacological treatments or refer them to specialty care. For adolescents, it is critical that the treatment provided be tailored to their age and circumstances, and that it addresses any co-occurring conditions such as anxiety or depression, ADHD or conduct disorders. Be informed about specialty programs for adolescents that can be referral options.

- **Expand treatment capacity in the medical system.** If specialty care options do not exist for your patients, work to make these resources available as you would if they had any other unmet medical need. To provide quality treatment to all adolescents with substance use disorders, we need to increase the number of health care professionals who are trained to provide effective care.

- **Require education and training in addiction services.** To ensure that all medical professionals are equipped to conduct routine screenings for substance use, identify symptoms of substance use in patients, provide brief interventions and treat or refer to specialty care when necessary, all medical education programs must include in their curriculum information regarding: the health and safety risks of adolescent substance use; the developmental nature of addiction; the associated risk factors, comorbidities, symptoms and consequences; and the range of treatment options. Such education and training should become part of the mainstream medical qualifying and credentialing system in the United States.

- **Press government and private health care insurers to reimburse for adolescent substance use prevention and treatment.** Preventive services, including screenings and brief interventions, and treatment for substance use disorders can save lives and save money and should be considered standard care. Although limited billing codes exist for substance-related screenings and brief interventions, not all state Medicaid agencies, Medicare or private insurance companies reimburse for the full range of needed services. Health care

providers should press for reimbursement for these services as they do for coverage of other health conditions.

Policymakers

Policymakers face two seemingly antithetic obligations: to protect the public health and to close severe budgetary shortfalls. Preventing teen substance use and treating teen addiction is one of the few opportunities where both goals can be addressed simultaneously.

Policymakers can reduce the cultural influences that drive adolescent substance use by: implementing public awareness campaigns; curbing teen access to addictive substances by raising taxes on tobacco and alcohol products, expanding tobacco bans and raising the minimum age for purchase of tobacco products to 21; and limiting adolescents' exposure to tobacco and alcohol advertising. They also can use the leverage of government systems to expand access to quality prevention and treatment services for adolescents--particularly those at high risk; fund research on prevention and treatment for teens; and improve reporting requirements and data collection for substance-related accidents and mortality.

Only by effectively preventing and treating substance use disorders in the teen population can policymakers prevent many of the health and social consequences and their enormous costs that fall to government.

- **Get the facts out through population-wide public health campaigns and fund independent evaluations of these campaigns.** Policymakers can do much to educate the public and change social norms regarding adolescent substance use through public awareness campaigns targeted to parents of adolescents and to teens themselves. Campaigns such as these already have proven effective in reducing other public health problems, including smoking, and can influence public perceptions of other forms of substance use as well. Such campaigns must be objectively evaluated to ensure that they are effective. Important facts to convey to the public include:

  - The evidence regarding the risks and consequences of teen substance use;
  - The science demonstrating that addiction is a brain disease and explaining why adolescence is *the* critical time for intervention;
  - The key role of parents in prevention and in counteracting the influences in teen culture that promote use; and
  - The signs of trouble and where to get help.

- **Raise taxes on tobacco and alcohol products.** Higher cost of addictive products is strongly linked to reduced use by young people. Raising tobacco and alcohol taxes not only helps to keep these products out of the hands of children and teens, it also reduces use among adults, resulting in improved health outcomes and a reduction in health care expenditures. To maximize the benefit of tobacco and alcohol tax hikes, governments should mandate that the tax revenues be applied to prevention and treatment initiatives.

- **Expand tobacco bans.** Smoking bans not only limit adolescents' access to cigarettes, but also send a clear message that smoking is dangerous and socially unacceptable. Comprehensive indoor/outdoor clean air laws are a cost-effective public health measure that has been shown to reduce smoking and related health care costs. Athletic organizations, such as Major League Baseball, also should be encouraged to ban smokeless tobacco use which is on the rise among teens and sends a dangerous message to admiring young sports fans.

- **Raise the minimum legal age for purchasing tobacco to 21.** Research clearly supports the imperative to keep all

tobacco products from children and teens, not only because of the harms associated with use but also because delaying onset of use until the brain is more fully developed decreases the likelihood of addiction. Raising the minimum legal age for purchasing tobacco to 21 from 18 will send a clear message that use by teens is harmful and will reduce access to tobacco among teens.

- **Limit adolescent exposure to alcohol advertising.** Prohibit alcohol advertising, sponsorships and promotions in media with 15 percent or greater youth audiences and in venues with 15 percent or greater youth attendance, as recommended by the National Research Council, the Institute of Medicine and the Center on Alcohol Marketing and Youth.

- **Expand access to addiction prevention and treatment for adolescents.** Federal and state governments spend 50 times as much on the consequences of substance use and addiction as they do on prevention and treatment. Governments should provide resources to expand quality treatment for adolescents to help fill the treatment gap and require that all health care insurers cover these services in their insurance plans. The federal government should increase residency-training opportunities in adolescent addiction medicine.

- **Use the leverage of government systems to identify teens at risk and provide interventions and treatment.** The fact that many teens who are at increased risk for substance use and addiction come into contact with government services--such as the child welfare, juvenile justice and mental health systems--presents a unique opportunity to identify these youth and provide needed services. All health care providers who care for adolescents through government-funded programs (e.g., juvenile justice, child welfare, Indian Health Service, community health clinics) or through government-funded insurance payments (e.g., CHIPS/ Medicaid, other state insurance) should be required to offer effective preventive services, such as screenings and brief interventions, and to offer or refer patients for effective treatment for substance use disorders. Identifying at-risk teens and intervening early reduces their risk of further substance use, recidivism and other behavioral problems and, ultimately, leads to cost-savings through decreased demand for government services. Governments should require that services be delivered by trained health care providers.

- **Fund research on prevention and treatment for teens.** Policymakers should invest public funds in the development of innovative, science-based approaches to adolescent substance use prevention, early intervention and treatment, and ensure that they are rigorously evaluated for effectiveness.

- **Improve reporting requirements and data collection for substance-related accidents and mortality**. Accurate data are needed to measure the impact of substance use on public safety, to evaluative the effectiveness of public health interventions and to calculate cost-savings over time. Currently available data on some of the most severe consequences of adolescent substance use are sparse, inconsistent and difficult to interpret on a national level. The federal government should work with states to develop uniform and reliable reporting requirements with regard to accidents, injuries and deaths that can be attributed directly to teens' use of tobacco, alcohol and other drugs.

Educators and Community Organizations

Next to the home, school is the place where teens spend the most time. Schools and communities in which teens reside should reinforce the health message--educating parents, students and community members that teen substance use is a preventable public health problem and addiction is a treatable disease.

Schools and community partners also should look for signs of trouble and get help for those students who need it. To assure that teens get the help they need, schools and communities can offer comprehensive and age-, gender- and culturally-appropriate prevention programs, put in place substance-related policies that connect teens with needed health services and apply them fairly and consistently.

- **Help educate parents, students and other community members that substance use is a health problem.** Schools and community leaders can play a very important role in educating the public about the dangers of adolescent substance use, why it must be understood as a health problem and the importance of preventing and treating it. By educating people about this condition, schools and communities are in a better position to help connect teens and their families to effective health care services rather than address it primarily as a problem of delinquency.

- **Look for signs of trouble and get help for those students who need it.** Educators are in a unique position to identify at-risk adolescents and to intervene early with those who are using addictive substances or demonstrating behaviors associated with substance use such as changes in mood, attention, academic performance or behavioral problems. Schools and community leaders should ensure that all personnel who come into contact with teens are equipped to identify the signs and symptoms of substance use problems and know exactly what to do should a student demonstrate such signs. Schools and communities should develop working relationships with trained health care professionals to conduct routine screenings of all high school-age teens for substance use and other co-occurring health problems and to refer teens who screen positive for professional assessment and treatment if needed. School personnel and community organizations should work with health care providers to assure they have at their disposal names of health care professionals and specialty treatment programs to whom they can refer teens who show signs of substance use problems or disorders.

- **Implement age-appropriate and comprehensive prevention programs.** School-based prevention messages should begin early in a student's academic career and continue in similar intensity throughout a student's education, with age-appropriate modifications. Prevention initiatives should be based in science, implemented with fidelity to the tested program, carried out by trained prevention specialists and connected with the school curriculum rather than relegated to isolated events or lessons. Prevention programs should address all the key factors influencing a student's likelihood of engaging in substance use, including personal challenges, family and social pressures, mental health stressors and pro-substance use media messages. These programs should be designed to foster an environment where substance use is understood as a health-risk behavior that is of critical concern to teens, their parents, schools and the larger community.

- **Implement fair and consistent policies and enforce them.** Establishing, communicating and enforcing clear no-substance use rules consistently and fairly for all students and school personnel deters such behavior and gives students a clearly articulated and powerful reason to choose not to use. Avoid punitive policies that result in the removal of teens from the academic, social, health and other support services they need. Instead, hold students and school personnel accountable for their behavior but take a health-based approach to helping those students who demonstrate signs or symptoms of substance use or addiction.

The Media

Understanding the extent to which media messages can result in unhealthy behavior among teens, media organizations have an

obligation to help promote healthy, rather than destructive, youth behavior. They can do this by finding creative yet profitable ways to craft messages that discourage adolescent substance use, eliminating marketing efforts to adolescents that make addictive substances appear attractive, and using new technology to counteract pro-substance use media and advertising messages.

- **Craft messages that discourage adolescent substance use.** Writers and media executives can influence their viewers' and listeners' beliefs, expectations and perceptions of peer behavior. When it comes to substance use, showing realistic outcomes of teen substance use, including the adverse consequences, and incorporating content that makes abstaining from substance use attractive to teens can help change social norms about use and encourage teen audiences to make healthy choices.

- **Eliminate marketing efforts to adolescents that makes addictive substances appear attractive.** Although adolescents are too young to legally purchase tobacco or alcohol, they are not too young to be seduced by advertisements for these products. Protect adolescents from unnecessary exposure to such marketing by eliminating advertisements for alcohol in media with 15 percent or greater youth audiences and in venues with 15 percent or greater youth attendance. This includes advertising at events frequented by underage youth and advertisements and product placements in TV programs, radio shows, movies, Web sites and smart phone applications attractive to persons ages 21 and younger.

- **Utilize new technology to counteract pro-substance use media and advertising messages.** Employ creative prevention approaches that target students where they spend most of their time and devote most of their focus and attention--online social media sites, text messaging programs, video games and other high-tech media.

Researchers

Increasing our understanding of the causes and consequences of teen substance use and developing and evaluating innovative approaches to address this health issue are of critical importance. Researchers can add to this knowledge in many ways, including developing and conducting studies on the effectiveness of promising prevention programs, early interventions and treatments tailored to high school-age teens, and exploring best practices for implementation.

- **Conduct independent studies on the effectiveness of promising prevention programs.** Few prevention programs currently in use have been rigorously evaluated for effectiveness in preventing and reducing student substance use. Even fewer have been evaluated by researchers not directly tied to the development of the program. To assure that scarce funds made available for prevention are used most effectively, more information is needed on the effectiveness of prevention programs and on alternative approaches to those that do not produce results.

- **Develop evidence-based prevention programs, early interventions and treatments tailored to high school-age teens.** Most existing prevention programs are designed for middle school students with only sporadic booster sessions for high school students. Most early interventions have been designed for and tested on college-age youth. Few studies have evaluated the effectiveness of prevention and early intervention approaches for high school-age teens. More research also is needed on effective treatment approaches for teens, including the use and safety of pharmacological therapies, treatments for co-occurring conditions and on finding a cure for addiction.

- **Explore best practices for implementation.** Too often, well-designed prevention programs, early interventions and

treatments are not implemented with fidelity or are implemented by individuals without the appropriate training or credentials. Researchers should explore ways to ensure that effective programs are implemented as intended in order to produce the best results possible.

Teens

Teens have a personal stake and responsibility in assuring their own health and future opportunities. They can do this by equipping themselves with accurate information about the causes, effects and consequences of substance use and about the nature of addiction; by encouraging their friends and peers to be healthy and safe; and by intervening early with friends in need of help.

- **Become media savvy.** Learn to discern fact from fiction and information from advertising so you can make your own well-informed choices. Much of the information posted on the Internet and the portrayals of substance use in the media present an inaccurate picture of what addictive substances can do to your body, brain, behavior, feelings, health and future. Educate yourself about the health consequences of substance use during your teen years and about why these products are so heavily marketed to you.

- **Communicate openly with adults about substance use and related health issues.** Seek out reliable and trustworthy adults with whom to share your questions, thoughts and concerns related to substance use and other health or social problems you may be facing.

- **Help others make healthy choices.** Take on the responsibility of helping to ensure the health and well-being of your peers by getting involved in peer counseling or other prevention programs and early intervention efforts.

- **At the first sign of trouble, get help for yourself or for a friend.** You may be in the best position to know when you or a friend needs help. Friends who use tobacco, alcohol or other drugs can cause serious harm to themselves or others and can become addicted; the problem will not go away on its own so be a true friend and seek help. Know where to turn quickly if you or a friend develops a problem with addictive substances and speak up just as you would for any other health problem.

Appendix A
Methodology

The National Center on Addiction and Substance Abuse (CASA) at Columbia University performed the following activities to present a comprehensive analysis of adolescent substance use in the United States:

- A thorough review of the research literature related to adolescent substance use, prevention and treatment;
- Secondary analysis of seven national data sets;
- Interviews with leading experts in a broad range of fields relevant to the report, including adolescent health and addiction treatment, substance use education and prevention, media and social marketing as well as parents and student groups, trade associations, policymakers and persons in recovery;
- On-line focus groups with high school students, parents of high schools students and high school personnel; and
- National surveys of high school students, parents of high schools students and high school personnel.

Literature Review

CASA staff identified and reviewed more than 1,000 publications, including peer-reviewed journal articles, government and professional reports and newspaper articles.

Analysis of National Data Sets

CASA's Substance Abuse Data Analysis Center (SADAC^{SM}) conducted extensive analyses of the following seven national data sets:

- National Survey on Drug Use and Health;

- Youth Risk Behavior Survey;
- Monitoring the Future;
- Treatment Episode Data Set;
- Drug Abuse Warning Network;
- The Fatality Analysis Reporting System; and
- The National Youth Tobacco Survey.

National Survey on Drug Use and Health

The *National Survey on Drug Use and Health* (NSDUH), administered by the U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration (SAMHSA), is a cross-sectional national survey of approximately 70,000 randomly selected non-institutionalized individuals ages 12 and older in the United States.

CASA analyzed NSDUH data to examine tobacco, alcohol and other drug use among individuals ages 12 and older living in U.S. households; however, unless otherwise indicated, the majority of the analyses were restricted to data on enrolled high school students ages 18 and younger. After excluding middle school students (in grades 7 and 8) and college students from the population of 12-18 year olds, CASA's analysis of NSDUH data indicates that only 4.6 percent of adolescents that age are not currently enrolled in high school. Excluding this small cohort from the analyses did not alter the findings in any significant way; therefore, to be consistent with other data sets used in this study that represent enrolled high school students, only respondents to the NSDUH who were enrolled in high school were included in the analyses presented in this report.

The NSDUH is known to considerably underestimate the rate of substance use, particularly among young people, because it is administered in the home where a parent or other adult is present, increasing the risk that respondents will under-report substance use and other high-risk or illegal activities.[1] The NSDUH also does not include high-risk institutionalized populations, such as prison inmates, hospital patients, patients in addiction treatment and others who cannot be reached in a home (e.g., the homeless), who tend to use at higher rates than non-institutionalized populations.[2]

For each type of addictive substance (tobacco, alcohol, marijuana, controlled prescription drugs and other illicit drugs), the NSDUH provides data on lifetime use, current use, frequency patterns and initiation age; and on past-year diagnosis of an alcohol use disorder, past-year diagnosis of an illicit or controlled prescription drug use disorder and past-month diagnosis of nicotine dependence. The data set also allows for the identification of adolescents currently enrolled in high school, those who have dropped out, those with histories of arrests, and those who have had major depressive episodes as well as a myriad of other characteristics that have been linked to adolescent substance use and addiction.

The NSDUH also provides data on adolescents' perceptions of peer substance use as well as their perceived risk of trying certain addictive substances, using certain substances monthly and using marijuana weekly (no risk, slight risk, moderate risk, great risk). By means of a three point scale (neither approve nor disapprove, somewhat disapprove, strongly disapprove), CASA assessed adolescents' perceptions of parental disapproval of various forms of substance use, their perceptions of close friends' disapproval of substance use and their own disapproval of peers' substance use.

Because of changes made in survey methodology, time series data are available only from 2002 to 2009.

The NSDUH data related to determining whether a respondent met clinical criteria for a past-year substance use disorder diagnosis involving alcohol, controlled prescription drugs or illicit drugs correspond to the diagnostic

criteria for alcohol or other drug abuse or dependence presented in the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV)*.[3]

To be defined as having past-year clinical substance abuse, respondents must have met one or more of the following criteria (and must not have met criteria for dependence upon the substance in the past year):[4]

(1) Serious problems at home, work or school caused by the substance, such as neglecting your children, missing work or school, doing a poor job at work or school or losing a job or dropping out of school.

(2) Used the substance regularly and then did something that might have put you in physical danger.

(3) Use of the substance caused you to do things that repeatedly got you in trouble with the law.

(4) Had problems with family or friends that were probably caused by using the substance and continued to use the substance even though you thought the substance use caused these problems.

To be defined as having clinical substance dependence, respondents must have met three or more of the following criteria:[5]

(1) Spent a great deal of time over a period of a month getting, using or getting over the effects of the substance.

(2) Used the substance more often than intended or was unable to keep set limits on the substance use.

(3) Needed to use the substance more than before to get desired effects or noticed that the same amount of substance use had less effect than before.

(4) Inability to cut down or stop using the substance every time tried or wanted to.

(5) Continued to use the substance even though it was causing problems with emotions, nerves, mental health or physical problems.

(6) The substance use reduced or eliminated involvement or participation in important activities.

For marijuana, inhalants, hallucinogens and tranquilizers, a respondent was defined as having a drug dependence if he or she met three or more of these six standard dependence criteria. A seventh withdrawal criterion[*] was added for alcohol, pain relievers, cocaine, heroin, sedatives and stimulants. A respondent was defined as having dependence on these substances if he or she met three or more of the seven dependence criteria.

The 2009 National Survey on Drug Use and Health (NSDUH) uses the *Nicotine Dependence Syndrome Scale* (NDSS)[6] to determine nicotine dependence. The NDSS was designed to measure nicotine dependence in a comprehensive way; it measures five dimensions of nicotine dependence based on symptoms and characteristics outlined in the DSM-IV, including craving and withdrawal (drive), preference for smoking over other activities (priority), decreased response to the effects of smoking (tolerance), patterns of tobacco use (stereotypy) and smoking at a regular rate (continuity).[7] The NDSS was designed for adult smokers; although an adolescent version of the NDSS has been developed,[8] NSDUH used the adult version.

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[*] The withdrawal criterion is defined by a respondent reporting having experienced a certain number of withdrawal symptoms that vary by substance (e.g., having trouble sleeping, cramps, hands tremble).

The 2009 NSDUH contains the following 19 NDSS questions (responses to each question are measured on a scale of 1-5):[9]

1. Smoking drive (compulsion to smoke driven by nicotine craving and withdrawal):

(1) After not smoking for a while, you need to smoke in order to feel less restless and irritable.
(2) When you don't smoke for a few hours, you start to crave cigarettes.
(3) You sometimes have strong cravings for a cigarette where it feels like you're in the grip of a force you can't control.
(4) You feel a sense of control over your smoking--that is, you can "take it or leave it" at any time.
(5) You sometimes worry that you will run out of cigarettes.

2. Nicotine tolerance:

(1) Since you started smoking, the amount you smoke has increased.
(2) Compared to when you first started smoking, you need to smoke a lot more now in order to be satisfied.
(3) Compared to when you first started smoking, you can smoke much, much more now before you start to feel anything.

3. Continuous smoking:

(1) You smoke cigarettes fairly regularly throughout the day.
(2) You smoke about the same amount on weekends as on weekdays.
(3) You smoke just about the same number of cigarettes from day to day.
(4) It's hard to say how many cigarettes you smoke per day because the number often changes.
(5) It's normal for you to smoke several cigarettes in an hour, then not have another one until hours later.

4. Behavioral priority (preferring smoking over other reinforcing activities):

(1) You tend to avoid places that don't allow smoking, even if you would otherwise enjoy them.
(2) There are times when you choose not to be around your friends who don't smoke because they won't like it if you smoke.
(3) Even if you're traveling a long distance, you'd rather not travel by airplane because you wouldn't be allowed to smoke.

5. Stereotypy (fixed patterns of smoking):

(1) Do you have any friends who do not smoke cigarettes?
(2) The number of cigarettes you smoke per day is often influenced by other things--how you're feeling, or what you're doing, for example.
(3) Your smoking is not affected much by other things. For example, you smoke about the same amount whether you're relaxing or working, happy or sad, alone or with others.

To be defined as meeting the NDSS criteria for nicotine dependence, the NSDUH respondent must:

- Have smoked at least one cigarette in the past 30 days, and
- Score an average of greater than or equal to 2.75 across 17 of the 19 NDSS questions (the two questions regarding nonsmoking friends were excluded due to higher item non response rates).

Studies with samples of adolescents have shown that the NDSS is valid and reliable,[10] that NDSS measures correlated with cotinine* levels among participants[11] and that the NDSS tapped levels of nicotine dependence below clinical thresholds.[12] However, NDSS may fail to detect

* The primary metabolized form of nicotine, it is a biologic indicator of recent exposure to nicotine.

dependence in some adolescents, including those who do not experience multiple dimensions of dependence.[13]

NSDUH also included a single question from the *Fagerstrom Test of Nicotine Dependence* (FTND)[14] regarding how soon after waking smokers have their first cigarette.[15] Using this one question test, an NSDUH respondent who reported smoking cigarettes in the past month was defined as nicotine dependent if the first cigarette smoked was within 30 minutes of waking up on the days he or she smoked. Few (3.4 percent) high school students met this test. CASA did not include responses to the FTND question when determining prevalence of nicotine dependence in the NDSUH sample because we cannot confirm the validity of using this single question to determine dependence among adolescents.

Youth Risk Behavior Surveillance System

The *Youth Risk Behavior Survey* (YRBS), administered by the Centers for Disease Control and Prevention, is a nationally representative school-based survey that monitors six categories of health-risk behaviors among public and private high school students. Reported rates of substance use are higher than in the NSDUH because the survey is administered confidentially at school rather than in the respondents' homes. The sample, however, does not include young people who are absent from school when the surveys are conducted or who have dropped out of school. The survey provides data from 1991-2009.

CASA analyzed data from the YRBS to assess lifetime and current use of tobacco, alcohol, marijuana and other illicit drugs; trend data; and the relationships between substance use and other risking-taking behaviors. The YRBS does not provide data on the full range of illicit drugs measured by the NSDUH, nor does it measure symptoms of substance use disorders. Misuse of controlled prescription drugs was not addressed until the 2009 study when it included one question concerning lifetime use of any prescription drug without a doctor's permission.

Monitoring the Future

The *Monitoring the Future* study (MTF), funded by the National Institutes of Health's National Institute on Drug Abuse (NIDA), is an ongoing survey conducted by the University of Michigan's Institute for Social Research. It assesses the behaviors, attitudes and values of American secondary school students, college students and young adults. Each year, approximately 50,000 8th, 10th and 12th grade students are surveyed. The survey is administered in schools, but does not include young people who are absent from school when the surveys are conducted or who have dropped out of school. The MTF provides data on 12th graders since 1975, and on 8th and 10th graders since 1991.

CASA examined trend data from the MTF to identify changes in rates of substance use and substance-related attitudinal shifts over time within demographics categories.

Treatment Episode Data Set

The *Treatment Episode Data Set* (TEDS), sponsored by the U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration (SAMHSA), provides information on the demographic and substance use characteristics of the approximately 1.8 million annual admissions to addiction treatment programs in facilities that report to individual state administrative data systems. TEDS does not include all treatment admissions. Rather, it includes admissions to facilities that are licensed or certified by the state substance abuse agency to provide treatment (or are administratively tracked by the agency for other reasons). Facilities reporting TEDS data are generally those that receive state alcohol and/or other drug agency funds (including Federal Block Grant funds) for the provision of addiction treatment services. TEDS is an admission-based system and TEDS admissions do not represent individuals. Thus, an individual admitted to treatment twice within a calendar year would be counted as two admissions.

CASA analyzed TEDS admissions data for the years 2001 through 2008 to characterize the treatment path of adolescents. Sources of referral, type of treatment, identified primary substance problem and use of various substances were examined. CASA also analyzed TEDS 2007 discharge data to assess the completion and drop out rates of adolescent treatment admissions.

Drug Abuse Warning Network

The *Drug Abuse Warning Network* (DAWN) public health surveillance system, conducted by the U.S. Department of Health and Human Services' Substance Abuse and Mental Health Services Administration (SAMHSA), monitors drug-related emergency department (ED) visits from a national sample of general, non-Federal hospitals that operate 24-hour EDs with oversampling of hospitals in selected metropolitan areas. In participating hospitals, ED medical records are reviewed retrospectively to identify visits related to recent substance use. Illegal drugs, prescription and over-the-counter pharmaceuticals, dietary supplements and non-pharmaceutical inhalants are included in the analysis. Alcohol, when present in combination with another drug, is included as well. When alcohol is the only substance implicated in a visit, it is included for patients younger than age 21.

The Fatality Analysis Reporting System

The National Center for Statistics and Analysis (NCSA) of the National Highway Traffic Safety Administration (NHTSA) conducts the *Fatality Analysis Reporting System* (FARS), a nationwide census providing yearly data regarding fatal injuries suffered in motor vehicle traffic crashes. FARS contains data derived from a census of fatal traffic crashes within the 50 States, the District of Columbia and Puerto Rico. The results of alcohol and other drug tests are recorded, as well as police officers' determination of alcohol and/or other drug involvement. The FARS database contains descriptions, in standardized formats, of each fatal crash reported. CASA analyzed FARS data to examine the role of alcohol and other drug use in fatal motor vehicle crashes involving adolescent drivers.

The National Youth Tobacco Survey

The *National Youth Tobacco Survey* (NYTS), administered by the Centers for Disease Control and Prevention, was designed to provide national data on indicators key to the design, implementation and evaluation of comprehensive tobacco prevention and control programs. The survey is administered to adolescents in grades 6 through 12 and assesses exposure to tobacco advertisements, exposure to secondhand smoke, access to tobacco products and tobacco use. CASA analyzed the NYTS to explore the extent to which physicians intervene with adolescent patients who smoke.

Key Informant Interviews

The key informant interviews were conducted between July and October of 2010. Forty-nine interviews were completed (19 by phone, 30 via e-mail). Participants were identified through a literature review, past CASA research, referrals from CASA's National Advisory Commission that was convened for this study, and through a snowball sample, where respondents recommended other qualified interviewees.

The Key Informant Interview guide included the following questions:

- Q1. Despite years of prevention efforts, many high school-aged teens still engage in substance use. What do you think are the underlying reasons for why teens use these substances?

- Q2. What is the best way to educate and convince parents to prevent teens from using these substances?

- Q3. Do you think that teens' immersion in technology (in the form of e-mail, texting, the Internet and social networking sites) has any significant impact on their substance use attitudes and behaviors? If so, please explain how.

- Q4. What role should schools play in preventing and reducing adolescent substance use?

- Q5. Do you think there is anything we can learn from successful prevention and public health initiatives in other areas that might be helpful if applied to substance use prevention? (If Yes, what are they?)

- Q6. What do you think are the three most important steps this nation could take to prevent teen substance use?

- Q7. As you may know, there is a large body of science documenting that addiction is a disease that most often begins in adolescence, and that teen use of tobacco, alcohol and other drugs threatens public health and safety. However, this information does not seem to be well understood by the public. How do you think we can best get this health message across to the general public in a way that changes behavior?

- Q8. Is there anything that you would like to add or that you think is important for us to address in our study?

- Q9. Is there someone else that you would strongly recommend we interview to help inform our work?

- Q10. We are examining the main national data sets with information on teen substance use and related behaviors. Is there a regional or state specific data source that you think would be useful for us to look at that might give us added insight on this topic or ideas for how to address it?

The responses were analyzed by CASA's staff to identify key themes and inform subsequent research efforts.

Focus Groups

To better understand the factors driving substance use among high school students, the consequences of such use and what can be done to prevent and reduce substance use among high school-age students, CASA conducted online focus groups with high school students, parents of high school students and high school personnel.

The recruiting and screening materials, consent protocols, focus group discussion guides and methodology were approved by CASA's Institutional Review Board (IRB) which required both affirmative parental or guardian consent and participants' assent for high school students' participation. The recruitment materials, the consent forms and focus groups were in English only.

Knowledge Networks (KN), a survey research firm specializing in conducting online surveys, was the subcontractor selected to recruit participants and conduct the online focus groups. KN is experienced in conducting focus groups and other forms of qualitative research with adolescents and adults. The focus group discussions were moderated by Claire Heffernan of Heffernan Market Research.

Five online focus groups were conducted from August 31 to September 2, 2010. Two groups were conducted with high school students and two with parents of high school students. One group was conducted with high school teachers and administrators. Each online focus group lasted approximately one hour. Participants included:

- Fourteen 9th and 10th graders;

- Seven 11th and 12th graders;

- Nine parents of 9th and 10th graders;

- Thirteen parents of 11th and 12th graders; and

- Fifteen high school personnel (14 teachers and one administrator).

The discussion topics included assessing participants' views regarding the prevalence, risks and social acceptability of adolescent substance use, and what parents and schools are and should be doing to prevent adolescent substance use. Participants' responses were examined and used to inform the design of CASA's national surveys conducted for this study.

National Surveys

To fill in the gaps in knowledge that CASA identified in the literature review, analyses of national datasets and focus groups, CASA conducted nationally representative surveys of high school students, parents of high school students and high school teachers and other school personnel.

The recruiting and screening materials, consent protocols, survey instruments and methodology were approved by CASA's Institutional Review Board (IRB) which required both affirmative parental or guardian consent and participants' assent for all high school student respondents. The recruitment materials, the consent forms and the surveys were in English only.

Knowledge Networks (KN) was selected to recruit participants and conduct the surveys.

The surveys were conducted between November 19, 2010 and December 2, 2010. The survey respondents included:

- A nationally representative sample of 1,000 adolescents ages 13 to 18 currently enrolled in high school. All students were recruited through their parents.

- A nationally representative sample of 1,000 parents of current high school students. Parent interviews were conducted with a sub-sample of parents (75 percent) whose teens had participated in the survey.

- A sample of 500 current high school teachers and other high school personnel, using both a KN Panel sample and e-Rewards sample (an opt-in sample provider). Inclusion criteria included being a current high school teacher, principal, assistant principal, coach, social worker, student assistance counselor, substance abuse counselor or guidance counselor who dealt with substance-related issues.

Sample Recruitment

KN recruited respondents from the Web-enabled KnowledgePanel®, a probability-based panel designed to be representative of the U.S. population. The Panel was created by randomly selecting households using two methodologies: random-digit dial (RDD) and address-based sampling (ABS). ABS involves probability-based sampling of addresses from the U.S. Postal Service's Delivery Sequence File. Randomly selected addresses are invited, through a series of mailings and, in some cases, follow up calls, to join KnowledgePanel®. KN also utilizes list-assisted RDD sampling techniques based on a sample frame of the U.S. residential landline telephone universe, with an over-sampling of telephone exchanges that have high concentrations of black and Hispanic households based on Census data. The 30 percent of numbers for which a valid postal address cannot be matched to the number are under-sampled. Advance letters are sent to households for which a valid address is available; subsequently, all of the randomly selected numbers are called and invited to participate in KnowledgePanel®. Numbers are called for 90 days, with at least 14 attempts made for non-answers and numbers known to be associated with a household.

In order to assure that the research panel is nationally representative, individuals are selected independently of Internet access and computer ownership, and individuals who attempt to self-select or volunteer to join the Panel are excluded. Individuals who are randomly selected and consent to become members of the KN research Panel are provided with a laptop computer and free Internet access if they do not already have a personal computer and Internet access in their homes. KN administers a profile survey to each new Panel

member to collect basic demographic information (including the ages of all other individuals living in the member's household) which is used for eligibility and weighting purposes and is attached to future survey results. Once the profile is complete, the member is considered activated.

Once a week, activated members are invited, based on eligibility, to participate in a KN client survey. Participation is completely voluntary and Panel members are free to decide whether to participate in any given survey; however, if a member does not participate in a number of consecutive surveys, KN may remove that individual from the Panel. Panel members are offered one of two incentives to serve on the Panel: those without a computer and Internet connection are provided with a laptop and free Internet access, while those who have their own computer and Internet access earn reward points for participation that can be converted into cash (approximately $4 to $6 per month).

The sample of current high school teachers and other high school personnel (e.g., principals, guidance counselors, etc.) was drawn from both the KnowledgePanel® sample and the e-Rewards sample (an online convenience sample provider; this additional sample source will be referred to as "off-panel").

Participation and Response Rates

For both the parent and students surveys, 5,291 screening notifications were sent to parents with children who were in the KnowledgePanel®. Of those, 2,929 (55.4 percent) parents responded; 1,776 (60.6 percent of respondents, 33.5 percent of the total) met the inclusion criteria. Finally, 1,361 parents (25.7 percent of the total, 46.5 percent of the responders or 76.6 percent of those who met the inclusion criteria) agreed to allow their high school-age teen to participate in the survey. Of this denominator, 1,000 high school-age teens (73.5 percent) completed the student survey (although the portal was closed after the sample size reached 1,000) and 1,019 (74.9 percent) parents completed the parent survey.

For the in-panel teacher survey, 2,117 notifications were sent to the teacher pool and 1,478 (69.8 percent) responded. Of those, 215 (14.5 percent of responders, 10.2 percent of those notified) met the inclusion criteria. In the Opt-In (Off-Panel) sample, 490 completed the survey and 298 (60.8 percent) met the inclusion criteria.

Weighting

Three different weights are applied to the data by the statistical group at KN. The design for the KN Panel recruitment begins as an equal probability sample, with a base weight adjustment applied to compensate for purposeful under- or over-sampling to allow for better estimates within subgroups or hard to reach populations. A second weight was then applied based upon the most recent (i.e., September 2010) Current Population Survey (CPS) to reduce effects of non-response, non-coverage bias. A final weight was applied post study sampling to reduce bias due to non-response. These final weights were applied to the samples of high school students, parents of high school students and teachers based upon known population characteristics. The high school principals and other personnel sample was not weighted due to the absence of known demographic benchmarks. Because the teacher sample was weighted and the high school principals and other school personnel samples were not, data from these samples could not be combined. All weights were constructed so that the final weighted sample size was equal to the original sample size.

Appendix B
2010 CASA Survey of Parents of High School Students Weighted Frequencies

PARENT CONSENT

Recently, with your permission, your child, [XNAME], participated in a survey on behalf of The National Center on Addiction and Substance Abuse, a policy research center at Columbia University and now we would like to ask you to complete a follow-up survey.

Knowledge Networks, a research firm, and The National Center on Addiction and Substance Abuse at Columbia University are conducting a nationwide research project about the attitudes and behaviors of high school students as they relate to smoking, drinking and other drug use. As part of this project we are surveying parents of high school students. We are interested in your thoughts and experiences as they relate to substance use and related issues among high school students, including how best to address the problem.

If you choose to participate, we will ask you questions about your attitudes and beliefs about your teen's health and future; about tobacco, alcohol, marijuana and other drug use; and about the role that parents, peers, the media, and schools play in preventing teen substance use. Your responses will be combined with the responses of parents across the country. No identifying information about you will be released to anyone. **We respect your privacy**, and want to assure you that your responses are confidential. This survey should take around 20 minutes to complete.

If you are willing to participate in this important study, please click CONTINUE.

PARENT SURVEY

Remember, please keep [XNAME] in mind when responding to the questions throughout this survey.

A1. What is the highest level of education you expect [XNAME] to achieve?

- 3.5 Some high school
- 9.1 High school diploma
- 14.1 Vocational/technical degree or certificate/associates degree
- 42.0 College degree (bachelors)
- 31.0 Graduate school/professional degree (masters, PhD, doctor/MD, lawyer/JD)
- 0.2 Refused/No response

A2. Which of the following medical conditions do you think [XNAME] is at risk for developing during his/her lifetime? [Please check all that apply]

- 27.2 Diabetes
- 25.0 Cancer
- 20.6 Heart disease
- 22.2 Obesity
- 1.9 Anorexia/bulimia
- 34.7 Depression
- 8.4 Addiction to nicotine/smoking

13.5 Addiction to alcohol or other drugs
1.9 HIV/AIDS
10.4 Sexually transmitted infection (for example, gonorrhea, genital warts, herpes or syphilis)
7.7 Refused/No response

A3. How important is it to you that [XNAME] does the following health-related things?
[Scale: 1=Not at all important; 2=A little important; 3=Somewhat important; 4=Very important]

Get regular exercise
0.2 Not at all important
3.2 A little important
21.1 Somewhat important
75.5 Very important
0.1 Refused/No response

Eat balanced meals (e.g., fruits, vegetables, limited sugar)
0.3 Not at all important
4.1 A little important
22.6 Somewhat important
73.0 Very important
0.1 Refused/No response

Take vitamins/nutritional supplements
9.3 Not at all important
23.3 A little important
32.2 Somewhat important
35.1 Very important
0.1 Refused/No response

Get routine medical check-ups
1.3 Not at all important
4.1 A little important
21.5 Somewhat important
73.0 Very important
0.1 Refused/No response

Protect himself/herself from sexually transmitted infections/diseases
1.1 Not at all important
1.5 A little important
3.8 Somewhat important
93.4 Very important
0.1 Refused/No response

Avoid [getting pregnant/getting someone pregnant]
1.7 Not at all important
1.0 A little important
4.2 Somewhat important
93.0 Very important
0.1 Refused/No response

Take good care of his/her teeth
0.0 Not at all important
2.0 A little important
9.3 Somewhat important
88.6 Very important
0.1 Refused/No response

Be informed about what’s good/not good for his/her body

0.2 Not at all important
2.0 A little important
18.0 Somewhat important
79.6 Very important
0.1 Refused/No response

A4. To what extent is each of the following a source of stress or anxiety for your high-school-age child? [Scale: 1=Not at all stressful; 2=A little stressful; 3=Somewhat stressful; 4=Very stressful]

School work
8.4 Not at all stressful
24.7 A little stressful
42.2 Somewhat stressful
24.7 Very stressful
0.1 Refused/No response

Extracurricular activities
29.0 Not at all stressful
33.8 A little stressful
26.1 Somewhat stressful
11.0 Very stressful
0.1 Refused/No response

Social life/friends
21.7 Not at all stressful
33.6 A little stressful
32.2 Somewhat stressful
12.3 Very stressful
0.3 Refused/No response

Dating/sex
23.4 Not at all stressful
35.1 A little stressful
26.0 Somewhat stressful
15.4 Very stressful
0.1 Refused/No response

Money pressures
23.4 Not at all stressful
39.7 A little stressful
24.8 Somewhat stressful
11.9 Very stressful
0.2 Refused/No response

Family issues
22.2 Not at all stressful
39.7 A little stressful
25.6 Somewhat stressful
12.5 Very stressful
0.1 Refused/No response

Future/college plans
9.9 Not at all stressful
31.4 A little stressful
39.6 Somewhat stressful
18.9 Very stressful
0.2 Refused/No response
Appearance/how he or she looks
16.2 Not at all stressful
32.5 A little stressful
32.5 Somewhat stressful
18.7 Very stressful
0.1 Refused/No response
Getting picked on/being bullied
45.4 Not at all stressful
30.1 A little stressful
15.9 Somewhat stressful
8.5 Very stressful
0.1 Refused/No response
Pressure to smoke
60.9 Not at all stressful
18.1 A little stressful
12.7 Somewhat stressful
8.1 Very stressful
0.1 Refused/No response
Pressure to drink
43.4 Not at all stressful
29.6 A little stressful
16.7 Somewhat stressful
10.3 Very stressful
0.1 Refused/No response
Pressure to use other drugs
48.3 Not at all stressful
27.2 A little stressful
15.2 Somewhat stressful
9.1 Very stressful
0.1 Refused/No response
Other (please specify)
30.3 Not at all stressful
1.8 A little stressful
3.9 Somewhat stressful
1.9 Very stressful
0.1 Refused/No response

A5. Which of the following adults in [XNAME]'s life does he/she feel comfortable talking to about personal issues or personal problems? [Please check all that apply]

79.8 Mother
46.6 Father
18.0 Grandparent
27.7 Other relative (please specify)
8.8 Teacher
10.0 School counselor
7.9 Coach
1.0 Other adult at school (please specify)
20.8 Family friend
10.8 Religious leader (such as pastor, rabbi, minister, imam)
8.6 Therapist or other health professional
3.4 Other (please specify)
2.4 There are no adults in [XNAME]'s life that he/she talks to about personal issues or personal problems

A6. Of all the people you said "yes" about in the previous question, which is the one that your child is the *most likely* to talk to about a personal issue or personal problem? [Please check all that apply][*]

59.8 Mother
15.1 Father
2.9 Grandparent
11.3 Other relative (please specify)
0.3 Teacher
1.0 School counselor
0.6 Coach
0.1 Other adult at school (please specify)
5.0 Family friend
0.8 Religious leader (such as pastor, rabbi, minister, imam)
1.6 Therapist or other health professional
1.6 Other (please specify)
0.1 Refused/No response

A7. Please indicate whether each of the following statements is true about your high-school-age child. [Please check all that apply]

51.5 My child is very self confident
9.6 My child often feels alone or isolated
56.7 My child has specific goals for the future
33.9 My child often feels overwhelmed by all he/she has to do
10.5 My child often feels very sad or depressed
18.8 My child often feels very anxious
62.6 My child feels it is very important to get good grades
45.7 My child feels a strong connection to school
16.5 My child wishes that I could spend more time with him/her
72.2 My child has some very good friends
65.3 My child feels hopeful about the future
75.8 My child likes himself/herself

[*] Question asked only of respondents who selected two or more responses to the previous question. (n=994)

71.2 My child believes he/she is able to achieve his/her goals

B1A. [SPLIT SAMPLE]
In some states voters have made it legal for people to use marijuana if prescribed by a doctor. Which of the following best reflects your opinion on this matter?
47.9 Doctors should be allowed to prescribe marijuana
14.4 Doctors should not be allowed to prescribe marijuana
17.6 More information about the safety and effectiveness of marijuana for medical use is needed before doctors should be allowed to prescribe it
20.0 I don't have an opinion on this matter

B1B. All drugs must be reviewed for their safety and effectiveness and approved for medical use by the U.S. Food and Drug Administration (FDA) before they can be prescribed by a doctor; however, in some states voters have bypassed this process and permitted doctors to prescribe marijuana without FDA approval. Which of the following best reflects your opinion on this matter?
30.7 Doctors should be allowed to prescribe marijuana without FDA approval
45.6 Doctors should not be allowed to prescribe marijuana without FDA approval
23.7 I don't have an opinion on this matter

B2. Which of the following best describes your opinion of what marijuana is? Is marijuana a…[Please check all that apply]
70.0 Harmful drug
20.8 Harmless drug
21.0 Medicine/prescription drug

B3. Who, if anyone, should be allowed to use marijuana legally?
23.5 No one, its use should be illegal for everyone
49.4 Only patients who have been prescribed marijuana by a doctor
21.1 All adults over the age of 21
3.8 All adults over the age of 18
0.6 Any one who wants to use it, regardless of age
1.5 Other (please specify)
0.1 Refused/No response

B4. Which of the following do you think are the main factors involved in developing an addiction to tobacco/nicotine? Please select *a maximum* of two main factors.
20.2 A physical health problem
15.5 A mental health problem
8.1 A genetic problem
27.9 A behavioral problem
4.9 A moral problem
2.6 A spiritual problem
44.8 A reliance on the substance as an emotional crutch in response to negative life events
48.6 A problem of willpower or self control
0.3 Refused/No response

B5. Which of the following do you think are the main factors involved in developing an addiction to alcohol? Please select *a maximum* of two main factors.

12.7 A physical health problem
17.3 A mental health problem
23.2 A genetic problem
26.7 A behavioral problem
5.3 A moral problem
2.9 A spiritual problem
52.0 A reliance on the substance as an emotional crutch in response to negative life events
39.3 A problem of willpower or self control
0.3 Refused/No response

B6. Which of the following do you think are the main factors involved in developing an addiction to prescription/illegal drugs? Please select *a maximum* of two main factors.

23.7 A physical health problem
21.4 A mental health problem
8.5 A genetic problem
26.3 A behavioral problem
5.2 A moral problem
3.2 A spiritual problem
49.7 A reliance on the substance as an emotional crutch in response to negative life events
40.2 A problem of willpower or self control
0.3 Refused/No response

B7. To what extent is each of the following behaviors dangerous for your high-school-age child? [Scale: 1=Not at all dangerous; 2=A little dangerous; 3=Somewhat dangerous; 4=Very dangerous]

Smoking cigarettes
5.1 Not at all dangerous
6.6 A little dangerous
27.9 Somewhat dangerous
60.2 Very dangerous
0.2 Refused/No response

Drinking 4 or 5 alcoholic drinks/shots within a few hours (binge drinking)
5.4 Not at all dangerous
2.5 A little dangerous
7.9 Somewhat dangerous
84.0 Very dangerous
0.2 Refused/No response

Getting drunk
3.5 Not at all dangerous
7.1 A little dangerous
20.1 Somewhat dangerous
69.0 Very dangerous
0.2 Refused/No response

Smoking marijuana
6.8 Not at all dangerous
13.0 A little dangerous
21.0 Somewhat dangerous
59.1 Very dangerous
0.2 Refused/No response

Not wearing a seat belt (while riding in a car)
3.6 Not at all dangerous
4.9 A little dangerous
25.2 Somewhat dangerous
66.2 Very dangerous
0.2 Refused/No response

Using (inhaling/breathing in) inhalants (like glue, aerosol sprays)
6.2 Not at all dangerous
1.5 A little dangerous
4.6 Somewhat dangerous
87.5 Very dangerous
0.2 Refused/No response

Taking prescription pain medications (like Vicodin or OxyContin) that were not prescribed for him/her, or in a way that wasn't prescribed, to get high
5.5 Not at all dangerous
2.1 A little dangerous
5.1 Somewhat dangerous
87.0 Very dangerous
0.2 Refused/No response

Taking prescription tranquilizers (like Xanax or Valium) that were not prescribed for him/her, or in a way that wasn't prescribed, to relax or relieve stress
5.3 Not at all dangerous
3.1 A little dangerous
5.4 Somewhat dangerous
85.9 Very dangerous
0.2 Refused/No response

Having unprotected sex
3.3 Not at all dangerous
4.2 A little dangerous
11.5 Somewhat dangerous
80.7 Very dangerous
0.2 Refused/No response

Mixing alcohol with an energy drink (like Red Bull)
5.8 Not at all dangerous
5.2 A little dangerous
10.8 Somewhat dangerous
78.0 Very dangerous
0.2 Refused/No response

Using other illicit drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
5.5 Not at all dangerous
1.6 A little dangerous
3.4 Somewhat dangerous
89.3 Very dangerous
0.2 Refused/No response

Driving while drunk
5.6 Not at all dangerous
1.4 A little dangerous
3.1 Somewhat dangerous
89.7 Very dangerous
0.2 Refused/No response

Driving while high on marijuana
5.8 Not at all dangerous
2.5 A little dangerous
10.5 Somewhat dangerous
81.0 Very dangerous
0.2 Refused/No response

Driving while high on prescription drugs
5.5 Not at all dangerous
1.6 A little dangerous
6.0 Somewhat dangerous
86.7 Very dangerous
0.2 Refused/No response

Mixing alcohol with prescription drugs (like Valium, Xanax, Vicodin)
5.6 Not at all dangerous
1.7 A little dangerous
4.0 Somewhat dangerous
88.4 Very dangerous
0.2 Refused/No response

Taking prescription stimulants (like Adderall, Ritalin) that were not prescribed for him/her, or in a way that wasn't prescribed, to be more awake or focused
5.6 Not at all dangerous
3.1 A little dangerous
7.8 Somewhat dangerous
82.3 Very dangerous
0.1 Refused/No response

Getting in a car with a stranger
5.1 Not at all dangerous
2.9 A little dangerous
9.3 Somewhat dangerous
82.5 Very dangerous
0.2 Refused/No response

B8. How likely are each of the following things to happen to [XNAME] if he/she binge drinks about once a month? (Binge drinking for a girl is drinking four or more alcoholic drinks within a few hours, for a boy it's drinking five or more alcoholic drinks within a few hours.)
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Poor academic performance
- 8.8 Not at all likely
- 12.5 A little likely
- 25.2 Somewhat likely
- 53.3 Very likely
- 0.1 Refused/No response

Overdose/death
- 14.6 Not at all likely
- 21.7 little likely
- 29.1 Somewhat likely
- 34.3 Very likely
- 0.3 Refused/No response

Have an accident (e.g., fall, drown)
- 7.4 Not at all likely
- 11.5 A little likely
- 26.7 Somewhat likely
- 54.0 Very likely
- 0.4 Refused/No response

Drive drunk/ride in a car with a drunk driver
- 12.3 Not at all likely
- 10.2 A little likely
- 27.4 Somewhat likely
- 49.9 Very likely
- 0.3 Refused/No response

Get into a car accident if driving drunk
- 11.7 Not at all likely
- 8.3 A little likely
- 19.3 Somewhat likely
- 60.5 Very likely
- 0.3 Refused/No response

Damage brain cells
- 9.1 Not at all likely
- 10.4 A little likely
- 24.2 Somewhat likely
- 56.0 Very likely
- 0.3 Refused/No response

Increase chances of alcohol addiction
- 9.4 Not at all likely
- 11.1 A little likely
- 29.2 Somewhat likely
- 50.2 Very likely
- 0.1 Refused/No response

Get into a fight
16.5 Not at all likely
24.0 A little likely
27.7 Somewhat likely
31.5 Very likely
0.3 Refused/No response

Sexually assault someone or be sexually assaulted
23.1 Not at all likely
18.7 A little likely
24.8 Somewhat likely
33.2 Very likely
0.3 Refused/No response

Have legal problems (e.g., get arrested)
10.7 Not at all likely
13.0 A little likely
29.7 Somewhat likely
46.3 Very likely
0.3 Refused/No response

Have unprotected sex
10.6 Not at all likely
15.5 A little likely
27.2 Somewhat likely
46.4 Very likely
0.3 Refused/No response

B9. What level of binge drinking do you think can cause damage to your child's brain? (Binge drinking for a girl is drinking four or more alcoholic drinks within a few hours, for a boy it's drinking five or more alcoholic drinks within a few hours.)
26.1 Just about every day
23.3 Just about once a week
10.7 Just about once a month
38.3 Just once
1.6 Binge drinking does not cause brain damage

B10. How likely is each of the following things to happen to [XNAME] if he/she smokes marijuana about once a month?
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Poor academic performance
10.6 Not at all likely
18.6 A little likely
26.3 Somewhat likely
44.4 Very likely
0.1 Refused/No response

Overdose/death
40.8 Not at all likely
24.4 A little likely
15.7 Somewhat likely
19.1 Very likely
0.1 Refused/No response

Have an accident (e.g., fall, drown)
12.9 Not at all likely
27.9 A little likely
27.2 Somewhat likely
31.9 Very likely
0.1 Refused/No response

Drive while high/ride in a car with a driver who is high
10.9 Not at all likely
16.7 A little likely
32.4 Somewhat likely
39.9 Very likely
0.1 Refused/No response

Get into a car accident if driving while high
12.1 Not at all likely
16.6 A little likely
31.6 Somewhat likely
39.6 Very likely
0.1 Refused/No response

Damage brain cells
13.1 Not at all likely
18.1 A little likely
24.1 Somewhat likely
44.6 Very likely
0.1 Refused/No response

Increase chances of drug addiction
14.4 Not at all likely
18.6 A little likely
25.5 Somewhat likely
41.3 Very likely
0.1 Refused/No response

Get into a fight
32.8 Not at all likely
25.2 A little likely
21.7 Somewhat likely
20.2 Very likely
0.1 Refused/No response

Sexually assault someone or be sexually assaulted
34.3 Not at all likely
24.0 A little likely
19.6 Somewhat likely
21.9 Very likely
0.1 Refused/No response

Have legal problems (e.g., get arrested)
13.5 Not at all likely
18.0 A little likely
29.5 Somewhat likely
39.0 Very likely
0.1 Refused/No response

Have unprotected sex
14.3 Not at all likely
25.6 A little likely
31.3 Somewhat likely
28.8 Very likely
0.1 Refused/No response

B11. How likely is each of the following things to happen to your high-school-age child if he/she takes prescription drugs about once a month that were not prescribed for him/her, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused?
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Poor academic performance
7.6 Not at all likely
14.1 A little likely
27.3 Somewhat likely
50.7 Very likely
0.3 Refused/No response

Overdose/death
8.9 Not at all likely
17.7 A little likely
27.0 Somewhat likely
46.1 Very likely
0.3 Refused/No response

Have an accident (e.g., fall, drown)
7.8 Not at all likely
20.5 A little likely
32.2 Somewhat likely
39.2 Very likely
0.3 Refused/No response

Drive while high/ride in a car with a driver who is high
9.6 Not at all likely
15.8 A little likely
31.3 Somewhat likely
43.1 Very likely
0.3 Refused/No response

Get into a car accident if driving while high
9.2 Not at all likely
13.9 A little likely
29.4 Somewhat likely
46.9 Very likely
0.5 Refused/No response

Damage brain cells
7.2 Not at all likely
14.9 A little likely
24.8 Somewhat likely
52.8 Very likely
0.3 Refused/No response

Increase chances of drug addiction
6.4 Not at all likely
13.7 A little likely
22.7 Somewhat likely
57.0 Very likely
0.3 Refused/No response

Get into a fight
18.0 Not at all likely
28.6 A little likely
26.3 Somewhat likely
26.8 Very likely
0.3 Refused/No response

Sexually assault someone or be sexually assaulted
24.2 Not at all likely
23.4 A little likely
23.7 Somewhat likely
28.3 Very likely
0.3 Refused/No response

Have legal problems (e.g., get arrested)
9.2 Not at all likely
18.8 A little likely
29.8 Somewhat likely
41.8 Very likely
0.3 Refused/No response

Have unprotected sex
12.1 Not at all likely
22.6 A little likely
30.5 Somewhat likely
34.3 Very likely
0.5 Refused/No response

B12. Does your high-school-age child have any friends who do each of the following? [Please check all that apply]
35.3 Smoke cigarettes
41.7 Drink alcohol
8.4 Drink 4 or 5 alcoholic drinks/shots within a few hours (binge drink)
30.3 Smoke marijuana
5.7 Use other illicit drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
1.3 Use (inhale/breathing in) inhalants (like glue, aerosol sprays)
7.8 Use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax or relieve stress
6.2 Use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to be more awake or focused
50.7 None of my child's friends smoke, drink or use other drugs
0.1 Refused/No response

B12A. You mentioned that your child has friend(s) who use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed in order to be more awake or focused. Do your child's friend(s) use prescription drugs in this way for the following reasons?*
[Please check all that apply]

55.2 To be more awake or focused for school, to study or to do other schoolwork?
41.8 To be more awake or focused for a job, athletic activities or other extracurricular activities?
77.2 To be more awake or focused for partying or having fun?
0.1 Refused/No response

B13. Has [XNAME] or anybody your child's age that he/she personally knows experienced any of the following as a result of *someone else's* use of alcohol or other drugs?
[Please check all that apply]

14.1 Accident
8.6 Injury
3.9 Victim of sexual assault or rape
10.3 Unintended pregnancy
5.3 Physical abuse
12.4 Being harassed, picked on, drawn into a fight
7.8 Sleep disruption
19.6 Disruption of ability to perform schoolwork or other extracurricular activities
31.9 Gotten into trouble with adults/authorities
3.4 Other (please specify)
54.6 No one that my child knows personally, including my child, has experienced these things as a result of someone else's use of alcohol or other drugs
0.3 Refused/No response

B14. Which of the following do you think are the *three main* reasons that some high-school-age children choose *not* to drink or use other drugs?
Please select only three reasons.

52.8 Parents would disapprove
35.3 Parents would punish them
49.3 Their friends don't drink/use other drugs
67.3 Personal values
25.3 Religion/spirituality
18.7 It's against the law
20.3 They are concerned with getting good grades
15.9 Health reasons
1.8 Other (please specify)

B15. How difficult is it for a high school student to choose not to drink alcohol?

19.4 Not at all difficult
32.5 A little difficult
33.6 Somewhat difficult
14.4 Very difficult
0.1 Refused/No response

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* Question asked only of respondents who said that their child has friend(s) who use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed in order to be more awake or focused. (n=64)

B16. Are students who do not drink generally more or less popular?

10.0 More popular
25.3 Less popular
64.5 Popularity isn't related to drinking
0.2 Refused/No response

B17. Thinking about other people's high-school-age-children who you know smoke, drink or use other drugs, do you think their parents *typically* know about it?

33.1 Yes
41.9 No
24.9 I don't know any children who smoke, drink or use other drugs
0.2 Refused/No response

B17B. Why do you think their parents don't know about it?

65.2 They hide it from their parents
14.9 Their parents aren't around much
17.0 Their parents don't notice
2.8 Other (please specify)

B17C. If their parents typically know about it, which of the following statements do you think is true?

46.7 Their parents ignore it or pretend not to notice
23.9 Their parents allow it
29.4 Their parents try to stop them from doing it

B18. How much do you think that each of the following keeps some parents from talking to their high-school-age children about smoking, drinking or using other drugs?
[Please check all that apply]

60.6 Parents don't know how to talk to their high-school-age children about substance use
48.0 Parents are too busy or they don't have enough time
24.1 Parents feel it's hopeless to try to stop their children from using these substances
26.3 Parents don't think it's such a big deal if high-school-age students use these substances
68.9 Parents don't believe their own children would use these substances
3.1 Other (please specify)
0.2 Refused/No response

B19. To what extent are you in favor of the following policy initiatives to reduce substance use among young people?
[Scale: 1=Not at all; 2=A little; 3=Somewhat; 4=Very much]
Increase alcohol taxes to raise the cost of alcohol

30.3 Not at all
17.3 A little
21.0 Somewhat
30.9 Very much
0.4 Refused/No response

Increase cigarette taxes to raise the cost of smoking
23.7 Not at all
13.7 A little
18.9 Somewhat
43.3 Very much
0.4 Refused/No response

Make it illegal for teens to drive if they have even one sip of alcohol/if they have a blood alcohol content (BAC) level above zero
10.4 Not at all
12.7 A little
22.2 Somewhat
54.3 Very much
0.4 Refused/No response

Have a wider ban on tobacco and alcohol advertising
17.5 Not at all
19.6 A little
18.7 Somewhat
43.7 Very much
0.4 Refused/No response

Completely ban depictions of smoking on TV and in movies
25.0 Not at all
21.0 A little
19.4 Somewhat
34.1 Very much
0.4 Refused/No response

Raise income taxes to fund anti-substance use public health campaigns
48.0 Not at all
26.0 A little
14.6 Somewhat
10.9 Very much
0.5 Refused/No response

Make it a crime for parents to serve alcohol to underage people, other than their own children, in their home
10.7 Not at all
7.9 A little
17.9 Somewhat
63.0 Very much
0.4 Refused/No response

C1. To what extent is each of the following statements about you and [XNAME] true?
[Scale: 1=Not at all true; 2=A little true; 3=Somewhat true; 4=Very true]

I know where my child is most or all of the time
1.3 Not at all true
4.8 A little true
25.2 Somewhat true
68.5 Very true
0.3 Refused/No response

I know who my child is with most or all of the time
2.0 Not at all true
5.8 A little true
26.6 Somewhat true
65.3 Very true
0.3 Refused/No response

My child can talk to me about almost anything
1.6 Not at all true
7.2 A little true
25.1 Somewhat true
65.8 Very true
0.3 Refused/No response

I know when my child is feeling sad or down
1.7 Not at all true
10.0 A little true
39.9 Somewhat true
48.1 Very true
0.3 Refused/No response

I explain the rules I set for my child
0.6 Not at all true
3.5 A little true
23.0 Somewhat true
72.7 Very true
0.3 Refused/No response

I pretty much let my child do what he/she wants to do
46.7 Not at all true
31.9 A little true
16.4 Somewhat true
4.8 Very true
0.3 Refused/No response

I expect my child to follow the rules I set for him/her
1.0 Not at all true
2.4 A little true
18.4 Somewhat true
77.9 Very true
0.3 Refused/No response

My child knows I love him/her no matter what
0.7 Not at all true
1.8 A little true
10.0 Somewhat true
87.2 Very true
0.3 Refused/No response

I am not really involved in my child's life
82.6 Not at all true
7.5 A little true
4.4 Somewhat true
5.1 Very true
0.4 Refused/No response

C2. What are the *top three* concerns you have when it comes to [XNAME]? I am most concerned

about my child's….
Please write a '1' next to your greatest concern, a '2' next to your second greatest concern and a '3' next to your third greatest concern.

52.4 Getting good grades
42.5 Getting into college
14.0 Having safe sex
22.8 Abstaining from sex
8.3 Not smoking cigarettes
16.6 Not drinking alcohol
10.2 Not using marijuana
22.9 Not using other illicit drugs
6.1 Not using prescription drugs that were not prescribed for him/her, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused
27.3 Safe driving
19.2 Eating healthy/balanced meals
10.4 Getting regular exercise
6.7 Not being picked on/bullied
1.7 Not picking on/bullying others
20.2 Not suffering from depression or anxiety
7.8 Being safe on the Internet
4.5 Avoiding gangs
5.1 Other (please specify)

C3. How much do you think your concerns, opinions or expectations influence whether or how much [XNAME] smokes cigarettes, drinks alcohol or uses other drugs?

4.9 Not at all
9.2 A little
32.2 Somewhat
53.1 Very much
0.6 Refused/No response

C4. How often do you talk with [XNAME] about each of the following health-related topics?
[Scale: 1=Never; 2=Rarely; 3=Sometimes; 4=Often]

Smoking

5.6 Never
18.6 Rarely
48.1 Sometimes
27.5 Often
0.1 Refused/No response

Sex

4.7 Never
16.8 Rarely
44.1 Sometimes
34.3 Often
0.1 Refused/No response

Drinking alcohol
3.9 Never
14.3 Rarely
48.9 Sometimes
32.7 Often
0.1 Refused/No response

Drinking and driving
6.7 Never
14.7 Rarely
40.0 Sometimes
38.5 Often
0.1 Refused/No response

Eating a healthy or balanced diet
2.7 Never
14.3 Rarely
40.2 Sometimes
42.6 Often
0.1 Refused/No response

Getting regular exercise
3.7 Never
18.6 Rarely
42.2 Sometimes
35.4 Often
0.1 Refused/No response

Using other drugs
7.5 Never
19.6 Rarely
40.1 Sometimes
32.6 Often
0.1 Refused/No response

C5. Which of the following do you do to prevent [XNAME] from smoking, drinking or using other drugs? [Please check all that apply]
13.9 Smell breath/check their eyes when [XNAME] comes home
21.0 Look in room/bag /other personal items for evidence of cigarette, alcohol or other drug use
2.4 Perform drug testing
5.9 Ask his/her friends if [XNAME] is smoking, drinking or using other drug
42.5 Set strict rules about not using
40.0 Impose consequences if he/she does use (like grounding; taking away car keys or cell phone; prohibiting TV, video games or using the Internet for a certain amount of time)
12.4 Make sure [XNAME] is supervised by adults at all time
81.6 Have an open, honest relationship with [XNAME]
76.7 Be actively engaged in [XNAME]'s life
73.1 Set a good example/be a good role model
70.1 Explain the negative consequences of smoking, drinking and using other drugs
3.4 Other (please specify)
1.2 I don't think I should try to prevent [XNAME] from smoking, drinking or using other drugs

C6. Which of the following people do you think have the most influence over your child's decision of whether or not to smoke, drink alcohol or use other drugs?
Please select the 3 people who you think have the most influence.

11.1 School personnel
82.8 Parents
75.5 Friends
25.9 Boyfriend/girlfriend
14.1 Religious leaders (such as pastor, rabbi, minister, imam)
1.5 Tobacco/alcohol advertising
3.1 Celebrities
28.3 Siblings
7.4 Other relatives (please specify)
2.9 Other (please specify)
0.1 Refused/No response

C7. Do you permit [XNAME] to:

Smoke cigarettes
1.2 Yes
98.7 No
0.1 Refused/No response

Drink alcohol only on special occasions or for religious ceremonies/rituals
17.8 Yes
82.1 No
0.1 Refused/No response

Drink alcohol recreationally with friends, even without adult supervision
0.6 Yes
99.3 No
0.1 Refused/No response

Drink alcohol recreationally, but only under an adult's supervision
3.9 Yes
95.9 No
0.1 Refused/No response

Smoke marijuana
1.4 Yes
98.4 No
0.2 Refused/No response

Use other illicit drugs
0.4 Yes
99.5 No
0.1 Refused/No response

Use prescription drugs that were not prescribed for him/her, or in a way that wasn't prescribed, to be more awake or focused
0.3 Yes
99.5 No
0.1 Refused/No response

Use prescription drugs that were not prescribed for him/her, or in a way that wasn't prescribed, to get high, relax or relieve stress

0.3 Yes
99.4 No
0.3 Refused/No response

C8. By what age do you think [XNAME] will be able to make mature, responsible decisions about using alcohol?

2.6 13 or younger
6.1 14-15
8.7 16-17
14.5 18
13.6 19-20
54.4 21 or older
0.2 Refused/No response

C9. By what age do you think your child *should* be able to drink alcohol?

0.9 13 or younger
0.1 14-15
0.6 16-17
6.8 18
6.7 19-20
66.6 21 or older
18.3 I do not believe anyone should drink alcohol
0.1 Refused/No response

D1. How concerned do you think your child's high school administration is about each of the following student behaviors?
[Scale: 1=Not at all concerned; 2=A little concerned; 3=Somewhat concerned; 4=Very concerned]

Smoking cigarettes

11.4 Not at all concerned
24.8 A little concerned
31.5 Somewhat concerned
31.9 Very concerned
0.4 Refused/No response

Drinking alcohol

6.8 Not at all concerned
15.3 A little concerned
31.8 Somewhat concerned
45.7 Very concerned
0.4 Refused/No response

Smoking marijuana

7.0 Not at all concerned
14.3 A little concerned
31.5 Somewhat concerned
46.8 Very concerned
0.4 Refused/No response

Using other drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
7.0 Not at all concerned
12.9 A little concerned
25.8 Somewhat concerned
53.9 Very concerned
0.4 Refused/No response

Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax or relieve stress
7.0 Not at all concerned
13.4 A little concerned
28.8 Somewhat concerned
50.4 Very concerned
0.4 Refused/No response

Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to be more awake or focused
7.0 Not at all concerned
14.0 A little concerned
28.7 Somewhat concerned
49.7 Very concerned
0.6 Refused/No response

Sexual activity
11.9 Not at all concerned
25.3 A little concerned
30.6 Somewhat concerned
31.8 Very concerned
0.4 Refused/No response

Unhealthy eating/being overweight
18.3 Not at all concerned
32.3 A little concerned
28.5 Somewhat concerned
20.5 Very concerned
0.4 Refused/No response

D2. What would you say are the *top three* health/safety-related concerns that your child's high school has for the students?
Please write a '1' next to what you think is the greatest concern, a '2' next to the second greatest concern and a '3' next to the third greatest concern.
22.5 Promoting safe sex
18.9 Promoting abstinence from sex
20.9 Preventing smoking cigarettes
45.8 Preventing alcohol use
26.3 Preventing marijuana use
38.6 Preventing other illicit drug use
11.2 Preventing students' use of prescription drugs were not prescribed for them, or in a way that wasn't prescribed
18.8 Promoting safe driving
11.0 Promoting healthy eating/preventing obesity or other eating disorders
10.7 Promoting regular exercise
28.9 Preventing bullying
5.9 Preventing mental health problems such as depression or anxiety

11.5 Promoting Internet safety/privacy
21.9 Preventing gang involvement/violence
4.3 Other (please specify)
0.2 Refused/No response

D3. What do you think should be the *main roles* of your child's high school in preventing student substance use?
Please select *a maximum* of three main roles.
83.8 Education/information for students
21.1 Drug testing/detecting student use
65.0 Informing parents when children are suspected of using
11.0 Screening for health problems including substance use
45.0 Counseling students with symptoms of substance use problems
17.0 Educating parents about the dangers of teen substance use
14.8 Teaching parents how to prevent teen substance use
1.0 Other (please specify)
1.7 My child's school should not be involved in preventing student substance use
0.2 Refused/No response

D4. If your child's high school were to suspect that [XNAME] had a problem with alcohol or other drugs, what would you want the school to do about it?
[Please check all that apply]
96.3 Inform me (child's parents)
43.6 Require my child to meet with a school counselor
36.1 Refer my child to a professional counseling/treatment program
13.2 Refer my child to a health care provider
13.0 Suspend my child from school
2.5 Expel my child from school
4.9 Transfer my child to a school that specializes in students with alcohol or other drug problems
1.1 Other (please specify)
0.6 My child's school should not do anything about it
0.2 Refused/No response

D5. How effective do you think the high school's policies (rules and consequences) about student smoking, drinking or using other drugs are in preventing students from doing these things *at school or during school hours*?
9.0 Not at all
20.0 A little
35.7 Somewhat
29.9 Very
4.3 I don't know what my child's school's rules are
0.9 My child's school doesn't have rules about student smoking, drinking or using other drugs
0.3 Refused/No response

D6. How effective do you think are the high school's substance use prevention programs are in affecting [XNAME]'s decisions about whether or not to smoke, drink or use other drugs?

11.3 Not at all
22.2 A little
34.3 Somewhat
22.0 Very
9.2 I don't know what substance use prevention programs my child's school provides
0.8 My child's school doesn't do substance use prevention
0.2 Refused/No response

D7. Do you believe that a high school can prevent or reduce student substance use?

65.2 Yes
34.7 No
0.1 Refused/No response

E1. How necessary do you think it is to control or limit [XNAME]'s exposure to messages in the media (TV, music, movies, video games) and on the Internet related to the following topics:
[1=Not at all necessary; 2=A little necessary; 3=Somewhat necessary; 4=Very necessary]

Sex
16.4 Not at all necessary
22.8 A little necessary
31.9 Somewhat necessary
28.8 Very necessary
0.1 Refused/No response

Smoking
26.0 Not at all necessary
23.6 A little necessary
24.8 Somewhat necessary
25.4 Very necessary
0.1 Refused/No response

Violence
19.6 Not at all necessary
22.4 A little necessary
29.4 Somewhat necessary
28.4 Very necessary
0.1 Refused/No response

Drinking
20.1 Not at all necessary
23.9 A little necessary
29.2 Somewhat necessary
26.7 Very necessary
0.1 Refused/No response

Other drug use
18.7 Not at all necessary
20.0 A little necessary
29.6 Somewhat necessary
31.5 Very necessary
0.2 Refused/No response

E2. A number of young celebrities have been in the news recently for being caught drinking while driving

or using other drugs. To what extent do you think that these behaviors by popular celebrities encourage high-school-student-age children to use alcohol or other drugs?

16.0 Not at all
35.1 A little
34.7 Somewhat
14.1 Very much
0.1 Refused/No response

F1. This question is about your use of tobacco products. The answers that people give us about their use are important to this study's success. We know that this information is personal but remember your answers are confidential.

Have you smoked a cigarette in the past 30 days?

18.7 Yes
81.2 No
0.1 Refused/No response

These questions are about drinks of alcoholic beverages. Throughout these questions, by a "drink" we mean a can or bottle of beer, a glass of wine or a wine cooler, a shot of liquor, or a mixed drink with liquor in it. We are not asking about times when you only had a sip or two from a drink.

F2. Do you drink alcohol?

58.9 Yes
41.0 No
0.1 Refused/No response

F2A. On how many days in the past 30 days did you drink one or more drinks of an alcoholic beverage?*

13.6 0 days
66.7 1 to 10 days
12.3 11 to 20 days
7.3 21 days or more
0.3 Can't remember

F3. Have you ever had 5 or more drinks on the same occasion? By "occasion," we mean at the same time or within a couple of hours of each other.

54.7 Yes
45.3 No

F3A. During the past 30 days, on how many days did you have 5 or more alcoholic beverages on the same occasion?†

57.5 0 days
39.3 1 to 10 days
3.1 11 to 20 days
0.0 21 days or more
0.0 Can't remember

---

* Question asked only of respondents who said they have drank alcohol. (n=600)
† Question asked only of respondents who said they have ever had 5 or more drinks on the same occasion. (n=328)

These questions are about your use of marijuana. The answers that people give us about their use are important to this study's success. We know that this information is personal but remember your answers are confidential.

F4. Have you ever, even once, used marijuana or hashish?

50.2 Yes
49.4 No
0.4 Refused/No response

F4A. During the past 30 days, on how many days did you use marijuana or hashish?*

82.8 0 days
9.6 1 to 10 days
0.8 11 to 20 days
5.3 21 days or more
1.3 Can't remember

F5. During the past 12 months, on how many days did you use marijuana or hashish?† (If you cannot remember, your best guess will do)

In the past 12 months, I used marijuana or hashish on _____ days

78.7 0 days
10.6 1 to 12 days
2.9 13 to 50 days
2.0 51 to 100 days
5.7 101 days or more

G1. Which of the following best describes you?

89.7 I was born in the U.S.
10.3 I was born outside the U.S.
0.1 Refused/No response

G1A. How old were you when you came to the U.S. to live?‡

I was _____ years old when I came to the U.S. to live

29.5 0 to 11
16.2 12 to 18
29.5 19 to 25
25.7 26 and above

G2. How important is religion to your family?

10.4 Not at all important
17.1 A little important
27.9 Somewhat important
44.6 Very important
0.1 Refused/No response

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* Question asked only of respondents who said they have ever used marijuana or hashish. (n=511)
† Question asked only of respondents who said they have ever used marijuana or hashish. (n=511)
‡ Question asked only of respondents who said they were born outside the U.S. (n=105)

G3. In a typical month, how often do you attend religious services?

_____ times
36.5 0 times
46.7 1 to 4 times
16.7 5 or more times

G4. What kind of school does [XNAME] attend?
85.5 Public--not including charter schools
5.1 Public charter school
1.1 Private, not affiliated with a particular religion
3.6 Private religious--affiliated with the Roman Catholic Church
2.7 Private religious--affiliated with some religious organization other than the Roman Catholic Church
1.8 Other (please specify)
0.2 Refused/No response

G5. How many students would you say there are in your [XNAME]'s high school?
1.4 Less than 100
6.6 100-199
18.6 200-499
21.2 500-749
14.1 750-999
37.9 1,000 or more
0.2 Refused/No response

G6. Do you, *personally*, know anyone who has had an addiction to alcohol or other drugs?
69.1 Yes
26.5 No
4.3 I don't know
0.1 Refused/No response

Thank you for participating in this nationwide survey conducted by The National Center on Addiction and Substance Abuse at Columbia University.

Appendix C
2010 CASA Survey of High School Students
Weighted Frequencies

PARENT CONSENT

CONSENT 1

Knowledge Networks, a research firm, and The National Center on Addiction and Substance Abuse at Columbia University, a policy research center, are conducting a nationwide survey about the attitudes and behaviors of high school students as they relate to smoking, drinking and other drug use.

For this survey, we'd like to hear from your child**,** [FC]**.** Your child's participation is extremely important to the success of this project.

If you and your child choose to participate, we will ask [FC] questions about his/her attitudes and beliefs about health, education and goals for the future; attitudes and beliefs about teen tobacco, alcohol, marijuana and other drug use; experiences with tobacco, alcohol, marijuana and other drug use; and opinions about the role that peers, the media, family and schools play in preventing teen substance use.

[FC]'s responses will be combined with the responses of teens across the country. No identifying information about your child will be released to anyone. We respect your privacy and the privacy of your child, and want to assure you that [FC]'s responses are confidential; no one, including you, will able to see your child's responses except for the people conducting the study**.** [FC]**'**s survey should take about 20 minutes to complete.

If you give consent for [FC] to participate in this survey, your child will be told about the purpose of the survey and will be asked to read similar information and decide whether or not he/she wants to participate. Your consent is required for [FC] to be able to participate in the survey.

If [FC] participates in this survey, we will send you a separate follow-up survey and ask for your thoughts on the same topics.

If you are willing to allow your child to participate in this important study, please click CONTINUE.

CONSENT 2

Thank you for your participation. At this point, please ask [FC] to come to the computer to learn about and complete this survey. If [FC] is unavailable at this time, you can resume the survey later by clicking the survey link in your email invitation which will return you to this point.

Please remember we'd like to hear [FC]'s unique opinions about each question as much as possible. Please allow your child to have privacy when completing the survey.

TEEN ASSENT

CONSENT 3

Dear [FC],

Thank you in advance for taking the time to complete this survey. We are conducting this survey on behalf of The National Center on Addiction and Substance Abuse, a policy research center at Columbia University, and the research will be used to help us understand teen attitudes and the risks teenagers face today.

If you choose to participate, we will ask about your attitudes and beliefs about health, education and goals for the future; attitudes and beliefs about teen tobacco, alcohol, marijuana and other drug use; experiences with tobacco, alcohol, marijuana, and other drug use; and opinions about the role that peers, the media, family and schools play in preventing teen substance use.

Your responses will be combined with the responses of teens across the country. No identifying information about you will be released to anyone. We respect your privacy and want to assure you that your responses are confidential; no one, including your parents, will have access to your responses except for the people conducting this study. The survey should take about 20 minutes to complete.

If you are willing to participate in this important study, please click CONTINUE.

HIGH SCHOOL TEEN SURVEY

A1. To what extent do you personally think that each of the following behaviors is "cool"? In answering this question, please think about *your own* feelings and attitudes rather than those of other people your age.
[Scale: 1=Not at all cool; 2=A little cool; 3=Somewhat cool; 4=Very cool]

Participating in sports
- 7.0 Not at all cool
- 17.0 A little cool
- 27.3 Somewhat cool
- 48.8 Very cool

Driving or owning a car
- 2.3 Not at all cool
- 8.3 A little cool
- 18.1 Somewhat cool
- 71.3 Very cool

Having a job/working part-time
- 4.8 Not at all cool
- 19.3 A little cool
- 37.6 Somewhat cool
- 38.2 Very cool
- 0.1 Refused/No response

Hooking up/engaging in sexual activity
61.0 Not at all cool
20.9 A little cool
10.8 Somewhat cool
7.3 Very cool
Drinking alcohol
71.6 Not at all cool
18.8 A little cool
7.1 Somewhat cool
2.5 Very cool
Smoking cigarettes
90.4 Not at all cool
5.1 A little cool
3.1 Somewhat cool
1.3 Very cool
0.2 Refused/No response
Having a boy/girl friend
6.2 Not at all cool
22.9 A little cool
38.5 Somewhat cool
32.3 Very cool
0.1 Refused/No response
Getting drunk or high
83.7 Not at all cool
9.1 A little cool
4.7 Somewhat cool
2.5 Very cool
Dieting to be slim
41.3 Not at all cool
35.5 A little cool
17.5 Somewhat cool
5.7 Very cool
Using prescription drugs that were not prescribed for you, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused
91.7 Not at all cool
4.2 A little cool
2.9 Somewhat cool
1.1 Very cool
0.1 Refused/No response
Getting good grades
2.2 Not at all cool
9.7 A little cool
32.0 Somewhat cool
55.9 Very cool
0.1 Refused/No response

Smoking marijuana
84.7 Not at all cool
9.2 A little cool
3.5 Somewhat cool
2.4 Very cool
0.2 Refused/No response
Picking on/bullying other kids
94.1 Not at all cool
4.2 A little cool
0.7 Somewhat cool
0.9 Very cool
Being straight edge/being committed to not smoking, drinking, using drugs
12.0 Not at all cool
16.8 A little cool
22.3 Somewhat cool
48.9 Very cool
Volunteering/doing community service
9.5 Not at all cool
28.4 A little cool
37.0 Somewhat cool
25.1 Very cool
Being involved in politics or civic responsibilities
24.3 Not at all cool
36.2 A little cool
30.0 Somewhat cool
9.5 Very cool
Working out/exercising/body building
5.2 Not at all cool
21.7 A little cool
33.0 Somewhat cool
40.0 Very cool
Not caring about getting good grades
84.6 Not at all cool
10.6 A little cool
3.0 Somewhat cool
1.8 Very cool
Having a good relationship with your parents
3.1 Not at all cool
17.3 A little cool
33.5 Somewhat cool
46.0 Very cool

A2. Now, to what extent do *most people your age* think that each of the following behaviors is "cool"? In answering this question, please think about the feelings and attitudes of *most people your age*, regardless of your own personal feelings.
[Scale: 1=Not at all cool; 2=A little cool; 3=Somewhat cool; 4=Very cool]

Participating in sports
- 2.3 Not at all cool
- 13.4 A little cool
- 34.5 Somewhat cool
- 49.7 Very cool
- 0.1 Refused/No response

Driving or owning a car
- 1.9 Not at all cool
- 4.2 A little cool
- 11.7 Somewhat cool
- 82.2 Very cool
- 0.1 Refused/No response

Having a job/working part-time
- 9.7 Not at all cool
- 30.0 A little cool
- 37.1 Somewhat cool
- 23.1 Very cool
- 0.1 Refused/No response

Hooking up/engaging in sexual activity
- 17.6 Not at all cool
- 22.9 A little cool
- 26.8 Somewhat cool
- 32.6 Very cool
- 0.1 Refused/No response

Drinking alcohol
- 21.6 Not at all cool
- 24.6 A little cool
- 28.7 Somewhat cool
- 25.0 Very cool
- 0.1 Refused/No response

Smoking cigarettes
- 34.3 Not at all cool
- 29.6 A little cool
- 20.5 Somewhat cool
- 15.3 Very cool
- 0.3 Refused/No response

Having a boy/girl friend
- 2.2 Not at all cool
- 8.9 A little cool
- 26.3 Somewhat cool
- 62.5 Very cool
- 0.1 Refused/No response

Getting drunk or high
26.1 Not at all cool
25.2 A little cool
26.6 Somewhat cool
21.6 Very cool
0.5 Refused/No response
Dieting to be slim
20.1 Not at all cool
34.0 A little cool
29.3 Somewhat cool
16.5 Very cool
0.1 Refused/No response
Using prescription drugs that were not prescribed for you, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused
43.1 Not at all cool
29.2 A little cool
18.2 Somewhat cool
9.6 Very cool
0.1 Refused/No response
Getting good grades
11.9 Not at all cool
40.3 A little cool
30.9 Somewhat cool
16.9 Very cool
0.1 Refused/No response
Smoking marijuana
28.1 Not at all cool
28.3 A little cool
24.5 Somewhat cool
18.6 Very cool
0.4 Refused/No response
Picking on/bullying other kids
49.6 Not at all cool
28.3 A little cool
16.1 Somewhat cool
6.0 Very cool
0.1 Refused/No response
Being straight edge/being committed to not smoking, drinking, using drugs
32.9 Not at all cool
36.3 A little cool
17.9 Somewhat cool
12.8 Very cool
0.1 Refused/No response
Volunteering/doing community service
38.6 Not at all cool
37.5 A little cool
18.3 Somewhat cool
5.6 Very cool
0.1 Refused/No response

Being involved in politics or civic responsibilities
51.5 Not at all cool
33.9 A little cool
11.5 Somewhat cool
3.1 Very cool
0.1 Refused/No response
Working out/exercising/body building
4.1 Not at all cool
21.0 A little cool
40.9 Somewhat cool
33.9 Very cool
0.1 Refused/No response
Not caring about getting good grades
30.9 Not at all cool
37.2 A little cool
22.1 Somewhat cool
9.7 Very cool
0.2 Refused/No response
Having a good relationship with your parents
24.8 Not at all cool
37.2 A little cool
24.1 Somewhat cool
13.8 Very cool
0.1 Refused/No response

A3. How important is it to you to do the following health-related things?
[Scale: 1=Not at all important; 2=A little important; 3=Somewhat important; 4=Very important]
Get regular exercise
3.9 Not at all important
13.4 A little important
34.3 Somewhat important
48.4 Very important
Eat balanced meals (e.g., fruits, vegetables, limited sugar)
6.2 Not at all important
24.9 A little important
37.7 Somewhat important
31.2 Very important
Take vitamins/nutritional supplements
18.2 Not at all important
31.2 A little important
32.5 Somewhat important
18.1 Very important
0.1 Refused/No response
Get routine medical check-ups
6.5 Not at all important
25.4 A little important
32.7 Somewhat important
35.3 Very important

Protect yourself from sexually transmitted infections/diseases
1.8 Not at all important
3.9 A little important
8.8 Somewhat important
85.5 Very important
Avoid getting pregnant/getting someone pregnant
3.1 Not at all important
2.9 A little important
6.2 Somewhat important
87.8 Very important
Take good care of your teeth
1.4 Not at all important
9.3 A little important
26.7 Somewhat important
62.7 Very important
Be informed about what's good/not good for your body
3.0 Not at all important
20.5 A little important
33.1 Somewhat important
43.3 Very important

A4. To what extent is each of the following a source of stress or anxiety for you?
[Scale: 1=Not at all stressful; 2=A little stressful; 3=Somewhat stressful; 4=Very stressful]
School work
8.8 Not at all stressful
21.8 A little stressful
38.1 Somewhat stressful
31.4 Very stressful
Extracurricular activities
34.5 Not at all stressful
34.0 A little stressful
22.5 Somewhat stressful
8.9 Very stressful
0.1 Refused/No response
Social life/friends
28.4 Not at all stressful
32.3 A little stressful
27.6 Somewhat stressful
11.7 Very stressful
Dating/sex
36.8 Not at all stressful
31.8 A little stressful
23.2 Somewhat stressful
8.2 Very stressful
Money pressures
24.5 Not at all stressful
34.3 A little stressful
20.8 Somewhat stressful
20.4 Very stressful

Family issues
23.2 Not at all stressful
35.0 A little stressful
25.5 Somewhat stressful
16.3 Very stressful

Future/college plans
9.4 Not at all stressful
26.8 A little stressful
32.5 Somewhat stressful
31.2 Very stressful

Appearance/how he or she looks
21.7 Not at all stressful
32.8 A little stressful
29.2 Somewhat stressful
16.4 Very stressful

Getting picked on/being bullied
58.0 Not at all stressful
20.8 A little stressful
12.4 Somewhat stressful
8.7 Very stressful

Pressure to smoke
74.2 Not at all stressful
13.4 A little stressful
6.5 Somewhat stressful
5.6 Very stressful
0.2 Refused/No response

Pressure to drink
62.2 Not at all stressful
21.0 A little stressful
10.7 Somewhat stressful
6.1 Very stressful

Pressure to use other drugs
71.1 Not at all stressful
15.5 A little stressful
7.3 Somewhat stressful
6.1 Very stressful

Other (please specify)
26.2 Not at all stressful
1.9 A little stressful
1.4 Somewhat stressful
4.4 Very stressful
66.1 Refused/No response

A5. Which of the following do you *typically* do to relieve stress?
[Please check all that apply]
63.5 Socialize with friends/spend time with a girlfriend or boyfriend
43.0 Talk to parents/other relatives
4.2 Smoke a cigarette
56.6 Take a nap/sleep
52.4 Exercise (take a walk, play sports, do outdoor activities)

3.5 Smoke marijuana
8.6 Talk to an advisor/counselor/therapist
83.8 Watch TV/listen to music/play video or computer games/surf the Internet/see a movie
1.4 Take a prescription drug that was not prescribed for you, or in a way that wasn't prescribed
35.9 Read
44.7 Do a hobby (e.g., art, music, woodworking, photography, computer programming, cooking)
16.4 Write in a journal
15.7 Do school work
23.5 Pray/meditate
4.4 Drink alcohol
37.5 Eat
2.5 Have sex
4.6 Other (please specify)

A6. Which of the following adults do you feel comfortable talking to about personal issues or personal problems? [Please check all that apply]

71.9 Mother
39.4 Father
14.3 Grandparent
22.5 Other relative (please specify)
11.8 Teacher
11.5 School counselor
9.7 Coach
2.3 Other adult at school (please specify)
20.7 Family friend
12.3 Religious leader (such as pastor, rabbi, minister, imam)
9.5 Therapist or other health professional
6.4 Other (please specify)
7.9 There are no adults in my life that I talk to about my personal issues or personal problems
0.1 Refused/No response

A7. Of all the people you said "yes" about in the previous question, which is the one that you are the *most likely* to talk to about a personal issue or personal problem?*
[Please check all that apply]

54.6 Mother
16.6 Father
2.0 Grandparent
11.3 Other relative (please specify)
1.0 Teacher
1.6 School counselor
0.3 Coach
0.5 Other adult at school (please specify)

* Question asked only of respondents who selected two or more responses to the previous question. (n=919)

A8. What is the highest level of education you expect to achieve?

4.8 Some high school
6.9 High school diploma
8.6 Vocational/technical degree or certificate/associates degree
41.9 College degree (bachelors)
37.7 Graduate school/professional degree (masters, PhD, doctor/MD, lawyer/JD)

A9. During your lifetime, do you think you, personally, will develop any of the following medical conditions? [Please check all that apply]

23.3 Diabetes
20.6 Cancer
13.9 Heart disease
16.5 Obesity
2.8 Anorexia/bulimia
28.0 Depression
5.4 Addiction to nicotine/smoking
4.6 Addiction to alcohol or other drugs
0.3 HIV/AIDS
3.1 Sexually transmitted infection (for example, gonorrhea, genital warts, herpes or syphilis)
14.8 Refused/No response

A10. Please indicate whether each of the following statements is true about you. [Please check all that apply]

44.8 I am very self confident
21.1 I often feel alone or isolated
59.5 I have specific goals for the future
44.2 I often feel overwhelmed by all I have to do
16.4 I often feel very sad or depressed
24.2 I often feel very anxious
66.6 I feel it is very important to get good grades
31.4 I feel a strong connection to school
15.8 I wish that I could spend more time with my parents
76.5 I have some very good friends
67.9 I feel hopeful about the future
70.2 I like myself
53.1 I am able to achieve the goals I set for myself

B1. Which of the following best describes your opinion of what marijuana is? Is marijuana a…

70.3 Harmful drug
24.7 Harmless drug
16.9 Medicine/prescription drug

B2. Which of the following do you think are the main factors involved in developing an addiction to tobacco/nicotine?
Please select *a maximum* of two main factors.

21.0 A physical health problem
16.6 A mental health problem
5.9 A genetic problem
26.3 A behavioral problem
7.3 A moral problem
2.4 A spiritual problem
44.6 A reliance on the substance as an emotional crutch in response to negative life events
49.4 A problem of willpower or self control
0.2 Refused/No response

B3. Which of the following do you think are the main factors involved in developing an addiction to alcohol?
Please select *a maximum* of two main factors.

14.1 A physical health problem
18.3 A mental health problem
12.8 A genetic problem
29.4 A behavioral problem
9.0 A moral problem
3.1 A spiritual problem
47.0 A reliance on the substance as an emotional crutch in response to negative life events
42.8 A problem of willpower or self control
0.2 Refused/No response

B4. Which of the following do you think are the main factors involved in developing an addiction to prescription/illegal drugs?
Please select *a maximum* of two main factors.

21.8 A physical health problem
25.4 A mental health problem
3.5 A genetic problem
27.2 A behavioral problem
7.8 A moral problem
2.3 A spiritual problem
46.0 A reliance on the substance as an emotional crutch in response to negative life events
43.0 A problem of willpower or self control
0.2 Refused/No response

B5. To what extent is each of the following behaviors dangerous for someone your age?
[Scale: 1=Not at all dangerous; 2=A little dangerous; 3=Somewhat dangerous; 4=Very dangerous]
Smoking cigarettes

3.7 Not at all dangerous
16.1 A little dangerous
23.7 Somewhat dangerous
56.4 Very dangerous
0.1 Refused/No response

Drinking 4 or 5 alcoholic drinks/shots within a few hours (binge drinking)
2.3 Not at all dangerous
4.4 A little dangerous
15.6 Somewhat dangerous
77.6 Very dangerous
0.1 Refused/No response

Getting drunk
4.0 Not at all dangerous
10.8 A little dangerous
25.8 Somewhat dangerous
59.3 Very dangerous
0.1 Refused/No response

Smoking marijuana
7.5 Not at all dangerous
19.4 A little dangerous
20.8 Somewhat dangerous
52.1 Very dangerous
0.2 Refused/No response

Not wearing a seat belt (while riding in a car)
1.9 Not at all dangerous
14.6 A little dangerous
32.6 Somewhat dangerous
50.8 Very dangerous
0.2 Refused/No response

Using (inhaling/breathing in) inhalants (like glue, aerosol sprays)
0.9 Not at all dangerous
2.5 A little dangerous
14.6 Somewhat dangerous
82.0 Very dangerous
0.1 Refused/No response

Taking prescription pain medications (like Vicodin or OxyContin) that were not prescribed for him/her, or in a way that wasn't prescribed, to get high
1.2 Not at all dangerous
3.5 A little dangerous
15.3 Somewhat dangerous
80.0 Very dangerous
0.1 Refused/No response

Taking prescription tranquilizers (like Xanax or Valium) that were not prescribed for him/her, or in a way that wasn't prescribed, to relax or relieve stress
1.7 Not at all dangerous
4.2 A little dangerous
14.2 Somewhat dangerous
79.8 Very dangerous
0.1 Refused/No response

Having unprotected sex
0.6 Not at all dangerous
6.4 A little dangerous
20.6 Somewhat dangerous
72.3 Very dangerous
0.1 Refused/No response

Mixing alcohol with an energy drink (like Red Bull)
4.5 Not at all dangerous
10.2 A little dangerous
20.6 Somewhat dangerous
64.7 Very dangerous
0.1 Refused/No response

Using other illicit drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
0.8 Not at all dangerous
2.1 A little dangerous
5.6 Somewhat dangerous
91.5 Very dangerous
0.1 Refused/No response

Driving while drunk
0.4 Not at all dangerous
1.0 A little dangerous
3.3 Somewhat dangerous
95.3 Very dangerous
0.1 Refused/No response

Driving while high on marijuana
2.1 Not at all dangerous
5.7 A little dangerous
12.2 Somewhat dangerous
79.7 Very dangerous
0.2 Refused/No response

Driving while high on prescription drugs
0.5 Not at all dangerous
2.4 A little dangerous
9.0 Somewhat dangerous
88.1 Very dangerous
0.1 Refused/No response

Mixing alcohol with prescription drugs (like Valium, Xanax, Vicodin)
0.8 Not at all dangerous
2.4 A little dangerous
6.7 Somewhat dangerous
90.0 Very dangerous
0.1 Refused/No response

Taking prescription stimulants (like Adderall, Ritalin) that were not prescribed for him/her, or in a way that wasn't prescribed, to be more awake or focused
1.9 Not at all dangerous
6.7 A little dangerous
18.5 Somewhat dangerous
72.8 Very dangerous
0.1 Refused/No response

Getting in a car with a stranger
1.0 Not at all dangerous
3.9 A little dangerous
17.1 Somewhat dangerous
77.9 Very dangerous
0.1 Refused/No response

B6. How likely is each of the following things to happen to someone your age who binge drinks about once a month? (Binge drinking for a girl is drinking four or more alcoholic drinks within a few hours, for a boy it's drinking five or more alcoholic drinks within a few hours.)
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Poor academic performance
5.2 Not at all likely
14.7 A little likely
29.4 Somewhat likely
50.7 Very likely
0.1 Refused/No response

Overdose/death
9.7 Not at all likely
24.9 A little likely
37.2 Somewhat likely
38.1 Very likely
0.1 Refused/No response

Have an accident (e.g., fall, drown)
4.0 Not at all likely
12.6 A little likely
28.6 Somewhat likely
54.7 Very likely
0.1 Refused/No response

Drive drunk/ride in a car with a drunk driver
5.0 Not at all likely
7.3 A little likely
27.5 Somewhat likely
60.0 Very likely
0.2 Refused/No response

Get into a car accident if driving drunk
4.7 Not at all likely
5.5 A little likely
24.6 Somewhat likely
65.2 Very likely
0.1 Refused/No response

Damage brain cells
7.1 Not at all likely
12.0 A little likely
23.5 Somewhat likely
57.4 Very likely
0.1 Refused/No response

Increase chances of alcohol addiction
5.8 Not at all likely
12.0 A little likely
26.5 Somewhat likely
55.6 Very likely
0.1 Refused/No response

Get into a fight
3.0 Not at all likely
13.1 A little likely
34.3 Somewhat likely
49.5 Very likely
0.1 Refused/No response

Sexually assault someone or be sexually assaulted
11.0 Not at all likely
21.2 A little likely
29.5 Somewhat likely
38.2 Very likely
0.1 Refused/No response

Have legal problems (e.g., get arrested)
5.4 Not at all likely
12.9 A little likely
32.7 Somewhat likely
49.0 Very likely
0.1 Refused/No response

Have unprotected sex
4.8 Not at all likely
10.2 A little likely
32.8 Somewhat likely
52.1 Very likely
0.1 Refused/No response

B7. What level of binge drinking do you think can cause damage to the brain of someone your age? (Binge drinking for a girl is drinking four or more alcoholic drinks within a few hours, for a boy it's drinking five or more alcoholic drinks within a few hours.)
44.5 Just about every day
32.3 Just about once a week
14.5 Just about once a month
28.3 Just once
1.2 Binge drinking does not cause brain damage
0.1 Refused/No response

B8. How likely is each of the following things to happen to someone your age who smokes marijuana about once a month?
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Poor academic performance
- 5.7 Not at all likely
- 19.6 A little likely
- 29.4 Somewhat likely
- 44.8 Very likely
- 0.5 Refused/No response

Overdose/death
- 32.1 Not at all likely
- 25.0 A little likely
- 19.1 Somewhat likely
- 23.4 Very likely
- 0.4 Refused/No response

Have an accident (e.g., fall, drown)
- 9.8 Not at all likely
- 25.6 A little likely
- 29.8 Somewhat likely
- 34.4 Very likely
- 0.4 Refused/No response

Drive while high/ride in a car with a driver who is high
- 5.1 Not at all likely
- 15.8 A little likely
- 30.5 Somewhat likely
- 48.4 Very likely
- 0.3 Refused/No response

Get into a car accident if driving while high
- 7.3 Not at all likely
- 19.2 A little likely
- 31.9 Somewhat likely
- 41.1 Very likely
- 0.5 Refused/No response

Damage brain cells
- 8.0 Not at all likely
- 18.6 A little likely
- 24.9 Somewhat likely
- 48.1 Very likely
- 0.4 Refused/No response

Increase chances of drug addiction
- 9.9 Not at all likely
- 18.4 A little likely
- 26.3 Somewhat likely
- 45.2 Very likely
- 0.3 Refused/No response

Get into a fight
17.0 Not at all likely
23.9 A little likely
31.3 Somewhat likely
27.4 Very likely
0.4 Refused/No response

Sexually assault someone or be sexually assaulted
22.9 Not at all likely
27.1 A little likely
23.8 Somewhat likely
25.5 Very likely
0.8 Refused/No response

Have legal problems (e.g., get arrested)
6.1 Not at all likely
21.4 A little likely
32.8 Somewhat likely
39.4 Very likely
0.3 Refused/No response

Have unprotected sex
10.2 Not at all likely
23.6 A little likely
30.2 Somewhat likely
35.6 Very likely
0.4 Refused/No response

B9. How likely is each of the following things to happen to someone your age who takes prescription drugs about once a month that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused?
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Poor academic performance
3.9 Not at all likely
17.6 A little likely
32.6 Somewhat likely
45.5 Very likely
0.3 Refused/No response

Overdose/death
6.7 Not at all likely
16.3 A little likely
29.0 Somewhat likely
47.7 Very likely
0.3 Refused/No response

Have an accident (e.g., fall, drown)
3.6 Not at all likely
22.5 A little likely
32.6 Somewhat likely
41.0 Very likely
0.3 Refused/No response

Drive while high/ride in a car with a driver who is high
4.2 Not at all likely
18.9 A little likely
31.7 Somewhat likely
44.8 Very likely
0.4 Refused/No response
Get into a car accident if driving while high
3.3 Not at all likely
19.0 A little likely
29.5 Somewhat likely
47.9 Very likely
0.3 Refused/No response
Damage brain cells
4.7 Not at all likely
14.5 A little likely
28.2 Somewhat likely
52.3 Very likely
0.3 Refused/No response
Increase chances of drug addiction
3.5 Not at all likely
11.9 A little likely
27.2 Somewhat likely
57.2 Very likely
0.3 Refused/No response
Get into a fight
8.2 Not at all likely
25.6 A little likely
34.2 Somewhat likely
31.5 Very likely
0.5 Refused/No response
Sexually assault someone or be sexually assaulted
9.9 Not at all likely
31.6 A little likely
27.8 Somewhat likely
30.3 Very likely
0.4 Refused/No response
Have legal problems (e.g., get arrested)
5.6 Not at all likely
20.7 A little likely
31.4 Somewhat likely
41.9 Very likely
0.4 Refused/No response
Have unprotected sex
7.5 Not at all likely
25.1 A little likely
31.1 Somewhat likely
35.9 Very likely
0.5 Refused/No response

B10. Do you, *personally*, have any friends who do each of the following?
[Please check all that apply]

53.1 Smoke cigarettes
56.0 Drink alcohol
18.6 Drink 4 or 5 alcoholic drinks / shots within a few hours (binge drink)
45.4 Smoke marijuana
15.8 Use other illicit drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
5.8 Use (inhale/breathing in) inhalants (like glue, aerosol sprays)
15.9 Use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax or relieve stress
12.6 Use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to be more awake or focused
35.2 None of my friends smoke, drink or use other drugs
0.1 Refused/No response

B10B. You mentioned that you personally have friend(s) who use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, in order to be more awake or focused. Does the friend(s) you know use prescription drugs in this way for the following reasons?*
[Please check all that apply]

60.1 To be more awake or focused for school, to study or to do other schoolwork?
55.1 To be more awake or focused for a job, athletic activities or other extracurricular activities?
77.1 To be more awake or focused for partying or having fun?

B11. Have you or anybody your age that you *personally* know experienced any of the following as a result of *someone else's* use of alcohol or other drugs?
[Please check all that apply]

26.8 Accident
19.4 Injury
7.0 Victim of sexual assault or rape
13.8 Unintended pregnancy
11.1 Physical abuse
19.4 Being harassed, picked on, drawn into a fight
12.8 Sleep disruption
24.5 Disruption of ability to perform schoolwork or other extracurricular activities
41.0 Gotten into trouble with adults/authorities
2.5 Other (please specify)
44.2 No one that I know personally, including myself, has experienced these things as a result of someone else's use of alcohol or other drugs
0.1 Refused/No response

* Question asked only of respondents who said friend(s) use prescription drugs that were not prescribed for them, or in a way that wasn't prescribed in order to be more awake or focused. (n=126)

B12. Which of the following do you think are the *three main* reasons that some people your age choose *not* to drink or use other drugs?
Please select only three reasons.

52.4 Parents would disapprove
40.8 Parents would punish them
33.7 Their friends don't drink / use other drugs
59.4 Personal values
26.3 Religion/spirituality
30.2 It's against the law
15.6 They are concerned with getting good grades
22.9 Health reasons
3.6 Other (please specify)
0.1 Refused/No response

B13. How difficult is it for a person your age to choose not to drink alcohol?

40.7 Not at all difficult
33.5 A little difficult
19.3 Somewhat difficult
6.5 Very difficult

B14. Are students who do not drink generally more or less popular?

13.8 More popular
25.5 Less popular
60.6 Popularity isn't related to drinking
0.1 Refused/No response

B15. Thinking about the people your age that you know who smoke, drink or use other drugs, do you think their parents *typically* know about it?

25.0 Yes
60.7 No
14.0 I don't know any teens who smoke, drink or use other drugs
0.2 Refused/No response

B15B. Why do you think their parents don't know about it?*

70.7 They hide it from their parents
12.7 Their parents aren't around much
13.9 Their parents don't notice
2.6 Other (please specify)
0.1 Refused/No response

B15C. If their parents typically know about it, which of the following statements do you think is true?†

47.6 Their parents ignore it or pretend not to notice
20.4 Their parents allow it
32.0 Their parents try to stop them from doing it

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* Question asked only of respondents who said they think parents do not typically know. (n=607)
† Question asked only of respondents who said they think parents typically know. (n=250)

B16. How much do you think that each of the following keeps some parents from talking to their high-school-age children about smoking, drinking or using other drugs?
[Scale: 1=Not at all; 2=A little; 3=Somewhat; 4=Very much]

Parents don't know how to talk to their high-school-age children about substance use
- 10.9 Not at all
- 26.7 A little
- 45.9 Somewhat
- 16.1 Very much
- 0.4 Refused/No response

Parents are too busy or they don't have enough time
- 10.1 Not at all
- 24.0 A little
- 39.7 Somewhat
- 25.8 Very much
- 0.4 Refused/No response

Parents feel it's hopeless to try to stop their children from using these substances
- 25.0 Not at all
- 33.5 A little
- 29.8 Somewhat
- 11.3 Very much
- 0.4 Refused/No response

Parents don't think it's such a big deal if high-school-age students use these substances
- 39.4 Not at all
- 30.3 A little
- 20.3 Somewhat
- 9.7 Very much
- 0.4 Refused/No response

Parents don't believe their own children would use these substances
- 6.6 Not at all
- 18.8 A little
- 37.0 Somewhat
- 37.2 Very much
- 0.5 Refused/No response

Other (please specify)
- 9.8 Not at all
- 1.5 A little
- 5.7 Somewhat
- 2.8 Very much

For each of the following questions please estimate the percent of students (fill in a number from 0 to 100) that does each behavior.

B17. What percentage of students at your school do you think smokes cigarettes at least once a week?
_____%
- 2.3 0 percent
- 50.8 1 to 25 percent
- 32.4 26 to 50 percent
- 9.9 51 to 75 percent
- 4.7 76 to 100 percent

B18. What percentage of students at your school do you think drink alcohol at least once a month?
_____%

2.2	0 percent
34.6	1 to 25 percent
33.9	26 to 50 percent
18.1	51 to 75 percent
11.0	76 to 100 percent
0.2	Refused

B19. What percentage of students at your school do you think drink 4 or 5 alcoholic drinks/shots within a few hours at least once a month?
_____%

3.2	0 percent
61.7	1 to 25 percent
22.2	26 to 50 percent
7.3	51 to 75 percent
3.2	76 to 100 percent
2.4	Refused

B20. What percentage of students at your school do you think smoke marijuana at least once a month?
_____%

4.1	0 percent
49.1	1 to 25 percent
27.0	26 to 50 percent
10.9	51 to 75 percent
9.2	76 to 100 percent

B21. What percentage of students at your school do you think ever used prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, *to be more awake or focused*?
_____%

8.5	0 percent
67.9	1 to 25 percent
16.8	26 to 50 percent
4.8	51 to 75 percent
1.9	76 to 100 percent
0.1	Refused

B22. What percentage of students at your school do you think ever used prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, *to get high, relax, relieve stress*?
_____%

7.1	0 percent
67.3	1 to 25 percent
18.5	26 to 50 percent
5.4	51 to 75 percent
1.8	76 to 100 percent
0.1	Refused

B23. What percentage of students at your school do you think ever used other illicit drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)?
_____%

12.2 0 percent
72.9 1 to 25 percent
11.2 26 to 50 percent
2.1 51 to 75 percent
1.3 76 to 100 percent
0.1 Refused

B24. What percentage of students at your school do you think ever used (inhaled/breathed in) inhalants (like glue, aerosol sprays)?
_____%

14.5 0 percent
73.0 1 to 25 percent
8.6 26 to 50 percent
2.5 51 to 75 percent
1.3 76 to 100 percent
0.1 Refused

B25. Below is a list of common groups or types of high school students. At your school, are any of these groups more likely to drink alcohol?
[Please check all that apply]

44.1 Jocks/athletes
40.9 Preps/rich kids
39.6 Popular kids
41.0 Punks/Goths/Emos
6.5 Good students
3.9 Nerds/geeks
9.0 Gamers/techies
2.9 Other (please specify)
28.7 People at my school drink, but not more or less so in any specific group
5.3 People at my school don't drink
0.2 Refused/No response

B25A. Which of the following groups are least likely to drink alcohol?
[Please check all that apply]

21.6 Jocks/athletes
10.1 Preps/rich kids
13.5 Popular kids
10.7 Punks/Goths/Emos
67.4 Good students
60.9 Nerds/geeks
37.8 Gamers/techies
2.6 Other (please specify)

B26. Below is the same list of common groups or types of high school students. At your school, are any of these groups more likely to smoke marijuana?
[Please check all that apply]

26.3 Jocks/athletes
30.7 Preps/rich kids
28.2 Popular kids
45.3 Punks/Goths/Emos
2.8 Good students
4.8 Nerds/geeks
14.0 Gamers/techies
2.6 Other (please specify)
31.1 People at my school smoke marijuana, but not more or less so in any specific group
6.2 People at my school don't smoke marijuana
0.2 Refused/No response

B26A. Which of the following groups are least likely to smoke marijuana?
[Please check all that apply]

24.4 Jocks/athletes
12.7 Preps/rich kids
12.8 Popular kids
8.7 Punks/Goths/Emos
65.5 Good students
56.0 Nerds/geeks
27.0 Gamers/techies
2.5 Other (please specify)

B27. How likely is it that you will drink alcohol on prom night?

54.1 Not at all likely
19.9 A little likely
8.5 Somewhat likely
8.1 Very likely
9.3 There is no prom at my school/I don't plan to go to the prom
0.1 Refused/No response

B28. How likely is it that you will try or use marijuana in the future?

74.5 Not at all likely
15.0 A little likely
5.3 Somewhat likely
5.0 Very likely
0.1 Refused/No response

B29. If someone close to you needed help for an addiction, where would you turn for information or help?

71.0 Friend or family member
23.6 A doctor or other health professional
13.7 A psychologist, psychiatrist, or other mental health professional
28.2 Student guidance counselor
20.2 Addiction "hotline" or "helpline"
13.4 Addiction treatment center
14.1 Alcoholics Anonymous (AA), other similar mutual support or self-help programs
16.9 Internet or Yellow Pages, or "look it up" or do "research"
21.5 Religious leader (such as pastor, rabbi, minister, imam)
2.5 Would not know where to turn for help
2.3 Other (please specify)
5.3 Not sure
0.1 Refused/No response

C1. To what extent is each of the following statements about you and your parents true?
[Scale: 1=Not at all true; 2=A little true; 3=Somewhat true; 4=Very true]

Your parents know where you are most or all of the time
1.1 Not at all true
6.3 A little true
24.3 Somewhat true
68.0 Very true
0.2 Refused/No response

Your parents know who you are with most or all of the time
1.9 Not at all true
10.9 A little true
27.6 Somewhat true
59.5 Very true
0.2 Refused/No response

You can talk to your parents about almost anything
8.4 Not at all true
16.7 A little true
38.3 Somewhat true
36.4 Very true
0.2 Refused/No response

Your parents know when you're feeling sad or down
6.0 Not at all true
19.9 A little true
39.3 Somewhat true
34.6 Very true
0.2 Refused/No response

Your parents explain the rules they set for you
3.0 Not at all true
9.6 A little true
29.2 Somewhat true
58.0 Very true
0.2 Refused/No response

Your parents pretty much let you do what you want to do
28.4 Not at all true
32.7 A little true
29.5 Somewhat true
9.5 Very true
0.2 Refused/No response

Your parents expect you to follow the rules they set for you
1.1 Not at all true
3.5 A little true
19.2 Somewhat true
76.1 Very true
0.2 Refused/No response

Your parents love you no matter what
1.5 Not at all true
3.1 A little true
14.1 Somewhat true
81.1 Very true
0.2 Refused/No response

Your parents are not really involved in your life
73.5 Not at all true
12.5 A little true
8.3 Somewhat true
5.5 Very true
0.2 Refused/No response

C2. What do you think are your parents' *top three* concerns for you? My parents are most concerned about me….

Please write a '1' next to what you think is your parents' greatest concern, a '2' next to their second greatest concern and a '3' next to their third greatest concern.

74.1 Getting good grades
54.6 Getting into college
13.7 Having safe sex
24.5 Abstaining from sex
8.1 Not smoking cigarettes
14.3 Not drinking alcohol
9.3 Not using marijuana
6.8 Not using other illicit drugs
4.9 Not using prescription drugs that were not prescribed for him/her, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused
25.3 Safe driving
16.0 Eating healthy/balanced meals
7.6 Getting regular exercise
3.9 Not being picked on/bullied
2.0 Not picking on/bullying others
10.3 Not suffering from depression or anxiety
6.6 Being safe on the Internet
3.4 Avoiding gangs
5.0 Other (please specify)

C3. How much do your parents' concerns, opinions or expectations influence whether or how much you smoke cigarettes, drink alcohol or use other drugs?

8.0 Not at all
12.0 A little
29.2 Somewhat
50.9 Very much

C4. How often do your parents talk with you about each of the following health-related topics? [Scale: 1=Never; 2=Rarely; 3=Sometimes; 4=Often]

Smoking
14.6 Never
27.4 Rarely
36.0 Sometimes
21.9 Often
0.1 Refused/No response

Sex
10.8 Never
23.8 Rarely
38.6 Sometimes
26.6 Often
0.1 Refused/No response

Drinking alcohol
11.8 Never
23.9 Rarely
40.4 Sometimes
23.8 Often
0.1 Refused/No response

Drinking and driving
14.1 Never
20.1 Rarely
34.6 Sometimes
31.0 Often
0.1 Refused/No response

Eating a healthy or balanced diet
7.6 Never
19.2 Rarely
37.9 Sometimes
35.1 Often
0.1 Refused/No response

Getting regular exercise
10.0 Never
20.0 Rarely
38.2 Sometimes
31.6 Often
0.1 Refused/No response

Using other drugs
16.8 Never
26.5 Rarely
33.3 Sometimes
23.3 Often
0.1 Refused/No response

C5. What do you think parents *should* be doing to prevent their high-school-age children from smoking, drinking or using other drugs?
[Please check all that apply]
25.8 Smell their breath / check their eyes when they come home
26.3 Look in their room / bag /other personal items for evidence of cigarette, alcohol or other drug use
15.3 Perform drug testing
13.2 Ask their friends if they're smoking, drinking or using other drugs
44.9 Set strict rules about not using
49.1 Impose consequences if they do use (like grounding them; taking away car keys or cell phone; prohibiting TV, video games or using the Internet for a certain amount of time)
11.8 Make sure they are supervised by adults at all times
78.8 Have an open, honest relationship with their children
64.9 Be actively engaged in their children's life
69.4 Set a good example/be a good role model
61.7 Explain the negative consequences of smoking, drinking and using other drugs
1.4 Parents shouldn't bother trying to prevent their children from smoking, drinking or using other drugs
1.8 Other (please specify)
0.1 Refused/No response

D1. How concerned do you think your school's administration is about each of the following behaviors among students?
[Scale: 1=Not at all concerned; 2=A little concerned; 3=Somewhat concerned; 4=Very concerned]
Smoking cigarettes
12.1 Not at all concerned
27.5 A little concerned
27.4 Somewhat concerned
32.8 Very concerned
0.2 Refused/No response
Drinking alcohol
6.7 Not at all concerned
19.8 A little concerned
28.9 Somewhat concerned
44.3 Very concerned
0.2 Refused/No response
Smoking marijuana
6.5 Not at all concerned
16.3 A little concerned
30.2 Somewhat concerned
46.8 Very concerned
0.2 Refused/No response

Using other drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)

6.7 Not at all concerned
18.3 A little concerned
26.5 Somewhat concerned
48.3 Very concerned
0.2 Refused/No response

Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax or relieve stress

7.3 Not at all concerned
21.0 A little concerned
26.9 Somewhat concerned
44.6 Very concerned
0.2 Refused/No response

Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to be more awake or focused

7.5 Not at all concerned
21.5 A little concerned
26.9 Somewhat concerned
44.0 Very concerned
0.2 Refused/No response

Sexual activity

16.3 Not at all concerned
26.3 A little concerned
26.7 Somewhat concerned
30.6 Very concerned
0.2 Refused/No response

Unhealthy eating/being overweight

21.9 Not at all concerned
32.6 A little concerned
26.8 Somewhat concerned
18.6 Very concerned
0.2 Refused/No response

D2. How effective are your school's rules/policies about student smoking, drinking or using other drugs in preventing students from doing these things *at school or during school hours*?

8.2 Not at all
20.8 A little
32.6 Somewhat
33.5 Very
4.0 I don't know what my school's rules are
0.9 My school doesn't have rules about student smoking, drinking or using other drugs
0.1 Refused/No response

D3. Do the things your school does to encourage students not to smoke, drink or use other drugs affect your decisions about whether or not to do these things?

26.4 Not at all
25.2 A little
25.8 Somewhat
17.0 Very
4.7 I don't know how my school encourages students not to smoke, drink or use other drugs
0.8 My school doesn't do anything to discourage students from smoking, drinking or using other drugs
0.1 Refused/No response

E1. Have you ever done the following online?
[Please check all that apply]

24.6 Talk (chat, IM, email, blog) about drinking or using other drugs
24.7 View pictures of people drinking or using other drugs
21.7 Watch videos of people drinking or using other drugs
1.8 Visit alcohol brands' Web sites
1.4 Visit cigarette brands' Web sites
2.2 Post pictures of yourself or friends drinking or using other drugs
7.7 Look up information about how to use drugs or what people use them for
18.8 Look up information about the dangers or smoking, drinking or using other drugs
52.4 None of these
0.2 Refused/No response

E2. A number of young celebrities have been in the news recently for being caught drinking while driving or using other drugs. To what extent do you think that these behaviors by popular celebrities *encourage* people your age to use alcohol or other drugs?

19.5 Not at all
35.9 A little
31.3 Somewhat
13.1 Very much
0.1 Refused/No response

These questions are about your use of tobacco products. The answers that people give us about their use are important to this study's success. We know that this information is personal but remember your answers are confidential.

F1. Have you ever smoked part or all of a cigarette?

18.8 Yes
81.2 No
0.1 Refused/No response

F2. Think specifically about the past 30 days….On how many of the past 30 days did you smoke part or all of a cigarette?*

59.1 0 days
21.3 1 to 10 days
3.2 11 to 20 days
13.3 21 days or more
2.9 Can't remember

F3. Have you ever used any of the following other tobacco products, besides cigarettes? [Please check all that apply]

6.7 Cigar
6.1 Water pipe or hookah
2.4 Chew
3.9 Dip/snuff
69.1 Other (please specify)
16.4 Refused

These questions are about drinks of alcoholic beverages. Throughout these questions, by a "drink" we mean a can or bottle of beer, a glass of wine or a wine cooler, a shot of liquor, or a mixed drink with liquor in it. We are not asking about times when you only had a sip or two from a drink.

F3. Have you ever, even once, had a drink of any type of alcoholic beverage? Please do not include times when you only had a sip or two from a drink.

35.8 Yes
64.1 No
0.1 Refused/No response

F4. Think specifically about the past 30 days…On how many days did you drink one or more drinks of an alcoholic beverage?†

55.4 0 days
37.4 1 to 10 days
3.4 11 to 20 days
1.7 21 days or more
2.3 Can't remember

F5. Have you ever had 5 or more alcoholic beverages on the same occasion? By "occasion," we mean at the same time or within a couple of hours of each other.

26.9 Yes
73.1 No

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* Question asked only of respondents who said they have smoked ever. (n=188)
† Question asked only of respondents who said they have ever had a drink of any type of alcoholic beverage. (n=358)

F6. During the past 30 days, on how many days did you have 5 or more alcoholic beverages on the same occasion?*

50.1 0 days
40.6 1 to 10 days
0.0 11 to 20 days
6.3 21 days or more
2.0 Refused
1.2 Can't remember

The next questions are about marijuana and hashish. Marijuana is also called pot or grass. Hashish is a form of marijuana that is also called "hash." Another form of hashish is hash oil.

F7. Have you ever, even once, used marijuana or hashish?

17.2 Yes
82.7 No
0.1 Refused/No response

F8. Think specifically about the past 30 days…On how many days did you use marijuana or hashish? †

56.4 0 days
27.3 1 to 10 days
9.9 11 to 20 days
4.1 21 days or more
4.0 Can't remember

F5. During the past 12 months, on how many days did you use marijuana or hashish? ‡ (If you cannot remember, your best guess will do)

In the past 12 months, I used marijuana or hashish on _____ days

14.3 0 days
59.3 1 to 12 days
12.8 13 to 50 days
5.2 51 to 100 days
8.1 101 days or more

Now we have some questions about drugs that people are supposed to take only if they have a prescription from a doctor and only in the way or amount that was prescribed by a doctor. We are only interested in your use of a drug if:

- The drug was not prescribed for you, or
- You took the drug in a way or amount that wasn't prescribed only for the experience or feeling it caused (e.g., to get high, relax, relieve stress or be more awake or focused).

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* Question asked only of respondents who said they have ever had 5 or more drinks on the same occasion. (n=96)
† Question asked only of respondents who said they have ever used marijuana or hashish. (n=172)
‡ Question asked only of respondents who said they have ever used marijuana or hashish. (n=172)

We are not interested in your use of "over-the counter" drugs such as aspirin, Tylenol, or Advil that can be bought in drug stores or grocery stores without a doctor's prescription.

F9. Have you ever, even once, used a prescription pain killer (such as Percocet, Vicodin or OxyContin) that was not prescribed for you, or in a way that wasn't prescribed, only for the experience or feeling it caused?

2.8 Yes
97.1 No
0.1 Refused/No response

F10. Have you ever, even once, used a prescription tranquillizer (such as Xanax or Valium) that was not prescribed for you, or in a way that wasn't prescribed, only for the experience or feeling it caused?

2.2 Yes
97.7 No
0.1 Refused/No response

F11. Have you ever, even once, used a prescription stimulant (such as Adderall or Ritalin) that was not prescribed for you, or in a way that wasn't prescribed, only for the experience or feeling it caused?

2.2 Yes
97.7 No
0.1 Refused/No response

F12. Have you ever, even once, used a prescription stimulant (such as Adderall or Ritalin) that was not prescribed for you, or in a way that wasn't prescribed, in order to be more awake or focused *for school, to study or to do other schoolwork*?

61.9 Yes
38.1 No

F13. Have you ever, even once, used a prescription stimulant (such as Adderall or Ritalin) that was not prescribed for you, or in a way that wasn't prescribed, in order to be more awake or focused *for a job, athletic activities or other extracurricular activities*?

43.9 Yes
47.1 No
0.9 Refused/No response

F14. Have you ever, even once, used a prescription stimulant (such as Adderall or Ritalin) that was not prescribed for you, or in a way that wasn't prescribed, in order to be more awake or focused *to party or for fun*?

63.3 Yes
36.7 No

G1. What kind of school do you attend?

80.2 Public--not including charter schools
5.8 Public charter school
1.2 Private, not affiliated with a particular religion
4.4 Private religious--affiliated with the Roman Catholic Church
4.1 Private religious--affiliated with some religious organization other than the Roman Catholic Church
4.2 Other (please specify)
0.1 Refused/No response

G2. About how many students would you say there are in your high school?

3.4 Less than 100
5.7 100-199
19.7 200-499
19.8 500-749
10.1 750-999
41.3 1,000 or more

G3. Do you consider yourself:

95.1 Straight/heterosexual
0.3 Gay
1.2 Bisexual
0.3 Transgender
1.4 Other (please specify)
1.5 Don't know/undecided
0.2 Refused/No response

G4. What kinds of grades do you typically get?

26.5 Mostly As
38.5 Mostly As & Bs
9.4 Mostly Bs
16.3 Mostly Bs & Cs
3.4 Mostly Cs
4.0 Mostly Cs & Ds
1.8 Mostly Ds or below

G5. How important is religion to your family?

12.1 Not at all important
22.5 A little important
27.3 Somewhat important
38.1 Very important

G6. In a typical month, how often do you attend religious services?

_____ times.

33.9 0 times
45.5 1 to 4 times
20.5 5 or more times
0.1 Refused

G7. Which of the following best describes you?

95.6 I was born in the U.S.
3.2 I came to the U.S. before age 6
1.0 I came to the U.S. between ages 6-12
0.2 I came to the U.S. after age 12

G8. Which of the following best describes your mother or primary female guardian?

87.9 She was born in the U.S.
10.6 She was born outside the U.S.
0.2 Don't know
1.2 I don't have a mother or primary female guardian
0.1 Refused/No response

G9. Which of the following best describes your father or primary male guardian?

87.1 He was born in the U.S.
10.1 He was born outside the U.S.
0.6 Don't know
2.1 I don't have a father or primary male guardian
0.1 Refused/No response

G10. Do you, *personally*, know anyone who has had an addiction to alcohol or other drugs?

43.4 Yes
45.0 No
11.5 I don't know
0.2 Refused/No response

G11. As you were taking this survey, was there someone there with you who could see your answers?

10.2 Yes
89.8 No

Thank you for participating in this nationwide survey conducted by The National Center on Addiction and Substance Abuse at Columbia University.

Appendix D
2010 CASA Survey of High School Teachers and School Personnel
Weighted Frequencies

CONSENT

Knowledge Networks, a research firm, and The National Center on Addiction and Substance Abuse at Columbia University, a policy research center, are conducting a nationwide research project about the attitudes and behaviors of high school students as they relate to smoking, drinking and other drug use. As part of this project we are surveying high school teachers, administrators and other school personnel. We are interested in your thoughts and experiences as they relate to substance use and related issues among high school students, including how best to address the problem.

If you choose to participate, we will ask you questions about your attitudes and beliefs about teen tobacco, alcohol, marijuana and other drug use, your school's policies and procedures regarding student substance use, and the role that peers, the media, family and schools play in preventing teen substance use. Your responses will be combined with the responses of school personnel across the country. No identifying information about you will be released to anyone. We respect your privacy, and want to assure you that your responses are confidential. This survey should take around 20 minutes to complete.

If you are willing to participate in this important study, please click CONTINUE.

TEACHERS AND SCHOOL PERSONNEL SURVEY

A1A. [SPLIT SAMPLE]

In some states voters have made it legal for people to use marijuana if prescribed by a doctor. Which of the following best reflects your opinion on this matter?
Please select only one response.

Teachers	Other	
55.2	44.8	Doctors should be allowed to prescribe marijuana
7.1	12.5	Doctors should not be allowed to prescribe marijuana
32.9	39.6	More information about the safety and effectiveness of marijuana for medical use is needed before doctors should be allowed to prescribe it
4.8	3.1	I don't have an opinion on this matter

A1B. All drugs must be reviewed for their safety and effectiveness and approved for medical use by the U.S. Food and Drug Administration (FDA) before they can be prescribed by a doctor; however, in some states voters have bypassed this process and permitted doctors to prescribe marijuana without FDA approval. Which of the following best reflects your opinion on this matter?

Teachers	Other	
38.6	23.1	Doctors should be allowed to prescribe marijuana without FDA approval
48.7	56.9	Doctors should not be allowed to prescribe marijuana without FDA approval
12.7	20.0	I don't have an opinion on this matter

A2. Which of the following best describes your opinion of what marijuana is? Is marijuana a… [Please check all that apply]

Teachers	Other	
67.8	76.4	Harmful drug
20.5	13.7	Harmless drug
32.3	23.0	Medicine/prescription drug
0.4	0.0	Refused/No response

A3. Who, if anyone, should be allowed to use marijuana legally?

Teachers	Other	
18.3	14.9	No one, its use should be illegal for everyone
57.0	63.4	Only patients who have been prescribed marijuana by a doctor
18.6	16.1	All adults over the age of 21
4.7	3.1	All adults over the age of 18
0.2	0.0	Any one who wants to use it, regardless of age
0.7	2.5	Other (please specify)
0.4	0.0	Refused/No response

A4. Which of the following do you think are the main factors involved in developing an addiction to tobacco/nicotine?
Please select *a maximum* of two main factors.

Teachers	Other	
25.3	24.9	A physical health problem
9.4	20.5	A mental health problem
11.9	10.6	A genetic problem
30.7	24.2	A behavioral problem
2.3	1.2	A moral problem
4.0	1.9	A spiritual problem
57.4	55.9	A reliance on the substance as an emotional crutch in response to negative life events
39.5	37.3	A problem of willpower or self control

A5. Which of the following do you think are the main factors involved in developing an addiction to alcohol? Please select *a maximum* of two main factors.

Teachers	Other	
17.3	16.8	A physical health problem
11.7	18.6	A mental health problem
37.5	32.9	A genetic problem
24.4	21.1	A behavioral problem
2.6	1.2	A moral problem
5.1	1.9	A spiritual problem
63.1	58.4	A reliance on the substance as an emotional crutch in response to negative life events
27.3	31.1	A problem of willpower or self control

A6. Which of the following do you think are the main factors involved in developing an addiction to prescription/illegal drugs?
Please select *a maximum* of two main factors.

Teachers	Other	
38.1	31.1	A physical health problem
16.2	23.6	A mental health problem
9.7	13.7	A genetic problem
24.2	23.6	A behavioral problem
2.6	1.9	A moral problem
3.4	1.9	A spiritual problem
60.2	60.9	A reliance on the substance as an emotional crutch in response to negative life events
32.4	29.8	A problem of willpower or self control

A7. To what extent is each of the following behaviors dangerous for a high school student?
[Scale: 1=Not at all dangerous; 2=A little dangerous; 3=Somewhat dangerous; 4=Very dangerous]

Teachers	Other	
		Smoking cigarettes
0.0	0.6	Not at all dangerous
6.1	3.1	A little dangerous
33.5	37.9	Somewhat dangerous
60.4	57.8	Very dangerous
0.0	0.6	Refused/No response
		Drinking 4 or 5 alcoholic drinks/shots within a few hours (binge drinking)
0.0	0.6	Not at all dangerous
0.0	1.9	A little dangerous
4.4	4.3	Somewhat dangerous
95.6	93.2	Very dangerous
		Getting drunk
0.0	1.2	Not at all dangerous
1.9	1.2	A little dangerous
22.6	19.9	Somewhat dangerous
75.5	77.6	Very dangerous

Teachers	Other	
		Smoking marijuana
0.4	0.6	Not at all dangerous
12.4	3.7	A little dangerous
37.1	29.2	Somewhat dangerous
50.0	66.5	Very dangerous
0.1	0.0	Refused/No response
		Not wearing a seat belt (while riding in a car)
0.5	0.0	Not at all dangerous
2.0	3.1	A little dangerous
28.5	19.3	Somewhat dangerous
68.9	77.6	Very dangerous
		Using (inhaling/breathing in) inhalants (like glue, aerosol sprays)
0.1	0.0	Not at all dangerous
0.0	0.6	A little dangerous
5.5	4.3	Somewhat dangerous
94.4	95.0	Very dangerous
		Taking prescription pain medications (like Vicodin or OxyContin) that were not prescribed for him/her, or in a way that wasn't prescribed, to get high
0.0	0.0	Not at all dangerous
0.0	0.6	A little dangerous
5.6	5.6	Somewhat dangerous
94.4	93.2	Very dangerous
0.0	0.6	Refused/No response
		Taking prescription tranquilizers (like Xanax or Valium) that were not prescribed for him/her, or in a way that wasn't prescribed, to relax or relieve stress
0.0	0.0	Not at all dangerous
0.0	0.6	A little dangerous
9.9	8.1	Somewhat dangerous
90.1	91.3	Very dangerous
		Having unprotected sex
0.0	0.0	Not at all dangerous
2.2	2.5	A little dangerous
25.4	19.9	Somewhat dangerous
72.4	77.6	Very dangerous
0.1	0.0	Refused/No response
		Mixing alcohol with an energy drink (like Red Bull)
0.0	0.6	Not at all dangerous
4.3	3.1	A little dangerous
19.2	19.3	Somewhat dangerous
76.4	77.0	Very dangerous
		Using other illicit drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
0.1	0.0	Not at all dangerous
0.0	0.6	A little dangerous
3.3	1.2	Somewhat dangerous
96.6	98.1	Very dangerous

Teachers	Other	
		Driving while drunk
0.0	0.0	Not at all dangerous
0.0	0.6	A little dangerous
0.3	1.2	Somewhat dangerous
99.5	97.5	Very dangerous
0.2	0.6	Refused/No response
		Driving while high on marijuana
0.0	0.0	Not at all dangerous
0.2	0.6	A little dangerous
8.5	8.7	Somewhat dangerous
91.4	90.7	Very dangerous
		Driving while high on prescription drugs
0.0	0.0	Not at all dangerous
0.0	0.0	A little dangerous
3.7	5.6	Somewhat dangerous
96.3	94.4	Very dangerous
		Mixing alcohol with prescription drugs (like Valium, Xanax, Vicodin)
0.0	0.0	Not at all dangerous
0.0	0.6	A little dangerous
2.6	1.9	Somewhat dangerous
97.4	97.5	Very dangerous
		Taking prescription stimulants (like Adderall, Ritalin) that were not prescribed for him/her, or in a way that wasn't prescribed, to be more awake or focused
1.3	0.0	Not at all dangerous
2.8	2.5	A little dangerous
13.6	12.4	Somewhat dangerous
82.4	85.1	Very dangerous
		Getting in a car with a stranger
0.0	0.6	Not at all dangerous
1.9	4.3	A little dangerous
27.6	19.9	Somewhat dangerous
70.5	75.2	Very dangerous

A8. How likely is each of the following things to happen to a high school student who binge drinks about once a month? (Binge drinking for a girl is drinking four or more alcoholic drinks within a few hours, for a boy its drinking five or more alcoholic drinks within a few hours.)
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Teachers	Other	
		Poor academic performance
2.2	3.1	Not at all likely
19.8	15.5	A little likely
46.5	47.2	Somewhat likely
31.5	34.2	Very likely

Teachers	Other	
		Overdose/death
3.5	2.5	Not at all likely
23.4	26.7	A little likely
49.1	43.5	Somewhat likely
24.1	27.3	Very likely
		Have an accident (e.g., fall, drown)
0.3	0.0	Not at all likely
7.5	8.1	A little likely
41.2	39.8	Somewhat likely
51.0	52.2	Very likely
		Drive drunk/ride in a car with a drunk driver
0.1	0.0	Not at all likely
1.3	3.1	A little likely
32.4	29.2	Somewhat likely
66.0	67.7	Very likely
0.3	0.0	Refused/No response
		Get into a car accident if driving drunk
0.1	0.0	Not at all likely
1.8	2.5	A little likely
33.0	28.0	Somewhat likely
65.1	69.6	Very likely
		Damage brain cells
0.7	1.2	Not at all likely
7.7	8.7	A little likely
26.6	26.7	Somewhat likely
65.0	63.4	Very likely
		Increase chances of alcohol addiction
0.6	1.2	Not at all likely
13.3	9.9	A little likely
33.9	36.0	Somewhat likely
52.2	52.8	Very likely
		Get into a fight
0.1	0.6	Not at all likely
9.6	13.0	A little likely
48.2	48.4	Somewhat likely
42.2	37.9	Very likely
		Sexually assault someone or be sexually assaulted
0.2	0.6	Not at all likely
10.5	14.9	A little likely
48.7	44.7	Somewhat likely
40.6	39.8	Very likely
		Have legal problems (e.g., get arrested)
0.1	0.0	Not at all likely
10.0	14.9	A little likely
49.1	41.6	Somewhat likely
40.7	43.5	Very likely

Teachers	Other	
		Have unprotected sex
0.0	0.6	Not at all likely
3.3	6.8	A little likely
37.0	34.8	Somewhat likely
59.6	57.8	Very likely
0.1	0.0	Refused/No response

A9. What level of binge drinking do you think can cause damage to the brain of a high school student? (Binge drinking for a girl is drinking four or more alcoholic drinks within a few hours, for a boy it's drinking five or more alcoholic drinks within a few hours.)

Teachers	Other	
8.1	12.0	Just about every day
27.2	35.2	Just about once a week
29.2	16.2	Just about once a month
34.5	36.6	Just once
1.0	0.0	Binge drinking does not cause brain damage

A10. How likely is each of the following things to happen to a high school student who smokes marijuana about once a month?
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Teachers	Other	
		Poor academic performance
4.0	5.6	Not at all likely
25.1	20.5	A little likely
38.1	44.7	Somewhat likely
32.8	29.2	Very likely
		Overdose/death
47.1	33.5	Not at all likely
31.0	39.8	A little likely
14.9	15.5	Somewhat likely
7.0	11.2	Very likely
		Have an accident (e.g., fall, drown)
6.8	5.6	Not at all likely
41.6	41.0	A little likely
34.7	29.8	Somewhat likely
17.0	23.6	Very likely
		Drive drunk/ride in a car with a drunk driver
1.2	2.5	Not at all likely
11.7	15.5	A little likely
34.6	34.8	Somewhat likely
52.6	47.2	Very likely
		Get into a car accident if driving drunk
0.8	0.6	Not at all likely
17.4	16.8	A little likely
37.2	34.2	Somewhat likely
44.6	48.4	Very likely

Teachers	Other	
		Damage brain cells
6.0	5.6	Not at all likely
20.3	19.9	A little likely
24.9	23.6	Somewhat likely
48.8	50.9	Very likely
		Increase chances of addiction
7.3	5.6	Not at all likely
21.1	21.1	A little likely
37.9	31.1	Somewhat likely
33.7	42.2	Very likely
		Get into a fight
24.6	16.1	Not at all likely
30.8	37.3	A little likely
31.3	28.0	Somewhat likely
13.2	18.6	Very likely
		Sexually assault someone or be sexually assaulted
15.3	9.9	Not at all likely
36.7	36.0	A little likely
34.8	33.5	Somewhat likely
13.2	20.5	Very likely
		Have legal problems (e.g., get arrested)
2.7	3.1	Not at all likely
23.2	26.7	A little likely
42.5	38.5	Somewhat likely
31.6	31.7	Very likely
		Have unprotected sex
0.8	3.7	Not at all likely
27.9	19.3	A little likely
37.8	38.5	Somewhat likely
33.5	38.5	Very likely
0.1	0.0	Refused/No response

A11. How likely is each of the following things to happen to a high school student who takes prescription drugs about once a month that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused?
[Scale: 1=Not at all likely; 2=A little likely; 3=Somewhat likely; 4=Very likely]

Teachers	Other	
		Poor academic performance
5.9	5.6	Not at all likely
19.4	19.9	A little likely
42.1	41.0	Somewhat likely
32.7	33.5	Very likely
		Overdose/death
2.3	2.5	Not at all likely
16.5	23.6	A little likely
45.3	37.3	Somewhat likely
35.9	36.6	Very likely

Teachers	Other	
		Have an accident (e.g., fall, drown)
1.0	2.5	Not at all likely
21.8	23.0	A little likely
48.6	44.1	Somewhat likely
28.6	30.4	Very likely
		Drive drunk/ride in a car with a drunk driver
0.6	1.2	Not at all likely
14.6	19.9	A little likely
40.1	32.9	Somewhat likely
44.7	46.0	Very likely
		Get into a car accident if driving drunk
0.1	1.9	Not at all likely
13.6	14.3	A little likely
39.8	34.8	Somewhat likely
46.5	49.1	Very likely
		Damage brain cells
2.7	5.0	Not at all likely
16.9	15.5	A little likely
33.7	29.2	Somewhat likely
46.7	50.3	Very likely
		Increase chances of addiction
0.9	1.9	Not at all likely
9.3	12.4	A little likely
33.0	32.9	Somewhat likely
56.8	52.8	Very likely
		Get into a fight
7.1	3.7	Not at all likely
29.0	35.4	A little likely
43.1	39.1	Somewhat likely
20.8	21.7	Very likely
		Sexually assault someone or be sexually assaulted
4.1	3.7	Not at all likely
32.2	31.1	A little likely
44.0	39.1	Somewhat likely
19.7	26.1	Very likely
		Have legal problems (e.g., get arrested)
5.5	3.1	Not at all likely
18.2	21.7	A little likely
45.6	44.7	Somewhat likely
30.8	30.4	Very likely
		Have unprotected sex
3.3	2.5	Not at all likely
23.6	18.6	A little likely
37.3	40.4	Somewhat likely
35.7	38.5	Very likely
0.1	0.0	Refused/No response

A12. Has any high school student at your school experienced any of the following as a result of *someone else's* use of alcohol or other drugs?
[Please check all that apply]

Teachers	Other	
64.4	67.1	Accident
57.2	66.5	Injury
32.1	42.9	Victim of sexual assault or rape
34.6	44.7	Unintended pregnancy
42.6	48.4	Physical abuse
51.3	53.4	Being harassed, picked on, drawn into a fight
41.0	39.8	Sleep disruption
67.1	65.8	Disruption of ability to perform schoolwork or other extracurricular activities
73.1	71.4	Gotten into trouble with adults/authorities
7.1	6.2	Other (please specify)
6.3	8.1	No student at my school has experienced these things as a result of someone else's use of alcohol or other drugs

A13. Which of the following do you think are the *three main* reasons that some high-school-age students choose not to drink or use other drugs?
Please select only three reasons.

Teachers	Other	
37.2	48.5	Parents would disapprove
40.3	25.5	Parents would punish them
58.0	56.5	Their friends don't drink / use other drugs
73.0	76.4	Personal values
38.6	29.2	Religion/spirituality
15.3	18.6	It's against the law
21.0	20.5	They are concerned with getting good grades
8.2	15.5	Health reasons
1.1	3.1	Other (please specify)

A14. How difficult is it for a high school student to choose not to drink alcohol?

Teachers	Other	
6.4	8.1	Not at all difficult
27.2	16.8	A little difficult
49.3	49.1	Somewhat difficult
17.1	26.1	Very difficult

A15. Are students who do not drink generally more or less popular?

Teachers	Other	
6.1	8.1	More popular
34.5	42.2	Less popular
59.4	49.7	Popularity isn't related to drinking

A16. Thinking about the students at your school who you know smoke, drink or use other drugs, do you think their parents *typically* know about it?

Teachers	Other	
44.2	57.8	Yes
52.3	39.8	No
3.5	2.5	I don't know any students who smoke, drink or use other drugs

A16B. Why do you think their parents don't know about it?*

Teachers	Other	
55.6	57.8	They hide it from their parents
21.2	15.6	Their parents aren't around much
19.0	18.8	Their parents don't notice
4.2	7.8	Other (please specify)

A16B1. If their parents typically know about it, which of the following statements do you think is true?†

Teachers	Other	
55.3	66.7	Their parents ignore it or pretend not to notice
26.0	14.0	Their parents allow it
18.7	18.3	Their parents try to stop them from doing it
0.0	1.1	Refused/No response

A17. How much do you think that each of the following keeps some parents from talking to their high-school-age children about smoking, drinking or using other drugs?
[Please check all that apply]

Teachers	Other	
53.9	68.9	Parents don't know how to talk to their high-school-age children about substance use
63.1	56.5	Parents are too busy or they don't have enough time
33.5	38.5	Parents feel it's hopeless to try to stop their children from using these substances
52.4	53.4	Parents don't think it's such a big deal if high-school-age students use these substances
68.6	60.9	Parents don't believe their own children would use these substances
10.2	4.3	Other (please specify)

A18. To what extent are you in favor of the following policy initiatives to reduce substance use among young people?
[Scale: 1=Not at all; 2=A little; 3=Somewhat; 4=Very much]

Teachers	Other	
		Increase alcohol taxes to raise the cost of alcohol
36.4	32.3	Not at all
17.7	19.9	A little
20.6	28.0	Somewhat
25.2	19.9	Very much

* Question asked only of respondents who said they think parents do not typically know. (n= 184 teachers, 64 other)
† Question asked only of respondents who said they think parents typically know. (n=156 teachers, 93 other)

Teachers	Other	
		Increase cigarette taxes to raise the cost of smoking
24.4	18.6	Not at all
10.1	14.3	A little
21.4	21.1	Somewhat
44.1	46.0	Very much
		Make it illegal for teens to drive if they have even one sip of alcohol/if they have a blood alcohol content (BAC) level above zero
13.6	6.2	Not at all
10.9	14.3	A little
18.7	26.7	Somewhat
56.8	52.8	Very much
		Have a wider ban on tobacco and alcohol advertising
17.1	9.3	Not at all
13.8	14.3	A little
22.7	33.5	Somewhat
46.5	42.9	Very much
		Completely ban depictions of smoking on TV and in movies
35.6	16.8	Not at all
22.6	24.2	A little
22.8	28.6	Somewhat
19.0	30.4	Very much
		Raise income taxes to fund anti-substance use public health campaigns
57.4	41.0	Not at all
28.1	28.6	A little
8.2	19.3	Somewhat
6.2	11.2	Very much
		Make it a crime for parents to serve alcohol to underage people, other than their own children, in their home
6.0	2.5	Not at all
6.9	13.7	A little
17.9	23.6	Somewhat
69.2	60.2	Very much

A19. What percentage of students at your school do you think smokes cigarettes at least once a week?
_____%

Teachers	Other	
1.1	0.6	0 percent
62.5	55.9	1 to 25 percent
26.7	32.3	26 to 50 percent
6.3	8.7	51 to 75 percent
3.1	2.5	76 to 100 percent

A20. What percentage of students at your school do you think drink alcohol at least once a month?
_____%

Teachers	Other	
0.7	0.6	0 percent
26.7	23.6	1 to 25 percent
33.5	42.9	26 to 50 percent
27.3	25.5	51 to 75 percent
11.1	7.5	76 to 100 percent

A21. What percentage of students at your school do you think drink 4 or 5 alcoholic drinks/shots within a few hours at least once a month?
_____%

Teachers	Other	
1.3	0.6	0 percent
58.5	62.7	1 to 25 percent
31.0	27.3	26 to 50 percent
6.3	8.7	51 to 75 percent
3.4	0.6	76 to 100 percent

A22. What percentage of students at your school do you think smoke marijuana at least once a month?
_____%

Teachers	Other	
1.2	1.2	0 percent
51.7	57.8	1 to 25 percent
36.1	24.9	26 to 50 percent
7.4	11.8	51 to 75 percent
3.7	4.4	76 to 100 percent

A23. What percentage of students at your school do you estimate ever used prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused?
_____%

Teachers	Other	
1.2	1.9	0 percent
75.9	71.4	1 to 25 percent
15.9	14.9	26 to 50 percent
2.3	8.1	51 to 75 percent
4.0	3.7	76 to 100 percent

B1. How concerned is your school's administration about each of the following student behaviors?
[Scale: 1=Not at all concerned; 2=A little concerned; 3=Somewhat concerned; 4=Very concerned]

Teachers	Other	
		Smoking cigarettes
9.5	5.6	Not at all concerned
37.6	21.1	A little concerned
33.3	39.8	Somewhat concerned
19.6	33.5	Very concerned

Teachers	Other	
		Drinking alcohol
4.8	1.2	Not at all concerned
15.7	9.3	A little concerned
31.4	29.2	Somewhat concerned
48.1	60.2	Very concerned
		Smoking marijuana
7.1	1.2	Not at all concerned
16.9	8.7	A little concerned
25.7	25.5	Somewhat concerned
50.3	64.6	Very concerned
		Using other drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
6.9	1.9	Not at all concerned
19.6	12.4	A little concerned
22.4	20.5	Somewhat concerned
51.0	65.2	Very concerned
		Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax or relieve stress
8.9	3.1	Not at all concerned
24.0	9.9	A little concerned
26.7	24.2	Somewhat concerned
40.5	62.7	Very concerned
		Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to be more awake or focused
9.0	2.5	Not at all concerned
25.5	12.4	A little concerned
28.2	24.8	Somewhat concerned
37.3	60.2	Very concerned
		Sexual activity
11.1	4.3	Not at all concerned
23.5	19.3	A little concerned
45.5	42.2	Somewhat concerned
19.9	34.2	Very concerned
		Unhealthy eating/being overweight
26.4	9.9	Not at all concerned
40.7	35.4	A little concerned
25.1	32.3	Somewhat concerned
7.8	22.4	Very concerned

B2. What would you say are the *top three* health/safety-related concerns that your school has for the high school students?

Please write a '1' next to what you think is the greatest concern, a '2' next to the second greatest concern and a '3' next to the third greatest concern.

Teachers	Other	
14.6	16.1	Promoting safe sex
9.7	7.5	Promoting abstinence from sex
15.7	9.3	Preventing smoking cigarettes
46.0	37.9	Preventing alcohol use

Teachers	Other	
25.2	30.4	Preventing marijuana use
27.5	30.4	Preventing other illicit drug use
4.5	12.4	Preventing students' use of prescription drugs were not prescribed for them, or in a way that wasn't prescribed
24.1	16.1	Promoting safe driving
6.3	13.0	Promoting healthy eating/preventing obesity or other eating disorders
3.3	7.5	Promoting regular exercise
50.6	60.2	Preventing bullying
14.9	16.8	Preventing mental health problems such as depression or anxiety
16.0	15.5	Promoting Internet safety / privacy
38.0	23.0	Preventing gang involvement/violence
3.7	3.7	Other (please specify)

B3. What do you think should be the *main* role of your high school in preventing student substance use?
Please select *a maximum* of three main roles.

Teachers	Other	
77.0	86.3	Education/information for students
21.9	18.0	Drug testing / detecting student use
50.6	45.3	Informing parents when children are suspected of using
11.1	13.7	Screening for health problems including substance use
57.4	54.7	Counseling students with symptoms of substance use problems
26.4	34.2	Educating parents about the dangers of teen substance use
27.3	19.9	Teaching parents how to prevent teen substance use
0.0	1.9	Other (please specify)
0.3	0.6	My school should not be involved in preventing student substance use

B4. Which of the following does your school do to deter high school students from smoking, drinking or using other drugs on school grounds?
Please check all that apply.

Teachers	Other	
7.4	11.2	Screen all students for signs of alcohol or other drug problems
9.0	16.1	Screen particular groups of students (e.g., athletes) or high-risk students for signs of alcohol or other drug problems
7.9	9.3	Random drug testing of all students
11.4	13.0	Random drug testing only of particular student groups (e.g., athletes)
14.7	21.1	Drug testing, with cause for suspicion only
30.6	33.5	Random bag/locker checks
44.5	56.5	Bag/locker checks, with cause for suspicion only
13.1	14.3	Other (please specify)
15.6	8.7	My school does not do anything to deter student substance use
1.8	0.0	Refused/No response

B5. Which of the following does your school do if a student is caught smoking? Please check all that apply.

Teachers	Other	
75.5	83.2	Parents are informed
11.0	19.3	Counseling is required
13.2	18.0	Counseling is suggested
4.7	6.8	Referred to a health care provider
59.3	65.8	Suspension
4.9	4.3	Expulsion
14.1	19.9	Law enforcement is called in
10.0	12.4	Other (please specify)
8.8	2.5	There are no consequences that I'm aware of
1.8	0.0	Refused/No response

B6. Which of the following does your school do if a student is caught drinking or using other drugs? Please check all that apply.

Teachers	Other	
89.8	92.5	Parents are informed
34.0	39.8	Counseling is required
17.3	20.5	Counseling is suggested
10.2	14.3	Referred to a health care provider
82.5	76.4	Suspension
20.3	24.8	Expulsion
47.3	55.3	Law enforcement is called in
4.7	5.0	Other (please specify)
1.4	0.0	There are no consequences that I'm aware of
1.8	0.6	Refused/No response

B7. How well informed, generally, are students at your school about the school's policies (rules and consequences) regarding student smoking, drinking or using other drugs?

Teachers	Other	
1.8	0.6	Not at all
6.6	5.0	A little
33.6	19.3	Somewhat
55.8	74.5	Very
1.8	0.6	I don't know
0.4	0.0	My school doesn't have rules or consequences about student smoking, drinking or using other drugs

B8. How well informed, generally, are the faculty and other personnel at your school about the school's policies (rules and consequences) regarding student smoking, drinking or using other drugs?

Teachers*	Other	
1.1	0.6	Not at all
8.9	5.0	A little
30.0	18.0	Somewhat
58.4	75.8	Very
1.7	0.6	I don't know
0.0	0.0	My school doesn't have rules or consequences about student smoking, drinking or using other drugs

B9. Are your school's policies (rules and consequences) regarding student smoking, drinking or using other drugs enforced?

Teachers†	Other	
1.2	0.6	Not at all
8.5	7.5	A little
34.0	17.4	Somewhat
53.0	73.9	Very
3.3	0.6	I don't know
0.0	0.0	My school doesn't have rules or consequences about student smoking, drinking or using other drugs

B10. Are your school's policies (rules and consequences) about student smoking, drinking or using other drugs enforced *consistently* for all students who violate them?

Teachers‡	Other	
5.4	1.2	Not at all
10.6	6.2	A little
26.5	19.9	Somewhat
50.1	71.4	Very
7.4	1.2	I don't know
0.0	0.0	My school doesn't have rules or consequences about student smoking, drinking or using other drugs

* Question asked only of respondents who indicated that their school has policies (rules and consequences) regarding student smoking, drinking or using other drugs. (n= teachers, 351)

† Question asked only of respondents who indicated that their school has policies (rules and consequences) regarding student smoking, drinking or using other drugs. (n= teachers, 351)

‡ Question asked only of respondents who indicated that their school has policies (rules and consequences) regarding student smoking, drinking or using other drugs. (n= teachers, 351)

B11. How effective are your school's policies (rules and consequences) about student smoking, drinking or using other drugs in preventing students from doing these things *at school or during school hours*?

Teachers*	Other	
2.6	3.1	Not at all
15.9	15.5	A little
50.7	41.6	Somewhat
28.7	38.5	Very
2.0	1.2	I don't know
0.0	0.0	My school doesn't have rules or consequences about student smoking, drinking or using other drugs

B12. How are school policies regarding student alcohol and other drug use chosen or determined?†
Please check all that apply.

Teachers	Other	
59.1	67.7	Determined by the school board
14.7	26.7	Based on a review of the research evidence
38.5	55.9	Based on what school administrators think would work best
15.8	17.4	Based on input from parents
5.1	8.1	Other (please specify)
24.3	6.8	I don't know how the policies are chosen

B13. Which of the following does your school do if a student is thought to have a problem with alcohol or other drugs?
Please check all that apply.

Teachers	Other	
71.5	83.9	Parents are informed
63.8	72.7	The school counselor intervenes
31.6	46.6	The student is referred to professional counseling/treatment
6.5	16.1	The student is referred to a health care provider
23.3	23.0	The student is suspended from school
3.9	6.8	The student is expelled from school
4.9	3.1	The student is transferred to a school that specializes in students with alcohol or other drug problems
7.3	7.5	Other (please specify)
8.6	3.1	There are no official procedures in place that I'm aware of for dealing with a student with an alcohol or other drug use problem
1.8	0.0	Refused/No response

* Question asked only of respondents who indicated that their school has policies (rules and consequences) regarding student smoking, drinking or using other drugs. (n= teachers, 351)
† Question asked only of respondents who indicated that their school has policies (rules and consequences) regarding student smoking, drinking or using other drugs. (n= teachers, 351)

B14. Does your school have any of the following professionals on staff or readily available for students who have an alcohol or other drug use problem?
Please check all that apply.

Teachers	Other	
19.9	19.3	Substance abuse counselor trained in substance use
19.7	18.0	Student assistance counselor trained in substance use
28.0	28.6	Nurse trained in substance use
23.8	24.2	Social worker trained in substance use
7.7	14.3	Other professional (please specify)
19.9	8.1	I don't know
19.5	31.7	My school does not have any such professionals
1.8	0.0	Refused/No response

B15. Does your school train educators and other school staff how to identify and respond to students alcohol and other drug use?

Teachers	Other	
26.9	58.4	Yes
63.2	32.9	No
9.9	8.7	I don't know

B16. Does your school formally measure or assess rates of student substance use?

Teachers	Other	
11.7	28.0	Yes
54.2	59.0	No
34.0	13.0	I don't know
0.1	0.0	Refused/No response

B17. What does your school do if a faculty member or other school personnel demonstrates evidence of an alcohol or other drug use problem?
Please check all that apply.

Teachers	Other	
15.5	23.0	Verbal reprimand
12.1	16.1	Law enforcement is called in
11.8	29.2	Recommend counseling/treatment
16.3	31.1	Require counseling/treatment
3.6	12.4	Refer to a health care provider
22.0	41.6	Suspend
21.2	19.9	Fire
7.4	15.5	Other (please specify)
45.5	20.5	I don't know
2.3	1.9	Nothing
1.8	0.0	Refused/No response

B18. What prevention programs does your school have in place to prevent or reduce student substance use?
Please check all that apply.

Teachers	Other	
16.7	18.6	Social norms marketing programs, where attempts are made to correct students' misperceptions or overestimation of the actual prevalence of substance use among their peers
13.3	11.2	Stand-alone substance use prevention curriculum for all students
7.3	8.1	Stand-alone substance use prevention curriculum for particular groups of students (e.g., athletes) or for high-risk students
43.1	52.8	Substance use prevention curriculum within a larger health curriculum
6.9	14.9	Substance use prevention curriculum integrated into the academic curriculum across all grade levels
30.2	44.1	School assemblies in which substance use prevention is a primary topic
20.1	30.4	Peer education/peer intervention programs
6.1	18.6	Smoking cessation program (like Not-On-Tobacco)
2.8	4.3	Media literacy training
30.0	24.2	DARE
4.5	2.5	Other national prevention program (please specify)
3.9	5.0	Other (please specify)
15.7	6.2	I don't know what my school does in terms of prevention programs
8.5	8.7	My school doesn't have any prevention programs

B19. How effective are your school's substance use prevention programs in affecting students' decisions about whether or not to smoke, drink or use other drugs?*

Teachers	Other	
18.2	8.0	Not at all
44.6	49.6	A little
31.9	37.2	Somewhat
5.3	5.1	Very much

B20. How are school prevention programs regarding student alcohol and other drug use chosen or determined?†
Please check all that apply.

Teachers	Other	
49.1	45.3	Determined by the school board
16.5	33.6	Based on a review of the research evidence
41.5	59.9	Based on what school administrators think would work best
12.3	16.8	Based on input from parents
5.8	11.7	Other (please specify)
32.6	8.8	I don't know how the policies are chosen

* Question asked only of respondents who indicated that their school has substance use prevention programs. (n= 267 teachers, 137 other)
† Question asked only of respondents who indicated that their school has substance use prevention programs. (n= 267 teachers, 137 other)

B21. What barriers impede the school's ability to provide better substance use prevention programming? Please check all that apply.

Teachers	Other	
53.7	68.3	Not enough funding/financial resources for substance use prevention
40.8	52.8	Not enough time for substance use prevention
16.5	14.9	Insufficient administrative support for substance use prevention
32.6	26.7	Insufficient parental support for substance use prevention
20.0	18.6	Insufficient state/school board support for substance use prevention
2.4	1.9	Other (please specify)
15.8	4.3	I don't know what the barriers are
10.0	6.2	There are no barriers that I know of

B22. Do you believe that a high school can prevent or reduce student substance use?

Teachers	Other	
80.8	90.1	Yes
19.2	9.9	No

C1. What do you think are the *top three* concerns of parents when it comes to their high-school-age children? Parents are most concerned about their children….
Please write a '1' next to your greatest concern, a '2' next to your second greatest concern and a '3' next to your third greatest concern.

Teachers	Other	
69.8	83.2	Getting good grades
51.6	55.9	Getting into college
16.0	8.7	Having safe sex
12.7	9.9	Abstaining from sex
1.4	0.6	Not smoking cigarettes
14.6	11.2	Not drinking alcohol
5.6	8.7	Not using marijuana
26.4	21.7	Not using other illicit drugs
0.5	3.1	Not using prescription drugs that were not prescribed for him/her, or in a way that wasn't prescribed, to get high, relax, relieve stress or be more awake or focused
26.2	16.1	Safe driving
0.6	2.5	Eating healthy/balanced meals
0.0	0.0	Getting regular exercise
32.5	42.2	Not being picked on/bullied
3.3	6.2	Not picking on/bullying others
6.8	6.2	Not suffering from depression or anxiety
3.8	5.0	Being safe on the Internet
16.5	13.7	Avoiding gangs
6.3	5.0	Other (please specify)

C2. How concerned do you think the parents of the students in your school are about each of the following student behaviors?
[Scale: 1=Not at all concerned; 2=A little concerned; 3=Somewhat concerned; 4=Very concerned]

Teachers	Other	
		Smoking cigarettes
12.6	6.8	Not at all concerned
49.4	49.7	A little concerned
33.2	33.5	Somewhat concerned
4.8	9.9	Very concerned
		Drinking alcohol
4.3	1.9	Not at all concerned
36.6	26.7	A little concerned
44.6	52.8	Somewhat concerned
14.5	18.6	Very concerned
		Smoking marijuana
3.9	0.6	Not at all concerned
34.8	21.7	A little concerned
45.2	50.3	Somewhat concerned
16.2	27.3	Very concerned
		Using other drugs (like acid, Ecstasy, cocaine, methamphetamines or heroin)
4.2	1.2	Not at all concerned
29.9	18.6	A little concerned
34.5	32.3	Somewhat concerned
31.4	47.8	Very concerned
		Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to get high, relax or relieve stress
6.8	4.3	Not at all concerned
35.9	21.1	A little concerned
33.6	34.8	Somewhat concerned
23.6	39.8	Very concerned
		Using prescription drugs that were not prescribed for them, or in a way that wasn't prescribed, to be more awake or focused
9.4	4.3	Not at all concerned
34.7	24.8	A little concerned
34.3	34.2	Somewhat concerned
21.6	36.6	Very concerned
		Sexual activity
5.3	3.7	Not at all concerned
26.8	28.0	A little concerned
50.0	46.0	Somewhat concerned
17.9	22.4	Very concerned
		Unhealthy eating/being overweight
21.7	18.6	Not at all concerned
57.4	46.6	A little concerned
20.1	25.5	Somewhat concerned
0.9	9.3	Very concerned

C3. What do you think parents *should* be doing to prevent their high-school-age children from smoking, drinking or using other drugs?
[Please check all that apply]

Teachers	Other	
41.0	42.9	Smell breath/check their eyes when they come home
54.7	59.0	Look in room/bag /other personal items for evidence of cigarette, alcohol or other drug use
14.8	23.0	Perform drug testing
14.5	20.5	Ask his/her friends if they're smoking, drinking or using other drug
61.6	59.0	Set strict rules about not using
76.2	66.5	Impose consequences if they do use (like grounding them; taking away car keys or cell phone; prohibiting TV, video games or using the Internet for a certain amount of time)
13.6	19.3	Make sure they are supervised by adults at all time
92.2	89.4	Have an open, honest relationship with their children
92.8	88.8	Be actively engaged in their children's life
92.5	88.8	Set a good example/be a good role model
79.9	78.9	Explain the negative consequences of smoking, drinking and using other drugs
0.0	0.0	Parents shouldn't try to prevent their children from smoking, drinking or using other drugs
1.8	1.9	Other (please specify)

C4. Does your school attempt to include parents in designing or implementing substance use prevention programs?

Teachers	Other	
24.5	41.6	Yes
31.9	46.6	No
43.6	11.8	I don't know

D1. A number of young celebrities have been in the news recently for being caught drinking while driving or using other drugs. To what extent do you think that these behaviors by popular celebrities encourage high-school-student-age children to use alcohol or other drugs?

Teachers	Other	
9.2	3.7	Not at all
32.0	24.2	A little
38.5	47.2	Somewhat
20.4	24.2	Very much
0.0	0.6	Refused/No response

D2. Does your school control or limit students' use of school computers to access content on the Internet related to the following topics?
Please check all that apply.

Teachers	Other	
92.9	90.7	Sex
59.5	66.5	Smoking
79.1	80.1	Violence
72.0	75.2	Drinking
68.5	72.7	Other drug use
3.2	6.8	School does not limit or control students' access to Internet content in any way
1.3	1.2	School does not have computers for student use
1.8	0.0	Refused/No response

E1. Is the school that you work at…

Teachers	Other	
77.4	79.5	Public--not including charter schools
8.1	5.6	Public charter school
4.9	8.7	Private, not affiliated with a particular religion
2.5	3.1	Private religious--affiliated with the Roman Catholic Church
7.0	3.1	Private religious--affiliated with some religious organization

E2. How many students would you say attend your high school?

Teachers	Other	
6.5	10.6	Less than 100
7.3	8.1	100-199
18.6	18.0	200-499
6.5	13.7	500-749
6.5	10.6	750-999
54.5	39.1	1,000 or more

E3. Do you, *personally*, know anyone who has had an addiction to alcohol or other drugs?

Teachers	Other	
77.0	77.0	Yes
18.9	21.1	No
4.1	1.9	I don't know

Thank you for participating in this nationwide survey conducted by The National Center on Addiction and Substance Abuse at Columbia University.

Appendix E
Key Informant Interviewees

The Honorable Karen Adam, Judge, Pima County Juvenile Court, Tucson, AZ

Kenneth H. Beck, PhD, Professor, University of Maryland, School of Public Health, Department of Public and Community Health, College Park, MD

Patricia Berry, President of the National Student Assistance Association; Director of the Student Assistance Center at Prevention First, Inc., Springfield, IL

Monique Bourgeois, Executive Director, Association of Recovery Schools, Fort Washington, PA

Michael F. Brennan, MA, MSW, LCSW, Policy Associate II, Children, Youth and Families, Muskie School of Public Service, Portland, ME

Robert D. Brewer, MD, MSPH, Captain, U.S Public Health Service Alcohol Program Leader, National Center for Chronic Disease Prevention and Health Promotion/Centers for Disease Control and Prevention (CDC), Atlanta, GA

Wilson Compton, MD, Director of the Division of Epidemiology, Services and Prevention Research, National Institute on Drug Abuse (NIDA), Bethesda, MD

William Crano, PhD, Professor of Psychology, Claremont Graduate University, Claremont, CA

Paula Dawning, Retired Superintendent of Schools, Benton Harbor, Michigan

Lisa Director, PhD, Adjunct Clinical Assistant Professor of Psychology, New York University, New York, NY

Diane Elliot, MD, FACSM, Professor of Medicine, Oregon Health and Science University, Portland, OR

Richard Ellis, Founder and President, 12to20, Encino, CA

Eric, A person in recovery

Bill Evans, PhD, Professor, Human Development and Family Studies, University of Nevada-Reno, Reno, NV

David Faulkner, Executive Director, Day One, South Portland, ME

Linn Goldberg, MD, FACSM, Professor of Medicine, Head of the Division of Health Promotion and Sports Medicine, and Director of the Human Performance Laboratory, Oregon Health and Science University, Portland, OR

Vanessa Gomez, Guidance Counselor, Valley View High and Moreno Valley Unified School District, Moreno Valley, CA

Mark T. Greenberg, PhD, The Bennett Endowed Chair in Prevention Research; Director, Prevention Research Center for the Promotion of Human Development; Professor of Human Development and Psychology, College of Health and Human Development, Penn State University, University Park, PA

Leo Gutierrez, Counselor, Rainbow Days, Dallas, TX

Jennifer L. Hartstein, PsyD, Hartstein Psychological Services, PLLC, New York, NY

J. David Hawkins, PhD, Professor, School of Social Work; Social Development Research Group, University of Washington, Seattle, WA

Aaron Hogue, PhD, Associate Director, Health and Treatment Research and Analysis, The National Center on Addiction and Substance Abuse (CASA) at Columbia University, New York, NY

Susan James-Andrews, MA, Research Lecturer, Administration of Justice Department, George Mason University; President, James-Andrews & Associates, Fairfax, VA

David H. Jernigan, PhD, Associate Professor and Director, Center on Alcohol Marketing and Youth, Baltimore, MD

Kimberly Johnson, MBA, Co-Deputy Director for Operations, NIATx, University of Wisconsin-Madison, Madison, WI

Kathryn Jones, Director of Adult Substance Abuse Services, Center for Health Care Services, San Antonio, TX

Jean Kilbourne, EdD, Author, West Newton, MA

Herbert W. Levine, PhD, Supervising Director, Massachusetts Recovery High Schools; Executive Director, New England Association of School Superintendents, Peabody, MA

Ron Manderscheid, PhD, Executive Director, National Association of County Behavioral Health and Developmental Disability Directors, Washington, DC

Alice E. Marwick, PhD candidate, New York University, Steinhardt School of Culture, Education, and Human Development, New York, NY

Frances Maturo, Executive Director, Archdiocese of New York Drug Abuse Prevention Program, Bronx, NY

Jill McCollum, Detective, Dallas Police Department, Youth Services Section, Dallas, TX

Randy McGibeny, Unit Coordinator of Mental Health Adolescent Intake & Assessment, Center for Health Care Services, San Antonio, TX

Tom (Andrew T.) McLellan, PhD, Former Deputy Director, Office of National Drug Control Policy (ONDCP), Washington, DC

The Honorable Leslie B. Miller, Arizona Superior Court, Pima County, Tucson, AZ

M. Duncan Minton, Esq., Juvenile Prosecutor, Chesterfield Courthouse, VA

James F. Mosher, JD, President, Alcohol Policy Consultations, Felton, CA

Jerald Newberry, Executive Director, National Education Association, Health Information Network, Washington, DC

Robert J. Pandina, PhD, Director, Center of Alcohol Studies, Rutgers University; Director, Rutgers Transdisciplinary Prevention Research Center, Center of Alcohol Studies, Rutgers University; Professor of Psychology, Center of Alcohol Studies, Rutgers University; Professor of Clinical Psychology, Graduate School of Applied and Professional Psychology, Rutgers University; Adjunct Professor of Psychiatry, UMDNJ/Robert Wood Johnson Medical School Graduate Faculty in Clinical Psychology and Neurosciences, Rutgers University, Piscataway, NJ

Stan Paprocki, Director, Colorado Department of Human Services, Alcohol and Drug Abuse/Division of Behavioral Health, Denver, CO

Peter Picard, Vice President, Custom Research, TRU, Chicago, IL

Kathryn Power, MEd, Director, Center for Substance Abuse Prevention (CSAP), Substance Abuse and Mental Health Services Administration (SAMHSA), Rockville, MD

Vicky Rideout, MA, Owner, VJR Consulting, San Francisco, CA

Charles J. Saylors, President, National PTA, Chicago, IL

Steven A. Schroeder, MD, Distinguished Professor of Health and Health Care, University of California, San Francisco, San Francisco, CA

Maureen A. Sedonaen, MBA, Founder, President and Chief Executive Officer, Youth Leadership Institute, San Francisco, CA

Jim Steinhagen, Executive Director, Hazelden Pioneer House, Plymouth, MN

Ronald D. Stephens, EdD, Executive Director, National School Safety Center, Oak Park, CA

Victor C. Strasburger, MD, Chief of the Division of Adolescent Medicine, Professor of Pediatrics, and Professor of Family & Community Medicine, University of New Mexico School of Medicine, Albuquerque, NM

Liz Tankel, Parent Activist, Malvern, PA

Sonya Lopez Thorn, Director, Upward Bound, Texas State University, San Marcos, TX

Mike Urbanski, Associate Head of School for Faculty Development and Student Services, Saltpointe Catholic High School, Tucson, AZ

Sue Yeres, EdD, Yeres Consulting and Training, San Francisco, CA

Appendix F
Screening, Brief Intervention and Referral to Treatment (SBIRT)

General Substance Use Screening and Assessment Tools

CRAFFT

The *CRAFFT* is a six-item questionnaire for assessing self-reported lifetime alcohol and other drug use problems among adolescents.[1] The items are:

1. Have you ever ridden in a ***C****ar* driven by someone (including yourself) who was high or had been using alcohol or drugs?

2. Do you ever use alcohol or drugs to ***R****elax*, feel better about yourself or fit in?

3. Do you ever use alcohol or drugs while you are by yourself ***A****lone*?

4. Do you ever ***F****orget* things you did while using alcohol or drugs?

5. Do your ***F****amily* or ***F****riends* ever tell you that you should cut down on your drinking or drug use?

6. Have you ever gotten into ***T****rouble* while you were using alcohol or drugs?

A similar test including questions two, three, five and six, titled *RAFFT*, also can be used to screen for adolescent substance use disorders.[2] Both tests can be administered and scored by practitioners in a matter of minutes.[3] An affirmative answer to each question is worth one point. A cut-off score of two is recommended for identifying alcohol and other drug use, abuse and dependence.[4] A positive test is a good indicator that respondents are in need of further assessment.

Settings. The *CRAFFT* tool has been validated among adolescent primary care clinic patients.[5]

Advantages. The *CRAFFT* demonstrated a 92.3 percent sensitivity rate and an 82.1 percent specificity[*] rate among adolescents with known substance use.[6] A cut-off score of two accurately recognized 76 percent of adolescent problem users, 80 percent of adolescents with substance abuse and dependence 92 percent of adolescents with substance dependence.[7]

The *CRAFFT* has excellent sensitivity but relatively low specificity.[8] The *CRAFFT* has shown acceptable performance with a cut-off score of two or higher among adolescents arriving at a clinic for routine health care.[9]

Limitations. Relative to other screening and assessment instruments, the validity of these instruments has not been widely tested.

Accessing the Instrument. The *CRAFFT* does not require training to administer and is widely available free of charge.[10]

Problem-Oriented Screening Instrument for Teenagers (POSIT)

The *Problem-Oriented Screening Instrument for Teenagers* was developed by the National Institute on Drug Abuse (NIDA) in 1991 as a first-stage screening mechanism.[11] It can identify potential problems in adolescents between the ages of 12 and 19 and covers 10 areas, including substance use, physical health and social relations.[†] [12]

The *POSIT* questionnaire used most often is made up of 139 yes/no items and takes 20 to 30 minutes to administer.[13] Respondents' scores help practitioners to determine whether they are in need of treatment or other referrals.[14] Practitioners can score the instrument in a matter of minutes.[15]

Settings. *POSIT* is appropriate for use in school, juvenile justice, family court, medical, psychiatric and addiction treatment populations.[16]

Advantages. Examinations of the *POSIT* among adolescents demonstrate the instrument's strong validity as a screening tool for substance use disorders.[17] Research has also tested the reliability of *POSIT* among adolescents receiving routine medical care.[18] Classifications made based on *POSIT*'s substance use domain correlated highly with similar screening tools. In one study, the substance use scale accurately identified 84.2 percent of adolescents with substance use disorders.[19] Using the 17-item version, a cut-off score of two accurately classified 84 percent of the people with substance use disorders.[‡] The 11-item scale produces similar results as the 17-item scale. Using this version, a cut-off score of two was found to be 85 percent accurate at identifying substance use disorders.[§] [20]

Limitations. The *POSIT* is rather lengthy and requires a considerable amount of time to complete. In addition, the written version of the *POSIT* requires substantial staff resources for scoring.[21]

Accessing the Instrument. The *POSIT* tool is not copyrighted and is available free of charge through NIDA. It does not require training to administer.[22]

Teen Addiction Severity Index (T-ASI)

The *Teen Addiction Severity Index* is specifically designed to screen for adolescent substance use problems in seven domains: psychoactive substance use, school or employment status, family functioning, peer/social relationships, legal status and psychiatric status.[23] Each domain contains a five-point scale for patients to rate the severity

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[*] Sensitivity is defined as a true positive--adolescents who have substance use problems screen positive with the particular tool. Specificity is defined as a true negative--adolescents who do not have substance use problems screen negative with the particular tool.

[†] The 10 domains are substance use and abuse, mental health, physical health, aggressive behavior/ delinquency, social skills, family relations, educational status, vocational status, peer relations and leisure/recreation.

[‡] 95 percent sensitivity, 79 percent specificity.

[§] 91 percent sensitivity; 82 percent specificity.

of their problems.[24] The *T-ASI* is helpful for identifying adolescents with substance use disorders and co-occurring psychiatric conditions.[25] The *T-ASI* contains 154 questions[26] and can be administered by a skilled and trained technician in 30-45 minutes.[27] The *Teen Addiction Severity Index-2 (T-ASI-2)* contains questions in 18 domains and is modeled on the *T-ASI* and is a self-report version of the instrument.[28]

Settings. The *T-ASI* is used in criminal justice settings, psychiatric hospitals and community treatment centers.[29]

Advantages. In clinical samples of adolescents, the *T-ASI* has been shown to be valid and reliable, with good internal consistency.[30] The *T-ASI-2* can be used to assess the treatment needs of adolescents and to track post-treatment outcomes.[31] Computer- and phone-based versions of the *T-ASI* allow for quicker administration, with participants rating high ease of use for both versions.[32] The instrument has been translated into Spanish, and this version accurately distinguished between those patients with substance use disorders and those without substance use disorders.[33]

Limitations. The *T-ASI* is expensive to administer and it must be administered by trained professionals.[34] The 18 domains of the *T-ASI-2* make the instrument longer.[35]

Accessing the instrument. The *T-ASI* is not copyrighted and there is no cost for use.[36]

Alcohol-Specific Screening and Assessment Tools

The Alcohol Use Disorders Identification Test (AUDIT)

The *Alcohol Use Disorders Identification Test* was created in 1989 to screen for excessive drinking and to aid in brief assessment in primary care settings. It also is used to identify hazardous and harmful[*] drinking.[37] The 10-question interview takes only a few minutes to administer[38] and even less time to score[39] and covers consumption levels, drinking behavior, adverse reactions and alcohol-related problems.[40]

The questionnaire can be self administered or administered through an interview with a trained practitioner,[41] particularly health professionals or their support staff.[42] Respondents' answers to each question are scored from zero to four, with a maximum score of 40.[43] Researchers have suggested the use of a cut-off score of eight, and a threshold score of three has been recommended to maximize sensitivity of the scale for use in adolescents younger than 18.[44] In studies using samples of adolescents, an *AUDIT* total score threshold of 4 yielded acceptable sensitivity and specificity when the *AUDIT* was validated against the DSM-IV criteria for an alcohol use disorder.[45]

Settings. The *AUDIT* was developed in primary care settings, but has been deemed appropriate by the National Institute on Alcohol Abuse and Alcoholism (NIAAA) for use with hospital, emergency department, psychiatric and primary care patients as well as in criminal justice, armed forces, workforce and college settings.[46]

Advantages. Reviews of the validity of the *AUDIT* in primary care settings found that it has a reported sensitivity ranging from 57 percent to 97 percent.[47] Among older adolescents ages 18 to 20 who were treated in emergency departments, the *AUDIT* had the overall best performance in identifying alcohol use disorders compared to other similar instruments, including the *CRAFFT*.[48]

The *AUDIT*'s greatest strengths include its focus on current practices, its ease of administration, its cultural neutrality and the fact that users need not pay a copyright fee, although the instrument is copyrighted.[49] The *AUDIT* also can be

[*] Defined as alcohol consumption that results in consequences to physical and mental health. Social consequences also may be included.

transferred to a computer-assisted screening instrument.[50]

Limitations. The *AUDIT* is less successful at identifying clinical disorders as defined by the DSM-IV than it is at identifying the extent of alcohol use and the presence of alcohol-related problems.[51] The length (10 items) of the *AUDIT* and its use of Likert-type scaling (40-point scale) make it longer and more complex to score than other instruments.[52]

Accessing the instrument. The *AUDIT* is copyrighted but available at no charge through the World Health Organization (WHO).[*] [53]

The Michigan Alcoholism Screening Test (MAST)

The *Michigan Alcoholism Screening Test*, originally developed in 1971, is one of the most well-known tools for identifying alcohol use disorders.[54] It consists of 25 yes/no questions concerning drinking behavior and alcohol related problems.[55] The instrument can be self-administered or administered in an interview format. The entire process, including scoring, takes less than 15 minutes and training is not required.[56] A cut-off score of about four or five has been shown to be a good indicator that a patient has an alcohol use problem.[57]

There also is a 13-item variation, referred to as *SMAST*, for *Short Michigan Alcoholism Screening Test*.[†] [58] The instrument takes even less time to complete than its longer counterpart. The *SMAST* is made up of yes/no items and affirmative answers are worth one point each. Generally a score of three indicates respondents have a borderline alcohol problem and a score of four or higher indicates an alcohol problem.[59]

[*] The training module costs $75. It can be purchased through the Division of Mental Health and Prevention of Substance Abuse at the WHO.

[†] Other variations of the instrument exist including a 10-item version called the Brief MAST, a version that incorporates drug diagnoses called MAST for Alcohol and Drugs (MAST/AD) and a version for geriatric patients (MAST-G). Since these variations are not used as commonly as MAST and SMAST, they are not elaborated upon here.

Settings. The tools can be used in a wide variety of adolescent and adult populations and in both clinical and research settings.[60]

Advantages. A modified version of the *MAST* (in which questions not relevant for adolescents were removed) was found to have acceptable internal consistency when used with an adolescent population.[61]

Limitations. The *MAST* has not been widely studied among adolescents.

Accessing the instrument. Both *MAST* and *SMAST* are in the public domain.[62] The *MAST* tool is not copyrighted and there is no fee for its use, however there is a $40 fee to obtain a copy of the instrument from the developers.[63] There is no cost for using the *SMAST*.[64]

Illicit and Controlled Prescription Drug-Specific Screening and Assessment Tools

The Drug Abuse Screening Test (DAST)

The *Drug Abuse Screening Test* was developed in 1982 to measure the severity of lifetime drug use disorders in adult populations. The original 28-item questionnaire was based on the *MAST* instrument.[65] There are four variations of the *DAST*: a 28-item, a 20-item, a 10-item and a 27-item questionnaire--the last is intended to screen adolescents.[66] These instruments measure drug problems in general; they do not identify a patient's primary addictive substance.[67]

Settings. The *DAST* instruments have been used successfully among adolescents and adult alcohol and other drug users, psychiatric patients and female offenders, as well as in the workplace.[68] It is recommended for use in populations not seeking treatment.[69]

Advantages. The *DAST* has been found to be both a valid and reliable assessment instrument.[70]

The *DAST-28* can identify up to 96 percent of individuals with drug use disorders.[71] Its overall accuracy in classifying patients according to DSM criteria is 89 percent.[72]

Among psychiatric outpatients, the *DAST-20* identified correctly 74 percent of individuals with drug use disorders and 83 percent without them.[73] Among adolescents at a crisis evaluation and intervention unit, the adolescent version of *DAST* identified 78.6 percent of those with drug use disorders and 84.5 percent of those without it, based on DSM criteria.[74]

Limitations. The 28-item version was found to be better at assessing lifetime drug use problems than current drug use problems among recently admitted psychiatric public hospital patients.[75]

Accessing the instrument. Although it is copyrighted, the instrument is available for use by clinicians, educators and researchers.[76] None of the *DAST* tools require training to administer.[77]

Chapter I
Notes

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Chapter IV
Notes

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Chapter V
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Chapter VI
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Chapter VII
Notes

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