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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. 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 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 is rising; ecstasy use is beginning to rise; and alcohol use is declining among U.S. teens**

ANN ARBOR, Mich.--- Several important findings come out of this year's Monitoring the Future study, the 36<sup>th</sup> annual, national survey of American teens in a series that launched in 1975.

- Marijuana use, which had been rising among teens for the past two years, continues to rise again this year—a sharp contrast to the considerable decline of the preceding decade.
- Ecstasy use—which fell out of favor in the early 2000s as concerns about its dangers grew—appears to be making a comeback this year, following a considerable recent decline in the belief that its use is dangerous.
- Alcohol use—and, specifically, occasions of heavy drinking—continues its long-term decline among teens into 2010, reaching historically low levels.

These and other findings are being released today. Monitoring the Future, conducted by a team of social scientists at the University of Michigan's Institute for Social Research, has been funded since its inception under a series of research grants from the National Institute on Drug Abuse, one of the National Institutes of Health. In 2010, more than 46,000 8<sup>th</sup>, 10<sup>th</sup>, and 12<sup>th</sup> graders, enrolled in nearly 400 secondary public and private schools, participated in the study.

The proportion of young people using *any illicit drug* has been rising over the past three years, due largely to increased use of marijuana—the most widely used of all the illicit drugs. The proportion of 8<sup>th</sup> graders who reported using at least one illicit drug in the prior 12 months (called annual prevalence) rose from 13% in 2007 to 16% in 2010, including a statistically significant increase of 1.6 percentage points this year. Among both 10<sup>th</sup> and 12<sup>th</sup> graders annual prevalence has increased by two percentage points since 2007. In 2010, the proportions using any illicit drug during the past year were 16%, 30%, and 38% in grades 8, 10, and 12 respectively.

Lifetime use was higher, of course, at 21%, 37%, and 48% in the three grades respectively. In other words, about half of the high school seniors in the class of 2010 have tried an illicit drug, and well over a third have used on one or more occasions in the prior 12 months.

The proportion of students reporting using *any illicit drug other than marijuana* has been gradually declining for some years, but that decline halted in 2010 in all three grades. The annual prevalence rates for using any illicit drug other than marijuana in the prior 12 months are 7%, 12%, and 17% in grades 8, 10, and 12; the corresponding lifetime prevalence rates are 11%, 17%, and 25%.

*Marijuana* use rose for all prevalence periods this year (lifetime, past year, past 30-days, and daily in the past 30-days) in all three grades under study. For the three grades combined, all of these one-year increases are statistically significant. Further, virtually all demographic subgroups are showing an increase in use.

“Though this upward shift is not yet very large, its duration and pervasiveness leave no doubt in our minds that it is real,” said Lloyd Johnston, the principal investigator of the study. “Perhaps the most troublesome part of it is that daily use of marijuana increased significantly in all three grades in 2010.” Daily or near-daily use is defined as use on 20 or more occasions in the prior 30 days; the rates for grades 8, 10, and 12 were 1%, 3%, and 6% in 2010. In other words, about one in sixteen 12<sup>th</sup> graders today uses marijuana on a daily or near-daily basis.

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). Possibly as a result, fewer teens have shown disapproval of marijuana use over the past two or three years. Both perceived risk and disapproval continued to decline in all three grades this year.

*Ecstasy* provided one of the most recent surges in use of an illicit drug. Use among teens rose sharply in the late 1990s, peaked in 2001, and then fell just as sharply over the next four years or so as perceived risk rose considerably (Figure 5). (Perceived risk is defined as the proportion of teens that see great risk to the user from using ecstasy even once or twice.) After 2004 or 2005, perceived risk fell steadily and the investigators warned that this could lead to a rebound in use. Some of that rebound now appears to be taking place, as use rose this year in all three grades, significantly so for 8<sup>th</sup> and 10<sup>th</sup> grades.

“There may well be a generational forgetting of the dangers of ecstasy as newer cohorts of youth enter adolescence. They have heard less about the dangers of the drug than did their

epidemic occurred.” Consistent with this notion, perceived risk is now considerably lower among the younger teens than the older ones. Personal disapproval of ecstasy use has declined in the lower grades but not in 12th grade over the last few years. Perceived availability of ecstasy fell considerably during the years of declining use; and, while there is as yet no increase in this measure, that decline has halted.

Taking *heroin using a needle* did show a small but statistically significant increase in 2010, but only among 12<sup>th</sup> graders and without any concurrent changes in perceived risk, disapproval, or availability. “Because the prevalence rates for heroin use are so low in this population, it doesn’t take a lot of cases to yield a significant change,” said Johnston, “so we are not yet ready to say that this is a real change. If it is real, it would be important; but we will want to see another year’s data before being confident that it is.”

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

Several classes of drugs exhibited a decline in use in 2010. Three of them—*narcotics other than heroin*, *Vicodin* specifically, and *sedatives (barbiturates)* will be discussed in the next section on prescription drugs. The fourth drug showing a decline in use is *cocaine*.

*Cocaine*. The use of cocaine among 8<sup>th</sup> graders has been in decline since 1998, but did not fall any further this year. The 10<sup>th</sup> and 12<sup>th</sup> graders, however, continued their gradual, steady declines in cocaine use that began after 2007 and 2006, respectively. Between 2009 and 2010 their annual prevalence rates dropped by 0.5 and 0.4 percentage points, both non-significant. “We interpret these small drops in use in the upper grades as declines because they continue a longer-term pattern of gradual decline,” Johnston said. The 2010 annual prevalence rates for cocaine are 1.6%, 2.2%, and 2.9% in the three grades—far lower than they were in the mid-1980s or even the mid-1990s.

### **The prescription drugs**

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. “While they remain a very important part of the picture,” Johnston said, “at least their use is no longer growing.”

*Amphetamines* showed a pattern of peaking and then declining. The changes occurred in a staggered fashion, likely reflecting some lasting differences among class cohorts. Among 8<sup>th</sup> graders, annual prevalence peaked at 7.2% in 1998 and then declined to 4.2% by 2007. Among 10<sup>th</sup> graders use peaked at 11.7% in 2001 and then declined to 6.4% by 2008; and among 12<sup>th</sup> graders, use peaked at 11.1% in 2002 and declined to 6.6% in 2009. However, in the upper grades there has been some increase in use over the past year or two, though not a statistically significant one. *Ritalin*, one of the amphetamine drugs, has seen a decline in use since 2001, when its misuse was first measured, but there was rather little change this year. *Adderall*, another amphetamine used mostly for the treatment of attention deficit hyperactivity disorder (ADHD),

is now misused more widely than Ritalin. (Adderall use has been measured only since 2009.) It showed no significant change in use this year, though there was some increase among 12<sup>th</sup> graders, reaching a 6.5% annual prevalence rate.

**Sedative (barbiturate)** use is reported only for 12<sup>th</sup> graders. They showed a pattern of increasing use from 1992 through 2005, with annual prevalence rising from 2.8% to 7.2%, before beginning a steady gradual decline in the years since, with a prevalence rate of 4.8% in 2010. (The small 0.4 percentage-point decrease in 2010 did not reach statistical significance.) Similarly, **tranquilizer** use grew considerably during the 1990s and peaked in 2002 at 7.7% annual prevalence among 12<sup>th</sup> graders. Since then it has shown a very gradual decline, reaching 5.6% in 2010. (The 0.7 percentage-point decline in 2010 continued the pattern but was not large enough to reach statistical significance.) In the lower grades the decline ended in 2008.

The use of a class of drugs consisting of **narcotics other than heroin** nearly tripled from 1992 through 2004, from an annual prevalence of 3.3% in 1992 among 12<sup>th</sup> graders (the only ones for whom these drugs are reported) to 9.5% in 2004. Use then remained level through 2009, showing a non-significant drop of 0.5 percentage points in 2010. Most of the drugs in this important class of addictive substances are analgesics (taken for pain), and two of the most important are Vicodin and OxyContin.

There had been relatively little systematic change in **Vicodin** use since it was first measured in 2002, until 2010, when there was a significant drop of 1.7 percentage points in the annual prevalence rate among 12<sup>th</sup> graders. The annual prevalence rates in 2010 for Vicodin were 2.7%, 7.7%, and 8.0% in grades 8, 10, and 12, respectively, leaving it as one of the most widely used illicit drugs even after the drop in 2010. "Nevertheless," according to Johnston, "the decline in Vicodin use is good news."

**OxyContin** use changed little this year. In all grades the rates of use were higher than when use was first measured in 2002, with annual prevalence rates in 2010 of 2.1%, 4.6%, and 5.1% in the three grades, respectively. Johnston said: "The fact that these two powerful and highly addictive drugs—Vicodin and OxyContin— remain as prevalent as they are among adolescents in this country is a real concern."

Where students acquire these prescription drugs is a matter of some interest. By asking those who used each drug in the past year where they got them, the investigators learned that the most common source was a friend giving the drug to the respondent, followed by a friend selling the drug to the respondent. In some cases the drugs were left over from a prescription the respondent previously had, and in some cases the drugs were taken from a relative without their permission; but these were less common sources. Only a modest proportion of the users (between 20% and 30%, depending on the drug) said they had bought them from a drug dealer or stranger. Almost none said that they had bought them on the Internet. (See Table 14.)

### **Illicit drugs holding steady**

The use of a number of illicit drugs remains relatively unchanged in 2010, though most are at lower levels of use than they were 10 or 15 years ago. They include: **any illicit drug other than marijuana, inhalants, LSD, hallucinogens other than LSD, PCP, crack, heroin** without using a

needle, *OxyContin*, *amphetamines* (including *Ritalin* and *Adderall* specifically), *methamphetamine*, *crystal methamphetamine*, several so-called “club drugs” (*Rohypnol*, *GHB*, and *Ketamine*), and *steroids*.

The investigators note that, although there has not been a rise in the use of *inhalants* in recent years, the proportions of teens seeing their use as dangerous declined considerably between 2001 and 2008, which may make young people more vulnerable to a resurgence of inhalant use, much as has happened with ecstasy. Fortunately, this decline in perceived risk has leveled out over the past two years.

The same is true for *LSD*. Perceived risk has fallen fairly dramatically among 8<sup>th</sup> graders, though it has not fallen further in 2010. This means that the newer cohorts of teenagers have less reason to avoid using LSD, should that drug make a comeback. “It leaves them more vulnerable,” Johnston said. Although LSD shows a significant increase this year among 12<sup>th</sup> graders (a rise of 0.7 percentage points to 2.6%) the investigators are not characterizing this as an increase because it simply brings the rate back to where it was two years ago. They interpret this as reflecting sampling error.

### **Over-the-counter cough and cold medicines**

The use of *cough and cold medicines* to get high has shown little systematic change since their use was first measured in 2006. These over-the-counter medications, usually containing the active ingredient dextromethorphan, are taken in doses that are multiples of the usual therapeutic dose in order to achieve the desired effect. “These drugs can be dangerous when consumed in the large quantities that young people tend to use in order to get high,” state the investigators. Annual prevalence rates for the three grades in 2010 were 3.2%, 5.1%, and 6.6% in grades 8, 10, and 12, respectively.

### **Salvia and Provigil**

Two drugs were added to the 12<sup>th</sup>-grade questionnaires in 2009—salvia and Provigil. *Salvia*, or 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 it is not controlled under the federal Controlled Substances Act. However, a number of states have restricted its sale and use, and others are considering doing so. The 2009 survey found that 5.7% of 12<sup>th</sup> graders indicated having used salvia during the prior 12 months, and this rate did not change significantly in 2010 (5.5%). This year for the first time 8<sup>th</sup> and 10<sup>th</sup> graders were asked about their use of salvia, and 1.7% and 3.7% said they had used salvia at least once in the past year. Clearly this drug has made some inroads in the adolescent population, but its use does not appear to be growing. As is true for many drugs, use tends to be particularly concentrated among males and those who are not college-bound.

The other drug added to the survey of 12<sup>th</sup> graders in 2009 is *Provigil* (modafinil), which is a prescription-controlled medicine for improving wakefulness. It is usually prescribed to people experiencing excessive sleepiness as a result of sleep disorders due to sleep apnea, shift work, or narcolepsy. The annual prevalence of using Provigil outside of medical supervision by 12<sup>th</sup> graders in 2009 was 1.8% and in 2010 was 1.3% (not a statistically significant change), suggesting that misuse of Provigil by teens is neither a serious nor a growing problem.

### **Alcohol use**

In general there has been a long-term decline in teen use of alcohol going back to the 1980s (Figure 15). The early- to mid-1990s saw a pause in this decline as alcohol use rose for several years along with the use of many of the illicit drugs. However, a sustained further decline resumed in the late 1990s—again, along with the use of a number of illegal drugs. It continued into 2010, when 30-day prevalence for the three grades combined fell significantly by 1.6 percentage points from 28.4% in 2009 to 26.8% in 2010. The three individual grades showed some decline in 2010 (-1.2, -1.5, and -2.3 percentage points in the three grades, respectively), but only the one-year decline in 12<sup>th</sup> grade reached statistical significance.

For 12<sup>th</sup> graders 2010 marks the lowest level of alcohol use since the study's inception in 1975. For 8<sup>th</sup> and 10<sup>th</sup> graders it marks the lowest point since these grades were first included in the study in 1991. Since 1991, thirty-day prevalence rates have fallen by about half among 8<sup>th</sup> graders, by close to one third among 10<sup>th</sup> graders, and by nearly one quarter among 12<sup>th</sup> graders.

***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 2010 (by 0.6, 1.1, and 2.1 percentage points, respectively, for grades 8, 10 and 12). Again, only the 12<sup>th</sup>-grade decline reached significance; but the decline for the three grades combined (-1.2 percentage points) was significant. This year's decline in occasional heavy drinking continues the gradual decrease since about 1999; the declines in the rates since recent peak levels are on the order of one half, one third, and one quarter for the three grades (Figure 16).

***Flavored Alcoholic Beverages.*** These beverages have been falling in popularity among teens since 2004 when they were first added to the study. In 2004, 23% of students in the three grades combined indicated using in the prior month; by 2010 that statistic had fallen to 17%, with a decline of 0.9 percentage points in 2010 (not significant). It is possible that alcoholic energy drinks displaced some of the market for flavored alcoholic beverages, the investigators note. During the period of decline in drinking in the 1980s, there was a considerable increase in perceived risk for occasions of heavy drinking on weekends. During the more recent period of more modest decline in drinking, perceived risk has risen more modestly and has not changed much over the past couple of years.

When asked how easy it would be to get alcohol if they wanted some, the majority of students in all three grades said it would be “fairly easy” or “very easy in 2010,” but such easy availability declined considerably between 1996 and 2008, particularly for 8<sup>th</sup> graders. There has been little further change over the past two years.

### **Steroid use**

Teenage use of anabolic steroids increased in the late 1990s, reaching peak levels in 2000 among 8<sup>th</sup> graders, 2002 among 10<sup>th</sup> graders, and 2004 among 12<sup>th</sup> graders. “The steroid problem among teens has diminished considerably over the past 10 years or so,” Johnston said. Since the recent peaks, annual prevalence of steroid use has declined by over two thirds among 8<sup>th</sup> graders, by more than half in 10<sup>th</sup> graders, and by four tenths among 12<sup>th</sup> graders. There has been little change over the past two years, except for a statistically significant decline of just 0.2 percentage points among 8<sup>th</sup> graders this year. In 2010, the proportions reporting any use of anabolic steroids

in the past year were only 0.5%, 1.0%, and 1.5% in grades 8, 10, and 12, respectively. Among boys, who generally have had considerably higher use than girls, the rates in 2010 were 0.7%, 1.3%, and 2.5%.

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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 Johnston, are Patrick O'Malley, Jerald Bachman, and John Schulenberg—all research professors at the University of Michigan's Institute for Social Research. Surveys of nationally representative samples of American high school seniors were begun in 1975, making the class of 2010 the 36<sup>th</sup> such class surveyed. Surveys of 8<sup>th</sup> and 10<sup>th</sup> graders were added to the design in 1991, making the 2010 nationally representative samples the 20<sup>th</sup> such classes surveyed. The sample sizes in 2010 are 15,769 eighth graders in 147 schools, 15,586 tenth graders in 123 schools, and 15,127 twelfth graders in 126 schools, for a total of 46,482 students in 396 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. (2011). *Monitoring the Future national results on adolescent drug use: Overview of key findings, 2010*, Ann Arbor, Mich., Institute for Social Research, The University of Michigan.

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