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**EDITORS:** Results of this year's Monitoring the Future survey are being released at a news conference at the National Press Club in Washington, D.C. at 10:00 a.m. Eastern time by the National Institute on Drug Abuse, which sponsors the study, and the University of Michigan, which designed and conducted the study. Participating will be the director of the White House Office of National Drug Control Policy (ONDCP), R. Gil Kerlikowske; the Assistant Secretary for Health, DHHS, Howard Koh; the director of the National Institute on Drug Abuse (NIDA), Nora Volkow; and the principal investigator of the study, Lloyd Johnston. For further information, contact Johnston at (734) 763-5043.

## **Marijuana use continues to rise among U.S. teens, while alcohol use hits historic lows**

ANN ARBOR, Mich.--- Among the more important findings from this year's Monitoring the Future survey of U.S. secondary school students are the following:

- Marijuana use among teens rose in 2011 for the fourth straight year—a sharp contrast to the considerable decline that had occurred in the preceding decade. Daily marijuana use is now at a 30-year peak level among high school seniors.
- “Synthetic marijuana,” which until earlier this year was legally sold and goes by such names as “K2” and “spice,” was added to the study's coverage in 2011; one in every nine high school seniors (11.4%) reported using that drug in the prior 12 months.
- Alcohol use—and, importantly, occasions of heavy drinking—continued a long-term gradual decline among teens, reaching historically low levels in 2011.
- Energy drinks are being consumed by about one third of teens, with use highest among younger teens.

In 2011, a nationally representative sample of 47,000 8<sup>th</sup>-, 10<sup>th</sup>-, and 12<sup>th</sup>-grade students, attending 400 public and private secondary schools, participated in the Monitoring the Future 2011 survey. The study is conducted at the University of Michigan's Institute for Social Research and funded since its inception in 1975 under a series of research grants from the National Institute on Drug Abuse, one of the National Institutes of Health.

The proportion of young people using *any illicit drug* has been rising gradually over the past four years, due largely to increased use of marijuana—the most widely used of all the illicit drugs. In 2011, 50% of high school seniors reported having tried an illicit drug at some time, 40% used one or more drugs in the past 12 months, and 25% used one or more drugs in the prior 30 days. The figures are lower for younger teens, though still disturbingly high: among 10<sup>th</sup> graders, 38% reported having tried an illicit drug, 31% used in the past 12 months, and 19% in the prior 30 days. Corresponding values for 8<sup>th</sup> graders are 20%, 15%, and 8.5%.

The proportion of students reporting using *any illicit drug other than marijuana* has been following a gradual decline for some years, but has remained fairly stable over the most recent three years, with 2011 levels being similar to the 2008 levels. The annual prevalence rates for using any illicit drug other than marijuana in the prior 12 months are 6%, 11%, and 18% in grades 8, 10, and 12; the corresponding lifetime prevalence rates are 10%, 16%, and 25%.

*Marijuana* use continued to rise among 10<sup>th</sup> and 12<sup>th</sup> graders this year for all prevalence periods (lifetime, past year, past 30-days, and daily use in the past 30-days). No one of these changes was large enough to be statistically significant, but they all continue the pattern of a gradual rise. Further, the increase in these grades was broad, with most demographic subgroups showing an increase in use. Among 8<sup>th</sup> graders there was no further rise in marijuana use in 2011, but rather a non-significant decrease in annual prevalence of 1.1 percentage points to 12.5%. Still, annual prevalence for 8<sup>th</sup> graders during the past two years has been higher than any time since the 2003, indicating that its use clearly has been rising among 8<sup>th</sup> graders, as well. For the three grades combined, the annual prevalence of marijuana use rose in 2011 from 24.5% to 25.0%, a non-significant one-year increase. But the increase since 2007, from 21.4% to 25%, is highly statistically significant ( $p < .001$ ).

Of perhaps greater importance is the rise in *daily or near daily marijuana use*, defined as use on 20 or more occasions in the prior 30 days. The rates of current daily marijuana use rose significantly in all three grades last year, and they rose slightly higher in all three grades again this year (though none of this year's changes were large enough to reach statistical significance); but here again, the increases since 2007 are highly significant at every grade level. Current daily prevalence levels in 2011 are 1.3%, 3.6%, and 6.6% in grades 8, 10, and 12.

“Put another way, one in every fifteen high school seniors today is smoking pot on a daily or near daily basis,” says Lloyd Johnston, the principal investigator of the study, “And that’s the highest rate that we have seen over the past thirty years—since 1981.”

One possible explanation for the resurgence in marijuana use is that in recent years fewer teens report seeing much danger associated with its use, even with regular use (Figure 3). “Perceived risk,” as the investigators call it—which the study has shown is often a harbinger of changes to come in the use of a drug—has been falling rather sharply for marijuana over the past five years or so; it continued to decline in all three grades this year. Teens’ disapproval of marijuana use also has fallen over the past three or four years, suggesting a lowering of peer norms against use. (The decline in disapproval may be a consequence of the decline in perceived risk; past research has shown that these two dimensions are closely linked.)

*Synthetic Marijuana* was added to the study’s coverage in 2011. Sometimes sold online, in head shops, convenience stores, or gasoline stations, synthetic marijuana is meant to mimic the effects of marijuana (cannabis), and it often contains synthetic cannabinoids that did not appear on the DEA’s list of scheduled substances. In February of 2011, however, the DEA used its temporary emergency powers to declare a number of the chemicals used in such products to be Schedule I drugs—unsafe, highly abused substances with no legitimate medical use—for at least a year. In addition, at least 18 states have banned synthetic marijuana. In 2011, 11.4% of high school seniors nationwide indicated using it in the prior 12 months; but they completed their questionnaires just shortly after the drugs were placed on the schedule of proscribed substances. “Next year’s results should tell us a lot more about how successful these new control efforts are,” says Johnston. “We know that the great majority of those who have used synthetic marijuana also used regular marijuana during the year, as well as a number of other drugs.”

*Ecstasy*. Annual prevalence rates for *ecstasy* (MDMA) in 2011 are 1.7%, 4.5%, and 5.3% in grades 8, 10, and 12, respectively; these rates reflect an increase in 12<sup>th</sup> grade of 0.9 percentage points, no real change in 10<sup>th</sup> grade, and a small but significant decline in 8<sup>th</sup> grade (0.7%). Use in all three grades is above the recent low points by 33%, 85%, and 77%, respectively, suggesting that a rebound seen in recent years is primarily among the older teens at this point. This rebound followed a period in which perceived risk (defined as the proportion of teens that see great risk to the user from using ecstasy) declined some in all three grades, as did disapproval.

“There may well be a generational forgetting of the dangers of ecstasy as newer cohorts of youth enter adolescence,” comments Johnston. “Because they were quite young when the original ecstasy epidemic occurred, they have had less chance to hear the warnings about the dangers of the drug than did their predecessors.”

The use of quite a number of illicit drugs held fairly steady this year, as is discussed later, while a lesser number showed declines in their use.

### **Illicit drugs declining in use**

Drugs showing some evidence of declines in use this year include: *inhalants*, *cocaine powder*, *crack cocaine*, the narcotic drug *Vicodin*, the stimulant drug *Adderall*, *sedatives*, *tranquilizers*, and *over-the-counter cough and cold medicines* used to get high.

***Inhalants***. Inhalants are gases or fumes that are inhaled, sometimes from a rag or paper bag, in order to get high. Many household products fit into this category. There has been a considerable decline in recent years among 8<sup>th</sup> and 10<sup>th</sup> graders in perceived risk associated with inhalant use, followed by a leveling off in the last year or two. (Twelfth graders are not asked these questions.) Despite this disturbing decline in perceived risk, there has not been a resurgence in use; in fact, use declined in all grades this year, significantly so in grades 8 and 10. Disapproval is quite high and has not slipped in recent years.

***Cocaine Powder***. The use of cocaine powder among 8<sup>th</sup> graders has been in decline since 1996 and declined slightly further this year. Among 10<sup>th</sup> graders, a long-term decline in use began after 1999, and there was a small further decline in 2011. Among 12<sup>th</sup> graders, the decline did not begin until after 2006, and use remained unchanged in 2011. All three grades, however, are at their lowest levels of use since those recent peak years, with annual prevalence rates down by between 55% and 61% since then. The 2011 annual prevalence rates for cocaine powder are 1.1%, 1.7%, and 2.6% in the three grades—far lower than they were in the mid-1980s, or during the resurgence in use in the mid-1990s.

***Crack***. This form of cocaine has been in decline for some years after reaching recent peak levels around 1998 or 1999. In 2011 the annual prevalence rate for all three grades combined fell significantly, by 0.2 percentage points, to 1.0% ( $p < .05$ ). The very low annual prevalence rates are currently: 0.9% in grades 8 and 10 and 1.0% in grade 12, with 12<sup>th</sup> grade showing a significant 0.4 percentage-point drop this year ( $p < .05$ ).

***Vicodin***. Vicodin is the most widely used of the narcotic drugs, most of which are analgesics. After a period of high use, annual prevalence is now down by between 23% and 30% from recent peak levels, and in 2011 is at 2.1%, 5.9%, and 8.1% for grades 8, 10, and 12. In 2011 annual prevalence fell by 0.6 percentage points in 8<sup>th</sup> grade (n.s.) and 1.8 percentage points ( $p < .05$ ) in 10<sup>th</sup> grade, but there was no further decline in 12<sup>th</sup> grade. It seems possible that the cautions in the media about the dangers of prescription drugs, including efforts by the National Institute on Drug Abuse, are beginning to have effect. While the study does not measure perceived availability for Vicodin specifically, it does measure it for the more general class of narcotics other than heroin, and that class has shown a steady decline in perceived availability in recent years.

**Adderall.** The most widely used amphetamine is Adderall, a drug commonly prescribed for the treatment of Attention Deficit Hyperactivity Disorder (ADHD). A significant decline in annual prevalence of misuse from 4.5% to 4.1 % was seen for the three grades combined in 2011 ( $p < .05$ ). Annual prevalence held steady in 12<sup>th</sup> grade, but declined in 8<sup>th</sup> and 10<sup>th</sup> grades by 0.6 and 0.7 percentage points, respectively (both n.s.) Only three years of data have been collected on the use of this drug so far, but it seems likely that Adderall use was rising in recent years as Ritalin use declined. Now it may be that the misuse of Adderall is also in decline, at least in 8<sup>th</sup> and 10<sup>th</sup> grades.

**Sedatives (barbiturates).** Sedative use grew steadily from 1992 through 2005, reaching a peak level of 7.2% annual prevalence among 12<sup>th</sup> graders. (Use of this class of drugs is not reported for 8<sup>th</sup> and 10<sup>th</sup> graders.) In 2010 there was a 0.4-percentage-point drop and in 2011 another 0.5-percentage-point drop in misuse (both n.s.), bringing the annual prevalence rate to 4.3%, 40% below the recent peak rate in 2005. Since 2005, both perceived risk and disapproval of sedatives have risen a bit, while availability has shown an appreciable decline, continuing the substantial long-term decline in availability for this class of drugs.

**Tranquilizers.** In 2011, there is evidence of a decline in the lower grades, with a significant drop of 0.7 percentage points to 2.0% ( $p < .01$ ) among 8<sup>th</sup> graders and of 0.5 percentage points to 4.5% (n.s.) among 10<sup>th</sup> graders. Use at 12<sup>th</sup> grade stayed steady at its lowest point in 12 years, 5.6%. For the three grades combined the 0.5-percentage-point decline was significant ( $p < .05$ ). Perceived availability of tranquilizers continues a gradual decline that has been quite substantial over the life of the study. (There are no questions on perceived risk or disapproval.)

**Cough and Cold Medications.** The misuse of over-the-counter cough and cold medicines to get high usually involves medicines that contain the cough-suppressant dextromethorphan. Youngsters take large doses of these medicines in order to get high, which is a dangerous practice. This misuse was first measured in 2006, and has fallen since then in 8<sup>th</sup> and 12<sup>th</sup> grades, where it fell further in 2011—by 0.5% (n.s.) and 1.2% ( $p < .05$ ), respectively. Use at 10<sup>th</sup> grade has remained fairly steady at around 5.5%, including in 2011. The annual prevalence rates are now 2.7%, 5.5%, and 5.3%, for grades 8, 10 and 12, respectively.

### **Illicit drugs holding steady**

Quite a number of drugs held fairly steady this year. These include use of *any illicit drug other than marijuana, inhalants, LSD, hallucinogens other than LSD, salvia, heroin* used with and without a needle, *narcotics other than heroin, OxyContin* specifically, *amphetamines, Ritalin* specifically, *Rohypnol, GHB, Ketamine, methamphetamine, crystal methamphetamine, Provigil*, and *steroids*. Also holding steady was the use of “*any prescription drug*” without medical supervision; this index is available only for 12<sup>th</sup> graders.

Only a select few of these drugs will be discussed specifically. While unchanged this year, most of these drugs are well below their recent peak levels attained in the past 15 years. Two exceptions are “any prescription drug” and salvia.

***Any illicit drug other than marijuana.*** While the proportion of students using any illicit drug has increased in the upper grades this year, due primarily to the rise in marijuana use, the proportion using any of the other illicit drugs held steady and may have even declined slightly in the lower grades (n.s.). The annual prevalence rates for this measure in 2011 are 6%, 11%, and 18% for the three grades. These rates reached their peak levels in 2001 and are now down by nearly 40% in 8<sup>th</sup> and 10<sup>th</sup> grades and by about 20% in 12<sup>th</sup> grade.

***Narcotics other than heroin.*** This important class of substances is composed mostly of analgesic prescription medications, including OxyContin and Vicodin, though it does contain some cough medicines that contain codeine. In 2011 there was no change. Perceived availability of these drugs has been in decline for some years and showed a decline in all three grades in 2011—the drops in 8<sup>th</sup> and 10<sup>th</sup> being significant.

***Use of Any Prescription Drug without Medical Supervision.*** Non-medical use of psychotherapeutic prescription drugs rose during the mid 1990s along with the use of nearly all illegal drugs, but while most illegal drugs peaked in the late 1990s and then began to decline, the misuse of most prescription drugs continued to climb into the 2000s. This had the effect of making them a more important part of the nation’s drug use problem than they had been previously. Fortunately, misuse of most of these drugs by teens has leveled off in the past few years, as these drugs and their dangers have received much more public attention.

The proportion of 12<sup>th</sup> graders indicating that they have used any prescription drug outside of medical supervision in their lifetime, or in the last year, has remained quite stable since 2007. (This measure is based on any use of amphetamines, tranquilizers, sedatives, or any narcotic drug other than heroin.) In 2011 22% indicated such misuse of at least one prescription drug in their lifetime, while 15% indicated such misuse in the past year. (The corresponding numbers in 2007 were 22% and 16%.)

The sources of such drugs are primarily through the informal network of friends and, to a lesser extent, relatives. In the 2009–2011 period, among past-year users of ***amphetamines***, the most prevalent sources were “given by a friend” (57%), “bought from a friend” (46%), and “bought from a drug dealer or stranger” (22%). Among past-year users of ***tranquilizers***, the same three sources topped the list at 58%, 46%, and 27%. Among past-year users of ***narcotics other than heroin***, these three reasons were endorsed by 53%, 35%, and 16%; while “from a prescription I had” tied for second at 35%. It thus appears that for narcotics other than heroin in particular, having leftover pills from an earlier prescription is a significant source for non-medically supervised use. The DEA with the assistance of many local and state law enforcement agencies

has sponsored a “take-back program” this year to encourage and assist citizens to dispose of leftover medicines.

“While the misuse of prescription drugs remains a very important part of the picture,” Johnston said, “at least their use seems no longer to be growing among teens, and some are declining in use.”

*Salvia*. *Salvia divinorum* is derived from a plant grown in the mountains of Mexico. It is an herb in the mint family that can induce relatively short-acting dissociative effects when chewed, smoked, or taken as a tincture. The U.S. Drug Enforcement Administration has designated it a “drug of concern,” but at present has not scheduled it for control under the federal Controlled Substances Act. However, a number of states have restricted its sale and use, and others are considering doing so. *Salvia* use was first measured among 12<sup>th</sup> graders in 2009 and among 8<sup>th</sup> and 10<sup>th</sup> graders in 2010. The 2011 annual prevalence rates were 1.6%, 3.9%, and 5.9% in grades 8, 10, and 12, respectively. These rates are very close to those observed in 2010, with no significant changes, which suggests that the use of this drug is not expanding among adolescents.

### Alcohol use

In general there has been a long-term decline in the use of alcohol by teens going back to the 1980s (Figure 15). The early- to mid-1990s saw a pause in this decline as their alcohol use rose for several years along with the use of cigarettes and many of the illicit drugs. However, a sustained further decline resumed in the latter half of the 1990s, similar to changes in use of cigarettes and a number of illegal drugs. This gradual decline in alcohol use continued into 2011, when all grades showed a further drop in all measures of alcohol use—lifetime, annual, 30-day, daily, and 5+ drinks on one or more occasions during the prior two weeks. For the three grades combined, the one-year declines in 2011 were statistically significant on all of these measures.

All of these statistics are at their historic lows over the life of the study (since 1975 among 12<sup>th</sup> graders and since 1991 among 8<sup>th</sup> and 10<sup>th</sup> graders.) For example, over the past 20 years, from 1991 to 2011, the proportion of 8<sup>th</sup> graders reporting any use of alcohol in the prior 30 days has fallen by about half (from 25% to 13%), among 10<sup>th</sup> graders by more than one third (from 43% to 27%), and among 12<sup>th</sup> graders by about one fourth (from 54% to 40%).

“These are substantial changes in a long-established behavior in our culture,” concludes Johnston, “and we believe that a number of factors have contributed to it.” In the 1980s a number of states raised their minimum drinking age to twenty-one, which these researchers were able to demonstrate reduced drinking. But even among the states that already had an age 21 law, there was some decline in drinking, likely due in part to campaigns to reduce drunk driving and later to encourage the use of designated drivers. The dangers perceived to be associated with episodic heavy drinking grew in the 1980s, as did students’ personal disapproval of such drinking. Both of these measures also rose in the 2000s, but more slowly.

Another contributing factor likely has been lowered availability, particularly for the younger teens. The proportion of 8<sup>th</sup> and 10<sup>th</sup> graders who say they could get alcohol “fairly easily” or “very easily” had been declining since 1996 and continued to drop in all three grades in 2011. Various other factors of likely importance include the advent of zero tolerance laws for drivers under age 21, higher beer taxes, and restrictions on alcohol promotion to youth.

***Occasions of Heavy Drinking.*** The proportion of students reporting having five or more drinks in a row at least once in the two weeks prior to the survey also fell in all three grades in 2011. ”Because this is the type of drinking behavior that is most likely to have adverse consequences for both teens and others around them, this is a behavior that we track closely,” states Johnston. For the three grades combined, the one-year decline (-1.3 percentage points) was highly significant ( $p < .01$ ); this statistic has declined by about one third since 1991, from 20% to 13.6%. The decline has been greatest for the younger teens during this period: with a drop of 41% among 8<sup>th</sup> graders versus 28% among 12<sup>th</sup> graders. However, the 12<sup>th</sup> graders showed a considerable decline prior to 1991. Overall their reported prevalence of this behavior has fallen from 41% in 1981 to 22% in 2011, reflecting a decline of nearly one half over the past 30 years (Figure 16). Consumption of all categories of alcoholic beverages monitored—beer, wine, wine coolers, flavored alcoholic beverages, and hard liquor—has been in decline, with hard liquor showing the least decline. (Wine, wine coolers, and hard liquor are asked only of 12<sup>th</sup> graders.)

### **Energy Drinks**

Energy drinks (such as Red Bull, Monster, and Reload) are sold legally and advertised to boost energy. They contain stimulants, usually caffeine, and sometimes other stimulants, as well as sugar. In 2011 in answer to the question, “About how many [energy drinks] do you drink per day on average?” The proportions indicating any recent use were 35% of 8<sup>th</sup> graders and 29% of both 10<sup>th</sup> and 12<sup>th</sup> graders. Use of one or more drinks per day was 18%, 11%, and 10% for 8<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup> grades. These rates are down some from 2010 in all three grades, so it appears that use is no longer growing.

### **Steroid use**

The annual prevalence of ***anabolic steroid*** use has declined by between 50% and 60% at all three grades from their recent peak levels in the early 2000s. There has been little systematic change in use since 2008. In 2011, the proportions reporting any use of anabolic steroids in the past year were only 0.7%, 0.9%, and 1.2% in grades 8, 10, and 12, respectively. Among boys, who generally have had considerably higher use than girls, the rates in 2011 were 1.0%, 1.4%, and 1.8%.

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Monitoring the Future has been funded under a series of competing, investigator-initiated research grants from the National Institute on Drug Abuse, one of the National Institutes of Health. The lead investigators, in addition to Lloyd Johnston, are Patrick O'Malley, Jerald Bachman, and John Schulenberg—all research professors at the University of Michigan's Institute for Social Research. Annual surveys of nationally representative samples of American high school seniors were begun in 1975, making the class of 2011 the 37<sup>th</sup> such class surveyed. Annual surveys of 8<sup>th</sup> and 10<sup>th</sup> graders were added to the design in 1991, making the 2011 nationally representative samples the 21<sup>st</sup> such classes surveyed. The 2011 samples total 46,733 students located in 400 secondary schools. The samples are drawn separately at each grade level to be representative of students in that grade in public and private secondary schools across the coterminous United States. Schools are selected with probability proportionate to their estimated class size.

The findings summarized here will be published in the forthcoming volume: Johnston, L. D., O'Malley, P. M., Bachman, J. G., & Schulenberg, J. E. (2012). *Monitoring the Future national results on adolescent drug use: Overview of key findings, 2011*. Ann Arbor, MI: Institute for Social Research, The University of Michigan.

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NOTES: Significance levels indicate the probability of getting a difference between two groups in a sample, or between two time points, as large as the one actually observed, if in fact there was really no difference in the population between the two groups or time points;  $p < .05$  indicates a 5% probability or less;  $p < .01$  indicates a 1% probability or less; and  $p < .001$  indicates one one-thousandth or less. The term n.s. (“not significant”) means that the observed difference could have happened by chance more often than 5% of the time, due to sampling error.