MONITORING *the* FUTURE

National Survey Results on Drug Use, 1975-2023: Overview and Detailed Results for Secondary School Students

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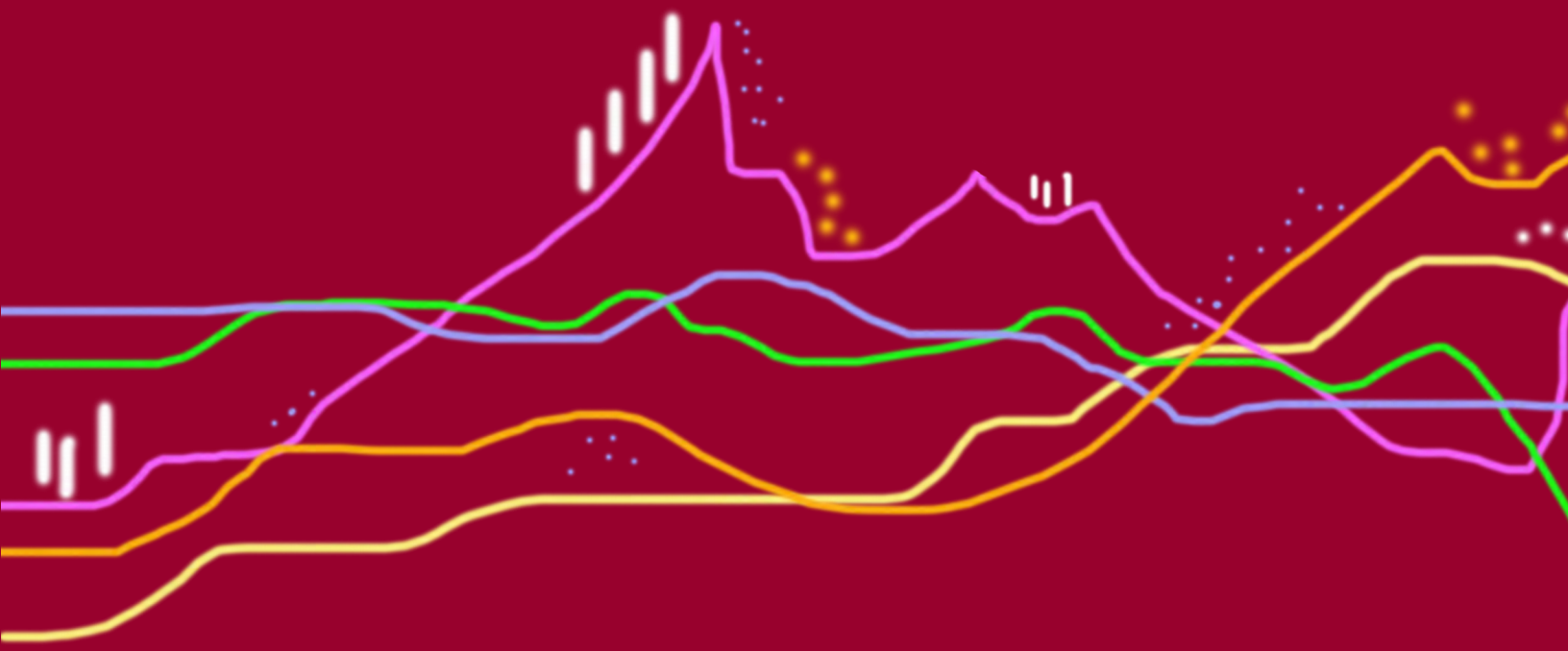

Sponsored by The National Institute on Drug Abuse at The National Institutes of Health

MONITORING THE FUTURE

NATIONAL SURVEY RESULTS ON DRUG USE, 1975–2023:

Overview and Detailed Results for Secondary School Students

by

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We also acknowledge and thank the thousands of 8th, 10th, and 12th grade students who complete the MTF questionnaires every year to tell us about their experiences.

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ABBREVIATED CONTENTS

Click on any item below (in blue) to go directly to that page.

DETAILED CONTENTS

Click on any item below (in blue) to go directly to that page.

DETAILED CONTENTS (continued)

Click on any item below (in blue) to go directly to that page.

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Click on any item below (in blue) to go directly to that page.

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Click on any item below (in blue) to go directly to that page.

LIST OF TABLES

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Click on any item below (in blue) to go directly to that page.

LIST OF FIGURES

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Chapter 1

INTRODUCTION

Substance use is a leading cause of preventable morbidity and mortality; it is in large part why, among 17 high-income nations, people in the U.S. have the highest probability of dying by age 50.[1,2,3] Substance use is also an important contributor to many social problems including domestic violence, violence more generally, criminal behavior, suicide, and more—and it is typically initiated during adolescence. It warrants our sustained attention.

Monitoring the Future (MTF) is designed to give such attention to substance use among the nation's youth and adults. It is an investigator-initiated study that originated with, and is conducted by, a team of research professors at the University of Michigan's Institute for Social Research. Since its onset in 1975, MTF has been funded continuously by the National Institute on Drug Abuse—one of the National Institutes of Health—under a series of peer reviewed, competitive research grants. The 2023 survey, reported here, is the 49th consecutive national survey of 12th grade students and the 33rd national survey of 8th and 10th grade students (who were added to the study in 1991).

MTF contains ongoing national surveys of both adolescents and adults in the United States. It provides the nation with a vital window into the important but often hidden problem behaviors of use of illegal drugs, alcohol, tobacco, and psychotherapeutic drugs used without a doctor's orders. For nearly five decades, MTF has helped provide a clearer view of the changing topography of these problems among adolescents and adults, a better understanding of the dynamic factors that drive some of these problems, and a better understanding of some of their consequences. It has also given policymakers, government agencies, public health professionals, and nongovernmental organizations (NGOs) in the field some practical approaches for intervening.

A widespread epidemic of illicit drug use emerged in the 1960s among U.S. youth, and since then dramatic changes have occurred in the use of nearly all types of illicit drugs, as well as alcohol and tobacco. Of particular importance, as discussed in detail below, are the many new illicit drugs that have emerged, along with new forms of alcoholic beverages and nicotine products. Among the substances that have arisen over the life of the survey are new classes of drugs that include vaping devices, hookah smoking, synthetic marijuana, and drugs taken for strength enhancement. New devices and methods for taking drugs, such as vaporizers and e-cigarettes, provide novel ways to use substances and use them in new combinations. Unfortunately, the number of new substances added to the list over the years substantially outnumbers the number removed because so many substances remain in active use. Throughout these many changes, substance use among the nation's youth has remained a major concern for parents, educators, health professionals, law

[1] Case, A. & Deaton, A. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century. *Proceedings of the National Academy of Sciences, 112*(49), 15078-15083.

[2] Murphy, S. L., Xu, J., Kochanek, K. D., & Arias, E. S. (2020). Mortality in the United States, 2020. NCHS Data Brief, no 395. Hyattsville, MD: National Center for Health Statistics.

[3] Esser, M. B., Leung, G., Sherk, A., Bohm, M. K., Liu, Y. Lu, H., & Naimi, T. S. (2022). Estimated deaths attributable to excessive alcohol use among US adults aged 20 to 64 years, 2015 to 2019. *JAMA Network Open, 5*(11), e2239485.

enforcement, and policymakers, largely because substance misuse is one of the largest and yet most preventable causes of morbidity and mortality during and after adolescence.

The MTF annual monograph series is a key vehicle for disseminating MTF's epidemiological findings. In addition to this monograph, the series includes a separate, annual monograph that presents prevalence and trends among U.S. adults ages 19 to 60, including both college students and young adults who are not attending college (scheduled for publication this summer), as well as an additional, periodic monograph that presents information on risk and protective behaviors for HIV among young adults. All MTF publications, including press releases, are available on the project website at www.monitoringthefuture.org.

CONTENT AREAS COVERED

Two of the major topics included in the present monograph are (a) the *prevalence and frequency* of use of a great many substances, both licit and illicit, among U.S. secondary school students in 8th, 10th, and 12th grades and (b) *historical trends* in use by students in those grades. Distinctions are made among important demographic subgroups in these populations based on gender, college plans, region of the country, population density, parent education, and race/ethnicity. MTF has demonstrated that key attitudes and beliefs about drug use are important determinants of usage trends, in particular the amount of risk to the user perceived to be associated with the various drugs and disapproval of using them; thus, those measures also are tracked over time, as are students' perceptions of certain relevant aspects of the social environment—in particular, perceived availability of each drug, peer norms about their use, and use by friends. Data on grade of first use, noncontinuation of use, trends in use in lower grades (based on retrospective reports), and intensity of use are also reported here.

Drug Classes

Initially, 11 separate classes of drugs were distinguished in order to heighten comparability with a parallel series of publications based on the National Survey of Drug Use and Health (NSDUH, formerly titled the National Household Survey of Drug Abuse): marijuana (including hashish), inhalants, hallucinogens, cocaine, heroin, narcotics other than heroin (both natural and synthetic), amphetamines, sedatives, tranquilizers, alcohol, and tobacco. Separate statistics have been presented for a number of subclasses of drugs within these more general categories: PCP and LSD (both hallucinogens), barbiturates and methaqualone (both sedatives), methamphetamine, crystal methamphetamine ("ice"), and crack and cocaine other than crack.

In the years since the study was launched, many additional categories of substances have been added to the MTF questionnaires—in many but not all cases in all three grades. Relatively fewer substances have been dropped due to their reaching very low prevalence. The substances added and dropped are shown in Table 1-1 sequentially by year and within year by the grade levels affected.

The large number of substances added over the years illustrates the dynamic and multidimensional nature of the country's drug problems. As time passes and new trends develop, additional drugs will be added to the study's coverage; occasionally ones that fall to very low prevalence levels (such as bath salts, "look-alike" pseudo-amphetamines, kreteks, bidis, PCP, and Provigil) are dropped. It is important, given this rapidly shifting variety of drugs, that information be gathered

and reported relatively quickly to inform legislators, regulatory agencies, scientists, practitioners in the field, parents, and educators about the extent to which newer drugs are making inroads in the youth population and what subgroups are proving most vulnerable.

Much of the information reported here deals with illicit use of controlled substances. The major exceptions are alcohol, vaping, cigarettes, other tobacco products, inhalants, nonprescription stimulants, medicines taken appropriately by prescription in the treatment of ADHD, creatine, cough and cold medicines, and salvia. In the questions about nonmedical use of psychotherapeutic drugs, respondents are asked to exclude any use with a doctor's order.

Throughout this report, we also focus attention on drug use at high frequency levels in addition to reporting proportions that have ever used various drugs. This is done to help differentiate levels of magnitude, or extent, of drug involvement. While there is no scientific or public consensus on what levels or patterns of use constitute misuse, there is a consensus that higher levels of use are more likely to have detrimental effects for the person who uses and for society. We have indirect measures of dosage per occasion by asking respondents about the duration and intensity of highs they usually experience with each type of drug. These items have shown some interesting trends over the years, detailed in Chapter 7.

Attitudes, Beliefs, and Early Experiences

Separate sections or whole chapters are devoted to the following issues related to a number of licit and illicit drugs:

- grade of first use;
- noncontinuation of use;
- respondents' own attitudes and beliefs about specific drugs;
- degree and duration of the highs attained;
- perceptions of availability of the drug; and
- perceptions of attitudes and behaviors of others in the social environment related to the use of various drugs.

Some of these variables have proven to be very important in explaining changes in use, as we discuss in detail in Chapter 8.

Over-the-Counter Substances

Included in this monograph are trends in the use of nonprescription stimulants, including cough medicines, and the performance-enhancing substances of anabolic steroids, androstenedione (andro), and creatine.

Cumulative Lifetime Daily Marijuana Use

Also included are trend results from a set of questions about cumulative lifetime marijuana use at a daily or near-daily level. These questions were added to enable us to develop a more complete individual history of daily use over a period of years. They reveal some important facts about frequent users of this drug.

Trends in Use of Specific Alcoholic Beverages

Twelfth grade data are reported for a wide spectrum of substances, including beer, liquor, wine, and flavored alcoholic beverages. Results on these various substances are discussed in Chapter 4 and Chapter 5. We present trends on alcohol use as well as on most other substances among demographic subgroups and for specific classes of alcoholic beverages in a separate, accompanying publication.[4]

Sources of Prescription Drugs

MTF documents trends in prescription-type psychotherapeutic drugs used without medical supervision. Since 2008, Chapter 4 and Chapter 5 also contain estimates of the proportion of 12th grade students who use *any* psychotherapeutic drug nonmedically in each prevalence period; these estimates can be made only for 12th graders, because estimates of use of sedatives and narcotics other than heroin are not reported for students in the lower grades due to concerns about the validity of their reports of these substances.

Synopses of Other MTF Publications

Chapter 10 contains short synopses of other MTF publications produced during the past year (journal articles, chapters, occasional papers, etc.). References to the full documents are provided, and many are available on the MTF website.

Appendices

Appendix A addresses the issue of whether absentees and school dropouts affect MTF results and, if so, to what extent. For illustrative purposes, the appendix provides estimates of prevalence and trends adjusted for these missing segments of the population for marijuana, cocaine, any illicit drug use, cigarettes, and alcohol.

Appendix B gives the definitions of the various demographic subgroups discussed.

Appendix C provides trends for 12th grade only on various *subclasses* of drugs within each of the following five general classes: hallucinogens other than LSD, amphetamines, tranquilizers, narcotics other than heroin, and sedatives. These tables provide annual prevalence levels over time and show how the mix of subclasses has changed over the years within each of the general classes.

Appendix D provides trends since 1991 in drug use for the *three grades combined*, as well as the absolute decline and the proportional decline in the prevalence of each drug since the most recent *peak* level. Such tables are helpful in getting a quick read on the trends. By combining the three grades, however, much of the meaningful detail available from grade-specific estimates is lost, including evidence of cohort effects.

In 2017 and earlier, the Appendix C of this monograph reported information on how to take into account the complex sample design in order to calculate confidence intervals for point estimates

[4] Johnston, L. D., Miech, R. A., O'Malley, P. M., Bachman, J. G., Schulenberg, J. E., & Patrick, M. E. (2022). *Demographic subgroup trends among adolescents in the use of various licit and illicit drugs 1975-2021* (Monitoring the Future Occasional Paper No. 97). Ann Arbor, MI: Institute for Social Research, University of Michigan.

and how to calculate statistics that test the significance of changes over time or of differences between subgroups. This appendix is no longer necessary with the opening of MTF's secure remote portal at the National Addiction and HIV Data Archive Program, which now allows researchers to compute such statistics directly using MTF weights and clustering variables (after completing an application process that includes a signed pledge to protect the confidentiality of the data). Interested readers may refer to Appendix C of earlier monographs for the information it provides about design effects and how their computational influence varies by substance. They are listed under Results > Annual Reports on the study website: www.monitoringthefuture.org.

PURPOSES AND RATIONALE FOR THIS RESEARCH

Perhaps no social problem has proven more clearly appropriate for and in need of the application of systematic research and reporting than substance misuse. Substance use behaviors are often hidden from public view, can change rapidly and frequently, and are of great importance to the wellbeing of the nation. Many legislative and programmatic interventions are aimed at these behaviors, such as the current opioid crisis and increases in adolescent smoking and illicit drug use, which we reported in the 1970s and again in the 1990s as a relapse in the drug epidemic unfolded.

Young people are often at the leading edge of social change, and this has been particularly true of drug use. MTF documented that the relapse in the drug epidemic in the early 1990s initially occurred almost exclusively among adolescents. Adolescents and adults in their 20s fall into the age groups at highest risk for illicit drug use. Moreover, use that begins in adolescence sometimes continues well into adulthood. This is indicated in the cohort effects that we report for a number of substances (and even in some attitudes and beliefs about them). The original epidemic of illicit drug use in the 1960s began on the nation's college campuses and then spread downward in age. By way of contrast, MTF has shown that the relapse phase in the 1990s first manifested itself among secondary school students and then started moving upward in age as those cohorts matured.

One purpose of MTF is to develop an accurate description of these important changes as they are unfolding. An accurate picture of the basic size and contours of the substance use problem among youth in the U.S. is a prerequisite for informed public debate and policymaking. In the absence of reliable *prevalence* data, substantial misconceptions can develop and resources can be misallocated. In the absence of reliable *trend* data, early detection and localization of emerging problems are more difficult and societal responses more lagged. For example, MTF provided early evidence that cigarette smoking among U.S. adolescents was rising sharply in the early 1990s, which helped stimulate and support some extremely important policy initiatives that culminated in the tobacco settlement between the tobacco industry and the states. MTF documented and described the sharp rise and subsequent decline in ecstasy use and earlier in cocaine use, illustrating the important role that *perceived risk* played in these changes, as it has done for a number of other drugs in the past. The study also helped draw attention to the rise in steroid and androstenedione use among adolescents in the late 1990s, resulting in legislative and regulatory action. It exposed a rise in the use of narcotic drugs other than heroin (especially certain prescription-type analgesics), stimulating an initiative at the White House Office of National Drug Control Policy aimed at reducing use. More recently, MTF has become a key source of information on vaping, and MTF results are cited by the FDA in its recent regulations prohibiting all flavoring of vaping cartridges except tobacco and menthol. In addition to enabling early detection and localization of

problems, valid trend data make assessments of the impact of major historical and policy-induced events much less conjectural.

The accurate empirical comparison of subgroup differences has challenged conventional wisdom in some important ways. Accurately characterizing not only differences but also differential changes among subgroups has been an important scientific contribution from MTF. For example, dramatic racial/ethnic differences in cigarette smoking emerged during the life of the study—differences that were almost nonexistent when MTF began in 1975. Further, the misinformed assumption by some that Black students use illicit drugs more than do White students has been disconfirmed since the beginning of the study, which shows lower levels of use for Black students in most years, though these differences have been narrowing in recent years as overall use of many substances declined, thus leaving less room for differences.

MTF also monitors a number of factors—peer norms regarding drugs, beliefs about the dangers of drugs, and perceived availability—that help explain the historical changes observed in drug use. Monitoring these factors has made it possible to examine a central policy issue in this nation's efforts to reduce drug use—namely, the relative importance of supply versus demand factors in bringing about some of the observed declines and increases in drug use.[5] Our group has also put forth a general theory of drug epidemics that uses many of these concepts to help explain the rises and declines that occur in use and emphasizes the importance of demand-side factors.[6]

In addition to accurately assessing prevalence and testing explanations of their causes, the integrated MTF study of adolescents and adults has a substantial number of other important research objectives that are addressed in our other publications. These include (a) assessing the impact of historical events such as the COVID-19 pandemic on population levels of substance use; (b) helping to determine which young people are at greatest risk for developing various short and long term patterns of drug misuse; (c) gaining a better understanding of the lifestyles and value orientations associated with various patterns of drug use and monitoring how subgroup differences shift over time; (d) determining the immediate and more general aspects of the social environment associated with drug use and misuse; (e) determining how major transitions in the social environment (e.g., entry into military service, civilian employment, college, working, unemployment) or in social roles (e.g., engagement, marriage, pregnancy, parenthood, divorce, remarriage) affect changes in drug use; (f) determining the life course trajectories and comorbidity of the various drug-using behaviors from early adolescence to middle and later adulthood and distinguishing such age effects from cohort and period effects; (g) determining the effects of social legislation, such as marijuana legalization, the long term effects of the Master Tobacco Settlement Agreement of 1998, and Tobacco 21 legislation on various types of substance use; (h) examining possible consequences of using various drugs; (i) examining linkages between educational success or failure and substance use; and (j) determining the changing connotations of drug use and

[5] Other major studies have adopted many of these measures including the National Survey on Drug Use and Health (NSDUH) and the European school surveys of substance use in nearly forty European countries (ESPAD), which is largely modeled after Monitoring the Future.

[6] See Johnston, L. D. (1991). Toward a theory of drug epidemics. In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–132). Hillsdale, NJ: Lawrence Erlbaum.

changing patterns of multiple drug use among youth.[7] Readers interested in publications dealing with any of these topics should visit the MTF website at www.monitoringthefuture.org.

The differentiation of age, period, and cohort effects in the use of various substances has been a particularly important contribution of MTF and one for which the study's cohort-sequential research design is especially well suited.

Since 2004, we have also been reporting about factors related to the spread of HIV. These factors include number of sexual partners, gender of sexual partners, condom use, injection drug use, injection drug use using shared needles, illicit drug and alcohol use more generally, and getting tested for HIV. Most of the research objectives listed above for licit and illicit drug use can also be addressed in relation to these very important behaviors. Our emphasis is on measuring and reporting prevalence and trends in HIV-related behaviors in the general population of young adults ages 19–30 who are high school graduates. We have also been measuring the extent to which these various risk and protective behaviors are correlated.

Our efforts over the years and going into the future cover both the epidemiology and etiology of substance use and related risk behaviors. Including both sets of efforts within the same large-scale study—and keeping measurement consistent across historical and developmental time—allows us to provide the nation with scientifically reliable, nationally representative estimates of historical trends of substance use as well as the developmental trends and possible causes, correlates, and consequences of substance use and other risk behaviors from adolescence through adulthood.

[7] For an elaboration and discussion of the full range of MTF research objectives in the domain of substance use, see Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2016). *The objectives and theoretical foundation of the Monitoring the Future Study* (Monitoring the Future Occasional Paper No. 84). Ann Arbor, MI: Institute for Social Research, University of Michigan.

TABLE 1-1
Added and Deleted Prevalence of Use Questions for 8th, 10th, and 12th Graders

Drug Name	Year in which added	Grades in which added			Year in which dropped	Grades in which dropped		
		8th	10th	12th		8th	10th	12th
PCP	1979			X	2014 [c]			X
Nonprescription Diet Pills	1982			X				
Stay-Awake Pills	1982			X				
Smokeless Tobacco [a]	1986, 1992			X	1990			X
Crack [b]	1986–1987, 1990			X				
Cocaine other than Crack	1987			X				
Steroids	1989			X				
Crystal Methamphetamine (Ice)	1990			X				
Been Drunk	1991			X				
Ecstasy (MDMA)	1996	X	X	X				
Rohypnol	1996	X	X	X	2002 [h]			X
Methamphetamine	1999	X	X	X				
GHB	2000	X	X	X	2012 [i]	X	X	
Ketamine	2000	X	X	X	2012 [i]	X	X	
Androstenedione	2001	X	X	X	2016 [i]	X	X	
Creatine	2001	X	X	X				
Ritalin	2001	X	X	X				
OxyContin	2002	X	X	X				
Vicodin	2002	X	X	X				
Flavored Alcoholic	2003			X				
Beverages (Alcopops) [d]	2004	X	X					
ADHD Stimulant-type drug—prescribed	2005	X	X	X				
ADHD Non-stimulant-type drug—prescribed	2005	X	X	X				
Any Prescription Drug—not prescribed [e]	2005			X				
10+ drinks in a row in past two weeks	2005			X				
	2016	X	X					
15+ drinks in a row in past two weeks	2005			X				
Over-the-counter Cough/Cold Medicines	2006	X	X	X				
Adderall	2009	X	X	X				
Tobacco using a Hookah	2010, 2016			X				
	2016	X	X					
Small Cigars	2010			X				
Energy Drinks	2010	X	X	X				
Energy Shots	2010	X	X	X				
Alcohol Beverages containing Caffeine [f]	2011	X	X	X				
Snus	2011			X				
	2012	X	X					
Large Cigars	2014	X	X	X				
Flavored Little Cigars	2014	X	X	X				
Regular Little Cigars	2014	X	X	X				

(Table continued on next page.)

TABLE 1-1 (cont.)
Added and Deleted Prevalence of Use Questions for 8th, 10th, and 12th Graders

	Year in which added	Grades in which added			Year in which dropped	Grades in which dropped		
		8th	10th	12th		8th	10th	12th
Vaping Nicotine	2017	X	X	X				
Vaping Marijuana	2017	X	X	X				
Vaping Just Flavoring	2017	X	X	X				
Marijuana Under a Doctor's Orders	2017	X	X	X				
Delta-8	2023			X				
Nicotine Pouches	2023	X	X	X				
Methaqualone	1975			X	1990/2013			X
Nitrites	1979			X	2010			X
Provigil	2009			X	2012			X
Bidis	2000	X	X		2006	X	X	
	2000			X	2011			X
Kreteks	2001	X	X		2006	X	X	
	2001			X	2015			X
Electronic Vaporizors	2015	X	X	X	2017	X	X	X
Look-Alikes	1982			X	2018			X
Bath Salts (synthetic stimulants)	2012	X	X	X	2019	X	X	X
Powdered Alcohol	2016	X	X	X	2020	X	X	X
Heroin With a Needle	1995	X	X	X	2022	X	X	X
Heroin Without a Needle	1995	X	X	X	2022	X	X	X
JUUL	2019	X	X	X	2022	X	X	X
Salvia	2009			X	2023	X	X	X
	2010	X	X		2023	X	X	X
Synthetic Marijuana [g]	2011			X	2023	X	X	X
Dissolvable Tobacco Products	2011			X	2023	X	X	X
	2012	X	X		2023	X	X	X

Source. The Monitoring the Future study, the University of Michigan.

Note. All prescription-type drugs listed refer to use without a doctor's orders, unless otherwise noted.

[a]Smokeless tobacco was added to one questionnaire form in 1986, dropped in 1990, then added to a different questionnaire form in 1992.

[b]A question on annual use of crack was added to a single form in 1986. The standard triplet questions (lifetime, annual, and 30-day use) were added to two forms in 1987 and to all forms in 1990.

[c]For 12th grade only: Lifetime and 30-day prevalence of use questions were dropped in 2002. A question on annual use remains in the study.

[d]For 12th grade only: A question on annual use of Alcopops was added to a single form in 2003. In 2004 it was replaced by the standard triplet questions (lifetime, annual, and 30-day use) about use of flavored alcoholic beverages.

[e]For 12th grade only: The use of any prescription drug includes use of any of the following: amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers…without a doctor telling you to use them.

[f]For all grades: In 2012 the alcoholic beverages containing caffeine question text was changed. See text for details.

[g]For all grades: Questions on the annual use of synthetic marijuana were added to the survey in the year specified in the table.

[h]For 12th grade only: Lifetime and 30-day prevalence of use questions were dropped in 2014. A question on annual use remains in the study.

[i]Only 8th and 10th grade questions were dropped from the study.

Chapter 2

OVERVIEW OF KEY FINDINGS IN 2023

Monitoring the Future (MTF), now having completed its 49th year of data collection, has become one of the nation's most relied upon scientific sources of valid information on trends in use of licit and illicit psychoactive drugs by U.S. adolescents, college students, young adults, and adults up to age 60. During the last four decades, the study has tracked and reported on the use of an ever-growing array of such substances in these populations of adolescents and adults.

The annual MTF series of monographs is one of the primary mechanisms through which the epidemiological findings are reported. Findings from the inception of the study in 1975 through 2023 are included in the monographs—the results of 49 national in-school surveys and 47 national follow-up surveys.

MTF has conducted in-school surveys of nationally representative samples of (a) 12th grade students each year since 1975 and (b) 8th and 10th grade students each year since 1991. In addition, beginning with the class of 1976, the study has conducted follow-up surveys of representative subsamples of the respondents from each previously participating 12th grade class. These follow-up surveys now continue well into adulthood, currently up to age 65. This monograph focuses on the results from the in-school surveys of 8th, 10th, and 12th grade students; a companion report on the panel study results[1] focuses on the follow-up surveys from ages 19 to 65.

MTF is designed to detect age, period, and cohort effects in substance use and related attitudes. Age effects are similar changes at similar ages seen across multiple class cohorts; they are common during adolescence. Period effects are changes that take place over a number of years across multiple age groups in the same calendar year (in this case, all three grades under study—8, 10, and 12). Cohort effects are substance use behaviors or attitudes that distinguish a class cohort from others that came before or after them and are maintained as the cohort ages.

Below we summarize key findings for use of various substances by U.S. 8th, 10th, and 12th graders in 2023, and full details for all drug trends follow in Chapter 5. In addition, the text below also refers to analyses for all three grades combined. These grade-combined results will appear in this Volume's Appendix D when the full Volume is released in the summer, and in the meantime these estimates can be found here on the project's website under the heading "Table for All Three Grades Combined", the results of which are presented in Appendix D.

The survey results divide cleanly into the time periods before and after the onset of the COVID-19 pandemic. All surveys in 2020 were completed before March 15, when national social distancing policies were enacted and data collection was halted due to pandemic concerns. Consequently, results from 2020 and previous years are pre-pandemic, while results from 2021 and later took place after the onset of the pandemic and the associated national response.

[1] Patrick, M. E., Schulenberg, J. E., Miech, R. A., Johnston, L. D., O'Malley, P. M., & Bachman, J. G. *Monitoring the Future Panel Study annual report: National data on substance use among adults ages 19 to 60, 1976-2022*. Monitoring the Future Monograph Series. University of Michigan Institute for Social Research: Ann Arbor, MI. Prior year versions are available on the MTF website. An updated version of this report that includes data from 2023—as well as results from respondents age 65—will be available on the MTF website in mid-August.

EXECUTIVE SUMMARY

Lowered Levels of Use Continued After Pandemic Onset for Cannabis, Alcohol, and Nicotine Vaping

Some of the project's largest year-to-year decreases ever recorded took place in the year of the pandemic onset. For example, for each grade the declines in past 12-month use of cannabis from 2020 to 2021 are the largest ever recorded by the survey (since 1975 for 12th grade students and since 1991 for 10th and 8th grade students). Record decreases also took place for alcohol use and nicotine vaping, which together with cannabis have been the most common forms of substance use among adolescents in recent years.

One major question to arise from these previous findings is whether the lower levels of substance use among adolescents would continue in future years. It is possible that the factors that disrupted and lowered drug use during the pandemic in 2021 had a long-lasting effect. This could occur if absence of drug use reduced involvement with peer groups that encouraged the use of drugs, and/or the adolescents who did not use substances during the pandemic were spared psychological/neurological changes that can increase their susceptibility for future drug use. Alternatively, substance use may have quickly rebounded to pre-pandemic levels when adolescents returned to school buildings in 2022 and afterwards, if pre-pandemic patterns of social interaction and drug use rapidly re-established.

The 2023 results show that adolescent drug use levels for the most common substances continued at the lowered levels observed after the pandemic onset. Since the large drop in 2021, cannabis levels for past 12-month use changed little with no clear direction in any of the three grades (see here for detailed estimates). Levels of alcohol use in the past 12 months for 12th grade students were slightly lower in 2023 than they had been in 2021, after a fleeting rebound in 2022. In 8th grade 2023 levels of use were also slightly lower in 2023 than in 2021, while in 10th grade the 2023 level was slightly higher than 2021, albeit substantially below the pre-pandemic level (by 10 percentage points; for details of all alcohol estimates see here). Nicotine vaping in the past 12 months continued to drop after 2021 in all three grades, with significant declines in 2023 in both 12th and 10th grade (see here for detailed estimates).

Delta-8: A New Drug on the Adolescent Scene

For the first time in 2023 MTF asked 12th grade students about their use of "delta-8." Delta-8 is a variant of delta-9-THC, which is the main psychoactive compound of cannabis (marijuana). Both delta-8 and delta-9 have similar intoxicating effects but different legal contexts. Delta-8 is federally legal. It is synthesized from hemp, which was legalized in the 2018 Agriculture Improvement Act.[2] Since the passage of this legislation delta-8 products have become increasingly available, including at gas stations and convenience stores, in many U.S. states. Potential health effects of delta-8, including dependence, are currently unknown.

The 2023 results show a delta-8 prevalence of 11.4% for past 12-month use among 12th grade students (the only grade asked about its use in 2023). Prevalence was lower in states that had legalized adult use of marijuana, consistent with the possibility that adolescents may be more likely

[2] U.S. Department of Agriculture. Farm Bill. Accessed January 22, 2024.

to use delta-8 when regular marijuana is relatively less available and accessible.[3] The 2024 survey will expand the number of questions on delta-8 in all three grades to better track its trends in use going forward.

Other Notable Findings

Additional findings on adolescent substance use are notable in 2023. Past-year use of **any illicit drug other than marijuana** continued at the lower levels set in 2021, after the pandemic onset. In 2023 its prevalence in 12th grade was 7%, where it has hovered since 2021, and was substantially lower than the pre-pandemic level of 11% in 2020. In 10th grade the 2023 prevalence level was 5%, where it has hovered since 2021, and was substantially lower than the pre-pandemic level of 9% in 2020. In 8th grade the 2023 prevalence level was 5%, where it has hovered since 2021, and was substantially lower than the 8% level in 2020.

Use of **any prescription drug** without a doctor's orders continued at the lower levels set in 2021, after the pandemic onset. In 2023 past 12-month prevalence in 12th grade was 4%, where it has hovered since 2021, and was substantially lower than the 8% level in 2020. (This measure is only reported for 12th grade). Use of any prescription drug without a doctor's orders is defined as any use of **amphetamines**, **sedatives (barbiturates)**, **narcotics other than heroin**, or **tranquilizers**. The pattern of a drop in 2021 and continued lowered levels afterwards is apparent for all these substances.

Any nicotine use in the last 30 days dropped significantly in 2023 in both 12th and 10th grade. This drop was driven primarily by the declines in nicotine vaping.

The percentage of adolescent **abstainers** from lifetime substance use significantly increased in 12th grade to 38% (from 31% in 2022) and in 10th grade to 54% (from 49% in 2022). Lifetime abstention from substance use is defined as never use of alcohol, marijuana, or nicotine (either by cigarettes or by vaping). In 12th grade *past 30-day* abstention from use of these drugs also significantly increased to 63% (from 58% in 2022).

In 12th grade use of **medications for ADHD** (attention-deficit/hyperactivity disorder) sustained the large increases that took place the previous year from 2021 to 2022. In 2023 the percentage of 12th grade students who ever took either stimulant or non-stimulant medications for ADHD was 14.6%, which was on 0.3% points below the record high set in 2022.

[3] For more detailed findings see Harlow, A. F., Miech, R. A., & Leventhal, A. M. (2024). Adolescent Δ8-THC and Marijuana Use in the US. *JAMA*, *331*(10), 861–865.

Chapter 3

STUDY DESIGN AND PROCEDURES

Monitoring the Future (MTF) incorporates several survey designs into one study, yielding analytic power beyond the sum of those component parts. The components include cross-sectional studies, repeated cross-sectional studies, and panel studies of individual cohorts and sets of cohorts. The annual cross-sectional surveys provide point estimates of various behaviors and conditions in any given year for a number of subpopulations (e.g., 8th graders, 10th graders, 12th graders, college students, all young adult high school graduates ages 19–30, as well adults ages 35 to 60) and provide point estimates for various subgroups within these different populations. Repeating these annual cross-sectional surveys over time allows an assessment of change across history in consistent age segments of the population, as well as among subgroups. The panel study permits the examination of developmental change in the same individuals as they assume adult responsibilities, enter and leave various adult roles and environments, and continue further into adulthood. It also permits an assessment of a number of outcomes later in life that MTF has shown to be linked to substance use in adolescence and beyond.

Finally, with a series of panel studies of sequential graduating class cohorts we are able to offer distinctions among, and explanations for, three fundamentally different types of change: period, age, and cohort. It is this feature that creates a synergistic effect in terms of analytic and explanatory power.[1,2]

This manuscript reports results for the 8th, 10th, and 12th graders, and the accompanying annual report on the panel data[3] reports results for those ages 19 to 60. It also focuses specifically on levels and trends in substance use among nationally representative samples of students enrolled in college and among high school graduates the same age not currently enrolled in college.

In 2023 MTF used an electronic questionnaire format for the fifth consecutive year. Starting in 2021, students in 8th, 10th, and 12th grades completed a web-based questionnaire on their own electronic devices during class time (which may have been at home if they were schooling remotely, for example as a result of the pandemic). In both 2019 and 2020 students also completed an electronic questionnaire that was connected to the internet, although they completed the survey on electronic tablets that MTF brought to schools. It is no longer necessary for MTF to bring tablets to schools because practically all schools now have internet access and almost all students have electronic devices to complete the MTF questionnaires. In rare cases when these resources are not available at a school, MTF brings electronic devices for students, as well as a mobile server to collect their survey responses.

[1] Bachman, J. G., Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., & Miech, R. A. (2015). *The Monitoring the Future project after four decades: Design and procedures* (Monitoring the Future Occasional Paper No. 82). Ann Arbor, MI: Institute for Social Research.

[2] For a more detailed description of the full range of research objectives of Monitoring the Future, see Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2016). *The objectives and theoretical foundation of the Monitoring the Future study* (Monitoring the Future Occasional Paper No. 84). Ann Arbor, MI: Institute for Social Research.

[3] Patrick, M. E., Miech, R. A., Johnston, L. D., & O'Malley, P. M. (2023). Monitoring the Future Panel Study annual report: National data on substance use among adults ages 19 to 60, 1976-2022. Monitoring the Future Monograph Series. Ann Arbor, MI: Institute for Social Research, University of Michigan.

RESEARCH DESIGN AND PROCEDURES FOR THE 12th GRADE SURVEYS

In 2023 the project surveyed 7,584 12th grade students in 83 schools distributed throughout the contiguous U.S. Twelfth graders have been surveyed in the spring semester of each year since 1975. Each year's data collection took place in both public and private high schools, which were selected to provide a representative cross-section of 12th graders throughout the contiguous U.S. (see Figure 3-1). A sampling statistician directed the selection of schools to ensure the rigor of the sampling procedures.

The Population Under Study

Senior year of high school is a strategic point at which to monitor drug use and related attitudes of youth. First, completion of high school represents the end of an important developmental period in this society, demarcating both the end of universal education and, for many, the end of living full-time in the parental home. Therefore, it is a logical point at which to take stock of accumulated influences. Further, completion of high school represents a jumping-off point—a point from which young people diverge into widely differing social environments and experiences. Thus senior year is a good time to take a "before" measure, allowing for the subsequent calculation of changes that may be attributable to the environmental transitions occurring in young adulthood, including college attendance, civilian employment, military service, and role transitions such as marriage, parenthood, divorce, etc. Finally, there are some important practical advantages built into the original system of data collections with samples of 12th graders. The need for systematically repeated, large-scale samples from which to make reliable estimates of change requires that considerable emphasis be put on cost efficiency as well as feasibility. The last year of high school constitutes the final point at which a reasonably good national sample of an age-specific cohort can be drawn and studied economically.

The Omission of Dropouts

One limitation in the MTF study design is the exclusion of individuals who drop out of high school before graduation—approximately 5–15% of each age cohort nationally, according to U.S. Census statistics. (The dropout rate has been declining in recent years; 5% is the most recent estimate.[4]) Clearly, the omission of individuals who drop out of high school introduces biases in the estimation of certain characteristics of the entire age group; however, for most purposes, the small proportion of students who drop out sets outer limits on the bias. Further, since the bias should remain relatively constant from one year to the next, their omission should introduce little or no bias in year-to-year change estimates. Appendix A in this volume addresses in detail the effects of the exclusion of those who dropped out or were absent in 12th grade on estimates of drug use prevalence and trends for the entire age cohort.

Sampling Procedures and Sample Weights

A multistage random sampling procedure is used to secure the nationwide sample of 12th graders each year. Stage 1 is the selection of particular geographic areas, Stage 2 is the selection of one or more high schools in each area (with probability proportionate to the school's student enrollment size for the grade in question), and Stage 3 is the selection of 12th graders within each high school

[4] National Center for Education Statistics. (2023, May). Status dropout rates. *Condition of Education*. U.S. Department of Education, Institute of Education Sciences. Retrieved 5 December 2023.

selected. Up to 500 12th graders in each school may be included. In schools with fewer 12th graders, the usual procedure is to include all of them in the data collection, though a smaller sample is sometimes taken to accommodate the needs of the school (either by randomly sampling entire classrooms or by some other unbiased, random method). Weights are assigned to compensate for differential probabilities of selection at each stage of sampling.

Starting in 2020, to address the smaller sample size in that year as a result of the COVID-19 pandemic and associated greater variability, the analyses were additionally weighted by region of the country (West, Midwest, Northeast and South) and, within each region, by metropolitan/non-metropolitan status. The purpose of this weighting is to ensure that the impact of these two factors on the analysis results is proportional to their size in the nation. Substance use levels and other demographics did not inform the sampling weights. This same weighting procedure was used for the 8th and 10th grade students. This post-stratification weighting was continued in all subsequent years for all three grades.

In order to be able to check observed trends in any given one-year interval, schools participate in the study for two consecutive years on a staggered schedule, with one half of them being replaced with a new random half-sample of schools each year. Therefore, in any given year about half of the schools in the sample are participating for the first time and the other half are participating for their second and final year. This three-stage sampling procedure, with annual replacement of half of the sample of schools each year, has yielded the numbers of participating schools and students shown in Table 3-1.

Questionnaire Administration

Informed consent (active or passive, per school policy) is obtained from parents of students younger than 18 years and from students themselves aged 18 years or older. About three weeks prior to the questionnaire administration date, parents of the target respondents are sent a letter by first-class mail, usually from the principal, announcing and describing the MTF study and providing parents with an opportunity to decline participation of their child if they wish. A flyer outlining the study in more detail is enclosed with the letter. Copies of the flyers are also given to the students by teachers in the target classrooms in advance of the date of administration. The flyers state that participation is entirely voluntary. MTF representatives and their assistants conduct the actual questionnaire administrations following standardized procedures detailed in an instruction manual. The questionnaires are administered in classrooms during a normal class period whenever possible; however, circumstances in some schools require the use of larger group administrations. Teachers are asked to remain present in the classroom to help maintain order, but to remain at their desks so that they cannot see students' answers.

Questionnaire Format

Because many questions are needed to cover all of the many topic areas in the MTF study, the questionnaire content for 12th graders is divided into six different questionnaire forms that are randomly distributed to participants to ensure six virtually identical random subsamples. (Five questionnaire forms were used between 1975 and 1988.) About one third of each form consists of key, or "core," variables common to all forms. All demographic variables are contained in this core set of measures. Key drug use variables are also in the core, while many of the specific drugs that have been added over time are not in the core set, but are in one or more forms. Many questions

on attitudes, beliefs, and perceptions of relevant features of the social environment are in fewer forms, and data are thus based on fewer cases—a single form would have one fifth of the total number of cases in 1975–1988 and one sixth of the total beginning in 1989. All tables in this report list the sample sizes upon which the statistics are based, stated in terms of the weighted number of cases.

2019 Estimates

The project conducted a randomized controlled experiment in 2019, in which a randomly-selected half of schools administered the student surveys with electronic tablets connected to the internet, and the other half with traditional paper-and-pencil questionnaires. Use of two different modes in 2019 raised the possibility that differences in 2019 estimates in comparison to other years may have stemmed in part from survey mode effects. We examined this possibility in detail, and for drug prevalence estimates we found no evidence of mode effects.[5] Consequently, for all 2019 drug prevalence estimates we report results from the pooled sample of paper-and-pencil and electronic tablet responses.

2020 Estimates

In-school data collection in 2020 was halted on March 15, 2020 as a result of the COVID-19 pandemic. This halt resulted in a sample size about one-quarter the size of a typical data collection. The 2020 in-school data collection was also unique because it was the first year all students recorded their answers on electronic tablets, which MTF brought to the schools. (The previous year a randomly-selected half of schools used electronic tablets.)

Detailed analyses of the 2020 results indicated that the curtailed MTF 2020 sample did not differ significantly from the nationally representative results from previous years in terms of sociodemographics and prevalence of use of substances that had stable prevalence in recent years.[6]

2021 Estimates and Beyond

The year 2021 was the first full school year affected by the COVID-19 pandemic and its associated social distancing policies. Anticipating that many students would be schooling remotely, MTF switched to an on-line questionnaire that students completed on their own electronic devices, either at school or at home (if in remote school).

Because the pandemic came on suddenly and unexpectedly, it was not possible for MTF to conduct a randomized-controlled test of the web-survey mode in comparison to electronic tablets. For two reasons we expect that such a test would have shown little to no differences in drug prevalence across the two modes, given that they are similar and both involve electronic devices connected to the internet. First, a 2019 MTF experiment that tested a much more substantial mode difference found no significant effect on drug prevalence estimates. In the 2019 administration, MTF surveyed a randomly-selected half of the schools using electronic tablets and the other half using paper-and-pencil questionnaires and found no mode differences in drug use prevalence.[6] Second, 2021 trends were similar in analyses that used all participants and in analyses that restricted the

[5] Miech, R. A., Couper, M. P., Heeringa, S. G., & Patrick, M. E. (2020). The impact of survey mode on US national estimates of adolescent drug prevalence: Results from a randomized controlled study. *Addiction, 116*(5), 1144–1151.

[6] Miech, R. A., Leventhal, A., Johnston, L., O'Malley, P. M., Patrick, M. E., & Barrington-Trimis, J. (2021). Trends in Use and Perceptions of Nicotine Vaping Among US Youth From 2017 to 2020. JAMA pediatrics, 175(2), 185–190.

analysis pool to the 46% of students who had all their classes in their school building, which suggests that at-home and in-school administrations produced similar results (analyses not shown here). Consequently, in this report we directly compare drug prevalence estimates in 2022 and 2021 with previous years.

However, we cannot rule out possible mode effects for some of the attitude and belief estimates after 2020. Consequently, we do not directly compare these results from 2022 and later years with results from 2020 and beforehand. We note that our cautiousness in comparing to previous years does necessarily mean that the results are not comparable, but only that comparability is not known at this point.

RESEARCH DESIGN AND PROCEDURES FOR THE 8th AND 10th GRADE SURVEYS

In 1991, MTF was expanded to include nationally representative samples of 8th and 10th grade students surveyed on an annual basis. Separate samples of schools and students are drawn at each grade level. In general, the procedures used for the annual in-school surveys of 8th and 10th grade students closely parallel those used for 12th graders, including the selection of schools and students, questionnaire administration, and questionnaire format. A major exception is that only two different questionnaire forms were used in 8th and 10th grade from 1991 to 1996, expanding to four forms beginning in 1997. The same four questionnaire forms are used for both 8th and 10th graders; most of the content is drawn from the 12th grade surveys, including the core section. Thus, key demographic variables and measures of drug use and related attitudes and beliefs are generally identical for all three grades. Many fewer questions about other values and attitudes are included in the 8th and 10th grade forms, in part because we think that many of them are likely to be more fully formed by 12th grade and, therefore, are best monitored there.

In 2023, the project surveyed 6,240 8th grade students in 76 schools and 8,494 10th grade students in a different 76 schools distributed throughout the contiguous U.S. Each year's data collection took place in both public and private schools, which were selected to provide a representative cross-section of 8th graders and 10th graders throughout the contiguous U.S. (see Figure 3-1). A sampling statistician directed the selection of schools to ensure the rigor of the sampling procedures.

Anonymity

Since 1999, all surveys for 8th and 10th graders have been fully anonymous. In previous years, MTF collected confidential, personal identification information from these respondents, and from 1991 to 1993 this information was used to follow up with 8th and 10th graders in a manner similar to follow-ups of 12th graders (see below).[7] Follow-up of 8th and 10th graders was discontinued after 1993, precluding the need for further collection of confidential, personal identification information. Considerations supporting a switch to fully anonymous surveys in 8th and 10th grade included the following: (a) school cooperation might be easier to obtain; and (b) to the extent that collecting contact information had any effect on survey responses such an effect would be removed

[7] A book reporting results from analyses of these younger panels was published in 2008. See Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008). *The education–drug use connection: How successes and failures in school relate to adolescent smoking, drinking, drug use, and delinquency*. New York: Lawrence Erlbaum Associates/Taylor & Francis.

from the national data, which are widely compared with results of state and local surveys (nearly all of which use anonymous questionnaires), thus making those comparisons more valid.

MTF considered in detail the effects of an anonymous survey as compared to a confidential survey that collected personal identification information. In 1998 the half-sample of 8th and 10th grade schools beginning their two-year participation in MTF received fully anonymous questionnaires, while the half-sample participating for their second and final year continued to get the confidential questionnaires that had been previously in use by MTF since 1991.

Examination of the 1998 results, based on the two equivalent half-samples at both grades 8 and 10, revealed that there was no effect of anonymous as compared to confidential surveys among 10th graders and only a very modest effect, if any, in self-reported substance use rates among 8th graders (with prevalence levels slightly higher in the anonymous condition).[8] All tables and figures in this volume combine data from both half-samples of 8th graders surveyed in a given year. This is also true for 10th graders, for whom we found no methodological effect, and 12th graders, for whom we assumed no such effect because none was found for 10th graders. (See this chapter's later section entitled "Representativeness and Sample Accuracy" for a further discussion of half-samples among all three grades.)

Questionnaire Forms and Sample Proportions

Beginning in 1997, in order to increase the measurement content in the study of 8th and 10th graders, the number of forms was expanded from two to four, although they are not distributed in equal numbers. Forms 1, 2, 3, and 4 are assigned to one third, one third, one sixth, and one sixth of the students, respectively. Thus, if a question appears on only one form, it is administered to either one third or one sixth of the sample. A question in two forms may be assigned to one third of the sample (one sixth plus one sixth), one half of the sample (one third plus one sixth), or two thirds of the sample (one third plus one third). A question in three forms may be assigned to two thirds (one third plus one sixth plus one sixth), or five sixths of the sample (one third plus one third plus one sixth). Footnotes to the tables indicate what proportions of all respondents in each grade were asked each question, if that proportion is other than the entire sample. All of the samples, whether based on one or more forms, are random samples and therefore representative of the larger population (the universe) of students at each grade.

REPRESENTATIVENESS AND SAMPLE ACCURACY

School Participation

Schools are invited to participate in the MTF study for a two-year period. With very few exceptions, each school participating in the first year has agreed to participate in the second year as well. When an original, randomly-drawn school in a geographic area declines to participate in the survey, a substitute school is selected in the same geographic area. In these cases the substitute is selected to be demographically similar to the original selection. This should almost entirely remove problems of bias in region, urbanicity, and the like that might result from schools that

[8] We have examined in detail the effects of administration mode using multivariable controls to assess the effects of the change on 8th-grade self-report data. Our findings generally show even less effect than is to be found without such controls. See O'Malley, P. M., Johnston, L. D., Bachman, J. G., & Schulenberg, J. E. (2000). A comparison of confidential versus anonymous survey procedures: Effects on reporting of drug use and related attitudes and beliefs in a national study of students. *Journal of Drug Issues, 30,* 35–54.

decline to participate. Table 3-2 presents yearly information on the percentage of originally-selected and substitute schools. These percentages declined in 2021 and afterwards, when schools were addressing the COVID-19 pandemic and many did not have the bandwidth to participate in a survey such as MTF.

Two questions are sometimes raised about the substitute schools: (a) How do substitutions affect the representativeness of the sample? (b) How does variation over time in the percentage of schools that are substitutes contribute to changes in estimates of drug use?

Among participating schools, there is very little difference in substance use levels between the sample of participating schools that were original selections, taken as a set, and the substitute schools taken as a set. Averaged over the years 2003 through 2015 for grades 8, 10, and 12 combined, the difference between original schools and substitute schools averaged 0.26 percentage points in the observed prevalence averaged across a number of drug use measures: two indices of annual illicit drug use, the annual prevalence of each of the major illicit drug classes, and several measures of alcohol and cigarette use. For half of the measures prevalence was higher in the substitute selections and in the other half it was higher in the original selections; specifically, out of 39 comparisons (13 drugs and drug indexes for each grade), prevalence was higher in 20 of the original selections and in 19 of the substitute selections.

Potential biases could be subtle, however. If, for example, it turned out that principals of schools with "drug problems" refused to participate, the sample could be biased. And if any other single factor were dominant in school refusals, that reason for refusal might also suggest a source of potential bias. However, the reasons principals give for declining to participate tend to be varied and are often a function of happenstance events specific to that particular year, such as a weather-related event that reduced the number of school days or the fact that the school already committed to participate in a number of other surveys that year; only very few schools, if any, object specifically to the drug-related survey content.

If it were the case that substitute schools differed substantially in drug use, then which particular schools participated could have a greater effect on estimates of drug use. However, the great majority of variance in drug use lies within schools, not between schools.[9] For example, from 2003 to 2015 for schools with 8th, 10th, or 12th grade students, about 2% to 8% of the variance in smoking cigarettes or drinking alcohol in the past 30 days was between schools. Among the illicit drugs, marijuana showed the largest amount of between-school variation, averaging between slightly less than 4% up to 5% for annual use, and 3% to 4% for 30-day use. Annual prevalence of cocaine use averaged between less than 1% and 1.5%, while prevalence of annual heroin use averaged less than 0.5%. Further, some, if not most, of the between-schools variance is due to differences related to factors such as region and urbanicity, which remain well controlled in the present sampling design.

It is unlikely that the substitute schools affect drug trends. If they did, then we would expect noticeable bumps up or down across all substance use estimates as the percentage of substitute schools varied over time. But MTF produces results that are very smooth and generally change in

[9] O'Malley, P. M., Johnston, L. D., Bachman, J. G., Schulenberg, J. E., & Kumar, R. (2006). How substance use differs among American secondary schools. *Prevention Science, 7*, 409–420.

an orderly fashion from one year to the next. Moreover, different substances trend in distinctly different ways. We have observed, for example, marijuana use decreasing while cocaine use was stable (in the early 1980s), alcohol use declining while cigarette use held steady (in the mid- to late 1980s), ecstasy use rising sharply while cocaine use showed some decline (late 1990s, early 2000s); and marijuana use remaining steady while alcohol use hit historic lows (since 2011). Moreover, attitudes and perceptions about drugs have changed variously, but generally in ways quite consistent with the changes in actual use. All of these patterns are explainable in terms of psychological, social, and cultural factors; they cannot be explained by a common factor of changes in percentage of substitute schools.

Of course, there could be some sort of constant bias across the years, but even in the unlikely event that there is, it seems highly improbable that it would be of much consequence for policy purposes, given that it would not affect trends and likely would have a very modest effect on levels of prevalence. Thus, we have a high degree of confidence that school refusals have not seriously biased the survey results.

Nevertheless, securing the cooperation of schools has become increasingly difficult. This is a problem common to the field, not specific to MTF. Therefore, beginning with the 2003 survey, we have provided payment to schools as a means of increasing their incentive to participate. (By that time, several other ongoing school-based survey studies already were using payments to schools.)

At each grade level, half of each year's sample comprises schools that started their participation the previous year, and half comprises schools that began participating in the current year. (Both samples are national replicates, meaning that each is drawn to be nationally representative by itself.) This staggered half sample design is used to check on possible fluctuations in the year-to-year trend estimates due to school turnover. For example, separate sets of one-year trend estimates are computed based on students in the half-sample of schools that participated in both 2017 and 2018, then based on the students in the half-sample that participated in both 2016 and 2017, and so on. Thus, each one-year matched half-sample trend estimate derived in this way is based on a constant set of schools. When the trend data derived from the matched half-sample (examined separately for each class of drugs) are compared with trends based on the total sample of schools, the results are usually highly similar, indicating that the trend estimates are affected little by school turnover or school substitutions. Of course, levels of absolute prevalence are not as precisely estimated when the sample is only half the usual size.

Student Participation

In 2023, completed questionnaires were obtained from 80% of all sampled students in 8th grade, 85% in 10th grade, and 72% in 12th grade (see Table 3-1 for response rates in all years). Because students with fairly high rates of absenteeism also report above-average rates of drug use, some degree of bias is introduced into the prevalence estimates by missing the absentees. Much of that bias could be corrected through the use of special weighting based on the self-reported absentee rates of the students who did respond; however, we decided not to use such a weighting procedure because the bias in overall drug use estimates is quite small, whereas the necessary weighting procedures would have introduced greater sampling variance in the estimates. Appendix A in this report illustrates the changes in trend and prevalence estimates that would result if corrections for absentees had been included.

Sampling Accuracy of the Estimates

Confidence intervals (95%) are provided in Tables 4-1 through 4-4 for lifetime, annual, 30-day, and daily prevalence of use for 8th, 10th, and 12th grade students. For example, lifetime prevalence of marijuana use for 12th graders could theoretically vary by up to ± 2.8 percentage points. The interpretation of this 95% confidence interval is that if we took a large number of samples of this size from the universe of all schools containing 12th graders in the contiguous U.S., 95 times out of 100 the sample would yield a result that would be less than 2.8 percentage points divergent from the result we would get from a comparable massive survey of *all* ~4.4 million 12th graders in *all* schools. Confidence intervals for the other prevalence periods (last 12 months, last 30 days, and current daily use) are generally smaller than those for lifetime use. In general, confidence intervals for 8th and 10th graders are very similar to those observed for 12th graders. Some drugs that are measured on only one or two questionnaire forms will have larger confidence intervals because they are based on smaller sample sizes.

In 2020, as a result of the smaller sample size, these confidence intervals were wider than they have been in previous years, when confidence intervals averaged ± 1.4% for lifetime prevalence across a wide variety of drug classes. Because of these larger confidence intervals in 2020, the minimum change in prevalence from 2019 to 2020 that was detectable as statistically significant was larger in 2020 than it was in earlier years.

In 2021 and subsequent years sample sizes, and consequently confidence intervals, were relatively closer to their typical size.

The Appendix C of Volume I published in 2017 and earlier years reported information on how to calculate confidence intervals for point estimates and how to calculate statistics that test the significance of changes over time or of differences between subgroups. This appendix is no longer necessary with the opening of MTF's remote portal at the National Addiction and HIV Data Archive Program, which now allows researchers to compute such statistics directly using MTF weights and clustering variables. Interested readers may refer to earlier publications of this monograph for the information it provides about design effects and how their computational influence varies by substance (e.g., see Appendix C here).

VALIDITY OF MEASURES OF SELF-REPORTED DRUG USE

Are sensitive behaviors such as drug use honestly reported? Like most studies dealing with sensitive behaviors, we have no direct, totally objective validation of the present measures; however, the considerable amount of existing inferential evidence strongly suggests that the MTF self-report questions produce largely valid data. Here we briefly summarize this evidence.[10]

[10] A more complete discussion may be found in: Johnston, L. D. & O'Malley, P. M. (1985). Issues of validity and population coverage in student surveys of drug use. In B. A. Rouse, N. J. Kozel, & L. G. Richards (Eds.), *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57 (ADM) 85 1402). Washington, DC: U.S. Government Printing Office; Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1984). *Drugs and American high school students: 1975–1983* (DHHS (ADM) 85 1374). Washington, DC: U.S. Government Printing Office; Wallace, J. M., Jr., & Bachman, J. G. (1993). Validity of self-reports in student-based studies on minority populations: Issues and concerns. In M. de LaRosa (Ed.), *Drug abuse among minority youth: Advances in research and methodology* (NIDA Research Monograph No. 130). Rockville, MD: National Institute on Drug Abuse.

First, using a three-wave panel design, we established that the various measures of self-reported drug use have a high degree of reliability—a necessary condition for validity.[11] In essence, respondents were highly consistent in their self-reported behaviors from model ages 18 to 22. Second, we found a high degree of consistency among logically related measures of use within the same questionnaire administration. Third, the proportion of 12th graders reporting some illicit drug use has reached two thirds of all respondents in peak years and over 80% in some follow-up years, constituting *prima facie* evidence that the degree of underreporting must be very limited. Fourth, 12th graders' reports of use by their unnamed friends—about whom they would presumably have considerably less reason to conceal information about use—have been highly consistent with self-reported use in the aggregate, both in terms of prevalence and trends in prevalence, as discussed in Chapter 9. Fifth, we have found self-reported drug use to relate in consistent and expected ways based on theory to a number of other attitudes, behaviors, beliefs, and social situations—strong evidence of "construct validity." Sixth, the missing data levels for the self-reported use questions are only very slightly higher than for the preceding non-sensitive questions, in spite of explicit instructions to respondents immediately preceding the drug section to leave blank those questions they feel they cannot answer honestly. Seventh, an examination of consistency in reporting of lifetime use conducted on the long-term panels of graduating seniors found quite low levels of recanting of earlier reported use of the illegal drugs.[12] There was a higher level of recanting for the psychotherapeutic drugs, suggesting that adolescents may actually overestimate their use of some drugs because of misinformation about definitions, but that this knowledge improves as they get older. Finally, the great majority of respondents, when asked, say they would answer such questions honestly if they are or were users.[13]

As an additional step to assure the validity of the data, we check for logical inconsistencies in the answers to the triplet of questions about use of each drug (i.e., lifetime, annual, and 30-day use), and if a respondent exceeds a maximum number of inconsistencies across the set of drug use questions, his or her record is deleted from the data set. Similarly, we check for improbably high rates of use of multiple drugs and delete such cases, assuming that the respondents are not taking the task seriously. Fortunately, very few cases (< 3%) have to be eliminated for these reasons.

This is not to argue that self-reported measures of drug use are necessarily valid in all studies. In MTF we have gone to great lengths to create a situation and set of procedures in which respondents recognize that their confidentiality will be protected. We have also tried to present a convincing case as to why such research is needed. The evidence suggests that a high level of validity has been obtained. Nevertheless, insofar as any remaining reporting bias exists, we believe it to be in the direction of underreporting. Thus, with the possible exception of the psychotherapeutic drugs, we believe our estimates to be lower than their true values, even for the obtained samples, but not substantially so.

[11] O'Malley, P. M., Bachman, J. G., & Johnston, L. D. (1983). Reliability and consistency in self-reports of drug use. *International Journal of the Addictions, 18*, 805–824.

[12] Johnston, L. D. & O'Malley, P. M. (1997). The recanting of earlier reported drug use by young adults. In L. Harrison (Ed.), *The validity of self-reported drug use: Improving the accuracy of survey estimates* (NIDA Research Monograph No. 167, pp. 59–80). Rockville, MD: National Institute on Drug Abuse.

[13] For a discussion of reliability and validity of student self-report measures of drug use like those used in MTF across varied cultural settings, see Johnston, L. D., Driessen, F. M. H. M., & Kokkevi, A. (1994). Surveying student drug misuse: A six-country pilot study. Strasbourg, France: Council of Europe.

Consistency and Measurement of Trends

MTF is designed to be sensitive to changes from one time period to another. A great strength of this study is that the measures and procedures have been standardized and applied consistently across many years. To the extent that any biases remain because of limits in school and/or student participation, and to the extent that there are systematic distortions (lack of validity) in the responses of some students, it seems very likely that such problems will exist in much the same proportions from one year to the next. In other words, biases in the survey estimates will tend to be consistent from one year to another, meaning that they should have very little effect on our measurement of trends. The smooth and consistent nature of most trend curves reported for the various drugs provides rather compelling empirical support for this assertion.

TABLE 3-1
Sample Sizes and Response Rates

	Number of Public Schools			Number of Private Schools			Total Number of Schools				Total Number of Students				*Student Response Rate (%)*		
Grade:	8th	10th	12th	8th	10th	12th	8th	10th	12th	Total	8th	10th	12th	Total	*8th*	*10th*	*12th*
1975	—	—	111	—	—	14	—	—	125	—	—	—	15,791	—	—	—	*78*
1976	—	—	108	—	—	15	—	—	123	—	—	—	16,678	—	—	—	*77*
1977	—	—	108	—	—	16	—	—	124	—	—	—	18,436	—	—	—	*79*
1978	—	—	111	—	—	20	—	—	131	—	—	—	18,924	—	—	—	*83*
1979	—	—	111	—	—	20	—	—	131	—	—	—	16,662	—	—	—	*82*
1980	—	—	107	—	—	20	—	—	127	—	—	—	16,524	—	—	—	*82*
1981	—	—	109	—	—	19	—	—	128	—	—	—	18,267	—	—	—	*81*
1982	—	—	116	—	—	21	—	—	137	—	—	—	18,348	—	—	—	*83*
1983	—	—	112	—	—	22	—	—	134	—	—	—	16,947	—	—	—	*84*
1984	—	—	117	—	—	17	—	—	134	—	—	—	16,499	—	—	—	*83*
1985	—	—	115	—	—	17	—	—	132	—	—	—	16,502	—	—	—	*84*
1986	—	—	113	—	—	16	—	—	129	—	—	—	15,713	—	—	—	*83*
1987	—	—	117	—	—	18	—	—	135	—	—	—	16,843	—	—	—	*84*
1988	—	—	113	—	—	19	—	—	132	—	—	—	16,795	—	—	—	*83*
1989	—	—	111	—	—	22	—	—	133	—	—	—	17,142	—	—	—	*86*
1990	—	—	114	—	—	23	—	—	137	—	—	—	15,676	—	—	—	*86*
1991	131	107	117	31	14	19	162	121	136	419	17,844	14,996	15,483	48,323	*90*	*87*	*83*
1992	133	106	120	26	19	18	159	125	138	422	19,015	14,997	16,251	50,263	*90*	*88*	*84*
1993	126	111	121	30	17	18	156	128	139	423	18,820	15,516	16,763	51,099	*90*	*86*	*84*
1994	116	116	119	34	14	20	150	130	139	419	17,708	16,080	15,929	49,717	*89*	*88*	*84*
1995	118	117	120	34	22	24	152	139	144	435	17,929	17,285	15,876	51,090	*89*	*87*	*84*
1996	122	113	118	30	20	21	152	133	139	424	18,368	15,873	14,824	49,065	*91*	*87*	*83*
1997	125	113	125	27	18	21	152	131	146	429	19,066	15,778	15,963	50,807	*89*	*86*	*83*
1998	122	110	124	27	19	20	149	129	144	422	18,667	15,419	15,780	49,866	*88*	*87*	*82*
1999	120	117	124	30	23	19	150	140	143	433	17,287	13,885	14,056	45,228	*87*	*85*	*83*
2000	125	121	116	31	24	18	156	145	134	435	17,311	14,576	13,286	45,173	*89*	*86*	*83*
2001	125	117	117	28	20	17	153	137	134	424	16,756	14,286	13,304	44,346	*90*	*88*	*82*
2002	115	113	102	26	20	18	141	133	120	394	15,489	14,683	13,544	43,716	*91*	*85*	*83*
2003	117	109	103	24	20	19	141	129	122	392	17,023	16,244	15,200	48,467	*89*	*88*	*83*
2004	120	111	109	27	20	19	147	131	128	406	17,413	16,839	15,222	49,474	*89*	*88*	*82*
2005	119	107	108	27	20	21	146	127	129	402	17,258	16,711	15,378	49,347	*90*	*88*	*82*
2006	122	105	116	29	18	20	151	123	136	410	17,026	16,620	14,814	48,460	*91*	*88*	*83*
2007	119	103	111	32	17	21	151	120	132	403	16,495	16,398	15,132	48,025	*91*	*88*	*81*
2008	116	103	103	28	19	17	144	122	120	386	16,253	15,518	14,577	46,348	*90*	*88*	*79*
2009	119	102	106	26	17	19	145	119	125	389	15,509	16,320	14,268	46,097	*88*	*89*	*82*
2010	120	105	104	27	18	22	147	123	126	396	15,769	15,586	15,127	46,482	*88*	*87*	*85*
2011	117	105	110	28	21	19	145	126	129	400	16,496	15,382	14,855	46,733	*91*	*86*	*83*
2012	115	107	107	27	19	20	142	126	127	395	15,678	15,428	14,343	45,449	*91*	*87*	*83*
2013	116	103	106	27	17	20	143	120	126	389	15,233	13,262	13,180	41,675	*90*	*88*	*82*
2014	111	98	105	30	16	17	141	114	122	377	15,195	13,341	13,015	41,551	*90*	*88*	*82*

(Table continued on next page.)

TABLE 3-1 (cont.)
Sample Sizes and Response Rates

	Number of Public Schools			Number of Private Schools			Total Number of Schools				Total Number of Students				*Student Response Rate (%)*		
Grade:	8th	10th	12th	8th	10th	12th	8th	10th	12th	Total	8th	10th	12th	Total	*8th*	*10th*	*12th*
2015	111	102	101	30	18	20	141	120	121	382	15,015	16,147	13,730	44,892	*89*	*87*	*83*
2016	117	92	100	25	18	20	142	110	120	372	17,643	15,230	12,600	45,473	*90*	*88*	*80*
2017	109	89	105	22	17	18	131	106	123	360	16,010	14,171	13,522	43,703	*87*	*85*	*79*
2018	110	106	106	28	21	23	138	127	129	394	14,836	15,144	14,502	44,482	*89*	*86*	*81*
2019	114	104	108	29	22	20	143	126	128	397	14,223	14,595	13,713	42,531	*89*	*86*	*80*
2020	30	36	29	8	2	7	38	38	36	112	3,161	4,890	3,770	11,821	*88*	*89*	*79*
2021	91	84	82	30	16	16	121	100	98	319	11,446	11,792	9,022	32,260	*82*	*78*	*69*
2022	81	82	80	23	20	22	104	102	102	308	9,889	11,950	9,599	31,438	*86*	*84*	*75*
2023	59	61	65	17	15	18	76	76	83	235	6,240	8,494	7,584	22,318	*80*	*85*	*72*

Source. The Monitoring the Future study, the University of Michigan.

TABLE 3-2

Percentage Original and Replacement School Selections, by Year [a]

Percent of slots filled by...	'77	'78	'79	'80	'81	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	'00
Original	59	63	62	63	71	71	66	72	67	66	72	71	68	70	59	55	60	53	52	53	51	51	57	62
Replacements	39	36	35	32	25	26	32	26	29	33	26	26	30	29	39	43	39	44	44	43	47	48	42	35
Total	98	99	97	95	96	97	99	98	96	99	99	98	99	99	98	98	99	97	96	96	98	99	99	97

Percent of slots filled by...	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20
Original	56	49	53	62	63	59	58	53	54	58	56	53	54	58	56	53	54	51	44	44	41	40	41	13
Replacements	42	48	45	37	34	40	39	43	44	39	40	43	44	39	40	43	41	41	49	47	49	50	50	13
Total	98	97	98	99	97	99	97	96	98	97	96	96	98	97	96	96	95	92	93	91	90	90	91	26

Percent of slots filled by...	'21	'22	'23
Original	27	22	16
Replacements	52	50	34
Total	79	72	50

Source: The Monitoring the Future study, the University of Michigan.

[a]In 2020 data collection was halted prematurely as a result of the COVID-19 pandemic.

FIGURE 3-1
Schools included in 1 Year's Data Collection
8th, 10th, and 12th Grades

Source. The Monitoring the Future study, University of Michigan
Note. One dot equals one school.

Chapter 4

DRUG USE IN 2023: PREVALENCE OVERALL AND BY DEMOGRAPHIC GROUPS

MTF examines differences in prevalence of drug use associated with gender, college plans, region of the country, population density, parents' education level, and racial/ethnic identification. Tables 4-1 through 4-4 provide statistics on levels of use for these various subgroups for all three grades in 2023. Additional information on trends in demographic differences for drug prevalence levels are presented in Occasional Paper 101.

Gender Differences

In general, higher proportions of males than females are involved in drug use, especially heavy use. Below we note important examples of and qualifications to this generalization.

- Use of ***marijuana*** was slightly higher for females than for males in 2023 in all three grade levels for lifetime and past 12-month use. For past 30-day use females' levels were also higher in 8th and 10th grade but slightly lower in 12th grade (18% versus 19%, respectively). This gender ordering is unusual because in past years it was reversed. The coming years will tell if males return to higher marijuana prevalence as the drug prevalence changes that took place during the pandemic recede long term, or if a new gender ordering has taken place.

- ***Delta-8*** is a product derived from hemp and is named after the ingredient Delta-8-Tetrahydrocannabinol, which is an isomer of Delta-9-Tetrahydrocannabinol, the main psychoactive compound of marijuana. Both produce similar highs, with delta-8 described by many users as "marijuana light." Delta-8 is federally legal as a result of the 2018 Agriculture Improvement Act, although some states ban or heavily regulate its use.[1] Past 12-month prevalence is about 30% higher for males than females (13% versus 10%, respectively) in 12th grade, which differs from marijuana use for which prevalence is either slightly higher for females or about equal by sex (depending on grade, see bullet immediately above).

- Males have higher prevalence than females on most illicit drugs other than marijuana—at least by 12th grade. Substances for which males have higher annual prevalence in 12th grade include ***inhalants, hallucinogens, LSD, hallucinogens other than LSD, cocaine, crack, OxyContin, Vicodin, ketamine, amphetamines, methamphetamine, tobacco using a hookah, small cigars, snus, steroids, and creatine***. Further, males account for an even greater share of the frequent or heavy users of many of these drugs.

- For many drugs, however, there is less gender difference in use in the lower grades, especially in 8th grade. For some drugs, females actually have higher levels of annual use in 8th grade (though in most cases, not statistically significantly higher), including ***any***

[1] For more information see Harlow, A. F., Miech, R. A., & Leventhal, A. M. (2024). Adolescent Δ8-THC and marijuana use in the US. *JAMA*, 331(10), 861-865.

illicit drug, any illicit drug other than marijuana, marijuana, hallucinogens, hallucinogens other than LSD, cocaine, crack, heroin, inhalants, amphetamines, tranquilizers, alcohol, been drunk, flavored alcoholic beverages, alcoholic beverages containing caffeine, any vaping, vaping nicotine, vaping marijuana, and vaping just flavoring. Thus, the gender differences observed in 12th grade, with males more likely to use most drugs, emerge over the course of middle to late adolescence. The gender differences in the early grades may result, in part, from females tending to mature earlier and associating with older males (this gender difference may then dissipate as same age males catch up in physical maturity and substance use opportunities).

- ***Binge drinking***, defined as five or more drinks is a row in the past two weeks, is more common in 12th grade among males than females, with prevalence levels of 12% and 9%, respectively. This contrasts with levels of any alcohol use in the past 30 days, which is slightly lower for males (23%) compared to females (25%).

- Past 30-day ***cigarette*** smoking prevalence in 2023 is similar for males and females in 8th grade (1% for both) and 10th grade (2% for both). By 12th grade a gender gap has opened up, and prevalence for males is 3.5% compared to 1.6% for females.

- Prevalence levels for ***vaping nicotine*** and ***vaping marijuana*** were higher for females than for males in all three grades for lifetime, past 12-month and past 30-day use.

- ***Smokeless tobacco*** is almost exclusively used by males, though now quite rarely. Compared to 3.2% of 12th grade males in 2023 who reported some use in the prior month, only 0.8% of females did.

- ***Nicotine pouches***, which include products under the brand name Zyn, were similar to smokeless tobacco in their gender distribution, with substantially higher levels of past 12-month use among males at all grade levels.

- Past 12-month use of ***creatine***—an over the counter substance used to increase muscle mass—was 19.0% for males and 6.1% for females. Males compared to females also had higher levels of use for other substances that can be used to increase muscle mass such as anabolic steroids (12-month prevalence of 0.6% and 0.3%, respectively in 12th grade) and androstenedione (12-month prevalence of 1.7% and 1.2%, respectively).

Racial/Ethnic Differences

Racial/ethnic comparisons are made here for students who identify exclusively as Black/African American, Hispanic, or White. In the findings presented in this volume, we routinely present combined data from two adjacent years to augment the sample sizes on which estimates for these two minority groups (as well as Whites) are based and, thus, increase the reliability of the estimates. Otherwise, misleading findings about the size of racial/ethnic differences may emerge, as well as (and perhaps more importantly) misleading findings about their trends. We caution the reader that the sampling error of differences among groups is likely to be larger than would be true for other demographic and background variables such as gender or college plans because

Black/African Americans and Hispanics are more likely to be clustered by neighborhood, and therefore by school.

Tables 4-1 to 4-4 give the two-year *combined* (i.e., 2022–2023) prevalence estimates for lifetime, annual, 30-day, and selected daily use for the three racial/ethnic groups at all three grade levels, along with the numbers of cases upon which the estimates are based on the first page of each table.

For a number of years, 12th grade Black/African American students reported lifetime, annual, 30-day, and daily prevalence levels for nearly all drugs that were lower—sometimes dramatically so—than those for White or Hispanic 12th graders. Today that finding is largely reversed, with drug use among Black/African Americans higher than other groups for many drugs. Higher levels are also seen in 8th and 10th grades, indicating that this reversal is almost certainly *not* due primarily to differential dropout rates.

- In 12th grade annual prevalence of ***marijuana*** use is higher for Black/African American students (33%) compared to White (26%) and Hispanic (25%) students. In earlier grades prevalence differed little across the three grades; between 8% and 9% in 8th grade and between 17% and 18% in 10th grade.

- Both 30-day use of ***any illicit drug*** and ***any illicit drug other than marijuana*** have similar prevalence levels across the three racial/ethnic groups. For Hispanic, Black/African American, and White 12th grade students the prevalence levels of past 30-day use of any illicit drug in 2023 were 17%, 22%, and 20%, respectively. For the outcomes of any illicit drug other than marijuana the corresponding prevalence levels were 2.8%, 3.7%, and 2.5%.

  White 12th grade students had the highest 12-month prevalence level of ***Vicodin, Ritalin, GHB, and steroids***.

- Hispanic 12th grade students have lower levels of drug use for all major drugs in comparison to White and Black/African American 12th grade students.

- Black/African American 12th grade students had higher levels of alcohol use than Hispanics and Whites in 2023. The percentage of 12th grade students who had a drink of ***alcohol*** in the past 12 months was 57% for Black/African American teens, compared to 43% for Hispanics and 32% for Whites. Prevalence levels for ***getting drunk*** in the past 12 months for the three racial/ethnic groups were 34%, 20%, and 16%, respectively. Prevalence of using a ***flavored alcoholic beverage*** in the last 12 months was 44%, 35%, and 19%, respectively. Use of ***alcoholic beverages containing caffeine*** in the last 12 months was 15%, 10%, and 5%, respectively. ***Binge drinking*** in the last 30 days was also highest among Black/African American 12th graders, at 16%, compared to 8% for Hispanics and 5% for Whites.

- Black/African American 12th grade students had higher levels of nicotine use than their White and Hispanic peers. Prevalence of ***cigarette smoking*** in the past 30 days in 12th grade was 5% for Black/African American teens, compared to 1.9% for Hispanic and 1.0% for White teens. In recent years ***nicotine vaping*** has become the more common way for teens

to use nicotine, and in 2023 30-day prevalence for Black/African Americans in 12th grade was 25%, compared to 13% for Hispanic and 10% for White students.

Differences Related to College Plans

Overall, students who say they probably or definitely will graduate from a four-year college program (referred to here as the "college-bound") have lower levels of illicit drug use in secondary school than those who say they probably or definitely will not (the "noncollege-bound"). (See Tables 4-1 through 4-4.)

Today the great majority of students at all three grade levels expect to attend and graduate from a four-year college: 81% in 8th grade, 81% in 10th grade, and 75% in 12th grade (calculated from first three columns of Table 4-1). The proportions indicating college plans are higher at the lower grade levels, even though future high school dropouts (typically about 7% of today's high school classes) are still contained in these samples. Cohort shifts in college attendance that have taken place since MTF began may partially explain this apparent anomaly, but there is probably a considerable age effect as well, wherein early aspirations become reality-tested (and adjusted) as secondary school experience cumulates and academic performance levels become more clearly established.

For any given drug, the differences between these two self-identified groups of college- or noncollege-bound students tend to be greatest in 8th grade, perhaps due to the inclusion of future high school dropouts, or the tendency of noncollege-bound students to have an earlier age of initiation of use, or both.

- Annual ***marijuana*** use, for example, was reported in 2023 by 26% of college-bound 12th graders versus 35% of the noncollege-bound; but among 8th graders it is reported by only 7% of the college-bound versus 15% of the noncollege-bound.

- ***Delta-8*** use in the last 12 months is 75% higher among the noncollege- as compared to college-bound students in 12th grade in 2023, at 16% and 9%, respectively. (Its use in the lower grades will be measured next year.)

- Among 12th graders in 2023 use of ***any illicit drug other than marijuana*** in the prior year was higher among the noncollege-bound youth (11%) compared to college-bound youth (6%) (Table 4-2).

- Frequent use of many illicit drugs shows larger contrasts related to college plans (Table 4-4). ***Daily marijuana*** use, for example, is more than three times as likely among the noncollege-bound as it is among the college-bound in 8th grade, more than twice as likely in 10th grade and 12th grade. ***Lifetime prevalence of daily marijuana use for a month or more*** shows the same concentration among the noncollege-bound, for whom prevalence is 22% as compared to 7% among the college-bound in 12th grade (this outcome not measured in the lower grades).

- An examination of Table 4-2 shows that quite large ratio differences are found between the college-bound and the noncollege-bound for annual prevalence of use on virtually all illicit drugs; these large ratios appear in all three grades.

- Levels of ***alcohol*** use in 12th grade differ little by college aspirations for lifetime, past 12-month, and past 30-day use. In contrast, in 8th grade the noncollege-bound have higher levels of use for these measures, by seven percentage points for lifetime use, and about four percentage point for past 12-month and past 30-day use.

- Noncollege-bound students are more likely than those who are college-bound to have received ***any medication*** for ADHD in their lifetime, either ***stimulant*** or ***nonstimulant*** drugs in 8th, 10th and 12th grade. Of course, ADHD may be one reason why a student does not anticipate going to college.

- ***Cigarette*** smoking prevalence in the past 30 days is 2.5% among college-bound 12th graders in comparison to 3.8% among the noncollege-bound. Proportional differences are larger in the lower grades: 0.6% of college-bound versus 2.5% of noncollege-bound students in 8th grade and 0.6% versus 2.5% in 10th grade. (The absence of dropouts undoubtedly reduces the ratio at 12th grade, because dropouts have high levels of smoking.)

- In part because of the concentration of cigarette smoking among the noncollege-bound, both ***any nicotine use*** and ***any nicotine use other than vaping*** in the past 30 days are higher for the noncollege-bound. In 12th grade the levels of any nicotine use for the college- as compared to the noncollege-bound are 16% versus 27%, in 10th grade they are 11% versus 18%, and in 8th grade they are 7% versus 15%. "Any nicotine use" indicates any use of cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

- ***Vaping marijuana*** is higher for the noncollege-bound youth in 8th and 10th grade. Past 30-day prevalence in 8th grade is 9% for noncollege-bound youth compared to 3% for students who believe they are college-bound. In 10th and 12th grade prevalence levels are about twice as high among the noncollege- versus college-bound; the percentages in 10th grade are 13% and 7%, respectively, while in 12th grade they are 20% and 11%.

- As with cigarettes, use of ***large cigars, flavored cigars, smokeless tobacco***, ***snus***, and ***nicotine pouches*** is substantially higher among the noncollege-bound than among the college-bound in all three grades (Tables 4-2 and 4-3).

Regional Differences

Appendix B provides detailed descriptions of the states included in the four regions of the country as defined by the United States Census Bureau—the Northeast, Midwest, South, and West. The MTF study design is intended to permit such regional comparisons, but it is not designed to permit state-level estimates, which would require far larger samples. Regional differences in drug use levels for the current year are provided in Tables 4-1 through 4-4 for grades 8, 10, and 12. Additional information on differences in drug prevalence by region are presented in Occasional Paper 101.

- In 2023, the overall prevalence levels of ***any illicit drug*** use in the last 12 months differ some among the regions, but the differences are not strong or consistent across grades (Table 4-2). As one example, prevalence in the Northeast was highest in 12th grade but

second lowest in 8th grade. No region had the highest or lowest levels of prevalence for use of any illicit drug across all three grades.

- ***Marijuana*** use and ***marijuana vaping*** show a regional pattern similar to that for any illicit drug—not surprising given that marijuana (the most prevalent illicit drug) tends to drive the index.

- ***Delta-8*** use in the past 12 months among 12th grade students was substantially lower in the West, at 5%, compared to about 15% in the South and Midwest and 10% in the Northeast.

- Regional variation in use in the past 12 months of ***any illicit drug other than marijuana*** is relatively small, with prevalence ranging from 4.2% to 4.9% among 8th graders, 4.2% to 5.8% among 10th graders, and 6.8% to 8.4% among 12th graders.

- Levels of ***nicotine vaping*** in the past 12 months were substantially lower in the West, for which prevalence was 14%, compared to 24% to 29% in the other three regions for 12th grade students. This regional difference is also present in 10th grade, although considerably weaker, and in 8th grade there are few differences by region, with prevalence varying between 9% and 13%.

- Use of ***nicotine pouches*** in the past 12 months by region follows a pattern similar to nicotine vaping, with substantially lower levels in the West in 12th grade, smaller regional differences in 10th grade, and little to no regional differences in 8th grade.

- ***Alcohol*** use and ***getting drunk*** in the past 12 months varies little by region in 2023, in any grade.

Differences Related to Population Density

Three levels of population density (or urbanicity) have been distinguished for analytical purposes: (a) large Metropolitan Statistical Areas (large MSAs), (b) other metropolitan statistical areas (other MSAs), and (c) non-MSAs. (See Appendix B for exact definitions.)

Differences in drug use across these various-sized communities are generally small, reflecting how widely drug use has diffused through the population (Tables 4-1 through 4-4). There are a few minor exceptions:

- ***Delta-8*** use in the past 12 months was highest in areas with lower population density. Its prevalence among 12th grade students in non-MSAs was 14% and 9% in large MSAs.

- ***Nicotine vaping*** is highest in rural areas (Table 4-2). Past 12-month prevalence levels in non-MSAs compared to large MSAs were 33% versus 20% in 12th grade, 23% versus 15% in 10th grade, and 14% and 11% in 8th grade. The prevalence levels in other MSAs fell between these two groups in all grades.

- ***Cigarette*** use in the past 30 days also is inversely related to community size at all three grade levels (see Table 4-3 showing 30-day prevalence). Prevalence in non-MSAs as

compared to large MSAs is 50% higher or more in all grades. The differences illustrate the extent to which cigarette smoking is a rural phenomenon as well as one concentrated among the less educated.

- ***Smokeless tobacco*** and ***nicotine pouch*** use in the past 30 days is similar to cigarette use in that it is highest in non-MSAs in the upper grade levels.

- Consistent with differences in cigarette smoking, nicotine vaping, smokeless tobacco use, and nicotine pouch use, ***any nicotine use*** is concentrated in more rural areas in all three grades.

Differences Related to Parental Education

To assess drug prevalence levels by parental education all students are separated into two groups: one in which either parent (or both) has a college degree and another in which neither parent has a college degree. Tables 4-1 through 4-4 present drug prevalence levels for these two groups.

- In 8th grade many drug prevalence levels are substantially higher among students whose parents do not have a college degree, but this difference often diminishes substantially, disappears completely, or in some cases reverses by 10th or 12th grade. Substances that follow this pattern include ***any illicit drug***, for which prevalence among students with and without parents that have a college degree are respectively 9% and 15% in 8th grade, compared with 32% for both groups in 12th grade. Other drugs that fit this same pattern for past 12-month us include ***marijuana use***, for which a 6 point lower level in 8th grade for students with parents who have a college degree diminishes to 1 point by 12th grade; ***vaping nicotine***, for which a 7 point difference in 8th grade diminishes to 0 points by 12th grade; and ***vaping marijuana***, for which a 6 point difference in 8th grade diminishes to 2 points by 12th grade. The diminished SES differences by 12th grade could be explained by the higher SES teenagers "catching up" with their more experienced peers from lower SES backgrounds, or by differential rates of dropping out of school among the strata, or both.

- ***Delta-8*** use in the past 12 months was slightly higher among 12th grade students who had a parent with versus without a college degree, at 13% and 11%, respectively. This pattern applies to ***all products that are vaped***.

- ***Alcohol*** use levels follow a different pattern, with little difference between parental education groups in 8th and 10th grade. In 12th grade prevalence was higher among students whose parents had versus did not have a college degree, at 51% and 43%, respectively.

- Past 30-day use of either ***non-stimulant-type*** or ***stimulant-type ADHD medication*** is higher in the upper SES groups in all three grades. To the extent that children from high SES families tend to be treated more for ADHD than others, it probably reflects that those families are more likely to receive professional assessment and treatment, and they likely are more able to afford it.

- ***Nicotine pouch*** use in the last 12 months is higher among 12th and 10th grade students who have a parent with a college education, though the rates are generally quite low for both groups. In 8th grade levels are 1.4% or lower and differ little by parental education.

TABLE 4-1
Lifetime Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Approximate Weighted N [a]			Any Illicit Drug [b]			Any Illicit Drug other than Marijuana [b]			Marijuana			Inhalants [c]			Hallucinogens [d,p]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	*5,700*	*8,100*	*7,100*	16.2	26.6	39.9	8.2	9.4	12.4	11.5	22.5	36.5	9.0	6.5	6.3	2.1	3.6	6.6
Gender																		
Male	*2,700*	*3,800*	*3,200*	14.2	21.8	37.8	7.1	8.4	12.1	9.7	17.9	34.8	8.1	5.8	5.5	1.7	3.5	7.6
Female	*2,600*	*3,700*	*3,400*	17.9	29.5	40.2	9.6	9.3	11.6	12.8	25.4	36.9	9.6	6.5	6.2	2.5	3.1	5.2
College Plans																		
None or under 4 years	*1,000*	*1,500*	*1,700*	22.1	32.9	45.8	9.6	12.6	16.9	18.1	29.4	41.7	9.2	7.4	6.2	3.7	6.1	10.8
Complete 4 years	*4,300*	*6,300*	*5,000*	14.8	24.8	37.1	7.8	8.4	10.8	9.7	20.6	34.1	9.1	6.4	6.6	1.6	2.8	5.1
Region					.													
Northeast	*1,000*	*1,400*	*1,200*	14.1	26.4	44.4	6.9	8.0	11.6	9.6	22.2	41.5	8.6	6.7	4.9	1.1	2.4	6.6
Midwest	*1,200*	*1,700*	*1,500*	17.2	30.6	39.5	7.9	10.8	12.3	13.1	26.7	36.2	6.6	6.9	5.2	1.6	4.4	6.1
South	*2,200*	*3,100*	*2,700*	14.9	25.7	38.9	8.3	9.6	12.7	10.2	21.2	35.4	10.1	7.2	7.2	1.8	3.3	6.5
West	*1,300*	*1,900*	*1,700*	19.1	24.6	38.3	9.3	8.8	12.5	13.5	21.3	34.9	9.5	5.0	6.8	3.6	4.3	7.3
Population Density																		
Large MSA	*3,000*	*2,000*	*2,500*	15.6	23.4	38.4	8.0	8.2	12.6	11.1	19.7	35.6	8.0	6.3	7.3	2.4	3.3	6.8
Other MSA	*1,500*	*4,600*	*3,200*	17.3	27.7	39.5	7.9	9.5	10.8	12.7	23.3	35.8	10.2	5.9	5.3	1.8	3.3	5.0
Non-MSA	*1,200*	*1,500*	*1,400*	16.4	27.3	43.2	9.3	10.7	15.5	11.1	23.9	39.8	9.8	8.9	6.7	1.5	5.0	9.9
Parental Education [e]																		
Neither parent has college degree	*2,100*	*2,700*	*3,000*	20.7	31.0	41.4	9.4	10.2	12.8	15.7	26.9	38.0	11.7	7.5	7.0	2.2	4.3	7.2
Either parent has college degree	*2,500*	*4,400*	*3,500*	13.9	24.4	39.6	8.3	8.9	12.7	8.7	20.4	36.3	8.1	6.2	6.3	1.7	3.1	6.6
Race/Ethnicity (2-year average) [f]																		
White	*6,100*	*8,700*	*7,100*	16.9	26.3	35.1	6.9	7.4	8.2	12.1	22.7	31.8	6.6	6.5	4.5	0.7	1.9	2.7
African American	*2,200*	*1,900*	*1,800*	14.9	25.6	43.1	8.7	8.9	14.4	9.9	21.9	40.3	9.4	7.1	6.7	1.8	3.2	7.8
Hispanic	*3,400*	*4,000*	*3,500*	15.5	27.5	36.6	8.3	10.1	9.9	11.5	23.9	34.0	9.3	6.5	4.8	2.1	3.7	5.4

(Table continued on next page.)

TABLE 4-1 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	LSD [p]			Hallucinogens other than LSD [p]			Ecstasy (MDMA) [c,r]			Cocaine			Crack			Cocaine other than Crack [i]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	1.1	2.1	3.1	1.4	3.0	5.9	0.9	1.4	1.6	1.0	1.0	1.3	0.6	0.7	0.8	0.8	0.9	1.0
Gender																		
Male	1.1	2.1	3.5	1.0	3.0	6.9	0.9	1.4	1.9	0.7	1.1	2.0	0.4	0.6	1.0	0.6	1.0	1.3
Female	1.2	1.6	2.4	1.9	2.6	4.4	0.6	1.1	1.1	1.3	0.7	0.7	0.8	0.5	0.6	0.9	0.6	0.6
College Plans																		
None or under 4 years	2.4	3.7	6.0	2.8	5.5	9.7	2.5	3.0	3.3	2.9	2.0	2.9	2.2	1.2	1.4	2.5	1.8	2.3
Complete 4 years	0.7	1.6	2.0	1.1	2.4	4.5	0.4	1.0	0.9	0.5	0.8	0.8	0.2	0.5	0.5	0.4	0.7	0.5
Region																		
Northeast	0.3	0.8	4.0	1.0	2.3	6.0	0.4	0.9	0.6	0.3	0.6	1.2	*	0.3	0.8	0.3	0.6	1.0
Midwest	1.0	2.5	2.8	1.1	3.4	5.4	0.9	1.0	2.5	0.7	1.3	1.2	0.4	1.2	0.7	0.7	0.9	1.1
South	1.4	2.0	3.6	0.8	2.7	5.3	0.9	1.2	2.0	1.0	1.0	1.6	0.7	0.5	0.9	0.6	1.0	1.1
West	1.5	2.9	1.7	3.1	3.8	7.1	1.0	2.5	1.0	1.6	1.1	1.1	1.2	0.9	0.7	1.4	1.0	0.8
Population Density																		
Large MSA	1.3	1.8	2.3	1.6	2.9	6.2	0.7	0.7	0.8	1.1	0.8	0.6	0.7	0.6	0.4	0.8	0.7	0.6
Other MSA	1.1	2.1	2.7	1.4	2.6	4.4	0.8	1.5	1.7	0.8	0.9	1.3	0.3	0.6	1.0	0.7	0.8	0.8
Non-MSA	0.8	2.5	5.1	1.0	4.5	8.6	1.4	2.0	2.9	1.1	1.8	2.7	0.7	1.1	0.9	0.7	1.7	2.2
Parental Education [e]																		
Neither parent has college degree	1.3	2.0	3.7	1.6	3.9	6.2	0.8	1.4	1.7	1.5	1.3	1.6	1.1	0.9	1.0	0.9	1.3	0.9
Either parent has college degree	0.6	2.0	2.8	1.5	2.6	6.0	0.8	1.4	1.5	0.6	0.9	1.2	0.1	0.6	0.6	0.6	0.8	1.1
Race/Ethnicity (2-year average) [f]																		
White	0.4	0.8	1.3	0.5	1.5	2.1	0.7	0.7	1.1	0.7	0.6	0.4	0.7	0.3	0.4	0.4	0.3	0.1
African American	0.8	1.8	4.4	1.4	2.6	6.5	1.1	1.3	2.9	0.8	0.7	2.0	0.5	0.4	1.0	0.6	0.7	1.8
Hispanic	1.3	2.9	3.2	1.6	2.8	4.4	1.0	1.8	1.6	0.9	1.0	1.7	0.6	0.7	1.0	0.8	0.8	1.2

(Table continued on next page.)

TABLE 4-1 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Heroin, Any Use [s]			Narcotics other than Heroin [j]			Amphetamines [j]			Methamphetamine [h,k]			Crystal Methamphetamine (Ice) [h]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.8	0.5	0.2	—	—	2.4	5.0	5.7	4.3	0.3	0.5	0.6	—	—	0.9
Gender															
Male	0.5	0.7	0.2	—	—	2.2	4.4	4.9	4.5	0.6	0.8	0.9	—	—	1.0
Female	1.1	0.2	0.1	—	—	2.2	5.5	5.8	4.0	0.1	0.1	0.4	—	—	0.9
College Plans															
None or under 4 years	2.3	1.4	0.5	—	—	2.9	6.1	8.2	5.8	1.6	1.8	1.7	—	—	1.1
Complete 4 years	0.4	0.3	0.1	—	—	2.2	4.9	5.1	3.8	0.0	0.2	0.2	—	—	0.8
Region															
Northeast	0.3	0.1	0.3	—	—	2.3	5.0	4.0	3.5	0.0	0.2	0.4	—	—	1.7
Midwest	0.8	0.7	0.3	—	—	2.3	5.0	6.7	4.5	0.0	0.1	0.4	—	—	0.7
South	0.5	0.5	0.2	—	—	2.5	4.7	5.9	4.7	0.2	0.2	0.4	—	—	0.8
West	1.5	0.7	0.1	—	—	2.4	5.5	5.5	4.2	1.0	1.5	1.2	—	—	0.7
Population Density															
Large MSA	1.1	0.1	0.1	—	—	2.0	4.6	3.8	4.6	0.4	0.3	0.9	—	—	1.1
Other MSA	0.3	0.4	*	—	—	2.1	5.4	6.3	3.6	0.0	0.6	0.5	—	—	1.0
Non-MSA	0.4	1.3	0.7	—	—	3.9	5.5	6.2	5.4	0.4	0.5	0.3	—	—	0.6
Parental Education [e]															
Neither parent has college degree	0.8	0.9	0.2	—	—	2.6	6.0	6.4	4.1	0.2	1.1	0.4	—	—	1.1
Either parent has college degree	0.5	0.3	0.2	—	—	2.3	4.9	5.5	4.9	0.0	0.2	0.9	—	—	0.8
Race/Ethnicity (2-year average) [f]															
White	0.7	0.3	0.2	—	—	1.5	4.5	4.1	2.7	0.6	0.7	0.8	—	—	0.7
African American	0.2	0.4	0.4	—	—	3.1	5.9	5.3	6.2	0.4	0.5	1.0	—	—	0.4
Hispanic	0.7	0.9	0.2	—	—	2.4	4.5	5.3	3.4	0.4	0.5	0.5	—	—	1.3

(Table continued on next page.)

TABLE 4-1 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Sedatives (Barbiturates) [j]			Tranquilizers [j]			Any Prescription Drug [l]			Rohypnol [m]			Alcohol		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	2.9	2.3	2.5	2.7	—	—	8.5	0.5	0.6	—	20.1	35.8	52.8
Gender															
Male	—	—	2.7	2.1	1.7	2.5	—	—	7.8	0.1	0.5	—	19.4	33.1	49.2
Female	—	—	2.6	2.6	3.2	2.7	—	—	8.5	0.9	0.6	—	20.7	38.1	55.5
College Plans															
None or under 4 years	—	—	4.1	1.9	2.5	3.0	—	—	9.8	2.8	2.8	—	26.2	38.1	53.9
Complete 4 years	—	—	2.5	2.5	2.5	2.6	—	—	8.2	0.0	0.1	—	18.7	35.3	52.2
Region															
Northeast	—	—	2.5	1.5	2.2	2.2	—	—	7.5	0.0	0.0	—	19.5	33.4	54.0
Midwest	—	—	2.4	2.3	2.9	2.7	—	—	8.3	0.0	1.1	—	18.3	38.4	54.9
South	—	—	3.5	2.7	2.8	2.6	—	—	8.8	0.1	1.0	—	20.8	37.2	52.4
West	—	—	2.5	2.1	1.9	3.2	—	—	9.0	1.9	0.0	—	20.9	32.7	50.4
Population Density															
Large MSA	—	—	2.7	1.9	2.8	2.3	—	—	8.9	0.9	0.8	—	18.3	33.1	54.3
Other MSA	—	—	2.5	2.7	2.4	2.8	—	—	7.6	0.0	0.3	—	19.7	35.7	49.3
Non-MSA	—	—	3.9	2.9	2.5	3.2	—	—	10.0	0.2	1.3	—	25.2	39.6	58.2
Parental Education [e]															
Neither parent has college degree	—	—	2.7	2.5	2.5	2.9	—	—	8.4	0.0	1.2	—	21.3	37.1	52.3
Either parent has college degree	—	—	3.1	2.8	2.6	2.6	—	—	9.1	0.1	0.4	—	21.0	37.4	55.8
Race/Ethnicity (2-year average) [f]															
White	—	—	2.1	1.7	2.1	1.7	—	—	6.1	0.5	0.4	—	16.6	28.8	42.9
African American	—	—	3.7	2.7	2.5	3.3	—	—	10.2	0.3	0.1	—	24.7	41.6	64.2
Hispanic	—	—	2.3	3.0	3.2	2.8	—	—	7.1	0.2	0.2	—	18.1	38.2	52.9

(Table continued on next page.)

TABLE 4-1 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Been Drunk [h]			Flavored Alcoholic Beverages [k,n]			Cigarettes			Any Vaping			Vaping Nicotine			Vaping Marijuana		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	7.3	17.6	32.7	12.4	26.4	44.3	5.8	9.4	15.0	17.5	26.0	35.7	16.5	25.1	33.5	8.4	16.8	25.5
Gender																		
Male	6.7	15.0	32.5	8.7	19.8	37.9	5.5	9.2	16.3	14.1	20.9	32.6	13.4	19.9	30.6	6.7	12.7	23.7
Female	7.8	19.9	33.0	16.9	32.1	51.0	5.7	8.7	12.1	20.0	30.2	37.5	18.9	29.4	35.4	9.5	19.9	25.8
College Plans																		
None or under 4 years	9.9	20.5	32.6	15.0	27.7	45.2	11.3	16.2	21.8	26.4	34.0	43.6	25.2	33.1	42.1	15.8	23.4	32.1
Complete 4 years	6.5	16.8	32.8	11.8	26.4	44.1	4.1	7.5	12.3	15.4	23.8	32.1	14.4	22.9	29.7	6.6	15.1	22.4
Region																		
Northeast	6.1	16.0	34.5	9.4	26.9	42.3	3.8	6.5	12.4	13.6	25.6	40.5	13.2	24.4	38.3	6.5	17.0	28.9
Midwest	7.0	20.6	34.0	11.9	33.2	47.9	6.7	11.4	18.7	18.3	28.5	40.0	17.5	27.6	38.6	8.6	19.1	27.3
South	7.4	17.9	33.4	15.9	25.5	45.2	5.9	9.3	14.5	18.9	26.4	35.3	17.7	25.3	34.1	7.2	16.1	24.5
West	8.1	15.3	29.4	10.2	21.3	41.1	6.1	9.7	14.2	17.3	23.5	28.7	16.1	23.0	24.4	11.4	15.8	22.8
Population Density																		
Large MSA	6.7	14.6	33.5	9.6	22.9	45.8	5.6	7.0	13.4	16.0	21.9	31.7	15.1	21.0	29.0	8.2	14.1	22.9
Other MSA	6.9	17.4	31.1	12.5	27.1	38.4	4.9	8.5	12.5	18.1	25.8	34.6	16.9	24.8	32.3	8.8	17.4	25.2
Non-MSA	9.0	22.1	34.9	19.0	29.1	55.3	7.5	15.3	23.5	20.6	32.2	45.1	19.8	31.3	44.1	8.4	18.7	30.6
Parental Education [e]																		
Neither parent has college degree	8.3	18.3	31.2	14.5	31.1	42.5	7.7	10.9	13.8	22.4	31.1	37.5	21.4	30.2	35.2	12.3	20.9	26.4
Either parent has college degree	6.7	18.5	35.4	14.2	26.5	48.3	4.2	8.5	16.2	13.9	23.7	35.5	12.8	22.6	33.3	5.1	14.7	25.7
Race/Ethnicity (2-year average) [f]																		
White	6.0	11.9	22.7	12.0	15.5	29.1	4.3	5.6	6.5	19.7	25.4	26.7	17.4	23.9	24.3	8.0	15.7	16.9
African American	8.5	21.6	41.1	17.3	33.2	53.0	6.8	10.7	20.9	17.3	28.2	44.9	16.6	27.2	43.3	7.4	17.0	30.6
Hispanic	6.7	17.0	28.0	10.7	26.2	43.3	4.9	7.4	10.4	15.8	29.4	32.8	14.8	27.8	31.0	7.4	19.5	23.2

(Table continued on next page.)

TABLE 4-1 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Vaping Just Flavoring			Nicotine Pouches [h,k]			Smokeless Tobacco [g,n]			Steroids [c]			Legal Use of Over-the-Counter Stimulants: Diet Pills [n]			Legal Use of Over-the-Counter Stimulants: Stay-Awake Pills [n]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	12.8	17.4	21.7	1.2	2.6	3.6	4.5	5.5	7.8	1.2	1.2	0.9	—	—	2.8	—	—	2.0
Gender																		
Male	9.8	12.8	18.2	1.8	4.2	4.9	4.6	8.0	10.1	1.2	1.3	0.9	—	—	2.0	—	—	1.4
Female	15.3	21.5	24.3	0.3	1.3	2.5	4.4	2.4	4.9	1.0	0.8	0.4	—	—	2.7	—	—	2.0
College Plans																		
None or under 4 years	18.7	21.6	27.8	2.6	6.5	4.3	10.5	12.9	13.2	2.5	2.1	2.7	—	—	1.7	—	—	3.5
Complete 4 years	11.3	16.2	19.2	0.9	1.7	3.3	3.1	3.8	5.2	0.9	0.9	0.4	—	—	3.0	—	—	1.4
Region																		
Northeast	8.5	15.9	25.8	0.5	1.6	3.8	4.3	3.6	5.8	0.5	0.9	1.4	—	—	2.1	—	—	0.9
Midwest	14.0	18.5	24.0	0.7	2.9	6.4	4.3	8.1	9.1	0.7	1.3	0.2	—	—	2.5	—	—	2.4
South	15.1	18.1	21.6	2.0	3.8	2.9	5.0	5.8	10.4	1.6	1.4	1.7	—	—	1.9	—	—	2.4
West	11.0	16.4	16.9	0.9	1.0	1.8	4.2	3.7	4.2	1.3	0.8	0.0	—	—	5.0	—	—	1.8
Population Density																		
Large MSA	11.3	14.6	18.5	0.6	1.1	2.8	3.9	3.6	5.0	0.5	0.8	0.2	—	—	2.3	—	—	1.0
Other MSA	13.6	17.5	21.0	1.1	2.1	2.2	5.3	4.6	7.2	1.5	1.0	1.5	—	—	3.1	—	—	2.2
Non-MSA	15.6	20.9	29.1	2.7	6.2	8.1	5.0	10.6	14.5	2.5	2.0	0.9	—	—	2.9	—	—	3.2
Parental Education [e]																		
Neither parent has college degree	15.7	21.7	24.6	1.5	2.9	3.1	6.3	6.4	8.7	1.4	1.3	0.6	—	—	3.2	—	—	2.1
Either parent has college degree	10.8	15.2	20.1	1.3	2.9	4.4	3.3	5.3	7.5	1.1	1.1	1.4	—	—	2.5	—	—	2.0
Race/Ethnicity (2-year average) [f]																		
White	15.6	17.2	17.2	—	—	—	6.2	5.0	5.0	1.5	1.4	3.5	—	—	2.6	—	—	1.7
African American	11.6	16.8	25.1	—	—	—	4.3	6.0	12.5	1.6	1.0	1.0	—	—	2.3	—	—	2.5
Hispanic	11.4	20.3	21.3	—	—	—	2.5	4.2	5.3	0.6	0.8	1.3	—	—	5.5	—	—	1.4

(Table continued on next page.)

TABLE 4-1 (cont.)
Lifetime Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Legal Use of Prescription ADHD Drugs								
	Stimulant-Type [h]			Non-Stimulant-Type [h]			Either Type [h]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	7.5	8.3	11.0	2.8	2.8	5.4	10.0	10.6	14.3
Gender									
Male	8.6	8.8	11.7	3.1	1.9	4.5	11.1	10.5	14.2
Female	6.7	6.3	9.1	2.3	3.0	4.7	8.9	8.8	11.8
College Plans									
None or under 4 years	11.3	10.6	14.8	3.8	3.5	9.0	13.2	13.4	19.4
Complete 4 years	6.6	7.8	9.9	2.4	2.7	4.1	9.0	10.0	12.6
Region									
Northeast	6.8	6.8	11.0	3.8	1.4	3.5	9.8	7.8	14.0
Midwest	8.3	7.2	10.2	1.9	2.9	5.7	10.7	9.4	13.5
South	9.3	9.3	11.5	4.3	4.5	5.9	12.0	12.8	14.2
West	5.0	8.9	11.2	1.2	1.2	5.6	6.8	10.4	15.5
Population Density									
Large MSA	5.4	5.8	10.6	2.2	1.4	4.7	7.3	7.1	13.7
Other MSA	9.1	8.9	9.8	4.3	2.8	4.9	12.9	11.3	12.9
Non-MSA	10.1	10.0	14.6	2.2	5.0	7.4	12.0	13.4	18.2
Parental Education [e]									
Neither parent has college degree	8.7	6.4	8.6	2.4	2.1	5.3	10.1	8.1	12.1
Either parent has college degree	7.2	10.2	12.8	3.5	3.7	5.9	10.8	13.0	16.0
Race/Ethnicity (2-year average) [f]									
White	7.3	6.7	9.1	3.0	2.2	2.4	9.1	8.7	10.4
African American	10.8	10.5	14.1	4.2	3.9	7.2	13.8	13.2	17.8
Hispanic	5.3	4.5	7.9	2.6	1.9	3.5	6.8	5.7	10.6

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following table 4-4.

TABLE 4-2
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Approximate Weighted N [a]			Any Illicit Drug [b]			Any Illicit Drug other than Marijuana [b]			Marijuana			Delta-8 [h]			Inhalants [c]			Hallucinogens [d,p]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	*5,700*	*8,100*	*7,100*	10.9	19.8	31.2	4.6	5.1	7.4	8.3	17.8	29.0	—	—	11.4	4.3	2.0	2.0	1.3	2.2	4.3
Gender															.						
Male	*2,700*	*3,800*	*3,200*	9.1	16.4	30.0	3.5	4.9	7.9	6.8	14.4	28.0	—	—	12.5	4.0	1.7	1.9	1.1	2.2	5.4
Female	*2,600*	*3,700*	*3,400*	12.4	21.5	30.9	5.7	4.7	6.1	9.5	19.6	28.9	—	—	9.6	4.5	2.1	1.5	1.5	1.8	3.2
College Plans															.						
None or under 4 years	*1,000*	*1,500*	*1,700*	17.7	25.4	37.6	6.6	5.5	11.0	14.9	24.0	34.8	—	—	16.1	5.1	2.2	2.7	2.8	3.3	7.4
Complete 4 years	*4,300*	*6,300*	*5,000*	9.1	18.2	28.2	4.1	4.8	6.0	6.6	16.0	26.3	—	—	9.2	4.2	2.0	1.9	0.9	1.7	3.3
Region															.						
Northeast	*1,000*	*1,400*	*1,200*	10.4	19.8	35.6	4.9	4.4	6.8	7.3	17.7	33.9	—	—	9.8	3.9	2.1	1.3	0.7	1.4	3.9
Midwest	*1,200*	*1,700*	*1,500*	12.1	23.9	32.3	4.4	5.8	7.0	9.8	21.9	30.1	—	—	14.4	2.7	2.0	1.8	0.9	2.6	3.9
South	*2,200*	*3,100*	*2,700*	9.9	19.1	30.2	4.8	5.6	7.3	7.2	16.6	28.1	—	—	14.6	5.7	2.3	2.3	1.0	2.1	4.3
West	*1,300*	*1,900*	*1,700*	11.8	17.3	28.6	4.2	4.2	8.4	9.4	16.0	26.0	—	—	4.9	4.0	1.6	2.2	2.6	2.4	5.2
Population Density															.						
Large MSA	*3,000*	*2,000*	*2,500*	10.6	17.7	29.9	4.2	4.5	7.5	7.9	15.9	28.1	—	—	8.9	4.2	1.9	3.0	1.5	2.1	4.7
Other MSA	*1,500*	*4,600*	*3,200*	12.1	20.3	31.1	5.1	5.1	6.5	9.4	18.1	28.4	—	—	12.3	5.0	1.6	1.3	1.3	1.8	3.1
Non-MSA	*1,200*	*1,500*	*1,400*	10.1	21.0	33.9	4.9	6.0	9.2	8.0	19.3	32.2	—	—	13.7	3.9	3.6	1.8	0.8	3.3	6.4
Parental Education [e]															.						
Neither parent has college degree	*2,100*	*2,700*	*3,000*	14.5	22.8	31.6	5.2	6.0	7.5	12.1	20.5	29.1	—	—	10.5	6.0	2.0	1.9	1.5	2.6	4.6
Either parent has college degree	*2,500*	*4,400*	*3,500*	8.7	18.4	31.8	4.4	4.6	7.7	5.9	16.6	29.9	—	—	12.5	3.6	2.1	2.1	0.8	2.0	4.5
Race/Ethnicity (2-year average) [f]															.						
White	*6,100*	*8,700*	*7,100*	11.7	18.8	27.8	3.6	3.6	4.7	9.3	17.3	25.5	—	—	—	3.3	1.6	1.2	0.6	1.4	1.3
African American	*2,200*	*1,900*	*1,800*	9.9	20.3	35.0	4.7	5.3	8.5	7.8	18.3	33.2	—	—	—	3.9	2.4	2.3	1.1	2.1	4.8
Hispanic	*3,400*	*4,000*	*3,500*	9.9	19.9	26.7	4.0	5.6	5.8	8.3	17.7	24.6	—	—	—	3.5	2.0	1.3	1.4	2.1	3.3

(Table continued on next page.)

TABLE 4-2 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	LSD [p]			Hallucinogens other than LSD [p]			Ecstasy (MDMA) [c,r]			Cocaine			Crack			Cocaine other than Crack [i]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.7	1.2	1.2	0.9	1.7	4.0	0.4	0.7	0.7	0.4	0.5	0.6	0.3	0.3	0.5	0.2	0.5	0.4
Gender																		
Male	0.6	1.3	1.4	0.6	1.9	5.1	0.4	0.8	0.6	0.1	0.6	1.0	0.1	0.3	0.7	0.1	0.6	0.6
Female	0.6	0.9	0.9	1.2	1.5	2.8	0.4	0.5	0.8	0.6	0.2	0.2	0.4	0.2	0.3	0.2	0.2	0.2
College Plans																		
None or under 4 years	1.8	2.0	2.6	1.9	3.0	6.7	1.5	2.0	1.2	0.9	1.4	1.4	0.6	0.7	1.1	0.8	1.3	0.9
Complete 4 years	0.4	0.9	0.7	0.7	1.4	3.0	0.2	0.4	0.4	0.2	0.3	0.3	0.1	0.1	0.2	0.1	0.3	0.2
Region																		
Northeast	0.2	0.5	1.3	0.7	1.3	3.7	0.3	0.5	0.5	0.1	0.4	0.7	0.0	0.2	0.8	0.1	0.4	0.6
Midwest	0.5	1.8	1.2	0.7	1.8	3.6	0.5	0.5	1.6	0.4	0.6	0.8	0.3	0.4	0.4	0.3	0.5	0.7
South	0.9	1.1	1.5	0.3	1.7	3.7	0.3	0.7	0.6	0.6	0.5	0.6	0.6	0.1	0.6	0.2	0.5	0.2
West	0.8	1.4	0.6	2.2	2.1	5.2	0.6	1.1	0.2	0.2	0.5	0.5	0.0	0.4	0.1	0.2	0.5	0.3
Population Density																		
Large MSA	0.7	1.0	1.3	1.1	1.9	4.3	0.4	0.3	0.4	0.3	0.2	0.3	0.2	0.1	0.1	0.1	0.2	0.3
Other MSA	0.7	1.3	0.8	1.0	1.3	3.0	0.5	0.8	0.6	0.4	0.5	0.6	0.3	0.3	0.7	0.4	0.4	0.3
Non-MSA	0.6	1.4	1.8	0.4	2.9	6.0	0.4	0.9	1.3	0.6	1.2	1.1	0.5	0.4	0.7	0.3	1.2	0.8
Parental Education [e]																		
Neither parent has college degree	0.7	1.3	1.2	1.1	2.3	4.1	0.5	0.9	0.7	0.7	0.8	0.6	0.6	0.4	0.6	0.3	0.8	0.3
Either parent has college degree	0.3	1.2	1.2	0.8	1.5	4.3	0.4	0.7	0.6	0.2	0.4	0.6	0.1	0.2	0.4	0.2	0.4	0.5
Race/Ethnicity (2-year average) [f]																		
White	0.3	0.4	0.7	0.5	1.1	1.1	0.3	0.4	0.7	0.4	0.2	0.2	0.4	0.1	0.3	0.2	0.2	*
African American	0.6	1.2	2.0	0.9	1.7	4.2	0.4	0.8	1.4	0.4	0.4	1.1	0.3	0.2	0.7	0.2	0.4	1.0
Hispanic	0.7	1.7	1.7	1.1	1.5	2.5	0.8	0.7	0.7	0.4	0.4	1.0	0.3	0.2	0.5	0.4	0.3	0.6

(Table continued on next page.)

TABLE 4-2 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Heroin, Any Use [s]			Narcotics other than Heroin [j]			OxyContin [c,j,k]			Vicodin [c,j,k]			Amphetamines [j]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.4	0.3	0.1	—	—	1.0	0.8	0.4	0.6	0.9	0.3	0.6	2.8	2.7	2.1
Gender															
Male	0.2	0.4	0.1	—	—	0.9	1.2	0.5	0.6	1.0	0.2	0.5	2.4	2.5	2.3
Female	0.7	0.1	0.1	—	—	0.9	0.5	0.2	0.4	0.9	0.1	0.3	3.0	2.5	1.8
College Plans															
None or under 4 years	0.9	1.0	0.3	—	—	1.4	1.2	1.1	0.9	0.7	0.6	1.0	4.1	2.9	3.1
Complete 4 years	0.3	0.1	*	—	—	0.8	0.7	0.2	0.5	0.9	0.2	0.4	2.5	2.7	1.8
Region															
Northeast	0.1	0.0	0.1	—	—	0.7	1.3	0.5	0.3	0.9	0.1	*	3.7	2.0	1.7
Midwest	0.6	0.3	0.1	—	—	0.9	0.3	0.2	0.2	0.3	0.4	0.5	2.8	3.2	1.8
South	0.3	0.2	0.1	—	—	1.3	1.5	0.5	1.3	1.4	0.2	0.9	2.8	3.1	2.2
West	0.5	0.6	*	—	—	0.9	0.0	0.3	0.0	0.7	0.3	0.6	2.1	2.2	2.5
Population Density															
Large MSA	0.6	0.0	*	—	—	0.8	0.8	0.7	0.3	1.2	0.3	0.8	2.1	2.1	2.1
Other MSA	0.2	0.3	*	—	—	0.8	1.1	0.2	0.7	0.8	0.3	0.5	3.7	3.1	2.0
Non-MSA	0.1	0.4	0.4	—	—	2.0	0.4	0.5	0.7	0.2	0.0	0.5	3.4	2.7	2.4
Parental Education [e]															
Neither parent has college degree	0.5	0.6	0.1	—	—	1.3	1.3	0.6	0.6	1.6	0.4	0.9	3.1	3.2	2.1
Either parent has college degree	0.4	0.1	0.1	—	—	0.9	0.7	0.3	0.6	0.7	0.2	0.4	2.9	2.5	2.2
Race/Ethnicity (2-year average) [f]															
White	0.5	0.1	0.1	—	—	0.8	1.6	1.3	1.2	1.6	1.1	1.3	2.2	1.9	1.5
African American	0.1	0.2	0.2	—	—	1.5	0.4	0.3	1.4	0.3	0.3	0.8	3.4	2.9	3.0
Hispanic	0.4	0.2	0.1	—	—	1.0	1.1	0.9	1.3	1.4	0.8	0.9	1.9	2.6	2.1

(Table continued on next page.)

TABLE 4-2 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Ritalin [h,j,k]			Adderall [h,j,k]			Methamphetamine [h,k]			Crystal Methamphetamine (Ice) [h]			Sedatives (Barbiturates) [j]			Tranquilizers [j]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.6	0.5	0.6	1.7	2.1	1.7	0.0	0.4	0.4	—	—	0.3	—	—	1.5	0.9	1.2	1.0
Gender																		
Male	0.9	0.4	0.6	1.7	2.0	2.1	0.0	0.6	0.7	—	—	0.2	—	—	1.2	0.6	1.0	1.0
Female	0.5	0.5	0.6	1.7	2.3	1.6	0.0	0.1	0.1	—	—	0.3	—	—	1.2	1.2	1.3	0.9
College Plans																		
None or under 4 years	0.5	0.1	1.0	1.7	4.4	2.0	0.0	1.7	1.2	—	—	0.5	—	—	2.1	0.7	0.6	1.1
Complete 4 years	0.7	0.6	0.4	1.5	1.6	1.7	0.0	0.1	0.1	—	—	0.2	—	—	1.2	1.0	1.3	0.9
Region																		
Northeast	0.7	0.3	0.0	1.6	0.2	0.3	0.0	0.2	0.0	—	—	0.5	—	—	1.3	1.0	1.4	0.8
Midwest	0.3	0.2	1.3	1.0	3.2	2.4	0.0	0.1	0.0	—	—	0.2	—	—	1.3	1.1	1.2	1.3
South	1.3	0.6	0.8	3.3	1.6	3.0	0.0	0.1	0.3	—	—	0.4	—	—	1.5	1.1	1.2	0.9
West	0.0	0.6	0.0	0.1	3.7	0.2	0.0	1.2	1.1	—	—	0.0	—	—	1.6	0.2	1.0	1.0
Population Density																		
Large MSA	0.8	0.2	0.3	1.5	2.0	2.3	0.0	0.0	0.8	—	—	0.3	—	—	1.4	0.6	1.4	0.9
Other MSA	0.8	0.5	0.9	2.8	2.3	1.5	0.0	0.6	0.1	—	—	0.3	—	—	1.6	1.2	1.1	1.1
Non-MSA	0.0	0.6	0.2	0.4	2.0	1.4	0.0	0.2	0.3	—	—	0.2	—	—	1.3	1.2	1.1	0.8
Parental Education [e]																		
Neither parent has college degree	1.1	0.4	1.0	2.8	1.9	1.4	0.0	1.0	0.1	—	—	0.4	—	—	1.4	1.2	1.2	0.8
Either parent has college degree	0.5	0.6	0.3	1.2	2.7	2.1	0.0	0.1	0.7	—	—	0.1	—	—	1.6	0.9	1.2	1.1
Race/Ethnicity (2-year average) [f]																		
White	1.9	1.3	1.7	2.4	3.3	2.0	0.2	0.4	0.2	—	—	0.6	—	—	1.3	0.7	1.0	0.8
African American	0.3	0.3	0.7	1.9	2.1	3.2	0.1	0.4	0.5	—	—	0.1	—	—	1.8	1.2	1.3	1.5
Hispanic	0.8	1.0	0.5	2.5	3.9	1.8	0.2	0.3	0.3	—	—	0.6	—	—	1.5	1.4	2.0	1.1

(Table continued on next page.)

TABLE 4-2 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Any Prescription Drug [l]			Over-the-Counter Cough/Cold Medicines [h,k]			Rohypnol [m,n]			GHB [n]			Ketamine [h]			Alcohol			Been Drunk [h]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	4.2	4.0	3.0	2.4	0.0	0.1	0.2	—	—	0.3	—	—	1.0	15.1	30.6	45.7	4.6	13.1	25.1
Gender																					
Male	—	—	4.0	5.2	2.0	2.7	0.0	0.0	0.2	—	—	0.0	—	—	1.4	14.0	28.2	42.8	4.3	11.0	26.7
Female	—	—	3.6	3.4	3.6	2.3	0.0	0.2	0.2	—	—	0.5	—	—	0.5	16.0	32.5	48.1	5.0	15.1	24.0
College Plans																					
None or under 4 years	—	—	5.3	3.3	3.0	2.9	0.0	0.2	0.7	—	—	0.4	—	—	1.8	19.5	31.3	46.1	5.7	13.9	25.6
Complete 4 years	—	—	3.8	4.2	3.0	2.2	0.0	0.1	*	—	—	0.2	—	—	0.8	14.1	30.4	45.3	4.3	12.9	25.0
Region																					
Northeast	—	—	3.5	2.3	2.7	1.3	0.0	0.0	0.1	—	—	0.0	—	—	*	13.7	28.6	46.7	3.5	12.5	26.7
Midwest	—	—	4.0	4.0	2.2	3.9	0.0	0.0	0.4	—	—	0.0	—	—	0.3	14.2	33.0	46.5	3.9	15.4	24.8
South	—	—	4.2	5.1	3.2	2.3	0.0	0.2	0.3	—	—	0.7	—	—	1.7	15.7	31.9	46.0	5.3	13.5	26.2
West	—	—	4.8	3.9	3.6	1.8	0.0	0.0	0.0	—	—	0.0	—	—	1.2	16.1	27.8	43.9	5.0	11.0	22.6
Population Density																					
Large MSA	—	—	4.4	2.4	2.9	2.5	0.0	0.2	0.3	—	—	0.0	—	—	1.2	13.4	28.3	47.6	3.9	11.7	25.0
Other MSA	—	—	4.0	4.4	3.0	2.4	0.0	0.1	0.2	—	—	0.6	—	—	1.2	14.7	30.8	41.8	4.6	12.6	24.2
Non-MSA	—	—	4.3	7.2	2.9	1.9	0.0	0.0	0.0	—	—	0.0	—	—	0.3	20.2	33.2	51.6	6.7	16.8	27.3
Parental Education [e]																					
Neither parent has college degree	—	—	3.9	3.4	3.7	2.1	0.0	0.1	0.2	—	—	0.6	—	—	0.6	15.6	30.6	43.2	4.6	13.4	22.8
Either parent has college degree	—	—	4.6	5.5	2.9	2.8	0.0	0.1	0.2	—	—	0.0	—	—	1.4	16.0	32.9	50.6	4.8	14.3	28.6
Race/Ethnicity (2-year average) [f]																					
White	—	—	3.5	3.6	3.9	2.8	0.5	0.0	0.0	—	—	0.7	—	—	0.6	9.0	20.4	31.5	2.3	7.5	16.0
African American	—	—	5.2	4.1	3.8	2.7	0.2	0.0	0.4	—	—	0.3	—	—	1.4	18.0	35.1	57.2	5.9	17.2	34.2
Hispanic	—	—	3.7	1.8	3.2	1.5	0.1	0.1	0.6	—	—	0.4	—	—	0.8	12.5	28.8	43.3	4.2	11.3	20.4

(Table continued on next page.)

TABLE 4-2 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Flavored Alcoholic Beverages [k,n]			Alcoholic Beverages containing Caffeine [h,k]			Tobacco using a Hookah [n]			Small Cigars [n]			Any Vaping			Vaping Nicotine			Vaping Marijuana		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	8.9	19.8	36.1	7.5	7.6	11.6	—	—	2.7	—	—	4.4	13.2	20.3	28.8	11.4	17.6	23.2	6.5	13.1	19.6
Gender																					
Male	6.5	13.9	31.2	6.6	5.8	12.4	—	—	3.0	—	—	5.6	10.3	16.2	26.6	9.0	13.8	21.2	4.9	10.0	18.7
Female	12.1	24.5	41.2	9.1	9.0	11.4	—	—	1.6	—	—	2.8	15.5	23.5	29.7	13.1	20.7	24.5	7.4	15.6	19.3
College Plans																					
None or under 4 years	11.6	19.4	36.6	12.3	8.8	12.8	—	—	3.0	—	—	6.1	22.2	26.9	36.8	18.9	23.2	30.4	12.1	18.2	25.9
Complete 4 years	8.4	20.1	36.1	6.4	7.4	11.2	—	—	2.7	—	—	3.5	11.1	18.4	25.2	9.6	15.9	20.1	5.1	11.8	16.6
Region																					
Northeast	6.0	22.1	34.4	5.1	5.0	7.5	—	—	4.7	—	—	3.1	9.9	21.7	32.7	8.8	18.3	26.6	5.1	14.2	22.0
Midwest	8.1	24.2	36.1	5.9	8.0	13.8	—	—	1.1	—	—	3.9	13.9	22.0	32.5	12.2	19.3	28.5	7.1	14.6	21.3
South	10.2	19.3	37.0	6.9	8.2	11.3	—	—	3.4	—	—	4.8	13.5	19.9	28.6	11.4	17.7	24.1	5.5	11.9	19.1
West	10.0	15.1	36.1	11.2	8.4	12.8	—	—	1.7	—	—	5.1	14.6	18.2	22.8	12.5	15.3	14.3	8.3	12.9	17.1
Population Density																					
Large MSA	7.9	15.3	38.8	7.1	6.4	11.7	—	—	4.3	—	—	4.9	12.4	17.8	26.0	10.5	15.4	19.7	6.4	11.5	17.9
Other MSA	8.1	20.9	30.9	6.0	7.6	11.1	—	—	1.9	—	—	3.3	13.2	19.9	27.2	11.4	16.8	21.5	6.8	13.4	19.0
Non-MSA	12.6	22.9	43.5	10.4	9.5	12.3	—	—	1.7	—	—	5.9	15.6	24.6	37.6	14.0	22.8	33.1	6.2	14.3	24.1
Parental Education [e]																					
Neither parent has college degree	10.6	21.6	32.4	10.1	9.7	10.3	—	—	3.5	—	—	3.9	18.1	24.3	29.1	15.4	20.6	23.5	9.7	16.8	19.2
Either parent has college degree	10.5	20.7	41.1	6.8	7.2	12.7	—	—	1.8	—	—	5.2	9.6	18.3	29.5	8.3	16.1	24.0	3.7	11.2	20.6
Race/Ethnicity (2-year average) [f]																					
White	6.7	10.2	18.9	5.0	3.8	4.9	—	—	5.3	—	—	1.5	14.4	19.6	19.9	11.3	15.4	15.6	5.9	12.3	12.5
African American	11.5	26.7	44.3	5.9	8.3	14.5	—	—	2.5	—	—	7.4	13.0	22.9	37.3	11.9	20.7	32.7	5.8	13.9	23.8
Hispanic	7.4	18.3	35.2	5.9	6.5	9.6	—	—	2.9	—	—	3.1	12.7	22.3	23.7	11.1	17.7	18.0	5.9	14.9	16.4

(Table continued on next page.)

TABLE 4-2 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Vaping Just Flavoring			Snus [k,n]			Steroids [c]			Androstenedione [h]			Creatine [h,k]			Nicotine Pouches [h,k]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	7.7	10.5	11.7	0.3	1.3	1.8	0.6	0.5	0.7	—	—	1.4	4.7	11.0	11.9	0.6	1.9	2.9
Gender																		
Male	5.3	7.6	9.4	0.4	2.1	3.0	0.5	0.8	0.6	—	—	1.7	8.6	18.9	19.0	0.7	3.0	4.1
Female	9.9	13.1	13.1	0.2	0.5	0.5	0.6	0.1	0.3	—	—	1.2	1.0	3.5	6.1	0.3	0.9	2.1
College Plans																		
None or under 4 years	12.3	11.7	15.5	0.8	3.5	3.0	1.8	0.9	1.6	—	—	1.3	7.5	11.0	10.4	2.4	4.0	3.8
Complete 4 years	6.5	9.9	10.1	0.2	0.7	1.5	0.4	0.4	0.3	—	—	1.5	4.0	11.0	12.5	0.2	1.4	2.6
Region																		
Northeast	5.3	10.9	14.0	0.7	0.9	2.2	0.3	0.3	1.5	—	—	0.0	3.5	7.6	11.0	0.2	1.1	3.5
Midwest	8.4	11.4	12.9	0.2	2.1	1.6	0.4	0.5	0.2	—	—	2.5	5.9	11.3	10.3	0.5	2.5	5.1
South	9.6	10.1	11.9	0.4	1.4	2.8	0.7	0.6	1.0	—	—	1.4	4.8	13.4	13.8	0.7	2.5	2.6
West	5.9	9.9	8.5	0.0	0.7	0.2	1.0	0.6	0.0	—	—	1.4	4.3	9.2	11.1	0.9	0.8	0.9
Population Density																		
Large MSA	6.6	9.9	10.2	0.1	0.5	1.3	0.2	0.3	0.1	—	—	1.1	4.2	7.2	12.2	0.6	0.7	2.4
Other MSA	8.7	10.4	10.5	0.5	1.2	2.2	0.9	0.5	1.2	—	—	2.2	4.7	11.3	12.0	0.8	1.6	1.5
Non-MSA	9.3	11.2	16.9	0.5	2.7	1.8	1.5	1.0	0.4	—	—	0.2	5.8	15.0	11.2	0.5	4.3	7.3
Parental Education [e]																		
Neither parent has college degree	10.5	12.9	13.0	0.4	1.5	0.8	0.7	0.6	0.4	—	—	1.9	4.5	9.6	11.2	1.4	1.4	2.3
Either parent has college degree	5.8	9.3	11.0	0.3	1.2	2.7	0.7	0.4	0.9	—	—	1.1	6.2	12.5	13.8	0.1	2.5	3.9
Race/Ethnicity (2-year average) [f]																		
White	10.1	10.4	9.4	1.5	0.9	1.1	0.4	0.8	3.2	—	—	2.5	2.5	6.5	3.9	—	—	—
African American	7.2	10.8	12.8	0.6	1.7	2.9	1.0	0.6	0.6	—	—	1.1	5.7	13.1	13.9	—	—	—
Hispanic	7.8	11.5	10.7	0.5	0.9	1.5	0.4	0.2	1.1	—	—	2.4	3.6	7.9	9.8	—	—	—

(Table continued on next page.)

TABLE 4-2 (cont.)
Annual Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Legal Use of Over-the-Counter Stimulants					
	Diet Pills [n]			Stay-Awake Pills [n]		
	8th	10th	12th	8th	10th	12th
Total	—	—	1.1	—	—	0.8
Gender						
Male	—	—	0.3	—	—	0.7
Female	—	—	1.4	—	—	0.8
College Plans						
None or under 4 years	—	—	0.9	—	—	1.4
Complete 4 years	—	—	1.2	—	—	0.6
Region						
Northeast	—	—	1.3	—	—	0.0
Midwest	—	—	1.9	—	—	1.0
South	—	—	0.9	—	—	1.0
West	—	—	0.5	—	—	1.0
Population Density						
Large MSA	—	—	0.5	—	—	0.2
Other MSA	—	—	1.3	—	—	0.9
Non-MSA	—	—	1.6	—	—	1.7
Parental Education [e]						
Neither parent has college degree	—	—	1.4	—	—	0.9
Either parent has college degree	—	—	1.0	—	—	0.7
Race/Ethnicity (2-year average) [f]						
White	—	—	1.5	—	—	1.2
African American	—	—	0.9	—	—	1.2
Hispanic	—	—	1.6	—	—	0.5

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-4.

TABLE 4-3
Thirty-Day Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Approximate Weighted N [a]			Any Illicit Drug [b]			Any Illicit Drug other than Marijuana [b]			Marijuana			Inhalants [c]			Hallucinogens [d,p]			LSD [p]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	*5,700*	*8,100*	*7,100*	6.5	11.3	19.8	2.6	2.3	3.4	4.7	10.3	18.4	2.6	0.9	1.2	0.5	0.8	1.6	0.3	0.4	0.4
Gender																					
Male	*2,700*	*3,800*	*3,200*	5.0	9.5	19.5	1.7	2.2	3.4	3.8	8.5	18.5	2.7	0.6	1.3	0.3	1.0	2.0	0.3	0.7	0.6
Female	*2,600*	*3,700*	*3,400*	7.9	12.0	19.2	3.6	2.0	2.9	5.4	11.3	17.8	2.2	0.9	0.6	0.6	0.6	1.1	0.3	0.1	0.1
College Plans																					
None or under 4 years	*1,000*	*1,500*	*1,700*	10.8	15.8	27.2	4.1	2.7	5.5	8.6	15.0	25.1	3.9	1.1	1.9	1.2	1.5	3.0	0.8	0.9	1.3
Complete 4 years	*4,300*	*6,300*	*5,000*	5.2	10.0	16.2	2.2	2.2	2.6	3.5	8.8	15.1	2.4	0.8	0.9	0.3	0.6	1.1	0.2	0.3	0.1
Region																					
Northeast	*1,000*	*1,400*	*1,200*	5.2	12.3	23.6	2.9	2.3	3.3	3.4	10.9	22.0	2.4	1.1	0.5	0.2	0.6	1.3	0.1	0.1	0.3
Midwest	*1,200*	*1,700*	*1,500*	7.1	13.6	21.1	2.1	2.4	3.9	5.5	12.9	19.7	1.4	0.6	0.9	0.3	1.2	1.9	0.2	0.6	0.6
South	*2,200*	*3,100*	*2,700*	6.4	10.4	18.8	3.2	2.5	3.2	4.4	9.0	17.5	3.3	0.9	1.3	0.7	0.5	1.7	0.7	0.2	0.5
West	*1,300*	*1,900*	*1,700*	7.3	10.2	17.5	2.1	1.9	3.4	5.4	9.9	15.9	2.6	0.8	1.7	0.4	1.2	1.4	0.0	0.7	0.1
Population Density																					
Large MSA	*3,000*	*2,000*	*2,500*	6.4	10.9	20.1	2.5	2.6	3.4	4.5	9.8	18.7	2.6	0.9	1.5	0.5	1.2	1.8	0.3	0.6	0.3
Other MSA	*1,500*	*4,600*	*3,200*	7.1	11.2	18.9	2.8	2.1	3.0	5.2	10.1	17.4	2.9	0.5	0.7	0.5	0.6	1.2	0.4	0.4	0.3
Non-MSA	*1,200*	*1,500*	*1,400*	6.1	12.4	21.4	2.8	2.4	4.5	4.7	11.6	20.1	1.9	1.8	1.5	0.5	0.9	2.2	0.3	0.2	0.7
Parental Education [e]																					
Neither parent has college degree	*2,100*	*2,700*	*3,000*	8.6	13.5	20.8	3.0	3.1	3.4	6.7	12.0	19.1	3.4	0.9	1.2	0.6	1.0	1.6	0.4	0.6	0.4
Either parent has college degree	*2,500*	*4,400*	*3,500*	5.1	10.2	19.6	2.5	1.8	3.4	3.3	9.3	18.5	1.8	0.7	1.1	0.3	0.7	1.7	0.1	0.3	0.4
Race/Ethnicity (2-year average) [f]																					
White	*6,100*	*8,700*	*7,100*	7.0	11.9	20.4	2.1	1.9	2.5	5.3	11.2	18.5	1.9	1.0	0.6	0.1	0.5	0.4	0.0	0.2	0.3
African American	*2,200*	*1,900*	*1,800*	6.0	11.6	22.3	2.7	2.2	3.7	4.8	10.8	21.0	2.0	1.1	0.9	0.5	0.7	1.6	0.3	0.3	0.6
Hispanic	*3,400*	*4,000*	*3,500*	5.2	11.4	16.9	1.8	2.5	2.8	4.0	10.2	15.4	1.8	0.7	0.8	0.5	0.7	1.2	0.3	0.6	0.6

(Table continued on next page.)

TABLE 4-3 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Hallucinogens other than LSD [p]			Ecstasy (MDMA) [c,r]			Cocaine			Crack			Cocaine other than Crack [i]			Heroin, Any Use [s]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.2	0.7	1.5	0.3	0.3	0.3	0.3	0.4	0.4	0.2	0.2	0.3	0.2	0.4	0.3	0.3	0.2	0.1
Gender																		
Male	0.1	0.8	2.0	0.2	0.6	0.2	*	0.5	0.7	*	0.2	0.6	*	0.4	0.5	0.1	0.3	0.1
Female	0.3	0.5	1.1	0.2	0.1	0.3	0.5	0.1	0.1	0.4	0.1	0.1	0.2	0.1	0.1	0.6	*	0.1
College Plans																		
None or under 4 years	0.8	1.3	2.6	1.3	1.5	0.6	0.8	1.1	0.9	0.4	0.6	0.8	0.7	1.1	0.8	0.8	0.8	0.3
Complete 4 years	0.1	0.5	1.1	*	0.1	0.1	0.1	0.2	0.2	0.1	*	0.2	*	0.2	0.1	0.2	*	*
Region																		
Northeast	0.2	0.5	1.3	0.1	0.2	*	0.0	0.2	0.6	0.0	0.0	0.6	0.0	0.2	0.5	0.1	0.0	0.1
Midwest	0.2	0.9	1.7	0.2	0.1	0.6	0.2	0.6	0.4	0.1	0.2	0.3	0.1	0.5	0.6	0.4	0.0	0.2
South	0.2	0.4	1.6	0.3	0.2	0.3	0.6	0.3	0.2	0.5	*	0.4	0.2	0.3	0.1	0.3	0.1	0.1
West	0.4	1.1	1.4	0.4	1.0	0.0	0.2	0.4	0.4	0.0	0.4	0.1	0.2	0.4	0.2	0.5	0.6	*
Population Density																		
Large MSA	0.3	1.1	1.8	0.3	0.1	0.2	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.6	0.0	*
Other MSA	0.2	0.5	1.1	0.2	0.4	0.2	0.3	0.4	0.4	0.3	0.2	0.5	0.2	0.3	0.3	0.1	0.3	0.1
Non-MSA	0.2	0.8	2.0	0.3	0.3	0.5	0.4	0.7	0.6	0.4	0.2	0.5	0.2	0.7	0.6	0.0	*	0.4
Parental Education [e]																		
Neither parent has college degree	0.3	0.9	1.4	0.4	0.6	0.2	0.7	0.6	0.4	0.6	0.3	0.4	0.3	0.6	0.3	0.5	0.4	0.1
Either parent has college degree	0.2	0.6	1.6	0.1	0.2	0.3	0.1	0.3	0.4	*	0.1	0.3	0.1	0.3	0.3	0.4	*	0.1
Race/Ethnicity (2-year average) [f]																		
White	0.1	0.4	0.2	0.2	0.1	0.5	0.4	0.2	0.1	0.4	0.1	0.2	0.2	0.1	0.0	0.4	*	0.1
African American	0.3	0.6	1.3	0.2	0.3	0.7	0.2	0.3	0.6	0.2	0.2	0.6	0.1	0.2	0.5	0.1	0.1	0.2
Hispanic	0.2	0.4	0.9	0.3	0.4	0.5	0.3	0.3	0.6	0.2	0.2	0.4	0.3	0.2	0.6	0.4	0.2	0.1

(Table continued on next page.)

TABLE 4-3 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Narcotics other than Heroin [j]			Amphetamines [j]			Methamphetamine [h,k]			Crystal Methamphetamine (Ice) [h]			Sedatives (Barbiturates) [j]			Tranquilizers [j]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	0.4	1.6	1.3	1.1	0.0	0.3	0.1	—	—	0.2	—	—	0.7	0.4	0.4	0.3
Gender																		
Male	—	—	0.3	1.2	1.3	0.8	0.0	0.6	0.2	—	—	0.2	—	—	0.6	0.2	0.4	0.3
Female	—	—	0.3	1.9	1.1	1.2	0.0	0.1	0.1	—	—	0.1	—	—	0.6	0.7	0.6	0.2
College Plans																		
None or under 4 years	—	—	0.5	2.6	1.5	1.9	0.0	1.5	0.2	—	—	0.2	—	—	1.1	0.5	0.4	0.5
Complete 4 years	—	—	0.4	1.4	1.3	0.8	0.0	*	0.1	—	—	0.2	—	—	0.5	0.5	0.5	0.2
Region																		
Northeast	—	—	0.2	2.0	1.0	1.1	0.0	0.2	0.0	—	—	0.1	—	—	0.7	0.7	0.8	0.2
Midwest	—	—	0.3	1.4	0.9	1.4	0.0	0.0	0.0	—	—	0.2	—	—	0.6	0.3	0.6	0.4
South	—	—	0.7	1.6	1.6	1.0	0.0	*	0.3	—	—	0.3	—	—	0.6	0.7	0.3	0.5
West	—	—	0.4	1.4	1.4	0.9	0.0	1.2	0.0	—	—	0.0	—	—	0.9	*	0.4	*
Population Density																		
Large MSA	—	—	0.4	1.3	1.4	0.9	0.0	0.0	*	—	—	0.3	—	—	0.7	0.2	0.8	0.2
Other MSA	—	—	0.3	2.1	1.3	1.0	0.0	0.5	0.1	—	—	*	—	—	0.7	0.7	0.3	0.3
Non-MSA	—	—	0.9	1.7	1.1	1.5	0.0	0.2	0.3	—	—	0.2	—	—	0.7	0.8	0.5	0.5
Parental Education [e]																		
Neither parent has college degree	—	—	0.5	1.6	1.8	1.0	0.0	0.8	0.1	—	—	0.2	—	—	0.7	0.7	0.6	0.2
Either parent has college degree	—	—	0.4	1.7	1.0	1.1	0.0	0.1	0.2	—	—	0.1	—	—	0.7	0.3	0.3	0.3
Race/Ethnicity (2-year average) [f]																		
White	—	—	0.3	1.2	1.2	1.0	0.0	0.0	0.2	—	—	0.4	—	—	0.8	0.5	0.5	0.3
African American	—	—	0.6	2.0	1.3	1.4	0.0	0.3	0.3	—	—	0.1	—	—	0.9	0.5	0.5	0.5
Hispanic	—	—	0.3	1.1	1.0	1.0	0.1	0.2	*	—	—	0.4	—	—	0.7	0.5	0.8	0.5

(Table continued on next page.)

TABLE 4-3 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Any Prescription Drug [l]			Rohypnol [m]			Alcohol			Been Drunk [h]			Flavored Alcoholic Beverages [k,n]			Cigarettes			Any Vaping		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	—	—	2.0	0.0	*	—	5.9	13.7	24.3	1.5	5.1	12.5	3.2	7.9	17.9	1.1	2.3	2.9	8.7	14.4	22.1
Gender																					
Male	—	—	1.5	0.0	0.0	—	6.0	11.7	23.4	1.9	3.7	14.7	2.9	6.1	14.4	0.9	2.3	3.5	6.2	10.8	20.1
Female	—	—	2.0	0.0	0.1	—	5.2	15.4	24.9	1.0	6.4	10.7	3.6	9.4	21.4	1.2	2.0	1.6	10.6	17.2	23.1
College Plans																					
None or under 4 years	—	—	3.0	0.0	0.2	—	8.7	15.2	26.9	2.7	5.0	13.7	5.1	9.1	16.2	2.5	5.1	3.8	15.3	20.8	30.2
Complete 4 years	—	—	1.6	0.0	0.0	—	5.0	13.2	23.0	1.3	5.1	12.3	2.8	7.7	18.6	0.6	1.4	2.5	7.0	12.6	18.4
Region																					
Northeast	—	—	2.1	0.0	0.0	—	3.7	13.2	23.8	1.3	5.1	13.7	2.1	8.5	15.7	1.2	1.0	2.3	4.8	15.0	25.0
Midwest	—	—	2.2	0.0	0.0	—	4.3	15.2	25.5	0.9	7.0	12.8	2.3	7.9	17.2	1.0	3.4	3.3	9.9	15.9	25.6
South	—	—	2.0	0.0	0.1	—	7.6	13.6	25.2	2.0	4.8	12.2	3.5	7.9	18.6	1.3	2.2	2.1	8.9	14.0	22.4
West	—	—	2.0	0.0	0.0	—	6.0	12.8	22.1	1.4	4.0	11.9	4.4	7.6	19.1	1.0	2.5	4.3	9.9	13.4	16.4
Population Density																					
Large MSA	—	—	1.8	0.0	*	—	5.5	13.0	27.3	1.1	5.2	13.9	3.5	6.8	21.0	0.9	1.6	2.9	8.1	12.2	19.8
Other MSA	—	—	2.0	0.0	0.1	—	5.4	13.2	20.0	1.8	4.5	10.8	2.5	8.3	14.3	1.0	2.1	2.1	8.5	14.1	20.1
Non-MSA	—	—	2.5	0.0	0.0	—	7.7	16.0	28.8	2.4	7.0	14.1	3.5	8.3	20.9	1.8	4.0	4.9	10.5	18.4	30.9
Parental Education [e]																					
Neither parent has college degree	—	—	2.0	0.0	0.1	—	6.4	13.1	20.4	1.6	4.8	11.4	5.4	7.3	14.8	1.5	2.5	2.4	12.5	17.1	22.3
Either parent has college degree	—	—	2.0	0.0	0.0	—	5.1	15.0	29.4	1.5	5.6	15.3	2.2	9.3	21.5	0.9	2.2	3.3	5.4	12.8	22.8
Race/Ethnicity (2-year average) [f]																					
White	—	—	2.0	0.5	0.0	—	3.5	8.1	13.5	1.0	3.4	7.4	1.4	4.7	7.6	0.8	1.5	1.0	9.2	14.8	15.2
African American	—	—	2.5	0.2	0.0	—	6.8	16.2	33.7	2.0	7.0	19.9	4.7	11.4	24.3	1.2	2.2	4.5	8.6	16.6	29.6
Hispanic	—	—	1.8	0.1	0.1	—	4.5	11.9	20.0	1.1	3.5	8.9	2.6	7.1	15.4	0.6	1.3	1.9	7.9	15.7	18.4

(Table continued on next page.)

TABLE 4-3 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Vaping Nicotine			Vaping Marijuana			Vaping Just Flavoring			Large Cigars [h,q]			Flavored Little Cigars [h,q]			Regular Little Cigars [h,q]			Tobacco Using a Hookah [h,k]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	7.0	11.9	16.9	4.2	8.5	13.7	4.5	6.7	8.1	1.0	0.3	1.8	0.6	1.2	2.0	0.8	0.5	1.9	0.7	0.5	1.3
Gender																					
Male	4.8	8.7	15.1	3.7	6.3	13.2	2.8	4.2	5.8	1.1	0.4	3.3	0.5	1.6	2.5	0.4	0.6	2.3	0.6	0.4	1.1
Female	8.5	14.4	17.9	4.2	10.4	13.5	6.0	9.2	9.7	0.5	0.2	0.3	0.5	0.7	1.7	0.9	0.3	1.6	0.6	0.5	1.5
College Plans																					
None or under 4 years	12.0	17.3	24.4	9.0	13.2	19.5	8.3	8.5	11.4	2.2	0.7	2.6	2.6	2.1	3.3	2.8	0.9	3.4	2.4	0.9	1.9
Complete 4 years	5.7	10.3	13.8	2.8	7.3	10.8	3.6	6.1	6.6	0.7	0.2	1.5	0.2	1.0	1.6	0.3	0.4	1.2	0.4	0.4	1.1
Region																					
Northeast	4.0	12.2	19.4	3.0	9.4	15.3	2.4	6.7	10.2	0.3	0.3	1.1	0.0	0.0	3.0	0.1	0.0	2.8	0.0	0.3	3.5
Midwest	8.1	13.0	21.5	5.1	10.5	15.1	5.9	7.7	8.7	0.6	0.1	3.6	0.6	1.3	3.9	1.0	1.3	3.0	0.4	0.3	0.6
South	7.2	11.5	17.9	3.3	7.5	13.8	5.5	6.1	8.6	1.2	0.4	1.6	0.9	1.5	1.6	1.1	0.6	1.5	0.7	0.4	0.9
West	7.7	11.3	9.0	5.5	7.9	11.2	3.4	6.9	5.3	1.5	0.3	0.8	0.6	1.5	0.0	0.6	0.0	0.8	1.5	1.2	1.0
Population Density																					
Large MSA	6.1	9.7	13.3	4.0	7.5	13.5	3.6	6.1	6.6	0.8	0.3	2.1	0.3	0.6	2.4	0.3	0.0	2.1	0.8	1.2	1.1
Other MSA	6.9	11.3	15.2	4.4	8.4	12.6	5.4	6.6	7.2	0.9	0.4	1.2	1.0	1.3	1.2	1.1	0.6	0.9	0.8	0.4	1.7
Non-MSA	9.4	16.6	27.0	4.3	10.2	16.6	5.9	7.8	12.8	1.5	0.1	2.4	0.9	1.7	3.3	1.5	1.1	3.9	0.4	0.0	0.7
Parental Education [e]																					
Neither parent has college degree	10.0	14.1	17.7	5.8	10.4	13.4	6.6	8.4	9.5	1.4	0.2	1.4	1.0	2.5	1.9	1.1	0.7	1.9	0.6	0.6	2.1
Either parent has college degree	4.5	10.5	17.3	2.5	7.2	14.4	3.3	5.8	7.3	0.7	0.3	2.3	0.2	0.5	2.4	0.5	0.3	2.1	0.6	0.4	0.7
Race/Ethnicity (2-year average) [f]																					
White	6.82	10.17	10.38	3.9	9.7	8.7	5.8	6.8	6.9	0.4	0.4	0.9	0.2	1.1	3.1	0.8	0.9	2.9	2.1	1.2	1.9
African American	7.33	14.56	24.82	3.9	8.9	16.4	4.6	6.8	9.0	0.8	0.6	3.4	0.4	1.5	2.8	0.6	0.9	2.4	0.4	0.5	1.0
Hispanic	5.99	12.23	12.49	3.7	10.1	12.5	4.6	8.0	7.4	0.3	0.3	1.0	0.8	1.0	1.0	0.8	0.2	1.1	0.6	0.3	2.4

(Table continued on next page.)

TABLE 4-3 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Any Nicotine Use [k,n]			Any Nicotine Use other than Vaping [k,n]			Nicotine Pouches [h,k]			Smokeless Tobacco [g,n]			Steroids [c]			Legal Use of Over-the-Counter Stimulants: Diet Pills [n]			Legal Use of Over-the-Counter Stimulants: Stay-Awake Pills [n]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	9.0	12.7	19.5	3.1	3.5	5.9	0.4	1.1	1.4	1.6	2.3	2.5	0.3	0.4	0.5	—	—	0.4	—	—	0.4
Gender																					
Male	7.4	10.2	17.9	3.6	4.1	6.6	0.5	1.8	2.5	1.8	3.4	3.2	0.1	0.6	0.4	—	—	0.3	—	—	0.7
Female	10.9	13.2	19.5	2.2	2.6	4.8	0.1	0.4	0.6	1.5	0.8	0.8	0.4	0.1	0.3	—	—	0.3	—	—	0.0
College Plans																					
None or under 4 years	15.1	18.3	26.6	7.5	7.2	9.4	2.0	2.7	2.2	4.2	5.4	5.6	0.8	0.8	1.3	—	—	0.9	—	—	1.4
Complete 4 years	7.4	11.0	15.9	1.8	2.6	4.7	0.1	0.7	1.1	1.0	1.6	1.2	0.2	0.2	0.3	—	—	0.2	—	—	0.0
Region																					
Northeast	4.9	11.5	26.9	1.3	0.9	10.3	0.0	*	2.7	2.8	1.2	3.3	0.3	0.2	1.1	—	—	0.0	—	—	0.0
Midwest	9.7	13.7	24.5	2.2	4.8	5.6	0.0	2.0	2.4	1.0	3.7	2.9	0.4	0.3	0.2	—	—	0.8	—	—	0.5
South	9.3	12.9	20.4	3.7	3.9	5.8	0.6	1.6	1.0	1.3	2.6	3.4	0.3	0.4	0.8	—	—	0.4	—	—	0.4
West	10.7	12.5	6.9	4.0	3.7	3.0	0.9	0.2	0.2	1.8	1.5	0.3	0.3	0.5	0.0	—	—	0.4	—	—	0.7
Population Density																					
Large MSA	8.6	10.6	14.6	2.6	2.4	5.2	0.4	0.2	1.6	1.7	1.5	1.3	0.2	0.2	0.1	—	—	0.0	—	—	0.0
Other MSA	7.8	12.5	18.1	2.7	3.5	4.9	0.7	0.9	0.6	1.2	1.9	2.2	0.6	0.3	1.0	—	—	0.5	—	—	0.4
Non-MSA	11.7	16.5	32.1	4.8	5.0	9.9	0.3	2.7	3.1	2.1	4.4	5.2	0.3	0.7	0.4	—	—	0.8	—	—	1.2
Parental Education [e]																					
Neither parent has college degree	13.5	17.2	21.0	3.1	5.4	7.1	1.0	0.5	1.2	1.9	2.6	1.9	0.4	0.5	0.3	—	—	0.6	—	—	0.2
Either parent has college degree	6.8	10.3	18.4	3.0	2.6	4.9	0.1	1.6	1.9	1.1	2.3	3.2	0.2	0.2	0.8	—	—	0.2	—	—	0.4
Race/Ethnicity (2-year average) [f]																					
White	11.1	11.1	15.8	4.0	3.7	4.8	—	—	—	3.4	2.8	3.4	0.5	0.4	3.0	—	—	1.0	—	—	0.9
African American	8.5	15.2	28.4	2.6	4.2	9.3	—	—	—	1.0	2.6	4.0	0.4	0.5	0.6	—	—	0.5	—	—	0.3
Hispanic	6.0	11.1	16.9	1.8	2.0	4.8	—	—	—	1.0	2.0	0.9	0.3	0.1	1.0	—	—	0.7	—	—	0.1

(Table continued on next page.)

TABLE 4-3 (cont.)
Thirty-Day Prevalence of Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Current, Legal Use of Prescription ADHD Drugs [t]								
	Stimulant-Type [h]			Non-Stimulant-Type [h]			Either Type [h]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	2.9	3.7	4.7	0.7	1.4	2.0	3.9	5.1	6.7
Gender									
Male	2.9	4.1	4.3	1.1	0.7	1.5	4.2	5.0	6.0
Female	3.0	3.2	4.6	0.2	1.9	2.1	3.5	5.0	6.4
College Plans									
None or under 4 years	3.5	2.9	5.3	1.0	1.4	3.5	4.7	4.2	8.5
Complete 4 years	2.7	3.9	4.6	0.6	1.5	1.6	3.6	5.4	6.2
Region									
Northeast	2.6	2.8	4.0	1.2	0.5	0.9	3.8	3.4	5.3
Midwest	4.7	3.4	4.9	0.3	1.8	1.7	5.6	5.3	6.7
South	4.0	4.9	4.3	0.4	2.2	1.9	4.8	7.0	5.7
West	0.0	2.6	5.9	1.2	0.7	3.6	1.2	3.3	10.0
Population Density									
Large MSA	1.8	2.9	5.1	0.8	0.9	2.3	2.8	3.7	7.6
Other MSA	5.0	3.8	3.5	0.6	1.3	1.3	6.2	5.0	4.8
Non-MSA	2.4	4.4	6.9	0.7	2.7	3.1	3.2	7.5	9.7
Parental Education [e]									
Neither parent has college degree	2.8	2.1	2.4	0.4	0.8	2.2	3.4	2.9	4.4
Either parent has college degree	2.9	5.0	6.2	1.2	1.9	2.1	4.4	6.9	8.4
Race/Ethnicity (2-year average) [f]									
White	2.2	1.9	2.6	1.3	1.0	1.2	3.1	2.8	4.0
African American	4.9	6.2	6.9	1.6	1.8	2.9	6.6	7.6	9.6
Hispanic	1.8	1.0	2.2	0.4	0.7	0.4	2.2	1.4	2.6

Source. The Monitoring the Future study, the University of Michigan.

See footnotes following Table 4-4.

TABLE 4-4
Thirty-Day Prevalence of Daily Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

				Marijuana						Alcohol								
				Used Daily in Past 30 Days			Ever Used Daily for Month or More in Lifetime [r]			Daily			5+ Drinks [o]			Been Drunk [h]		
	Approximate Weighted N [a]																	
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	5,700	8,100	7,100	0.9	2.7	6.5	—	—	13.6	0.2	0.4	0.9	2.0	5.4	10.2	0.1	0.2	0.5
Gender																		
Male	2,700	3,800	3,200	0.9	2.5	6.6	—	—	13.1	0.2	0.6	1.4	2.1	4.9	12.0	0.1	0.3	0.8
Female	2,600	3,700	3,400	0.9	2.6	6.0	—	—	9.3	*	0.2	0.4	1.3	5.8	8.5	*	0.1	0.2
College Plans																		
None or under 4 years	1,000	1,500	1,700	2.0	5.6	11.6	—	—	21.9	0.2	0.8	2.0	3.7	7.7	12.8	0.0	0.4	1.1
Complete 4 years	4,300	6,300	5,000	0.6	1.9	4.2	—	—	7.0	0.1	0.3	0.5	1.4	4.8	8.9	0.1	0.2	0.3
Region																		
Northeast	1,000	1,400	1,200	0.7	2.5	7.3	—	—	15.7	0.2	0.2	0.8	0.9	4.5	12.1	0.1	0.1	0.0
Midwest	1,200	1,700	1,500	1.4	4.3	8.1	—	—	11.0	0.2	0.4	1.0	0.9	6.9	11.8	*	0.3	0.9
South	2,200	3,100	2,700	1.1	2.6	6.4	—	—	12.8	0.3	0.6	1.0	3.2	5.6	10.2	0.3	0.2	0.8
West	1,300	1,900	1,700	0.3	1.6	4.5	—	—	7.2	0.0	0.3	0.8	1.8	4.5	7.2	0.0	0.2	0.2
Population Density																		
Large MSA	3,000	2,000	2,500	0.5	1.5	5.6	—	—	11.1	0.1	0.3	0.9	1.8	3.7	11.4	*	0.1	0.4
Other MSA	1,500	4,600	3,200	1.4	2.6	6.4	—	—	11.8	0.1	0.2	0.9	1.7	5.1	7.6	0.0	0.1	0.5
Non-MSA	1,200	1,500	1,400	1.4	4.7	8.3	—	—	12.2	0.5	1.1	1.0	2.9	8.8	13.8	0.5	0.6	0.8
Parental Education [e]																		
Neither parent has college degree	2,100	2,700	3,000	1.0	3.5	7.4	—	—	14.0	0.1	0.4	0.8	2.1	5.5	7.8	0.0	0.3	0.5
Either parent has college degree	2,500	4,400	3,500	0.4	2.1	5.9	—	—	9.9	0.2	0.4	1.0	1.7	5.6	12.7	0.1	0.2	0.6
Race/Ethnicity (2-year average) [f]																		
White	6,100	8,700	7,100	0.8	2.7	5.7	—	—	13.0	0.1	0.5	0.2	1.0	3.6	4.8	0.1	0.2	0.8
African American	2,200	1,900	1,800	0.9	2.6	6.9	—	—	15.8	0.1	0.5	1.4	2.3	6.6	16.0	0.1	0.2	0.7
Hispanic	3,400	4,000	3,500	0.2	1.3	4.7	—	—	8.2	*	0.2	1.0	1.9	5.2	7.5	*	0.1	0.7

(Table continued on next page.)

TABLE 4-4 (cont.)
Thirty-Day Prevalence of Daily Use of Various Drugs by Subgroups for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Cigarettes						Smokeless Tobacco [g,n]		
	One or More Daily			Half Pack or More Daily			Daily		
	8th	10th	12th	8th	10th	12th	8th	10th	12th
Total	0.4	1.0	0.7	0.3	0.6	0.5	0.5	0.5	0.4
Gender									
Male	0.5	1.0	0.8	0.3	0.7	0.5	0.5	0.6	0.6
Female	0.4	0.7	0.2	0.4	0.2	0.1	0.5	0.1	0.2
College Plans									
None or under 4 years	0.9	2.5	1.4	0.7	1.9	0.8	0.9	1.5	0.8
Complete 4 years	0.2	0.5	0.3	0.2	0.2	0.2	0.4	0.3	0.3
Region									
Northeast	0.8	0.4	1.1	0.7	0.2	0.3	1.7	0.0	0.9
Midwest	0.4	1.2	1.2	0.4	0.5	0.9	0.1	0.7	0.5
South	0.3	1.1	0.5	0.1	0.6	0.4	0.5	0.8	0.2
West	0.3	1.2	0.5	0.3	1.0	0.3	0.0	0.2	0.3
Population Density									
Large MSA	0.4	0.5	0.5	0.3	0.4	0.4	0.4	0.2	0.2
Other MSA	0.5	1.1	0.6	0.2	0.7	0.5	0.4	0.5	0.3
Non-MSA	0.5	1.5	1.3	0.3	0.6	0.5	0.7	1.0	1.2
Parental Education [e]									
Neither parent has college degree	0.6	1.0	0.7	0.6	0.9	0.4	0.7	0.5	0.2
Either parent has college degree	0.3	0.9	0.5	0.2	0.4	0.3	0.1	0.6	0.5
Race/Ethnicity (2-year average) [f]									
White	0.5	1.0	0.5	0.5	0.6	0.4	0.9	0.9	0.3
African American	0.3	0.7	1.1	0.1	0.3	0.4	0.3	0.4	1.4
Hispanic	0.2	0.7	0.9	0.1	0.4	0.7	0.2	0.7	0.2

Source. The Monitoring the Future study, the University of Michigan.

See footnotes on the following page.

Footnotes for Tables 4-1 through 4-4

Notes. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%.

[a]Subgroup *N*s may vary depending on the number of forms in which the use of each drug was asked about.

[b]Use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. For 8th and 10th graders, the use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers).

[c]12th grade only: Data based on three of six forms; *N* is three sixths of *N* indicated.

[d]Unadjusted for known underreporting of certain drugs. See text for details.

[e]Missing data were allowed on one of the two variables.

[f]To derive percentages for each racial subgroup, data for the specified year and the previous year have been combined to increase subgroup sample sizes and thus provide more stable estimates. See appendix B for details on how race/ethnicity is defined.

[g]8th and 10th grades only: Data based on two of four forms; *N* is one half of *N* indicated.

[h]12th grade only: Data based on two of six forms; *N* is two sixths of *N* indicated.

[i]12th grade only: Data based on four of six forms; *N* is four sixths of *N* indicated.

[j]Only drug use not under a doctor's orders is included here.

[k]8th and 10th grades only: Data based on one of four forms; *N* is one third of *N* indicated.

[l]The use of any prescription drug includes use of any of the following: amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers …without a doctor telling you to use them.

[m]8th and 10th grades only: Data based on one of four forms; *N* is one sixth of *N* indicated.

[n]12th grade only: Data based on one of six forms; *N* is one sixth of *N* indicated.

[o]This measure refers to having five or more drinks in a row in the last two weeks.

[p]12th grade only: Data based on five of six forms; *N* is five sixths of *N* indicated.

[q]8th and 10th grades only: Data based on two of four forms; *N* is one third of *N* indicated.

[r]8th and 10th grades only: Data based on three of four forms; *N* is five sixths of *N* indicated.

[s]8th and 10th grades only: Data based on three of four forms; *N* is four sixths of *N* indicated.

[t]For the use of prescrption ADHD drugs, the question is asked differently than that for other drugs presented here. Therefore, the estimates indicate youth who reported "Yes, I take them now."

[u]8th and 10th grades only: Data based on two of four forms; *N* is two thirds of *N* indicated.

Chapter 5

TRENDS IN DRUG USE

The measurement of historical and developmental change over the past five decades has been among the most important contributions of Monitoring the Future to the fields of substance use research, policy, and prevention. This includes measurements of change in the levels of drug use, in the types of drugs being used, in the methods of using them, in the ages and characteristics of people using them, in related attitudes and beliefs about drug use, and in conditions surrounding use. Such information has significant implications for public policy—for needs assessment, agenda setting, policy formulation, and policy evaluation. More generally, it has implications for the current and future health of the nation. In this chapter, we review the many changes that have taken place over the past 49 years in the use of drugs, both licit and illicit.

Historical trend data are presented and discussed in this chapter for students in 8th, 10th, and 12th grades. Data for 12th graders come from 49 nationally-representative surveys conducted between 1975 and 2023, while data for the 8th and 10th graders come from 33 nationally-representative surveys conducted between 1991 and 2023. For a variety of substances, the use measures discussed include lifetime use, use during the past 12 months, use during the past 30 days, use on 20 or more occasions during the past 30 days (which we refer to as daily to near-daily use), and daily use.

THE COVID-19 PANDEMIC AND ADOLESCENT DRUG USE

The survey results divide neatly into the time periods before and after the onset of the pandemic. All surveys in 2020 were completed before March 15, when national social distancing policies were enacted and data collection was halted due to pandemic concerns. Consequently, results from 2020 and previous years are pre-pandemic, while results from 2021 and afterwards took place after the onset of the pandemic and the associated national response.

The COVID-19 pandemic is a historical event of particular interest for the 2023 results. From 2020 to 2021 MTF documented some of the largest one-year declines ever recorded by the survey across a wide variety of drugs. It is possible that these decreases will hold for future years going forward, or, instead, drug prevalence levels may bounce back to where they were before the pandemic as school buildings re-opened and social interactions returned to their customary patterns.

TWO THEMES IN DRUG TRENDS FROM 1975–2023

Two general themes are apparent in trends over nearly a half century in use of a majority of drugs, and we elaborate on these themes in what follows. The first theme is what we term the "1990s drug relapse," which was a rapid increase in prevalence for many drugs that started in the early 1990s. Previous to this period, prevalence levels of many drugs had reached a historical low after years of decline. The prevalence levels for many drugs today lie between the nadirs observed at the start of the 1990s and the peak of 1990s drug relapse. Drugs that do

not follow this overall pattern, such as some forms of alcohol use and tobacco use, are important exceptions that we note and discuss below.

The second theme is cohort effects. We use the term cohort here to refer to youth born at roughly the same time who are grouped by grade level and experience history together as they age. A cohort effect is a drug trend that follows a cohort as it grows older. For example, if an upsurge in cigarette smoking occurs in a cohort that is in 8th grade, it is likely to be observed two years later when that cohort is in 10th grade and then again two years later when that cohort is in 12th grade.

A cohort-specific pattern of drug use can stem from factors such as cohort-specific attitudes towards perceived risk of drug use, changing peer norms about the acceptability of drug use, changes in legal status of a drug, and the addictiveness of the drugs that youth use. We have found that cohort effects are often present, and trends among the lower grades can foretell future changes in the higher grades. This has been the case especially during the onset of the drug relapse in the early 1990s.

TRENDS IN PREVALENCE OF USE, 1975–2023

Below a bolded and italicized hyperlink appears for each drug and drug-use category assessed by the project, followed by a brief narrative outlining major trends in the drug's prevalence. Clicking on the hyperlink brings the reader to a drug-specific webpage that presents an array of drug-specific information. This includes the drug's prevalence levels for all years in both graphical and tabular formats, across all assessed reporting periods (e.g., lifetime use, past 12-month use, past 30-day use, and daily use when assessed), as well as an option to download all the drug-specific prevalence data. Appendix D also presents tables with all drug prevalence information for each drug for readers who prefer such a format and/or readers without a working internet connection.

Abstainers

Abstainers are defined as students with no use of alcohol, marijuana, or nicotine (either by cigarettes or by vaping). In 2023 levels of lifetime abstention significantly increased in 10th and 12th grade. The 2023 levels are at or near the highest recorded since the survey first started tracking this measure in 2017.

Increases in lifetime abstention were driven by decreases in nicotine vaping and alcohol use. Levels of lifetime cannabis use changed little from 2022 to 2023.

Past 30-day abstention also trended upwards in all three grades, with a significant increase in 12th grade to the highest level recorded by the project.

Any Illicit Drug

Any illicit drug use is a measure of the percentage of youth who have engaged in use of at least one type of illicit drug. In 2023 the percentages of youth who had ever used any illicit drugs had not returned to 2020 (pre-pandemic) levels and remained near the decreased levels observed during the pandemic in 2021 for lifetime, past 12-month, and past 30-day use.

There have been gradual albeit inconsistent declines for all grades since the peaks in the mid to late 1990s drug use relapse, beginning in 1996 for 8th graders, 1997 for 10th graders, and 1999 for 12th graders. These declines also ended in a staggered fashion in 2007, 2008, and 2009, respectively. The declines were followed by increases between 2007 and 2010 among 8th graders, between 2008 and 2011 among 10th graders, and between 2009 and 2011 for 12th graders. This overall pattern suggests some cohort effects were in play. In 2013 the trend lines shifted up slightly as new examples of drugs in the amphetamine class were added to the questionnaires.

This pattern of younger teens being the first to exhibit many of the turnarounds in use suggests that they may be particularly sensitive to new social forces. Because they are considerably less likely to have established usage patterns or related attitudes, their behavior and attitudes may simply be more malleable. They then carry those changes in their behaviors and attitudes into later grades as they age; in this volume we discuss a number of such cohort effects.

Prior to the 1990s, a period when Monitoring the Future surveys were limited to 12th grade students, their prevalence of lifetime use of any illicit drug peaked at 66% in 1981, the highest level ever recorded by the survey. In other words fully two-thirds of these 12th grade students had used one or more illicit drugs. From that year on, lifetime use declined steadily to a prevalence of 41% by 1992, which until this year was the lowest level recorded by the survey (in 2023 lifetime prevalence was 40%).

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Use of any illicit drug in 12th grade is defined as any use of cannabis (which remains illegal at the federal level), LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. In 8th and 10th grade the use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers).

Any Illicit Drug Including Inhalants

When inhalants are included in the index of illicit drug use, the percentages categorized as having ever used an illicit drug rise, especially for 8th graders.

As with the findings for any illicit drug use, in 2023 the percentages of youth who had ever used any illicit drugs including inhalants had not returned to their 2020 levels and remained near the decreased levels observed during the pandemic in 2021. Lifetime prevalence levels in 2023 were 22% for 8th graders, 29% for 10th graders, and 42% for 12th graders.

Past 12-month use changed little in 2023 and remained below 2020 levels. Past 30-day use followed the same pattern.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Use of any illicit drug including inhalants in 12th grade is defined as any use of inhalants, cannabis (which remains illegal at the federal level), LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. In 8th and 10th grade the use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers).

Any Illicit Drug Other Than Marijuana

In 2023 the percentage of youth who had used any illicit drug other than marijuana in their lifetime had not returned to 2020 levels and remained near the decreased levels observed during the pandemic in 2021. Lifetime prevalence levels in 2023 were 8% for 8th graders, 9% for 10th graders, and 12% for 12th graders.

Past 12-month use and past 30-day use followed the same pattern as lifetime use, with prevalence levels in all grades much closer to 2021 than 2020 levels.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

The proportion of students using illicit drugs other than marijuana has declined by more than half since 1981, when past 12-month levels stood at 10%, 18%, and 21% in 8th, 10th, and 12th grade, respectively.

In the 1970s most of the sudden rise in 12th graders' reported use resulted from the increasing popularity of cocaine between 1976 and 1979 and, then, to the increasing use of amphetamines between 1979 and 1981. Then from 1982 through 1992 there was a substantial decline in the use of any illicit drug other than marijuana among 12th graders.

Use of any illicit drug other than marijuana in 12th grade is defined as any use of LSD, other hallucinogens, crack, cocaine other than crack, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. In 8th and 10th grade the use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers).

Any Prescription Drug

The percentage of 12th grade students who used any prescription drug without a doctor's orders had not returned to pre-pandemic levels by 2023. Lifetime, past 12-month, and past 30-day use all dropped precipitously from 2020 (before the pandemic) to 2021 (during the pandemic), and have since remained at the new, lower levels. In 2023 lifetime prevalence was 9%, compared to 14% in 2020. Past 12-month use was 4% in 2023, compared to 8% in 2020. Past 30-day use was 2% in 2023, compared to 3% in 2020.

Overall, use of any prescription drug without a doctor's direction has declined markedly since first tracked by the survey in 2005. Prevalence is three to four times lower in 2023 as compared to 2005 for lifetime, past 12-month, and past 30-day use.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

The use of any prescription drug nonmedically defined as any use of amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers "without a doctor telling you to use them."

Any Nicotine Use

Any nicotine use in the past 30 days dropped markedly in 12th and 10th grades in 2023, and held steady in 8th grade. Today most youth use nicotine by vaping it, and the 2023 decline in any nicotine use is driven in large part by the decline in nicotine vaping. This decline, in turn, is in large part a delayed effect of the pandemic (see commentary on nicotine vaping for more detail).

Any nicotine use was indicated by any use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Any Nicotine Use Other Than Vaping

Past 30-day prevalence levels of any nicotine use other than vaping had not returned to their 2020 levels by 2023. In 12th grade prevalence decreased significantly to 6%, which is the lowest level recorded by the survey since first tracked in 2017. In 10th grade prevalence also decreased, although not significantly, and the 4% level is also the lowest tracked by the survey since first tracked in this grade in 2019. In 8th grade past 30-day prevalence was unchanged at 3%, where it has been the past three years.

Overall this outcome has declined markedly since first tracked by the survey. The decrease is quite dramatic in 12th grade, falling more than threefold from 21% in 2017 to 6% in 2023; it fell by roughly half in 10th and 8th grade in the four-year interval from 2019 to 2023.

Any nicotine use other than vaping was indicated by any use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, or smokeless tobacco.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Trends in Use of Specific Drugs

Marijuana (Cannabis)

The percentage of youth who have used marijuana had not returned to pre-pandemic, 2020 levels by 2023. Lifetime, past 12-month, and past 30-day use all dropped precipitously from 2020 (before the pandemic) to 2021 (during the pandemic), and have since remained at the new, lower levels. The 2023 levels still remain substantial, with the percentage of youth using marijuana in the last year at 29% in 12th grade, 18% in 10th grade, and 8% in 8th grade.

The lower prevalence levels in 2021 and afterwards mark the first substantial change in marijuana prevalence in more than a decade; previous to 2021 marijuana levels had hovered without any systematic trending for about a decade.

Levels of annual marijuana use today are considerably lower than the historic highs observed in the late 1970s, when more than half of 12th graders had used marijuana in the past 12 months. This high point marked the pinnacle of a rise in marijuana use from relatively negligible levels before the 1960s.

Daily marijuana use, defined as use on 20 or more occasions in the past 30 days, increased slightly, but not significantly, in 2023. In all grades 2023 levels remained below those in 2020, when all surveys were collected before the start of the national social distancing policies on March 15, 2020 in response to the COVID-19 pandemic.

The prevalence of using marijuana daily for a month or more during one's lifetime is reported for 12th graders only. That prevalence was at 21% when first measured in 1982, declined sharply to just 8% by 1992, and rose back to 19% by 1997, followed by a long gradual decline to 12% by 2018, before leveling. It stood at 12% in 2023.

In 2020 prevalence levels are not reported for daily marijuana use for a month because of low sample size that resulted from curtailed data collection due to the pandemic.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Medical Marijuana (Cannabis)

Since 2017 the survey has included the question “Have you ever used ‘medical marijuana;’ that is, marijuana you used because a doctor told you to use it?” Prevalence has hovered between 1% and 4% in all years in all grades.

Delta-8

Questions on delta-8 were added to the survey in 2023. Delta-8 is a substance derived from hemp. It contains THC-8, which is a chemical similar to the active ingredient THC-9 found in cannabis and reportedly produces a high that some have called “marijuana light.” Regulation of delta-8 is currently under development; because it is derived from hemp, its use and sale is not covered by state, local, and federal laws that regulate cannabis.

In 2023 we included a 'tripwire' question that asks just about past 12-month use. If the tripwire shows substantial prevalence, then it motivates the addition of more questions on the substance in future years.

Prevalence was 11.4% among 12th grade students for past 12-month use. This prevalence level is considerable for a substance that has only recently come to market. For 2024 we have added more detailed questions on its use, as well as questions on where adolescents obtain it.

Inhalants

Prevalence of inhalant use in the last 12 months changed little in each of the three grades in 2023.

Inhalants are unusual because their prevalence is consistently higher in the lower grades, a pattern not observed for any other drug. The use of inhalants at an early age may reflect the fact that many inhalants are cheap, readily available (often in the home), and legal to buy and possess. The decline in use with age likely reflects their coming to be seen as "kids' drugs," in addition to the fact that a number of other, more desirable drugs become more accessible to older adolescents, who also are more able to afford them.

The increase in prevalence of inhalants in all three grades at the start of the 1990s was a continuation of a trend that was observable far earlier among 12th grade students, when only they were being surveyed. The same was likely true among 8th and 10th graders, although our data on them cover only 1991 forward. The anti-inhalant campaign launched by the Partnership for a Drug-Free America in 1995 (partly in response to MTF results showing increasing use) may have played an important role in reversing this long-term trend. Increases in use that began around 2018 proved fleeting, and decreases in prevalence in 2020 and 2021 have returned levels to near record lows.

Prior to 2000, trends in inhalants were confounded by the use of amyl and butyl nitrites, and past MTF reports presented an additional 12th grade inhalant trend for measures without nitrites (e.g., see the 2014 MTF report for a detailed description). Since that time youth's use of nitrites has fallen to very low levels and is no longer tracked by Monitoring the Future.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Hallucinogens

The percentage of 12th grade students using hallucinogens in the past 12 months has varied little between a narrow window of 4% and 5% over the past decade and in 2023 was 4%. In 10th grade a drop in use during the pandemic in 2021 has persisted and the prevalence of past 12-month use in 2023 was 2%. In 8th grade declines in use have plateaued since around 2014, in part because prevalence has hovered at 1% since that time and has little room to fall further.

Hallucinogen use followed the typical pattern of an increase during the 1990s relapse, followed by a gradual but inconsistent decline in the following years. Annual hallucinogen use peaked in 1996, which is a few years earlier than the peak for most other drugs. Current levels of

annual hallucinogen use are less than half their peak in the 1990s. The two components of the hallucinogens class, LSD and hallucinogens other than LSD, generally followed the same pattern until a sharp decline in LSD use emerged after 1999.

Lifetime prevalence of hallucinogen use among 12th graders has never exceeded 15.2%—a level attained in 1976 and then again 21 years later in 1997.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

LSD

LSD prevalence had not returned to 2020 levels by 2023, for either lifetime, past 12-month use, or past 30-day use. In 2023 lifetime and past 12-month prevalence stayed steady or trended down, bringing levels to record or near-record lows. In 12th grade prevalence significantly declined for lifetime, past 12-month, and past 30-day use.

LSD was one of the first drugs to decline at the start of the 1980s, almost surely due to increased information about its potential dangers. The subsequent increase in its use during the mid-1990s may reflect the effects of "generational forgetting"—that is, replacement cohorts knowing less than their predecessors about the potential dangers of LSD because they have had less exposure to the negative consequences of using the drug.

We believe that the decline in use prior to 2002 might have resulted in part from a displacement of LSD by sharply rising use of MDMA (ecstasy and more recently Molly). After 2001, when MDMA use itself began to decline, the sharp further decline in LSD use likely resulted from a sudden drop in the availability of LSD (discussed in Chapter 9), because attitudes generally have not moved in a way that could explain the fall in use, while perceived availability has.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Hallucinogens Other Than LSD

Hallucinogens other than LSD include psilocybin, or "shrooms," which comprise a major component of this category.

In 12th grade hallucinogen use shows an unusual pattern of steady increases in prevalence since the pandemic onset. Levels of use steadily increased from 3% in 2019 to 6% in 2023.

In 8th and 10th grade prevalence shows the more common pattern of declines during the pandemic in 2021 for lifetime, past 12-month, and past 30-day use. Since then levels of use have returned close to the pre-pandemic levels.

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PCP

The prevalence of past-year PCP use is reported only for 12th grade students, and in 2023 it was 0.5%. Prevalence has not risen above 2% for the past 20 years.

PCP was first included in the survey in 1979, and its prevalence dropped rapidly thereafter, suggesting that it achieved a deserved reputation as a dangerous drug very quickly. Its use increased during the 1990s drug relapse, but its annual prevalence increased to a high of only 2.6%. Since 2002, its use has remained low.

To free up space for questions on other drugs, the survey stopped tracking lifetime and past 30-day use of this low-prevalence drug in 2014. These measures will be re-introduced into the survey if past 12-month use increases in the future.

Ecstasy (MDMA)

The percentage of youth who used MDMA (street names "Molly" and "ecstasy") did not return to 2020 levels in 2023. Prevalence levels in 2023 were at or near the lowest ever recorded by the survey for lifetime, past 12-month, and past 30-day use. In 12th grade significant declines in prevalence took place for lifetime, past 12-month, and past 30-day use. All levels for all grades and reporting intervals were at 2% or less.

The historical trend for MDMA follows a pattern somewhat different from most of the other drugs in that an increase did not occur until the late 1990s, and it peaked later than many drugs—in 2001. Obviously there were some special forces at work on the use of this drug, including its popularity at raves followed by public concern about the dangers of its use. Since that time its prevalence has gradually declined, although a short-lived upsurge took place in all grades around 2009–2010.

In 2014 some questionnaire forms in the survey included "Molly" as an example of MDMA, along with ecstasy, and the inclusion of this example appeared to make relatively little difference in the overall prevalence of MDMA. In 2015 the remaining forms were changed to also include "Molly" as an example in the questions about MDMA.

Trends in MDMA use are unique because the upswing in use in 1999 occurred first in the older grades. The 8th graders did not show this resurgence until a year later, in 2000. A different dynamic seemed to be at work for MDMA than for most other drugs during this historical period, because it appears that the increase in use rippled down the age scale rather than the reverse; this may be because raves (which older teens would be more likely to attend) played an important role in its dispersion.

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Cocaine

The percentage of youth who had used cocaine had not returned to 2020 levels by 2023 for 12th grade students. Prevalence significantly declined for lifetime, past 12-month, and past 30-day use in 12th grade, continuing a downward trend after a nearly 50% drop from 2020 to 2021.

In both 10th grade and 8th grade lifetime prevalence was 1.0%, which compares to a 1.6% prevalence level for both grades in 2020. At such low levels there is little room for prevalence to fall further in future years.

Both past 12-month and past 30-day cocaine use are less than 1% in all grades.

Cocaine grew in popularity among 12th graders in the late 1970s, then plateaued at a high level of around 12% annual prevalence in the first half of the 1980s, when most drugs were falling, before plunging by about three quarters by 1991. This drug then followed the common pattern of an increase in use during the 1990s relapse before showing a period of decline since 2006. The increase had leveled out about three years earlier for 8th graders (in 1996) than for 12th graders (in 1999), evidence of a cohort effect.

The reduction of adolescent cocaine use to today's low levels is a success story given its considerable popularity in the 1980s, when past-year prevalence among 12th graders reached 13% (in 1985). Reasons for this steep decline in cocaine use—in particular the role of perceived risk—are discussed in Chapter 8 in this MTF report.

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Crack

In 2023 past-year use of crack cocaine was at or near historic lows. Annual use levels among 8th, 10th, and 12th grade students were all 0.5% or less. Like cocaine, crack use dropped sharply from 1986—when its use was first measured—through 1991. Consistent with other illicit drugs, its prevalence then increased during the 1990s drug relapse, peaked in the late 1990s, and has since declined to today's low levels of use.

Questions on crack cocaine were first introduced into the survey in 1986, when information gathered routinely in MTF showed some indirect evidence of the rapid spread of crack cocaine. For example, we found that the proportion of all 12th graders reporting that they had ever smoked cocaine (as well as used it in the past year) more than doubled between 1983 and 1986, from 2.4% to 5.7%. In the same period, the proportion of those who said that they had both used cocaine during the prior year and at some time had been unable to stop using it when they tried doubled (from 0.4% to 0.8%). In addition, between 1984 and 1986, the proportion of 12th graders reporting daily use of cocaine also doubled (from 0.2% to 0.4%). We think it likely that the rapid advent of crack use during this period was reflected in all of these changes, though we did not yet have a direct measure of its use.

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Cocaine Other Than Crack

Trends in prevalence of cocaine other than crack follow closely the trends for cocaine use overall. In 2023 prevalence had not returned to 2020 levels. In 12th grade lifetime prevalence fell further to 1%, which compares to the level of 4% in 2020, before the onset of the pandemic.

In 10th grade lifetime prevalence increased slightly to 0.9%, which compares to the 2020 level of 1.5%. In 8th grade lifetime prevalence has been below 1% since 2021, which leaves little room to fall further.

Both past 12-month and past 30-day cocaine use are near zero prevalence and are below 1% in all grades.

These low levels in 2023 contrast with highs in annual prevalence of 2.5% in 8th grade in 1996, 4.4% in 10th grade in 1999, and 10% in 12th grade in 1987 (when this outcome was first measured).

Questions on cocaine other than crack were first asked of 12th grade students in 1987, and prevalence declined precipitously through 1992. Perceived risk rose sharply during that period as the population became more concerned regarding the possibilities of addiction and overdose death from using cocaine.

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Heroin

Past 12-month use of heroin has always been relatively low, with annual prevalence never higher than 2% at any time in the survey for any grade. In 2023 the level of annual use was 0.4% or less in each grade. Prevalence levels of heroin are now at or near all-time lows, after a long decline from a peak established at the end of the 1990s drug relapse period. One unusual pattern specific to heroin is that the late 1990s mark the highest levels of use ever recorded in the study, whereas for most other drugs the all-time highs were set near the beginning of the 1980s. This trend was due in part to the advent of heroin use without a needle.

The increase in heroin use that occurred around 1995 was recognized fairly quickly and gave rise to some ameliorative actions, including an anti-heroin campaign by the Partnership for a Drug-Free America. An increasing number of deaths due to heroin use, including in the entertainment and fashion communities, also received widespread publicity. These factors may well explain the subsequent leveling in use after the near doubling of heroin prevalence that took place in 1995.

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Narcotics Other Than Heroin

Use of narcotics other than heroin without a doctor's orders is reported only for 12th grade students. In 2023 lifetime use declined significantly, bringing prevalence to 2.4%, which is the second-lowest recorded by the project (the lowest was 2.3% in 2021). The 2.4% level is more than six times lower than the high of 14% in 2002. Past 12-month use also significantly declined in 2023 to 1%, which ties with 2021 as the lowest level recorded by the survey. Past 30-day use declined, although not significantly, to a level of 0.4%, which is the second-lowest recorded by the survey.

Two patterns make trends in use of these drugs unique. First, peak use came during the 1990s relapse—and not during the 1980s as it did for so many other drugs—suggesting that its rise during the 1990s was more than just a return to drug use patterns of the past and instead represented the emergence of new, unique patterns of use for adolescents. Second, the peak established after the 1990s drug relapse stayed at a stubbornly high level for much longer than most illicit drugs. High levels of use during the 2000s raised concern that use of these types of prescription drugs had become endemic. The recent decline in prevalence since 2010 shows that efforts to reduce use among adolescents have been successful.

Because the question text on half of the questionnaire forms was updated in 2002 with the inclusion of additional examples of narcotics other than heroin (i.e., OxyContin, Vicodin, and Percocet), we obtained a higher reported level of use with the new version of the question that year (9.4%) than with the previous version of the question (7.0%). (When we make a significant change in the wording of a question, we often use this type of spliced design in which a random half of the respondents to the questionnaire forms containing the drug get the new version and others get the old version in the same year so that we can assess the impact of the wording change.) All questionnaire forms contained the new version of the question in 2003 and thereafter.

In 2023 the list of example narcotics in the survey question included Methadone, Codeine, OxyContin, Percodan, Opium, Demerol, Percocet, Ultram, Morphine, Oxycodone, Tylox, Tramadol, Vicodin, Hydrocodone (Lortab, Lorcet, Norco), MS Contin, and Suboxone.

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OxyContin

In 2023 the percentage of youth who used the specific narcotic drug OxyContin without a doctor's orders significantly declined in 10th and 12th grade, and it was 0.8% or lower in all grades.

Use of OxyContin has declined overall since first tracked by the survey in 2002. Its prevalence began a long-term decline in 2009/2010 for 10th and 12th grade students and in 2013 for 8th grade students, resulting in record or near-record lows in 2023.

Vicodin

Use of the specific narcotic drug Vicodin without a doctor's orders had an annual prevalence of less than 1% across the three grades in 2023. Levels of use significantly declined to record lows in 2023 for 12th and 10th grade students. The low levels in 2023 are the result of a marked decline from peaks before 2010 of 3% in 8th grade, 8% in 10th grade, and 11% in 12th grade.

While there was a large age difference in prevalence in earlier years, there remained practically none in 2023 as prevalence approached zero.

Amphetamines

The percentage of youth who used amphetamines without a doctor's orders trended slightly downward in 2023, with small declines in past 12 month use all less than one percentage point compared to 2022. The decline in 12th grade was small from 2.8% in 2022 to 2.1% in 2023, but statistically significant.

Use has declined gradually and substantially over the course of the survey. Across the three grades, lifetime use ranged from 11% to 15% in 1991 and declined to a range of 4% to 6% in 2023. In all three grades, past 12-month use ranged from 2% to 3% in 2023, and past 30-day use from 1% and 2%.

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We believe past prevalence reports among 12th grade students in the early 1980s were somewhat exaggerated because some respondents included non-amphetamine over-the-counter diet and stay-awake pills, as well as "look-alike" and "sound-alike" stimulants, in their answers. In 1982, we added new versions of the amphetamine use questions that were more explicit in instructing respondents not to include such nonprescription pills. Between 1981 and 1982, prevalence level reports dropped as a result of this methodological change. In all tables and figures, data for 1975 through 1981 are based on the unchanged questions; data since 1982 are based on the revised questions, providing our best assessments of current prevalence and more recent trends in true amphetamine use. Still, in 1982 annual prevalence among 12th graders was 20%.

In 1982 and 1983, the two years for which both adjusted and unadjusted statistics are available, the unadjusted data showed a modest amount of over-reporting. Both statistics suggest that a downturn in 12th graders' use of amphetamines began in 1982 and continued for a decade. For example, between 1981 and 1992 their annual prevalence for amphetamines fell by nearly two thirds, from 20% to 7%, while 30-day use and current daily use both fell by more than two thirds. As with a number of other drugs, the trend lines veered upwards after 1992.

Ritalin

The stimulant Ritalin is used to treat attention deficit hyperactivity disorder (ADHD). Prevalence of use without a doctor's orders in the last 12 months edged lower in 2023 for all three grades, and was less than 1% in each.

Prevalence has declined substantially since first tracked by the survey in 2001. From 2001 to 2023 it declined from 2.9% to 0.6% in 8th grade, from 4.8% to 0.5% in 10th grade, and from 5.1% to 0.6% in 12th grade.

Adderall

In 2023 nonmedical use of the amphetamine Adderall in the past 12 months declined in all three grades, significantly so in 12th grade.

In 12th grade the prevalence of 1.7% is the lowest since the survey first started tracking use of this substance in 2009. Levels of 2023 use were also low in 8th and 10th grade, at 1.7% and 2.1%, respectively.

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Methamphetamine

Use of methamphetamine has declined to near-zero prevalence over the past two decades, with lifetime use at or below 0.6% in 2023. This marks a steep decline from 1999 lifetime prevalence levels (when they were first tracked), which were at 4.5%, 7.3%, and 8.2% in 8th, 10th, and 12th grades, respectively.

Crystal Methamphetamine

Lifetime prevalence of crystal methamphetamine use in 12th grade has been less than 1% since 2020, leaving little room to fluctuate in response to environmental influences.

Annual prevalence among 12th graders fell from 3.0% in 2002 to 0.3% in 2023. Its similarity to crack cocaine (both are in chunks and are burned) may have played a role in this decline, because crack came to be seen as very dangerous to use, and the concern may have generalized to crystal meth.

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Sedatives

Use of sedatives (barbiturates) without a doctor's orders in 2023 edged down slightly for lifetime and past 12-months use, and significantly declined for past 30-day use. Use was at the lowest level recorded by the survey for all three reporting intervals.

Prevalence declined after the highs of the 1990s drug relapse but for some years remained substantially higher than they were before the relapse began. By 2023 annual prevalence was at a historic low at 1.5%. As with many other substances, prevalence increased during the 1990s drug relapse, but a long-term decline did not start until 2005, which is nearly a decade later than the decline seen for most other drugs. This pattern of sustained, high levels past the 1990s is found for misuse of many of the prescription drugs, and was seen for the class "narcotics other than heroin." Trends over the past fifteen years, however, indicate that a long-term decline has been taking place.

Prior to the increase in use in the 1990s, past 12-month use had declined very appreciably from its highest reading of 16% in 1976 to 3% in 1992.

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Tranquilizers

In 2023 the percentage of youth who used tranquilizers without a doctor's orders declined in all grades for lifetime, past 12-month, and past 30-day use. In 12th grades these declines were statistically significant for past 12-month and past 30-day use. As a result of the declines in all grades, the substantial decreases in prevalence that took place during the pandemic in 2021 largely persisted into 2023.

In 2001 the survey question on tranquilizers was modified to include Xanax as an example of a tranquilizer, and the discontinuity in the graph for that year marks the slightly higher prevalence estimate that resulted from this question change.

Among 12th and 10th grade students, tranquilizer use increased during the 1990s; the increase was sustained well into the 2000s, which is a trend typical for the general category of prescription medication misuse.

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Rohypnol

Rohypnol, a "club drug," was added to MTF in 1996.

In 2023 prevalence is less than 1% in all grades for past 12-month use. Lifetime and past 30-day use, which are measured in 8th and 10th grade, were also below 1% in 2023.

As a questionnaire space economy measure, in 2002 the standard triplet question (asking about lifetime, past 12-month, and past 30-day use of Rohypnol) was replaced with a tripwire question asking only about use in the past 12 months. (This change was made at 12th grade only.) As a result of this change in the structure and location of the question, trend data since 2002 may not be directly comparable to data prior to 2002, as noted by the discontinuity in the graph.

Ketamine

Prevalence of past-12 month ketamine use among 12th grade students has been below 2% for the past decade and in 2023 stood at 1%. This "club drug" was added to the survey in 2000. It showed little change in its usage levels through 2002. Since then use has declined in all grades. Because of the very low levels of use of this drug by 2011, questions about its use were dropped from the questionnaires administered to 8th and 10th graders.

GHB

Prevalence of past-12 months GHB use among 12th grade students has been below 1.5% for the past decade and in 2023 stood at 0.3%. Since 2017 prevalence has hovered around 0.4%.

Alcohol

In 2023 alcohol use significantly declined in 12th grade for lifetime, past 12-month, past 30-day, and daily use. It also significantly declined in 10th grade for lifetime use. These trends

contrast with last year, when 12th grade alcohol use increased for lifetime, past 12-month, and daily use.

This year's decline in 12th grade alcohol use is consistent with a delayed effect of the pandemic. Students in 12th grade in 2023 are members of the cohort that were just starting high school and were in 9th grade in 2020, when the majority of U.S. school buildings closed as a result of the pandemic. While in 9th grade this cohort had the largest decreases among students in all grades for substance use, including alcohol.[1] To the extent that forestalled initiation of substance use for one year can potentially lower adolescents' levels of substance use for the rest of their lives,[2] this year's decrease in alcohol use in 12th grade may stem from the lowered levels of alcohol initiation in this cohort three years earlier.

The significant decreases in alcohol use in 2023 in 12th grade are part of a long term, overall decline that has taken place since the year 2000 in all three grades. From 2001 to 2023 past 12-month prevalence has decreased from 73% to 46% in 12th grade, from 65% to 31% in 10th grade, and from 43% to 15% in 8th grade.

Unlike most other drugs, alcohol use showed only a modest increase during the 1990s relapse, exhibiting more of a pause in its long-term decline.

Binge drinking was lower in 2023 than in 2022 for all three grades, but these decreases were statistically significant. Binge drinking is defined as consuming five or more drinks in a row during the past two weeks,

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Been Drunk

Prevalence of being drunk had not returned to 2020 levels by 2023. In 12th and 10th grade both past 12-month and past 30-day use dropped substantially during the pandemic in 2021 and in 2023 these levels declined further, with a statistically significant decline in past 30-day use in 12th grade. In 8th grade these prevalence levels have changed little since 2015.

Annual prevalence of being drunk has been in a long-term decline, which began first among 8th graders after 1996, then among 10th graders after 2000, and in 12th grade after 2004, suggesting a cohort effect.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

The survey text for this item reads "On how many occasions (if any) have you been drunk or very high from drinking alcoholic beverages?"

[1] Miech, R., Patrick, M. E., & Keyes, K. (2023). Declines in adolescent substance use after the COVID-19 pandemic onset: The role of initiation in grades 7 and 9. *The Journal of Adolescent Health, 73*(5), 838–844.

[2] U.S. Department of Health and Human Services (HHS), Office of the Surgeon General, Facing Addiction in America. The Surgeon General's Report on Alcohol, Drugs, and Health. Washington, DC: HHS, November 2016.

Alcoholic Beverages With Caffeine

Annual use of alcoholic beverages containing caffeine significantly increased from 2022 to 2023 in 8th grade, from 4.7% to 7.5%. In general, 8th grade levels have been hovering at about 6% since 2016.

In 10th and 12th grade prevalence was little changed in 2023. Overall, use levels in these grades have declined substantially since first tracked in 2011. Annual prevalence among 12th and 10th grade students has decreased more than 50% overall.

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Flavored Alcoholic Beverages

In 2023, use of flavored alcoholic beverages (also known as "alcopops" or "malternatives") in the past 12 months had returned to pre-pandemic levels in 12th grade. Specifically, prevalence was 38% in 2019 (the last measurement before the pandemic), declined to 32% in 2021, and then returned to 38% in 2022 and similarly 36% in 2023. (2020 prevalence levels are not reported for 12th grade due to low sample size that resulted from curtailed data collection due to the pandemic.)

In 10th and 8th grade past 12-month prevalence declined slightly and did not return to 2020 levels. It is possible that 12th grade students had more opportunities and more autonomy to use flavored alcoholic beverages in 2023 than did their peers in younger grades.

Use of these products has declined substantially since the project first began tracking them in 2004. This decline is apparent in trends for lifetime, past 12-month, and past 30-day use in all three grades. For example, past 30-day use has declined dramatically over the course of the survey, in 8th grade from 15% in 2004 to 3% in 2023, in 10th grade from 25% in 2004 to 8% in 2023, and in 12th grade from 31% in 2004 to 18% in 2023.

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Beer

In 2023 prevalence of beer drinking in the past 12 months and the past 30 days had not returned to pre-pandemic levels in any of the three grades. Beer drinking for both these intervals declined substantially in 2021 during the pandemic, and in 2023 levels declined slightly further or stayed level.

In the long term, beer use has declined substantially in all grades. From 1991 to 2023 lifetime use decreased in 12th grade from 82% to 42%, in 10th grade from 74% to 27%, and in 8th grade from 59% to 14%. Substantial long-term declines have also taken place for past 12-month, past 30-day, and in all grades these prevalence levels are at or near the lowest recorded by the survey.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns. (2020 prevalence levels not reported in 12th grade because of low sample size that resulted from curtailed data collection during the pandemic.)

Liquor

Use of hard liquor is asked only of 12th grade students. In 2023 prevalence edged downward for lifetime, past 12-month, past 30-day use, as well as for binge drinking. With these small decreases prevalence was at the lowest recorded by the survey for lifetime and past 12-month use, and second-lowest for past 30-day use. Nevertheless, prevalence remains substantial, with one out of every five 12th graders reporting use of liquor in the past 30 days.

A decline in liquor consumption among 12th graders actually began after about 1980 but was interrupted in the late 1990s by the relapse phase in the use of most drugs, including alcohol. After about 2002 the long-term decline in alcohol use resumed.

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Wine

Wine consumption is asked only of 12th grade students. In 2023 prevalence edged downward slightly for lifetime, past 12-month, and past 30-day use. Prevalence was near record lows in 2023, following a substantial overall decline since 2000. Specifically, from 2000 to 2023 lifetime prevalence declined from 64% to 35%, past 12-month from 45% to 23%, and past 30-day from 16% to 7%.

In 1988 MTF added a question on wine coolers, which had the effect of sharply reducing self-reported wine use. (Up to that point many users of wine coolers likely reported such use under wine.) Prevalence of wine use rose somewhat during the 1990s drug relapse but continued a long-standing decline in 2001.

As with liquor, the longer term decline in wine consumption that began in the late 1980s was interrupted in the 1990s during the relapse phase in drug and alcohol use.

Binge drinking with wine has been higher than with liquor. It declined substantially in the late 1980s, suggesting that wine coolers accounted for reported binge drinking until wine coolers were separated into their own category.

Cigarettes

The percentage of adolescents who had ever smoked a cigarette did not significantly change from 2022 to 2023, although it trended slightly downward in all three grades. Overall, cigarette prevalence in 2023 is at or near the lowest ever recorded by the survey since the start of the survey in 1975.

The intense public debate in the late 1990s over cigarette policies likely played an important role in bringing about the very significant downturn in adolescent smoking over the past two

decades. MTF helped to give rise to that debate, as it publicly reported in the first half of the 1990s that the level of smoking among U.S. adolescents was rising sharply—results that were widely covered in the national media. Other subsequent developments likely have contributed, including (a) increases in cigarette prices, brought about in part by the tobacco industry settlement with the states and by state-level taxing decisions; (b) substantially increased prevention activities, including antismoking ad campaigns in a number of states; (c) the removal of certain types of advertising (including billboards) as well as the Joe Camel campaign nationwide; (d) the initiation of a national antismoking ad campaign by the American Legacy Foundation, which was created as a condition of the tobacco Master Settlement Agreement of 1998; and (e) efforts by the Food and Drug Administration (FDA) and states to reduce youth access to cigarettes.

An important milestone occurred in 2009 with passage of the Family Smoking Prevention and Tobacco Control Act, which gave the U.S. Food and Drug Administration the authority to regulate the manufacturing, marketing, and sale of tobacco products. New efforts by the FDA have undoubtedly contributed to the continuing decline in use of cigarettes and their reported availability by 8th, 10th, and 12th graders.

In earlier years, efforts to reduce adolescent smoking did not meet with as much success. Between 1984 and 1992 smoking prevalence was little changed among 12th grade students despite increasingly restrictive legislation with regard to smoking debated and enacted at state and local levels, as well as prevention efforts made in many school systems. These results suggest that the successful reduction of adolescent smoking, as we have seen in recent decades, requires a concerted, national, multi-pronged effort.

During the 1990s trends in cigarette smoking generally moved in concert across 8th, 10th, and 12th grades—and not in the usual, staggered pattern indicative of a cohort effect. The prevalence of current smoking began to rise among 8th and 10th graders after 1991 and among 12th graders after 1992, and until 1996 moved steadily upward in all three grades. In 1996, current smoking peaked in grades 8 and 10 and then peaked a year later among 12th graders. It is interesting that cigarettes, which normally reflect cohort differences, began to exhibit a secular trend in the same historical period that illicit drugs, which normally exhibit secular trends, began to show cohort effects.

Of particular importance is the fact that in all three grades in 2023 the prevalence of smoking half-a-pack or more per day is down from peak levels by more than 90%.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Vape Nicotine (E-Cigarettes)

The percentage of students who vaped nicotine in 2023 decreased in all grades for lifetime, past 12-month, and past 30-day use. In 12th grade the declines were statistically significant for all three reporting intervals. In 10th grade the declines were statistically significant for past 12-month and past 30-day use.

These declines reflect the lasting effect of processes set into place three years earlier. The 12th grade students of 2023 were in a cohort that started high school in 9th grade during 2020, when most U.S. school buildings closed as a result of the pandemic. While in 9th grade these students initiated nicotine vaping at record low levels,[3] which had a lasting effect. When these students were in 12th grade in 2023 the percentage who vaped nicotine in the past 12 months and first ever vaped in 9th grade was a striking 36% lower than in it had been for 12th grade students in 2022, whose 9th grade experience was not disrupted by the pandemic.[4] These low levels of initiation in 9th grade for the 2023 12th grade cohort accounted for most of their decline in nicotine vaping.[4]

Similarly, most of the decline in past 12-month nicotine vaping for 10th grade students in 2023 resulted from lasting, lower levels of initiation three years earlier in 7th grade, which is the start of junior high school.[4]

Despite the recent declines in use, the prevalence of nicotine vaping remains one of the highest among all adolescent substances. In 2023 its past 12-month prevalence levels of 11% in 8th grade and 18% in 10th grade are second only to alcohol. Nicotine vaping's prevalence of 23% in 12th grade ranks third behind alcohol and marijuana use. These high rankings are largely due to the very sharp increases in the prevalence of nicotine vaping between 2017 and 2019.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Vape Marijuana (Cannabis)

In 2023 the percentage of students who vaped marijuana changed little in all three grades. As a result, the substantial decreases in prevalence that took place during the pandemic onset in 2021 in 8th and 10th grade largely persisted into 2023. This pattern was apparent for lifetime, past 12-month, and past 30-day use.

In 12th grade prevalence levels did not decline as much as they did in the lower grades during the pandemic in 2021, and annual use levels in 12th grade have hovered at around 20% since 2019. This pattern differs from overall marijuana use, for which prevalence levels decreased in 2021 and this decrease persisted into 2022 and 2023.

Large increases in marijuana vaping in previous years were not accompanied by increases in overall marijuana use. These results suggest that marijuana vaping is not increasing the pool of adolescent marijuana users. It could substitute for combustible marijuana use, it could serve as a way for marijuana users to avoid detection by adults (because vaped marijuana does not have the distinctive smell of combustible marijuana), and/or it could be a way for users to supplement their combustible marijuana use.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

[3] Miech, R., Patrick, M. E., & Keyes, K. (2023). Declines in adolescent substance use after the COVID-19 pandemic onset: the role of initiation in grades 7 and 9. *The Journal of Adolescent Health, 73*(5), 838–844.

[4] Miech, R. (2024). Changes in U.S. adolescent nicotine vaping prevalence from 2022 to 2023: the role of reduced initiation three years earlier during the onset of the pandemic. Advance online publication.

Vape Flavoring

The percentage of youth who report that they vaped "just flavoring" in their lifetime and in the past 12 months did not return to 2020 levels by 2023. Nevertheless, this behavior remains somewhat common, with nearly one in five 12th graders reporting that they vaped 'just flavor' in their lifetime and more than one in ten reporting having done so in the last 12 months.

Practically all youth who report vaping 'just flavoring' also report vaping nicotine (as indicated by very low prevalence in the "Vape flavoring without nicotine" tables and graphs). Most adolescents who vape "just flavoring" are doing so as a supplement to their nicotine vaping and not as a substitute for it.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Vape Flavoring Without Nicotine

In 2017 MTF started asking students if they vaped "just flavoring." A substantial prevalence of this outcome could raise at least two potential scenarios. First, it could be possible that a portion of youth believed they were not vaping nicotine when in fact they were. Second, if students truly were vaping only flavoring, then the recent large increases in adolescent vaping may be less alarming than it at first appeared—to the extent that adolescents are not being exposed to the addictive chemical nicotine.

These two potential scenarios are not supported by the results. The finding that in 2023 1% of students or less in all grades report vaping flavoring exclusively without nicotine in the past 30 days indicates that practically all students who report vaping "just flavoring" are also vaping nicotine.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Smokeless Tobacco

The percentage of youth who used smokeless tobacco during the past 30 days was at or near record lows in 2023. In 12th grade prevalence was 2.5% (the record low was in 2021 at 2.2%), in 10th grade it was 2.3% (the record low was in 2021 at 1.7%), and in 8th grade it was 1.6% (the record low was in 2022 at 1.2%).

Lifetime use was also at or near record lows in 2023, at 8% in 12th grade, 6% in 10th grade, and 5% in 8th grade.

Daily use of smokeless tobacco is at near-negligible levels, with a prevalence of 0.5% or less in all grades.

Trends in smokeless tobacco stand out as very different from trends for adolescent use of other drugs. Unlike almost all other substances, use of smokeless tobacco did not increase during the 1990s relapse but actually declined for nearly 10 years, beginning around 1994. Further, smokeless tobacco is one of few substances for which prevalence increased after 2007,

although this increase among 10th and 12th grade students was not lasting. Finally, the trends show little in the way of cohort effects, given that trends have moved in parallel and not in staggered fashion for all three grades. These results suggest that the factors leading to use of smokeless tobacco are much different from the drivers of use of other drugs.

Questions about the use of smokeless tobacco were first introduced in 1986, omitted in 1990 and 1991, and then reintroduced in 1992. Through 2010, the examples of smokeless tobacco provided in the question were snuff, plug, dipping tobacco, and chewing tobacco; because of new forms of smokeless tobacco entering the market, snus and dissolvable tobacco were added to the examples in 2011. The introduction and promotion of new smokeless products, including snus, may well have contributed to the increase in use seen in all grades that peaked around that time.

Snus

In 2023 prevalence of snus use in the past 12 months stood at 0.3%, 1.3%, and 1.8% for 8th, 10th, and 12th graders. In 8th grade the 0.3% marks a significant decline from 1.0% the previous year.

Snus is a variation on smokeless tobacco, as are some other dissolvable tobacco products, that literally dissolve in the mouth. Questions on snus were added to the 12th grade survey in 2011 and to the 8th and 10th grade surveys in 2012. Past year prevalence had been falling quite sharply in the upper grades since the introduction of those questions. The upper grades have tended to have considerably higher levels of use—at least until 2018.

Clearly snus has lost most of its appeal to teenagers, possibly in part due to the sharp increases in the popularity of vaping.

Large Cigars

Smoking large cigars, which has not been particularly common among secondary school students, has declined overall since 2014 in all three grades. Since 2019 a steep decline in prevalence of 30-day use has taken place among 12th grade students, falling by more than half from 4.5% in 2019 to 1.8% in 2023. The trend has also been downward in 8th and 10th grades, which in 2023 have a 30-day prevalence levels of 1% in 8th grade and 0.3% in 10th.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Flavored Little Cigars

Use of flavored little cigars in the past 30 days declined slightly (but not significantly) in all three grades in 2023 and extended the substantial decreases in prevalence that took place in 2021 during the pandemic.

Overall prevalence has declined markedly since this measure was added to the survey in 2014. Specifically, from 2014 to 2023 prevalence in 12th grade fell from 12% to 2%, in 10th grade from 7% to 1%, and in 8th grade from 4% to 1%.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Regular Small Cigars

Use of regular (unflavored) small cigars during the past 12 months significantly dropped in 10th grade in 2023 and held steady in 8th and 12th grade. Prevalence has declined markedly overall since first tracked in 2014, and 2023 levels are record lows, all below 2%.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Cigarillos (Small Cigars)

The percentage of 12th grade students who used a cigarillo (also known as a small cigar) in the past 12 months was 4% in 2023, which is a non-significant decline from the 6% level in 2022. The 2023 level is the second lowest recorded by the study since it began tracking cigarillos in 2010, when prevalence was about four times higher at 23%.

Tobacco Hookah

A hookah is a device to inhale combustible tobacco and consists of a long, flexible tube through which users inhale tobacco smoke that has passed through water and is thereby cooled. In 2023 the percentage of 12th grade students who used a hookah in the past 12 months declined slightly to 2.7%, which is the second lowest level recorded by the survey, which first measured hookah use in 2010. Use increased from 2010 to 2014 but has been steadily declining since, with 2023 prevalence about eight times lower than the high of 23% recorded in 2014.

Nicotine Pouch

Starting in 2023 the survey included a question on the use of nicotine pouches. Specifically, the question asked "The next questions ask about small, white pouches that contain nicotine which users place in their mouth. Nicotine pouches are different from other smokeless tobacco products such as snus, dip, or chew, because they do not contain any ground tobacco leaf. Common brands include Zyn, On!, or Velo. Please do not include other types of tobacco pouches, such as snus pouches or smokeless tobacco pouches when answering the following questions." The survey then asked about lifetime, past 12-month, and past 30-day use.

Prevalence was low, with lifetime use at 4% in 12th grade, 3% in 10th grade, and 1% in 8th grade. Past 30-day use, which is commonly referred to as "current use," was low at 1.4% or less in all three grades. MTF will continue tracking these new products in the coming years to see if they gain popularity among adolescents.

Steroids

In 2023 lifetime prevalence of anabolic steroid use was 1% in all grades. In general, lifetime, past 12-month, and past 30-day use have decreased, sometimes unevenly, since highs in the early 2000s.

Anabolic steroids, sometimes used for muscle development including in body building, were rendered illegal to purchase or sell without a prescription in the Anabolic Steroids Control Act

of 1990. Prevalence of use fell among 12th graders for a couple of years thereafter, but then increased some. Use for all grades peaked around 2002 and have since declined substantially.

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Creatine

Creatine is not a hormone or a drug but a nutrient found in the skeletal muscle of most animals. It is used to reduce the recovery time of muscles, to increase muscle mass, and to thereby enhance performance for high-intensity, short-duration exercises. It is readily available over the counter, which undoubtedly helps to explain the substantial levels of use we have found among teens.

Past 12-month use maintained the large increases that took place last year, from 2021 to 2022. All grades levels are at the highest recorded since the project first began tracking use of this substance in 2001. Prevalence in 2023 was 12% in 12th grade, 11% in 10th grade, and 5% in 8th grade.

These results are consistent with the possibility of an increase in the proportion of adolescents involved in fitness and weightlifting during the pandemic. Lasting increases since 2021 also took place for the performance-enhancing drug androstenedione, which is sometimes used with creatine.

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Androstenedione

Androstenedione, a precursor to testosterone, is a performance-enhancing substance that was scheduled by the Drug Enforcement Administration early in 2005, making its sale and possession no longer legal.

In 12th grade, past 12-month prevalence was 1.4% in 2023, and maintained most of the large increase that took place last year, when it jumped to 1.9% in 2022 from 0.6% in 2021. The current higher levels in 2023 are a departure from the long-term decline that started at 3.0% in 2001 and decreased to 0.5% by 2019.

These results are consistent with the possibility of a lasting increase in the proportion of 12th grade students involved in fitness and weightlifting during the pandemic. Lasting increases also took place since 2021 for the performance-enhancing drug of creatine.

The survey stopped tracking this drug among 8th and 10th graders after 2014, when prevalence levels were less than 1% in these grades.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Legal Stimulants

Diet Pills

Use of diet pills, which are over-the-counter stimulants, were at the lowest level ever recorded by the survey in 2023 for lifetime, past 12-month, and past 30-day use.

The 1.1% level for past 12-month use in 2023 is more than five times lower than the peak of 21% recorded in 1982, when diet pills were first included on the survey. After 1983, prevalence fell quickly over the next ten years to 8% in 1993; this was a particularly positive development because nearly all of these diet pills contained phenylpropanolamine, which the Food and Drug Administration has since determined has health risks for the user and in 2005 removed them from over-the-counter sale. Use stabilized through the mid-1990s at around 9.4%, rose after 1998 to reach 15.1% in 2002, and then declined to today's low of 1.1% in 2023.

Stay-Awake Pills

Use of stay-awake pills, which are over-the-counter stimulants, were at or near the lowest level ever recorded by the survey in 2023 for lifetime, past 12-month, and past 30-day use among 12th graders.

The 2023 prevalence of 0.8% for past 12-month use is more than twenty times lower than the peak level of 26% in 1988. Since then prevalence of stay-awake pills has gradually declined somewhat irregularly with no periods of sustained increases.

OTC Cough/Cold Medicine

There are a number of over-the-counter drugs that can be used to relieve symptoms from coughing or having a cold. Several of them, like Robitussin and Tylenol, contain dextromethorphan (DXM). When taken in large doses, its side effects can mimic those of some illegal drugs, like hallucinations and sensory changes. Teens can buy them to use for these purposes and risk a number of dangerous side effects.

Not all cough and cold medications contain DXM, of course, but because a number of them do, we track the more general class to get an indication of changes in DXM abuse. The survey questions asks students if they have taken nonprescription cough or cold medicines "to get high."

In 2023 past 12-month prevalence changed less than one percentage point in each of the three grades. In 8th grade the current level of 4% is toward the higher end of the range that varies from the low of 2% recorded in 2015 and the high of 4.6% recorded in 2020.

In 10th grade a decline in 2023 brought prevalence to 3%, which is exactly half of the 6% high recorded in 2009.

In 12th grade prevalence held steady at 2.4%, which is the second-lowest level recorded by the survey (the lowest level was 1.7% in 2021).

Note that in recent years the grades have tended to reverse the order of their prevalence levels, with the 8th graders tending to have the highest prevalence and the 12th graders the lowest. The only other class of drugs that currently show such a pattern is inhalants.

Energy Drinks

Energy drinks are non-alcoholic beverages that usually contain high amounts of caffeine, and include brands such as Red Bull and Monster. MTF asks about daily use of these drinks.

Prevalence has followed a U-shaped curve, with higher levels when first tracked in 2010, a steady decline until about 2015, and then a subsequent reversal as prevalence increased thereafter. In 2023 levels of daily use in 12th and 10th grade were at the highest levels recorded by the survey, at 17% and 18%, respectively. In 8th grade prevalence declined slightly in 2023 after five years of steady increases, and was at 13%.

The wording for this question is "'Energy drinks' are non-alcoholic beverages that usually contain high amounts of caffeine, including such drinks as Red Bull®, Full Throttle®, Monster®, and Rockstar®. They are usually sold in 8- or 16-ounce cans or bottles. About how many (if any) energy drinks do you drink PER DAY, on average?"

Energy Shots

Energy "shots" usually come in 2 or 3 ounce containers and include brands such as 5-Hour Energy and Redline. MTF asks about daily use of energy shots.

Daily use of these substances has not systematically trended over the past decade. In all three grades prevalence has hovered at around 3% to 4%. When first tracked 8th grade students had the highest levels of use—at 7% in 2011—but by 2014 these levels had declined to 4% and have fluctuated around this level since. This lack of change in consumption of energy shots in recent years contrasts with the substantial increase of use in energy drinks.

The text for this question is: "Energy drinks are also sold as small "shots", that usually contain just 2 or 3 ounces (5-hour ENERGY®, Redline®, etc.). How many (if any) energy drink shots do you drink PER DAY, on average?"

Energy Drinks or Shots

Energy drinks and energy shots contain high levels of caffeine. Trends in daily use of these products follow a U-shaped curve, with higher levels when the project first began tracking them in 2010, a steady decline until about the year 2015, and then a reversal as prevalence subsequently increased. This trend is driven mainly by use of energy drinks and not by use of energy shots which have not systematically trended in the past decade.

Legal Use of Drugs for the Treatment of ADHD Taken Under Medical Supervision

ADHD Either Type

Medical use of either stimulant or non-stimulant drugs to treat ADHD changed little from 2022 to 2023 in 12th and 10th grade, for both lifetime and 30-day use. Consequently, the increases in use that occurred last year persisted into 2023.

In 8th grade use edged lower in 2023 for both lifetime and 30-day use. These declines eroded the substantial increases in use since the pandemic, although prevalence levels remain above those recorded before the pandemic onset in 2020.

In all three grades, prevalence increases after the pandemic onset in 2021 and 2022 reversed a decline that had led both lifetime and 30-day prevalence to be at or near the lowest level recorded by the survey in 2020.

It is possible that the need for treatment of ADHD increased during the pandemic due to adolescents experiencing more stress during the pandemic. Another possibility is that sheltering at home during the pandemic may have made any attention issues of adolescents more salient to their parents.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

ADHD Stimulant

Medical use of stimulant drugs to treat ADHD was one of the few substances with increasing prevalence after the pandemic onset, in 2021 and 2022. For lifetime use the increases since the pandemic persisted in 10th and 12th grade into 2023. In 8th grade they did not, although the decline by two percentage points was not statistically significant. Levels were 8% in 8th and 10th grade, and 11% in 12th grade.

Past 30-day use declined by about one percentage point in all grades, although this decline was not statistically significant. Levels were 5% or less in all three grades.

It is conceivable that there was an increase in the need for treatment during the pandemic due to adolescents being under more stress during the pandemic. Another possibility is that sheltering at home during the pandemic may have made any attention issues of adolescents more salient to their parents.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

ADHD Non-Stimulant

Medical use of non-stimulant type drugs for the treatment of ADHD are sometimes prescribed when stimulants have proven ineffective or not well tolerated.

In 2023 lifetime use of these drugs held steady, with only slight declines of less than one percentage point in all three grades.

Past 30-day use declined significantly in 12th grade, from 3.5% in 2022 to 2.0% in 2023. With this decline the level decreased from the highest ever recorded by the survey to a level that is about average of those from previous years. In 10th and 8th grade it changed little.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

DRUGS NO LONGER TRACKED ANNUALLY

The drugs listed below did not appear on the 2023 MTF surveys. In most cases prevalence levels fell so low that survey questions on the drug were removed to make room for questions on other drugs, as well as to reduce respondent burden. In some cases, as with "electronic vaporizers," questions were removed to make place for updated terminology and measures.

JUUL

Questions about use of the vaping device JUUL were not asked in 2022 because the FDA has removed them from the U.S. market.[5]

Prior to 2022 prevalence of the vaping device JUUL declined dramatically. Both past 12-month and past 30-day prevalence declined about 50% in just one year in all three grades from 2020 to 2021.

This decline likely stemmed from both national policies aimed at reducing nicotine vaping prevalence among adolescents, as well as the COVID-19 pandemic.

One policy to reduce tobacco use in general is the "Tobacco 21" law, which went into force on December 20, 2019. This law raised the age of sale for all tobacco products in the U.S. from 18 to 21. It is specifically designed to reduce adolescent access to vaping devices and other tobacco products.

In addition, in 2020 the FDA placed restrictions on flavoring of cartridge-based vaping systems and banned flavors popular among adolescents such as mint and fruit. These restrictions went into force on February 7, 2020, four days before the first school was surveyed in MTF that year. This ban likely has had a continuing effect.

At the same time, these large declines took place during the COVID-19 pandemic, when social distancing policies were implemented specifically to reduce social interactions outside of the home. These policies included school building closures, reductions and/or cancellations of after school group activities, and physical distancing policies requiring people to stay six feet from others. For many, these policies likely reduced adolescents' access to vaping devices and cartridges, as well as their opportunities to use them free from adult supervision.

All results from 2020 are from surveys completed before March 15, 2020, when national social distancing policies were implemented and the survey halted due to pandemic concerns.

Heroin Use Without a Needle

The percentage of youth ever using heroin without a needle fell to near-zero levels in 2021, and those questions were removed from the survey to make room for questions on other drugs.

[5] US Food & Drug Administration. (2022, June 23). FDA denies authorization to market JUUL products.

The advent of new, very pure, heroin that could be used without a needle played a significant role in raising heroin prevalence to its all-time peak in the mid-1990s. Since then its use has declined to record lows.

Heroin Use With a Needle

The percentage of youth ever using heroin with a needle fell to near-zero levels in 2021 and was removed from the survey to make room for questions on other drugs.

Heroin use with a needle among students is quite rare, and lifetime use was never higher than 2% when tracked between 1995 and 2021.

Bath Salts

Questions on "bath salts" (synthetic cathinones) were added to the survey in 2012 out of concern that these particularly toxic drugs would gain popularity among adolescents. As it turns out, annual prevalence has been low and never higher than 1.3% in any grade. In 2018, prevalence was 0.9% or less in all grades, and the survey questions were removed to make room for questions on other drugs. These questions will be added back to the survey in future years if a concern arises that adolescent use of bath salts is making a comeback.

Amyl and Butyl Nitrites

Amyl and butyl nitrites, one class of inhalants, became somewhat popular in the late 1970s, but their use has been almost eliminated in the years since. The annual prevalence level among 12th grade students was 6.5% in 1979 but only 0.9% in 2009. Because of this decrease in use, and to allow for the addition of other questions, the questions on nitrite use have not been included in the study since 2010. These questions will be added back to the survey in future years if a concern arises that adolescent use of these nitrites is making a comeback.

When nitrites were included in the definition of inhalants, they masked the increase that was occurring in the use of other inhalants, because their use was declining at the same time that the use of the other inhalants was increasing.

Methaqualone (Quaaludes)

Use of methaqualone (brand name Quaalude) without a doctor's orders had a past 12-month prevalence among 12th graders of 0.4% in 2012, after which it was no longer included on the survey to make room for questions on other drugs. Previously, use of this drug rose sharply from 1978 until 1981. Starting in 1982 use began to decline, helping to account for the overall adjusted sedative index resuming its decline that year. Annual prevalence for methaqualone plummeted from 7.6% in 1981 to 0.2% by 1993; it then inched up a bit during the drug relapse phase in the 1990s to 1.1% in 1996, where it remained in 1999. By 2012 it was down to 0.4%, a tiny fraction of its peak level.

Provigil

Questions on use of Provigil (a prescription stay-awake drug used for narcolepsy, shift work, etc.) were added to the 12th grade questionnaires in 2009. In 2011, 1.5% used this drug without a doctor's orders in the past 12 months, suggesting that this drug had not made serious inroads among youth in terms of non-medically-supervised use. Given the low use, questions on

Provigil were no longer included on the survey starting in 2012. These questions will be added back to the survey in future years if a concern arises that adolescent use of Provigil is making a comeback.

Bidis

A question about bidis, a type of flavored cigarette imported from India, was included in the MTF questionnaires for the first time in 2000, with a single tripwire question asking about the frequency of use in the past year. Some observers had been concerned that bidis might become popular among U.S. youth, but that does not seem to have been the case. The 2010 proportion of 12th graders using bidis during the past year was only 1.4%. Thirty-day and daily use would be appreciably lower. Given the low prevalence levels, the question on bidis was dropped from 8th and 10th grade questionnaires in 2006 and from 12th grade questionnaires in 2011. These questions will be added back to the survey in future years if a concern arises that adolescent use of bidis is making a comeback.

Kreteks

A question about kreteks, a type of clove cigarette that was usually imported from Indonesia, was added in 2001 to the list of tripwire questions that ask only about past 12-month use.

Because the prevalence levels turned out to be low, this question also was dropped in 2006 from the 8th and 10th grade questionnaires to make room for other questions. In 2014, only 1.6% of 12th graders reported any use of kreteks in the prior 12 months, and the question has not been included on the survey since then. These questions will be added back to the survey in future years if a concern arises that adolescent use of kreteks is making a comeback.

Salvia

Salvia is an herb with hallucinogenic properties, common to southern Mexico and Central and South Americas. Although it currently is not a drug regulated by the Controlled Substances Act, several states have passed legislation to regulate its use, as have several countries.

When first measured in 2009 prevalence among 12th grade students was 5.7% for past 12-month use. Since then its prevalence has dropped considerably and in 2022 was 0.8% in 8th grade, 10th grade, and 12th grade. This question was dropped from the survey in 2023 due to low prevalence.

Synthetic Marijuana

Synthetic marijuana has been branded as “K2” and “Spice,” among other names. When products such as these first appeared on the market some of their novel chemical compositions fell outside of regulated substances and were available for purchase at convenient stores and gas stations, even though use could have serious health consequences.

When first assessed in 2011 the past 12-month prevalence of synthetic marijuana was 11%. The Drug Enforcement Agency (DEA) scheduled various forms of synthetic marijuana in March 2011, which subsequently reduced their availability. Prevalence among adolescents subsequently dropped markedly, falling to 1.8% among 12th grade students in 2021.

Questions on this substance were dropped in 2023 because of low prevalence, and also out of concern that some adolescents were confusing use synthetic marijuana with marijuana vaping.

Dissolvable Tobacco

Dissolvable tobacco can be sold as lozenges, strips, or sticks. As the name implies, most dissolve in the mouth and do not require spitting or discarding of the product.

Questions on these products added to the 12th grade survey in 2011 and the 8th and 10th grade surveys in 2012 out of concern that they may become popular among adolescents. This concern was not realized, and past 12-month prevalence has always been less than 2% in all grades. These questions were discontinued in 2023 as a result of low prevalence.

Wine Coolers

Wine coolers are sweet, carbonated, alcoholic beverages. The survey first included questions on these products for 12th grade students in 1988, and past 12-month prevalence was 69%. Since then, prevalence has declined substantially, to 21% in 2022.

Use of these products is also assessed with survey questions on the broader topic of "flavored alcoholic beverages," which include wine coolers, hard seltzers, and ready-to-drink cocktails. Questions on wine coolers were dropped in 2022 because they no longer warranted specialized attention as prevalence has fallen more than 50% since their heyday in the 1980s.

SUMMARY OF TRENDS

As these varied patterns of use show, the overall proportion of U.S. adolescents using any substance in their lifetime has changed over the years, and the mix of drugs they use has changed even more. A number of drug classes showed dramatic declines (particularly in the 1980s), some showed substantial increases (particularly in the late 1970s and again in the 1990s), and some remained fairly stable. Further, the periods in which they either increased or decreased varied considerably, although between 1992 and 1996—the "relapse phase" of the epidemic—the use of many drugs increased and by 1997 the use of most had stabilized. Afterwards most have declined in use to some degree, sometimes very sharply, as was seen with LSD and MDMA; however, this was not true of all illicitly used drugs—in particular the prescription type drugs such as narcotics other than heroin, sedatives, and tranquilizers continued to increase well into the 2000s before they began their current declines, making them an important part of the nation's drug problems.

Recent years have seen new increases and decreases in adolescent drug use. Vaping of nicotine and marijuana surged in prevalence in 2018 and 2019. This surge was then followed by a large, overall decline in adolescent drug use after the onset of the pandemic from 2020 to 2021 that resulted in some of the largest one-year declines recorded by the survey. Whether these declines persist among affected cohorts in the coming years—and whether persistence of the declines varies by substance—is of central importance for drug theory and policy. These findings demonstrate once again the ever-changing nature of adolescent substance use and, consequently, the need to continually monitor and address emerging trends.

Chapter 6

INITIATION AND NONCONTINUATION: PREVALENCE AND TRENDS

SUBSTANCE USE INITIATION

Knowing when young people begin to use various drugs helps us better understand the etiology of substance use and provides a guide to the timing and nature of various interventions, which are likely most effective when administered prior to the grades of peak initiation. We know that grades of peak initiation vary according to drug and tend to progress from drugs perceived as the least risky, deviant, or illegal toward those perceived as more so.

One way to estimate when use of a particular drug is initiated is to ask respondents to self report when they first used a drug. In the MTF study we ask about initiation in terms of grade levels rather than age, because we believe that adolescents' memories are more likely to be organized in those terms. It also could be argued that social experiences and risk taking opportunities are organized more by grade than age. Given that each grade level is composed of students who are about the same age, grade can be readily translated into modal ages.

MTF has been collecting grade of initiation data from 12th graders since 1975, and from 8th and 10th graders since 1991, when those grades were added to the study. The results reported in this chapter provide a retrospective view of trends in lifetime prevalence of use at earlier grade levels. These retrospective reports provide information on drug use at grade levels not directly surveyed by MTF (i.e., 11th grade, 9th grade, and every grade below 8th). We present a series of tables of reports from 8th, 10th, and 12th graders, with accompanying figures for 8th and 12th graders.

One would not necessarily expect that in a particular year 8th, 10th, and 12th graders would give the same retrospective prevalence level for a drug, even for a given grade, because the three groups differ in a number of important ways:

- The 8th and 10th grade samples include eventual school dropouts, whereas 12th grade samples (completing the survey late in the school year) include almost none. In addition, the lower grades also have lower absentee rates. For any given year, both of these factors should cause the prevalence of use levels derived contemporaneously from a particular class cohort of 8th graders to be higher (for any specified grade level up through 8th grade) than the retrospectively reported prevalence rates derived from that same class cohort of young people who are still in school near the end of 10th or 12th grades.

- Because each class cohort experienced 8th grade in a different year, any broad historical or secular trend in the use of a drug could contribute substantially to differences in respondents' reports of their experiences when they were in 8th grade.

- Because 8th, 10th, and 12th graders are in three different class cohorts, any lasting differences among cohorts could contribute to differences in reported use at any specified grade level.

In addition, two types of method artifacts could also explain observed differences:

- Memory errors for early years are more likely to occur for older respondents (who are, of course, further removed in time from the initiation experience). They may forget that an event ever occurred (although this may be unlikely for use of drugs), or they may not accurately remember *when* an event occurred. For example, events may be remembered as having occurred more recently than they actually did—a kind of forward telescoping of the recalled timing of events.[1]

- The definition of the eligible event may change as a respondent gets older. Thus, an older student may be less likely to include an occasion of taking a sip from someone's beer as an alcohol use event, or an older student may be more likely to appropriately exclude an over the counter stimulant when asked about amphetamine use. While we attempt to ask the questions as clearly as possible, some of these drug definitions are fairly subtle and may be more difficult for younger respondents. Indeed, we have omitted from this report 8th and 10th graders' data on their use of sedatives (barbiturates) and narcotics other than heroin because we judged them to contain erroneous information.[2]

INCIDENCE OF USE BY GRADE LEVEL

Tables 6-1 through 6-3 provide retrospective initiation levels for various types of drug use as reported by students surveyed in 8th, 10th, and 12th grades.[3] Obviously, the older students have a longer age span over which they can report initiation. Table 6-4 shows the retrospective initiation rates from all three grades separately to allow comparison by grade levels.

The questions from which the data are derived have a common stem: "When (if ever) did you FIRST do each of the following things? Don't count anything you took because a doctor told you to." Various drug-using behaviors are asked about, for example, "smoke your first cigarette," "smoke cigarettes on a daily basis," "try an alcoholic beverage—more than just a few sips," "try marijuana," etc. The answer alternatives list grade levels.

- In general, drug use by the end of 6th grade is very low (Table 6-4). With the exception of alcohol, 5% or less of the 2023 respondents in all grades reported use of any drug by 6th grade. Drugs with this low level of use by 6th grade include the common drugs of ***marijuana*** and ***nicotine vaping***, as well as ***hallucinogens***, ***LSD***, ***hallucinogens other than LSD***, ***MDMA (ecstasy, Molly)***, ***cocaine in general***, ***crack cocaine***, ***cocaine other than crack***, ***heroin***, ***amphetamines***, and ***tranquilizers***.

[1] See Bachman, J. G., & O'Malley, P. M. (1981). When four months equal a year: Inconsistencies in students' reports of drug use. *Public Opinion Quarterly, 45*, 536–548; Jabine, T. B., Straf, M. L., Tanur, J. M., & Tourangeau, R. (Eds.). (1984). Cognitive aspects of survey methodology: Building a bridge between disciplines. Washington DC: National Academy Press.

[2] We have found that young adult follow-up surveys of 12th graders yield higher recanting rates for the psychotherapeutic drugs, in contrast to the illegal drugs. We interpret this discrepancy as reflecting, in part, a better understanding of the distinctions between prescription and nonprescription drugs in young adulthood. See Johnston, L. D., & O'Malley, P. M. (1997). The recanting of earlier reported drug use by young adults. In L. Harrison & A. Hughes (Eds.), *The validity of self-reported drug use: Improving the accuracy of survey estimates* (pp. 59–80) (NIDA Research Monograph No. 167). Rockville, MD: National Institute on Drug Abuse.

[3] Prevalence levels in Chapter 6 tables and figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly selected subsample of respondents. Previous to 2019 the prevalence levels in Chapter 6 tables and figures were adjusted to match the estimates in Chapters 4 and 5. In 2019 and later the estimates in Chapter 6 tables and figures are not adjusted.

- ***Alcohol*** is the drug most likely to have been initiated by the end of 6th grade, with 5% of 12th grade students reporting that they had used it by 6th grade (Table 6-4).

- Among 8th and 10th grade respondents in 2023, 2.9% and 1.6%, respectively, said they had tried ***marijuana*** by the end of 6th grade (Table 6-4). Among 12th grade students only 1.1% reported use by 6th grade. As noted at the beginning of this chapter, these differences by grade may reflect a number of factors, including higher levels of marijuana use among 8th grade students who will later drop out of high school, for example.

- Levels of ***nicotine vaping*** initiation are second only to alcohol use. In 2023 5% of 8th grade students reported that they had vaped nicotine by 6th grade, which compares to 8.2% for alcohol. These high levels of use among young children are especially concerning in light of evidence that nicotine has a stronger influence on child and adolescent brains as compared to adult brains for outcomes such as anxiety related behavior, reward processing, dopamine expression, and serotonin functioning.[4]

- ***Cigarette*** smoking, like nicotine vaping, tends to be initiated particularly early. Based on data from the 2023 8th graders (Table 6-1), their peak grade for initiation of cigarette smoking was the 7th grade (1.2%)—or modal ages 12 through 13—but a considerable number initiated smoking even earlier. Indeed, in 2023 1.6% of 8th grade respondents reported having had their first cigarette in 5th grade or earlier.

  Note that in 2023, 8th graders' reports of smoking initiation by the end of 6th grade were higher (2.2%) than 12th graders' reports of initiation by the end of 6th grade (1.9%). Several factors noted earlier in this chapter could contribute to this difference; however, it seems likely that much of the difference occurs because the 8th grade samples include nearly all those who will eventually drop out, a group that has markedly higher levels of cigarette smoking (see Table A-1 in Appendix A).[5]

- ***Smokeless tobacco*** use also tends to be initiated early, as Tables 6-1 through 6-3 illustrate, with the highest rates of initiation found in grades 7 through 10. Of the 8th grade respondents in 2023, 1.5% reported trying smokeless tobacco by 6th grade, and another 1.5% by 8th grade (for a total of 3.0%). These rates are based on boys and girls combined—initiation rates are substantially higher among boys.

- ***Inhalant*** use tends to begin early. Based on the responses from 10th graders surveyed in 2023, most inhalant initiation appears to have occurred by the end of 9th grade with the highest initiation occurring in 8th and 9th grades (Table 6-2).

- ***Alcohol*** use by the end of 6th grade was reported by 8.1% of 8th grade respondents in 2023, but by only 4.5% of 12th grade respondents in that year (Table 6-4). At least two factors

[4] Colyer-Patel, K., Kuhns, L., Weidema, A., Lesscher, H., & Cousijn, J. (2023). Age-dependent effects of tobacco smoke and nicotine on cognition and the brain: A systematic review of the human and animal literature comparing adolescents and adults. *Neuroscience & Biobehavioral Reviews*, *146*, 105038.

[5] Bachman, J. G., O'Malley, P. M., Schulenberg, J. E., Johnston, L. D., Freedman-Doan, P., & Messersmith, E. E. (2008). *The education–drug use connection: How successes and failures in school relate to adolescent smoking, drug use, and delinquency*. New York: Lawrence Erlbaum Associates/Taylor & Francis Group.

noted earlier may contribute to this difference. One is that students who eventually drop out are more likely than average to drink at an early age.[4] A second one is related to the issue of what is meant by "first use." The questions for all grades refer specifically to the first use of "an alcoholic beverage—more than just a few sips," but we believe that the 12th graders are better able to understand and exclude having a small amount (only a few sips) with parents or for religious or celebratory purposes. Note that data from the three groups of respondents tend to converge as we ask about lifetime alcohol use by the time they reach higher grade levels (Table 6-4).

For this reason we rely more on 12th grade data to examine changes in initiation of alcohol use across age, and these data suggest that the peak years of alcohol initiation are 7th through 11th grades. The first occasion of ***drunkenness*** is most likely to occur in the high school grades 9 through 11 (Table 6-3).

- The ***illicit drugs other than marijuana*** generally do not reach peak initiation rates until the high school years (in grades 9 through 11 for most drugs).

TRENDS IN LIFETIME PREVALENCE AT EARLIER GRADE LEVELS

Using the retrospective data provided by members of each 12th grade class concerning their grade of first use, it is possible to reconstruct lifetime prevalence of use trend lines for lower grade levels over many earlier years as the 12th graders passed through those grades prior to their participation in MTF. Obviously, data from school dropouts are not included in these trends. Figures 6-1 through 6-15 present the reconstructed lifetime prevalence curves (reflecting any use in lifetime) for most drugs. Starting with Figure 6-3, retrospective prevalence curves are also presented for 8th graders, who have been included in the annual MTF surveys since 1991. These trends include data from some students who will later drop out of school.

When comparing the retrospective prevalence curves of the figure for 12th grade students versus the figure for 8th grade students, the reader should keep in mind that the trends across the two figures are often plotted on different scales on the vertical axis to improve the clarity of the 8th grade figures, which have lower prevalence levels. So, for example, in Figure 6-3, the vertical scale of the figure for 12th grade students goes to 80%, whereas the figure for 8th grade students reaches only 30%.

We have chosen to report initiation rates in terms of trends in lifetime prevalence attained by each class of students as they reach different grade levels. Although average age of initiation is another way to discuss this type of data, we think it could be misleading. For example, the average age of initiation could be lower in more recent classes because fewer students are initiating use at later ages (perhaps due to a recent downward secular trend) rather than because more students are starting at younger ages. Yet many readers may interpret a decline in average age of initiation as reflecting a downward shift in the propensity to use at younger ages, independent of any secular trends, and therein lies the potential confusion.

- Based on retrospective data provided by successive 12th grade classes, Figure 6-1 shows trends at each grade level for lifetime use of ***any illicit drug.*** Very few 12th graders report initiation of drug use by the end of 6th grade, a finding that persists throughout all forty

plus years of the study. These results indicate that the vast majority of initiation begins after elementary school.

Grades 7 through 10 are a key developmental period for the initiation of illicit drug use. In all years, more than half of 12th graders who reported having ever used an illicit drug had done so while in grades 7 through 10 (see Table 6-3 and Figure 6-1).

- As we discuss in more detail below, the inclusion of marijuana in the composite measure of "any illicit drug use" has a substantial influence on findings for initiation. Marijuana has high initiation levels in middle school. In contrast, first use of illicit drugs other than marijuana typically occurs in high school (Figure 6-2 and later). Age of initiation patterns have remained steady as overall prevalence had declined, as indicated by similar, relative distances between the lines in Figure 6-2 across the years.

- In all years, more than half of 12th graders who reported using ***marijuana*** said they had done so by 10th grade. This is visually depicted in Figure 6-3 by trend lines for retrospective accounts of their use by 10th grade that are higher than half the lifetime prevalence for each cohort when it was in 12th grade (2 years later).

  The historical increases and decreases in 12th grade lifetime prevalence of marijuana use are also present in 8th grade. Parallel trends for 8th and 12th grade are seen in the top panel of Figure 6-3 and are present for the near constant level of lifetime marijuana prevalence before then that dates back to the mid 1990s, the substantial increase during the 1990s relapse, the decline in lifetime prevalence through the 1980s, as well as the increase in the late 1970s. These results indicate that the social influences that led to changes in adolescent marijuana use extended as far down as 8th grade.

  In fact, the historical variation in marijuana use observed among 12th grade students is seen as far down as 7th grade, as indicated in the lower panel of Figure 6-3. This panel depicts retrospective reports by 8th graders on their lifetime marijuana use. It shows a marked drop in prevalence after the onset of the pandemic in 2020, as well as an increase in lifetime marijuana prevalence during the 1990s drug relapse. In contrast, in 6th grade prevalence does not rise much above 5% in any year. Taken as a whole, these results suggest that the behaviors of middle school students may be particularly sensitive to the changing norms and mores about marijuana use in the general population.

- ***Daily marijuana use for a month or more*** consistently shows high levels of incidence in 9th grade. This is indicated by substantial separation for the 9th grade line in comparison to the grades below it. Overall levels of this outcome dropped appreciably in the 1980s in all grades above 7th, rose sharply from the early 1990s in those same grades, and then hovered for about a decade. A cohort effect is apparent in a multiyear decline that started in 10th grade in 2011, in 11th grade in 2012, and in 12th grade in 2013. In these three grades prevalence dropped by about five percentage points over the next three years and has stayed steady since.

- Questions on grade of first ***marijuana vaping*** were added to the 12th grade survey in 2020 (Figure 6-4). By 12th grade most initiation took place in the high school years, starting in grade 9. A comparison with Figure 6-3 shows that overall marijuana use has not increased since 2017, which suggests that increased incidence of marijuana vaping is not bringing new initiates to marijuana use. Vaping may instead serve as a substitute or supplemental form of marijuana use among those who do use or would otherwise have used combustible marijuana.

  Initiation of ***marijuana vaping*** by 6th grade is near negligible, at least in the results up to 2023. Students in 12th grade between 2020 and 2023 were in 6th grade between 2014 and 2017, when levels of marijuana vaping were low before the sharp increases in 2018 and 2019. In future years initiation levels of marijuana vaping by 6th grade may increase.

- More than half of all 12th graders who have ever used ***alcohol*** initiated use by 10th grade (Figure 6-10). This is indicated by lifetime prevalence in all years of the study for 10th grade cohorts that are more than half or the levels when those same cohorts were in 12th grade (two years later). From the early 1970s to mid 1980s, the trends lines were fairly steady in grade 12 and increased modestly when they were in grades 8 through 10. Since the mid 1980s, all grades have shown steady declines in initiation, in about equal proportion. Because the results from the classes since 1993 are based on the revised question about alcohol use—which qualifies the question with the phrase "more than just a few sips"—these data are not strictly comparable to earlier trend data, though the trend lines before and after 1993 align fairly closely. (A break in the trend lines shows the rather modest decline in the reported initiation rates that this change produced.) The lower panel of Figure 6-10, based on data from 8th grade respondents, also shows a gradual, steady, and very substantial decline in lifetime prevalence of alcohol use that has taken place over the life of the study.

- In 1986, we began asking 12th graders about the first time they drank "enough to feel ***drunk*** or very high" (Figure 6-11). In all years, the trend lines for being drunk show a substantial gap in lifetime prevalence between 8th and 9th grades, as well as between 9th and 11th grades. These gaps reflect substantial increases in the initiation of drinking alcohol to the point of drunkenness between 8th and 10th grades and even into 11th grade. In fact, among 12th grade students who had ever been drunk, about half first became drunk between 8th and 10th grade, as indicated by the distance between the 8th and 10th grades encompassing half or more of the total lifetime prevalence recorded at 12th grade (two to four years later). Since the late 1980s the overall trends in initiation for all grades have been downward, with the exception of a short period in the relapse phase of the drug epidemic in the 1990s when initiation rates rose slightly and then leveled.

  A substantial decline in drunkenness has taken place for 8th grade students over the course of the survey. This decline was interrupted by a slight rise from 2016 to 2019, but has since resumed.

- Initiation levels for ***nicotine vaping*** are substantial in the early grades. In 2023 more than 10% of 12th grade students reported they first vaped nicotine before 9th grade. An additional

18.9% reported initiating nicotine vaping in the high school years (Figure 6-15 and Table 6-3). These results indicate that middle school is an important starting point for policies and interventions aimed at preventing nicotine vaping among children and adolescents.

- Variation in lifetime prevalence of ***any illicit drug other than marijuana*** over the course of the study has been driven primarily by initiation in high school (Figure 6-2), that is, 9th grade and after. The lifetime prevalence level for 8th grade students is relatively flat over the course of the study, with a slight, overall decline since the late 1990s. In contrast, the trends for high school students show much more variation, especially before the mid-1990s.

- The lower panel of Figure 6-6 presents reports from 8th grade students on their past use of ***inhalants***. It shows that their initiation levels are quite high in 7th grade, pointing to the importance of the middle school years as a key age of initiation for use of inhalants.

  Lifetime prevalence levels as reported by 8th grade students are substantially higher than lifetime prevalence levels in 8th grade as reported by 12th grade students. This is, in part, because the surveys of 8th graders include students who will later drop out of school and, consequently, not be included in 12th grade reports of earlier inhalant use.

- Of 12th grade students who have used ***hallucinogens***, about half initiated use by 10th grade. This is depicted in Figure 6-7 with a lifetime prevalence level for students in 10th grade that is about half or more than their lifetime prevalence in 12th grade, two years later. Lifetime prevalence of when in 6th grade as reported by 12th grade students is near zero in all forty plus years of the study and when in 8th and 9th grade is typically less than 5%. Throughout the life of the study, a substantial jump in lifetime prevalence occurs when students are in 10th and 11th grade, indicating that these are key years of initiation. Since 2012, hallucinogen initiation (and therefore use) plateaued in all grades. The apparent upturn in the class of 2001 is an artifact of a change in question wording; when the term "shrooms" (a commonly used term for hallucinogenic mushrooms containing psilocybin) was added to the list of examples in the question about use of ***hallucinogens other than LSD***; the absolute level of reported hallucinogen use increased somewhat that year, but thereafter the trend lines continued to show declines.

- Initiation levels of ***LSD*** and ***hallucinogens other than LSD*** (Figures 6-8 and 6-9) are highest in grades 10 and higher, pointing to the high school years as a peak time of initiation.

- ***Cigarette smoking*** has one of the lowest ages of initiation (Figure 6-12). The gaps between the trend lines for lifetime smoking in 6th and 8th grade have been one of the largest for all drugs, indicating substantial initiation at these ages. Although lifetime prevalence of cigarette smoking has declined very substantially over the course of the study, still 4.2% of 8th grade students report having smoked a cigarette in 2023 (Table 6-1). In the most recent cohort of 12th graders surveyed, lifetime prevalence increased by about 2 percentage points at each grade until it reached a cumulative prevalence of 11.5% among 12th grade students in 2023 (Table 6-3).

The important decline in teen smoking initiation that began in the late 1990s also can be seen in the lower panel of Figure 6-12, based on responses from 8th grade students. This figure also shows evidence of a secular trend, in that the sharp decline since 1996 at 8th grade is not much reflected in the retrospective data for earlier grades until the 8th grade class of 2002. After a sharp drop, the rate of decline in smoking initiation by 8th grade decelerated across about five classes until both the 8th and 12th grade classes of 2011 showed a sharper decline, likely due at least in part to an increase in federal tobacco taxes in 2009. After 2015 cigarette use plateaued across all grades, with a fleeting, one-year increase that started in the 6th grade cohort in 2014 and by 2020 made its way up to 12th grade as this cohort aged. The long term decline resumed afterwards. The lower panel shows that historically the rate of initiation by 8th grade has been largely due to initiation prior to 7th grade, particularly between 5th and 7th grades. This suggests that late elementary school and early middle school may be strategic times to focus smoking prevention efforts.

- Questions about ***smokeless tobacco*** initiation (Figure 6-14) were first asked of 12th graders in the class of 1986. These prevalence questions were dropped from the 1990 and 1991 surveys of 12th graders, but reinstated in 1992. The 1986–1989 survey questions were located near the end of one questionnaire form; the questions since 1992 have been relocated so they appear early in the form. As a result, estimates based on two versions are not strictly comparable, and it may be misleading, therefore, to connect the two trend lines.

  Most initiation of smokeless tobacco has taken place by 10th grade, with little further increase in 11th grade and even less in 12th grade.

  Initiation patterns are similar to those for cigarette smoking (discussed above), with the earliest grades showing both substantial initiation and historical variation in levels of initiation (even in 4th grade), a large jump in lifetime prevalence between 6th and 8th grade during the earlier years of the study, and a substantial decline in initiation in all grades over the course of the study. One important difference between trends in smokeless tobacco and cigarettes is that for all grades the decline in smokeless tobacco paused in the early 2000s. This pause actually turned to a slight upswing beginning in the lower grades around 2005 and continuing through 2012 in 12th grade (again suggesting a cohort effect). Initiation rates have since declined, with the exception of a slight, one-year upsurge present among 9th graders in 2013 that proved fleeting, though it seemed to echo through the upper grades suggesting a brief cohort effect. All grades showed further declines after that brief increase. The introduction of new products and advertising may have played a role in the resurgence in lifetime prevalence seen in the early to mid 2000s.

DRUGS NO LONGER ANNUALLY TRACKED FOR INITIATION DUE TO LOW LEVELS OF USE

- The study reported the use of ***nitrite*** inhalants from 1975 until 2009, when prevalence fell to such a low level that questions on nitrites were dropped and replaced with questions on other drugs. For a discussion of nitrite initiation, see the 2014 version of this monograph that reports data through 2013.

- Retrospective questions about grade of first use for ***PCP*** were added in 1980 and discontinued in 2009 because very low prevalence made it strategic for the survey to ask questions about other drugs. For a discussion of initiation trends for this drug see the 2014 version of this volume that reports data through 2013.

- The study tracked the initiation of ***methaqualone*** use (brand name Quaalude) from 1975 to 2013, when items were deleted due to low prevalence. A full discussion of initiation trends for this drug is available in the 2014 version of this volume that reports data through 2013.

- The study reported initiation of ***steroid*** use among 12th grade students from 1989 to 2019 and for 8th and 10th grade students from 1991 to 2015. Due to low prevalence, these questions have been removed to make room for questions on other drugs. For information on steroid use initiation among 12th grade students see the version of this volume that reports data through 2019 (published in 2020), and for 8th and 10th grade students see the version that reports data through 2014 (published in 2015).

- Trends in initiation up to 2022 are reported here for ***cocaine***, ***crack cocaine***, ***other forms of cocaine***, ***heroin***, ***narcotics other than heroin***, ***amphetamines***, ***sedatives (barbiturates)***, ***tranquilizers***, and ***cigarette smoking on a daily basis***. The number of adolescents who use these drugs is now very low, with lifetime prevalence levels <3%. Survey questions on initiation and corresponding analyses will return in future years if lifetime prevalence increases.

TRENDS IN NONCONTINUATION RATES

One indication of the proportion of people who try a drug but do not continue to use it can be derived from calculating the percentage of those who ever used a drug in their lifetime (once or more) but did *not* use it in the 12 months preceding the survey.[6] We use the word "noncontinuation" rather than "discontinuation" to describe this situation because the latter term might imply discontinuing an established pattern of use, whereas our current operational definition includes noncontinuation by experimental users as well as established users.

Table 6-5a shows how the noncontinuation rates observed for the various classes of drugs have changed over time among 12th graders. These rates and the changes in them over the years are shown in Table 6-5a for lifetime use; in Table 6-5b the noncontinuation rates are based on 12th graders who are "experienced" (i.e., used the drug 10 or more times in their lifetime). An important caution is that these estimates are based on students who have ever used specific drugs, and the estimates can vary substantially from year to year for drugs with lower prevalence and thus small numbers of cases.

[6] This operationalization of noncontinuation has an inherent limitation in that users of a given drug who initiated use *during* the past year by definition cannot be noncontinuers. Thus, the definition tends to understate the noncontinuation rate, particularly for drug use initiated late in high school rather than in earlier years or for newly popular drugs.

- The noncontinuation rate for ***nicotine vaping*** in 2023 was 31%, which has been steady in recent years (it compares with 30% in 2022 and 31% in 2021). This level represents more than a doubling since 2019, when it was 14%. Since 2019 the prevalence of nicotine vaping plateaued and then began to decline. These results suggest that in recent years the decline in adolescent nicotine vaping partly stems from the increasing percentage of adolescents who discontinued use after initiating use.

- Noncontinuation had to be defined differently for ***cigarettes*** because respondents are not asked to report on their cigarette use in the past year. The noncontinuation rate is thus defined as the percentage of those who say they ever smoked in their lifetime who also reported not smoking at all during the *past 30 days* rather than the past year. In 2023 noncontinuation of cigarettes continued its long term increase and was at 81%, which is the highest level for cigarettes recorded over the life of the study. In 1999—the first and lowest measure we have—it was 46%.

- Noncontinuation of ***smokeless tobacco*** was near its highest recorded level in 2023 at 68%. One possibility is that nicotine vaping is displacing teen use of cigarettes and smokeless tobacco, a hypothesis that warrants close consideration.

- The noncontinuation rate for ***marijuana vaping*** has almost doubled in the past five years, from 12% in 2019 to 23% in 2023. Part of the reason for these increased rates may be the outbreak of vaping related lung injury in 2020, which was linked to marijuana vaping. Since 2019 the prevalence of marijuana vaping has plateaued after marked increases in 2018 and 2019. As with nicotine vaping, these results suggest that in recent years the deceleration in adolescent marijuana vaping partly stems from the increasing percentage of adolescents who discontinued use after initiating use.

- ***Marijuana*** use overall—that is, without the question specifying any specific method of use—has one of the lowest rates of noncontinuation of all drugs (Table 6-5a). In 2023, the noncontinuation rate was only 20%, and has hovered in a narrow window between 18% and 26% over the last two decades.

  During the first half of the 1990s, marijuana noncontinuation rates fell by half, from a high of 35% in 1991 to a low of 17% in 1995, indicating that the substantial increase in prevalence during this period represented not only an increase in youth adopting marijuana use, but also sharply lower levels of users desisting from it. Previous to 1992, noncontinuation had gradually increased since the early 1980s, and with these higher rates of noncontinuation came a decrease in marijuana prevalence during those same years.

Alcohol has had the lowest rate of noncontinuation in every year of the survey and in 2023 it was 13%. In previous years it increased gradually from about 1988 (when it was 7%) to 1993 (when it was 12%), perhaps reflecting the changed norms regarding its use (see Chapter 8). These norms, in turn, may have reflected both the influence of a number of states changing the legal drinking age and a greater emphasis being placed on the dangers of drunk driving.

Table 6-5b provides noncontinuation rates for 12th graders who were "experienced" in the use of various drugs, here defined as those who reported having used a drug on 10 or more occasions during their lifetime. It shows that noncontinuation is far less likely among this group. Further, while the direction of the trends in noncontinuation rates among all users have been similar to trends observed in the same drugs for experienced users, the degree of fluctuation in noncontinuation has tended to be considerably smaller among more experienced users.

The numbers of cases upon which each percentage in Table 6-5b is based are considerably smaller than in most other tables, and particularly when overall use of a drug is low to start with; therefore, the trend data are somewhat uneven. The following are some important trends for noncontinuation rates of experienced users:

- Noncontinuation for experienced ***marijuana*** users has been very low throughout the past 46 years, ranging from a low of 4% in 1975 to a high of only 12% in 1990. In 2023 it was at a near-historic low level at 5%.

- Noncontinuation had to be defined differently for ***cigarettes*** because respondents are not asked to report on their cigarette use in the past year. Noncontinuation is thus defined as the percentage of those who say they ever smoked "regularly" who also reported not smoking at all during the *past 30 days* rather than in the past year.

  In 2023 the noncontinuation rate was 56%, the highest level recorded by the survey since 1975. The previous high was in 2019, at 43%. These high levels of noncontinuation in recent years for students who have smoked "regularly" in the past contribute to the lowest prevalence levels of 12th grade cigarette use recorded by the study in recent years.

  The noncontinuation level in 2023 is over four times the nadir of 13% that was reached in 1997, at the height of the drug relapse. Increases in noncontinuation rates suggest that it is possible for many youth who have smoked regularly to stop—or to switch to nicotine vaping for those who find it difficult to quit nicotine—before they develop a lifelong dependence on cigarettes and the associated health consequences. Nevertheless, even today the vast majority of youth who develop a smoking habit early do not stop by 12th grade, highlighting cigarette use as a particularly addictive behavior.

IMPLICATIONS OF NONCONTINUATION FOR PREVENTION

Wherever prevention programs take place—whether for schools, families, communities, or the media—questions arise as to what *should* be prevented and what *can* be prevented. While efforts to reduce adolescent initiation of substance use have received wide support and considerable resources, there has been considerably less consensus as to whether the discontinuation of use is a realistic goal for prevention efforts. We believe the results just presented here help to inform that debate.

The findings show that whatever social forces brought about the large declines in drug use during the 1980s and the substantial increases during the 1990s operated through effects on *both* initiation and noncontinuation rates. Put another way, the decreases and subsequent increases in annual and 30-day prevalence of use were considerably larger than could be explained by fluctuations in

initiation rates alone. These findings show that noncontinuation *can* and *does* change appreciably and, therefore, that any comprehensive prevention strategy should include increasing cessation—that is, preventing continuation and escalation among users—as one of its objectives, particularly from early stage use.

The findings show the importance of distinguishing among users at different levels of involvement. A comparison of the noncontinuation rates in Table 6-5a, based on all previous users, and Table 6-5b, based on only experienced users (those who reported having used a given drug 10 or more times) is highly instructive. Clearly, 12th graders in the early stages of use were appreciably more likely to discontinue their use than their counterparts who had greater involvement with the drug. This makes early intervention in terms of turning initial experimental use into nonuse not only a viable goal for prevention, but also a particularly important one.

TABLE 6-1
Incidence of Use of Various Drugs by Grade for 8th Graders, 2023

(Entries are percentages.)

Grade in which drug was first used:	Marijuana	Inhalants	Hallucinogens	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Cocaine other than Crack	Heroin	Amphetamines	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily)[a]	Smokeless Tobacco	Vaping Nicotine
4th (or below)	0.8	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	3.1	0.5	1.0	0.0	0.3	0.4
5th	0.8	0.5	0.2	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.0	2.5	0.6	0.6	0.1	0.5	1.1
6th	1.4	0.7	0.0	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.1	0.1	2.5	0.8	0.6	0.1	0.7	3.5
7th	3.1	0.5	0.3	0.1	0.3	0.1	0.2	0.2	0.1	0.1	0.3	0.3	5.5	2.3	1.2	0.3	1.0	5.6
8th	2.6	0.4	0.4	0.1	0.3	0.4	0.1	0.1	0.2	0.1	0.3	0.2	4.1	3.0	0.7	0.1	0.5	4.1
Never used	91.4	96.5	99.1	99.7	99.2	99.4	99.5	99.7	99.6	99.7	98.9	99.2	82.2	92.8	95.8	99.4	97.0	85.3

Source. The Monitoring the Future study, the University of Michigan.

Notes. Questions on marijuana, inhalants, cocaine, crack, cocaine other than crack, alcohol, been drunk, cigarettes, and daily cigarettes included on all surveys. Questions on vaping included in randomly-selected five-sixths of surveys. Questions on hallucinogens, LSD, hallucinogens other than LSD, heroin, amphetamines, tranquilizers, and smokeless tobacco included in randomly-selected one-half of surveys. Questions on ecstasy (MDMA) included in randomly-selected one-third of surveys.

Prevalence levels in these tables do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

[a]Data based on the percentage of regular smokers (ever).

TABLE 6-2
Incidence of Use of Various Drugs by Grade for 10th Graders, 2023

(Entries are percentages.)

Grade in which drug was first used:	Marijuana	Inhalants	Hallucinogens	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Cocaine other than Crack	Heroin	Amphetamines	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily)[a]	Smokeless Tobacco	Vaping Nicotine
4th (or below)	0.4	0.7	0.1	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	2.3	0.6	0.8	0.1	0.4	0.6
5th	0.2	0.4	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.2	0.5	0.0	0.1	0.5
6th	1.0	0.4	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.0	2.8	0.6	0.5	0.0	0.3	2.0
7th	1.9	0.3	0.2	0.1	0.2	0.1	0.1	0.0	0.1	0.2	0.2	0.2	4.1	1.6	1.4	0.1	0.5	3.2
8th	3.5	0.4	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.0	0.4	0.2	6.5	2.9	1.4	0.2	0.6	5.0
9th	7.6	0.2	1.0	0.7	0.8	0.2	0.2	0.1	0.1	0.1	0.3	0.1	11.1	6.8	1.8	0.3	1.8	7.6
10th	5.0	0.4	0.5	0.3	0.5	0.2	99.4	0.1	0.2	0.1	0.4	0.3	5.8	6.0	1.0	0.2	1.0	4.2
Never used	80.3	97.2	97.8	98.5	98.2	99.3	0.0	99.6	99.5	99.4	98.5	99.1	65.9	81.3	92.6	99.0	95.2	77.0

Source. The Monitoring the Future study, the University of Michigan.

Notes. Questions on marijuana, inhalants, cocaine, crack, cocaine other than crack, alcohol, been drunk, cigarettes, and daily cigarettes included on all surveys. Questions on vaping included in randomly-selected five-sixths of surveys. Questions on hallucinogens, LSD, hallucinogens other than LSD, heroin, amphetamines, tranquilizers, and smokeless tobacco included in randomly-selected one-half of surveys. Questions on ecstasy (MDMA) included in randomly-selected one-third of surveys.

Prevalence levels in these tables do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

[a]Data based on the percentage of regular smokers (ever).

TABLE 6-3
Incidence of Use of Various Drugs by Grade
for 12th Graders, 2023

(Entries are percentages.)

Grade in which drug was first used:	Any Illicit Drug	Any Illicit Drug other than Marijuana	Marijuana	Marijuana Daily for Month or More	Inhalants	Hallucinogens [a]	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Heroin	Narcotics other than Heroin	Amphetamines [b]	Sedatives (Barbiturates)	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily) [c]	Smokeless Tobacco	Vaping Nicotine	Vaping Marijuana
6th (or below)	1.8	0.7	1.1	0.6	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.3	0.1	0.1	0.0	4.5	0.8	2.2	0.1	0.8	1.6	0.6
7th–8th [d]	7.6	1.3	7.0	4.2	0.3	0.8	0.5	0.5	0.3	0.0	0.0	0.0	0.4	0.3	0.3	0.5	10.3	3.4	2.8	0.2	1.5	8.8	4.2
9th	7.2	1.1	7.0	1.5	0.3	0.7	0.5	0.5	0.1	0.2	0.0	0.0	0.2	0.1	0.3	0.3	8.6	5.8	1.5	0.1	1.1	6.4	5.7
10th	5.9	1.0	5.7	1.5	0.0	0.8	0.8	0.4	0.2	0.1	0.0	0.0	0.2	0.0	0.2	0.1	10.2	6.7	1.8	0.0	0.6	4.6	5.5
11th	7.8	2.6	7.5	1.4	0.1	1.9	0.6	1.8	0.2	0.2	0.1	0.0	0.4	0.2	0.1	0.3	12.2	8.3	2.1	0.1	0.7	5.3	6.4
12th	5.6	1.3	5.4	0.0	0.0	1.0	0.1	1.1	0.2	0.2	0.0	0.0	0.0	0.0	0.3	0.2	7.1	5.5	1.2	0.1	0.8	2.6	4.2
Never used	64.0	92.0	66.4	90.9	99.2	94.8	97.6	95.6	98.8	99.2	99.8	99.9	98.6	99.2	98.7	98.7	47.2	69.5	88.5	99.4	94.6	70.6	73.4

Source. The Monitoring the Future study, the University of Michigan.

Notes. Questions on marijuana daily for month or more, inhalants, crack, and ecstasy (MDMA) included in randomly-selected one-sixth of surveys. Questions on vaping included in randomly-selected two-thirds of surveys. Questions on any illicit drug, any illicit drug other than marijuana, marijuana, hallucinogens, LSD, hallucinogens other than LSD, cocaine, heroin, narcotics other than heroin, amphetamines, sedatives (barbiturates), tranquilizers, alcohol, been drunk, and smokeless tobacco included in randomly-selected one-third of surveys. Questions on cigarettes and daily cigarettes included in randomly-selected one-half of surveys.

Prevalence levels in these tables do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

[a]Unadjusted for known underreporting of certain drugs. See text for details.

[b]Based on data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription amphetamines.

[c]Data based on the percentage of regular smokers (ever).

[d]For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about initiation in each grade separately. For consistency, those 12th graders reporting initiation of use in 7th or 8th grade are combined on the chapter 6 tables and figures.

TABLE 6-4
Incidence of Use of Various Drugs: A Comparison of Responses from 8th, 10th, and 12th Graders, 2023

Grade level of respondents:	Marijuana	Inhalants	Hallucinogens [a]	LSD	Hallucinogens other than LSD	Ecstasy (MDMA)	Cocaine	Crack	Cocaine other than Crack	Heroin	Amphetamines [b]	Tranquilizers	Alcohol	Been Drunk	Cigarettes	Cigarettes (Daily) [c]	Smokeless Tobacco	Vaping Nicotine
	Percentage who used by end of 6th grade																	
8th	2.9	2.5	0.2	0.1	0.2	0.2	0.1	0.1	0.0	0.1	0.5	0.2	8.2	1.9	2.3	0.2	1.5	5.0
10th	1.6	1.6	0.2	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.1	6.5	1.4	1.7	0.1	0.8	3.0
12th	1.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	—	0.1	0.1	0.0	4.5	0.8	2.2	0.1	0.8	1.6
	Percentage who used by end of 8th grade																	
8th	8.6	3.5	0.9	0.3	0.8	0.6	0.5	0.3	0.4	0.3	1.1	0.8	17.8	7.2	4.2	0.6	3.0	14.7
10th	7.0	2.3	0.7	0.5	0.5	0.3	0.5	0.2	0.2	0.4	0.8	0.4	17.2	5.9	4.5	0.5	1.9	11.3
12th	8.1	0.4	0.8	0.5	0.5	0.3	0.1	0.1	—	0.1	0.4	0.5	14.8	4.3	5.0	0.3	2.3	10.5
	Percentage who used by end of 10th grade																	
10th	19.7	2.8	2.2	1.5	1.8	0.7	100.0	0.4	0.5	0.6	1.5	0.9	34.1	18.7	7.4	1.0	4.8	23.0
12th	20.8	0.7	2.3	1.8	1.5	0.7	0.5	0.1	—	0.1	0.5	0.9	33.6	16.8	8.3	0.4	4.0	21.4

Source. The Monitoring the Future study, the University of Michigan.

Notes. For 8th and 10th graders only: Questions on marijuana, inhalants, cocaine, crack, cocaine other than crack, alcohol, been drunk, cigarettes, and daily cigarettes included on all surveys. Questions on vaping included in randomly-selected five-sixths of surveys. Questions on hallucinogens, LSD, hallucinogens other than LSD, heroin, amphetamines, tranquilizers, and smokeless tobacco included in randomly-selected one-half of surveys. Questions on ecstasy (MDMA) included in randomly-selected one-third of surveys.

For 12th graders only: Questions on marijuana daily for month or more, inhalants, crack, and ecstasy (MDMA) included in randomly-selected one-sixth of surveys. Questions on vaping included in randomly-selected two-thirds of surveys. Questions on any illicit drug, any illicit drug other than marijuana, marijuana, hallucinogens, LSD, hallucinogens other than LSD, cocaine, heroin, narcotics other than heroin, amphetamines, sedatives (barbiturates), tranquilizers, alcohol, been drunk, and smokeless tobacco included in randomly-selected one-third of surveys. Questions on cigarettes and daily cigarettes included in randomly-selected one-half of surveys.

Prevalence levels in these tables do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

§ Insufficient data for 2020 estimate.

[a]Unadjusted for underreporting of certain drugs. See text for details.

[b]Based on data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription amphetamines.

[c]Data based on the percentage of regular smokers (ever).

TABLE 6-5a
Trends in Noncontinuation Rates among 12th Graders
Who Ever Used Drug in Lifetime

Percentage who did not use in last 12 months

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Marijuana/Hashish	15.4	15.7	15.6	15.2	15.9	19.1	22.5	24.5	25.8	27.1	25.1	23.8	27.7	29.9	32.3	33.7	34.9	32.8	26.3	19.6	16.8	20.3	22.4	23.6
Inhalants	—	70.9	66.7	65.8	57.5	61.3	66.7	64.8	68.4	64.6	63.0	61.6	59.4	61.1	66.5	61.7	62.5	62.7	59.8	56.5	54.0	54.2	58.4	59.2
Hallucinogens [a]	31.3	37.7	36.7	32.9	29.8	30.1	32.3	35.2	38.7	39.3	38.8	38.1	37.9	38.2	40.4	37.2	39.6	35.9	32.1	33.3	26.8	27.9	35.1	36.2
LSD	36.3	41.8	43.9	35.1	30.5	30.1	33.7	36.5	39.3	41.3	41.3	37.5	38.1	37.7	41.0	37.9	40.9	34.9	34.0	34.3	28.2	30.2	38.2	39.7
Hallucinogens other than LSD [a]	33.3	42.1	38.4	37.1	36.4	36.7	38.5	41.3	43.8	42.4	44.6	47.4	40.7	48.8	48.8	48.8	45.9	48.5	43.6	36.7	29.6	35.3	38.7	35.2
Ecstasy (MDMA)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.6	42.0	37.9
Cocaine	37.8	38.1	33.3	30.2	22.1	21.7	24.8	28.1	29.6	28.0	24.3	24.9	32.2	34.7	36.9	43.6	55.1	49.2	45.9	39.0	33.3	31.0	36.8	38.7
Crack	—	—	—	—	—	—	—	—	—	—	—	—	27.8	35.4	34.0	45.7	51.6	42.3	42.3	36.7	30.0	36.4	38.5	43.2
Cocaine other than Crack	—	—	—	—	—	—	—	—	—	—	—	—	30.0	38.8	38.8	46.5	54.3	50.9	46.3	42.3	33.3	34.4	39.0	41.7
Heroin [b]	54.5	55.6	55.6	50.0	54.5	54.5	54.5	50.0	50.0	61.5	50.0	54.5	58.3	54.5	53.8	61.5	55.6	50.0	54.5	50.0	31.3	44.4	42.9	50.0
Narcotics other than Heroin [c,d]	36.7	40.6	37.9	39.4	38.6	35.7	41.6	44.8	45.7	46.4	42.2	42.2	42.4	46.5	47.0	45.8	47.0	45.9	43.8	42.4	34.7	34.2	36.1	35.7
Amphetamines [c,e]	27.4	30.1	29.1	25.3	24.4	21.2	19.3	27.2	33.5	36.6	39.7	42.7	43.5	44.9	43.5	48.0	46.8	48.9	44.4	40.1	39.2	37.9	38.2	38.4
Methamphetamine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	51.9	57.6	55.2	45.2	47.1	38.5	36.4	47.7	43.4
Sedatives (Barbiturates) [c,f]	36.7	40.7	40.4	40.9	36.4	38.2	41.6	46.6	47.5	50.5	50.0	50.0	51.4	52.2	49.2	50.0	45.2	49.1	46.0	41.4	36.5	35.5	37.0	36.8
Tranquilizers [c,g]	37.6	38.7	40.0	41.8	41.1	42.8	45.6	50.0	48.1	50.8	48.7	46.8	49.5	48.9	50.0	51.4	50.0	53.3	45.3	43.9	38.0	36.1	39.7	35.3
Alcohol [h]	6.2	6.7	5.9	5.8	5.3	5.7	6.0	6.5	5.7	7.1	7.2	7.4	7.0	7.3	8.8	9.9	11.7	12.2‡	9.1	9.2	8.7	8.5	8.4	8.7
Been Drunk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.4	20.7	20.6	17.8	16.9	16.0	17.1	16.7
Cigarettes [j]	50.1	48.5	49.2	51.3	53.4	57.0	58.6	57.1	57.1	57.9	56.2	56.2	56.2	56.7	56.4	54.4	55.1	55.1	51.7	49.6	47.7	46.4	44.1	46.3
Vaping Nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping Marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Smokeless Tobacco [j]	—	—	—	—	—	—	—	—	—	—	—	63.4	64.9	66.1	71.2	—	—	64.7	65.6	63.4	60.4	67.3	61.7	66.5
Steroids [i]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	36.7	41.4	33.3	47.6	40.0	45.8	34.8	26.3	41.7	37.0

(Table continued on next page.)

TABLE 6-5a (cont.)
Trends in Noncontinuation Rates among 12th Graders
Who Ever Used Drug in Lifetime

Percentage who did not use in last 12 months

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Marijuana/Hashish	23.9	25.2	24.5	24.3	24.3	24.9	25.0	25.6	24.1	24.0	21.9	20.5	20.1	19.5	20.0	20.9	21.8	20.0	17.6	17.6	18.4	19.4	20.8	19.7	20.3
Inhalants	63.6	58.5	65.4	61.5	65.2	61.5	55.6	59.4	65.1	62.0	63.8	59.7	60.8	63.6	63.7	70.1	66.6	67.0	68.8	63.9	64.1	70.5	64.6	69.1	68.2
Hallucinogens [a]	31.4	37.7‡	34.4	45.0	44.3	36.1	38.2	41.3	35.4	32.3	36.7	35.9	38.0	36.5	41.4	36.9	34.5	35.4	33.9	35.0	34.0	29.0	42.6	37.7	34.4
LSD [a]	33.6	40.5	39.4	58.3	67.8	52.2	48.8	49.0	38.6	31.4	40.9	35.6	33.0	37.5	44.5	33.3	32.5	38.7	33.6	37.7	35.8	33.8	48.7	44.3	61.3
Hallucinogens other than LSD [a]	35.8	36.2‡	37.1	41.3	40.0	35.6	38.6	41.4	37.5	35.3	37.7	38.1	41.4	38.7	42.2	40.3	39.5	42.2	38.8	39.6	37.1	40.6	45.6	39.4	31.4
Ecstasy (MDMA)	30.0	25.5	21.4	29.5	45.8	46.7	44.0	36.8	30.2	30.3	34.8	38.8	33.7	47.5	43.7	35.7‡	39.3	45.4	47.2	46.4	34.3	48.5	59.3	53.7	57.8
Cocaine	36.7	41.9	41.5	35.9	37.7	34.6	36.8	32.6	33.0	39.6	44.2	46.2	44.7	43.9	41.8	38.4	36.9	38.2	34.5	40.1	40.7	30.7	51.5	39.2	54.5
Crack	41.3	43.6	43.2	39.5	38.9	41.0	43.9	41.7	40.1	43.2	45.4	42.1	45.4	42.5	41.6	37.5	38.6	41.9	39.4	39.5	37.0	25.9	51.5	27.3	39.2
Cocaine other than Crack	34.1	41.6	40.5	37.1	37.3	35.6	36.6	34.6	34.3	38.0	44.1	49.0	46.0	46.2	43.5	42.0	36.9	37.7	34.2	41.5	42.0	27.1	57.4	31.6	61.9
Heroin [b]	45.0	37.5	50.0	41.2	46.7	40.0	43.9	45.6	39.9	43.1	39.8	45.1	46.4	41.3	42.9	38.9	40.6	55.7	42.2	53.3	37.1	†	72.7	†	†
Narcotics other than Heroin [c,d]	34.3	34.0	32.3‡	30.7	29.5	29.6	29.4	32.5	30.1	30.8	30.2	33.2	33.0	35.4	36.3	36.0	36.5	38.9	37.8	43.6	49.3	60.3	57.5	48.1	58.1
Amphetamines [c,e]	37.4	32.7	32.7	33.9	31.3	33.3	34.5	35.1	34.7	35.8	32.9	33.7	33.2	34.3‡	29.3	32.7	28.8	33.1	36.1	36.5	41.9	42.1	52.4	46.9	51.1
Methamphetamine	42.7	45.6	43.5	46.3	48.4	45.2	43.3	43.5	44.3	55.6	50.0	53.7	34.1	37.9	38.6	50.5	42.8	†	†	†	†	†	†	†	†
Crystal Methamphetamine (Ice)	60.4	45.0	39.0	36.2	48.7	47.5	41.9	46.0	52.0	62.6	54.0	50.9	45.1	49.1	43.0	39.9	54.4	†	†	†	†	†	†	†	†
Sedatives (Barbiturates) [c,f]	34.8	32.6	34.5	29.5	31.8	34.3	31.8	35.7	33.3	31.5	36.2	35.5	38.4	34.8	36.0	37.6	38.2	41.6	34.8	37.0	41.4	45.0	48.7	43.6	48.9
Tranquilizers [c,g]	37.6	36.0‡	29.3	32.5	34.3	31.1	31.5	35.5	35.2	30.4	32.5	34.5	35.5	37.1	39.4	36.0	31.7	36.1	37.8	41.5	45.3	55.0	61.9	52.7	63.5
Alcohol [h]	7.8	8.8	8.0	8.8	8.5	8.1	8.7	8.5	8.0	9.0	8.5	8.2	9.3	8.5	9.2	8.8	9.0	9.2	9.4	8.9	11.0	10.1	14.1	15.8	13.3
Been Drunk	14.6	16.9	16.7	18.2	17.4	14.1	17.0	15.1	16.3	16.7	16.7	18.6	17.4	17.0	16.9	16.8	19.5	19.3	21.5	21.0	19.5	11.4	26.1	19.3	23.3
Cigarettes [j]	46.4	49.7	51.6	53.3	54.5	52.6	53.5	54.2	53.2	54.3	53.7	54.5	53.2	56.5	57.3	60.4	63.3	62.8	63.7	67.9	74.2	68.8	76.9	76.4	80.5
Vaping Nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.7	12.6	13.5	22.1	31.3	29.6	30.9
Vaping Marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	19.8	16.2	12.2	20.9	28.8	25.1	23.0
Smokeless Tobacco [j]	64.4	67.0	60.3	64.6	61.1	60.3	56.7	60.2	56.4	58.1	48.7	51.5	50.9	54.6	52.8	44.3	53.2	53.2	54.7	58.8	64.5	§	74.3	68.8	68.3
Steroids [i]	37.9	32.0	35.1	37.5	40.0	26.5	44.2	35.6	35.5	31.5	32.3	27.1	32.5	30.2	31.5	23.7	27.1	37.0	35.5	28.9	33.7	†	38.7	†	†

(Table continued on next page.)

TABLE 6-5a (cont.)
Trends in Noncontinuation Rates among 12th Graders
Who Ever Used Drug in Lifetime

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' † ' indicates that the cell entry was omitted because it was based on fewer than 50 twelfth graders who ever used drug in lifetime. All other cells are based on more than 50 cases. ' ‡ ' indicates that the question changed in the following year. See relevant footnote for that drug.

§This estimate is not presented in 2020 due to small sample size. The survey question for this estimate appears on a randomly-selected 1/6 of the questionnaires, and the number of responses is uniquely small in 2020 when the COVID-19 pandemic halted MTF data collection prematurely and the resulting sample size was only 25% of the target.

[a]In 2001 the question text was changed in half of the questionnaire forms. Other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms. Data for hallucinogens are also affected by these changes and have been handled in a parallel manner. Beginning in 2014 hallucinogens, LSD and hallucinogens other than LSD were based on five of six forms.

[b]In 1995, the heroin question was changed in three of six forms. Separate questions were asked for use with and without injection. Data presented here represent the combined data from all forms.

[c]Only drug use not under a doctor's orders is included here.

[d]In 2002 the question text was changed in half of the questionnaire forms. In the list of examples of narcotics other than heroin, Talwin, laudanum, and paregoric were replaced with Vicodin, OxyContin, and Percocet. The 2002 data are based on the changed forms only. In 2003, the remaining forms were changed to the new wording. Beginning in 2003, the data are based on all forms. In 2013 the list of examples was changed on one form: MS Contin, Roxycodone, Hydrocodone (Lortab, Lorcet, Norco), Suboxone, Tylox, and Tramadol were added to the list. An examination of the data did not show any effect from the wording change.

[e]In 2009, the question text was changed slightly in half of the questionnaire forms. An examination of the data did not show any effect from the wording change. The remaining forms where changed in 2010. In 2011 the introduction to the question was changed slightly in one of six forms. An examination of the data did not show any effect from the wording change. In 2013 the question wording was chanaged in three of the questionnaires. The new wording in 2013 asked "On how many occasions (if any) have you taken amphetamines or other prescription stimulant drugs…" In contrast, the old wording did not include the text highlighted in red. Results in 2013 indicated higher prevalence in questionnaires with the new as compared to the old wording; it was 21% higher in 12th grade. 2013 data are based on the changed forms only; *N* is one half of *N* indicated. In 2014 all questionnaires included the new, updated wording.

[f]For 12th graders only: In 2004 the question text was changed in half of the questionnaire forms. Barbiturates was changed to sedatives, including barbiturates. Goofballs, yellows, reds, blues, and rainbows were deleted from the list of examples; Phenobarbital, Tuinal, Nembutal, and Seconal were added. An examination of the data did not show any effect from the wording change. In 2005 the remaining forms were changed in a like manner. In 2013 the question text was changed in all forms: Tuinal, Nembutal, and Seconal were replaced with Ambien, Lunesta, and Sonata. In one form the list of examples was also changed: Tuinal was dropped from the list and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added. An examination of the data did not show any effect from the wording change.

[g]In 2001, for the tranquilizer list of examples, Miltown was replaced with Xanax in half of the questionnaire forms. The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms.

[h]In 1993, the question text was changed slightly in half of the questionnaire forms to indicate that a drink meant more than a few sips. The 1993 data are based on the changed forms only. In 1994 the remaining forms were changed to the new wording. Beginning in 1994, the data are based on all forms. In 2004, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2005.

[i]In 2006, the question text was changed slightly in one of the questionnaire forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2007. In 2008 the question text was changed slightly. An examination of the data did not show any effect from the wording change. In 2009 the remaining forms were changed.

[j]Numbers presented here represent percent of lifetime users who have not used in the past 30 days.

TABLE 6-5b
Trends in Noncontinuation Rates among 12th Graders
Who Used Drug 10 or More Times in Lifetime

Percentage who did not use in last 12 months

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Marijuana/Hashish	4.0	4.0	4.1	3.7	4.6	5.4	7.2	7.6	8.3	8.8	7.8	7.9	9.2	9.9	10.6	12.3	10.5	10.9	7.8	5.0	4.7	6.6	7.7	8.2
Inhalants [a]	—	48.9	42.6	34.6	23.8	25.2	23.8	27.2	23.1	23.4	25.8	15.3	21.1	21.5	25.9	24.0	23.7	28.6	21.8	26.4	21.6	24.8	25.2	28.0
Hallucinogens [b]	10.8	16.1	15.2	10.8	8.1	8.4	7.7	7.5	13.0	14.1	12.2	11.1	11.9	16.6	21.8	16.5	17.4	11.5	12.1	14.3	10.6	9.0	12.2	16.4
LSD [b,c]	15.2	17.3	18.0	12.2	7.4	6.4	7.1	7.5	15.3	12.1	12.6	12.2	11.5	16.0	21.2	16.0	18.5	11.4	11.9	15.3	11.5	10.5	16.8	20.3
Hallucinogens other than LSD [b]	—	16.6	14.4	13.3	11.5	13.1	7.7	8.2	8.5	14.5	13.7	16.0	15.8	20.1	19.5	22.6	29.3	19.6	16.2	16.0	10.1	15.5	15.9	17.5
Ecstasy (MDMA) [d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†	†	†
Cocaine	7.7	8.2	6.2	3.8	3.1	3.1	3.1	2.9	6.2	3.1	2.5	3.5	7.6	11.4	11.3	19.6	25.3	20.2	14.1	22.9	9.6	8.8	12.0	12.4
Crack [e]	—	—	—	—	—	—	—	—	—	—	—	—	13.4	2.1	5.2	26.2	31.1	15.3	16.4	16.8	6.3	8.3	17.4	19.5
Cocaine other than Crack	—	—	—	—	—	—	—	—	—	—	—	—	10.2	6.1	16.2	18.5	24.3	23.2	14.7	24.1	15.5	13.9	14.6	17.1
Heroin [f]	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
Narcotics other than Heroin [g,h]	9.6	11.6	9.7	9.9	8.7	10.8	10.1	13.5	16.4	15.4	12.2	13.8	15.6	19.3	15.2	15.9	16.1	16.8	16.7	16.8	12.6	11.5	10.1	12.4
Amphetamines [g,i]	8.0	9.8	7.6	7.4	6.1	4.1	4.4	8.4	10.7	12.7	17.5	17.6	17.5	16.0	17.4	18.1	17.2	19.8	13.5	13.8	11.9	10.2	10.8	15.0
Methamphetamine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Crystal Methamphetamine (Ice) [j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†	†	†	†	†	†	†	†	†
Sedatives (Barbiturates) [g,k]	13.4	16.5	12.9	13.5	11.2	11.7	8.9	12.6	17.7	22.8	20.6	19.7	20.7	23.4	18.0	19.8	19.7	23.4	11.0	14.9	10.9	8.3	11.1	12.5
Tranquilizers [g,l]	12.0	13.0	11.1	14.4	14.1	14.3	16.3	16.0	14.8	18.8	19.2	15.0	17.1	15.8	11.7	19.3	13.1	21.0	6.7	13.8	6.2	6.9	13.9	13.6
Alcohol [m]	0.6	0.8	0.6	0.9	0.7	0.8	1.0	0.9	0.9	1.1	1.2	1.0	1.1	1.2	1.5	1.9	1.9	2.3‡	2.5	2.1	2.0	1.6	1.9	1.9
Been Drunk	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.3	4.1	4.6	3.3	2.8	2.1	3.6	2.8
Cigarettes [o]	16.0	16.7	16.2	17.9	19.6	21.4	20.8	19.1	18.6	18.5	15.9	17.0	17.1	18.2	18.5	18.2	17.4	18.6	16.9	15.9	14.6	13.5	13.1	14.3
Smokeless Tobacco [o]	—	—	—	—	—	—	—	—	—	—	—	21.8	18.4	25.7	26.2	—	—	29.6	25.5	33.1	26.5	27.3	26.2	17.9
Steroids [n]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	†	†	†	†	†	†	†	†	†	†

(Table continued on next page.)

TABLE 6-5b (cont.)
Trends in Noncontinuation Rates among 12th Graders
Who Used Drug 10 or More Times in Lifetime

Percentage who did not use in last 12 months

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Marijuana/Hashish	8.5	9.0	8.7	9.4	8.4	8.9	8.8	9.2	8.8	7.2	7.7	7.7	6.4	6.6	6.8	7.1	6.6	7.0	4.2	4.2	5.1	5.9	5.1	5.8	4.9
Inhalants [a]	27.8	23.0	30.8	25.7	23.8	30.1	12.2	26.3	24.8	19.3	20.7	26.4	23.2	24.4	31.7	33.8	20.7	†	†	41.7	†	†	†	†	†
Hallucinogens [b]	12.8	12.9‡	12.3	20.0	21.5	12.1	14.3	19.1	13.3	7.3	13.1	12.7	5.4	8.8	14.6	16.6	9.9	4.4	7.4	10.6	7.5	†	39.3	11.3	6.3
LSD [c]	14.3	15.7	14.6	28.6	47.8	23.0	16.3	23.4	14.9	5.9	15.8	11.6	4.8	5.5	8.0	7.9	10.6	†	15.2	3.6	13.7	†	47.8	14.2	†
Hallucinogens other than LSD [b]	13.4	6.2‡	10.8	11.0	18.4	9.7	13.1	17.7	15.3	7.7	15.7	12.9	7.6	8.7	15.2	21.6	12.5	†	8.4	6.5	11.7	†	61.3	†	†
Ecstasy (MDMA) [d]	†	†	2.5	8.3	33.2	17.7	12.2	†	18.9	6.8	7.7	18.2	15.5	15.4	†‡	7.8	7.8	†	†	†	†	†	†	†	†
Cocaine	12.3	18.1	15.6	11.3	11.8	13.2	10.5	11.9	15.0	14.7	16.3	20.1	21.9	14.9	18.0	11.4	17.8	14.3	11.9	11.7	10.2	†	9.6	4.9	†
Crack [e]	16.0	13.5	7.1	10.9	12.1	13.7	7.5	18.5	18.4	17.9	14.6	21.9	19.9	15.2	13.2	8.7	17.4	†	†	†	7.2	†	†	†	†
Cocaine other than Crack	13.1	22.5	14.9	11.7	11.0	15.6	12.4	14.5	11.8	17.5	18.4	19.5	24.8	14.8	17.6	13.5	†	†	15.6	13.6	12.0	†	†	†	†
Heroin [f]	†	†	†	†	†	†	†	†	†	†	13.5	21.4	14.5	25.5	†	†	†	†	†	†	†	†	†	†	†
Narcotics other than Heroin [g,h]	12.2	10.8	9.7‡	8.3	9.2	8.2	8.4	12.2	9.0	9.0	11.1	12.4	9.2	14.2	14.5	13.8	11.5	19.2	16.2	20.3	22.1	†	†	39.8	†
Amphetamines [g,i]	12.7	11.2	7.7	10.0	8.9	12.9	13.0	11.3	13.8	17.7	13.3	11.2	17.2	16.3‡	9.7	11.9	11.8	13.6	13.4	18.2	21.3	25.9	42.4	52.4	27.8
Methamphetamine	12.4	22.8	19.2	23.9	29.1	13.5	21.5	16.9	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†	†
Crystal Methamphetamine (Ice) [j]	†	†	†	11.2	†	23.1	†	†	†	†	†	†	†	†	†	†	†	†	20.0	†	†	†	†	†	†
Sedatives (Barbiturates) [g,k]	10.7	7.0	5.6	5.7	6.9	8.5	10.4	11.4	11.9	10.0	11.6	10.3	16.8	10.4	12.2	9.4	14.9	10.6	9.8	10.4	17.3	†	15.5	10.0	†
Tranquilizers [g,l]	9.9	5.3‡	8.1	5.8	11.2	7.9	9.8	12.3	10.7	8.7	8.8	10.6	14.4	12.9	15.7	18.1	10.2	14.0	13.6	14.4	19.8	†	34.4	28.1	†
Alcohol [m]	1.7	1.7	1.3	1.9	1.5	1.3	1.6	1.4	1.2	1.5	1.6	1.6	1.8	1.4	1.7	1.5	1.5	1.2	1.3	1.2	1.6	2.5	2.1	1.7	1.5
Been Drunk	1.8	2.6	2.3	2.0	2.9	2.1	2.9	3.1	2.2	2.6	2.9	3.0	2.4	2.0	2.0	2.4	2.3	2.4	1.7	2.8	2.7	5.0	3.9	4.0	4.2
Cigarettes [o]	16.1	16.3	17.5	17.3	17.2	15.9	16.7	18.9	17.9	17.9	17.8	18.3	20.0	20.4	21.4	22.8	22.1	24.0	24.0	29.8	42.6	32.2	36.0	37.6	56.1
Smokeless Tobacco [o]	20.7	15.1	18.9	20.4	16.2	15.3	15.4	25.1	17.4	16.0	15.6	14.8	18.2	17.6	15.3	7.5	13.9	15.6	22.0	32.2	†	†	35.2	†	†
Steroids [n]	†	†	†	†	†	†	†	11.9	†	†	†	0.0	†	†	†	†	†	†	†	†	†	†	†	†	†

(Table continued on next page.)

TABLE 6-5b (cont.)
Trends in Noncontinuation Rates among 12th Graders
Who Used Drug 10 or More Times in Lifetime

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' † ' indicates that the cell entry was omitted because it was based on fewer than 50 twelfth graders who used 10 or more times. All other cells are based on more than 50 cases. ' ‡ ' indicates that the question changed in the following year. See relevant footnote for that drug.

[a]Inhalants are unadjusted for underreporting of amyl and butyl nitrites.

[b]In 2001 the question text was changed in half of the questionnaire forms. Other psychedelics was changed to other hallucinogens, and shrooms was added to the list of examples. The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms. Data for hallucinogens are also affected by these changes and have been handled in a parallel manner. Hallucinogens are unadjusted for underreporting of PCP. Beginning in 2014 hallucinogens, LSD and hallucinogens other than LSD were based on five of six forms.

[c]Based on 55 cases in 2009.

[d]Based on 54 cases in 2005, 55 cases in 2009, 56 cases in 2010, and 57 cases in 2012.

[e]Based on 85 cases in 1987, 54 cases in 1988, and 56 cases in 1989. Crack was included in all six questionnaire forms beginning in 1990. Based on 56 cases in 2013.

[f]In 1995, the heroin question was changed in three of six forms. Separate questions were asked for use with and without injection. Data presented here represent the combined data from all forms. Based on 54 cases in 2009.

[g]Only drug use not under a doctor's orders is included here.

[h]In 2002 the question text was changed in half of the questionnaire forms. In the list of examples of narcotics other than heroin, Talwin, laudanum, and paregoric were replaced with Vicodin, OxyContin, and Percocet. The 2002 data are based on the changed forms only. In 2003, the remaining forms were changed to the new wording. Beginning in 2003, the data are based on all forms. In 2013 the list of examples was changed on one form: MS Contin, Roxycodone, Hydrocodone (Lortab, Lorcet, Norco), Suboxone, Tylox, and Tramadol were added to the list. An examination of the data did not show any effect from the wording change.

[i]In 2009, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. In 2010 the remaining forms. were changed. In 2011 the introduction to the question was changed slightly in one of six forms. An examination of the data did not show any effect from the wording change. In 2013 the question wording was chanaged in three of the questionnaires. The new wording in 2013 asked "On how many occasions (if any) have you taken amphetamines or other prescription stimulant drugs…" In contrast, the old wording did not include the text highlighted in red. Results in 2013 indicated higher prevalence in questionnaires with the new as compared to the old wording; it was 21% higher in 12th grade. 2013 data are based on the changed forms only; *N* is one half of *N* indicated. In 2014 all questionnaires included the new, updated wording.

[j]Based on 55 cases in 2002 and 56 cases in 2004.

[k]For 12th graders only: In 2004 the question text was changed in half of the questionnaire forms. Barbiturates was changed to sedatives, including barbiturates. Goofballs, yellows, reds, blues, and rainbows were deleted from the list of examples; Phenobarbital, Tuinal, Nembutal, and Seconal were added. An examination of the data did not show any effect from the wording change. In 2005 the remaining forms were changed in a like manner. In 2013 the question text was changed in all forms: Tuinal, Nembutal, and Seconal were replaced with Ambien, Lunesta, and Sonata. In one form the list of examples was also changed: Tuinal was dropped from the list and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added. An examination of the data did not show any effect from the wording change.

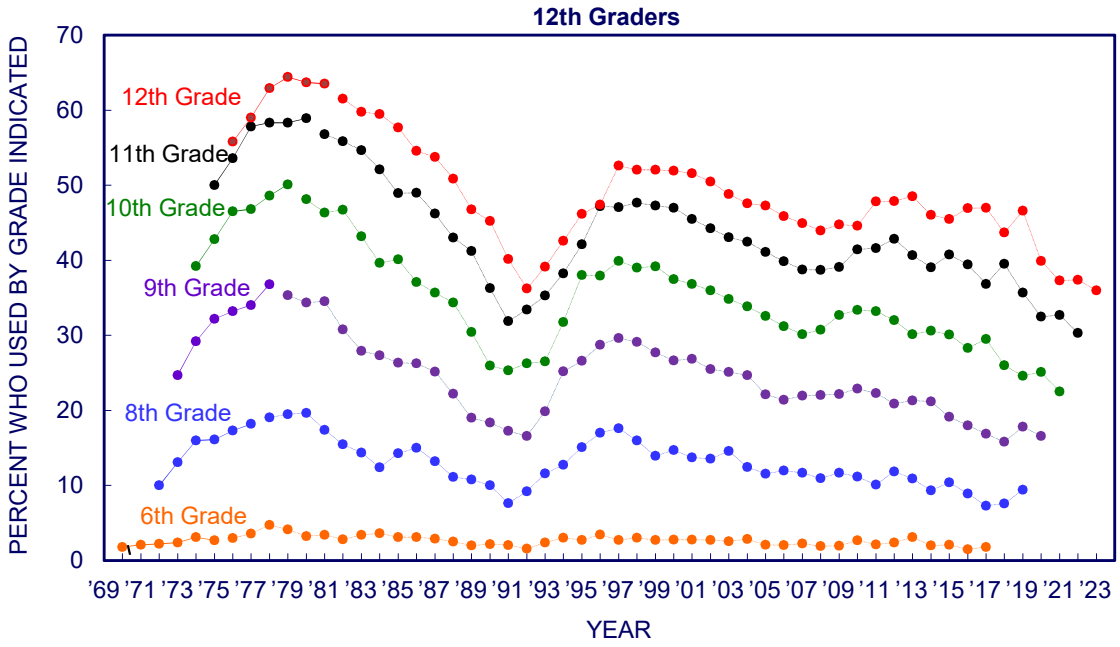
[l]In 2001, for the tranquilizer list of examples, Miltown was replaced with Xanax in half of the questionnaire forms. The 2001 data are based on the changed forms only. In 2002 the remaining forms were changed. Beginning in 2002, the data are based on all forms.

[m]In 1993, the question text was changed slightly in half of the questionnaire forms to indicate that a drink meant more than a few sips. The 1993 data are based on the changed forms only. In 1994 the remaining forms were changed to the new wording. Beginning in 1994, the data are based on all forms. In 2004, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2005.

[n]In 2006, the question text was changed slightly in one of the questionnaire forms. An examination of the data did not show any effect from the wording change. Based on 62 cases in 2006. The remaining forms were changed in 2007. In 2008 the question text was changed slightly. An examination of the data did not show any effect from the wording change. In 2009 the remaining forms were changed in a like manner. Based on 51 cases in 2010.

[o]Percentage of regular users (ever) who did not use at all in the last 30 days.

FIGURE 6-1
Any Illicit Drug
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th Graders

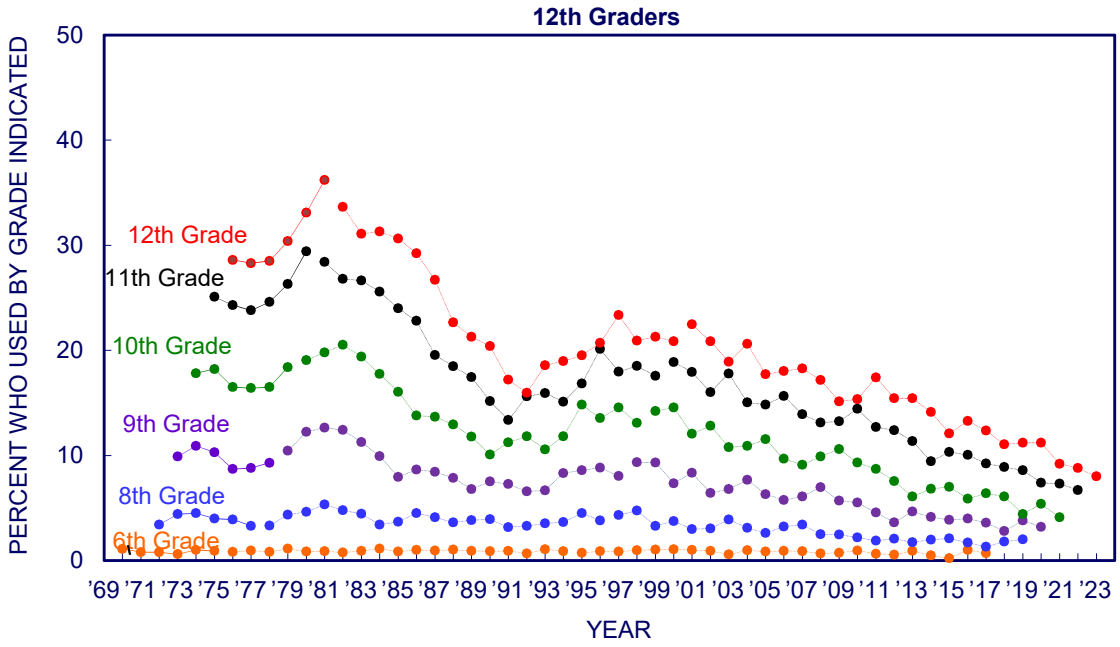


Source. The Monitoring the Future study, the University of Michigan.

Notes. The dashed lines connect percentages that result if nonprescription stimulants are excluded. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-2
Any Illicit Drug other than Marijuana
Trends in Lifetime Prevalence for Earlier Grade Levels*
based on Retrospective Reports from 12th Graders



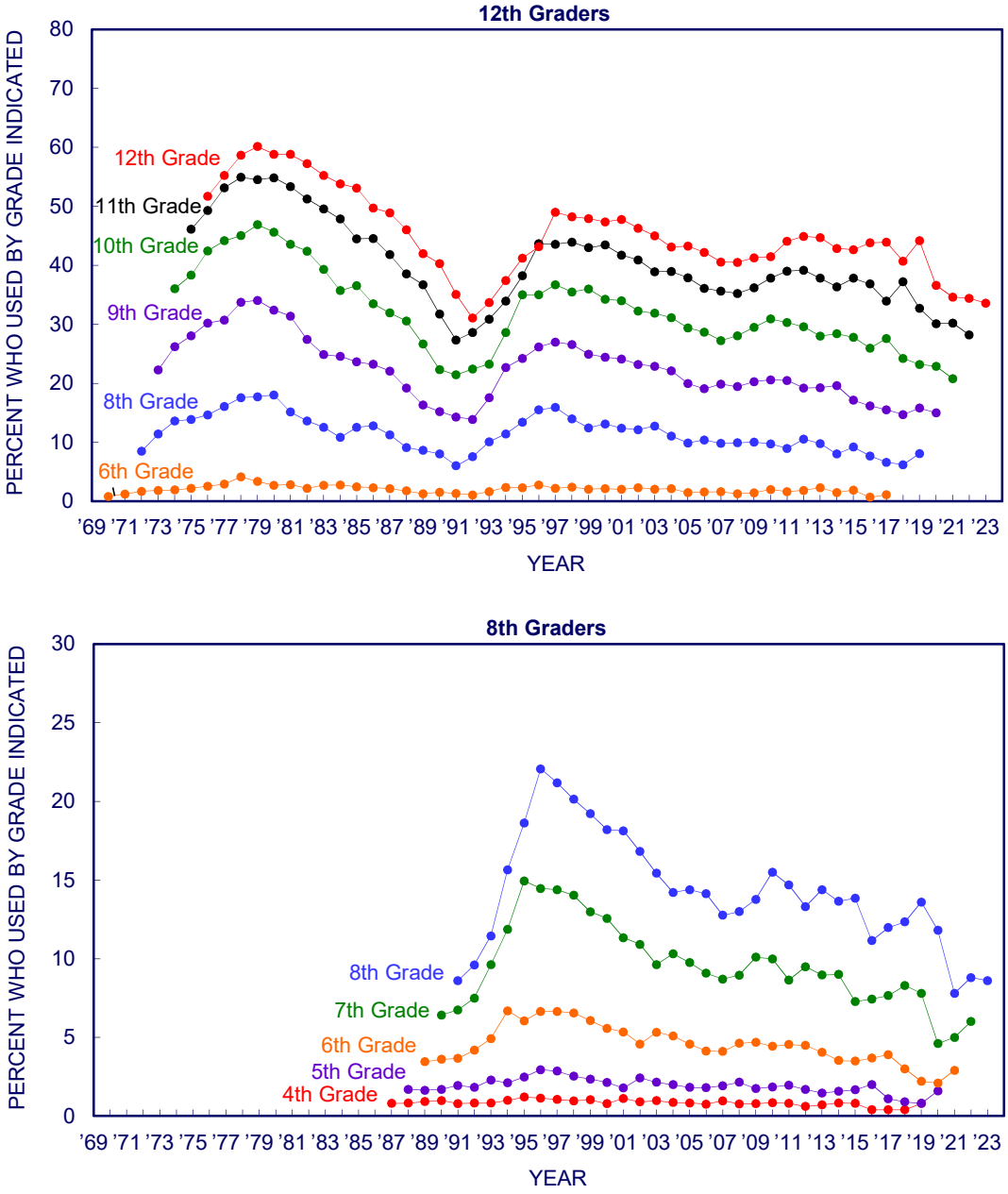
Source. The Monitoring the Future study, the University of Michigan.

Notes. The dashed lines connect percentages that result if nonprescription stimulants are excluded. Beginning in 2001, revised sets of questions on other hallucinogens use were introduced. Data for any illicit drug other than marijuana are affected by these changes.

Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-3
Marijuana
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th and 8th Graders

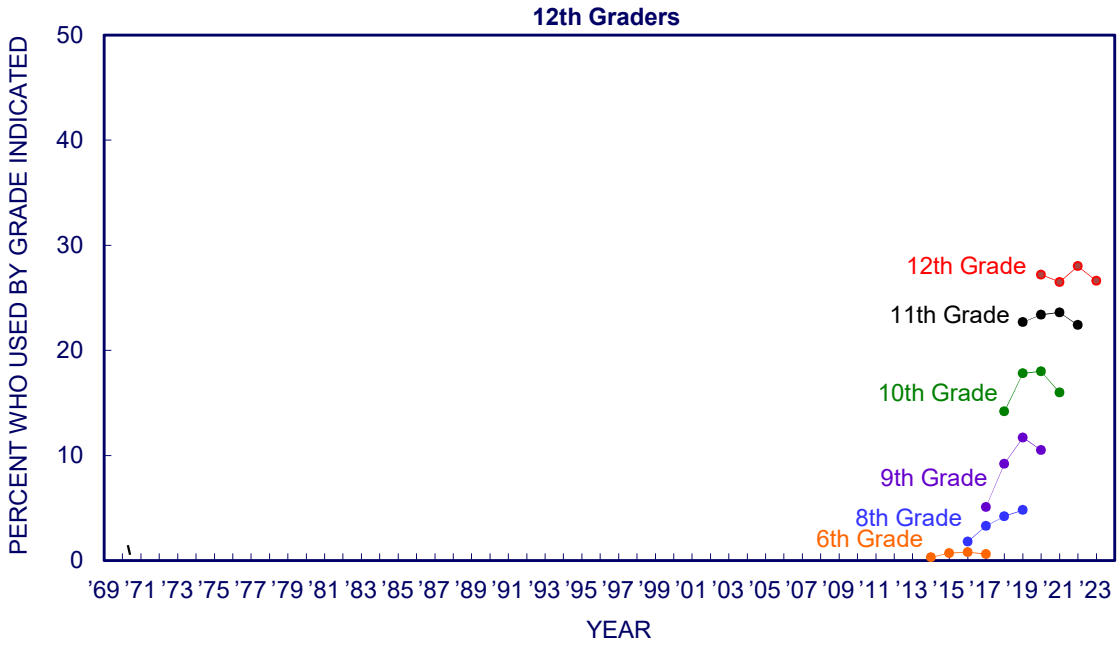


Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-4
Vaping Marijuana
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th Graders

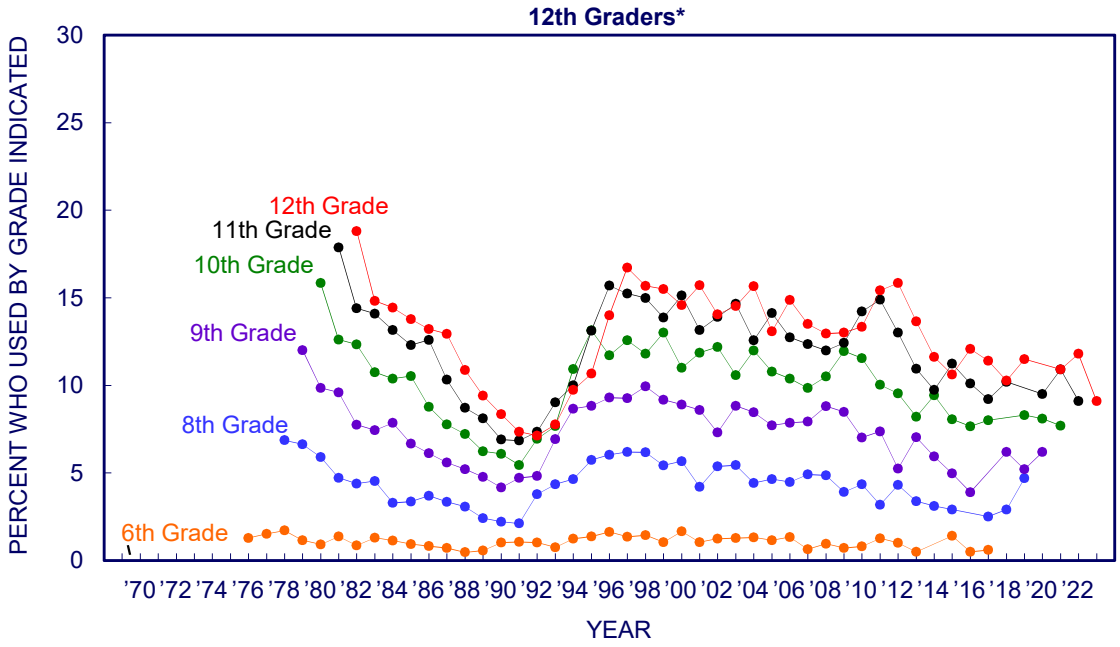


Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-5
Daily Marijuana Use for a Month or More
Trends in Lifetime Prevalence for Earlier Grade Levels based on Retrospective Reports from 12th Graders

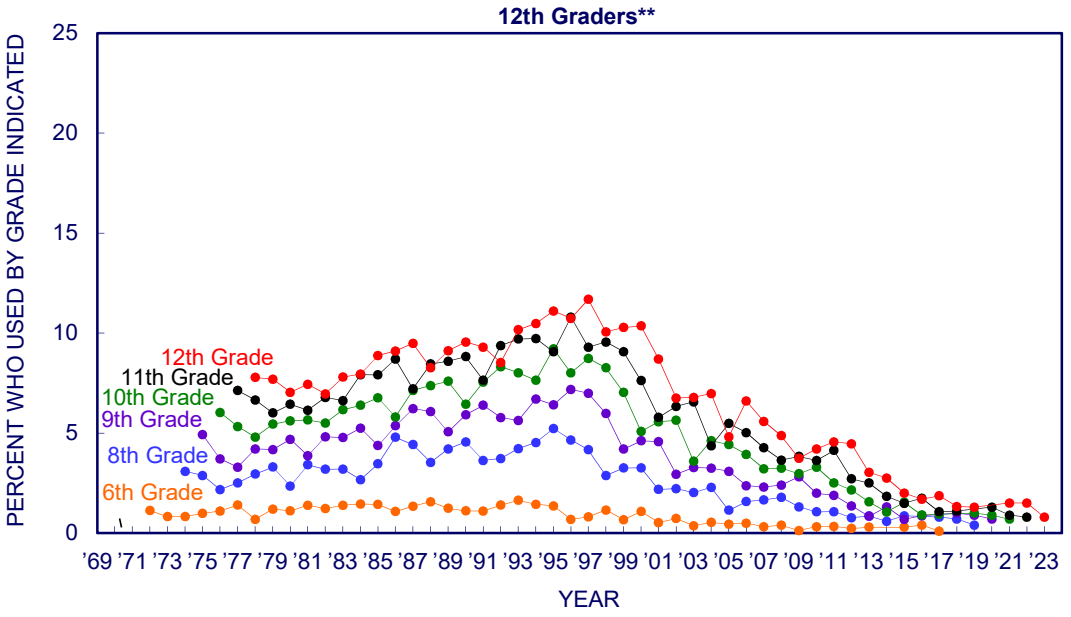


Source. The Monitoring the Future study, the University of Michigan.

Notes. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*These estimates not presented in 2020 due to insufficient data.

FIGURE 6-6
Inhalants
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th and 8th Graders



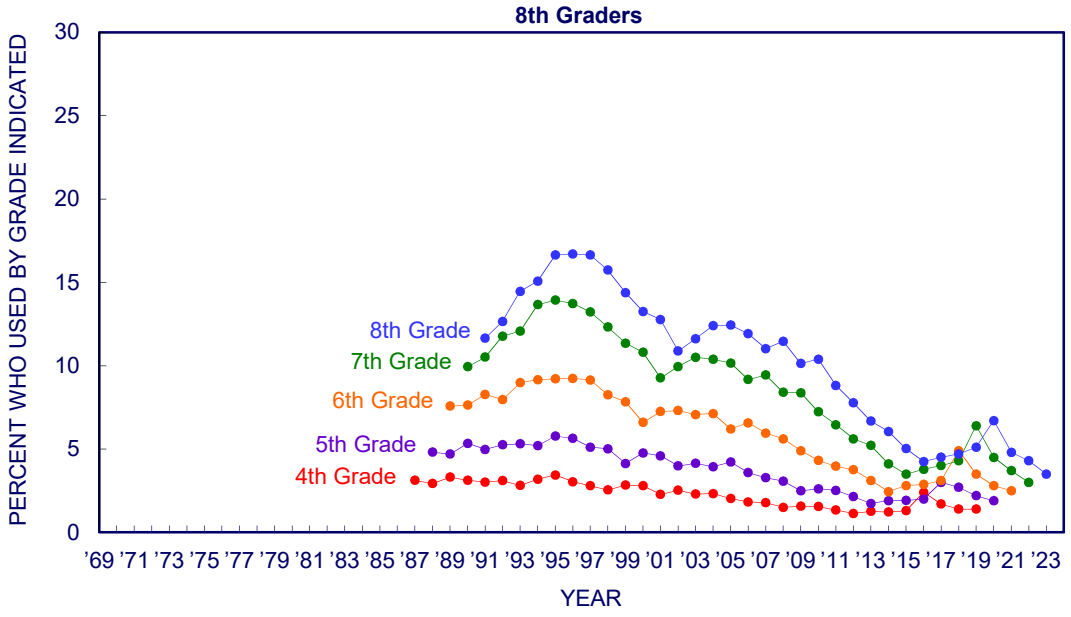


FIGURE 6-6 (cont.)

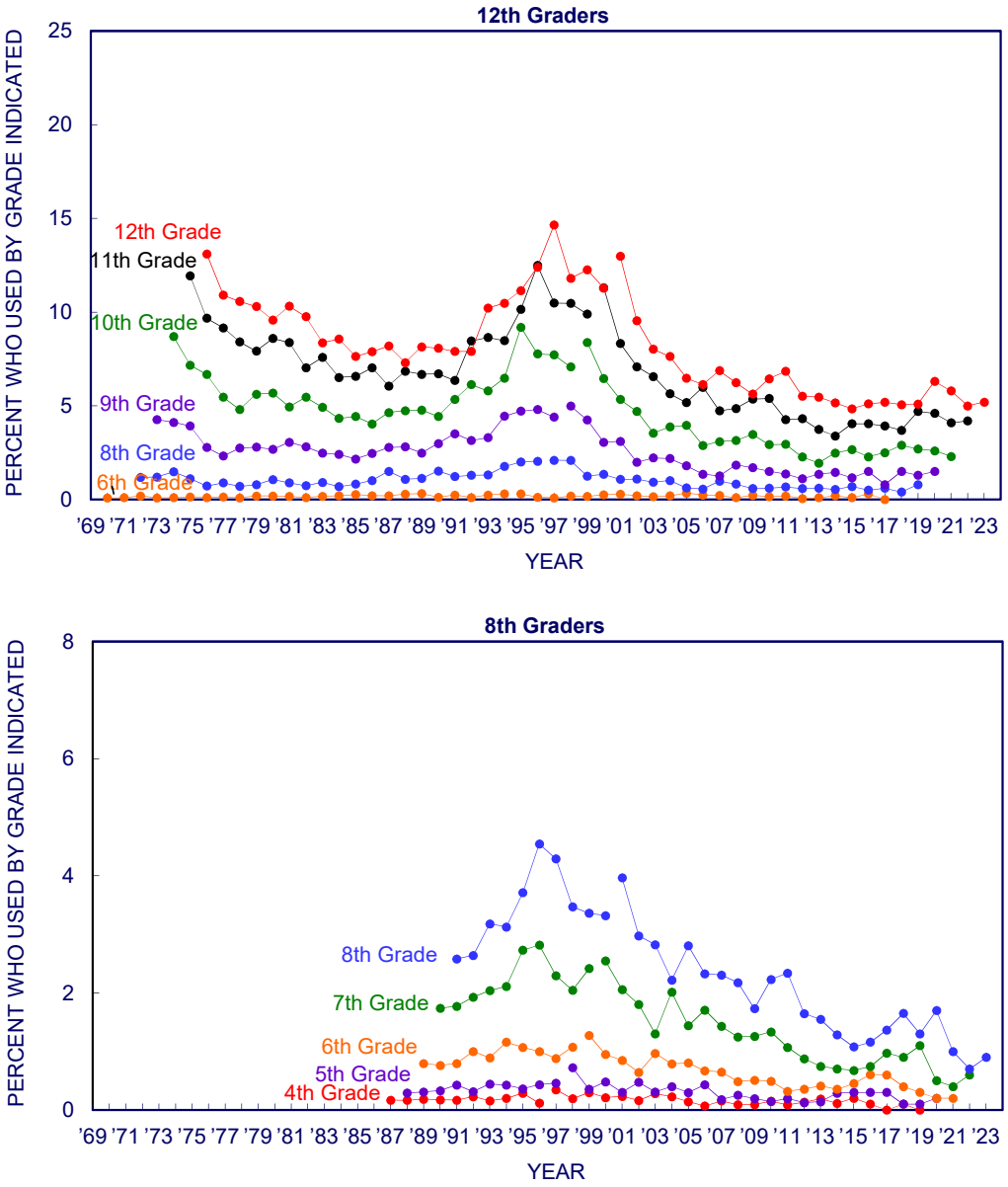
Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

**These estimates not presented in 2020 due to insufficient data.

FIGURE 6-7
Hallucinogens
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th and 8th Graders



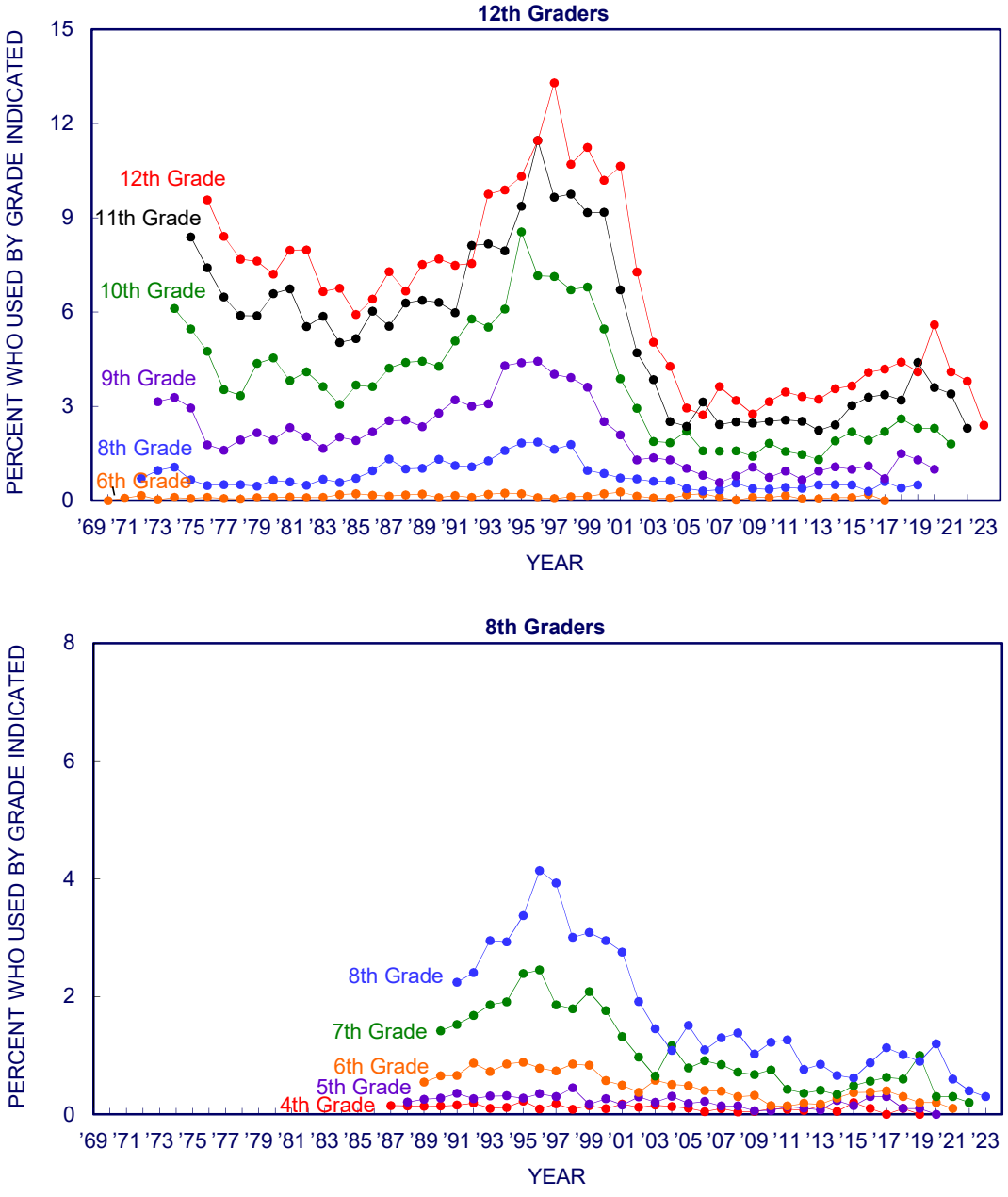
Source. The Monitoring the Future study, the University of Michigan.

Notes. Beginning in 2001, revised sets of questions on other hallucinogens use were introduced. Data for hallucinogens are affected by these changes.

Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-8
LSD
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th and 8th Graders

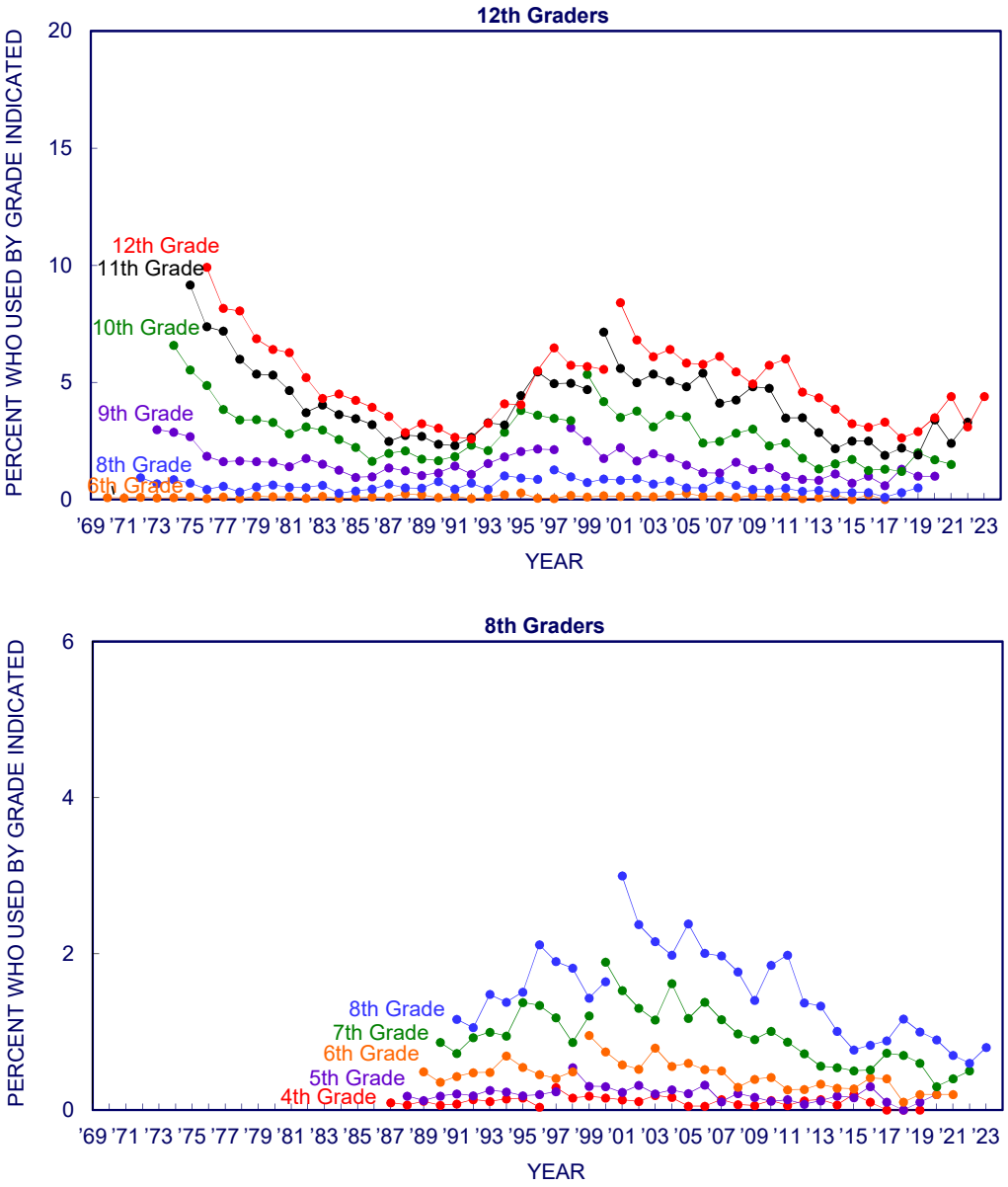


Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-9
Hallucinogens other than LSD
Trends in Lifetime Prevalence for Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders

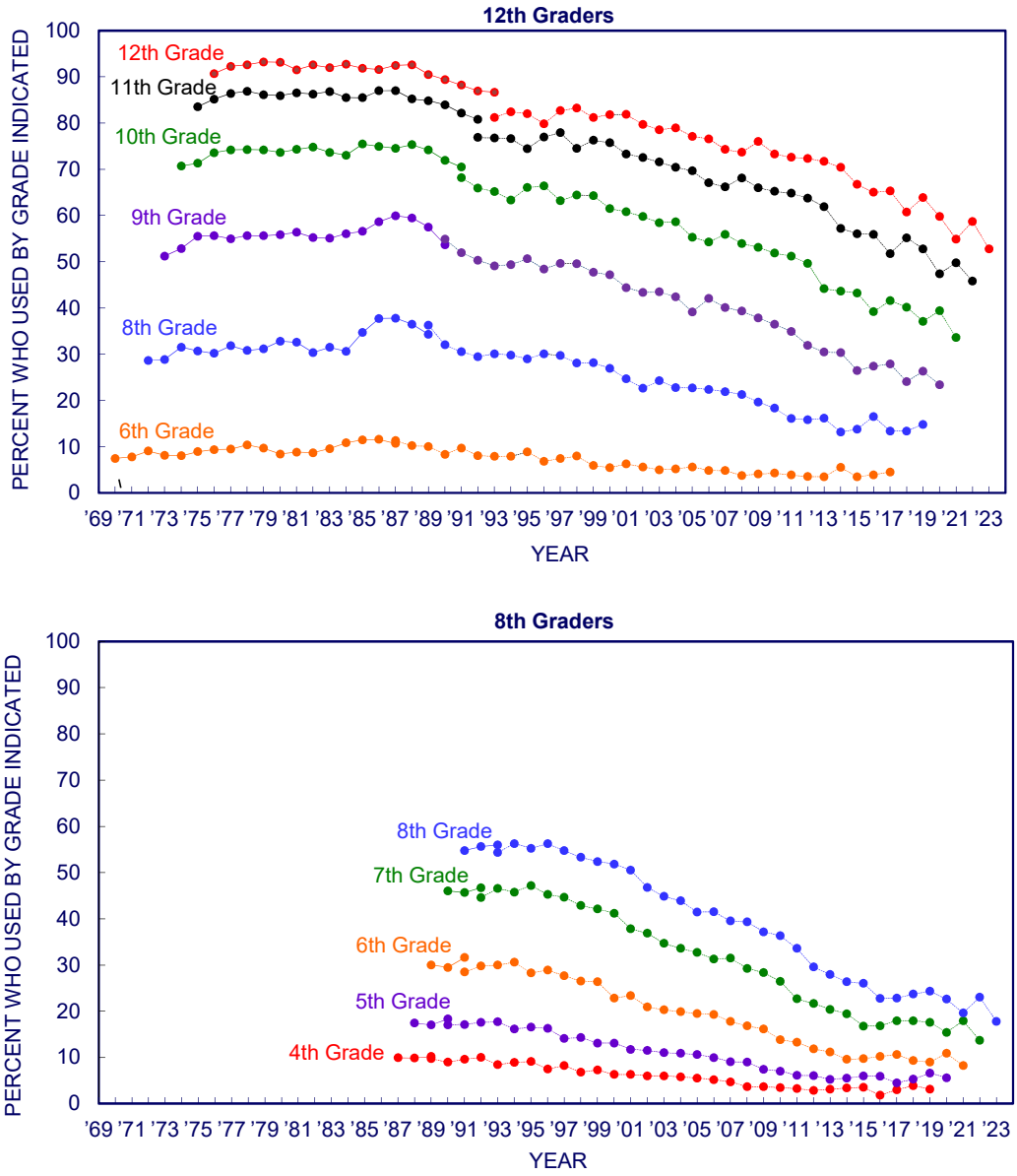


Source. The Monitoring the Future study, the University of Michigan.

Notes. Beginning in 2001, revised sets of questions on other hallucinogens use were introduced, in which other psychedelics was replaced with other hallucinogens and shrooms was added to the list of examples. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-10
Alcohol
Trends in Lifetime Prevalence for Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders



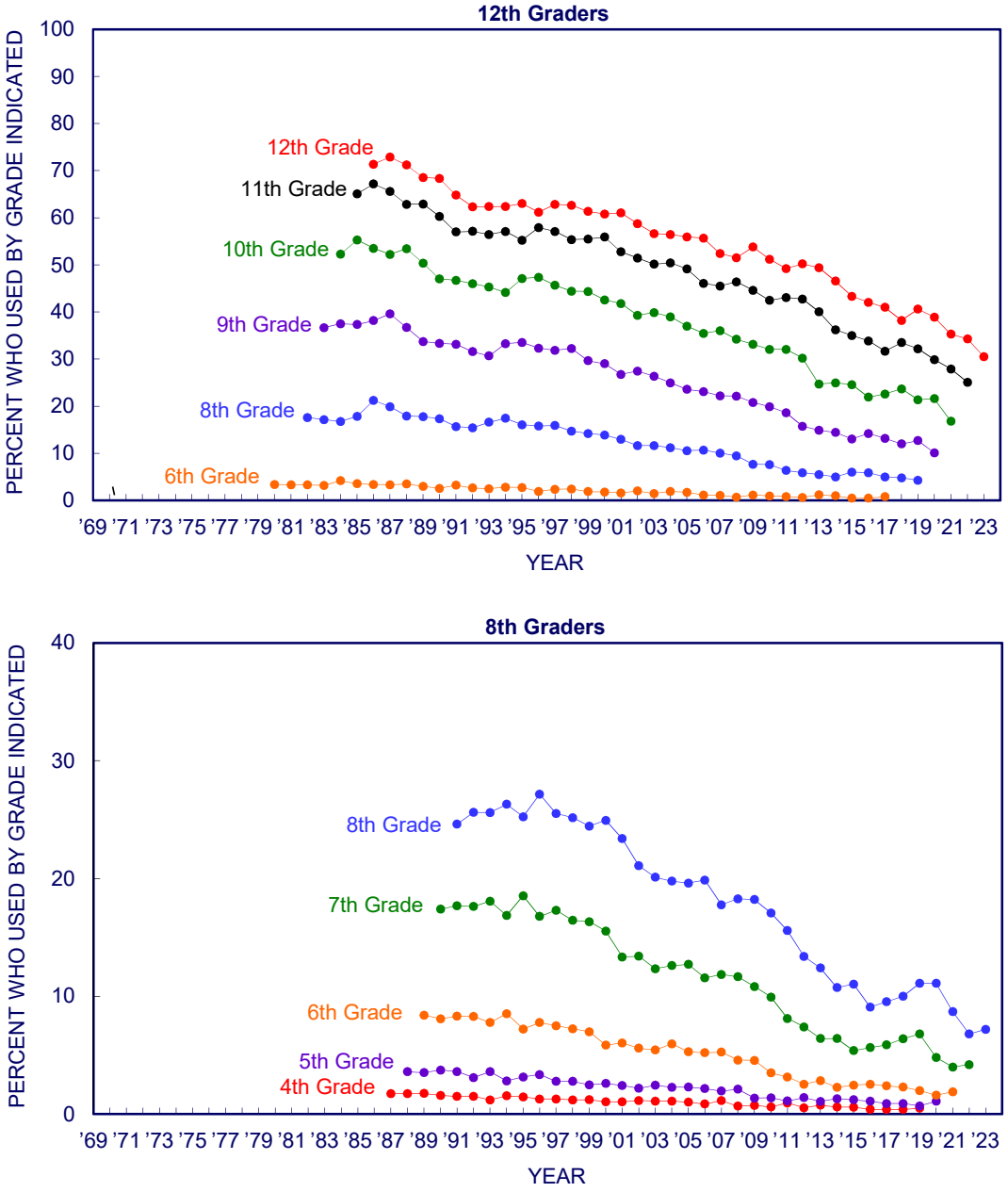
Source. The Monitoring the Future study, the University of Michigan.

Notes. Beginning in 1993, revised sets of questions on alcohol use were introduced in which respondents were told that an occasion of use meant more than just a few sips. The dashed lines connect percentages that are based on data from the revised questions.

Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-11
Been Drunk
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th and 8th Graders

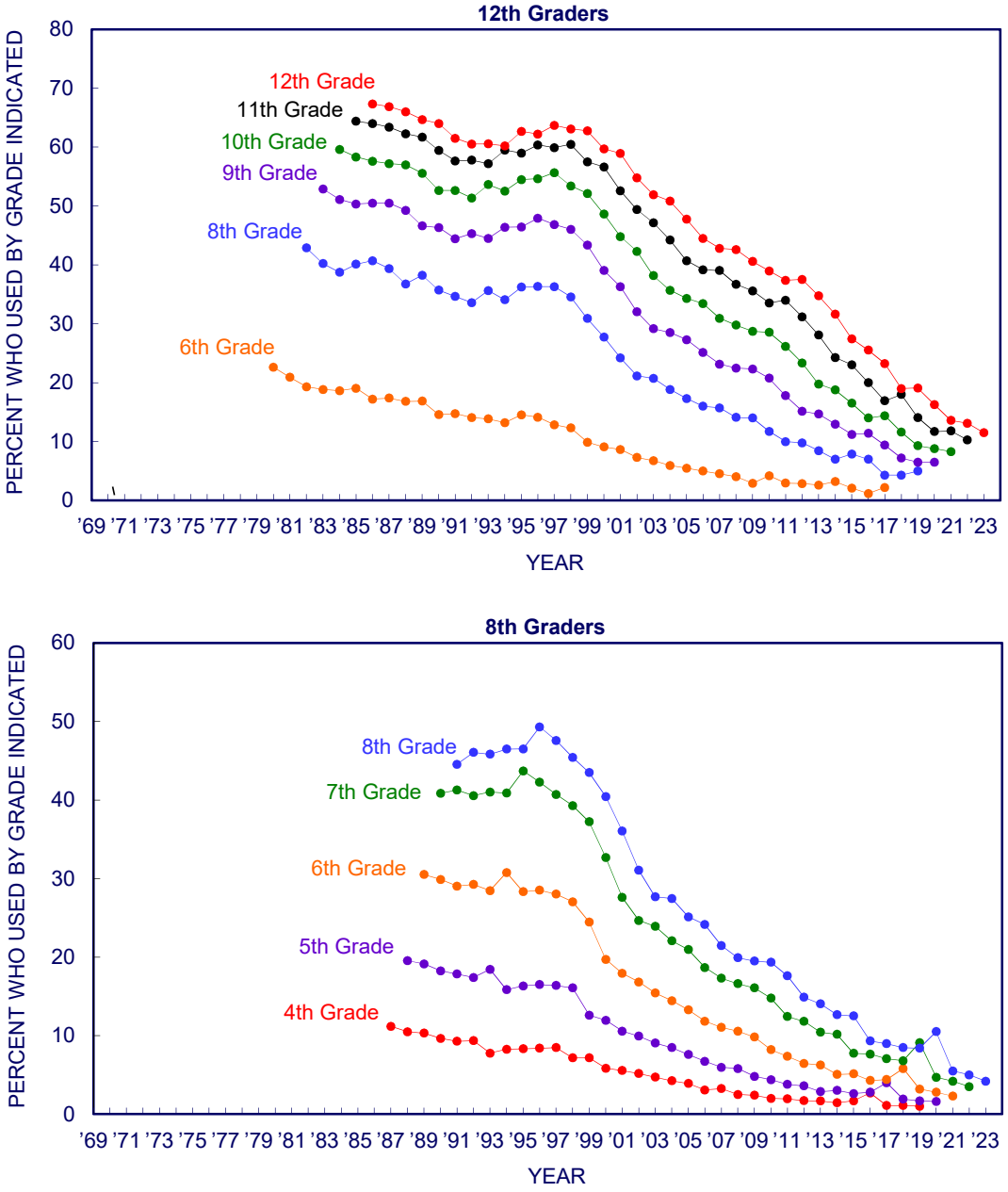


Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-12
Cigarettes
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th and 8th Graders

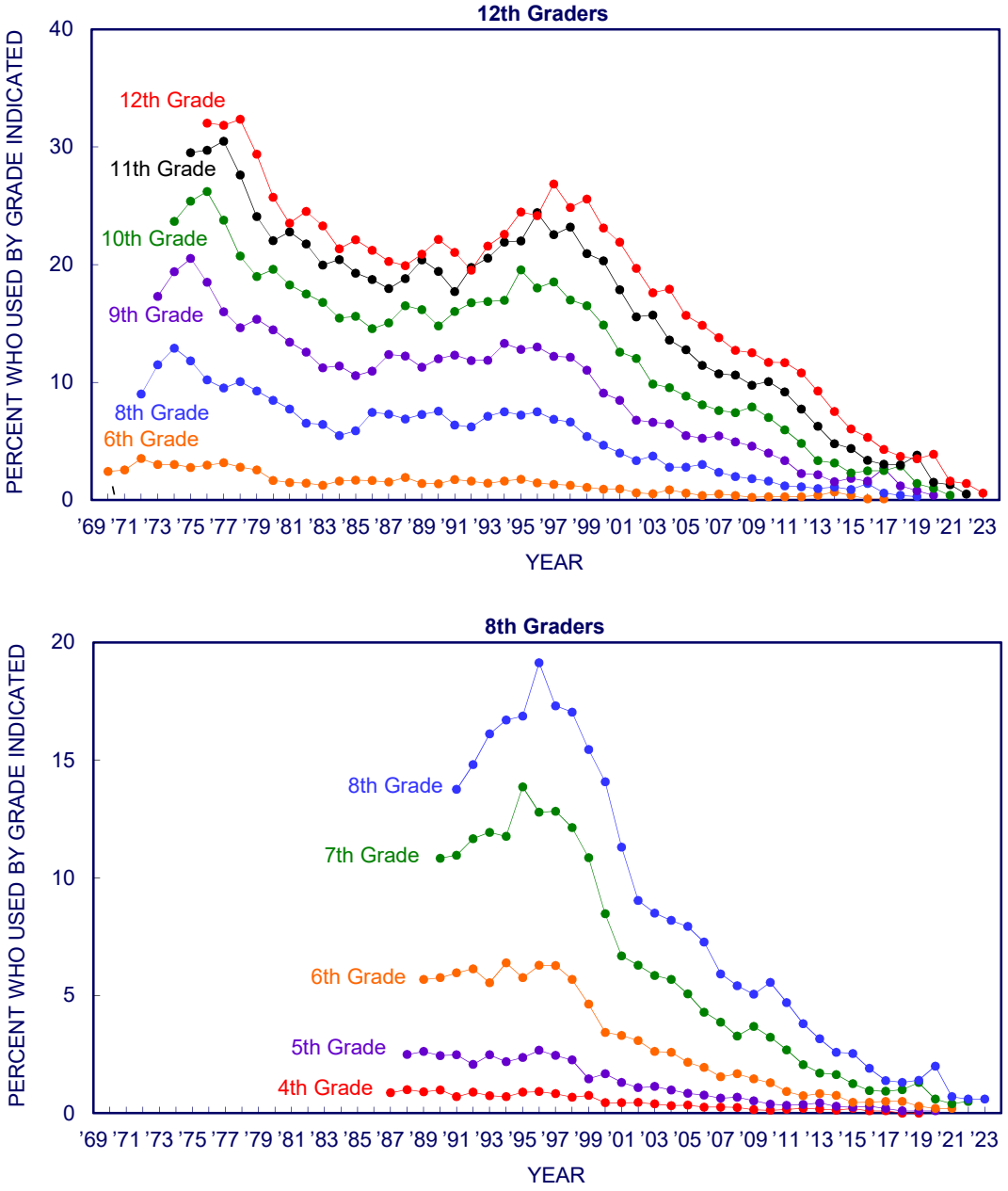


Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-13
Cigarette Smoking on a Daily Basis
Trends in Lifetime Prevalence for Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders

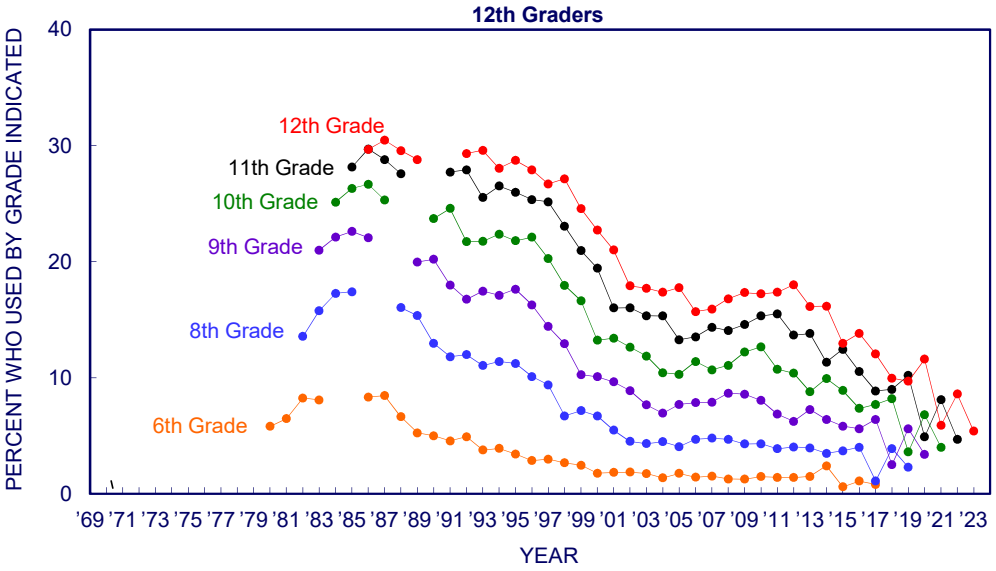


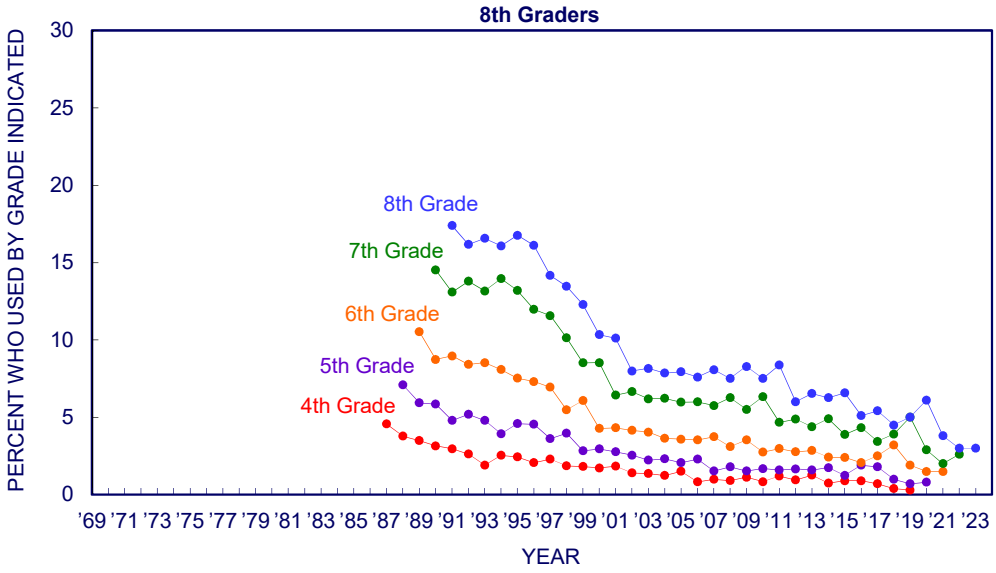
Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-14
Smokeless Tobacco
Trends in Lifetime Prevalence for Earlier Grade Levels*
based on Retrospective Reports from 12th and 8th Graders





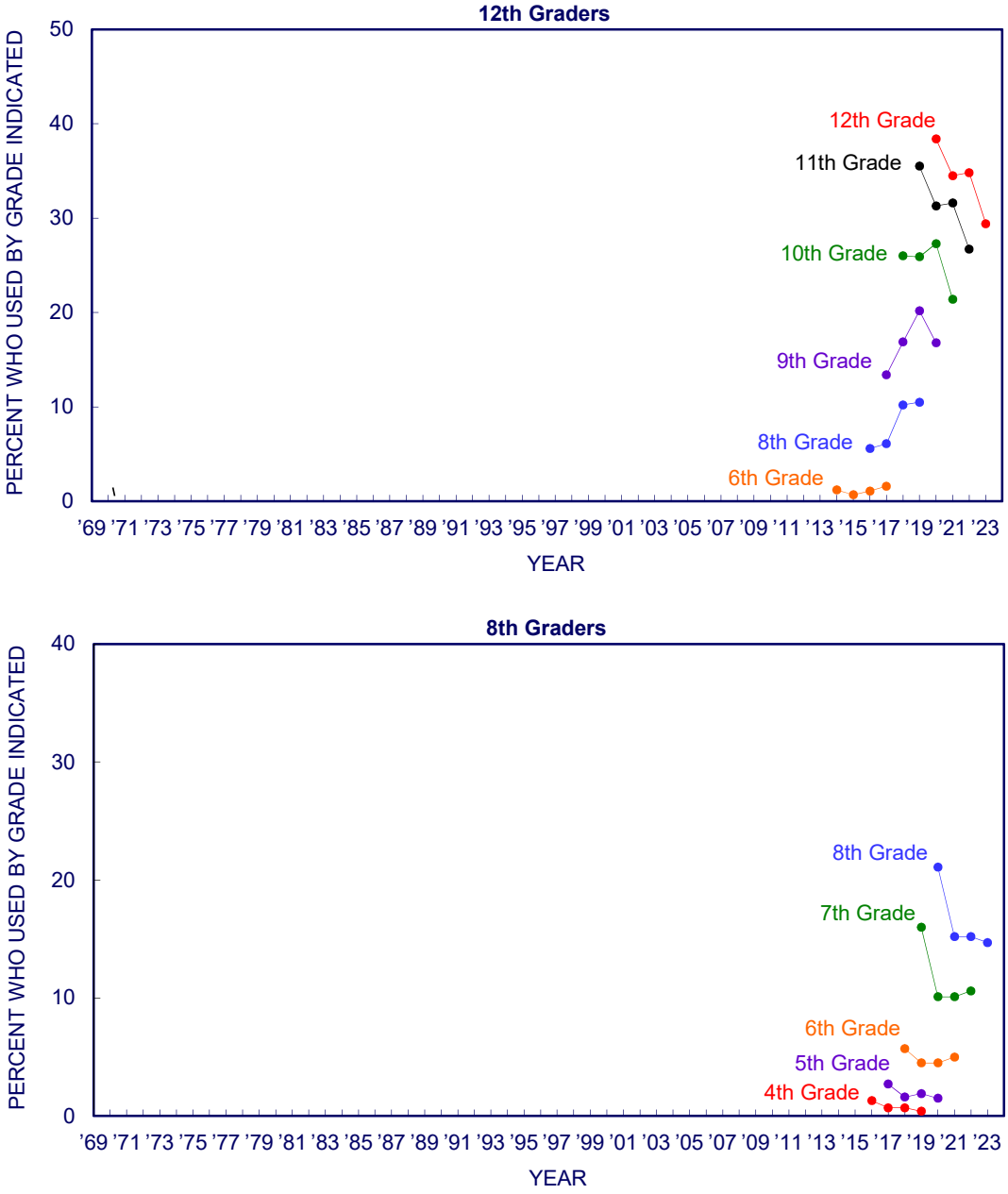
Source. The Monitoring the Future study, the University of Michigan.

Notes. Prevalence of smokeless tobacco was not asked of 12th graders in 1990 or 1991. Prior to 1990, the prevalence question on smokeless tobacco was located near the end of one 12th grade questionnaire form, after 1991 the question was placed earlier and in a different form. This shift could explain any discontinuity between the corresponding lines for each grade.

Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

FIGURE 6-15
Vaping Nicotine
Trends in Lifetime Prevalence for Earlier Grade Levels* based on Retrospective Reports from 12th and 8th Graders



Source. The Monitoring the Future study, the University of Michigan.

Note. Prevalence levels in these figures do not necessarily match the prevalence levels reported in Chapters 4 and 5, which are based on a larger, randomly-selected subsample of respondents.

*For 12th graders, the question about grade of initiation of use originally asked about initiation in grade 7 or grade 8 combined. Beginning in 1990, the question asked about each grade separately. For consistency, those 12th graders reporting initiation in 7th or 8th grade are combined on the chapter 6 tables and figures.

Chapter 7

INTENSITY OF DRUG USE

Frequency of Lifetime, Annual, and 30-Day Use

While previous chapters focus largely on *prevalence* of use for different time periods, more detailed information about the *frequency* of use is important to understand severity of substance use. Table 7-1a provides data on frequency of use of various drugs for lifetime, 12-month, and 30-day time periods. Tables 7-1b, 7-1c, and 7-1d provide additional frequency of use estimates for vaping, binge drinking, cigarette use, and use of other tobacco products. As shown in these tables, considerable proportions of lifetime users of many drugs could best be characterized as experimental users, reporting use on only one or two occasions.

Certain drugs stand out for their high frequency of use:

- The percentage of adolescents who reported they had ever ***vaped nicotine regularly*** in 2023 was 4.8% for 8th grade students, 7.1% for 10th grade students, and 12.7% for 12th grade students (Table 7-1c). Nicotine vaping ranks among the most frequently used of all substances in these grades.

- The percentage of adolescents who reported they had ever ***vaped "just flavoring" regularly*** by 2023 was 2.9% for 8th grade students, 3.5% for 10th grade students, and 5.1% for 12th grade students.

- The percentage of adolescents who reported they had ever regularly vaped "just flavoring" and never regularly vaped nicotine was near zero in 2023, ranging from 0.4% to 0.5% across the three grades (results not tabled). These results indicate that most adolescents who have vaped "just flavoring" have done so in addition to nicotine vaping and not as a substitute for it.

- The percentage of adolescents who report they had ever ***vaped marijuana regularly*** in 2023 was 1.9% for 8th grade students, 4.9% for 10th grade students, and 8.4% for 12th grade students.

- One measure of heavy drinking called ***binge drinking*** asks respondents to report how many times during the previous *two-week* period they had consumed ***five or more drinks in a row***. Table 7-1b shows that in 2023 about half of students in each grade who had engaged in this behavior had done so more than once during the past two weeks, though the proportions reporting having done so at all differ considerably by grade at 2.0%, 5.4% and 10.2% in grades 8, 10, and 12.

- ***Marijuana*** shows some of the highest proportions reporting more than experimental use, with 2.4%, 7.1% and 15.4%, of 8th, 10th, and 12th graders, respectively, reporting use on 20 or more occasions in their lifetime in 2023 (Table 7-1a).

- 12th grade students do not use ***delta-8*** as frequently as they use marijuana. Delta-8 is a product derived from hemp that contains an isomer of delta-9 THC, which is the psychoactive ingredient in marijuana. Some people who have used delta-8 describe the high they experience as "marijuana light." In 2023 2.8% of 12th grade students reported lifetime use of 20 or more occasions, which compares to 15% for marijuana. Delta-8 is a relatively new product, and these low levels of repeated use suggest that its novelty may currently drive its use. Results from future years will indicate if students start using delta-8 more frequently. (Only 12th grade students were asked about use of delta-8 in 2023).

Prevalence of Current Daily Use

Frequent use of illicit or licit drugs is a great concern for the health and safety of adolescents. Table 7-1a and Tables D-1 through D-64 in Appendix D show the prevalence of current daily or near daily use of the various classes of illicit drugs. Table 7-1a shows levels of daily use for marijuana, alcohol, and other drugs, for which daily use is defined as use on 20 or more occasions in the preceding 30 days. Table 7-1c shows levels of daily use for cigarettes, smokeless tobacco, and nicotine vaping. Daily use is defined for cigarettes and nicotine vaping as use on 30 days in the preceding 30 days. For smokeless tobacco daily use is defined by the response "about once a day" or more often in the past 30 days.

- ***Nicotine vaping*** has one of the highest levels of daily use. The proportion reporting use every day in the last 30 days in 8th grade was 1.4%, in 10th grade was 2.4%, and in 12th grade was 5.8%.

- In 2023 the percentages who reported using one or more ***cigarettes*** per day in the last 30 days were 0.4%, 0.9%, and 0.8% in grades 8, 10, and 12, respectively.

- Levels of daily use of ***smokeless tobacco*** are about the same as daily use of cigarettes, at 0.4%, 0.5%, and 0.4% for 8th, 10th, and 12th grade, respectively. The levels among males are quite a bit higher, however, as discussed in Chapter 4.

- Daily use of ***marijuana*** was high in 2023 with use on 20 more occasions during the past 30 days at 0.9%, 2.7% and 6.4% across 8th, 10th, and 12th grade, respectively. Thus about one in 16 high school seniors is a current daily marijuana user.

- The percentages of 8th, 10th, and 12th grade students who reported that they used ***alcohol*** daily in 2023 were 0.2%, 0.4%, and 0.9%, respectively.

- Daily use of *each* of the ***other illicit drugs***, as indicated by use 20 or more occasions during the past 30 days, is reported by 0.2% or less of 12th grade respondents (Table 7-1a). While low, these figures are not inconsequential, because 1% of the high school class of 2023, for example, represents in excess of 20,000 individuals nationwide.

- Between 13% and 18% of students in 8th, 10th, and 12th grade reported daily use of an ***energy drink*** (Table 7-1e), defined as consuming one or more energy drinks per day. Use of energy drinks is assessed with the question "'Energy drinks' are non-alcoholic beverages

that usually contain high amounts of caffeine, including such drinks as Red Bull, Full Throttle, Monster, and Rockstar", and respondents are asked to report how many such drinks they consume daily.

Unlike most substances that MTF surveys energy drinks are legal for adolescents to purchase and consume (as are energy 'shots,' below). Caffeine is the primary active ingredient in these products, and they are not considered addictive stimulants because they do not produce large surges in dopamine such as those caused by other stimulants like methamphetamine. Nevertheless, use of the high levels of caffeine in these products may cause dependency and result in mild withdrawal symptoms with reductions in use, and high levels of use may negatively interact with use of other drugs.

- Three to four percent of 8th, 10th, and 12th grade students reported daily use of an ***energy shot***, defined as consuming one or more energy shots per day. These typically come in containers that are just two or three ounces.

DEGREE AND DURATION OF HIGHS AMONG 12th GRADERS IN 2023

Among the reasons given by adolescents for using different drugs,[1] achieving an altered state of consciousness or "getting high" is a central objective for many. MTF assesses 12th graders' self-reported degree or duration of highs, both as trends at the population level and in terms of variation from drug to drug. Measuring these subjective experiences and monitoring changes in them over time, as MTF has done for many years, can be helpful from epidemiological and policy perspectives. Although these data do not address the many qualitative differences in the experience of being high, they provide a useful description of two important dimensions: degree and duration. Twelfth grade respondents are asked in one of the six questionnaire forms to indicate how high they usually get and how long they usually stay high when using marijuana and when using alcohol. The term "high" is not defined for the respondent, but we assume that people interpret it as the degree to which normal cognitive functioning and affective states are altered by taking the drug.

Tables 7-2 and 7-3 present estimates for ***marijuana*** and ***alcohol***. These substances met our requirement of at least 50 respondents for estimates of degree and duration of highs; sample sizes are limited because these survey questions appear on only a randomly selected one-sixth of the 12th grade questionnaires and only users of a drug in the past 12 months are asked to report on degree and duration of highs associated with using it.

These tables present trends in degree and duration of drug highs in two ways. First, the results are shown as a percentage of *past-year users* of each drug in order to indicate any changes in the experiences among fairly recent users and to provide some indication of changes in the quantity

[1] Patrick, M. E., Evans-Polce, R., Kloska, D. & Maggs, J.L. (2019). Reasons high school students use marijuana: Prevalence and correlations with use over four decades. *Journal of Studies on Alcohol and Drugs, 80,* 15-25.

Terry-McElrath, Y. M., Stern, S. A., & Patrick, M. E. (2017). Do alcohol use reasons and contexts differentiate adolescent high-intensity drinking? Data for U.S. high school seniors, 2005-2016. *Psychology of Addictive Behaviors, 31,* 775-785.

Patrick, M. E., Schulenberg, J. E., O'Malley, P. M., Johnston, L. D., & Bachman, J. G. (2011). Adolescents' reported reasons for alcohol and marijuana use as predictors of substance use and problems in adulthood. *Journal of Studies on Alcohol and Drugs, 72*(1), 106-116.

Johnston, L. D., & O'Malley, P. M. (1986). Why do the nation's students use drugs and alcohol? Self-reported reasons from nine national surveys. *Journal of Drug Issues, 16*, 29–66.

of the active ingredient consumed by users. Results are also displayed as a percentage of *all* respondents answering that questionnaire form, thereby indicating experiences of drug-induced highs as proportions of the entire population under study.

- ***Marijuana*** produces a strong high, with 20% of users reporting that they usually get "very high" when they used it in 2023 and another, additional 49% saying they usually get "moderately high." In past years marijuana has ranked near the top of substances that make 12th grade users "very high"—above cocaine, tranquilizers, narcotics other than heroin, amphetamines, and alcohol, but below hallucinogens (including LSD).

- In 2023 only a relatively few of the large proportion of 12th graders who use ***alcohol*** said that they usually get very high when drinking (7%), although a fair portion (34%) said they usually get moderately or very high.

Tables 7-2 and 7-3 present in their lower panels trend data on the *duration* of the highs experienced by the users of the same drugs.

- In 2023 about half of ***marijuana*** users (47%) said they usually stay high one to two hours, almost two out of five users (36%) reported usually staying high three to six hours, and another 11% said they usually stayed high for seven hours or more, so there is considerable variability among users in how long they stay high.

- A fair proportion of ***alcohol*** users—37% in 2023—said that they usually do not get high when using alcohol.

TRENDS IN THE DEGREE AND DURATION OF DRUG HIGHS

MTF has documented trends in the degree and duration of highs experienced by young people since 1975, when the study began. Below we discuss these trends for marijuana and alcohol.

- The *degree* of highs usually attained by ***marijuana*** users remains at high levels first established in the early 2000s, and has not shown any consistent increase or decline since then (Table 7-2). The proportion of marijuana users usually getting "moderately" or "very" high has fluctuated around 74% for the last decade and a half (it was 69% in 2023), a level higher than any other period covered by the survey. Prior to the early 2000s, the degree of highs experienced by adolescents tracked loosely with overall marijuana prevalence, with degree of highs increasing as prevalence increased and vice versa. During the 1990s drug relapse, the percentage of 12th grade students getting moderately or very high increased from around 65% at the start of the 1990s to 75% at the end, at a time when marijuana prevalence increased. Previous to the relapse, from the late 1970s through the 1980s, the degree of highs obtained showed an overall decline and leveling, as prevalence declined and leveled during this period.

  The trend in *duration* of highs from marijuana use is similar to that for degree. The proportion of users saying they stay high three or more hours was roughly level over the past 16 years, fluctuating around 43% (in 2023 it was 47%). Prior to the early 2000s, duration of highs tracked with overall prevalence of use, with increases in both during the

1990s relapse and decreases in both from the late 1970 through the 1980s. The decreases were likely due in part to the increasing number of 12th graders using marijuana and using it lightly, and in part due to a general shift toward less intense use, even within the segment most prone toward marijuana use.[2] The proportion of users staying high three or more hours reached a low of 35% in 1988, in contrast to a high of 52% at the very start of the survey in 1975. Importantly, duration of highs from marijuana use in 2019 were not the highest recorded, a distinction that belongs to the mid-1970s.

Both degree and duration of highs from marijuana track only weakly, if at all, with the substantial increase in THC (tetrahydrocannabinol) content of marijuana over the four decades of the survey. The Marijuana Potency Program, sponsored in part by the National Institute on Drug Abuse (NIDA), has analyzed tens of thousands of cannabis preparations confiscated by U.S. law enforcement. In 1975 the average concentration of THC in seized samples was 0.74% and steadily climbed thereafter to 2.82% in 1985, 3.75% in 1995, 7.2% in 2005, and nearly 13% in 2013.[3,4] As shown above, no such 15-fold increase is present in the degree and duration of marijuana highs reported by adolescents. Taken as a whole, these results suggest that adolescent marijuana users self-titrate their intake to achieve a degree and duration of high that has changed little over the course of the survey despite substantial changes in marijuana potency over the years.

- The proportion of 12th grade users who usually stayed high on ***alcohol*** for seven hours or more was 2.4% in 2023, where it has hovered over the past two decades (Table 7-3). The proportion of 12th grade alcohol users who reported usually getting very high on alcohol was 7.4% in 2023, which falls within the 6% to 13% range seen throughout the life of the study.

- Given low prevalence levels, questions on the degree and duration of highs from ***LSD*** were discontinued in 2015 to make room for other survey questions. Detailed estimates up to 2014 can be found in the 2014 edition of this monograph. In sum, no clearly discernible long term pattern were present in the degree of highs reported by LSD users—substantial proportions of users every year reported intense highs—but the average duration of highs declined considerably after the late 1990s. After 2001, the prevalence of LSD use declined sharply, which in turn is reflected in the decreased proportion of all respondents saying that they got high at all on LSD. The average duration of LSD highs declined some from the mid-1990s to 2014.

[2] For detailed interpretations of the data for these years, please refer to Johnston, L. D., O'Malley, P. M., & Bachman, J. G. (1984). *Drugs and American high school students: 1975-1983* (DHHS Publication No. [ADM] 85-1374). Rockville, MD: National Institute on Drug Abuse, pp. 82-83.

[3] National Institute on Drug Abuse. (2020). Cannabis (Marijuana) research report: Is marijuana addictive?

National Institute on Drug Abuse. (2022). Cannabis (Marijuana) potency.

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Hellerman, C. (2013, August 9). Is super weed, super bad? CNN.

[4] The Marijuana Potency Program has stopped analyzing samples due to lack of funding but continues to collect samples that it will analyze if funding is renewed.

- Starting in 2019 low prevalence levels prevented reliable estimates of degree and duration of highs for a number of drugs, including ***hallucinogens other than LSD***, ***cocaine***, ***narcotics other than heroin***, ***amphetamines***, and ***tranquilizers***. For information on these trends up to 2018 see the 2019 version of this report here, which presents trends up to 2018.

TABLE 7-1a
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Marijuana			Delta-8 [b]			Inhalants [c,k]			Hallucinogens [d,j]			LSD [j]			Hallucinogens other than LSD [j]			PCP [e]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Lifetime Frequency																					
No occasions	88.5	77.5	63.5	—	—	—	91.0	93.5	93.7	97.9	96.4	93.4	98.9	97.9	96.9	98.6	97.0	94.1	—	—	—
1–2 occasions	5.2	7.7	9.0	—	—	—	5.6	4.6	4.0	1.1	1.6	3.1	0.7	1.3	1.8	0.8	1.9	3.4	—	—	—
3–5 occasions	1.8	3.5	5.2	—	—	—	1.0	1.0	0.9	0.3	1.2	2.0	0.1	0.5	0.7	0.2	0.5	1.3	—	—	—
6–9 occasions	0.9	1.9	3.2	—	—	—	0.9	0.4	0.5	0.1	0.2	0.5	*	0.1	0.3	0.2	0.3	0.4	—	—	—
10–19 occasions	1.2	2.3	3.7	—	—	—	0.5	0.1	0.3	0.3	0.4	0.6	0.2	0.1	0.1	0.2	0.2	0.4	—	—	—
20–39 occasions	0.6	1.6	3.4	—	—	—	0.3	0.1	0.3	0.1	0.1	0.2	*	*	0.1	0.1	0.1	0.2	—	—	—
40 or more	1.8	5.5	12.0	—	—	—	0.6	0.3	0.3	0.1	0.2	0.3	0.1	0.1	0.1	*	0.1	0.1	—	—	—
Annual Frequency																					
No occasions	91.7	82.2	71.0	—	—	88.6	95.7	98.0	98.0	98.7	97.8	95.7	99.3	98.8	98.8	99.1	98.3	96.0	—	—	99.5
1–2 occasions	3.7	6.3	8.4	—	—	3.6	2.5	1.4	1.4	0.7	1.0	2.5	0.2	0.9	0.7	0.6	1.2	2.5	—	—	0.1
3–5 occasions	1.2	3.0	4.3	—	—	2.5	0.8	0.4	0.2	0.2	0.8	1.0	0.2	0.2	0.3	0.2	0.3	0.8	—	—	0.4
6–9 occasions	0.7	1.8	2.4	—	—	1.4	0.3	0.1	0.2	0.2	0.1	0.4	0.1	0.1	0.1	0.1	0.1	0.3	—	—	0.0
10–19 occasions	1.1	1.4	3.4	—	—	1.2	0.4	0.1	0.1	0.2	0.2	0.2	0.1	*	*	*	0.1	0.2	—	—	0.0
20–39 occasions	0.5	1.8	2.2	—	—	0.9	0.1	*	*	*	*	0.1	*	0.1	0.0	*	*	0.1	—	—	0.1
40 or more	1.1	3.5	8.3	—	—	1.9	0.3	0.1	0.1	0.0	0.1	0.1	0.0	*	0.1	0.0	0.1	*	—	—	0.0
30-Day Frequency																					
No occasions	95.3	89.7	81.6	—	—	—	97.4	99.1	98.8	99.5	99.2	98.4	99.7	99.6	99.6	99.8	99.3	98.5	—	—	—
1–2 occasions	2.4	3.7	5.7	—	—	—	1.7	0.7	0.9	0.3	0.4	1.0	0.2	0.3	0.2	0.2	0.5	1.0	—	—	—
3–5 occasions	0.5	1.5	2.5	—	—	—	0.3	0.1	0.1	0.1	0.2	0.4	0.1	0.1	0.1	*	0.1	0.3	—	—	—
6–9 occasions	0.5	1.1	1.6	—	—	—	0.1	*	0.1	*	0.1	0.1	0.0	*	*	0.0	0.1	*	—	—	—
10–19 occasions	0.4	1.2	2.1	—	—	—	0.2	*	*	0.1	0.1	*	0.1	*	*	*	*	0.1	—	—	—
20–39 occasions	0.3	0.9	2.1	—	—	—	0.0	0.0	0.0	*	*	*	*	0.0	0.0	0.0	0.0	*	—	—	—
40 or more	0.6	1.8	4.3	—	—	—	0.2	0.1	0.1	0.0	0.1	0.1	0.0	*	0.1	0.0	*	*	—	—	—

(Table continued on next page.)

TABLE 7-1a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Ecstasy (MDMA) [c,k]			Cocaine			Crack			Cocaine other than Crack [g]			Heroin [k]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Lifetime Frequency															
No occasions	99.1	98.6	98.4	99.0	99.0	98.7	99.4	99.3	99.2	99.2	99.1	99.0	99.2	99.5	99.8
1–2 occasions	0.6	0.9	1.1	0.5	0.3	0.7	0.5	0.4	0.3	0.5	0.5	0.4	0.6	0.4	0.1
3–5 occasions	0.1	0.3	0.2	0.3	0.3	0.2	*	0.3	0.2	*	0.1	0.3	*	0.1	*
6–9 occasions	0.2	0.1	0.1	*	0.1	0.2	*	*	0.1	0.1	0.1	0.1	0.0	*	*
10–19 occasions	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	*	0.1	*	*	0.0	0.0	*
20–39 occasions	0.0	*	*	0.0	*	*	0.0	0.0	*	0.0	*	*	0.0	0.0	0.0
40 or more	0.1	*	*	*	0.2	0.2	*	*	0.2	*	0.2	0.1	0.1	*	*
Annual Frequency															
No occasions	99.6	99.3	99.3	99.6	99.5	99.4	99.7	99.7	99.5	99.8	99.5	99.6	99.6	99.7	99.9
1–2 occasions	0.3	0.6	0.4	0.3	0.1	0.3	0.2	0.1	0.2	0.1	0.3	0.2	0.3	0.2	*
3–5 occasions	0.1	*	0.2	*	0.2	0.1	*	0.1	0.1	0.1	*	0.1	0.0	*	*
6–9 occasions	0.0	*	*	0.1	0.1	*	*	*	*	*	0.1	*	0.0	0.0	*
10–19 occasions	0.0	0.0	*	0.0	*	*	*	0.0	*	*	*	0.0	0.0	0.0	*
20–39 occasions	0.0	0.0	0.0	*	*	*	0.0	*	0.0	*	*	0.0	0.0	*	*
40 or more	0.1	*	*	0.0	0.1	0.1	0.0	*	0.2	0.0	0.1	0.1	0.1	*	#REF!
30-Day Frequency															
No occasions	99.7	99.7	99.7	99.7	99.6	99.6	99.8	99.8	99.7	99.8	99.6	99.7	99.7	99.8	99.9
1–2 occasions	0.1	0.3	0.2	0.2	*	0.1	0.2	*	0.1	0.1	0.2	0.1	0.3	0.1	*
3–5 occasions	0.1	*	*	0.1	0.2	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	*	*
6–9 occasions	0.0	*	0.0	0.0	0.1	*	*	*	*	*	0.1	*	0.0	0.0	*
10–19 occasions	0.0	0.0	*	*	0.0	*	0.0	*	0.0	0.0	*	0.0	0.0	*	*
20–39 occasions	0.0	0.0	0.0	*	*	0.0	0.0	0.0	0.0	*	0.0	0.0	0.0	0.0	0.0
40 or more	0.1	0.0	*	0.0	*	0.1	0.0	*	0.2	0.0	*	0.1	0.1	*	*

(Table continued on next page.)

TABLE 7-1a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Narcotics other than Heroin [h]			OxyContin [a,c,h]			Vicodin [a,c,h]			Amphetamines [h,i]			Ritalin [a,b,h]			Adderall [a,b,h]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Lifetime Frequency																		
No occasions	—	—	97.6	—	—	—	—	—	—	95.0	94.3	95.7	—	—	—	—	—	—
1–2 occasions	—	—	1.2	—	—	—	—	—	—	2.9	3.1	2.1	—	—	—	—	—	—
3–5 occasions	—	—	0.4	—	—	—	—	—	—	0.5	1.0	0.7	—	—	—	—	—	—
6–9 occasions	—	—	0.2	—	—	—	—	—	—	0.5	0.4	0.3	—	—	—	—	—	—
10–19 occasions	—	—	0.2	—	—	—	—	—	—	0.3	0.4	0.3	—	—	—	—	—	—
20–39 occasions	—	—	0.1	—	—	—	—	—	—	0.2	0.2	0.2	—	—	—	—	—	—
40 or more	—	—	0.3	—	—	—	—	—	—	0.6	0.6	0.7	—	—	—	—	—	—
Annual Frequency																		
No occasions	—	—	99.0	99.2	99.6	99.4	99.1	99.7	99.4	97.2	97.3	97.9	99.4	99.5	99.4	98.3	97.9	98.3
1–2 occasions	—	—	0.5	0.5	0.2	0.2	0.6	0.1	0.2	1.5	1.4	1.0	0.2	0.3	0.2	0.7	0.9	1.0
3–5 occasions	—	—	0.1	0.1	0.1	0.1	0.2	0.0	0.3	0.6	0.6	0.4	*	0.0	0.3	0.3	0.8	0.3
6–9 occasions	—	—	0.1	0.1	*	0.1	0.0	0.0	*	0.2	0.2	0.3	*	*	0.1	0.2	0.1	0.2
10–19 occasions	—	—	0.1	0.0	*	0.1	0.0	0.1	*	0.1	0.2	0.1	0.3	*	0.0	*	0.1	*
20–39 occasions	—	—	*	0.0	*	0.0	0.0	*	0.0	0.1	0.1	0.2	0.1	*	0.0	0.3	*	0.0
40 or more	—	—	0.1	0.1	*	*	0.1	*	*	0.2	0.3	0.2	#REF!	0.1	*	0.1	0.1	0.2
30-Day Frequency																		
No occasions	—	—	99.6	—	—	—	—	—	—	98.4	98.7	98.9	—	—	—	—	—	—
1–2 occasions	—	—	0.3	—	—	—	—	—	—	1.1	0.7	0.5	—	—	—	—	—	—
3–5 occasions	—	—	*	—	—	—	—	—	—	0.2	0.3	0.3	—	—	—	—	—	—
6–9 occasions	—	—	*	—	—	—	—	—	—	*	*	*	—	—	—	—	—	—
10–19 occasions	—	—	*	—	—	—	—	—	—	*	0.1	0.1	—	—	—	—	—	—
20–39 occasions	—	—	*	—	—	—	—	—	—	0.1	0.2	*	—	—	—	—	—	—
40 or more	—	—	0.1	—	—	—	—	—	—	*	*	0.1	—	—	—	—	—	—

(Table continued on next page.)

TABLE 7-1a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Methamphetamine [a,b]			Crystal Methamphetamine (Ice) [b]			Sedatives (Barbiturates) [h]			Tranquilizers [h]			Over-the-Counter Cough/Cold Medicine [a,b]			Rohypnol [a,e]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Lifetime Frequency																		
No occasions	99.7	99.5	99.4	—	—	99.1	—	—	97.1	97.7	97.5	97.3	—	—	—	0.4	99.4	—
1–2 occasions	0.3	0.1	0.2	—	—	0.8	—	—	1.5	1.6	1.6	1.8	—	—	—	*	0.6	—
3–5 occasions	0.0	0.3	0.0	—	—	0.0	—	—	0.5	0.2	0.3	0.4	—	—	—	0.0	*	—
6–9 occasions	*	*	*	—	—	0.0	—	—	0.2	0.2	0.3	0.1	—	—	—	0.0	0.0	—
10–19 occasions	0.0	*	0.0	—	—	0.0	—	—	0.3	0.1	0.1	0.2	—	—	—	0.0	0.0	—
20–39 occasions	0.0	0.0	0.0	—	—	0.1	—	—	0.1	*	*	0.1	—	—	—	0.0	0.0	—
40 or more	0.0	0.0	0.4	—	—	0.1	—	—	0.3	0.1	0.1	0.1	—	—	—	.	*	—
Annual Frequency																		
No occasions	100.0	99.6	99.6	—	—	99.7	—	—	98.5	99.1	98.8	99.0	96.0	97.0	97.6	0.0	99.9	99.8
1–2 occasions	0.0	0.1	*	—	—	0.1	—	—	0.7	0.5	0.9	0.5	0.9	1.4	1.1	0.0	0.0	*
3–5 occasions	0.0	0.3	0.0	—	—	0.0	—	—	0.4	0.2	0.1	0.3	1.5	0.7	0.6	0.0	*	0.0
6–9 occasions	0.0	0.0	*	—	—	0.1	—	—	0.2	0.1	0.1	0.1	1.3	0.4	0.4	0.0	0.0	0.1
10–19 occasions	0.0	0.0	0.0	—	—	0.1	—	—	0.1	*	0.1	*	0.3	0.4	0.2	0.0	0.0	*
20–39 occasions	0.0	0.0	0.0	—	—	*	—	—	0.1	*	*	*	*	0.1	*	0.0	*	0.0
40 or more	0.0	0.0	0.3	—	—	*	—	—	0.1	*	*	0.1	0.1	*	*	.	0.0	0.1
30-Day Frequency																		
No occasions	100.0	99.7	99.9	—	—	99.8	—	—	99.3	99.6	99.6	99.7	—	—	—	0.0	100.0	—
1–2 occasions	0.0	*	*	—	—	0.1	—	—	0.4	0.4	0.3	0.2	—	—	—	0.0	0.0	—
3–5 occasions	0.0	0.3	0.0	—	—	0.1	—	—	0.1	*	0.1	0.1	—	—	—	0.0	0.0	—
6–9 occasions	0.0	0.0	*	—	—	*	—	—	*	*	*	0.0	—	—	—	0.0	0.0	—
10–19 occasions	0.0	0.0	0.0	—	—	*	—	—	0.1	0.0	*	*	—	—	—	0.0	*	—
20–39 occasions	0.0	0.0	0.0	—	—	0.0	—	—	*	0.0	0.0	*	—	—	—	0.0	0.0	—
40 or more	0.0	0.0	0.1	—	—	*	—	—	*	*	*	0.1	—	—	—	0.0	0.0	—

(Table continued on next page.)

TABLE 7-1a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	GHB [e]			Ketamine [b]			Alcohol			Been Drunk [b]			Flavored Alcoholic Beverages [a,e]			Alcoholic Beverages containing Caffeine [a,b]			Tobacco using a Hookah [e]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Lifetime Frequency																					
No occasions	—	—	—	—	—	—	79.9	64.2	47.2	92.7	82.4	67.3	87.6	73.6	55.7	—	—	—	—	—	—
1–2 occasions	—	—	—	—	—	—	7.8	10.5	10.9	4.6	9.7	12.8	5.2	10.8	11.8	—	—	—	—	—	—
3–5 occasions	—	—	—	—	—	—	4.6	9.0	11.4	1.0	3.4	6.2	4.1	6.5	9.4	—	—	—	—	—	—
6–9 occasions	—	—	—	—	—	—	2.3	5.4	8.4	0.8	1.7	4.4	1.8	4.0	6.3	—	—	—	—	—	—
10–19 occasions	—	—	—	—	—	—	3.0	5.3	8.6	0.5	1.1	3.4	0.6	2.3	6.4	—	—	—	—	—	—
20–39 occasions	—	—	—	—	—	—	1.1	2.6	5.7	0.1	0.9	2.6	0.4	1.1	4.8	—	—	—	—	—	—
40 or more	—	—	—	—	—	—	1.3	2.9	7.8	0.3	0.7	3.1	0.4	1.7	5.5	—	—	—	—	—	—
Annual Frequency																					
No occasions	—	—	99.7	—	—	99.0	84.9	69.4	54.3	84.9	86.9	74.9	91.1	80.2	63.9	92.5	92.4	88.4	—	—	97.3
1–2 occasions	—	—	0.0	—	—	0.7	8.5	15.5	17.4	8.5	8.3	12.6	5.5	11.2	13.8	3.9	4.2	6.1	—	—	2.2
3–5 occasions	—	—	0.2	—	—	0.1	3.2	6.7	10.6	3.2	2.4	4.9	2.4	4.6	9.1	2.4	1.7	2.3	—	—	0.2
6–9 occasions	—	—	0.1	—	—	*	1.6	3.8	6.7	1.6	1.0	2.6	0.6	2.0	5.4	0.7	1.0	1.7	—	—	0.2
10–19 occasions	—	—	0.0	—	—	0.2	1.0	2.5	5.6	1.0	0.9	2.4	0.3	0.8	3.6	0.3	0.3	0.8	—	—	0.1
20–39 occasions	—	—	0.0	—	—	0.0	0.5	1.2	3.2	0.5	0.3	1.1	0.2	0.4	2.8	0.1	0.2	0.4	—	—	0.0
40 or more	—	—	0.0	—	—	*	0.4	0.9	2.3	0.4	0.3	1.4	0.1	0.9	1.3	0.1	0.2	0.3	—	—	0.1
30-Day Frequency																					
No occasions	—	—	—	—	—	—	94.1	86.3	75.7	98.5	94.9	87.5	96.8	92.1	82.1	—	—	—	—	—	—
1–2 occasions	—	—	—	—	—	—	3.8	9.7	15.4	1.1	3.9	7.7	2.7	5.8	10.5	—	—	—	—	—	—
3–5 occasions	—	—	—	—	—	—	1.2	2.4	4.6	0.2	0.7	2.7	0.2	1.2	4.4	—	—	—	—	—	—
6–9 occasions	—	—	—	—	—	—	0.4	0.7	2.1	*	0.3	1.0	0.1	0.2	1.8	—	—	—	—	—	—
10–19 occasions	—	—	—	—	—	—	0.4	0.5	1.2	*	0.1	0.6	*	0.3	0.6	—	—	—	—	—	—
20–39 occasions	—	—	—	—	—	—	*	0.1	0.4	0.0	0.1	0.2	0.1	0.1	0.4	—	—	—	—	—	—
40 or more	—	—	—	—	—	—	0.2	0.3	0.5	0.1	0.1	0.3	*	0.3	0.2	—	—	—	—	—	—

(Table continued on next page.)

TABLE 7-1a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Small Cigars [e]			Nicotine Pouches [a,b]			Snus [a,e]			Steroids [c]		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Lifetime Frequency												
No occasions	—	—	—	98.8	97.4	96.4	—	—	—	98.8	98.8	99.1
1–2 occasions	—	—	—	0.9	1.4	1.8	—	—	—	0.9	0.7	0.6
3–5 occasions	—	—	—	*	0.5	0.7	—	—	—	0.1	0.3	0.2
6–9 occasions	—	—	—	0.0	*	0.3	—	—	—	0.1	*	0.0
10–19 occasions	—	—	—	0.2	0.1	0.2	—	—	—	*	*	0.0
20–39 occasions	—	—	—	0.0	0.3	0.3	—	—	—	*	*	0.0
40 or more	—	—	—	0.0	0.4	0.3	—	—	—	0.1	0.1	0.1
Annual Frequency												
No occasions	—	—	95.6	99.4	98.1	97.1	99.7	98.7	98.2	99.4	99.5	99.3
1–2 occasions	—	—	2.5	0.4	1.0	1.6	0.1	0.6	0.5	0.4	0.2	0.4
3–5 occasions	—	—	1.0	0.0	0.2	0.4	*	0.2	0.4	0.1	0.2	0.1
6–9 occasions	—	—	0.3	0.2	0.1	0.3	*	0.2	0.5	*	*	0.0
10–19 occasions	—	—	0.3	0.0	0.2	0.2	*	0.1	0.3	0.0	*	*
20–39 occasions	—	—	0.2	0.0	*	0.2	0.0	*	*	0.0	*	*
40 or more	—	—	*	0.0	0.3	0.2	0.1	0.3	0.1	0.1	0.1	0.1
30-Day Frequency												
No occasions	—	—	—	99.6	98.9	98.6	—	—	—	99.7	99.6	99.5
1–2 occasions	—	—	—	0.2	0.5	0.6	—	—	—	0.2	0.1	0.4
3–5 occasions	—	—	—	0.2	0.1	0.4	—	—	—	*	0.1	*
6–9 occasions	—	—	—	0.0	0.2	0.2	—	—	—	0.0	*	0.0
10–19 occasions	—	—	—	0.0	*	0.2	—	—	—	0.0	*	*
20–39 occasions	—	—	—	0.0	0.1	*	—	—	—	*	*	0.0
40 or more	—	—	—	0.0	*	0.1	—	—	—	*	0.1	0.1

(Table continued on next page.)

TABLE 7-1a (cont.)
Frequency of Use of Various Drugs: Lifetime, Annual, and 30-Day
8th, 10th, and 12th Graders, 2023

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%.

[a]8th and 10th grades only: Data based on one of four forms.

[b]12th grade only: Data based on two of six forms.

[c]12th grade only: Data based on three of six forms.

[d]Unadjusted for known underreporting of PCP. See text for details.

[e]12th grade only: Data based on one of six forms.

[f]8th and 10th grades only: Data based on two of four forms.

[g]12th grade only: Data based on four of six forms.

[h]Only drug use not under a doctor's orders is included here.

[i]Based on data from the revised question, which attempts to exclude the inappropriate reporting of nonprescription stimulants.

[j]12th grade only: Data based on five of six forms.

[k]8th and 10th grades only: Data based on three of four forms.

TABLE 7-1b
Frequency of Occasions of Heavy Drinking, for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	8th Grade	10th Grade	12th Grade
Think back over the LAST TWO WEEKS. How many times have you had five or more drinks in a row?			
None	98.0	94.6	89.8
Once	1.1	2.7	5.1
Twice	0.4	1.6	2.8
3 to 5 times	0.3	0.7	1.9
6 to 9 times	0.1	0.2	0.1
10 or more times	0.2	0.2	0.3
During the last two weeks, how many times (if any) have you had 10 or more drinks in a row?			
None	98.9	97.9	97.8
Once	0.3	1.3	0.9
Twice	0.5	0.6	0.6
3 to 5 times	0.1	0.2	0.1
6 to 9 times	*	*	0.4
10 or more times	0.2	0.0	0.2
During the last two weeks, how many times (if any) have you had 15 or more drinks in a row?			
None	—	—	98.3
Once	—	—	1.0
Twice	—	—	0.3
3 to 5 times	—	—	0.3
6 to 9 times	—	—	0.1
10 or more times	—	—	0.1

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%.

TABLE 7-1c
Frequency of Use for Selected Tobacco and Vaping Outcomes for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	8th Grade	10th Grade	12th Grade
Have you ever smoked cigarettes?			
Never	94.2	90.6	85.0
Once or twice	4.2	6.2	10.7
Occasionally but not regularly	0.7	2.0	2.8
Regularly in the past	0.6	0.8	1.1
Regularly now	0.3	0.5	0.4
How frequently have you smoked cigarettes during the past 30 days?			
Not at all (includes "never" category from question above)	98.9	97.7	97.1
Less than one cigarette per day	0.7	1.3	2.2
One to five cigarettes per day	0.1	0.4	0.3
About one-half pack per day	*	0.2	0.1
About one pack per day	0.1	*	0.1
About one and one-half packs per day	0.1	0.1	0.1
Two packs or more per day	0.1	0.2	0.2
Have you ever taken or used smokeless tobacco (snuff, plug, dipping tobacco, chewing tobacco)?			
Never	95.5	97.7	92.2
Once or twice	3.0	1.1	4.9
Occasionally but not regularly	0.6	0.3	1.3
Regularly in the past	0.5	0.4	1.1
Regularly now	0.4	0.2	0.4
How frequently have you taken smokeless tobacco during the past 30 days?			
Not at all (includes "never" category from question above)	98.4	97.7	97.5
Once or twice	0.6	1.1	1.4
Once or twice per week	0.2	0.3	0.5
Three to five times per week	0.3	0.4	0.2
About once a day	*	0.2	0.2
More than once a day	0.4	0.3	0.2

(Table continued on next page.)

TABLE 7-1c (cont.)
Frequency of Use for Selected Tobacco and Vaping Outcomes for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	8th Grade	10th Grade	12th Grade
In your LIFETIME, how often have you vaped nicotine?			
Never	83.5	74.9	66.5
Once or twice	7.0	11.1	11.4
Occasionally but not regularly	4.7	6.9	9.4
Regularly in the past	3.0	3.4	5.2
Regularly now	1.8	3.7	7.5
On how many DAYS (if any) during the LAST 30 DAYS have you vaped nicotine?			
No days	93.0	88.1	83.1
1–2 days	2.5	4.0	3.8
3–5 days	1.2	1.5	2.1
6–9 days	0.7	1.6	1.5
10–19 days	0.8	1.3	2.1
20–29 days	0.3	1.1	1.6
30 days	1.4	2.4	5.8
In your LIFETIME, how often have you vaped marijuana?			
Never	91.6	83.2	74.5
Once or twice	3.7	7.0	8.5
Occasionally but not regularly	2.8	4.9	8.7
Regularly in the past	0.8	2.4	3.7
Regularly now	1.1	2.5	4.7
On how many DAYS (if any) during the LAST 30 DAYS have you vaped marijuana?			
No days	95.8	91.5	86.3
1–2 days	1.4	2.9	4.4
3–5 days	0.8	1.7	2.2
6–9 days	0.4	1.2	1.6
10–19 days	0.6	1.2	2.0
20–29 days	0.3	0.6	1.3
30 days	0.8	1.0	2.2

(Table continued on next page.)

TABLE 7-1c (cont.)
Frequency of Use for Selected Tobacco and Vaping Outcomes for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	8th Grade	10th Grade	12th Grade
In your LIFETIME, how often have you vaped just flavoring?			
Never	87.2	82.6	78.3
Once or twice	6.7	9.7	11.0
Occasionally but not regularly	3.2	4.2	5.7
Regularly in the past	1.8	1.9	2.7
Regularly now	1.1	1.6	2.4
On how many DAYS (if any) during the LAST 30 DAYS have you vaped just flavoring?			
No days	95.5	93.3	91.9
1–2 days	2.0	2.7	2.7
3–5 days	0.8	1.1	1.5
6–9 days	0.3	0.8	1.0
10–19 days	0.5	0.8	0.7
20–29 days	0.2	0.3	0.6
30 days	0.7	1.0	1.6

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%.

TABLE 7-1d
Frequency of Days Used in the Past 30 Days for Various Tobacco and Other Substances for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Large Cigars			Flavored Little Cigars			Regular Little Cigars			Tobacco Using a Hookah		
	8th	10th	12th	8th	10th	12th	8th	10th	12th	8th	10th	12th
Number of days used in past 30 days												
No days	99.0	99.7	98.2	99.4	98.8	98.0	99.2	99.5	98.1	99.3	99.5	98.7
1–2 days	0.8	0.3	1.3	0.2	0.8	1.0	0.3	0.3	0.8	0.5	0.4	0.9
3–5 days	*	*	0.3	0.3	0.1	0.5	0.3	0.1	0.3	0.0	0.1	0.1
6–9 days	0.1	0.0	*	0.1	0.2	0.1	0.1	0.1	0.3	0.1	0.0	0.1
10–19 days	0.0	0.0	*	0.0	*	0.2	0.0	*	0.1	*	0.0	*
20–30 days	0.1	*	*	*	*	0.3	*	*	0.5	*	*	0.1

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%.

TABLE 7-1e
Frequency of Use Per Day for Energy Drinks and Energy Shots for 8th, 10th, and 12th Graders, 2023

(Entries are percentages.)

	Energy Drinks			Energy Shots		
	8th	10th	12th	8th	10th	12th
Number of drinks/shots per day						
None	70.5	63.8	63.5	92.8	93.1	93.9
Less than 1	16.4	18.7	19.7	3.2	3.4	2.8
One	7.5	11.5	11.2	1.9	1.6	1.1
Two	3.4	3.7	3.4	0.5	0.6	0.4
Three	0.9	1.0	1.4	0.3	0.5	0.8
Four	0.4	0.3	0.3	0.5	0.2	0.3
Five or six	0.1	0.5	0.2	0.2	0.1	0.4
7 or more	0.8	0.6	0.3	0.6	0.4	0.4

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' — ' indicates data not available. ' * ' indicates less than 0.05% but greater than 0%.

TABLE 7-2
MARIJUANA
Trends in Degree and Duration of Feeling High in Grade 12

(Entries are percentages.)

(Years cont.)

When you use marijuana or hashish how high do you usually get? [a]	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
% of Recent Users																
Not at all high	6.9	5.7	7.5	6.3	6.0	6.3	4.9	4.6	6.6	6.8	7.2	5.1	6.8	6.6	7.6	5.8
A little high	22.1	20.9	22.5	20.3	22.5	23.5	29.0	26.3	29.4	29.0	27.2	27.6	29.5	30.2	22.8	23.2
Moderately high	45.5	47.7	43.5	46.8	47.5	47.7	45.7	45.6	41.9	36.9	41.8	43.8	40.9	40.3	44.1	40.8
Very high	25.5	25.7	26.5	26.6	24.0	22.6	20.4	23.5	22.0	27.4	23.8	23.5	22.9	22.9	25.5	30.3
Approximate weighted N =	*1,142*	*1,266*	*1,448*	*1,873*	*1,606*	*1,495*	*1,607*	*1,588*	*1,366*	*1,264*	*1,298*	*1,177*	*1,174*	*1,142*	*782*	*694*
% of All Respondents																
No use in last 12 months	60.0	55.5	52.4	49.8	49.4	52.4	53.2	54.7	58.2	59.9	59.0	61.2	63.5	64.9	71.6	72.7
Not at all high	2.8	2.5	3.6	3.2	3.0	3.0	2.3	2.1	2.8	2.7	2.9	2.0	2.5	2.3	2.2	1.6
A little high	8.8	9.3	10.7	10.2	11.4	11.2	13.6	11.9	12.3	11.6	11.2	10.7	10.7	10.6	6.5	6.3
Moderately high	18.2	21.2	20.7	23.5	24.0	22.7	21.4	20.6	17.5	14.8	17.2	17.0	14.9	14.1	12.5	11.1
Very high	10.2	11.4	12.6	13.4	12.2	10.8	9.6	10.6	9.2	11.0	9.8	9.1	8.4	8.1	7.2	8.3
Approximate weighted N =	*2,855*	*2,845*	*3,042*	*3,731*	*3,175*	*3,143*	*3,437*	*3,506*	*3,268*	*3,154*	*3,163*	*3,033*	*3,219*	*3,250*	*2,755*	*2,542*
When you use marijuana or hashish how long do you usually stay high? [a]																
% of Recent Users																
Usually don't get high	8.5	8.0	9.5	8.0	8.4	8.5	7.6	7.0	9.9	9.6	9.3	8.2	11.1	9.6	10.8	7.8
One to two hours	39.7	43.2	42.6	47.4	48.7	51.7	52.5	53.8	55.6	51.7	52.4	55.0	52.9	56.0	51.9	53.3
Three to six hours	45.4	43.7	42.7	39.0	37.4	35.0	35.7	34.2	30.4	33.1	34.0	32.9	32.2	30.2	33.3	33.1
Seven to 24 hours	5.9	4.9	4.7	5.1	5.0	4.1	4.0	4.5	3.5	5.0	3.9	3.3	3.7	3.8	3.3	5.4
More than 24 hours	0.5	0.2	0.6	0.5	0.5	0.7	0.2	0.5	0.6	0.7	0.4	0.6	0.1	0.4	0.8	0.4
Approximate weighted N =	*1,141*	*1,261*	*1,449*	*1,873*	*1,619*	*1,500*	*1,607*	*1,593*	*1,357*	*1,268*	*1,295*	*1,176*	*1,172*	*1,147*	*787*	*694*
% of All Respondents																
No use in last 12 months	60.0	55.5	52.4	49.8	49.2	52.3	53.2	54.6	58.4	59.9	59.0	61.2	63.6	64.8	71.5	72.7
Usually don't get high	3.4	3.6	4.5	4.0	4.3	4.0	3.6	3.2	4.1	3.8	3.8	3.2	4.0	3.4	3.1	2.1
One to two hours	15.9	19.2	20.3	23.8	24.7	24.6	24.5	24.4	23.1	20.7	21.5	21.3	19.3	19.7	14.8	14.6
Three to six hours	18.2	19.4	20.3	19.6	19.0	16.7	16.7	15.5	12.7	13.3	13.9	12.8	11.7	10.7	9.5	9.0
Seven to 24 hours	2.4	2.2	2.2	2.6	2.5	2.0	1.9	2.0	1.4	2.0	1.6	1.3	1.3	1.3	0.9	1.5
More than 24 hours	0.2	0.1	0.3	0.3	0.2	0.3	0.1	0.2	0.3	0.3	0.2	0.2	0.0	0.1	0.2	0.1
Approximate weighted N =	*2,853*	*2,834*	*3,044*	*3,731*	*3,188*	*3,149*	*3,437*	*3,511*	*3,259*	*3,158*	*3,160*	*3,032*	*3,218*	*3,255*	*2,760*	*2,542*

(Table continued on next page.)

TABLE 7-2 (cont.)
MARIJUANA
Trends in Degree and Duration of Feeling High in Grade 12

(Entries are percentages.)

(Years cont.) →

When you use marijuana or hashish how high do you usually get? [a]	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
% of Recent Users																
Not at all high	7.2	7.8	9.0	7.0	8.1	5.7	5.4	6.1	6.8	6.3	5.4	5.4	5.1	5.4	6.4	5.2
A little high	21.6	25.9	19.4	21.7	22.3	17.9	18.6	22.0	19.8	22.6	18.7	23.2	17.7	19.2	21.1	18.8
Moderately high	42.8	39.3	45.9	40.6	40.8	47.5	45.1	43.6	43.7	39.6	42.8	41.7	44.6	42.6	42.7	44.3
Very high	28.4	27.0	25.8	30.7	28.8	28.9	30.9	28.4	29.8	31.4	33.1	29.7	32.7	32.8	29.9	31.8
Approximate weighted N =	*591*	*605*	*669*	*779*	*916*	*788*	*998*	*944*	*812*	*809*	*776*	*713*	*809*	*851*	*811*	*772*
% of All Respondents																
No use in last 12 months	76.2	76.8	74.8	69.6	64.1	66.5	61.2	62.6	63.6	61.8	63.0	66.3	66.6	65.2	66.7	66.9
Not at all high	1.7	1.8	2.3	2.1	2.9	1.9	2.1	2.3	2.5	2.4	2.0	1.8	1.7	1.9	2.1	1.7
A little high	5.1	6.0	4.9	6.6	8.0	6.0	7.2	8.2	7.2	8.6	6.9	7.8	5.9	6.7	7.0	6.2
Moderately high	10.2	9.1	11.6	12.4	14.7	15.9	17.5	16.3	15.9	15.1	15.8	14.1	14.9	14.8	14.2	14.7
Very high	6.7	6.3	6.5	9.3	10.4	9.7	12.0	10.6	10.8	12.0	12.2	10.0	10.9	11.4	9.9	10.5
Approximate weighted N =	*2,487*	*2,614*	*2,655*	*2,558*	*2,549*	*2,355*	*2,570*	*2,526*	*2,231*	*2,121*	*2,098*	*2,114*	*2,423*	*2,447*	*2,440*	*2,333*
When you use marijuana or hashish how long do you usually stay high? [a]																
% of Recent Users																
Usually don't get high	8.5	9.5	10.9	9.5	8.7	6.4	6.1	7.4	7.6	8.7	5.8	6.9	6.3	6.1	7.6	6.3
One to two hours	49.5	47.2	48.6	47.4	46.0	46.9	49.6	51.4	51.8	52.0	48.3	55.5	51.2	52.5	52.6	49.2
Three to six hours	34.4	37.7	36.8	36.1	37.6	39.3	37.1	35.7	33.5	34.9	38.2	32.4	37.2	35.3	34.7	37.3
Seven to 24 hours	6.9	4.9	3.2	5.5	6.7	6.2	6.0	5.1	5.9	3.6	6.0	5.1	4.8	4.3	3.7	6.2
More than 24 hours	0.8	0.8	0.4	1.4	1.0	1.2	1.1	0.4	1.2	0.9	1.6	0.1	0.6	1.9	1.3	1.0
Approximate weighted N =	*589*	*602*	*666*	*774*	*911*	*789*	*996*	*945*	*814*	*807*	*781*	*713*	*812*	*848*	*814*	*772*
% of All Respondents																
No use in last 12 months	76.3	76.9	74.9	69.7	64.2	66.5	61.2	62.6	63.6	61.9	62.9	66.3	66.5	65.3	66.7	66.9
Usually don't get high	2.0	2.2	2.7	2.9	3.1	2.1	2.4	2.8	2.8	3.3	2.2	2.3	2.1	2.1	2.5	2.1
One to two hours	11.7	10.9	12.2	14.4	16.5	15.7	19.3	19.2	18.9	19.8	17.9	18.7	17.1	18.2	17.5	16.3
Three to six hours	8.1	8.7	9.2	11.0	13.5	13.2	14.4	13.4	12.2	13.3	14.2	10.9	12.5	12.2	11.6	12.4
Seven to 24 hours	1.6	1.1	0.8	1.7	2.4	2.1	2.3	1.9	2.1	1.4	2.2	1.7	1.6	1.5	1.2	2.1
More than 24 hours	0.2	0.2	0.1	0.4	0.4	0.4	0.4	0.2	0.4	0.3	0.6	0.1	0.2	0.6	0.4	0.3
Approximate weighted N =	*2,485*	*2,611*	*2,652*	*2,553*	*2,544*	*2,356*	*2,568*	*2,527*	*2,233*	*2,119*	*2,103*	*2,114*	*2,426*	*2,444*	*2,442*	*2,334*

(Table continued on next page.)

TABLE 7-2 (cont.)
MARIJUANA
Trends in Degree and Duration of Feeling High in Grade 12

(Entries are percentages.)

When you use marijuana or hashish how high do you usually get? [a]	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 [b]	2020	2021	2022	2023
% of Recent Users																	
Not at all high	5.7	4.6	5.2	4.4	5.0	4.9	5.0	6.4	6.7	6.7	6.2	5.7	6.1	§	3.1	7.1	6.5
A little high	21.8	20.9	18.5	22.1	18.8	22.3	19.5	21.9	21.8	18.0	18.7	18.8	19.2	§	28.2	23.1	24.6
Moderately high	42.8	44.7	45.6	43.9	43.4	41.3	43.8	44.6	44.6	48.2	47.7	50.2	47.3	§	43.4	48.8	49.3
Very high	29.7	29.8	30.7	29.6	32.9	31.5	31.8	27.2	26.9	27.2	27.4	25.4	27.4	§	25.3	21.2	19.8
Approximate weighted N =	*737*	*740*	*724*	*812*	*860*	*817*	*740*	*698*	*689*	*693*	*766*	*754*	*347*	*§*	*404*	*388*	*316*
% of All Respondents																	
No use in last 12 months	69.3	67.7	67.9	65.6	63.0	63.7	64.9	66.1	67.5	63.9	63.1	65.7	65.2	§	71.4	71.8	73.4
Not at all high	1.8	1.5	1.7	1.5	1.8	1.8	1.7	2.2	2.2	2.4	2.3	2.0	2.1	§	0.9	2.0	1.7
A little high	6.7	6.8	5.9	7.6	7.0	8.1	6.8	7.4	7.1	6.5	6.9	6.4	6.7	§	8.1	6.5	6.5
Moderately high	13.1	14.4	14.7	15.1	16.1	15.0	15.4	15.2	14.5	17.4	17.6	17.2	16.5	§	12.4	13.7	13.1
Very high	9.1	9.6	9.9	10.2	12.2	11.4	11.2	9.2	8.7	9.8	10.1	8.7	9.5	§	7.2	6.0	5.3
Approximate weighted N =	*2,403*	*2,291*	*2,253*	*2,362*	*2,322*	*2,254*	*2,109*	*2,056*	*2,122*	*1,920*	*2,077*	*2,199*	*999*	*§*	*1,412*	*1,377*	*1,188*
When you use marijuana or hashish how long do you usually stay high? [a]																	
% of Recent Users																	
Usually don't get high	7.3	6.7	6.6	5.5	5.9	7.1	5.5	8.2	8.2	7.9	7.5	7.5	6.6	§	5.0	9.3	6.7
One to two hours	50.5	48.3	52.4	50.9	49.5	49.7	51.8	46.8	49.9	46.7	41.6	48.2	46.4	§	52.2	45.0	46.5
Three to six hours	37.3	38.2	35.6	38.2	36.8	35.9	37.9	38.6	36.0	38.7	44.8	37.1	39.8	§	36.8	39.1	36.1
Seven to 24 hours	4.3	5.7	4.1	4.4	5.6	6.1	2.7	5.7	5.2	5.1	5.0	5.4	5.6	§	5.4	5.1	8.7
More than 24 hours	0.7	1.1	1.4	1.1	2.2	1.2	2.2	0.9	0.8	1.6	1.2	1.8	1.7	§	0.6	1.5	2.0
Approximate weighted N =	*732*	*750*	*721*	*813*	*859*	*807*	*739*	*705*	*691*	*693*	*758*	*753*	*347*	*§*	*404*	*386*	*314*
% of All Respondents																	
No use in last 12 months	69.5	67.4	68.0	65.6	63.0	64.0	65.0	65.8	67.5	63.9	63.4	65.7	65.3	§	71.4	72.0	73.6
Usually don't get high	2.2	2.2	2.1	1.9	2.2	2.6	1.9	2.8	2.7	2.9	2.7	2.6	2.3	§	1.4	2.6	1.8
One to two hours	15.4	15.8	16.8	17.5	18.3	17.9	18.1	16.0	16.3	16.9	15.2	16.5	16.1	§	14.9	12.6	12.3
Three to six hours	11.4	12.5	11.4	13.1	13.6	12.9	13.3	13.2	11.7	14.0	16.4	12.7	13.8	§	10.5	11.0	9.5
Seven to 24 hours	1.3	1.9	1.3	1.5	2.1	2.1	1.0	1.9	1.7	1.8	1.8	1.9	1.9	§	1.5	1.4	2.3
More than 24 hours	0.2	0.4	0.4	0.4	0.8	0.4	0.8	0.3	0.3	0.6	0.4	0.6	0.6	§	0.2	0.4	0.5
Approximate weighted N =	*2,398*	*2,302*	*2,249*	*2,364*	*2,321*	*2,243*	*2,107*	*2,063*	*2,124*	*1,920*	*2,070*	*2,198*	*998*	*§*	*1,412*	*1,375*	*1,185*

Source. The Monitoring the Future study, the University of Michigan.

§ Insufficient data for estimate.

[a] These questions appear in just one form. They are asked only of respondents who report use of the drug in the prior 12 months (i.e., recent users).

[b] Results in following years may not be directly comparable due to survey mode effects; the 2021 survey was administered via a web questionnaire and in 2019 and earlier results are from paper-and-pencil surveys.

TABLE 7-3
ALCOHOL
Trends in Degree and Duration of Feeling High in Grade 12

(Entries are percentages.)

(Years cont.)

When you drink alcoholic beverages how drunk or high do you usually get? [a]	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
% of Recent Users																
Not at all high	23.6	21.6	20.6	19.1	19.6	20.7	18.9	18.9	18.8	19.0	19.7	18.5	18.8	20.0	22.1	23.0
A little high	33.8	32.3	32.8	33.9	33.6	32.6	33.8	32.6	35.8	34.0	34.8	34.7	34.4	34.2	34.4	32.3
Moderately high	35.9	38.0	39.6	39.9	38.7	39.7	41.4	40.9	38.8	39.2	38.5	39.8	38.8	38.2	35.9	36.2
Very high	6.6	8.1	7.0	7.1	8.1	7.0	5.8	7.5	6.7	7.8	7.1	7.1	8.0	7.6	7.6	8.5
Approximate weighted N =	*2,419*	*2,368*	*2,578*	*3,124*	*2,764*	*2,709*	*2,912*	*2,958*	*2,808*	*2,601*	*2,618*	*2,531*	*2,718*	*2,755*	*2,211*	*1,965*
% of All Respondents																
No use in last 12 months	15.2	14.3	13.0	12.3	12.5	13.2	14.7	14.1	14.1	17.1	16.1	16.0	14.6	14.8	18.8	21.2
Not at all high	20.0	18.5	17.9	16.8	17.2	18.0	16.2	16.2	16.2	15.8	16.5	15.5	16.0	17.0	18.0	18.1
A little high	28.7	27.7	28.5	29.7	29.4	28.3	28.9	28.0	30.7	28.2	29.2	29.1	29.4	29.2	28.0	25.5
Moderately high	30.4	32.6	34.5	35.0	33.8	34.4	35.3	35.2	33.3	32.5	32.3	33.4	33.1	32.6	29.2	28.5
Very high	5.6	6.9	6.1	6.2	7.1	6.1	5.0	6.5	5.7	6.5	5.9	6.0	6.8	6.5	6.1	6.7
Approximate weighted N =	*2,853*	*2,763*	*2,963*	*3,562*	*3,159*	*3,122*	*3,413*	*3,443*	*3,268*	*3,137*	*3,120*	*3,011*	*3,183*	*3,232*	*2,721*	*2,493*
When you drink alcoholic beverages how long do you usually stay drunk or high? [a]																
% of Recent Users																
Usually don't get high	25.7	24.6	22.6	21.3	21.7	22.7	20.9	20.5	21.4	20.3	21.5	20.9	20.8	22.9	24.2	24.7
One to two hours	40.5	38.5	38.8	39.8	41.9	39.5	40.3	41.3	40.8	42.2	41.5	40.6	43.8	42.0	41.3	39.4
Three to six hours	30.1	33.8	34.8	35.7	32.7	33.8	35.6	34.4	33.7	33.1	33.5	34.9	31.5	32.1	31.6	31.7
Seven to 24 hours	3.4	3.0	3.5	3.1	3.4	3.8	3.1	3.4	3.9	4.0	3.1	3.2	3.7	2.9	2.8	4.0
More than 24 hours	0.2	0.2	0.3	0.1	0.2	0.2	0.1	0.4	0.3	0.3	0.4	0.4	0.2	0.1	0.2	0.3
Approximate weighted N =	*2,403*	*2,358*	*2,547*	*3,098*	*2,746*	*2,697*	*2,892*	*2,947*	*2,792*	*2,588*	*2,608*	*2,509*	*2,711*	*2,748*	*2,202*	*1,949*
% of All Respondents																
No use in last 12 months	15.2	14.3	13.0	12.3	12.6	13.3	14.8	14.1	14.1	17.1	16.1	16.1	14.7	14.8	18.8	21.3
Usually don't get high	21.8	21.1	19.7	18.7	19.0	19.7	17.8	17.6	18.3	16.9	18.0	17.5	17.8	19.5	19.6	19.4
One to two hours	34.3	33.0	33.8	34.9	36.6	34.2	34.3	35.5	35.0	35.0	34.8	34.1	37.4	35.8	33.5	31.0
Three to six hours	25.5	29.0	30.3	31.3	28.6	29.3	30.4	29.6	28.9	27.4	28.1	29.3	26.9	27.3	25.6	24.9
Seven to 24 hours	2.9	2.6	3.0	2.7	3.0	3.3	2.7	2.9	3.3	3.4	2.6	2.7	3.2	2.5	2.2	3.2
More than 24 hours	0.2	0.2	0.3	0.1	0.2	0.2	0.1	0.3	0.2	0.2	0.3	0.4	0.2	0.1	0.2	0.2
Approximate weighted N =	*2,834*	*2,751*	*2,928*	*3,532*	*3,142*	*3,109*	*3,393*	*3,431*	*3,252*	*3,124*	*3,110*	*2,990*	*3,177*	*3,226*	*2,712*	*2,477*

(Table continued on next page.)

TABLE 7-3 (cont.)
ALCOHOL
Trends in Degree and Duration of Feeling High in Grade 12

(Entries are percentages.)

(Years cont.)

When you drink alcoholic beverages how drunk or high do you usually get? [a]	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
% of Recent Users																
Not at all high	20.6	24.2	23.8	19.7	20.7	23.2	22.0	20.6	21.1	22.4	20.5	23.2	21.0	23.5	23.6	25.0
A little high	36.8	32.5	32.2	32.7	32.6	29.9	28.9	29.8	27.3	26.1	26.7	30.1	28.6	25.8	25.3	27.6
Moderately high	34.0	35.6	36.5	38.3	36.5	35.5	37.5	37.5	41.7	38.8	40.9	35.1	37.6	37.6	38.7	35.2
Very high	8.6	7.7	7.5	9.2	10.1	11.4	11.6	12.1	10.0	12.7	11.8	11.7	12.9	13.1	12.4	12.2
Approximate weighted N =	*1,898*	*1,965*	*1,960*	*1,866*	*1,867*	*1,664*	*1,915*	*1,874*	*1,619*	*1,567*	*1,591*	*1,530*	*1,691*	*1,785*	*1,712*	*1,629*
% of All Respondents																
No use in last 12 months	22.7	23.6	25.4	26.4	25.7	28.2	24.7	25.6	27.0	26.2	24.2	28.7	30.1	26.5	29.9	30.0
Not at all high	15.9	18.5	17.8	14.5	15.4	16.6	16.6	15.3	15.4	16.6	15.6	16.5	14.7	17.3	16.5	17.5
A little high	28.5	24.8	24.0	24.1	24.2	21.5	21.8	22.2	19.9	19.3	20.2	21.4	20.0	18.9	17.8	19.3
Moderately high	26.3	27.2	27.2	28.2	27.1	25.5	28.2	27.9	30.5	28.6	31.0	25.1	26.3	27.7	27.1	24.6
Very high	6.7	5.9	5.6	6.8	7.5	8.2	8.7	9.0	7.3	9.4	9.0	8.3	9.0	9.7	8.7	8.6
Approximate weighted N =	*2,454*	*2,572*	*2,627*	*2,533*	*2,514*	*2,318*	*2,542*	*2,517*	*2,217*	*2,123*	*2,099*	*2,145*	*2,418*	*2,427*	*2,441*	*2,328*
When you drink alcoholic beverages how long do you usually stay drunk or high? [a]																
% of Recent Users																
Usually don't get high	23.0	27.0	26.1	22.5	23.2	25.3	23.5	22.6	22.5	24.6	21.5	24.9	22.3	24.6	25.2	27.0
One to two hours	40.1	37.3	38.8	40.5	36.7	33.1	33.6	36.8	32.3	32.2	33.7	33.7	32.7	31.5	31.0	32.1
Three to six hours	31.7	30.7	30.4	32.2	34.2	35.7	36.9	34.5	39.6	37.0	38.5	35.7	39.1	36.5	37.4	34.7
Seven to 24 hours	4.6	4.7	4.3	4.2	5.4	5.3	5.2	5.7	5.1	5.4	5.6	5.1	5.4	6.7	5.5	5.7
More than 24 hours	0.6	0.3	0.3	0.6	0.6	0.5	0.9	0.5	0.5	0.9	0.7	0.6	0.6	0.6	0.9	0.5
Approximate weighted N =	*1,884*	*1,951*	*1,950*	*1,857*	*1,849*	*1,657*	*1,897*	*1,853*	*1,614*	*1,552*	*1,586*	*1,523*	*1,681*	*1,775*	*1,698*	*1,625*
% of All Respondents																
No use in last 12 months	22.8	23.7	25.5	26.4	25.9	28.3	24.8	25.8	27.0	26.4	24.3	28.8	30.2	26.6	30.1	30.1
Usually don't get high	17.8	20.6	19.5	16.5	17.2	18.2	17.6	16.8	16.4	18.1	16.3	17.7	15.5	18.1	17.7	18.8
One to two hours	31.0	28.5	28.9	29.8	27.2	23.7	25.3	27.3	23.6	23.7	25.5	24.0	22.8	23.2	21.7	22.5
Three to six hours	24.4	23.4	22.7	23.7	25.3	25.6	27.7	25.6	28.9	27.2	29.2	25.5	27.3	26.8	26.2	24.2
Seven to 24 hours	3.5	3.6	3.2	3.1	4.0	3.8	3.9	4.2	3.7	3.9	4.2	3.6	3.8	4.9	3.8	4.0
More than 24 hours	0.5	0.2	0.2	0.4	0.4	0.4	0.7	0.4	0.4	0.7	0.5	0.4	0.4	0.5	0.6	0.4
Approximate weighted N =	*2,441*	*2,558*	*2,616*	*2,525*	*2,496*	*2,311*	*2,524*	*2,497*	*2,211*	*2,108*	*2,095*	*2,138*	*2,408*	*2,418*	*2,427*	*2,324*

(Table continued on next page.)

TABLE 7-3 (cont.)
ALCOHOL
Trends in Degree and Duration of Feeling High in Grade 12

(Entries are percentages.)

When you drink alcoholic beverages how drunk or high do you usually get? [a]	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 [b]	2020	2021	2022	2023
% of Recent Users																	
Not at all high	28.0	29.7	26.0	31.4	30.0	31.2	27.5	27.3	30.6	26.7	29.0	28.4	27.2	§	26.6	32.6	33.9
A little high	26.9	27.7	30.3	26.0	26.8	26.3	23.5	27.4	26.9	31.0	29.8	29.8	26.3	§	33.3	28.9	31.9
Moderately high	33.9	32.8	33.6	32.1	34.3	33.1	38.6	36.6	33.2	34.3	32.7	32.0	36.7	§	34.2	29.6	26.9
Very high	11.2	9.8	10.0	10.4	9.0	9.5	10.4	8.7	9.4	8.0	8.4	9.8	9.8	§	5.9	8.9	7.4
Approximate weighted N =	*1,676*	*1,608*	*1,565*	*1,617*	*1,546*	*1,502*	*1,365*	*1,308*	*1,291*	*1,183*	*1,221*	*1,313*	*548*	*§*	*698*	*722*	*544*
% of All Respondents																	
No use in last 12 months	30.1	30.4	30.5	31.9	33.7	33.1	35.3	36.6	39.8	39.3	40.9	40.7	43.7	§	50.9	47.8	54.2
Not at all high	19.6	20.7	18.1	21.4	19.9	20.9	17.8	17.3	18.4	16.2	17.2	16.8	15.3	§	13.1	17.0	15.5
A little high	18.8	19.3	21.1	17.7	17.7	17.6	15.2	17.4	16.2	18.8	17.6	17.7	14.8	§	16.4	15.1	14.6
Moderately high	23.7	22.8	23.4	21.9	22.7	22.2	25.0	23.2	20.0	20.8	19.3	19.0	20.7	§	16.8	15.4	12.3
Very high	7.8	6.8	7.0	7.1	6.0	6.3	6.7	5.5	5.6	4.9	5.0	5.8	5.5	§	2.9	4.7	3.4
Approximate weighted N =	*2,399*	*2,311*	*2,252*	*2,373*	*2,331*	*2,244*	*2,109*	*2,064*	*2,145*	*1,948*	*2,065*	*2,216*	*973*	*§*	*1,420*	*1,384*	*1,188*
When you drink alcoholic beverages how long do you usually stay drunk or high? [a]																	
% of Recent Users																	
Usually don't get high	30.2	32.3	28.0	31.2	32.0	31.7	26.6	27.6	30.4	29.3	30.0	31.9	29.5	§	27.9	32.4	36.6
One to two hours	28.9	27.4	33.4	28.4	28.5	31.3	28.7	33.4	31.0	31.8	34.6	28.1	33.6	§	37.7	36.1	34.5
Three to six hours	34.3	33.9	32.9	33.6	33.7	31.9	38.0	33.9	34.7	35.1	30.2	34.5	32.9	§	29.9	28.1	26.6
Seven to 24 hours	5.8	6.0	4.9	5.8	5.0	4.5	6.0	4.6	3.1	3.4	4.5	4.5	3.3	§	4.3	2.7	1.9
More than 24 hours	0.8	0.4	0.8	1.0	0.9	0.7	0.7	0.6	0.8	0.4	0.7	1.0	0.7	§	0.2	0.7	0.5
Approximate weighted N =	*1,664*	*1,601*	*1,561*	*1,606*	*1,535*	*1,498*	*1,361*	*1,304*	*1,286*	*1,176*	*1,213*	*1,315*	*547*	*§*	*692*	*723*	*543*
% of All Respondents																	
No use in last 12 months	30.3	30.5	30.6	32.0	33.8	33.1	35.3	36.7	39.9	39.4	41.0	40.7	43.7	§	51.1	47.8	54.3
Usually don't get high	21.0	22.5	19.4	21.2	21.4	21.2	17.2	17.5	18.3	17.8	17.7	18.9	16.6	§	13.7	16.9	16.7
One to two hours	20.2	19.0	23.2	19.3	18.8	20.9	18.6	21.1	18.6	19.3	20.4	16.7	18.9	§	18.5	18.9	15.8
Three to six hours	23.9	23.6	22.9	22.8	22.3	21.3	24.6	21.5	20.9	21.2	17.8	20.5	18.5	§	14.6	14.7	12.2
Seven to 24 hours	4.1	4.2	3.4	3.9	3.3	3.0	3.9	2.9	1.9	2.1	2.7	2.7	1.9	§	2.1	1.4	0.9
More than 24 hours	0.6	0.3	0.5	0.7	0.6	0.5	0.5	0.4	0.5	0.3	0.4	0.6	0.4	§	0.1	0.4	0.2
Approximate weighted N =	*2,387*	*2,304*	*2,248*	*2,362*	*2,320*	*2,241*	*2,105*	*2,060*	*2,140*	*1,941*	*2,058*	*2,218*	*972*	*§*	*1,414*	*1,384*	*1,187*

Source. The Monitoring the Future study, the University of Michigan.

§ Insufficient data for estimate.

[a] These questions appear in just one form. They are asked only of respondents who report use of the drug in the prior 12 months (i.e., recent users).

[b] Results in following years may not be directly comparable due to survey mode effects; the 2021 survey was administered via a web questionnaire and in 2019 and earlier results are from paper-and-pencil surveys.

Chapter 8

ATTITUDES AND BELIEFS ABOUT DRUG USE

Guided by its theoretical framework regarding historical variation in substance use behaviors, attitudes and beliefs, MTF measures key factors that have proved to be central to the explanation of historical differences and changes in drug use.[1] These factors include perceived risk of harm and personal disapproval of using the drug. Indeed, one of MTF's most important theoretical and empirical contributions to the general understanding of young people's drug use has been to demonstrate that changes in beliefs and attitudes about drugs are important determinants of historical trends, both upward and downward, in the use of many drugs.

This chapter focuses on three of these attitude and belief measures: (a) student beliefs about how much risk of ***harm*** various kinds of drug use have for the user, (b) the degree to which students personally ***disapprove*** of various kinds of drug use, and (c) attitudes about various forms of ***legal prohibitions*** to using drugs (for 12th grade students only). In the next chapter, we present results on the closely related topics of parents' and friends' attitudes about drugs, as students perceive them, as well as on various other aspects of the social context, including perceived availability and the extent of the student's exposure to people using drugs.

The data presented in this chapter show many inverse relationships at the aggregate level between the level of reported use of a drug and the levels of perceived risk and disapproval of using that drug. For example, among 10th and 12th graders, marijuana has a high level of use and one of the lowest levels of perceived risk and disapproval. These relationships suggest that individuals who believe that the use of a particular drug involves risk of harm, and/or who disapprove of its use, are less likely to use that drug; indeed, strong correlations also exist at the individual level between use of a drug and attitudes and beliefs about that drug.[2,3] Students who use a given drug are less likely to disapprove of its use or to see its use as dangerous.

Many attitudes and beliefs about specific drugs have changed dramatically during the life of the study, as have actual drug-using behaviors. Beginning in 1979, scientists, policymakers, and the media gave considerable attention to young people's increasing level of regular marijuana use as reported by this study and to the potential hazards associated with such use. As discussed later in this chapter, 12th graders' attitudes and beliefs about the regular use of marijuana shifted in a more conservative direction after 1979—a shift that coincided with a reversal in the previous, rapid rise of daily use and that very likely reflected the impact of the increased public attention and a greater focus on adverse consequences. Between 1986 and 1987, a similar and even more dramatic decline occurred for cocaine use and continued for some years. During much of the 1990s, however, there was an important turnaround or "relapse" in these attitudes, accompanied by an increased use of

[1] Johnston, L. D., O'Malley, P. M., Schulenberg, J. E., Bachman, J. G., Miech, R. A., & Patrick, M. E. (2016). *The objectives and theoretical foundation of the Monitoring the Future study* (Monitoring the Future Occasional Paper No. 84). Ann Arbor, MI: Institute for Social Research, University of Michigan.

[2] Johnston, L. D. (2003). Alcohol and illicit drugs: The role of risk perceptions. In D. Romer (Ed.), *Reducing adolescent risk: Toward an integrated approach* (pp. 56–74). Thousand Oaks, CA: Sage.

[3] Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). Prevalence and attitudes regarding marijuana use among adolescents over the past decade. *Pediatrics*, 140(6).

numerous illicit drugs, in particular marijuana. In the early 2000s, increased recognition of the hazards of ecstasy use appeared to contribute to a sharp downturn in use of that particular drug, as we had predicted. More recently, levels of nicotine vaping ranked near the bottom of all substances. in levels of perceived risk and disapproval, and it has since rapidly become one of the most commonly used substances among teens.

Trends and the Year 2019

The year 2019 requires special consideration when evaluating trends for the measures of this chapter. All 2019 estimates are presented in two columns. The first, in column "2019p," is based on student responses in a randomly-selected half of schools that completed the MTF survey with traditional paper-and-pencil questionnaires. The second, in column "2019e," is based on students responses in the other half of schools that completed the MTF survey with electronic data collection, using tablets connected to the internet (after 2019 all surveys used electronic data collection). In some cases the estimates in the two columns are similar, while in others they are substantially different, indicating that the survey mode (i.e., pencil-and-paper versus electronic) had some effect on how respondents answered the questionnaires.

Attitudes and behaviors appear especially vulnerable to differences in estimates across survey mode, in part because many of these questions required substantial modification for the electronic survey mode. When the survey used paper-and-pencil forms questions on topics such as disapproval appeared on one page, with each line listing a specific drug and then the associated response categories (e.g., strongly disapprove, disapprove, etc.). In the conversion to an electronic format many of these questions were split across multiple screens so that they would fit on an electronic display. (These same groupings were carried forward in all subsequent years.) The questions groupings on the screens introduced potential question-context effects. In essence, the items that accompanied a question in screen grouping could affect reported prevalence levels.

In what follows we compare estimates in 2021 and afterwards with the "2019e" estimates, all of which were collected with an electronic survey mode using the same screen groupings. In cases where the 2019 estimates are similar across survey modes the estimates in 2021 and afterwards are directly comparable to all previous years. In contrast, when the 2019 estimates substantially differ across survey mode then the comparisons of estimates before and after 2019 require consideration of the change in prevalence attributable to survey mode effects. (Estimates for 2020 are not presented because curtailed data collection due to the pandemic resulted in a sample size too small to produce reliable estimates for most attitude and behavior measures, which appeared on a randomly-selected subset of questionnaires.)

PERCEIVED HARMFULNESS OF DRUG USE IN 2023

Beliefs About Harmfulness Among 12th Graders

For many drugs, the level of risk attributed to use varies considerably with the intensity of use being considered. Expecting this to be the case, we structured the questions to differentiate among experimental, occasional, and regular drug use. (Questions about the harmfulness of alcohol and nicotine products specify different levels of use appropriate to those substances.) The respondent is asked, "How much do you think people risk harming themselves (physically or in other ways), if they . . .?" The sentence is completed with a series of phrases asking about increasing levels of

drug use, such as the series ". . . try marijuana once or twice," ". . . use marijuana occasionally," and ". . . use marijuana regularly." Response categories for the questions on harmfulness are "No Risk", "Slight Risk," "Moderate Risk," "Great Risk," and "Can't Say, Drug Unfamiliar." Students who respond "Can't Say, Drug Unfamiliar" are included in the denominator of the estimate in all grades.

Risk From Regular Use

- A majority of 12th graders perceive that regular use of many drugs entails a great risk of harm for the user. In 2023, 86% of 12th graders perceive a great risk of harm from regular use of ***heroin***, and 80% for ***cocaine*** (see Table 8-3). More than half (59%) of 12th graders attribute great risk to regular use of ***LSD***, and about half do so for regular use of ***amphetamines*** (49%) and regular use of ***sedatives*** (***barbiturates***) (53%). The perceived risk of ***marijuana*** is much lower, with about one in three 12th graders (31%) ascribing great risk to regular use.

- Almost three out of four 12th graders (74%) judge smoking one or more packs of ***cigarettes*** per day as entailing a great risk of harm for the user in 2023. This level of perceived risk is not much lower than the same perceived risk level for regular use of cocaine (80%).

- 12th grade students perceive substantially less risk to regular ***nicotine vaping*** (50%) than they do to regular cigarette use of one or more packs a day (74%).

- ***Marijuana vaping*** ranks as having a relatively lower risk for regular use among 12th grade students in comparison to nicotine vaping. In 2023, 40% considered it to involve "great risk."

- Regular use of ***alcohol*** is more explicitly defined in several questions providing specificity on the amount and frequency of use. About one in four 12th graders (24%) associate great risk of harm with having one or two drinks nearly every day, about 2 in 5 (39%) think there is great risk involved in having five or more drinks once or twice each weekend, and almost 3 in 4 (72%) think the user takes a great risk in having four or five drinks nearly every day. Still, it is noteworthy that more than 1 in 4 (28%) do *not* view having four or five drinks nearly every day as entailing great risk.

Risk From Experimental Use

- Far fewer respondents believe that a person runs a great risk of harm by trying a drug once or twice, which we refer to here as *experimental use*. Still, substantial proportions of 12th graders view even experimenting with most of the illicit drugs as risky. The 2023 percentages associating great risk with experimental use rank as follows:

Crystal methamphetamine (ice)	60%
Heroin without using a needle	60%
Heroin	58%
Steroids	50%
MDMA (ecstasy, Molly)	49%
PCP	43%
Narcotics other than heroin	41%
Amphetamines	37%
Adderall	32%
Sedatives (barbiturates)	31%
LSD	27%
Marijuana	11%
Alcohol	9%

Beliefs About Harmfulness Among 8th and 10th Graders

An abbreviated set of the same questions on perceived harmfulness has been asked of 8th and 10th graders since they were first surveyed by MTF in 1991. Perceived harmfulness of ***inhalant*** use is not asked of 12th graders but is included in the 8th and 10th grade questionnaires.

- Less than half of 8th and 10th grade students see great risk in ***smoking one to five cigarettes per day*** (36% of 8th graders and 45% of 10th graders, Tables 8-1 and 8-2). These low proportions seeing great risk suggest that at these younger ages many students are not taking into account that this level of use places smokers at substantial risk of becoming heavy, dependent users.

- Among 8th grade students half (50%) see vaping nicotine regularly as carrying great risk, as do 57% of 10th grade students and 50% of 12th grade students. These levels of perceived risk are substantially below those for regular cigarette use.

- Younger students, particularly 8th graders, are more likely than 12th graders to see ***marijuana*** use as dangerous. In 2023, 8th graders (33%) were almost three times more likely than 12th graders (13%) to see occasional marijuana use as entailing great risk of harm. Tenth graders fall in between at 24%.

- Eighth and 10th graders are more likely than 12th graders to see ***weekend binge drinking*** as dangerous: 52% for 8th graders, 54% for 10th graders, and 39% for 12th graders in 2023.

- Experimentation with ***inhalants*** is seen as dangerous by relatively low proportions of 8th and 10th graders (20% and 26%, respectively); these younger students are the ones most likely to use them.

TRENDS IN PERCEIVED HARMFULNESS OF DRUG USE THROUGH 2023

12th Grade Students

In what follows we present trends in perceived harmfulness up to 2023. Several very important trends in student beliefs about the dangers associated with using various drugs have occurred over the life of the study.

Perceived Risk and Marijuana Use

Some of the most important trends in perceived risk have involved ***marijuana*** (see Figures 8-1a and 8-4). Since 2015 the proportion of 12th graders who perceived great risk of harm from regular use has hovered around 30%. In 2023 it was 31%, after a two-year dip to 22% in 2021 that did not prove lasting.

The levels of 31% or lower in every year since 2017 are some of the lowest recorded by the survey, and represent the continuation of a long-term decline that started in 1991 when the level was 79%. The long term decrease is concerning in light of the fact that declines in perceived risk in the past have predicted future increases in use, a pattern that we interpret as reflecting a causal connection.[4] The trend line for the *perceived availability* of marijuana is included in Figure 8-4 to show its relative stability (particularly from 1975 to 1992) and, thus, its inability to explain the substantial fluctuations in usage levels over that time period.

From the beginning of the study in 1975 through 1978, the degree of harmfulness perceived to be associated with all levels of marijuana use declined as use increased sharply (see Figure 8-4). In 1979, for the first time, the proportion of 12th graders seeing risk to the user increased. This increase in perceived risk *preceded* an appreciable downturn in use (which began a year later in 1980) and continued fairly steadily through 1991, as use fell dramatically. However, in 1992 perceived risk began to drop again, which presaged a sharp increase in use beginning in 1993. As Figures 8-1a and 8-4 illustrate, perceived risk continued to drop and use continued to rise until 1997. This clear and consistent concordance in trends supports our contention that changes in beliefs about the harmfulness of marijuana use played a major role in causing both the downturn and the subsequent upturn in use. In both cases, the reversal in perceived risk preceded the reversal in actual use by a year. This pattern became evident again in 2003, as perceived risk for marijuana increased until 2006 while use declined, and between 2006 and 2012, when perceived risk of regular use declined while use rose a year later.

For two time periods this inverse association did not hold, in part because of a confounding influence of cigarette smoking. Specifically, from 1997 to 2002 and from 2006 to 2015 perceived risk of marijuana use declined but an increase in marijuana use did not take place (see Figure 8-4). In both these periods a substantial decline occurred in the percentage of adolescents who had

[4] Some time ago we addressed an alternate hypothesis—that a general shift toward a more conservative lifestyle might have accounted for the shifts in both attitudes and behaviors. The empirical evidence tended to contradict that hypothesis. See Bachman, J. G., Johnston, L. D., O'Malley, P. M., & Humphrey, R. H. (1988). Explaining the recent decline in marijuana use: Differentiating the effects of perceived risks, disapproval, and general lifestyle factors. *Journal of Health and Social Behavior*, *29*, 92–112. Johnston also showed that an increasing proportion of the quitters of and abstainers from marijuana use reported concern over the physical and psychological consequences of use as reasons for their non-use. See Johnston, L. D. (1982). A review and analysis of recent changes in marijuana use by American young people. In *Marijuana: The national impact on education* (pp. 8–13). New York: American Council on Marijuana. The role of perceived risk in the period of increased marijuana use in the 1990s is addressed in Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1998). Explaining the recent increases in students' marijuana use: The impacts of perceived risks and disapproval from 1976 through 1996. *American Journal of Public Health*, *88*, 887–892.

ever smoked a cigarette, from 65% in 1997 to 57% in 2002, and from 47% in 2011 to 31% in 2015. Marijuana use is much higher among youth who have tried a cigarette, in part because these youth have overcome the psychological barriers involved in inhaling smoke into the lungs. As increasing numbers of 12th graders fall into the category of youth who have never smoked a cigarette in their life, they move into a category that has historically had a very low level of marijuana use. If adolescent cigarette smoking had not declined during these periods then we believe the expected increase in marijuana use would likely have been observed; in fact, if cigarette use had not declined since 2011 we project marijuana use levels today would be at or near record highs.[5]

What accounts for changes in perceived risk of marijuana use, given the role this factor plays in marijuana use? In the earlier years of MTF, the largest increase (in absolute terms) in perceived risk occurred for regular marijuana use. The proportion of 12th graders who viewed regular marijuana use as involving a great risk doubled in just seven years from 35% to 70% between 1978 and 1985. Subsequently, the proportion increased more slowly, reaching 79% by 1991. This dramatic change occurred during a period when a substantial amount of scientific and media attention was devoted to the potential dangers of heavy marijuana use. Young people also had ample opportunity for vicarious learning about the effects of heavy use through observation, because such use was widespread among their peers. (In 1978, one in nine 12th graders was an active, daily marijuana user.) Concerns about the harmfulness of occasional and experimental use also increased, and those increases were even larger in proportional terms, though not in absolute terms. For example, the proportion of 12th graders seeing great risk in ***trying marijuana*** rose from 8% in 1978 to 27% in 1991, and for ***occasional marijuana use*** perceived risk rose from 12% to 41% over the same interval.

There are several possible and interconnected explanations for the turnaround and decline in perceived risk of marijuana use during the early 1990s. First, some of the forces that gave rise to the earlier increases in perceived risk became less influential: (a) because of lower use levels overall, fewer students had opportunities for vicarious learning by observing firsthand the effects of heavy marijuana use among their peers; (b) media coverage of the harmful effects of drug use, as well as of incidents resulting from drug use (particularly marijuana), decreased substantially in the early 1990s (as has been documented by media surveys of national news programs); (c) media coverage of the antidrug advertising campaign of the Partnership for a Drug-Free America also declined appreciably (as documented by both the Partnership and our own data from 12th graders on their levels of recalled exposure to such ads)[6]; (d) congressional funding for drug abuse prevention programs and curricula in the schools was cut appreciably in the early 1990s; and (e) the first Gulf War in 1990–1991 diverted attention from domestic concerns, including drug use, among both policy makers and the media. In addition, forces encouraging use became more visible; in particular, a number of rap, grunge, and rock groups started to sing the praises of using marijuana (and sometimes other drugs), perhaps influencing young people to think that using drugs might not be so dangerous after all. Finally, the drug experiences of many parents may have inhibited them from discussing drugs with their children, and may have caused them uncertainty in knowing how to handle the apparent hypocrisy of telling their children not to do what they

[5] Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). Prevalence and attitudes regarding marijuana use among adolescent over the past decade. *Pediatrics*, 140(6).

[6] Terry-McElrath, Y. M., Emery, S., Szczypka, G., & Johnston, L. D. (2011). Potential exposure to anti-drug advertising and drug-related attitudes, beliefs, and behaviors among United States youth, 1995-2006. *Addictive Behaviors, 36*, 116-124.

themselves had done as teens. We believe that all of these factors may have contributed to the resurgence of marijuana use in the 1990s—a period which we have referred to as the "relapse period" in the epidemic.

By the mid 1990s, many of these sources of influence had reversed direction, laying the groundwork for an end to the rise in marijuana use (and illicit drug use more generally). First, because there was considerably more use among young people and among many of their public role-model groups, the opportunity for vicarious learning by observing the consequences of use began to increase. And as MTF and other studies began to call the public's attention to the resurgence of the drug epidemic among youth, news stories on the subject increased substantially. Other institutions also changed their ways. The recording industry appeared to be producing fewer pro-drug lyrics and messages, in large part because of growing concern about overdose deaths among their own artists. (A similar dynamic seems to have occurred in the fashion industry with the resulting demise of "heroin chic.") Various government initiatives to prevent drug use by young people were launched, including the Department of Health and Human Services (DHHS) Secretary's Marijuana Use Prevention Initiative, which was launched at the 1994 annual national press conference reporting the MTF results. Federal funding for drug prevention in schools also increased appreciably.

In addition, parents were repeatedly exhorted to talk to their children about drugs, and it appears from other surveys that more of them did so. In the late 1990s, a federally sponsored media campaign involving paid advertising was initiated. MTF data indicate that the campaign reached increasing numbers of young people over a period of several years.[7]

Since 2012, perceived risk of marijuana use has fallen substantially as the movement to legalize recreational marijuana use has attained both substantial media coverage as well as success in increasing numbers of states legalizing it. A key message of this movement is that marijuana use is safe and does not pose much danger to health, a message that appears to be gaining traction with today's youth. This recent decline in perceived risk, which in the past has played a substantial role in reversing declines in use, has not yet been accompanied by an increase in marijuana use, likely in part because of the decline in youth cigarette use (discussed above).

Marijuana vaping is a newer mode of use (Table 8-3 and Figure 8-2a). Its level of perceived risk has ranked about 10 points higher than the survey's long-standing, more general question about marijuana that does not specify a mode of use. The percentage of 12th grade students who ascribed great risk to regular marijuana vaping increased from 31% in 2021 to 40% in 2023, which compares to levels for regular *general* marijuana use that were 22% in 2021 and 31% in 2023. Levels of perceived risk for occasional marijuana vaping have also significantly increased during the same time period, from 16% in 2021 to 22% in 2023, which compares to a 13% level for general marijuana use in both years. It is possible that media attention in 2020 to lung injuries and deaths that were attributed to vaping marijuana solutions with vitamin E acetate[8] raised levels of concern among students.

[7] For example, see Johnston, L. D. (2002, June 19). Written and oral testimony presented at hearings on the National Youth Anti-Drug Media Campaign, held by the Treasury and General Government Subcommittee on Appropriations of the U.S. Senate Appropriations Committee. *The Congressional Record*.

[8] Centers for Disease Control. (2020, Feb 25). Outbreak of lung injury associated with the use of e-cigarette, or vaping, products.

Vaping marijuana .presents an interesting contrast to vaping nicotine for perceived risk. In 2023 adolescents ascribed significantly ***more*** risk to regular marijuana vaping than to regular use of marijuana in general. In contrast, in 2023 adolescent ascribed significantly ***less*** risk to regular nicotine vaping than to regular cigarette use.

Perceived Risk for Substances Other than Marijuana

- Despite all that is known today about the health consequences of ***cigarette smoking***, about one fourth (26%) of 12th graders in 2023 still do not believe that there is a great risk in smoking a pack or more of cigarettes per day (Table 8-3). This level has hovered around 25% since the year 2000. One exception is that in 2021 it jumped to 34%, but this large increase did not last.

- Historically, the number of 12th graders who thought ***smoking a pack or more per day*** involved great risk to the user increased from 51% in 1975 to 64% in 1980. This shift corresponded to, and to some degree preceded, the downturn in current smoking found in this age group. Between 1980 and 1984, both perceived risk and use leveled. Then, from 1984 to 1993 perceived risk inched up from 64% to 70% while use remained quite stable. Perceived risk then declined a bit in 1994 and 1995 (as it did in the lower grades) and use rose through 1997. Between 1995 and 1998, perceived risk rose about five percentage points, presaging a decline in smoking that began in 1998. Overall, in the 13-year interval between 1984 and 1997, the percentage of 12th graders perceiving great risk in regular smoking rose only about five percentage points, whereas use actually rose by seven percentage points. Clearly, influences other than perceived risk were at work during this period. Between 1997 and 2006, perceived risk rose by another nine percentage points from 69% to 78%, while use fell by 15 percentage points (from 37% in 1997 to 22% in 2006). Thus, changes in perceived risk may well have contributed to the decline in use during this period. Perceived risk of smoking one or more packs per day among 12th graders has held steady since 2006 and hovered at around 75%, with a temporary dip to 66% during the pandemic in 2021. In 2023 it stood at 74%. In contrast, the 30-day prevalence of use continued to decline and was at 3% in 2023—the lowest level in the life of the study. It seems likely that increases in cigarette prices also played an important role in the decline during this period, including the increase in the federal tobacco tax passed in 2009.

- Levels of perceived risk for regular ***nicotine vaping*** significantly increased to 50% in 2023, from 45% the previous year (Table 8-3 and Figure 8-9a).

  Overall, perceived risk of nicotine vaping has increased substantially since first measured in 2017. Long term comparisons require an adjustment for a survey mode effect for this measure, in which estimates are about six points higher when students used electronic devices as compared to paper-and-pencil questionnaires to answer the survey questions (compare columns '2019p' and '2019e' in Table 8-3). Taking into account this survey mode effect, the 50% level in 2023 would be about 44% if assessed with paper-and-pencil (44%=50% - 6%), which compares to the 27% in 2017 (when the survey used paper-and-pencil questionnaires).

Perceived risk levels for nicotine vaping are substantially lower than they are for regular cigarette use (74%).

- Like marijuana, ***cocaine*** has shown a pattern of closely corresponding inverse trends between perceived risk and actual use among 12th graders (see Figure 8-5). In 2023, the proportion of 12th graders who perceive great risk in trying cocaine once or twice was 47%, about where it has hovered for the past two decades. A tight, mirror image correspondence between perceived risk and levels of use was present in the 1970s and 1980s. First, the percentage who perceived great risk in ***trying cocaine*** once or twice dropped steadily from 43% to 31% between 1975 and 1980, corresponding to a period of rapidly increasing annual prevalence of use. However, rather than reversing sharply, as did perceived risk for marijuana use, perceived risk for experimental cocaine use moved rather little from 1980 to 1986, corresponding to a fairly stable period in actual use. Then, from 1986 to 1987, perceived risk for experimenting with cocaine jumped abruptly from 34% to 48% in a single year, and in that year the first significant decline in use took place. From 1987 to 1990, perceived risk continued to rise sharply as use fell sharply.

  Correspondence between perceived risk of trying cocaine and levels of actual use can also be seen in the 1990s, although the changes are smaller. An increase in perceived risk of cocaine use ended in 1991, similar to the trend for marijuana. Perceived risk began to fall in 1992, and a year later actual use began rising among 12th graders (see Figure 8-5). The significant reversal of trends in beliefs set the stage for a resurgence in use, particularly when combined with the fact that the proportions of students using two of the so-called "gateway drugs"—cigarettes and marijuana—had also been rising. From 1992 to 1999, the proportion of 12th graders using cocaine in the prior 12 months rose steadily and doubled from 3.1% to 6.2% before decreasing significantly to 5.0% in 2000, with little change for some years after that.

  Levels of actual cocaine use track more closely with trends in perceived risk of experimental cocaine use than they with perceived risk of regular cocaine use. As we had predicted earlier, it was not until 12th graders' attitudes about behaviors they saw as relevant to themselves began to change (i.e., attitudes about experimental and occasional cocaine use) that the behaviors also began to shift.[9,10]

  We believe the large changes in both perceived risk of experimental and occasional use as well in changes in actual levels of use from 1986 to 1991 resulted from three factors: (a) the greatly increased media coverage of cocaine use and its dangers that occurred in that interval (particularly in 1986); (b) an increasing number of antidrug, and specifically, anticocaine media campaigns; and (c) the widely publicized 1986 deaths, publicly attributed to cocaine use, of sports stars Len Bias and Don Rogers. The deaths of the sports

[9] See Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1990). Explaining the recent decline in cocaine use among young adults: Further evidence that perceived risks and disapproval lead to reduced drug use. *Journal of Health and Social Behavior*, *31*, 173–184. For a discussion of perceived risk in the larger set of factors influencing trends, and for a consideration of the forces likely to influence perceived risk, see Johnston, L. D. (1991). Toward a theory of drug epidemics. In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–131). Hillsdale, NJ: Lawrence Erlbaum.

[10] Our belief in the importance of perceived risk of experimental and occasional cocaine use led us to include in 1986 for the first time the question about the dangers of occasional cocaine use. The very next year proved to have a sharp rise on this measure.

stars, we believe, helped to bring home the notions, first, that no one—regardless of age or physical condition—is invulnerable to being killed by cocaine, and second, that one does not have to be an addict or regular user to suffer such adverse consequences. In the media coverage that occurred during that period, the addictive potential of cocaine was heavily emphasized. The initial reporting of Don Rogers's death indicated that it was his first time to use, which made the story even more powerful; but that assertion was reversed subsequently.

- The proportion of 12th grade students perceiving great harm in regular use of ***amphetamines*** remained between 60% and 70% throughout most of the survey, but since 2009 has shown a considerable drop, and was 49% in 2023. This drop is underestimated somewhat because perceived risk of regular amphetamine use is about six points higher when students used electronic devices as compared to paper-and-pencil questionnaires to answer the survey questions (compare columns '2019p' and '2019e' in Table 8-3). Consequently the 49% level in 2023 would be expected to be closer to 43% if the survey had been conducted with paper-and-pencil surveys, as it had been in 2018 and all previous years.

- The proportion of 12th graders perceiving harm from regular use of ***sedatives (barbiturates)*** has ranged from 45% to 55% since 2002 and in 2023 was at 53%. Because of a survey mode effect (compare columns '2019p' and '2019e' in Table 8-3), the 53% in 2023 would be expected to be about 9 points lower at 44% if the survey had been conducted using paper-and-pencil questionnaires.

  A substantial decline took place between 1992 and 2002 during, and continuing on beyond, the relapse phase in drug use generally. In 1992 perceived risk levels were at 70%, where they had been since the start of the survey in 1975 and by 2002 they were at 49%.

- The percentage of 12th grade students who ascribed great risk to use of a ***narcotic other than heroin*** (such as the prescription opioids OxyContin and Vicodin) has changed little since the item was first added to the survey in 2010. Levels of risk for experimental use have ranged from 38% to 44% (41% in 2023), and for occasional use have varied from 51% to 59% (51% in 2023). For regular use, levels varied between 71% and 76% before 2020, and between 63% and 67% afterwards (66% in 2023). The dramatic decline in prevalence since 2011, with past 12-month prevalence steadily falling from 9% in 2011 to 1% in 2023 does not track with changes in perceived risk (although it does track with decreases in perceived availability).

- ***Heroin*** has consistently been seen as one of the most dangerous drugs—in particular regular heroin use, which no doubt accounts at least in part for the low prevalence levels observed throughout the life of the study. In all years of the study more than 80% of 12th grade students perceive a great risk to regular heroin use (Table 8-3, Figure 8-6a).

  More variation has been observed for experimental or occasional use of heroin (Figure 8-6a). Perceived risk of experimental use declined gradually between 1975 and 1986 (perhaps as the result of generational forgetting of the dangers of heroin), even though use dropped

and then stabilized in that interval. There was then an upward shift in perceived risk in 1987 (the same year in which there was a dramatic rise in perceived risk for cocaine) to a new level, where it held for four years. In 1992 risk dropped to a lower plateau again, a year or two before use started to rise. As perceived risk fell in the early 1990s, heroin use by 12th graders rose, with annual prevalence of use nearly tripling from 0.4% in 1991 to 1.1% by 1995. (Use also rose in the lower grades.) From 1995 through 1998, there was some increase in perceived risk (an increase that was also observed in the lower grades; see Tables 8-1 and 8-2 and Figure 8-6a). Usage levels then generally stabilized. Perhaps not entirely coincidentally, the Partnership for a Drug-Free America launched a media campaign aimed at deglamorizing heroin in 1996. While the intended target audience was young adults, many secondary school students undoubtedly saw the ads as well. Annual use of heroin by 12th graders decreased from 1.5% in 2000 to 0.8% by 2003 subsequent to the upturn in perceived risk between 1995 and 1998. Neither perceived risk nor use of heroin has changed a great deal
since.

- The proportion of 12th graders who saw great risk in regular use of ***LSD*** was 59% in 2023. This value would be expected to be about nine points lower if the 2023 survey had used paper-and-pencil questionnaires, given the survey mode effect documented in 2019 (compare column '2019p' with '2019e' in Table 8-3). The resulting value of 50% represents a long, gradual decline since the 84% level recorded (using paper surveys) in 1991.

  Perceived risk of experimental use of LSD also declined during the 1990s to about 35% in 2000; it remained at that level until about 2014 but has since dropped to 27% in 2023. Given the survey mode effect noted in 2019, this 27% would be about 6 points lower and register at 21% if the 2023 survey had used paper-and-pencil questionnaires.

  The sharp decline in 12th graders' perceived risk of LSD use between 1991 and 1997 was particularly noteworthy, confirming our concerns about generational forgetting—that attitudes and beliefs of the newer generation of young people were not influenced by the direct and vicarious learning experiences that helped to make their predecessors more cautious about using LSD. In the late 1960s and early 1970s, young people became aware of the risks of bad trips, uncontrollable flashbacks, dangerous behaviors under the influence, etc. Since then, those who have come into their teens likely know much less about such risks.

  Despite the fact that perceived risk of LSD use declined some prior to 2001 (while disapproval was fairly steady), use had been falling. Obviously, this decline in use cannot be explained by a change in attitudes, and thus raises the question of whether there was any substitution by another drug. As it happens, another drug popular in the club scene and also used for its hallucinogenic properties, ***MDMA*** (ecstasy, and more recently known as 'Molly'), had been in ascent and may have had some substitution effect. From 1998 to 2001, MDMA use more than doubled as LSD use was in decline. However, after 2001 both drugs declined, suggesting that there may no longer have been a displacement effect. Indeed, after 2001 there was a sharp decline in availability of LSD, which may well have

played a key role in its further sharp drop in use. The historically low levels of perceived risk for LSD reached in recent years suggest that young people today are not well prepared to resist resurgences in the popularity and availability of that drug, should those occur.

- The proportion of 12th graders who saw potential harm in trying ***MDMA*** (also known as ecstasy or more recently as Molly) "once or twice" has increased substantially in recent years, from 41% in 2021 to 49% in 2023. This level would be expected to be about six points lower and register at 43% if the 2023 survey had been conducted with paper-and-pencil questionnaires, due to a survey mode effect documented in 2019 (compared columns '2019p' and '2019e' in Table 8-3). With the increase in recent years, current levels of perceived risk are returning to the higher levels recorded from 2019 back to 2001 when it ranged from 46% to 57%.

  As documented in the next chapter, there was a dramatic rise in the availability of MDMA (ecstasy and, later, Molly) to American teens up to 2001, which may well help to explain its spread. The significant increases in perceived risk (for all three grades) in 2000 through 2003 were encouraging. We stated in the 2001 report in this series that we believed the use of this drug would not decline until more young people came to see its use as dangerous. In 2002, use of MDMA decreased some for all three grades, and in 2003 use decreased significantly for all three grades, presumably driven by the sharp increases in the perceptions of risk already underway.

  We believe that the unusually rapid changes in perceptions of risk about MDMA reflect the effects of several factors: much media coverage of adverse events associated with ecstasy use; the substantial efforts of the National Institute on Drug Abuse to gather and disseminate information about the adverse consequences associated with ecstasy use; and efforts by the Partnership for a Drug-Free America and the Office of National Drug Control Policy to discourage ecstasy use through an ad campaign, begun in 2002, that addressed the hazards of use.

  After the dramatic increase in perceived risk up through 2005 a long gradual decline took place that saw levels fall from 60% in 2005 to 46% in 2019. The increase in the past few years that culminated in a mode-adjusted level of 43% still remains far lower than the levels in the early 2000s. These lower levels raise the possibility that a process of generational forgetting of the hazards of MDMA use has been taking place. Declining levels of perceived risk for MDMA are especially concerning because some manufacturers mix MDMA with dangerous adulterants, such as stimulants found in "bath salts," as well as cocaine and heroin.[11] (More recently the synthetic opioid fentanyl has become a particularly dangerous adulterant added to many drugs.)

- The proportion of 12th grade students associating great risk with experimental use of ***crystal methamphetamine*** (***ice***) reached the highest level recorded by the survey in 2013, at 72%, and has declined slightly since then, to 60% by 2023 (Table 8-3). The current level of perceived risk is higher than risk of experimental use of any other drug except heroin,

[11] Campo-Flores, A. & Elinson, Z. (September 24, 2013). Club drug takes deadly toll; billed as pure ecstasy, "Molly" often gets laced with more dangerous substances. *The Wall Street Journal.*

which also stood at 60% in 2023. Consistent with the high levels of perceived risk, levels of use are extremely low, and in 2023 the prevalence of past-year use was 0.4%. A drop in prevalence occurred after increases in perceived risk from 1999–2014, consistent with perceived risk being a leading indicator and cause of changes in drug use.

- The proportion of 12th graders who perceived a great risk of harm in trying ***PCP*** (phencyclidine) was 43% in 2023, which is the lowest level recorded over the life of the survey (Table 8-3). Since first measured in 1991, it has varied between 44% and 55%. Actual use has remained low since about 2003, with past 30-day use less than 1% (Chapter 5).

- In 2023, 50% of 12th grade students saw a great risk in taking anabolic ***steroids*** (Table 8-3). This level would be expected to be about eight points lower and register at 42% if the 2023 survey had been conducted with paper-and-pencil questionnaires, due to a survey mode effect documented in 2019 (compared columns '2019p' and '2019e' in Table 8-3). This 42% level would be the second lowest recorded over the life of the survey since first tracked in 1989 (the lowest was in the previous year, at a mode-adjusted 41%).

  Use of steroids is very low, despite moderate levels of perceived risk, with a past-year prevalence of less than 1% in 2023 (see Chapter 5). These results suggest factors other than perceived harmfulness are driving the prevalence of steroids; availability likely plays a role because in recent years reported availability is at the lowest levels ever recorded by the survey in all three grades (see Chapter 9). The scheduling of many steroids by the DEA in 1990, with updates in 2004 making their use and possession illegal, has likely contributed heavily to both to the decline in perceived availability and in use.

  The history of perceived risk of steroids and adolescent use of them bears some resemblance to the situation regarding cocaine use. A noteworthy change in steroids occurred in 1992, when perceived risk rose by five percentage points (from 66% to 71%) among 12th graders. (Similar changes occurred for 8th and 10th graders.) That change suggested that the widely publicized experience of professional football player Lyle Alzado, who died of a brain tumor in 1992 that he believed resulted from his steroid use, had an important effect on young people's beliefs regarding the harmfulness of this drug. The effect of this "unfortunate role model" was similar to the effect of Len Bias's death on beliefs about the dangers of cocaine use, except that in Lyle Alzado's case he intentionally set about making his experience an object lesson for young people.[12] Unfortunately, levels of perceived risk of steroids have since declined.

  This decline accelerated in 1999, with an unusually sharp drop of six percentage points in 12th graders' perceived risk of steroid use; this coincided with a slight rise in use among 12th graders and a sharp rise in use among 8th and 10th graders. (Since 1995 perceived risk has been measured only among 12th graders, so their answers serve as the best estimate we

[12] The July 8, 1991, issue of *Sports Illustrated* magazine had an article by Lyle Alzado entitled "I Lied." For a discussion of the importance of vicarious learning from unfortunate role models, see Johnston, L. D. (1991). Toward a theory of drug epidemics. In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), *Persuasive communication and drug abuse prevention* (pp. 93–131). Hillsdale, NJ: Lawrence Erlbaum. (Listed as a chapter on the MTF website.)

have of how this belief was changing among secondary school students more generally. For this reason, we comment in this section on 8th and 10th graders as well as 12th graders.) We believe it likely that a highly visible baseball player (Mark McGwire), whose use of the steroid precursor androstenedione in the year that he hit a new home run record was widely reported in 1998, served unwittingly as a role model that year, this time associating the use of steroids with athletic success and physical prowess. In 2000 there was a continued sharp decline in perceived risk of steroid use among 12th graders. After 2000 perceived risk did not change a great deal until there was a significant drop in 2013, a leveling, and another significant drop in 2017.

A cohort effect is suggested by the pattern of declining steroid use across the grades since 1999; 8th graders were first to show a downturn beginning in about 2001, followed by 10th graders in 2003, and then by 12th graders in about 2005. Those staggered decreases followed somewhat staggered increases in the prior years, though both 8th and 10th graders began to increase in the same year (1999). In 2004 perceived risk began to rise in 12th grade (again, the only grade in which it is measured), and use continued to decline in all grades. Some might ask why use did not increase in the years after stories of widespread steroid use in professional baseball hit the headlines. The answer may lie in the amount of negative publicity and negative outcomes that have emerged for some of these players. Mark McGwire eventually admitted in 2010 that he had used steroids and that he regretted their use. Baseball player Roger Clemens had denied using steroids, but in 2010 he was indicted by a grand jury, charged with lying to Congress about his use of these drugs. He was tried on six felony counts and, following a long and damaging trial process, was found not guilty on all counts.

- The proportion perceiving great risk of harm in having ***one or two drinks nearly every day*** was 24% in 2023 among 12th graders, about the same level as it had been during the first year of the survey in 1975, when it was 22% (Figure 8-7a).

  Over the course of the survey this measure gradually increased to a peak of 33% in 1991, when use of many drugs reached a nadir, and subsequently leveled at about 21–22%. The earlier decline in perceived risk may have been due in part to publicity about the possible value of moderate alcohol consumption in protecting against cardiovascular disease.

- The proportion of 12th graders perceiving great risk in having ***four or five drinks nearly every day*** significantly increased to 72% in 2023, from 67% the year before. This level has always been high, and 2023 marks the highest level recorded over the life of the survey (Figure 8-7a).

- The percentage of 12th grade students who perceived "great risk" in ***weekend binge drinking*** (having five or more drinks in a row once or twice each weekend) was 39% in 2023 (Table 8-3 and Figure 8-7a). This percentage is an increase (although not a statistically significant one) from its 2021 level of 34% and its 2019 level of 36% (as measured with electronic data collection in column '2019e'). With these recent increases levels of perceived risk are returning to the range of 42% to 48%, which marked the high and low levels observed for the period of more than three decades from 1987 to 2019.

Actual prevalence of binge drinking declined appreciably between 1981 and 1993, from 41% to 28%, after which it rose slightly during the relapse phase in drug use and reached 32% by 1998. The increase in perceived risk during the 1980s may have been due in large part to the many efforts aimed at discouraging drunk driving—a point discussed in more detail elsewhere.[13] Since 1998, perceived risk has increased only slightly overall while binge drinking has declined to historic lows in recent years (10% in 2023), suggesting the influence of factors other than perceived risk for this time period.

8th and 10th Grade Students

The 8th and 10th grade surveys ask about perceived risk for fewer drugs than the 12th grade surveys. (See also Tables 8-1 through 8-3 for the tabular data)

- The proportions of 8th and 10th grade students who see great risk in pack-a-day ***cigarette smoking*** has declined over the past two years, significantly so in 10th grade (Tables 8-1 and 8-2, and Figure 8-8a). From 2021 to 2023 the decline in 8th grade was 5 percentage points (from 64% to 59%) and in 10th grade it was 4 percentage points (from 73% to 69%). In historical context these levels are high in comparison to previous decades, even with the recent declines in perceived risk. Nevertheless, the declines are concerning and warrant close monitoring in the coming years, given that new trends in adolescent drug use often start in the lower grades and then spread to the higher grades as youth cohorts age.

  After 1995, perceived risk rose in all three grade levels, including significant increases for 8th and 10th graders in 2000. Levels of smoking began to drop in 1997 for grades 8 and 10, and a year later among 12th graders; thus, an increase in perceived risk presaged, and very likely helped to drive, this important decline. Since 2000 perceived risk of smoking has increased somewhat further while actual cigarette use has declined precipitously. The increases in perceived risk since 2000 are not large enough to account for the dramatic decline in cigarette smoking in the following years, suggesting that other forces were at work.

  A number of factors in the late 1990s may well have contributed to the decline in teen smoking. A series of public events, such as highly visible lawsuits against the tobacco industry, brought considerable adverse publicity to the product and the industry, eventually leading to the widely publicized Tobacco Master Settlement Agreement in November 1998 between the states' Attorneys General and the major tobacco companies. Additional deterrents included increased cigarette prices, increased tobacco taxes, substantial tobacco prevention efforts in several large states, a nationwide antismoking ad campaign funded by the American Legacy Foundation (an entity created and funded under the tobacco settlement), the withdrawal of advertising from billboards, and the elimination of the Joe Camel ads. Monitoring the Future called widespread national attention in the early 1990s to sharp increases in smoking among teens, which may have played a role in instigating many of these efforts.

[13] O'Malley, P. M. & Johnston, L. D. (1999). Drinking and driving among American high school seniors: 1984–1997. *American Journal of Public Health*, *89*, 678–684.

- Trends in the proportions of students who perceive great risk in ***vaping nicotine*** vary by grade. In 8th grade the proportion for *occasional* use has stayed steady and was 23% in both 2021 and 2023. This is the lowest level for occasional use of any drug assessed in 8th grade. For *regular* use, perceived risk has been trending down, from 55% in 2020 to 50% in 2023.

  In contrast, in 10th grade perceived risk has trended up. Levels significantly increased for both regular use, from 52% in 2022 to 57% in 2023, and for occasional use, from 23% in 2022 to 26% in 2023. These trends are consistent with the upward trend in 12th grade, suggesting that effort to warn teens of the potential dangers of nicotine vaping have been more successful in high school than in middle school.

- The proportions of students who see great risk in regular use of ***smokeless tobacco*** in 2023 was 39% in 8th grade (Table 8-1). This level would be expected to be about four points lower and register at 35% if the 2023 survey had been conducted with paper-and-pencil questionnaires, due to a survey mode effect documented in 2019 (compared columns '2019p' and '2019e' in Table 8-1). The 35% level is within a small window of 33% to 37% where this measure has hovered since 2013 (adjusting estimates to paper-and-pencil levels).

  In 10th grade the level of risk had small, long-term increases starting in 1995 that lasted for a decade and resulted in increases of about 10 percentage points for 10th graders (Table 8-2). During the period of substantial increase in perceived risk between 1995 and 2000, a considerable decline in the use of smokeless tobacco took place. The gains in perceived risk lasted through about 2011 before receding and then leveling between 40% and 45%.

- For 8th and 10th grade students, the 2023 proportion who see great risk in experimental use of ***marijuana*** was near the lowest level recorded by the survey, at 21% and 17%, respectively (Tables 8-1 and 8-2, also Figure 8-1a).

  It is possible that youth throughout the country observe the recent trends permitting medical and recreational marijuana in many states for adult use and interpret them as signals that the drug is not dangerous and does not pose great risk of harm. Perceived risk has been in a steady decline since the mid 2000s. We had expected that a larger increase in marijuana use would have occurred by now in light of the decrease in perceived risk, but this increase was likely offset as a consequence of the decline in cigarette smoking (discussed above).[14]

  Before the late 2000s, the trend in perceived risk resembled a U curve (Figure 8-1a), in which it was at its highest level during the first two years when the survey measured it in 1991–1992 (40% for 8th graders and 32% for 10th graders), declined during the 1990s relapse, and then rebounded until the mid 2000s. In both 8th and 10th grades, marijuana prevalence followed a mirror image of these trends, with prevalence increasing during the 1990s (when perceived risk decreased), decreasing from the late 1990s through the mid-2000s (when perceived risk increased), and then increasing through 2010 (when perceived risk decreased).

[14] Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). Prevalence and attitudes regarding marijuana use among adolescents over the past decade. *Pediatrics*, 140(6).

Perceived harm of ***regular marijuana use*** follows the same trends, although overall levels of perceived risk are higher as would be expected. In 2023 the proportions of 8th graders who saw great risk in regular use of marijuana were near the lowest levels ever recorded by the survey at 54%. In 10th grade the level significantly increased in 2023 to 47%, from 42% the year before. This increase is consistent with a four percentage-point increase that took place in 12th grade from 2022 to 2023, although in 12th grade the increase was not statistically significant.

- A newer mode of cannabis use is ***marijuana vaping***, for which questions on perceived risk were first added to survey in 2020. In 8th and 10th grade the levels for occasional and regular use are similar to perceived risk for the survey's long-standing question on marijuana use that does not specify a mode (i.e., "use marijuana occasionally" and "use marijuana regularly").

- In both 8th and 10th grade the percentage of students who perceived great risk of harm of ***experimental cocaine*** use did not significantly change from 2021 to 2023, when it was at 43% and 55%, respectively (Tables 8-1 and 8-2, and Figure 8-3a). It also showed little trending in the years 2000 to 2019 for both grades.

  Comparisons of prevalence levels before and after 2020 are complicated by a survey mode effect in 2019 that resulted in higher levels for students who answered using electronic devices in comparison to paper and pencil questionnaires. A further complication is that the question wording changed in 2020 and afterwards to read "try cocaine once or twice" from "try cocaine in powder form once or twice" in previous years. While these methodological issues affect comparisons across the year 2020, they do not affect trending in the periods before or after..

- The percentage of students who perceived great risk in ***occasional cocaine use*** significantly decreased from 2021 to 2023 in both grades (Tables 8-1 and 8-2, and Figure 8-3a). In 8th grade it declined from 64% to 58% and in 10th grade from 74% to 70%. Nevertheless, prevalence levels have remained very low at less than 1% in both grades for past 12-month use since 2021.

  The question wording changed in 2020 to ask about "take cocaine occasionally" from "take cocaine powder occasionally." These changes affect comparisons across 2020, but not trending in the periods beforehand or afterwards.

- Perceived risk for ***LSD*** use among 8th and 10th grade students significantly declined in 2023, for both experimental and occasional use. This decline stems in large part from an increasing number of students in these grades who do not know what LSD is. In 8th grade the proportion who responded "Can't say, drug unfamiliar" increased from 42% in 2022 to 45% in 2023, which is almost half of the population. In 10th grade this proportion significantly increased from 27% in 2022 to 31% in 2023. These youth contribute to the denominator of the perceived risk ratios because they do not attribute great risk to LSD use, and as the denominator increases the value of the ratio decreases.

Before the 2000s perceived risk had been substantially higher with levels 50% to 100% higher in the early 1990s. As we pointed out earlier, the substantial decrease in LSD use over the course of the survey cannot be explained by parallel changes in perceived risk, because perceived risk was itself falling, not rising. As discussed in the next chapter, the drop in LSD prevalence may be better explained by the decline in the reported availability of LSD since the mid 1990s.

Despite the low levels of LSD use at present, we note that the overall drop in perceived risk for LSD over the history of the survey leaves today's cohorts of teens potentially vulnerable to resurgence in LSD use, should the drug become widely available again. Likely today's youth are less aware of the consequences of using this drug—due to a process we have called "generational forgetting" in which subsequent class cohorts are further from the period in which the drug was more prevalent and its consequences more directly witnessed and consequently better known.

- Questions about the perceived risk of ***inhalant*** use have been asked only of 8th and 10th graders, where use is most concentrated (Tables 8-1 and 8-2). The percentage of 8th grade students who attributed great harm to experimental inhalant use was 20% in 2023 and 2022 and 18% in 2021, which represent about a six point drop from the 2019 levels based on electronic data collection (column '2019e' in Tables 8-1 and 8-2). In 10th grade the level of 26% in 2023 was similar to the 28% in 2022, but a significant drop from the 30% level in 2021. These declines continue a long-term, gradual decrease in perceived risk that began in the early 2000s. During this period prevalence of inhalants also declined, indicating a role for factors other than perceived risk.

  Prior to the 2000s, levels of perceived risk jumped in 1996, after the Partnership for a Drug-Free America launched a media campaign in 1995 to increase adolescents' awareness of the dangers associated with inhalant use. The data here are consistent with the notion that their efforts were successful, because the increase in perceived risk occurred during the years of this intervention; most of the other drugs had not yet begun to show an increase in perceived risk at that point, and actual prevalence of inhalant use declined in all grades.

- The proportions of 8th and 10th graders who perceive great risk in having five or more drinks of ***alcohol*** once or twice each weekend ("weekend binge drinking") have stayed within the narrow range of 51%–59% in all years measured up to 2023 for both 8th and 10th graders.

PERSONAL DISAPPROVAL OF DRUG USE IN 2023

Since the beginning of the MTF study, we have included a set of questions to measure the judgement students attach to various types of drug use among 12th graders. The question wording is, "Do you disapprove of people (who are 18 or older) doing each of the following?" The answer alternatives are "don't disapprove," "disapprove," and "strongly disapprove." For 8th and 10th grades, a fourth response, "can't say, drug unfamiliar," is included, and the parenthetical phrase "who are 18 or older" is omitted from the question stem. Responses of "disapprove" or "strongly disapprove" are combined and reported here as "disapproval." For 8th and 10th graders, "can't say, drug unfamiliar" is included in calculating the percentages, so that what is represented (in all three

grades) is the proportion of *all* respondents who hold a disapproving attitude. Each question specifies a level involvement for each drug, such as "trying marijuana," "using marijuana occasionally," or "using marijuana regularly," similar to the questions about perceived risk.

Extent of Disapproval Among 12th Graders

- The majority of 12th graders disapprove of *regular use* of any of the illicit drugs (see Table 8-6). Among 12th graders in 2023, more than 90% disapprove of regular use of each of them.

- For each of the drugs included in this set of questions, fewer respondents indicate disapproval of experimental or occasional use than of regular use, as might be expected. However, the differences are not great for the use of illicit drugs other than marijuana, because nearly all 12th graders disapprove of even experimenting with them. For example, in 2023 the proportions disapproving of experimental use are 92% for ***heroin***, 91% for ***cocaine***, 73% for ***LSD***, and 86% for ***MDMA*** (ecstasy, Molly). The high levels of disapproval could be widely publicized and provide the basis for some potentially powerful prevention messages in the form of normative education.

- Disapproval of ***marijuana*** by 12th graders increases substantially for more regular levels of use. In 2023 the percentage who disapprove of marijuana use is 35% for trying it once or twice, 40% for occasional use, and 60% for regular use. Looked at another way, four out of ten 12th graders (40%) say they do not disapprove of regular marijuana use.

- Smoking a pack (or more) of ***cigarettes*** per day now meets with disapproval by almost eight out of nine (87%) 12th grade students—a level comparable to the level of disapproval for many of the illicit drugs and substantially higher than disapproval of regular marijuana use.

- The lowest levels of disapproval for regular use among 12th grade students in 2023 are regular marijuana use at 60%, regular marijuana vaping at 69%, ***daily alcohol drinking*** at 72%, and regular nicotine vaping at 80%. Regular marijuana vaping has a substantially lower level of disapproval than does regular nicotine vaping.

- Having ***one or two drinks nearly every day*** meets with the disapproval of 72% of 12th graders in 2023. Curiously, fewer 12th graders (66%) disapprove of ***weekend binge drinking*** (five or more drinks once or twice each weekend), despite the fact that more of them see a great risk in weekend binge drinking (39%) than in having one or two drinks nearly every day (24%). This divergence between the perceived risk associated with the two behaviors and the corresponding levels of disapproval helps to illustrate their differences.

Extent of Disapproval Among 8th and 10th Graders

- Attitudes about ***inhalant*** use have been asked only of 8th and 10th graders, and in 2023 the great majority (66% and 71%, respectively) said they disapprove of even trying inhalants.

- ***Marijuana*** use shows the greatest grade related difference in disapproval—the lower the grade, the higher the level of disapproval. Specifically, in 2023, 66% of the 8th graders said they disapprove of trying marijuana compared to 51% of 10th graders and 35% of 12th graders (see Tables 8-4 through 8-6). There is now considerable evidence that these attitudes do shift with age—that there is an age effect common to all cohorts. For example, the 8th graders of 1991 for the most part constituted the 10th graders of 1993 and the 12th graders of 1995, and their disapproval of trying marijuana fell from 85% in 8th grade in 1991, to 70% by 10th grade (in 1993), and to 57% by 12th grade (in 1995). This age-related drop far exceeds the secular trend at any given grade level, and would likely be even more pronounced were it not for the loss of dropouts between 8th and 12th grades. (It is also possible that, in addition to any age effects, there are also cohort effects—i.e., lasting differences between class cohorts.)

  Another possible explanation for this decrease in disapproval with age is that secondary school students' attitudes about use are age-graded—that is, they may disapprove more of an 8th grader using marijuana, less so for a 10th grader, and still less for a 12th grader. The question stem used at the lower grades does not specify the age of the person about whom they are answering, and the respondents may simply assume that the question is about people their age. The question asked of 12th graders over the years specifies people "who are 18 or older," and that lower limit corresponds closely to their current age.

- Disapproval of vaping marijuana decreases at higher grades. Specifically, disapproval levels of regular marijuana vaping are 77% in 8th grade, 75% in 10th grade, and 69% in 12th grade. For occasional marijuana vaping the levels are 73%, 65%, and 58%, respectively.

- Disapproval of ***alcohol*** use is also somewhat higher at the lower grade levels than among 12th graders. For example, in 2023, 81% of 8th graders, 80% of 10th graders, and 66% of 12th graders said they disapprove ***weekend binge drinking***.

- For ***cigarette*** use, the differences between grades are negligible at present: 84% of 8th graders, 86% of 10th graders, and 87% of 12th graders said they disapprove of someone smoking one or more packs per day in 2023. Oddly enough, the 8th graders, who are least likely to see regular smoking as dangerous (as summarized earlier in this chapter), are just as likely as students in the other grades to disapprove of it. This disparity may help to explain why many do begin to smoke. In the absence of an underlying belief that smoking really represents a hazard to them, many may not be deterred by the predominant peer norms alone.

- Disapproval of ***nicotine vaping*** is similar across all three grades. The proportion disapproving of occasional use is 73% in 8th grade, 72% in 10th grade, and 69% in 12th grade. For regular use the levels are, respectively, 77%, 81%, and 80% in 2023. As with cigarette smoking, these levels of disapproval for regular nicotine vaping are substantially higher than levels of perceived risk, which in 2023 range between 57% and 50%.

TRENDS IN DISAPPROVAL OF DRUG USE THROUGH 2023

Disapproval tends to move in a way more synchronous with drug use than does perceived risk and the way it commonly reverses course a year *prior* to a change in the actual use of that drug. In other words, disapproval tends to rise in the same year that use falls, and tends to fall in the same year that use rises. We have hypothesized that this is due in part to both disapproval and use being influenced by perceived risk, for which the inflection point often occurs a year earlier. For the long-term trends in 12th graders disapproval see the upper panel in the "b" versions of Figures 8-1 through 8-3 and Figures 8-6 through 8-9 (e.g., the upper panel in Figure 8-1b). See also Table 8-6, which provides the underlying tabular data.

The year 2019 requires special consideration when evaluating trends for the measures of this chapter. All 2019 estimates are presented in two columns. The first, in column "2019p," is based on student responses in a randomly-selected half of schools that completed the MTF survey with traditional paper-and-pencil questionnaires. The second, in column "2019e," is based on students responses in the other half of schools that completed the MTF survey with electronic data collection, using tablets connected to the internet (after 2019 all surveys used electronic data collection). In some cases the estimates in the two columns are similar, while in others they are substantially different (discussed in more detail at the start of this chapter).

12th Grade Students

- In 2023, levels of disapproval for ***marijuana*** use were near their lowest ever for experimental, occasional, and regular use, at 35%, 40%, and 60%, respectively (see Figure 8-1b and Table 8-6). All three outcomes have gradually and steadily declined since at least 2014. A slight increase in disapproval from 2021 to 2022 receded in 2023.

  Today's low levels are similar to those that occurred near the beginning of the MTF study in 1977, when disapproval of regular marijuana use among high school seniors was 66%. This was undoubtedly a continuation of longer-term trends that began in the late 1960s, as the norms of American young people against illicit drug use seriously eroded. Between 1977 and 1990, however, there was a substantial reversal of that trend as disapproval of regular use increased by 26 percentage points and reached the highest level recorded by the study in the early 1990s. While disapproval increased to this historic high, annual prevalence of marijuana hit a historic low. Since that time disapproval slipped during the 1990s drug relapse, while marijuana prevalence increased. Note that a sharp drop in disapproval is first apparent in 1993, a year *after* perceived risk began to decline. Changes in disapproval paused from 1995 to 2005, as did prevalence, and then disapproval continued its decline until it reached its current level. Trends in disapproval of occasional and experimental use follow a similar pattern, although at lower levels.

- Levels of disapproval for ***smoking one or more packs of cigarettes per day*** in 2023 are close to the highest ever recorded by the survey, with 87% of 12th graders disapproving (Figure 8-8b). The levels have varied little in recent years and ranged from 86% to 89% from 2017 to 2023.

Despite the large changes that were taking place in adult use of cigarettes and presumably in adult attitudes about smoking, young people's disapproval (of a pack or more per day) changed surprisingly little throughout much of the early and middle life of this study. The overall trend has been a very gradual increase from a level of 68% during the first year of the survey in 1975. The one exception is a sustained decline in disapproval during the 1990s drug relapse, from 1992 to 1997. Since 1997 disapproval has increased fairly steadily and prevalence of cigarette smoking has declined. The earlier lack of appreciable change in students' disapproval of smoking is surprising because many antismoking laws and policies had been enacted during the 1980s and 1990s. Very likely, the tobacco industry's promotion and advertising efforts helped to account for this lack of change in disapproval, as did the widespread portrayal of smoking by characters—often the lead characters—in movies and on television. But by the mid- to late-1990s the tobacco industry's advertising efforts were curtailed and its product received so much adverse publicity that disapproval finally rose substantially.

- The disapproval level for ***regular nicotine vaping*** was 80% in 2023, an increase of 4% from the previous year (although the increase was not significant). This increase is consistent with the significant increase in its perceived harm that took place in 2023.

- The proportion of 12th graders who disapproved of experimental use of ***amphetamines*** has gradually, but only slightly, increased over the course of the study and was 83% in 2023. Levels of disapproval for experimental use varied between 79% and 84% since 2011 (Table 8-6).

  Overall levels of disapproval of experimental use increased from 75% at the start of the study in 1975 to 88% in in 2010, and then levelled. Most of the increase in this measure occurred during the 1980s. Prevalence tracks with these changes in disapproval and decreased or levelled over the course of the survey, with the exception of increases at the start of the 1980s and the start of the 1990s. A revision of the amphetamine question in 2011 that updated the list of examples of specific amphetamines led to a slight, artifactual drop in the disapproval measure that year and thereafter, indicating that levels of disapproval today would be slightly higher were it not for this change. Levels of disapproval of regular use of amphetamines have bumped up against the ceiling of the measure and are 88% or higher in all years.

- The proportion of 12th grade students who disapprove of experimental ***cocaine*** use was 87% in 2023, and has been near 90% in every year since 1988 (in 2021 it fell to 82% but this decline appears anomalous, see Figure 8-3b and Table 8-6). It reached a nadir in the early 1980s, when cocaine use was more popular and experimental use was not considered as dangerous as it is today. This is the same period when prevalence was near its highest levels recorded. There was a sharp rise in disapproval of experimental use between 1986 and 1987, the same interval in which perceived risk rose dramatically (closing the gap between the percent disapproving of experimental use and regular use). This jump in disapproval was accompanied by a sharp drop in use that has persisted ever since. Disapproval of *regular* cocaine use has always been 89% or higher throughout the life of the survey. Disapproval of ***crack cocaine*** use, whether experimental, occasional, or

regular, has always been higher than 85%, and disapproval of regular crack use in 2023 was 90%.

- The proportion of 12th grade students who disapprove of trying ***MDMA*** (ecstasy, and more recently Molly) has been above 80% in all years since first assessed in 1997, and above 85% since 2017 (Table 8-6). In 2023 it was 86%. The question was modified to include "Molly" as an example street name for MDMA, which appears to have had only a slight influence on overall levels of disapproval (in 2014 disapproval was 1.8 percentage points lower than the previous year when the question was not yet changed). It is worth noting that in 2002 disapproval increased significantly to 84% from 80% the previous year, at the same time that use decreased and perceived risk continued its increase. Increases in perceived risk may have contributed to the subsequent increase in personal disapproval, albeit with a fair amount of lag.

- Disapproval of ***having one or two drinks nearly every day*** had hovered at around 72% over the prior decade, and in 2023 was 72% (Table 8-6 and Figure 8-7b). It fell to a record low of 67% in 2021, but this drop proved temporary.

  The disapproval level for ***weekend binge drinking*** was 66% in 2023. Long- term comparisons require an adjustment for a survey mode effect for this measure, in which estimates are about five points lower when students used electronic devices as compared to paper-and-pencil questionnaires to answer the survey questions (compare columns '2019p' and '2019e' in Table 8-6). Taking into account this survey mode effect, the 66% level in 2023 would be about 71% if assessed with paper-and-pencil (71%=66% + 5%). This 71% falls within the 70% to 75% range that has been the upper and lower bound for this measure for the past decade, with the one exception of a one-year dip in 2021 that proved fleeting.

  Disapproval of daily heavy alcohol use, as measured by ***having four or five drinks nearly*** *every day*, has ranged between 90% and 93% over the past decade, and was at 93% in 2023.

- With regard to alcohol abstention, the proportions of 12th graders who disapproved of even ***trying one or two drinks of alcohol*** have varied between 22% and 31% from 1989 to 2023, and was 27% in 2023. A substantial increase took place between 1981 and 1989, when disapproval gradually increased from a survey-low of 16% in 1981. It seems likely that the increased minimum drinking age in many states between 1981 and 1987 contributed to these changes in attitude about abstention, because all subsequent senior classes grew up under the higher minimum drinking age.[15] If so, this illustrates the considerable capacity of laws to influence informal norms. It also seems likely that the activities of Mothers Against Drunk Driving (MADD), which peaked in 1984, and of the designated driver effort, which occurred mostly from 1989 to 1992, helped to influence these attitudes.[16] While these ad campaigns dealt specifically with drinking and driving, we believe the

[15] O'Malley, P. M. & Wagenaar, A. C. (1991). Effects of minimum drinking age laws on alcohol use, related behaviors, and traffic crash involvement among American youth: 1976–1987. *Journal of Studies on Alcohol*, *52*, 478–491.

[16] O'Malley, P. M., & Johnston, L. D. (2013). Driving after drug or alcohol use by American high school seniors, 2001-2011. *American Journal of Public Health, 102*(11), 2027-34. See also O'Malley, P. M., & Johnston, L. D. (1999). Drinking and driving among U.S. high school seniors, 1984–1997. *American Journal of Public Health, 89*, 678–684.

negative connotations may well have generalized to heavy drinking under any circumstance, and contributed to the appreciable decline in weekend binge drinking.

8th and 10th Grade Students

Tables 8-4 and 8-5 provide tabular data on the trends in disapproval by 8th and 10th graders since 1991 (when the survey first started tracking these grades).

- The proportions of 8th and 10th graders who disapprove of experimental ***marijuana*** use were near the lowest levels recorded by the survey in 2023, at 66% and 51% respectively (Figure 8-1b and Tables 8-4 and 8-5). As with 12th grade students, levels of disapproval fell during the 1990s relapse, to lows of 68% and 54% in 1997 among 8th and 10th graders, respectively. Thereafter disapproval steadily increased for a decade and then steadily declined in the next decade to return to the low levels set in the late 1990s. In all years 8th grade students report the highest levels of disapproval, followed by 10th graders and then 12th graders. Trends in annual marijuana prevalence track inversely with levels of disapproval (that is, use is higher when disapproval is lower), with use levels lowest among 8th grade students, higher among 10th graders, and highest among 12th graders.

- Disapproval of ***vaping nicotine*** has increased among 8th and 10th grade students since first tracked in 2017 (Tables 8-4 and 8-5). In 8th grade the disapproval level in 2023 for occasional use stood at 73%, which was up from 63% in 2017. For regular use the level in 2023 was 77%, up from 70% in 2017.

  In 10th grade disapproval levels for *occasional* use increased from 59% in 2017 to 72% in 2023. A survey mode effect for occasional use in this grade indicates that responses based on electronic data collection would be about seven points higher if assessed with paper-and-pencil questionnaires (compare columns '2019p' and '2019e' in Table 8-5). Adjusting for this survey mode effect would make the increase in this measure over the course of the survey even larger, from 59% in 2017 to an estimated 79% in 2023 (79%=7%+72%). Disapproval of *regular* nicotine vaping increased from 68% in 2017 to 81% in 2023. This 2023 level translates to a paper questionnaire value of 85% after taking into account a 4% survey mode effect, although this mode effect was not statistically significant.

  Neither trends in disapproval nor trends in perceived risk of nicotine vaping correspond well with the very large prevalence increases in all grades since 2017. These findings suggest that other factors currently exert a relatively stronger influence on population prevalence. One candidate is the flavors that are currently available to teens who vape, such as mint, fruit, and candy varieties. No other drug we study other than alcohol comes in such flavors, which are very popular among youth.[17] Another candidate is social media, which allows vaping companies to reach youth and shape their behaviors and attitudes in unprecedented ways. Still a third might be modeling by peers, including their being able to use in school without detection.

[17] Leventhal, A.M., Miech, R.A., Barrington-Trimis, J., Johnston, L.D., O'Malley, P. M., Patrick, M.E. (2019). Flavors of e-cigarettes used by youths in the United States. *JAMA, 322*, 2132-2134.

- Disapproval of both experimental and regular inhalant use in 8th grade continued long term declines and in 2023, and were at 66% and 74%, respectively (Table 8-4). Both have been declining since 2007, when disapproval of experimental use was at 84% and disapproval of regular use was at 90%. This decline accelerated after the onset of the pandemic in 2020. Tenth grade shows a similar pattern of long-term declines in disapproval of experimental and regular use since 2007 that accelerated after the pandemic onset.

- The proportion of 8th grade students who disapprove of regular ***LSD*** use have hovered over the past decade between 54% and 60% and was 54% in 2023 (Table 8-4). In 10th grade the proportion was 67%, although a survey mode effect suggests that with a paper survey this level would be four points higher at 71%. This adjusted level would bring it between the 70% to 80% range that marks its lower and upper boundaries over the past decade. Disapproval of *experimental* LSD use changed little in the decade before 2020 or in the years after.

- The disapproval level of occasional ***MDMA*** (ecstasy, Molly) use among 8th grade students significantly declined from 64% in 2022 to 59% in 2023 (Table 8-4). This decline stems in large part from an increasing number of 8th grade students who do not know what MDMA is. This proportion that responded "Can't say, drug unfamiliar" significantly grew from 29% in 2022 to 34% in 2023. These youth contribute to the denominator of the disapproval ratio because they do not disapprove of occasional MDMA use, and as the denominator increases the value of the ratio decreases. This group also contributed to the decline in disapproval of *experimental* MDMA use from 59% in 2022 to 55% in 2023, although this decline was not statistically significant.

  In 10th grade disapproval of MDMA use has not changed much in the past three years, for either experimental or occasional use.

- The proportions of 8th and 10th grade students who disapprove of experimental use of ***cocaine*** has been high throughout the study and has been at or exceeded 82% in every year since 1991, when it was first assessed (Figure 8-3b and Tables 8-4 and 8-5).

- The proportion of 8th grade students who disapprove of ***weekend binge drinking*** held steady at 80% in 2023, where is has hovered since first assessed in 1991 (Figure 8-7b).

  In 10th grade, the disapproval levels have been between 78% and 83% for the past decade, and was at 80% in 2023. A survey mode effect in 2019 (compared columns '2019p' and '2019e' in Table 8-5) indicates that the 80% level in 2023 would be three points higher at 83% if it were assessed with paper-and-pencil questionnaires.

- Disapproval of ***smoking one or more packs of cigarettes per day*** has hovered between 85% and 90% for the past two decades in both grades 8 and 10 (Figure 8-8b). In 2023 levels were 84% in 8th grade and 86% in 10th grade. With the exception of a decline in disapproval during the 1990s drug relapse, disapproval of smoking has overall increased throughout the life of the survey. During the long period of increasing disapproval since the mid-1990s, and an even longer period of increase in perceived risk, actual smoking

levels fell appreciably. These changes in attitudes may well have been brought about by the Tobacco Master Settlement Agreement of 1998, which resulted in extremely adverse publicity for the tobacco industry, the end of the Joe Camel advertising campaign, a prohibition on billboard advertising of cigarettes, increases in the price of cigarettes, and the initiation of antismoking campaigns aimed at youth that continue today. Additional policies that have reduced smoking prevalence include state-level prohibitions on where smoking is allowed, increased efforts at reducing sales to underage youth, and the 2019 "Tobacco 21" U.S. law that set 21 as the minimum legal age to purchase tobacco and nicotine products.

TRENDS IN ATTITUDES REGARDING THE LEGALITY OF DRUG USE

At the beginning of the study in 1975, legal restraints on drug use appeared likely to be in a state of flux for some time. Therefore, we decided to measure attitudes about legal sanctions. As it turns out, there have been some dramatic changes in these attitudes as well as in related policies, particularly in recent years. Table 8-7 presents a set of questions on this subject, along with the answers provided by each 12th grade class. The set lists a sampling of illicit and licit drugs and asks respondents whether the use of each should be prohibited by law. A distinction was made between use in public and use in private—a distinction that has proven quite important. (These questions have not been asked of 8th and 10th grade respondents.) The answer alternatives are "no," "yes," and "not sure." A subsequent section deals specifically with the legal status of marijuana.

In what follows we present trends in attitudes on legality of drug use up to 2023. In our interpretation of the trends below we consider the possibility that a survey mode effect may have influenced the estimates in 2019 and later. In addition, in 2022 another change that may have affected the estimates is that the question text changed to asking about legality of drug use for adults 21 and over, while in previous year the question asked about legality of use for adults age 18 and over.

- Support for laws prohibiting consumption of ***marijuana*** *in private* has been in substantial decline since 1990 and has fallen by nearly three fourths from a high of 56% (in 1990) to 16% in 2023. The decline is consistent with the increasing acceptability of marijuana use, which both drives and is driven by the legalization of recreational marijuana use in U.S. states. The two point decline from 2021 to 2022 is consistent with the long-term decline in this measure, and likely not an artifact of the change in question wording that changed the reference group to adults age 21+ from adults age 18+.

  This trend in marijuana legality is almost a mirror image of the pattern before 1990, when the proportion who believed private marijuana use should be prohibited more than doubled, from 25% in 1978 to its level of 56% in 1990—also a dramatic shift.

  The trend for prohibition of marijuana use in *public* follows very closely the same overall pattern seen for private use, with support for prohibition of public use running about 20 to 30 percentage points higher than support for use in private in every year. In 2023 it was 46%.

- The proportions of 12th grade students agreeing that use of ***LSD*** and ***amphetamines*** should be prohibited by law in private and in public continued their ongoing, gradual declines in 2023 (Table 8-7).

  Estimates in 2022 appear to have been lowered somewhat by a change in the question text. In 2022 the question asked about use of substances among people age 21 and over, while in all previous years the question asked about people age 18 and over. This change would be expected to lower disapproval levels because it removes from consideration young adults not legally allowed to drink alcohol, an age group that some may believe should not be allowed to use other substances as well. The large drops from 2021 to 2022 in the percentage of 12th grade students who favored prohibiting LSD and amphetamine use, both for private use and also for public use, likely reflects, in part, an artifact stemming from this change in the question text.

- The percentage of 12th grade students who favor prohibiting use of ***heroin*** remained high in 2023 at 61% for private use and 75% for public use (Table 8-7). Levels were similar in 2021 and 2022, when the question asked about use among people age 21+, which was a switch from all previous years when the question asked about people age 18+. Lack of large changes from 2021 to 2022 suggests that students who favor prohibiting heroin use favor prohibitions for all people in this age range regardless of age.

- The proportion of 12th graders who said ***smoking cigarettes*** "in certain specified public places" should be prohibited by law was 32% in 2023 (Table 8-7). The three point decline to 32% from 35% in 2021 is consistent with and continues an overall downward trend since 2017, suggesting that the change in reference population to age 21+ in 2022 (from 18+ in previous years) did not have a large impact on estimates. A survey mode effect in 2019 (compared columns '2019p' and '2019e' in Table 8-7) indicates that 2021 and afterwards estimates would be about eight points lower if they had been assessed using paper-and-pencil questionnaires.

- The percentage of 12th grade students who favored prohibitions of ***drunkenness*** in public dropped to 32% in 2023 after hovering at about 40% from 2018 to 2022 (Table 8-7).

  The percentage who favored prohibitions against .drunkenness in private has been in decline in recent years and was 13% in 2023, which is down from a level of 22% in 2015.

THE LEGAL STATUS OF MARIJUANA

In what follows we present trends in attitudes on legality of marijuana use up to 2023. These questions were asked only of 12th grade students.

- In 2023 46% of 12th grade students favored ***legalization*** of marijuana (Table 8-8). Support for legalization has been steadily and rapidly increasing since 2007, when it was near 30%. Prior to 2008, support followed a U-shape curve, in which support levels near 30% were present at the beginning of the survey, in 1975, then dipped by half to a nadir of 15% in 1986–1988, only to redouble and return to around 30% by 1995, where it hovered for a decade before rising to a majority for the first time in 2019. The percentage support was

51% in 2019, 2021, and also 2022. This consistency indicates that a change in question text in 2022 did not result in a major shift in prevalence in 2022, when students were asked "do you favor" instead of the wording "would you favor" that was used in all previous years.

- The proportion of 12th grade students who favor treating ***marijuana use as a crime*** in 2023 was just 7%, which ties with the previous year for the lowest level ever recorded by the survey. Trends for this outcome are a mirror image of the pattern seen for support of marijuana legalization. Back around 1990 as many as 50% thought its use should be a crime. Support has dropped by 1% to 2% in every year since 2012. The same levels of 7% in 2021, 2022, and 2023 suggest no major changes resulted from the change in question text in 2022, when students were asked "do you favor" instead of the wording "would you favor" that was used in all previous years.

- Given higher levels of support for legalization among adults,[18] tolerance for legalization appears to increase after the high school years.

Past editions of this monograph reported trends in 12th grade responses to the question "If it were legal for people to USE marijuana, should it also be legal to SELL marijuana?" and also a question on whether students would be more inclined to use marijuana if it were legalized. These questions were discontinued in 2022 in response to the changing landscape of the legal status of marijuana use across the US.

[18] Daniller (2019, November 14) Two-Thirds of American Support Marijuana Legalization. Washington, DC: Pew Research Center

TABLE 8-1
Trends in Harmfulness of Drugs as Perceived by 8th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Use marijuana once or twice [b]	40.4	39.1	36.2	31.6	28.9	27.9	25.3	28.1	28.0	29.0	27.7	28.2	30.2	31.9	31.4	32.2	32.8	31.1
Use marijuana occasionally [b]	57.9	56.3	53.8	48.6	45.9	44.3	43.1	45.0	45.7	47.4	46.3	46.0	48.6	50.5	48.9	48.9	50.2	48.1
Use marijuana regularly [b]	83.8	82.0	79.6	74.3	73.0	70.9	72.7	73.0	73.3	74.8	72.2	71.7	74.2	76.2	73.9	73.2	74.3	72.0
Try inhalants once or twice [d]	35.9	37.0	36.5	37.9	36.4	40.8	40.1	38.9	40.8	41.2	45.6	42.8	40.3	38.7	37.5	35.8	35.9	33.9
Take inhalants regularly [d]	65.6	64.4	64.6	65.5	64.8	68.2	68.7	67.2	68.8	69.9	71.6	69.9	67.4	66.4	64.1	62.1	61.9	59.2
Try LSD once or twice [e]	—	—	42.1	38.3	36.7	36.5	37.0	34.9	34.1	34.0	31.6	29.6	27.9	26.8	25.8	23.8	22.8	21.9
Take LSD regularly [e]	—	—	68.3	65.8	64.4	63.6	64.1	59.6	58.8	57.5	52.9	49.3	48.2	45.2	44.0	40.0	38.5	36.9
Try ecstasy (MDMA, Molly) once or twice [f]	—	—	—	—	—	—	—	—	—	—	35.8	38.9	41.9	42.5	40.0	32.8	30.4	28.6
Take ecstasy (MDMA, Molly) occasionally [f]	—	—	—	—	—	—	—	—	—	—	55.5	61.8	65.8	65.1	60.8	52.0	48.6	46.8
Try cocaine once or twice [d,o]	55.5	54.1	50.7	48.4	44.9	45.2	45.0	44.0	43.3	43.3	43.9	43.2	43.7	44.4	44.2	43.5	43.5	42.7
Take cocaine occasionally [d,o]	77.0	74.3	71.8	69.1	66.4	65.7	65.8	65.2	65.4	65.5	65.8	64.9	65.8	66.0	65.3	64.0	64.2	62.7
Try heroin once or twice without using a needle [e]	—	—	—	—	60.1	61.3	63.0	62.8	63.0	62.0	61.1	62.6	62.7	61.6	61.4	60.4	60.3	60.8
Take heroin occasionally without using a needle [e]	—	—	—	—	76.8	76.6	79.2	79.0	78.9	78.6	78.5	78.5	77.8	77.5	76.8	75.3	76.4	75.5
Try OxyContin once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take OxyContin occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Vicodin once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Vicodin occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Adderall once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Adderall occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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TABLE 8-1 (cont.)
Trends in Harmfulness of Drugs as Perceived by 8th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Try cough/cold medicine once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take cough/cold medicine occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) [b]	11.0	12.1	12.4	11.6	11.6	11.8	10.4	12.1	11.6	11.9	12.2	12.5	12.6	13.7	13.9	14.2	14.9	13.5
Take one or two drinks nearly every day [b]	31.8	32.4	32.6	29.9	30.5	28.6	29.1	30.3	29.7	30.4	30.0	29.6	29.9	31.0	31.4	31.3	32.6	31.5
Have five or more drinks once or twice each weekend [b]	59.1	58.0	57.7	54.7	54.1	51.8	55.6	56.0	55.3	55.9	56.1	56.4	56.5	56.9	57.2	56.4	57.9	57.0
Smoke one to five cigarettes per day [c]	—	—	—	—	—	—	—	—	26.9	28.9	30.5	32.8	33.4	37.0	37.5	37.0	38.6	38.6
Smoke one or more packs of cigarettes per day [g]	51.6	50.8	52.7	50.8	49.8	50.4	52.6	54.3	54.8	58.8	57.1	57.5	57.7	62.4	61.5	59.4	61.1	59.8
Vape marijuana occasionally [m]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly [m]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally [c,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly [c,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Smoke little cigars or cigarillos regularly [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco regularly	35.1	35.1	36.9	35.5	33.5	34.0	35.2	36.5	37.1	39.0	38.2	39.4	39.7	41.3	40.8	39.5	41.8	41.0
Take dissolvable tobacco regularly [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take snus regularly [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Approximate weighted N =	*17,400*	*18,700*	*18,400*	*17,400*	*17,500*	*17,900*	*18,800*	*18,100*	*16,700*	*16,700*	*16,200*	*15,100*	*16,500*	*17,000*	*16,800*	*16,500*	*16,100*	*15,700*

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TABLE 8-1 (cont.)
Trends in Harmfulness of Drugs as Perceived by 8th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[l]	2019e[l]	2020	2021[n]	2022	2023	2022-2023 change
Use marijuana once or twice [b]	29.5	29.5	28.2	26.0	24.1	23.0	23.0	22.8	22.0	20.3	19.6	22.2	§	18.8*	20.6	21.4	+0.8
Use marijuana occasionally [b]	44.8	44.1	43.4	41.7	37.2	36.7	36.8	36.8	34.0	32.1	28.8	31.9	§	28.2*	31.1	33.3	+2.2
Use marijuana regularly [b]	69.8	68.0	68.3	66.9	61.0	58.9	58.0	57.5	54.8	52.9	51.4	53.1	§	51.6*	53.6	54.4	+0.7
Try inhalants once or twice [d]	34.1	35.5	34.7	34.2	33.7	34.5	33.7	32.0	31.5	29.6	27.9	25.4	§	18.2*	20.0	20.1	+0.1
Take inhalants regularly [d]	58.1	60.6	59.0	59.0	56.7	55.3	54.1	52.1	50.0	46.8	45.5	43.1	§	37.1*	37.1	38.4	+1.3
Try LSD once or twice [e]	21.4	23.6	21.7	19.9	19.6	20.0	22.2	22.6	23.1	20.8	21.8	22.7	§	16.1*	17.9	13.7	-4.2 s
Take LSD regularly [e]	37.0	38.6	37.8	35.0	34.5	33.7	37.0	36.8	37.9	36.4	38.1	40.0	§	36.7*	35.9	29.4	-6.5 ss
Try ecstasy (MDMA, Molly) once or twice [f]	26.0	27.0	25.4	23.6	24.1‡	46.1	45.5	42.5	43.3	41.9	39.0	42.7	§	33.2*	36.2	36.0	-0.3
Take ecstasy (MDMA, Molly) occasionally [f]	43.9	45.0	43.7	41.0	42.1‡	59.7	58.5	54.0	54.6	53.6	50.2	53.7	§	48.0*	48.7	46.9	-1.7
Try cocaine once or twice [d,o]	42.3	45.7	43.3	42.8	43.5	43.9	44.3	44.3	44.5	42.6	*43.4‡*	*52.7‡*	§	43.8*	46.0	43.0	-3.0
Take cocaine occasionally [d,o]	62.3	64.2	63.5	63.3	62.7	61.8	61.6	62.4	62.7	61.0	60.8‡	63.8‡	§	63.9*	59.5	58.4	-1.1
Try heroin once or twice without using a needle [e]	60.0	62.3	61.7	59.1	59.8	60.9	61.4	59.2	62.9	59.5	59.0	61.0	§	53.4*	53.8	52.7	-1.1
Take heroin occasionally without using a needle [e]	74.0	76.7	75.9	75.1	73.4	73.2	72.7	70.3	74.7	72.1	69.1	70.5	§	67.8*	66.6	64.3	-2.3
Try OxyContin once or twice [c]	—	—	—	21.9	19.9	22.1	20.2	21.3	21.0	20.8	19.2	22.4	§	17.7*	17.2	19.8	+2.6
Take OxyContin occasionally [c]	—	—	—	35.3	32.6	34.4	32.5	33.5	32.6	32.5	31.0	35.5	§	29.6*	29.1	31.1	+2.1
Try Vicodin once or twice [c]	—	—	—	17.5	15.0	18.4	16.9	18.3	17.1	16.1	*16.0*	*21.8*	§	18.0*	18.3	19.5	+1.2
Take Vicodin occasionally [c]	—	—	—	29.4	26.2	28.2	26.7	28.8	26.7	25.9	*25.3*	*30.6*	§	23.9*	22.9	29.2	+6.2 ss
Try Adderall once or twice [c]	—	—	—	17.6	16.5	20.7	19.2	21.4	20.4	20.1	*20.6*	*24.7*	§	20.9*	20.5	24.0	+3.6
Take Adderall occasionally [c]	—	—	—	29.9	28.3	32.5	32.0	35.9	33.8	34.0	35.2	32.0	§	30.0*	28.1	29.1	+1.0

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TABLE 8-1 (cont.)
Trends in Harmfulness of Drugs as Perceived by 8th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[l]	2019e[l]	2020	2021[n]	2022	2023	2022-2023 change
Try cough/cold medicine once or twice [c]	—	—	—	21.2	20.1	22.9	20.9	23.5	21.2	19.5	*20.7*	*26.8*	§	22.8*	24.5	27.3	+2.8
Take cough/cold medicine occasionally [c]	—	—	—	38.8	37.3	37.9	37.3	38.6	35.2	34.5	37.8	36.8	§	34.1*	33.7	36.7	+3.0
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) [b]	14.4	14.9	14.5	13.9	13.7	14.8	15.3	14.7	14.2	13.6	13.4	15.6	§	10.1*	12.1	12.5	+0.4
Take one or two drinks nearly every day [b]	31.5	32.3	31.8	31.4	30.6	31.0	30.9	30.7	30.0	28.7	*26.9*	*33.2*	§	27.2*	29.5	28.7	-0.8
Have five or more drinks once or twice each weekend [b]	55.8	57.2	58.4	58.2	55.7	54.3	53.9	53.4	53.7	52.3	50.7	55.6	§	51.8*	51.9	52.4	+0.4
Smoke one to five cigarettes per day [c]	38.6	38.2	37.4	40.4	42.8	41.9	41.7	43.2	41.9	40.8	39.8	38.8	§	39.5*	35.5	36.2	0.8
Smoke one or more packs of cigarettes per day [g]	59.1	60.9	62.5	62.6	62.4	62.1	63.0	61.2	62.1	61.3	63.3	65.6	§	64.0*	61.9	58.5	-3.4
Vape marijuana occasionally [m]	—	—	—	—	—	—	—	—	—	—	—	—	§	33.8*	36.2	39.0	+2.8
Vape marijuana regularly [m]	—	—	—	—	—	—	—	—	—	—	—	—	§	52.7*	53.0	55.4	+2.4
Vape an e-liquid with nicotine occasionally [c, j]	—	—	—	—	—	—	—	—	18.3	16.9	21.7	21.3	§	23.2*	24.1	23.2	-0.8
Vape an e-liquid with nicotine regularly [c, j]	—	—	—	—	—	—	—	—	32.7	32.4	40.2	43.6	§	55.1*	53.2	50.2	-3.0
Smoke little cigars or cigarillos regularly [c]	—	—	—	—	—	28.8	31.0	32.5	30.8	30.5	35.9	37.2	§	42.8*	31.6	33.0	+1.4
Use smokeless tobacco regularly	40.8	41.8	40.8	37.8	36.2	34.5	36.6	35.1	34.8	34.3	*37.1*	*40.9*	§	37.6*	36.5	39.0	+2.5
Take dissolvable tobacco regularly [c]	—	—	—	34.8	32.2	33.5	33.0	34.3	31.9	31.3	*32.0*	*37.4*	§	36.7*	34.0	38.4	+4.4 s
Take snus regularly [c]	—	—	—	42.2	38.9	38.3	37.7	37.9	36.4	34.2	36.0	38.3	§	36.4*	33.7	35.7	+2.0
Approximate weighted N =	*15,000*	*15,300*	*16,000*	*15,100*	*14,600*	*14,600*	*14,400*	*16,900*	*15,300*	*14,000*	*6,800*	*6,800*	*§*	*10,700*	*9,300*	*5,700*	

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TABLE 8-1 (cont.)
Trends in Harmfulness of Drugs as Perceived by 8th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. "‡' indicates that the question changed the following year.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar.

[b]Beginning in 2012 data based on two thirds of *N* indicated.

[c]Data based on one third of *N* indicated.

[d]Beginning in 1997, data based on two thirds of *N* indicated.

[e]Data based on one of two forms in 1993–1996; *N* is one half of *N* indicated. Beginning in 1997, data based on one third of *N* indicated due to changes in questionnaire forms.

[f] Beginning in 2014 data are based on the revised question which included "Molly," *N* is one third of *N* indicated in 2014 and two thirds of *N* indicated in 2015. 2014 and 2015 data are not comparable to earlier years due to the revision of the question text.

[g]Beginning in 1999, data based on two thirds of *N* indicated due to changes in questionnaire forms.

[h]E-cigarette data based on two thirds of *N* indicated. Little cigars or cigarillos data based on one third *N* indicated.

[i] Data based on two forms in 1991 and 1992. Data based on one of two forms in 1993 and 1994; *N* is one half of *N* indicated.

[j] Percentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

[k]Data based on two thirds of *N* indicated.

[l]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[m]Data based on one half of *N* indicated.

[n]Sample is decreased by as much as 50% for the following drugs due to survey question experiments: alcohol, inhalants, heroin, LSD, OxyContin, Vicodin, and cough/cold medicine.

[o]In 2019 and previous years the survey question asked about 'cocaine powder' and in 2020 forward it asked about 'cocaine'.

TABLE 8-2
Trends in Harmfulness of Drugs as Perceived by 10th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Use marijuana once or twice [b]	30.0	31.9	29.7	24.4	21.5	20.0	18.8	19.6	19.2	18.5	17.9	19.9	21.1	22.0	22.3	22.2	22.2	23.1
Use marijuana occasionally [b]	48.6	48.9	46.1	38.9	35.4	32.8	31.9	32.5	33.5	32.4	31.2	32.0	34.9	36.2	36.6	35.6	36.0	37.0
Use marijuana regularly [b]	82.1	81.1	78.5	71.3	67.9	65.9	65.9	65.8	65.9	64.7	62.8	60.8	63.9	65.6	65.5	64.9	64.5	64.8
Try inhalants once or twice [d]	37.8	38.7	40.9	42.7	41.6	47.2	47.5	45.8	48.2	46.6	49.9	48.7	47.7	46.7	45.7	43.9	43.0	41.2
Take inhalants regularly [d]	69.8	67.9	69.6	71.5	71.8	75.8	74.5	73.3	76.3	75.0	76.4	73.4	72.2	73.0	71.2	70.2	68.6	66.8
Try LSD once or twice [e]	—	—	48.7	46.5	44.7	45.1	44.5	43.5	45.0	43.0	41.3	40.1	40.8	40.6	40.3	38.8	35.4	34.6
Take LSD regularly [e]	—	—	78.9	75.9	75.5	75.3	73.8	72.3	73.9	72.0	68.8	64.9	63.0	63.1	60.8	60.7	56.8	55.7
Try ecstasy (MDMA, Molly)) once or twice [f]	—	—	—	—	—	—	—	—	—	—	39.4	43.5	49.7	52.0	51.4	48.4	45.3	43.2
Take ecstasy (MDMA, Molly) occasionally [f]	—	—	—	—	—	—	—	—	—	—	64.8	67.3	71.7	74.6	72.8	71.3	68.2	66.4
Try cocaine once or twice [d,o]	59.1	59.2	57.5	56.4	53.5	53.6	52.2	50.9	51.6	48.8	50.6	51.3	51.8	50.7	51.3	50.2	49.5	49.8
Take cocaine occasionally [d,o]	82.2	80.1	79.1	77.8	75.6	75.0	73.9	71.8	73.6	70.9	72.3	71.0	71.4	72.2	72.4	71.3	70.9	71.1
Try heroin once or twice without using a needle [e]	—	—	—	—	70.7	72.1	73.1	71.7	73.7	71.7	72.0	72.2	70.6	72.0	72.4	70.0	70.5	70.8
Take heroin occasionally without using a needle [e]	—	—	—	—	85.1	85.8	86.5	84.9	86.5	85.2	85.4	83.4	83.5	85.4	85.2	83.6	84.2	83.1
Try OxyContin once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take OxyContin occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Vicodin once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Vicodin occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Adderall once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take Adderall occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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TABLE 8-2 (cont.)
Trends in Harmfulness of Drugs as Perceived by 10th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Try cough/cold medicine once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take cough/cold medicine occasionally [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) [b]	9.0	10.1	10.9	9.4	9.3	8.9	9.0	10.1	10.5	9.6	9.8	11.5	11.5	10.8	11.5	11.1	11.6	12.6
Take one or two drinks nearly every day [b]	36.1	36.8	35.9	32.5	31.7	31.2	31.8	31.9	32.9	32.3	31.5	31.0	30.9	31.3	32.6	31.7	33.3	35.0
Have five or more drinks once or twice each weekend [b]	54.7	55.9	54.9	52.9	52.0	50.9	51.8	52.5	51.9	51.0	50.7	51.7	51.6	51.7	53.3	52.4	54.1	56.6
Smoke one to five cigarettes per day [c]	—	—	—	—	—	—	—	—	28.4	30.2	32.4	35.1	38.1	39.7	41.0	41.3	41.7	43.5
Smoke one or more packs of cigarettes per day [g]	60.3	59.3	60.7	59.0	57.0	57.9	59.9	61.9	62.7	65.9	64.7	64.3	65.7	68.4	68.1	67.7	68.2	69.1
Vape marijuana occasionally [m]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly [m]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally [c,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly [c,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Smoke little cigars or cigarillos regularly [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco regularly	40.3	39.6	44.2	42.2	38.2	41.0	42.2	42.8	44.2	46.7	46.2	46.9	48.0	47.8	46.1	45.9	46.7	48.0
Take dissolvable tobacco regularly [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take snus regularly [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Approximate weighted N =	*14,700*	*14,800*	*15,300*	*15,900*	*17,000*	*15,700*	*15,600*	*15,000*	*13,600*	*14,300*	*14,000*	*14,300*	*15,800*	*16,400*	*16,200*	*16,200*	*16,100*	*15,100*

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TABLE 8-2 (cont.)
Trends in Harmfulness of Drugs as Perceived by 10th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[l]	2019e[l]	2020	2021 [n]	2022	2023	2022-2023 change
Use marijuana once or twice [b]	20.5	19.9	19.3	17.2	15.7	15.2	15.8	16.4	14.8	13.9	14.1	15.2	§	16.9*	16.8	16.8	0.0
Use marijuana occasionally [b]	32.9	30.9	30.1	26.8	25.1	23.9	24.7	24.4	21.9	21.4	20.6	21.0	§	22.6*	23.4	24.4	+1.0
Use marijuana regularly [b]	59.5	57.2	55.2	50.9	46.5	45.4	43.2	44.0	40.6	38.1	39.5	39.6	§	41.0*	42.2	47.0	+4.8 sss
Try inhalants once or twice [d]	42.0	42.5	42.4	42.4	43.0	43.1	43.1	40.7	37.9	38.6	39.7	36.1	§	30.4*	27.6	25.8	-1.8
Take inhalants regularly [d]	66.8	67.1	66.2	66.1	65.9	64.7	63.1	59.7	57.7	57.6	57.5	55.0	§	52.3*	47.1	45.4	-1.7
Try LSD once or twice [e]	34.9	33.9	34.2	34.7	34.7	34.5	36.4	34.4	31.6	33.8	32.9	33.3	§	27.6*	26.6	22.3	-4.3 s
Take LSD regularly [e]	56.7	56.1	54.9	56.4	55.9	54.8	58.3	55.2	53.0	54.1	52.4	57.8	§	55.2*	51.5	46.5	-5.0 s
Try ecstasy (MDMA, Molly)) once or twice [f]	38.9	36.3	37.2	36.2	36.0‡	53.2	54.8	54.2	55.4	54.5	*53.0*	*58.3*	§	53.0*	47.8	47.3	-0.5
Take ecstasy (MDMA, Molly) occasionally [f]	62.1	59.2	60.8	59.8	58.6‡	69.0	70.1	69.3	68.6	67.6	66.1	67.4	§	66.5*	59.8	60.3	+0.4
Try cocaine once or twice [d,o]	50.8	52.9	53.0	53.4	54.5	54.1	54.8	54.6	52.5	52.6	*53.7‡*	*62.3‡*	§	55.3*	56.7	55.3	-1.4
Take cocaine occasionally [d,o]	71.0	72.2	72.0	72.6	72.8	71.7	72.6	70.9	70.4	70.2	71.0‡	72.9‡	§	74.0*	70.2	69.6	-0.6
Try heroin once or twice without using a needle [e]	72.2	73.0	72.9	72.6	73.2	72.6	74.1	73.3	72.2	71.4	73.6	75.6	§	73.2*	66.1	66.8	+0.7
Take heroin occasionally without using a needle [e]	83.3	84.8	83.4	84.4	84.0	82.5	83.3	82.2	81.4	81.0	82.6	81.8	§	81.8*	77.0	76.4	-0.6
Try OxyContin once or twice [c]	—	—	—	30.9	29.4	29.7	29.9	28.7	27.8	29.6	*25.0*	*31.4*	§	27.6*	29.7	26.6	-3.1 s
Take OxyContin occasionally [c]	—	—	—	48.3	44.7	44.4	43.7	41.4	41.3	43.9	41.5	45.8	§	41.3*	43.5	39.5	-4.0 s
Try Vicodin once or twice [c]	—	—	—	23.2	21.0	22.5	24.1	21.8	22.1	23.2	*19.7*	*28.2*	§	26.1*	27.5	24.3	-3.2 s
Take Vicodin occasionally [c]	—	—	—	40.3	36.0	36.4	35.4	32.6	32.0	34.8	*30.5*	*38.6*	§	32.6*	35.2	31.1	-4.1 s
Try Adderall once or twice [c]	—	—	—	19.7	17.6	22.2	22.9	22.5	21.6	23.2	*22.3*	*29.4*	§	25.9*	28.5	27.9	-0.6
Take Adderall occasionally [c]	—	—	—	34.3	30.5	37.0	37.0	35.8	36.4	39.8	39.1	38.8	§	38.1*	37.6	32.8	-4.8 ss

Table continued on next page.

TABLE 8-2 (cont.)
Trends in Harmfulness of Drugs as Perceived by 10th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[l]	2019e[l]	2020	2021[n]	2022	2023	2022-2023 change
Try cough/cold medicine once or twice [c]	—	—	—	23.6	21.6	22.9	24.0	24.0	21.8	22.1	*22.3*	*31.1*	§	27.9*	29.3	26.8	-2.6
Take cough/cold medicine occasionally [c]	—	—	—	40.4	37.3	38.3	38.2	37.6	36.4	37.2	37.9	39.3	§	37.0*	38.7	36.5	-2.3
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) [b]	11.9	11.9	12.3	11.3	11.3	11.6	12.4	13.3	12.5	13.0	13.6	13.4	§	13.2*	12.2	12.5	+0.3
Take one or two drinks nearly every day [b]	33.8	33.1	32.9	31.8	30.6	31.3	31.2	32.2	30.9	30.3	31.0	33.7	§	34.7*	31.4	34.0	+2.6
Have five or more drinks once or twice each weekend [b]	54.2	54.6	55.5	52.8	52.3	54.0	54.5	54.5	52.0	51.8	52.6	53.3	§	54.2*	51.4	53.7	+2.3
Smoke one to five cigarettes per day [c]	42.8	41.4	44.8	49.1	47.7	52.0	52.9	53.0	50.0	49.9	50.0	47.7	§	45.8*	45.7	44.5	-1.2
Smoke one or more packs of cigarettes per day [g]	67.3	67.2	69.8	71.6	70.8	72.0	72.9	71.5	69.8	69.6	73.2	72.8	§	72.7*	71.0	69.2	-1.8
Vape marijuana occasionally [m]	—	—	—	—	—	—	—	—	—	—	—	—	§	28.7*	30.0	32.3	+2.3
Vape marijuana regularly [m]	—	—	—	—	—	—	—	—	—	—	—	—	§	42.9*	43.1	47.4	+4.4 s
Vape an e-liquid with nicotine occasionally [c,j]	—	—	—	—	—	—	—	—	17.0	17.9	*22.7*	*18.4*	§	22.8*	22.7	25.5	+2.8 s
Vape an e-liquid with nicotine regularly [c,j]	—	—	—	—	—	—	—	—	30.0	31.3	40.7	39.2	§	52.6*	51.5	57.2	+5.7 sss
Smoke little cigars or cigarillos regularly [c]	—	—	—	—	—	31.0	34.9	35.3	34.0	34.9	*39.1*	*45.3*	§	45.6*	36.6	37.1	+0.5
Use smokeless tobacco regularly	44.7	43.7	45.7	42.9	40.0	39.9	42.5	43.0	40.7	41.0	44.5	45.4	§	43.8*	44.1	43.4	-0.7
Take dissolvable tobacco regularly [c]	—	—	—	33.3	31.3	32.0	35.6	34.2	32.7	33.2	*32.9*	*41.7*	§	38.6*	37.5	36.7	-0.8
Take snus regularly [c]	—	—	—	41.0	38.9	38.8	41.8	39.9	38.1	39.8	*39.0*	*43.2*	§	38.8*	37.8	36.6	-1.3
Approximate weighted N =	*15,900*	*15,200*	*14,900*	*15,000*	*12,900*	*13,000*	*15,600*	*14,700*	*13,500*	*14,300*	*7,000*	*7,000*	*§*	*11,000*	*11,200*	*8,100*	0.0

Table continued on next page.

TABLE 8-2 (cont.)
Trends in Harmfulness of Drugs as Perceived by 10th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. '‡' indicates that the question changed the following year.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar.

[b]Beginning in 2012 data based on two thirds of *N* indicated.

[c]Data based on one third of *N* indicated.

[d]Beginning in 1997, data based on two thirds of *N* indicated.

[e]Data based on one of two forms in 1993–1996; *N* is one half of *N* indicated. Beginning in 1997, data based on one third of *N* indicated due to changes in questionnaire forms.

[f] Beginning in 2014 data are based on the revised question which included "Molly," *N* is one third of *N* indicated in 2014 and two thirds of *N* indicated in 2015. 2014 and 2015 data are not comparable to earlier years due to the revision of the question text.

[g]Beginning in 1999, data based on two thirds of *N* indicated due to changes in questionnaire forms.

[h]E-cigarette data based on two thirds of *N* indicated. Little cigars or cigarillos data based on one third *N* indicated.

[i]Data based on two forms in 1991 and 1992. Data based on one of two forms in 1993 and 1994; *N* is one half of *N* indicated.

[j] Percentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

[k]Data based on two thirds of *N* indicated.

[l]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[m]Data based on one half of *N* indicated.

[n]Sample is decreased by as much as 50% for the following drugs due to survey question experiments: alcohol, inhalants, heroin, LSD, OxyContin, Vicodin, and cough/cold medicine.

[o]In 2019 and previous years the survey question asked about 'cocaine powder' and in 2020 forward it asked about 'cocaine'.

TABLE 8-3
Trends in Harmfulness of Drugs as Perceived by 12th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]															
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Use marijuana once or twice	15.1	11.4	9.5	8.1	9.4	10.0	13.0	11.5	12.7	14.7	14.8	15.1	18.4	19.0	23.6	23.1
Use marijuana occasionally	18.1	15.0	13.4	12.4	13.5	14.7	19.1	18.3	20.6	22.6	24.5	25.0	30.4	31.7	36.5	36.9
Use marijuana regularly	43.3	38.6	36.4	34.9	42.0	50.4	57.6	60.4	62.8	66.9	70.4	71.3	73.5	77.0	77.5	77.8
Try LSD once or twice	49.4	45.7	43.2	42.7	41.6	43.9	45.5	44.9	44.7	45.4	43.5	42.0	44.9	45.7	46.0	44.7
Take LSD regularly	81.4	80.8	79.1	81.1	82.4	83.0	83.5	83.5	83.2	83.8	82.9	82.6	83.8	84.2	84.3	84.5
Try PCP once or twice	—	—	—	—	—	—	—	—	—	—	—	—	55.6	58.8	56.6	55.2
Try ecstasy (MDMA, Molly) once or twice [b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try cocaine once or twice	42.6	39.1	35.6	33.2	31.5	31.3	32.1	32.8	33.0	35.7	34.0	33.5	47.9	51.2	54.9	59.4
Take cocaine occasionally	—	—	—	—	—	—	—	—	—	—	—	54.2	66.8	69.2	71.8	73.9
Take cocaine regularly	73.1	72.3	68.2	68.2	69.5	69.2	71.2	73.0	74.3	78.8	79.0	82.2	88.5	89.2	90.2	91.1
Try heroin once or twice	60.1	58.9	55.8	52.9	50.4	52.1	52.9	51.1	50.8	49.8	47.3	45.8	53.6	54.0	53.8	55.4
Take heroin occasionally	75.6	75.6	71.9	71.4	70.9	70.9	72.2	69.8	71.8	70.7	69.8	68.2	74.6	73.8	75.5	76.6
Take heroin regularly	87.2	88.6	86.1	86.6	87.5	86.2	87.5	86.0	86.1	87.2	86.0	87.1	88.7	88.8	89.5	90.2
Try heroin once or twice without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take heroin occasionally without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try any narcotic other than heroin (codeine, Vicodin, OxyContin, Percocet, etc.) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take any narcotic other than heroin occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take any narcotic other than heroin regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page.

TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

	Percentage saying great risk [a]															
How much do you think people risk harming themselves (physically or in other ways), if they . . .	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Try amphetamines once or twice [c]	35.4	33.4	30.8	29.9	29.7	29.7	26.4	25.3	24.7	25.4	25.2	25.1	29.1	29.6	32.8	32.2
Take amphetamines regularly [c]	69.0	67.3	66.6	67.1	69.9	69.1	66.1	64.7	64.8	67.1	67.2	67.3	69.4	69.8	71.2	71.2
Try Adderall once or twice [d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Adderall occasionally [d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try crystal methamphetamine (ice) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try sedatives (barbiturates) once or twice [f]	34.8	32.5	31.2	31.3	30.7	30.9	28.4	27.5	27.0	27.4	26.1	25.4	30.9	29.7	32.2	32.4
Take sedatives (barbiturates) regularly [e]	69.1	67.7	68.6	68.4	71.6	72.2	69.9	67.6	67.7	68.5	68.3	67.2	69.4	69.6	70.5	70.2
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)	5.3	4.8	4.1	3.4	4.1	3.8	4.6	3.5	4.2	4.6	5.0	4.6	6.2	6.0	6.0	8.3
Take one or two drinks nearly every day	21.5	21.2	18.5	19.6	22.6	20.3	21.6	21.6	21.6	23.0	24.4	25.1	26.2	27.3	28.5	31.3
Take four or five drinks nearly every day	63.5	61.0	62.9	63.1	66.2	65.7	64.5	65.5	66.8	68.4	69.8	66.5	69.7	68.5	69.8	70.9
Have five or more drinks once or twice each weekend	37.8	37.0	34.7	34.5	34.9	35.9	36.3	36.0	38.6	41.7	43.0	39.1	41.9	42.6	44.0	47.1
Smoke one or more packs of cigarettes per day	51.3	56.4	58.4	59.0	63.0	63.7	63.3	60.5	61.2	63.8	66.5	66.0	68.6	68.0	67.2	68.2
Vape marijuana occasionally [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally [f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly [f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take steroids	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.8	69.9
Approximate weighted N =	*2,804*	*2,918*	*3,052*	*3,770*	*3,250*	*3,234*	*3,604*	*3,557*	*3,305*	*3,262*	*3,250*	*3,020*	*3,315*	*3,276*	*2,796*	*2,553*

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TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Use marijuana once or twice	27.1	24.5	21.9	19.5	16.3	15.6	14.9	16.7	15.7	13.7	15.3	16.1	16.1	15.9	16.1	17.8	18.6
Use marijuana occasionally	40.6	39.6	35.6	30.1	25.6	25.9	24.7	24.4	23.9	23.4	23.5	23.2	26.6	25.4	25.8	25.9	27.1
Use marijuana regularly	78.6	76.5	72.5	65.0	60.8	59.9	58.1	58.5	57.4	58.3	57.4	53.0	54.9	54.6	58.0	57.9	54.8
Try LSD once or twice	46.6	42.3	39.5	38.8	36.4	36.2	34.7	37.4	34.9	34.3	33.2	36.7	36.2	36.2	36.5	36.1	37.0
Take LSD regularly	84.3	81.8	79.4	79.1	78.1	77.8	76.6	76.5	76.1	75.9	74.1	73.9	72.3	70.2	69.9	69.3	67.3
Try PCP once or twice	51.7	54.8	50.8	51.5	49.1	51.0	48.8	46.8	44.8	45.0	46.2	48.3	45.2	47.1	46.6	47.0	48.0
Try ecstasy (MDMA, Molly) once or twice [b]	—	—	—	—	—	—	33.8	34.5	35.0	37.9	45.7	52.2	56.3	57.7	60.1	59.3	58.1
Try cocaine once or twice	59.4	56.8	57.6	57.2	53.7	54.2	53.6	54.6	52.1	51.1	50.7	51.2	51.0	50.7	50.5	52.5	51.3
Take cocaine occasionally	75.5	75.1	73.3	73.7	70.8	72.1	72.4	70.1	70.1	69.5	69.9	68.3	69.1	67.2	66.7	69.8	68.8
Take cocaine regularly	90.4	90.2	90.1	89.3	87.9	88.3	87.1	86.3	85.8	86.2	84.1	84.5	83.0	82.2	82.8	84.6	83.3
Try heroin once or twice	55.2	50.9	50.7	52.8	50.9	52.5	56.7	57.8	56.0	54.2	55.6	56.0	58.0	56.6	55.2	59.1	58.4
Take heroin occasionally	74.9	74.2	72.0	72.1	71.0	74.8	76.3	76.9	77.3	74.6	75.9	76.6	78.5	75.7	76.0	79.1	76.2
Take heroin regularly	89.6	89.2	88.3	88.0	87.2	89.5	88.9	89.1	89.9	89.2	88.3	88.5	89.3	86.8	87.5	89.7	87.8
Try heroin once or twice without using a needle	—	—	—	—	55.6	58.6	60.5	59.6	58.5	61.6	60.7	60.6	58.9	61.2	60.5	62.6	60.2
Take heroin occasionally without using a needle	—	—	—	—	71.2	71.0	74.3	73.4	73.6	74.7	74.4	74.7	73.0	76.1	73.3	76.2	73.9
Try any narcotic other than heroin (codeine, Vicodin, OxyContin, Percocet, etc.) once or twice	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take any narcotic other than heroin occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take any narcotic other than heroin regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

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TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

How much do you think people risk harming themselves (physically or in other ways), if they . . .	Percentage saying great risk [a]																
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Try amphetamines once or twice [c]	36.3	32.6	31.3	31.4	28.8	30.8	31.0	35.3	32.2	32.6	34.7	34.4	36.8	35.7	37.7	39.5	41.3
Take amphetamines regularly [c]	74.1	72.4	69.9	67.0	65.9	66.8	66.0	67.7	66.4	66.3	67.1	64.8	65.6	63.9	67.1	68.1	68.1
Try Adderall once or twice [d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try Adderall occasionally [d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Try crystal methamphetamine (ice) once or twice	61.6	61.9	57.5	58.3	54.4	55.3	54.4	52.7	51.2	51.3	52.7	53.8	51.2	52.4	54.6	59.1	60.2
Try sedatives (barbiturates) once or twice [f]	35.1	32.2	29.2	29.9	26.3	29.1	26.9	29.0	26.1	25.0	25.7	26.2	27.9‡	24.9	24.7	28.0	27.9
Take sedatives (barbiturates) regularly [e]	70.5	70.2	66.1	63.3	61.6	60.4	56.8	56.3	54.1	52.3	50.3	49.3	49.6‡	54.0	54.1	56.8	55.1
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)	9.1	8.6	8.2	7.6	5.9	7.3	6.7	8.0	8.3	6.4	8.7	7.6	8.4	8.6	8.5	9.3	10.5
Take one or two drinks nearly every day	32.7	30.6	28.2	27.0	24.8	25.1	24.8	24.3	21.8	21.7	23.4	21.0	20.1	23.0	23.7	25.3	25.1
Take four or five drinks nearly every day	69.5	70.5	67.8	66.2	62.8	65.6	63.0	62.1	61.1	59.9	60.7	58.8	57.8	59.2	61.8	63.4	61.8
Have five or more drinks once or twice each weekend	48.6	49.0	48.3	46.5	45.2	49.5	43.0	42.8	43.1	42.7	43.6	42.2	43.5	43.6	45.0	47.6	45.8
Smoke one or more packs of cigarettes per day	69.4	69.2	69.5	67.6	65.6	68.2	68.7	70.8	70.8	73.1	73.3	74.2	72.1	74.0	76.5	77.6	77.3
Vape marijuana occasionally [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally [f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly [f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take steroids	65.6	70.7	69.1	66.1	66.4	67.6	67.2	68.1	62.1	57.9	58.9	57.1	55.0	55.7	56.8	60.2	57.4
Approximate weighted N =	*2,549*	*2,684*	*2,759*	*2,591*	*2,603*	*2,449*	*2,579*	*2,564*	*2,306*	*2,130*	*2,173*	*2,198*	*2,466*	*2,491*	*2,512*	*2,407*	*2,450*

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TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

	Percentage saying great risk [a]																	
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021	2022	2023	2022 – 2023 change
Use marijuana once or twice	17.4	18.5	17.1	15.6	14.8	14.5	12.5	12.3	12.9	11.9	12.1	10.7	12.4	§	10.0*	10.0	10.5	+0.5
Use marijuana occasionally	25.8	27.4	24.5	22.7	20.6	19.5	16.4	15.8	17.1	14.1	14.3	13.5	15.3	§	12.7*	12.7	13.4	+0.7
Use marijuana regularly	51.7	52.4	46.8	45.7	44.1	39.5	36.1	31.9	31.1	29.0	26.7	30.5	30.2	§	21.6*	27.6	31.4	+3.7
Try LSD once or twice	33.9	37.1	35.6	34.7	33.1	34.9	35.5	33.2	31.7	30.0	29.0	*28.3*	*33.8*	§	28.2*	27.4	27.2	-0.2
Take LSD regularly	63.6	67.8	65.3	65.5	66.8	66.8	62.7	60.7	58.2	56.1	55.2	*57.9*	*67.4*	§	54.7*	60.1	59.3	-0.8
Try PCP once or twice	47.4	49.7	52.4	53.9	51.6	53.9	53.8	54.4	55.1	53.6	51.7	52.6	52.9	§	42.9*	44.3	43.0	-1.3
Try ecstasy (MDMA, Molly) once or twice [b]	57.0	53.3	50.6	49.0	49.4	47.5‡	47.8	49.5	48.8	49.1	48.2	*46.3*	*52.1*	§	40.6*	46.1	48.7	+2.7
Try cocaine once or twice	50.3	53.1	52.8	54.0	51.6	54.4	53.7	51.1	52.7	49.5	47.9	47.7	48.2	§	52.0*	48.1	47.4	-0.7
Take cocaine occasionally	67.1	71.4	67.8	69.7	69.0	70.2	68.1	66.3	68.6	64.6	62.1	64.2	67.7	§	60.2*	65.1	68.4	+3.3
Take cocaine regularly	80.7	84.4	81.7	83.8	82.6	83.3	80.6	79.1	78.3	74.9	75.2	74.7	78.8	§	72.2*	77.1	80.0	+2.8
Try heroin once or twice	55.5	59.3	58.3	59.1	59.4	61.7	62.8	64.0	64.5	63.0	61.8	62.6	59.7	§	60.9*	59.4	58.1	-1.4
Take heroin occasionally	75.3	79.7	74.8	77.2	78.0	78.2	77.9	78.0	78.7	74.6	75.0	75.7	75.5	§	74.4*	75.8	73.0	-2.7
Take heroin regularly	86.4	89.9	85.5	87.9	88.6	87.6	85.7	84.8	85.4	83.3	81.4	81.2	83.9	§	82.4*	84.1	85.9	+1.8
Try heroin once or twice without using a needle	60.8	61.5	63.8	61.1	63.3	64.5	65.3	62.5	66.1	64.6	63.1	*60.5*	*68.9*	§	64.7*	60.0	59.6	-0.5
Take heroin occasionally without using a needle	73.2	74.8	76.2	74.7	76.1	76.4	73.6	71.1	74.6	72.7	69.6	*69.4*	*75.5*	§	73.8*	69.4	70.4	+1.0
Try any narcotic other than heroin (codeine, Vicodin, OxyContin, Percocet, etc.) once or twice	—	—	40.4	39.9	38.4	43.1	42.7	44.1	43.6	42.0	43.2	45.0	43.1	§	44.0*	42.9	41.3	-1.6
Take any narcotic other than heroin occasionally	—	—	54.3	54.8	53.8	57.3	59.0	58.5	55.7	55.5	56.7	56.7	57.3	§	53.8*	52.9	50.7	-2.2
Take any narcotic other than heroin regularly	—	—	74.9	75.5	73.9	75.8	72.7	73.9	72.4	70.8	71.6	73.1	69.1	§	62.8*	67.4	65.6	-1.7

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TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

	Percentage saying great risk [a]																	
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[g]	2019e[g]	2020	2021	2022	2023	2022 – 2023 change
Try amphetamines once or twice [c]	39.2	41.9	40.6‡	34.8	34.3	36.3	34.1	34.0	31.1	31.9	29.2	*29.7*	*38.5*	§	38.7*	36.7	36.6	-0.1
Take amphetamines regularly [c]	65.4	69.0	63.6‡	58.7	60.0	59.5	55.1	54.3	51.3	50.0	51.1	*48.4*	*53.9*	§	45.9*	51.5	48.6	-2.9
Try Adderall once or twice [d]	—	—	33.3	31.2	27.2	31.8	33.6	34.3	32.5	32.0	34.0	34.3	34.5	§	30.2*	31.8	32.3	+0.5
Try Adderall occasionally [d]	—	—	41.6	40.8	35.3	38.8	41.5	41.6	40.9	40.6	40.1	41.8	45.0	§	41.7*	39.6	40.9	+1.3
Try crystal methamphetamine (ice) once or twice	62.2	63.4	64.9	66.5	67.8	72.2	70.2	70.0	70.0	69.3	67.1	67.1	68.3	§	64.3*	63.5	59.8	-3.7
Try sedatives (barbiturates) once or twice [f]	25.9	29.6	28.0	27.8	27.8	29.4	29.6	28.9	27.4	26.9	26.3	*25.2*	*36.7*	§	30.9*	34.0	31.2	-2.8
Take sedatives (barbiturates) regularly [e]	50.2	54.7	52.1	52.4	53.9	53.3	50.5	50.6	47.0	44.0	45.1	*45.0*	*56.3*	§	49.6*	53.7	52.8	-0.9
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)	10.0	9.4	10.8	9.4	8.7	9.9	8.6	10.3	9.5	9.3	10.2	9.7	10.8	§	9.7*	10.0	9.1	-0.8
Take one or two drinks nearly every day	24.2	23.7	25.4	24.6	23.7	23.1	21.1	21.5	21.6	21.6	22.8	21.0	23.8	§	21.9*	23.3	23.7	+0.4
Take four or five drinks nearly every day	60.8	62.4	61.1	62.3	63.6	62.4	61.2	59.1	59.1	58.7	59.1	59.7	66.2	§	64.3*	66.6	72.4	+5.8 s
Have five or more drinks once or twice each weekend	46.3	48.0	46.3	47.6	48.8	45.8	45.4	46.9	48.4	45.7	44.7	*46.4*	*36.3*	§	34.4*	34.9	38.7	+3.8
Smoke one or more packs of cigarettes per day	74.0	74.9	75.0	77.7	78.2	78.2	78.0	75.9	76.5	74.9	73.9	75.6	75.3	§	66.0*	71.6	73.5	+1.9
Vape marijuana occasionally [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	§	16.0*	19.8	22.1	+2.3
Vape marijuana regularly [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	§	30.9*	35.9	40.4	+4.6 ss
Vape an e-liquid with nicotine occasionally [f]	—	—	—	—	—	—	—	—	—	16.4	15.8	*17.7*	*24.6*	§	22.7*	25.3	29.0	+3.7 s
Vape an e-liquid with nicotine regularly [f]	—	—	—	—	—	—	—	—	—	27.0	27.7	*35.2*	*40.5*	§	43.7*	45.2	50.4	+5.2 s
Take steroids	60.8	60.2	59.2	61.1	58.6	54.2	54.6	54.4	54.5	49.1	50.1	*50.8*	*58.5*	§	45.8*	48.6	49.5	+1.0
Approximate weighted N =	*2,389*	*2,290*	*2,440*	*2,408*	*2,331*	*2,098*	*2,067*	*2,174*	*1,988*	*1,919*	*1,976*	*891*	*1,103*	§	*580*	*1,333*	*1,240*	

Table continued on next page.

TABLE 8-3 (cont.)
Trends in Harmfulness of Drugs as Perceived by 12th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. ' ‡ ' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) No risk, (2) Slight risk, (3) Moderate risk, (4) Great risk, and (5) Can't say, drug unfamiliar.

[b] Beginning in 2014 data are based on the revised question which included "Molly." 2014 and 2015 data are not comparable to earlier years due to the revision of the question text.

[c]In 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

[d]In 2014 "(without a doctor's orders)" added to the questions on perceived risk of using Adderall.

[e]In 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

[f]Based on two of six forms in 2017 and 2018; N is two times the N indicated. Beginning in 2019, data based on three of six forms; *N* is three times the *N* indicated.

[g]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[h]Based on two of six forms; N is two times the N indicated.

TABLE 8-4
Trends in Disapproval of Drug Use in Grade 8

Do you disapprove of people who . . .	Percentage who disapprove or strongly disapprove[a]																
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Use marijuana once or twice [b]	84.6	82.1	79.2	72.9	70.7	67.5	67.6	69.0	70.7	72.5	72.4	73.3	73.8	75.9	75.3	76.0	78.7
Use marijuana occasionally [b]	89.5	88.1	85.7	80.9	79.7	76.5	78.1	78.4	79.3	80.6	80.6	80.9	81.5	83.1	82.4	82.2	84.5
Use marijuana regularly [b]	92.1	90.8	88.9	85.3	85.1	82.8	84.6	84.5	84.5	85.3	84.5	85.3	85.7	86.8	86.3	86.1	87.7
Try inhalants once or twice [c]	84.9	84.0	82.5	81.6	81.8	82.9	84.1	83.0	85.2	85.4	86.6	86.1	85.1	85.1	84.6	83.4	84.1
Take inhalants regularly [c]	90.6	90.0	88.9	88.1	88.8	89.3	90.3	89.5	90.3	90.2	90.5	90.4	89.8	90.1	89.8	89.0	89.5
Try LSD once or twice [d]	—	—	77.1	75.2	71.6	70.9	72.1	69.1	69.4	66.7	64.6	62.6	61.0	58.1	58.5	53.9	53.5
Take LSD regularly [d]	—	—	79.8	78.4	75.8	75.3	76.3	72.5	72.5	69.3	67.0	65.5	63.5	60.5	60.7	55.8	55.6
Try ecstasy (MDMA, Molly) once or twice [e]	—	—	—	—	—	—	—	—	—	—	69.0	74.3	77.7	76.3	75.0	66.7	65.7
Take ecstasy (MDMA, Molly) occasionally [e]	—	—	—	—	—	—	—	—	—	—	73.6	78.6	81.3	79.4	77.9	69.8	68.3
Try cocaine once or twice [c,j]	91.2	89.6	88.5	86.1	85.3	83.9	85.1	84.5	85.2	84.8	85.6	85.8	85.6	86.8	87.0	86.5	88.2
Take cocaine occasionally [c,j]	93.1	92.4	91.6	89.7	89.7	88.7	90.1	89.3	89.9	88.8	89.6	89.9	89.8	90.3	90.7	90.2	91.0
Try heroin once or twice without using a needle [d]	—	—	—	—	85.8	85.0	87.7	87.3	88.0	87.2	87.2	87.8	86.9	86.6	86.9	87.2	88.4
Take heroin occasionally without using a needle [d]	—	—	—	—	88.5	87.7	90.1	89.7	90.2	88.9	88.9	89.6	89.0	88.6	88.5	88.5	89.7
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) [b]	51.7	52.2	50.9	47.8	48.0	45.5	45.7	47.5	48.3	48.7	49.8	51.1	49.7	51.1	51.2	51.3	54.0
Take one or two drinks nearly every day [b]	82.2	81.0	79.6	76.7	75.9	74.1	76.6	76.9	77.0	77.8	77.4	78.3	77.1	78.6	78.7	78.7	80.4
Have five or more drinks once or twice each weekend [b]	85.2	83.9	83.3	80.7	80.7	79.1	81.3	81.0	80.3	81.2	81.6	81.9	81.9	82.3	82.9	82.0	83.8
Smoke one or more packs of cigarettes per day [f]	82.8	82.3	80.6	78.4	78.6	77.3	80.3	80.0	81.4	81.9	83.5	84.6	84.6	85.7	85.3	85.6	87.0
Vape marijuana occasionally [b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly [b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally [e,g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly [e,g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco regularly [b]	79.1	77.2	77.1	75.1	74.0	74.1	76.5	76.3	78.0	79.2	79.4	80.6	80.7	81.0	82.0	81.0	82.3
Approximate weighted N =	*17,400*	*18,500*	*18,400*	*17,400*	*17,600*	*18,000*	*18,800*	*18,100*	*16,700*	*16,700*	*16,200*	*15,100*	*16,500*	*17,000*	*16,800*	*16,500*	*16,100*

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TABLE 8-4 (cont.)
Trends in Disapproval of Drug Use in Grade 8

Do you disapprove of people who . . .	Percentage who disapprove or strongly disapprove[a]																	2022–2023 change
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021[i]	2022	2023	
Use marijuana once or twice [b]	76.6	75.3	73.5	74.4	75.1	72.0	70.5	70.3	70.1	67.3	64.5	62.3	62.3	§	60.3*	62.2	65.5	+3.3
Use marijuana occasionally [b]	82.6	81.9	79.9	81.1	81.6	78.8	77.7	77.5	77.5	75.5	73.1	70.9	70.3	§	69.0*	69.7	72.5	+2.7
Use marijuana regularly [b]	86.8	85.9	84.3	85.7	85.6	83.8	82.2	82.2	82.3	81.2	79.3	77.5	76.0	§	75.8*	76.3	79.1	+2.9
Try inhalants once or twice [c]	82.3	83.1	83.1	82.9	83.1	81.6	80.7	80.6	78.3	77.4	75.0	75.0	72.9	§	63.8*	64.8	65.7	+0.9
Take inhalants regularly [c]	88.5	88.4	88.9	88.5	88.6	86.8	85.5	85.4	83.3	82.8	81.3	81.9	78.8	§	74.9*	75.0	74.2	-0.8
Try LSD once or twice [d]	52.6	53.2	53.7	55.4	51.8	52.0	52.8	56.0	55.2	56.1	55.9	56.7	59.4	§	52.6*	51.7	51.2	-0.5
Take LSD regularly [d]	54.7	55.7	55.8	57.6	54.1	53.6	54.8	58.1	57.6	58.2	59.4	60.4	62.1	§	58.9*	56.8	54.3	-2.5
Try ecstasy (MDMA, Molly) once or twice [e]	63.5	62.3	62.4	64.2	60.2	60.9	61.0‡	68.2	64.8	63.0	63.7	65.1	64.7	§	59.1*	59.0	55.4	-3.6
Take ecstasy (MDMA, Molly) occasionally [e]	66.5	65.7	65.9	67.5	63.2	63.4	64.1‡	71.7	67.5	65.8	67.1	68.3	67.6	§	64.9*	63.7	58.5	-5.2 s
Try cocaine once or twice [c,j]	86.8	88.1	88.4	88.3	88.6	88.0	87.7	87.5	86.8	86.8	85.6	86.4‡	83.8‡	§	82.8*	81.6	81.8	+0.2
Take cocaine occasionally [c,j]	90.1	90.7	91.4	91.3	91.5	90.6	90.1	90.1	89.3	90.0	88.9	89.3‡	86.5‡	§	87.2*	85.5	85.2	-0.2
Try heroin once or twice without using a needle [d]	86.9	88.6	89.5	87.5	86.8	87.2	87.1	87.1	85.6	87.9	85.5	86.7	84.6	§	82.4*	82.2	79.7	-2.5
Take heroin occasionally without using a needle [d]	88.2	90.1	90.6	89.0	87.7	88.2	88.1	88.0	86.7	88.7	86.8	87.1	85.5	§	84.0*	83.1	81.9	-1.2
Try one or two drinks of an alcoholic beverage (beer, wine, liquor) [b]	52.5	52.7	54.2	54.0	54.1	53.3	53.3	53.7	52.6	51.0	47.4	*46.2*	*51.0*	§	40.9*	47.2	46.7	-0.5
Take one or two drinks nearly every day [b]	79.2	78.5	79.5	80.7	81.3	80.2	79.6	79.7	79.1	79.5	77.9	77.3	77.8	§	76.0*	76.3	76.0	-0.2
Have five or more drinks once or twice each weekend [b]	83.2	83.2	83.6	84.8	86.0	85.0	84.9	85.4	84.9	84.7	83.7	84.6	81.3	§	81.1*	81.3	80.3	-1.0
Smoke one or more packs of cigarettes per day [f]	86.7	87.1	87.0	88.0	88.8	88.0	87.5	88.8	88.1	88.8	87.6	87.8	85.5	§	85.6*	85.0	84.2	-0.8
Vape marijuana occasionally [b]	—	—	—	—	—	—	—	—	—	—	—	—	—	§	71.7*	73.9	72.7	-1.2
Vape marijuana regularly [b]	—	—	—	—	—	—	—	—	—	—	—	—	—	§	78.1*	79.8	77.1	-2.7
Vape an e-liquid with nicotine occasionally [e,g]	—	—	—	—	—	—	—	—	—	63.2	60.8	65.6	65.0	§	70.7*	70.5	73.0	+2.5
Vape an e-liquid with nicotine regularly [e,g]	—	—	—	—	—	—	—	—	—	69.9	68.9	74.7	73.4	§	79.0*	77.6	77.3	-0.4
Use smokeless tobacco regularly [b]	82.1	81.5	81.2	82.6	82.7	81.5	80.2	82.5	81.1	81.3	79.9	81.3	79.1	§	78.5*	78.3	78.4	+0.1
Approximate weighted N =	*15,700*	*15,000*	*15,300*	*16,000*	*15,100*	*14,600*	*14,600*	*14,400*	*16,900*	*15,300*	*14,000*	*6,800*	*6,800*	*§*	*10,700*	*9,300*	*5,700*	

Table continued on next page.

TABLE 8-4 (cont.)
Trends in Disapproval of Drug Use in Grade 8

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. ' ‡ ' indicates that the question changed the following year.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Don't disapprove, (2) Disapprove, (3) Strongly disapprove, and (4) Can't say, drug unfamiliar. Percentages are shown for categories (2) and (3) combined.

[b]Beginning in 2012, data based on two thirds of *N* indicated.

[c]Beginning in 1997, data based on two thirds of *N* indicated.

[d]Data based on one of two forms in 1993–1996; *N* is one half of *N* indicated. Beginning in 1997, data based on one third of *N* indicated due to changes in questionnaire forms.

[e]Data based on one third of *N* indicated. For MDMA "Molly" was added to the question text in 2015; 2014 and 2015 data are not comparable due to this change.

[f]Beginning in 1999, data based on two thirds of *N* indicated due to changes in questionnaire forms.

[g]Percentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

[h]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[i]Sample is decreased by as much as 50% for the following drugs due to survey question experiments: alcohol, inhalants, heroin, JUUL, LSD, and ecstasy (MDMA, molly).

[j]In 2019 and previous years the survey question asked about 'cocaine powder' and in 2020 forward it asked about 'cocaine'.

TABLE 8-5
Trends in Disapproval of Drug Use in Grade 10

Do you disapprove of people who . . .	Percentage who disapprove or strongly disapprove[a]																
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Use marijuana once or twice[b]	74.6	74.8	70.3	62.4	59.8	55.5	54.1	56.0	56.2	54.9	54.8	57.8	58.1	60.4	61.3	62.5	63.9
Use marijuana occasionally[b]	83.7	83.6	79.4	72.3	70.0	66.9	66.2	67.3	68.2	67.2	66.2	68.3	68.4	70.8	71.9	72.6	73.3
Use marijuana regularly[b]	90.4	90.0	87.4	82.2	81.1	79.7	79.7	80.1	79.8	79.1	78.0	78.6	78.8	81.3	82.0	82.5	82.4
Try inhalants once or twice[c]	85.2	85.6	84.8	84.9	84.5	86.0	86.9	85.6	88.4	87.5	87.8	88.6	87.7	88.5	88.1	88.1	87.6
Take inhalants regularly[c]	91.0	91.5	90.9	91.0	90.9	91.7	91.7	91.1	92.4	91.8	91.3	91.8	91.0	92.3	91.9	92.2	91.8
Try LSD once or twice[d]	—	—	82.1	79.3	77.9	76.8	76.6	76.7	77.8	77.0	75.4	74.6	74.4	72.4	71.8	71.2	67.7
Take LSD regularly[d]	—	—	86.8	85.6	84.8	84.5	83.4	82.9	84.3	82.1	80.8	79.4	77.6	75.9	75.0	74.9	71.5
Try ecstasy (MDMA, Molly) once or twice[e]	—	—	—	—	—	—	—	—	—	—	72.6	77.4	81.0	83.7	83.1	81.6	80.0
Take ecstasy (MDMA, Molly) occasionally[e]	—	—	—	—	—	—	—	—	—	—	81.0	84.6	86.3	88.0	87.4	86.0	84.3
Try cocaine once or twice[c,j]	90.8	91.1	90.0	88.1	86.8	86.1	85.1	84.9	86.0	84.8	85.3	86.4	85.9	86.8	86.9	87.3	87.7
Take cocaine occasionally[c,j]	94.0	94.0	93.2	92.1	91.4	91.1	90.4	89.7	90.7	89.9	90.2	89.9	90.4	91.2	91.2	91.4	92.0
Try heroin once or twice without using a needle[d]	—	—	—	—	89.7	89.5	89.1	88.6	90.1	90.1	89.1	89.2	89.3	90.1	90.3	91.1	90.7
Take heroin occasionally without using a needle[d]	—	—	—	—	91.6	91.7	91.4	90.5	91.8	92.3	90.8	90.7	90.6	91.8	92.0	92.5	92.5
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)[b]	37.6	39.9	38.5	36.5	36.1	34.2	33.7	34.7	35.1	33.4	34.7	37.7	36.8	37.6	38.5	37.8	39.5
Take one or two drinks nearly every day[b]	81.7	81.7	78.6	75.2	75.4	73.8	75.4	74.6	75.4	73.8	73.8	74.9	74.2	75.1	76.9	76.4	77.1
Have five or more drinks once or twice each weekend[b]	76.7	77.6	74.7	72.3	72.2	70.7	70.2	70.5	69.9	68.2	69.2	71.5	71.6	71.8	73.7	72.9	74.1
Smoke one or more packs of cigarettes per day[f]	79.4	77.8	76.5	73.9	73.2	71.6	73.8	75.3	76.1	76.7	78.2	80.6	81.4	82.7	84.3	83.2	84.7
Vape marijuana occasionally[b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly[b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally[e,g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly[e,g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco regularly[b]	75.4	74.6	73.8	71.2	71.0	71.0	72.3	73.2	75.1	75.8	76.1	78.7	79.4	80.2	80.5	80.5	80.9
Approximate weighted N =	*14,800*	*14,800*	*15,300*	*15,900*	*17,000*	*15,700*	*15,600*	*15,000*	*13,600*	*14,300*	*14,000*	*14,300*	*15,800*	*16,400*	*16,200*	*16,200*	*16,100*

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TABLE 8-5 (cont.)
Trends in Disapproval of Drug Use in Grade 10

Do you disapprove of people who . . .	Percentage who disapprove or strongly disapprove[a]																	
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021[i]	2022	2023	2022–2023 change
Use marijuana once or twice[b]	64.5	60.1	59.2	58.5	56.2	53.2	53.8	52.7	52.6	48.1	47.9	46.0	46.9	§	47.8*	48.1	50.9	+2.7
Use marijuana occasionally[b]	73.6	69.2	68.0	67.9	65.7	62.1	62.9	62.6	61.9	58.1	57.4	55.0	56.0	§	56.6*	56.9	59.5	+2.7 s
Use marijuana regularly[b]	83.0	79.9	78.7	78.8	77.3	73.8	74.6	74.3	73.5	70.2	69.7	67.4	67.7	§	70.2*	69.3	72.3	+3.1 s
Try inhalants once or twice[c]	87.1	87.0	86.5	86.9	85.7	86.1	85.9	84.1	83.3	80.7	81.8	81.8	79.5	§	74.5*	72.5	71.2	-1.3
Take inhalants regularly[c]	91.6	91.1	90.8	90.9	90.0	89.7	89.7	88.3	87.1	85.4	86.9	86.6	83.9	§	83.4*	80.6	79.2	-1.4
Try LSD once or twice[d]	66.3	67.8	68.2	68.5	68.3	69.1	67.8	70.3	69.5	66.9	70.5	69.2	71.3	§	63.3*	63.8	60.4	-3.5
Take LSD regularly[d]	69.8	72.2	72.9	72.5	73.0	74.2	73.3	76.5	74.9	74.5	76.5	*75.7*	*79.9*	§	75.3*	71.1	66.8	-4.3 s
Try ecstasy (MDMA, Molly) once or twice[e]	78.1	76.5	75.5	76.1	75.3	75.4	74.4‡	78.0	76.8	74.7	75.3	76.4	76.6	§	68.6*	69.8	68.9	-0.9
Take ecstasy (MDMA, Molly) occasionally[e]	83.0	81.3	81.3	82.2	81.2	81.3	80.4‡	84.0	81.7	80.0	79.5	81.8	82.4	§	75.8*	76.2	73.7	-2.5
Try cocaine once or twice[c,j]	88.6	88.4	89.0	89.4	89.3	88.7	88.9	87.9	87.9	86.1	87.6	87.4‡	86.0‡	§	84.7*	84.1	84.3	+0.2
Take cocaine occasionally[c,j]	92.1	92.1	92.2	92.5	92.4	91.8	91.9	91.8	90.8	89.9	90.9	90.9‡	89.1‡	§	89.0*	88.5	88.5	0.0
Try heroin once or twice without using a needle[d]	91.4	91.6	91.4	91.6	91.9	91.3	91.9	91.7	90.2	89.7	90.6	91.5	89.0	§	89.5*	87.6	87.0	-0.6
Take heroin occasionally without using a needle[d]	92.5	93.0	92.4	92.4	92.9	92.3	92.7	92.7	90.9	90.5	91.2	*92.1*	*89.3*	§	90.3*	88.5	88.6	+0.1
Try one or two drinks of an alcoholic beverage (beer, wine, liquor)[b]	41.8	39.7	40.3	41.5	39.6	38.5	40.7	40.0	41.8	39.3	39.6	40.4	41.0	§	36.7*	37.4	39.2	+1.8
Take one or two drinks nearly every day[b]	79.1	77.6	77.6	80.0	78.0	77.1	77.9	78.2	78.6	77.7	77.9	79.4	77.6	§	77.1*	77.4	78.8	+1.4
Have five or more drinks once or twice each weekend[b]	77.2	75.1	75.9	77.3	77.5	77.8	79.5	79.6	80.8	80.1	80.4	*82.4*	*78.8*	§	78.4*	78.4	80.0	+1.6
Smoke one or more packs of cigarettes per day[f]	85.2	84.5	83.9	85.8	86.0	86.1	88.0	88.3	88.5	87.8	88.5	89.5	87.2	§	86.5*	86.4	85.9	-0.5
Vape marijuana occasionally[b]	—	—	—	—	—	—	—	—	—	—	—	—	—	§	65.3*	63.4	65.1	+1.7
Vape marijuana regularly[b]	—	—	—	—	—	—	—	—	—	—	—	—	—	§	74.8*	73.4	75.1	+1.7
Vape an e-liquid with nicotine occasionally[e,g]	—	—	—	—	—	—	—	—	—	59.3	58.0	*65.4*	*58.5*	§	65.8*	67.9	71.6	+3.7 ss
Vape an e-liquid with nicotine regularly[e,g]	—	—	—	—	—	—	—	—	—	68.3	67.8	75.5	71.2	§	76.7*	77.4	80.8	+3.5 s
Use smokeless tobacco regularly[b]	81.8	79.5	78.5	79.5	79.5	77.7	78.7	80.1	81.2	80.7	80.7	83.2	80.2	§	79.6*	78.9	78.4	-0.5
Approximate weighted N =	*15,100*	*15,900*	*15,200*	*14,900*	*15,000*	*12,900*	*13,000*	*15,600*	*14,700*	*13,500*	*14,300*	*7,000*	*7,000*	*§*	*11,000*	*11,200*	*8,100*	

Table continued on next page.

TABLE 8-5 (cont.)
Trends in Disapproval of Drug Use in Grade 10

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. ' ‡ ' indicates that the question changed the following year.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Don't disapprove, (2) Disapprove, (3) Strongly disapprove, and (4) Can't say, drug unfamiliar. Percentages are shown for categories (2) and (3) combined.

[b]Beginning in 2012, data based on two thirds of *N* indicated.

[c]Beginning in 1997, data based on two thirds of *N* indicated due to changes in questionnaire forms.

[d]Data based on one of two forms in 1993–1996; *N* is one half of *N* indicated. Beginning in 1997, data based on one third of *N* indicated due to changes in questionnaire forms.

[e]Data based on one third of *N* indicated. For MDMA "Molly" was added to the question text in 2015; 2014 and 2015 data are not comparable due to this change.

[f]Beginning in 1999, data based on two thirds of *N* indicated due to changes in questionnaire forms.

[g] Percentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the denominator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the denominator.

[h]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[i]Sample is decreased by as much as 50% for the following drugs due to survey question experiments: alcohol, inhalants, heroin, JUUL, LSD, and ecstasy (MDMA, molly).

[j]In 2019 and previous years the survey question asked about 'cocaine powder' and in 2020 forward it asked about 'cocaine'.

TABLE 8-6
Trends in Disapproval of Drug Use in Grade 12

Do you disapprove of people (who are 18 or older) doing each of the following? [a]	Percentage who disapprove or strongly disapprove [b]															
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Use marijuana once or twice	47.0	38.4	33.4	33.4	34.2	39.0	40.0	45.5	46.3	49.3	51.4	54.6	56.6	60.8	64.6	67.8
Use marijuana occasionally	54.8	47.8	44.3	43.5	45.3	49.7	52.6	59.1	60.7	63.5	65.8	69.0	71.6	74.0	77.2	80.5
Use marijuana regularly	71.9	69.5	65.5	67.5	69.2	74.6	77.4	80.6	82.5	84.7	85.5	86.6	89.2	89.3	89.8	91.0
Trying LSD once or twice	82.8	84.6	83.9	85.4	86.6	87.3	86.4	88.8	89.1	88.9	89.5	89.2	91.6	89.8	89.7	89.8
Taking LSD regularly	94.1	95.3	95.8	96.4	96.9	96.7	96.8	96.7	97.0	96.8	97.0	96.6	97.8	96.4	96.4	96.3
Trying ecstasy (MDMA, Molly) once or twice [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trying cocaine once or twice	81.3	82.4	79.1	77.0	74.7	76.3	74.6	76.6	77.0	79.7	79.3	80.2	87.3	89.1	90.5	91.5
Taking cocaine regularly	93.3	93.9	92.1	91.9	90.8	91.1	90.7	91.5	93.2	94.5	93.8	94.3	96.7	96.2	96.4	96.7
Trying crack once or twice [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	92.3
Taking crack occasionally [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94.3
Taking crack regularly [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	94.9
Trying cocaine powder once or twice [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	87.9
Taking cocaine powder occasionally [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	92.1
Taking cocaine powder regularly [h]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	93.7
Trying heroin once or twice	91.5	92.6	92.5	92.0	93.4	93.5	93.5	94.6	94.3	94.0	94.0	93.3	96.2	95.0	95.4	95.1
Taking heroin occasionally	94.8	96.0	96.0	96.4	96.8	96.7	97.2	96.9	96.9	97.1	96.8	96.6	97.9	96.9	97.2	96.7
Taking heroin regularly	96.7	97.5	97.2	97.8	97.9	97.6	97.8	97.5	97.7	98.0	97.6	97.6	98.1	97.2	97.4	97.5
Trying heroin once or twice without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Taking heroin occasionally without using a needle	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Trying amphetamines once or twice [d]	74.8	75.1	74.2	74.8	75.1	75.4	71.1	72.6	72.3	72.8	74.9	76.5	80.7	82.5	83.3	85.3
Taking amphetamines regularly [d]	92.1	92.8	92.5	93.5	94.4	93.0	91.7	92.0	92.6	93.6	93.3	93.5	95.4	94.2	94.2	95.5
Trying one or two drinks of an alcoholic beverage (beer, wine, liquor)	21.6	18.2	15.6	15.6	15.8	16.0	17.2	18.2	18.4	17.4	20.3	20.9	21.4	22.6	27.3	29.4
Taking one or two drinks nearly every day	67.6	68.9	66.8	67.7	68.3	69.0	69.1	69.9	68.9	72.9	70.9	72.8	74.2	75.0	76.5	77.9
Taking four or five drinks nearly every day	88.7	90.7	88.4	90.2	91.7	90.8	91.8	90.9	90.0	91.0	92.0	91.4	92.2	92.8	91.6	91.9
Having five or more drinks once or twice each weekend	60.3	58.6	57.4	56.2	56.7	55.6	55.5	58.8	56.6	59.6	60.4	62.4	62.0	65.3	66.5	68.9
Smoking one or more packs of cigarettes per day	67.5	65.9	66.4	67.0	70.3	70.8	69.9	69.4	70.8	73.0	72.3	75.4	74.3	73.1	72.4	72.8
Vape marijuana occasionally [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Taking steroids	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	90.8
Approximate weighted N =	*2,677*	*2,957*	*3,085*	*3,686*	*3,221*	*3,261*	*3,610*	*3,651*	*3,341*	*3,254*	*3,265*	*3,113*	*3,302*	*3,311*	*2,799*	*2,566*

Table continued on next page.

TABLE 8-6 (cont.)
Trends in Disapproval of Drug Use in Grade 12

Do you disapprove of people (who are 18 or older) doing each of the following? [a]	Percentage who disapprove or strongly disapprove [b]																	
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Use marijuana once or twice	68.7	69.9	63.3	57.6	56.7	52.5	51.0	51.6	48.8	52.5	49.1	51.6	53.4	52.7	55.0	55.6	58.6	55.5
Use marijuana occasionally	79.4	79.7	75.5	68.9	66.7	62.9	63.2	64.4	62.5	65.8	63.2	63.4	64.2	65.4	67.8	69.3	70.2	67.3
Use marijuana regularly	89.3	90.1	87.6	82.3	81.9	80.0	78.8	81.2	78.6	79.7	79.3	78.3	78.7	80.7	82.0	82.2	83.3	79.6
Trying LSD once or twice	90.1	88.1	85.9	82.5	81.1	79.6	80.5	82.1	83.0	82.4	81.8	84.6	85.5	87.9	87.9	88.0	87.8	85.5
Taking LSD regularly	96.4	95.5	95.8	94.3	92.5	93.2	92.9	93.5	94.3	94.2	94.0	94.0	94.4	94.6	95.6	95.9	94.9	93.5
Trying ecstasy (MDMA, Molly) once or twice [c]	—	—	—	—	—	—	82.2	82.5	82.1	81.0	79.5	83.6	84.7	87.7	88.4	89.0	87.8	88.2
Trying cocaine once or twice	93.6	93.0	92.7	91.6	90.3	90.0	88.0	89.5	89.1	88.2	88.1	89.0	89.3	88.6	88.9	89.1	89.6	89.2
Taking cocaine regularly	97.3	96.9	97.5	96.6	96.1	95.6	96.0	95.6	94.9	95.5	94.9	95.0	95.8	95.4	96.0	96.1	96.2	94.8
Trying crack once or twice [h]	92.1	93.1	89.9	89.5	91.4	87.4	87.0	86.7	87.6	87.5	87.0	87.8	86.6	86.9	86.7	88.8	88.8	89.6
Taking crack occasionally [h]	94.2	95.0	92.8	92.8	94.0	91.2	91.3	90.9	92.3	91.9	91.6	91.5	90.8	92.1	91.9	92.9	92.4	93.3
Taking crack regularly [h]	95.0	95.5	93.4	93.1	94.1	93.0	92.3	91.9	93.2	92.8	92.2	92.4	91.2	93.1	92.1	93.8	93.6	93.5
Trying cocaine powder once or twice [h]	88.0	89.4	86.6	87.1	88.3	83.1	83.0	83.1	84.3	84.1	83.3	83.8	83.6	82.2	83.2	84.1	83.5	85.7
Taking cocaine powder occasionally [h]	93.0	93.4	91.2	91.0	92.7	89.7	89.3	88.7	90.0	90.3	89.8	90.2	88.9	90.0	89.4	90.4	90.6	91.7
Taking cocaine powder regularly [h]	94.4	94.3	93.0	92.5	93.8	92.9	91.5	91.1	92.3	92.6	92.5	92.2	90.7	92.6	92.0	93.2	92.6	92.8
Trying heroin once or twice	96.0	94.9	94.4	93.2	92.8	92.1	92.3	93.7	93.5	93.0	93.1	94.1	94.1	94.2	94.3	93.8	94.8	93.3
Taking heroin occasionally	97.3	96.8	97.0	96.2	95.7	95.0	95.4	96.1	95.7	96.0	95.4	95.6	95.9	96.4	96.3	96.2	96.8	95.3
Taking heroin regularly	97.8	97.2	97.5	97.1	96.4	96.3	96.4	96.6	96.4	96.6	96.2	96.2	97.1	97.1	96.7	96.9	97.1	95.9
Trying heroin once or twice without using a needle	—	—	—	—	92.9	90.8	92.3	93.0	92.6	94.0	91.7	93.1	92.2	93.1	93.2	93.7	93.6	94.2
Taking heroin occasionally without using a needle	—	—	—	—	94.7	93.2	94.4	94.3	93.8	95.2	93.5	94.4	93.5	94.4	95.0	94.5	94.9	95.3
Trying amphetamines once or twice [d]	86.5	86.9	84.2	81.3	82.2	79.9	81.3	82.5	81.9	82.1	82.3	83.8	85.8	84.1	86.1	86.3	87.3	87.2
Taking amphetamines regularly [d]	96.0	95.6	96.0	94.1	94.3	93.5	94.3	94.0	93.7	94.1	93.4	93.5	94.0	93.9	94.8	95.3	95.4	94.2
Trying one or two drinks of an alcoholic beverage (beer, wine, liquor)	29.8	33.0	30.1	28.4	27.3	26.5	26.1	24.5	24.6	25.2	26.6	26.3	27.2	26.0	26.4	29.0	31.0	29.8
Taking one or two drinks nearly every day	76.5	75.9	77.8	73.1	73.3	70.8	70.0	69.4	67.2	70.0	69.2	69.1	68.9	69.5	70.8	72.8	73.3	74.5
Taking four or five drinks nearly every day	90.6	90.8	90.6	89.8	88.8	89.4	88.6	86.7	86.9	88.4	86.4	87.5	86.3	87.8	89.4	90.6	90.5	89.8
Having five or more drinks once or twice each weekend	67.4	70.7	70.1	65.1	66.7	64.7	65.0	63.8	62.7	65.2	62.9	64.7	64.2	65.7	66.5	68.5	68.8	68.9
Smoking one or more packs of cigarettes per day	71.4	73.5	70.6	69.8	68.2	67.2	67.1	68.8	69.5	70.1	71.6	73.6	74.8	76.2	79.8	81.5	80.7	80.5
Vape marijuana occasionally [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape marijuana regularly [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine occasionally [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape an e-liquid with nicotine regularly [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Taking steroids	90.5	92.1	92.1	91.9	91.0	91.7	91.4	90.8	88.9	88.8	86.4	86.8	86.0	87.9	88.8	89.4	89.2	90.9
Approximate weighted N =	*2,547*	*2,645*	*2,723*	*2,588*	*2,603*	*2,399*	*2,601*	*2,545*	*2,310*	*2,150*	*2,144*	*2,160*	*2,442*	*2,455*	*2,460*	*2,377*	*2,450*	*2,314*

Table continued on next page.

TABLE 8-6 (cont.)
Trends in Disapproval of Drug Use in Grade 12

Do you disapprove of people (who are 18 or older) doing each of the following? [a]	Percentage who disapprove or strongly disapprove [b]																
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[f]	2019e[f]	2020	2021[g]	2022	2023	2022–2023 change
Use marijuana once or twice	54.8	51.6	51.3	48.8	49.1	48.0	45.5	43.1	39.0	41.1	34.1	39.6	§	31.2*	35.0	34.6	-0.4
Use marijuana occasionally	65.6	62.0	60.9	59.1	58.9	56.7	52.9	50.5	46.7	49.2	41.4	46.6	§	38.6*	41.6	39.8	-1.7
Use marijuana regularly	80.3	77.7	77.5	77.8	74.5	73.4	70.7	68.5	64.7	66.7	63.4	66.7	§	58.0*	61.6	59.7	-1.9
Trying LSD once or twice	88.2	86.5	86.3	87.2	86.6	85.0	81.7	82.4	78.0	80.5	76.1	77.7	§	68.7*	72.8	72.7	-0.1
Taking LSD regularly	95.3	94.3	94.9	95.2	95.3	94.7	92.5	92.4	92.7	93.4	93.8	92.8	§	90.3*	89.8	90.7	+0.9
Trying ecstasy (MDMA, Molly) once or twice [c]	88.2	86.3	83.9	87.1	84.9‡	83.1	84.5	84.0	85.1	85.6	89.8	87.6	§	85.5*	86.6	85.9	-0.7
Trying cocaine once or twice	90.8	90.5	91.1	91.0	92.3	90.0	89.0	88.4	88.0	88.9	88.5	88.8	§	81.7*	88.7	87.0	-1.7
Taking cocaine regularly	96.5	96.0	96.0	96.8	96.7	96.3	95.2	94.8	94.8	95.8	96.5	95.8	§	92.6*	95.0	95.1	0.0
Trying crack once or twice [h]	90.9	89.8	91.4	92.8	91.4	89.3	90.2	90.1	89.7	90.4	88.7	85.1	§	87.4*	87.1	86.1	-1.0
Taking crack occasionally [h]	94.0	92.6	93.9	95.0	93.6	91.9	92.5	92.0	91.8	92.2	91.1	85.7	§	90.1*	88.4	89.8	+1.4
Taking crack regularly [h]	94.3	93.1	94.4	95.4	94.1	92.4	92.8	92.6	92.5	92.5	91.5	85.0	§	90.1*	88.9	90.3	+1.4
Trying cocaine powder once or twice [h]	87.3	87.0	88.1	88.7	88.2	85.5	86.4	86.6	85.5	86.5	85.7	82.5	§	83.1*	83.4	84.3	+0.8
Taking cocaine powder occasionally [h]	92.3	91.0	92.2	93.0	91.7	90.4	91.3	90.6	90.3	91.3	90.1	84.3	§	86.6*	86.1	88.2	+2.1
Taking cocaine powder regularly [h]	93.9	92.6	93.8	95.0	94.1	91.7	92.4	92.0	92.2	92.0	91.2	85.6	§	89.5*	89.2	90.5	+1.3
Trying heroin once or twice	94.7	93.9	94.3	95.8	95.6	94.7	94.2	94.1	93.7	95.0	95.7	93.9	§	92.8*	92.9	92.3	-0.6
Taking heroin occasionally	96.9	96.2	96.3	97.0	96.9	96.6	95.3	95.5	95.5	96.4	96.7	95.9	§	94.9*	95.7	95.1	-0.6
Taking heroin regularly	97.4	96.4	96.7	97.4	97.4	97.1	96.4	95.7	95.9	96.8	97.3	96.3	§	96.3*	96.7	95.6	-1.1
Trying heroin once or twice without using a needle	94.7	93.2	92.6	95.2	93.7	92.5	92.6	93.8	93.3	93.0	95.2	95.0	§	93.4*	93.1	94.5	+1.3
Taking heroin occasionally without using a needle	95.5	94.5	94.1	95.9	94.6	93.5	92.8	94.0	93.8	93.4	95.4	95.1	§	93.9*	93.8	94.7	+0.9
Trying amphetamines once or twice [d]	88.2	88.1‡	84.1	83.9	84.9	83.1	81.4	82.1	81.9	81.0	80.3	83.5	§	78.5*	84.0	82.6	-1.3
Taking amphetamines regularly [d]	95.6	94.9‡	92.9	93.9	93.2	93.0	92.2	92.2	92.0	92.8	94.4	93.3	§	88.3*	91.2	91.3	+0.1
Trying one or two drinks of an alcoholic beverage (beer, wine, liquor)	30.6	30.7	28.7	25.4	27.3	29.2	28.9	28.8	27.2	31.3	26.3	30.1	§	22.3*	26.7	26.5	-0.3
Taking one or two drinks nearly every day	70.5	71.5	72.8	70.8	71.9	71.7	71.1	71.8	70.8	74.7	73.4	74.1	§	67.4*	71.0	72.4	+1.4
Taking four or five drinks nearly every day	89.7	88.8	90.8	90.1	90.6	91.9	89.7	91.1	90.7	91.7	91.5	91.9	§	91.8*	92.2	92.9	+0.7
Having five or more drinks once or twice each weekend	67.6	68.8	70.0	70.1	71.6	72.6	71.9	74.2	72.5	75.8	75.0	70.2	§	57.8*	66.9	66.0	-0.8
Smoking one or more packs of cigarettes per day	81.8	81.0	83.0	83.7	82.6	85.0	84.1	85.3	86.6	89.0	87.9	87.7	§	86.5*	86.3	87.4	+1.2
Vape marijuana occasionally [e]	—	—	—	—	—	—	—	—	—	—	—	—	§	48.0*	52.8	57.5	+4.7 s
Vape marijuana regularly [e]	—	—	—	—	—	—	—	—	—	—	—	—	§	64.5*	68.3	69.3	+0.9
Vape an e-liquid with nicotine occasionally [e]	—	—	—	—	—	—	—	—	62.0	59.2	56.6	60.7	§	60.3*	64.9	69.3	+4.4 s
Vape an e-liquid with nicotine regularly [e]	—	—	—	—	—	—	—	—	71.8	70.9	70.1	70.7	§	73.2*	76.0	79.6	+3.6
Taking steroids	90.3	89.8	89.7	90.4	88.2	87.5	87.8	86.7	88.5	87.4	88.7	90.3	§	80.9*	84.5	81.9	-2.7
Approximate weighted N =	*2,233*	*2,449*	*2,384*	*2,301*	*2,147*	*2,078*	*2,193*	*2,000*	*1,870*	*1,918*	*876*	*975*	*§*	*1,441*	*1,539*	*1,220*	

Table continued on next page.

TABLE 8-6 (cont.)
Trends in Disapproval of Drug Use in Grade 12

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' —' indicates data not available. ' ‡ ' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]The 1975 question asked about people who are 20 or older.

[b]Answer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

[c]Beginning in 2014 "molly" was added to the question on disapproval of using MDMA once or twice. 2014 and 2015 data are not comparable to earlier years due to this change.

[d]In 2011 the list of examples was changed from upper, pep pill, bennie, speed to upper, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

[e]Based on two of six forms; N is two times the N indicated.

[f]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant ($p<.05$) differences in 2019 between the two survey modes.

[g]Sample is decreased by approximately 50% for the following drugs due to survey question experiments: amphetamines, cocaine, alcohol, vaping nicotine, vaping marijuana, heroin without using a needle, Ecstasy (MDMA, molly), and JUUL.

[h]This estimate based on a question that was placed in a different form starting in 2021. Results from each form are nationally representative by themselves, as well as when combined.

TABLE 8-7
Trends in 12th Graders' Attitudes Regarding Legality of Drug Use

Do you think that peopl should be prohibited by law from doing each of the following?	Percentage saying "yes" [a]															
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Smoking marijuana in private	32.8	27.5	26.8	25.4	28.0	28.9	35.4	36.6	37.8	41.6	44.7	43.8	47.6	51.8	51.5	56.0
Smoking marijuana in public places	63.1	59.1	58.7	59.5	61.8	66.1	67.4	72.8	73.6	75.2	78.2	78.9	79.7	81.3	80.0	81.9
Taking LSD in private	67.2	65.1	63.3	62.7	62.4	65.8	62.6	67.1	66.7	67.9	70.6	69.0	70.8	71.5	71.6	72.9
Taking LSD in public places	85.8	81.9	79.3	80.7	81.5	82.8	80.7	82.1	82.8	82.4	84.8	84.9	85.2	86.0	84.4	84.9
Taking heroin in private	76.3	72.4	69.2	68.8	68.5	70.3	68.8	69.3	69.7	69.8	73.3	71.7	75.0	74.2	74.4	76.4
Taking heroin in public places	90.1	84.8	81.0	82.5	84.0	83.8	82.4	82.5	83.7	83.4	85.8	85.0	86.2	86.6	85.2	86.7
Taking amphetamines or sedatives in private [c]	57.2	53.5	52.8	52.2	53.4	54.1	52.0	53.5	52.8	54.4	56.3	56.8	59.1	60.2	61.1	64.5
Taking amphetamines or sedatives in public places [c]	79.6	76.1	73.7	75.8	77.3	76.1	74.2	75.5	76.7	76.8	78.3	79.1	79.8	80.2	79.2	81.6
Getting drunk in private	14.1	15.6	18.6	17.4	16.8	16.7	19.6	19.4	19.9	19.7	19.8	18.5	18.6	19.2	20.2	23.0
Getting drunk in public places	55.7	50.7	49.0	50.3	50.4	48.3	49.1	50.7	52.2	51.1	53.1	52.2	53.2	53.8	52.6	54.6
Smoking cigarettes in certain specified public places	—	—	42.0	42.2	43.1	42.8	43.0	42.0	40.5	39.2	42.8	45.1	44.4	48.4	44.5	47.3
Approximate weighted N =	*2,620*	*2,959*	*3,113*	*3,783*	*3,288*	*3,224*	*3,611*	*3,627*	*3,315*	*3,236*	*3,254*	*3,074*	*3,332*	*3,288*	*2,813*	*2,571*

Table continued on next page.

TABLE 8-7 (cont.)
Trends in 12th Graders' Attitudes Regarding Legality of Drug Use

Do you think that people should be prohibited by law from doing each of the following?	Percentage saying "yes" [a]															
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Smoking marijuana in private	51.6	52.4	48.0	42.9	44.0	40.4	38.8	39.8	39.3	38.8	39.1	38.4	40.3	41.4	40.7	42.3
Smoking marijuana in public places	79.8	78.3	77.3	72.5	72.9	70.0	69.4	72.2	71.5	72.1	68.3	67.6	68.6	69.2	69.6	68.5
Taking LSD in private	68.1	67.2	63.5	63.2	64.3	62.0	61.2	64.7	62.6	62.9	63.1	64.2	64.2	64.4	63.7	62.3
Taking LSD in public places	83.9	82.2	82.1	80.5	81.5	79.2	80.3	82.7	80.4	80.4	78.8	79.9	79.1	77.0	77.4	75.0
Taking heroin in private	72.8	71.4	70.7	70.1	72.2	70.8	70.6	73.9	72.9	71.1	70.6	73.6	73.1	72.0	71.3	71.6
Taking heroin in public places	85.4	83.3	84.5	82.9	84.8	82.3	84.3	86.4	84.2	83.9	81.7	83.7	83.2	80.9	82.0	80.1
Taking amphetamines or sedatives in private [c]	59.7	60.5	57.4	55.7	57.5	54.6	54.6	58.5	55.1	56.0	55.9	56.0	55.8‡	52.2	53.6	51.5
Taking amphetamines or sedatives in public places [c]	79.7	78.5	78.0	76.4	77.6	74.3	76.5	77.4	76.1	75.4	74.5	73.6	74.4‡	69.9	72.0	69.5
Getting drunk in private	22.0	24.4	22.1	21.0	21.6	21.4	20.5	20.2	20.5	21.5	22.6	21.0	21.4	22.0	22.5	23.4
Getting drunk in public places	54.3	54.1	53.6	54.3	54.5	52.8	51.7	51.2	52.8	51.9	50.6	48.6	50.1	47.7	48.2	47.3
Smoking cigarettes in certain specified public places	44.9	47.6	45.9	47.3	45.1	43.4	41.3	41.1	43.2	45.1	44.2	43.8	45.5	44.3	46.8	47.0
Approximate weighted N =	*2,512*	*2,671*	*2,759*	*2,603*	*2,578*	*2,422*	*2,587*	*2,563*	*2,283*	*2,146*	*2,161*	*2,162*	*2,450*	*2,450*	*2,461*	*2,381*

Table continued on next page.

TABLE 8-7 (cont.)
Trends in 12th Graders' Attitudes Regarding Legality of Drug Use

Do you think that people should be prohibited by law from doing each of the following?	Percentage saying "yes"[a]																		
	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[c]	2019e[c]	2020	2021	2022	2023	2022-2023 Change
Smoking marijuana in private	38.7	39.3	36.7	32.8	34.2	33.0	32.0	28.5	26.5	23.8	22.9	21.7	20.5	23.8	§	16.9*	15.3#	15.8	+0.5
Smoking marijuana in public places	69.4	70.2	67.1	62.4	63.8	64.4	61.3	57.0	55.7	57.0	50.3	47.9	49.1	51.2	§	42.0*	38.5#	45.8	+7.3 ss
Taking LSD in private	63.6	60.9	60.2	56.2	57.0	56.4	57.6	54.0	47.6	50.6	48.3	44.3	46.1	45.2	§	39.8*	31.0#	32.5	+1.6
Taking LSD in public places	76.9	74.2	74.8	72.3	73.3	72.8	73.9	71.9	66.9	71.9	68.6	65.4	68.5	69.2	§	63.7*	60.6#	60.7	+0.1
Taking heroin in private	72.5	72.0	71.3	70.1	68.8	68.9	71.0	68.4	64.1	69.6	68.5	66.4	67.9	67.7	§	65.2*	62.8#	60.5	-2.3
Taking heroin in public places	81.7	80.6	80.5	80.0	79.1	80.6	80.6	78.7	74.1	79.2	77.3	74.8	77.2	75.5	§	74.8*	75.1#	75.4	+0.3
Taking amphetamines or sedatives in private [c]	54.3	53.0	51.1	50.8	50.2	48.7	48.9	46.2	43.0	45.3	44.2	42.4	40.3	45.4	§	42.2*	33.8#	32.3	-1.4
Taking amphetamines or sedatives in public places [b]	72.8	71.6	71.1	70.7	68.5	69.8	68.5	67.0	61.5	66.1	63.3	60.2	62.4	64.4	§	61.1*	56.3#	55.6	-0.7
Getting drunk in private	21.3	23.2	22.1	20.3	21.4	21.6	21.8	19.5	22.0	18.8	20.3	19.7	17.1	19.8	§	16.6*	15.3#	12.9	-2.4
Getting drunk in public places	47.8	49.6	49.7	47.3	49.3	48.8	47.5	47.9	46.2	48.2	43.4	41.9	41.0	41.1	§	37.7*	39.0#	33.8	-5.2
Smoking cigarettes in certain specified public places	46.4	45.1	45.4	41.3	42.6	43.0	40.8	39.2	39.7	41.9	38.4	37.9	*35.5*	*43.7*	§	34.6*	31.4#	32.3	+1.0
Approximate weighted N =	*2,459*	*2,356*	*2,306*	*2,410*	*2,339*	*2,304*	*2,101*	*2,070*	*2,170*	*1,976*	*2,117*	*2,234*	*1,038*	*1,225*	§	*1,411*	*1,613*	*1,187*	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. ' ‡ ' indicates that the question changed the following year. See relevant footnote. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding. The 1975 question asked about people who are 20 or older.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

#Results for 2022+ may not be comparable to previous years. Beginning in 2022, question text was changed from asking about age 18 and older to asking about age 21 and older.

[a]Answer alternatives were: (1) No, (2) Not sure, and (3) Yes.

[b]In 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

[c]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

TABLE 8-8
Trends in 12th Graders' Attitudes Regarding Marijuana Laws

(Entries are percentages.)

There has been a great deal of public debate about whether marijuana use should be legal. Which of the following policies would you favor?	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Using marijuana should be entirely legal	27.3	32.6	33.6	32.9	32.1	26.3	23.1	20.0	18.9	18.6	16.6	14.9	15.4	15.1	16.6	15.9
It should be a minor violation like a parking ticket, but not a crime	25.3	29.0	31.4	30.2	30.1	30.9	29.3	28.2	26.3	23.6	25.7	25.9	24.6	21.9	18.9	17.4
It should be a crime	30.5	25.4	21.7	22.2	24.0	26.4	32.1	34.7	36.7	40.6	40.8	42.5	45.3	49.2	50.0	53.2
Don't know	16.8	13.0	13.4	14.6	13.8	16.4	15.4	17.1	18.1	17.2	16.9	16.7	14.8	13.9	14.6	13.6
Approximate weighted N =	*2,600*	*2,970*	*3,110*	*3,710*	*3,280*	*3,210*	*3,600*	*3,620*	*3,300*	*3,220*	*3,230*	*3,080*	*3,330*	*3,277*	*2,812*	*2,570*

TABLE 8-8
Trends in 12th Graders' Attitudes Regarding Marijuana Laws

(Entries are percentages.)

There has been a great deal of public debate about whether marijuana use should be legal. Which of the following policies would you favor?	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Using marijuana should be entirely legal	18.0	18.7	22.8	26.8	30.4	31.2	30.8	27.9	27.3	31.2	29.2	30.8	29.5	30.5	27.6	27.1
It should be a minor violation like a parking ticket, but not a crime	19.2	18.0	18.7	19.0	18.0	21.0	20.7	24.3	23.7	23.4	24.5	24.2	25.8	26.5	27.7	27.6
It should be a crime	48.6	47.6	43.4	39.4	37.3	33.8	34.0	32.6	32.5	30.2	31.1	29.1	29.8	28.5	29.7	31.7
Don't know	14.3	15.7	15.1	14.8	14.4	13.9	14.5	15.2	16.5	15.2	15.3	15.9	14.9	14.5	15.1	13.6
Approximate weighted N =	*2,515*	*2,672*	*2,768*	*2,597*	*2,574*	*2,426*	*2,585*	*2,566*	*2,285*	*2,143*	*2,160*	*2,150*	*2,444*	*2,461*	*2,466*	2,383

TABLE 8-8 (cont.)
Trends in 12th Graders' Attitudes Regarding Marijuana Laws

(Entries are percentages.)

There has been a great deal of public debate about whether marijuana use should be legal. Which of the following policies do you favor?	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[a]	2019e[a]	2020	2021	2022	2023	2022-2023 Change
Using marijuana should be entirely legal	29.3	29.4	31.8	36.2	39.2	39.3	41.5	43.4	42.4	44.7	48.9	48.2	50.7	48.9	§	51.1*	51.2#	45.9	-5.3
It should be a minor violation like a parking ticket, but not a crime	27.8	30.0	28.9	28.6	26.9	26.8	25.0	24.6	27.4	28.5	25.9	27.0	*24.9*	*32.0*	§	24.6*	26.6#	30.0	+3.5
It should be a crime	30.2	27.5	26.0	21.8	21.3	21.7	20.8	17.1	15.4	13.8	12.4	10.5	9.4	9.3	§	7.1*	6.8#	7.4	+0.7
Don't know	12.8	13.1	13.3	13.4	12.6	12.2	12.7	14.9	14.8	13.1	12.7	14.2	*15.0*	*9.8*	§	17.1*	15.5#	16.6	+1.1
Approximate weighted N =	*2,450*	*2,366*	*2,311*	*2,425*	*2,349*	*2,303*	*2,106*	*2,079*	*2,165*	*1,962*	*2,119*	*2,246*	*1,033*	*1,232*	§	*1,411*	*1,612*	*1,190*	

Source. The Monitoring the Future study, the University of Michigan.

§Estimates not presented due to insufficient data this year.

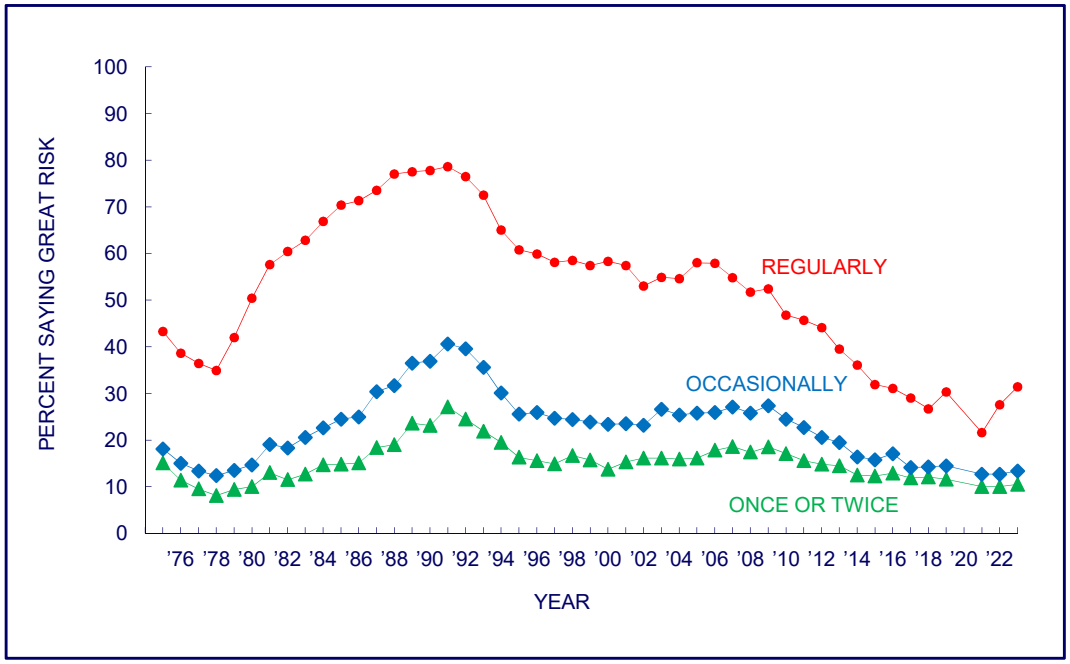
*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

#Results for 2022+ may not be comparable to previous years. Beginning in 2022, question text was changed from "would you favor?" to "do you favor?"

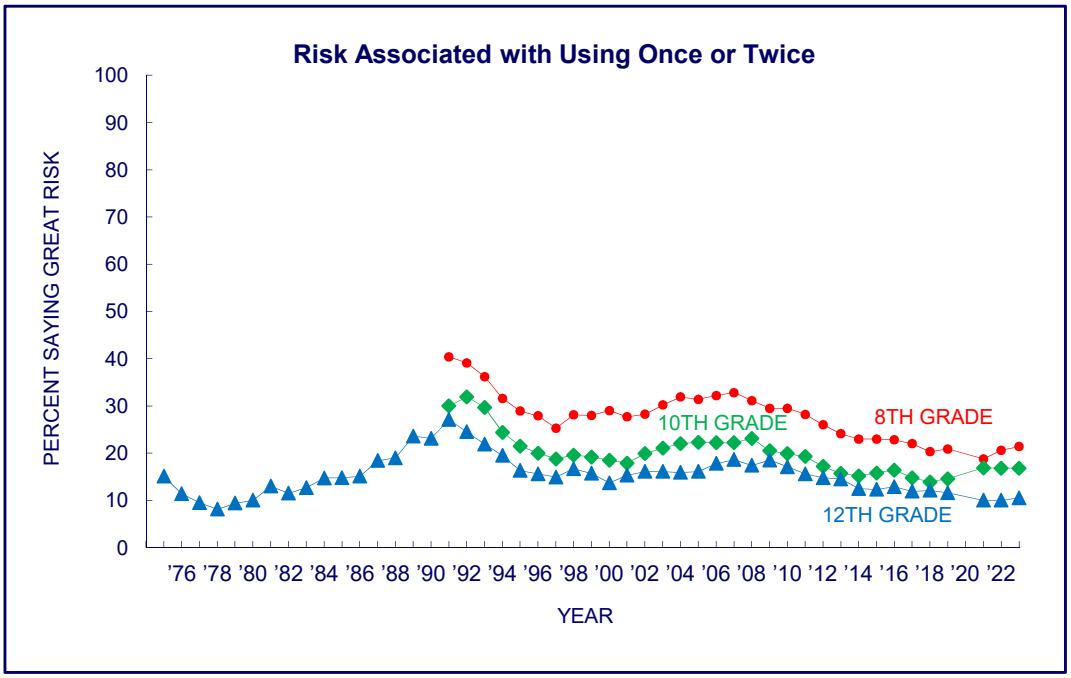
[a]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

FIGURE 8-1a
MARIJUANA
Trends in Perceived Harmfulness for Different Levels of Use in Grades 8, 10, and 12

12th Graders



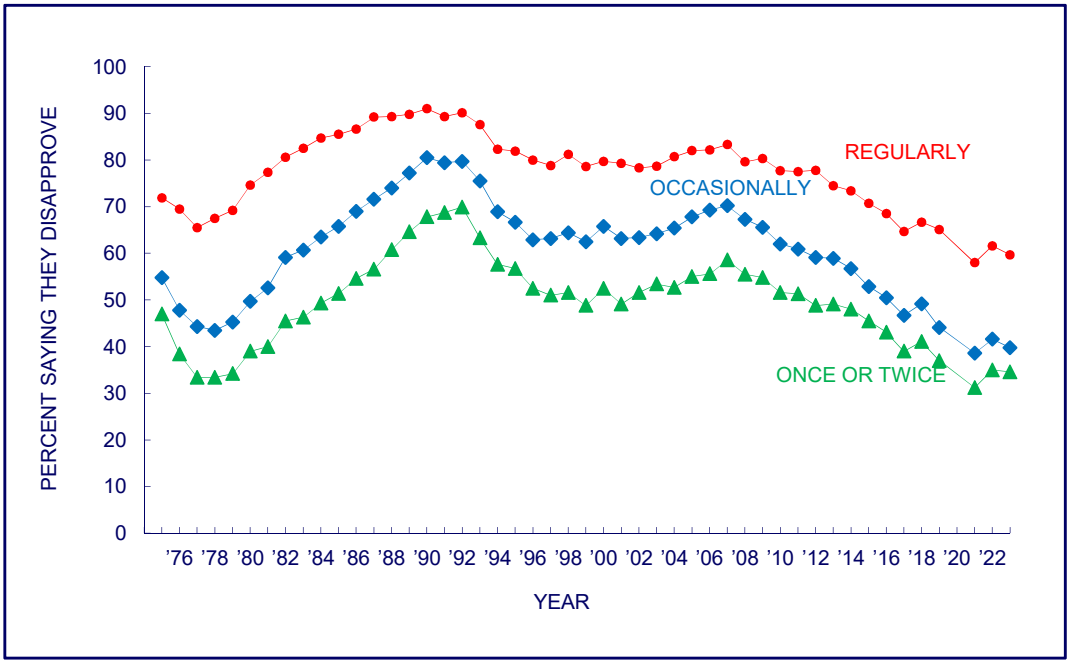
8th, 10th, and 12th Graders



See footnotes at end of this series of Figures

FIGURE 8-1b
MARIJUANA
Trends in Disapproval of Different Levels of Use in Grades 8, 10, and 12

12th Graders



8th, 10th, and 12th Graders

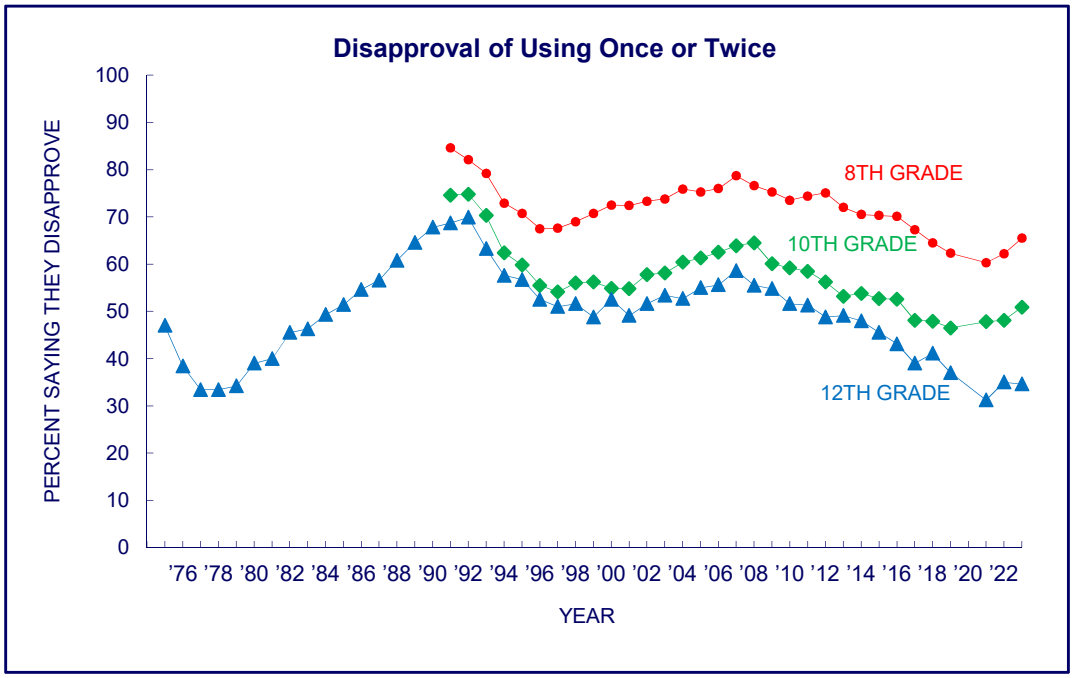


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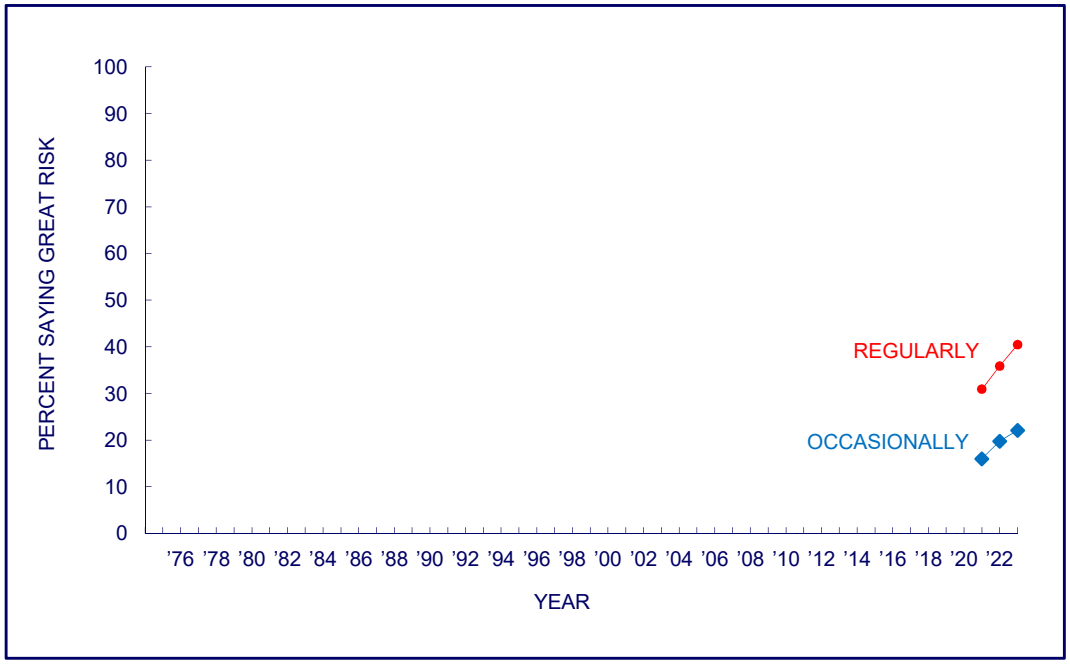
FIGURE 8-2a
VAPING MARIJUANA
Trends in Perceived Harmfulness for Different Levels of Use in Grades 8, 10, and 12

12th Graders



8th, 10th, and 12th Graders

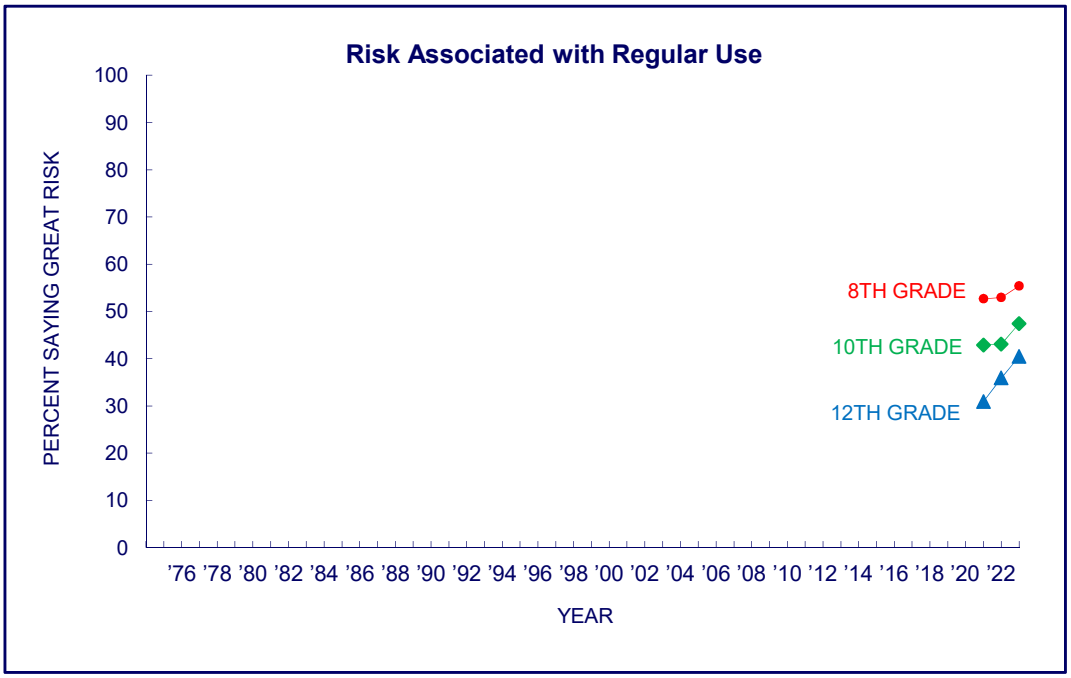


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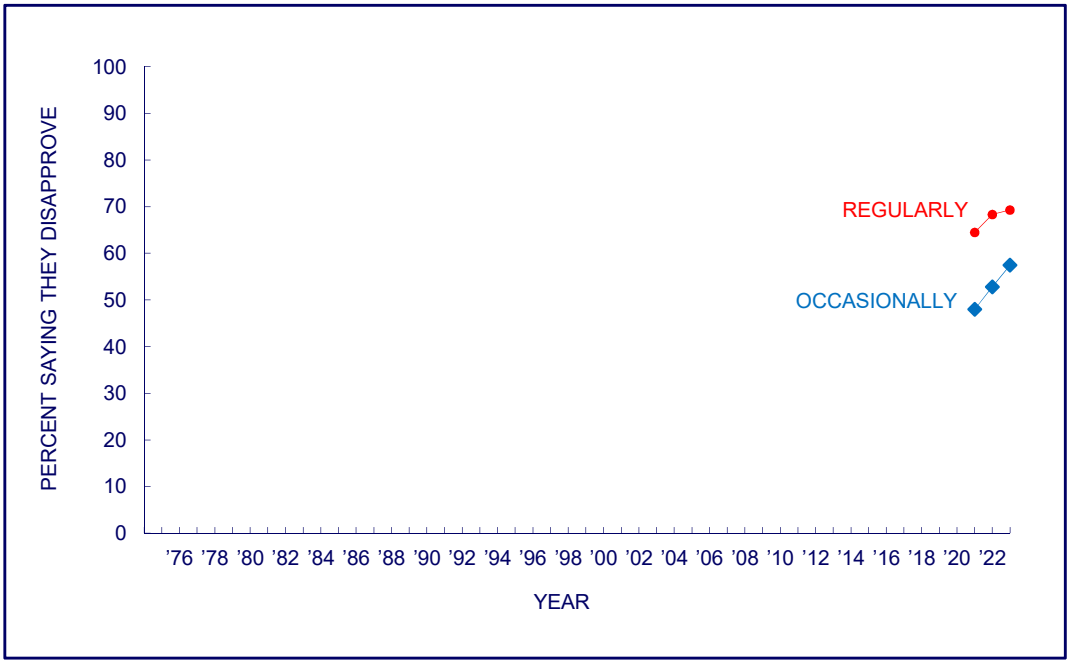
FIGURE 8-2b
VAPING MARIJUANA
Trends in Disapproval of Different Levels of Use in Grades 8, 10, and 12

12th Graders



8th, 10th, and 12th Graders

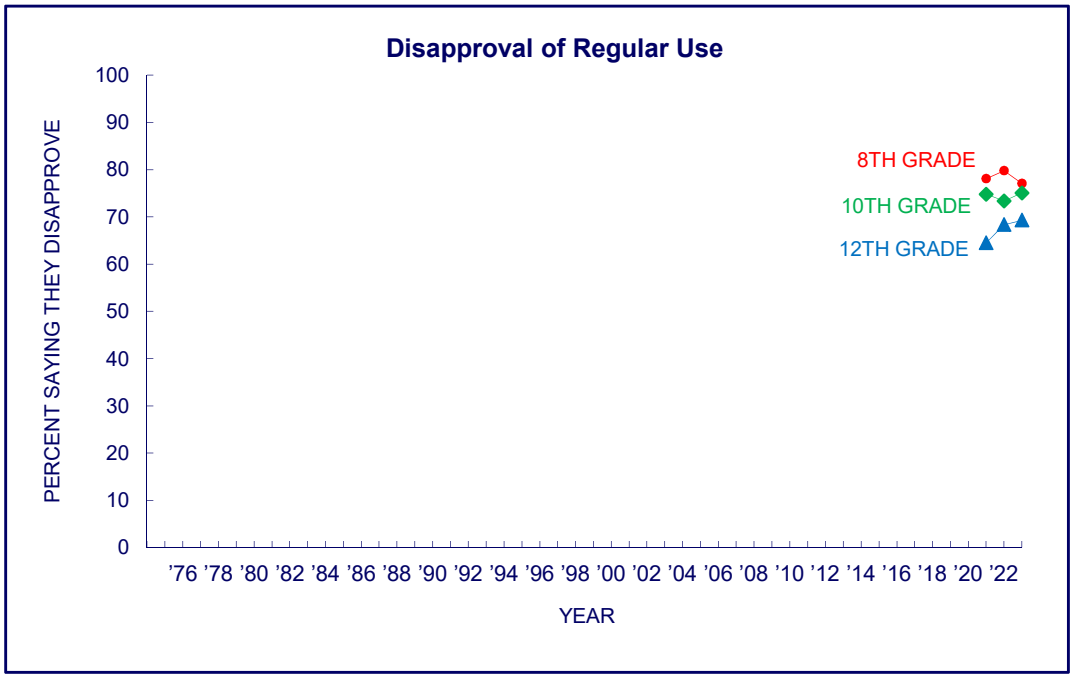


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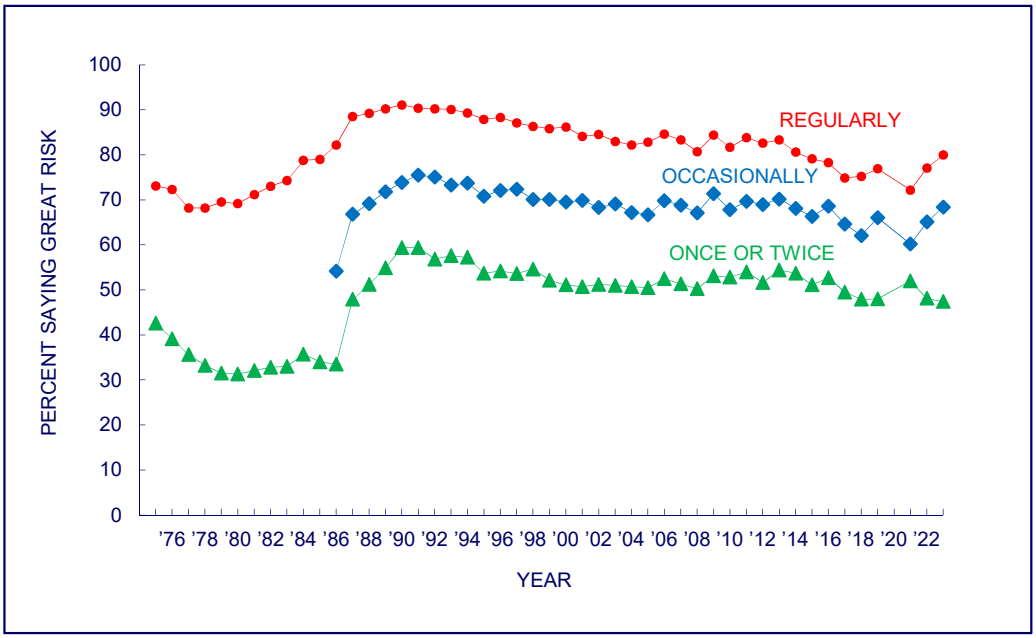
FIGURE 8-3a
COCAINE[a,b]
Trends in Perceived Harmfulness for Different Levels of Use in Grades 8, 10, and 12

12th Graders



8th and 10th Graders

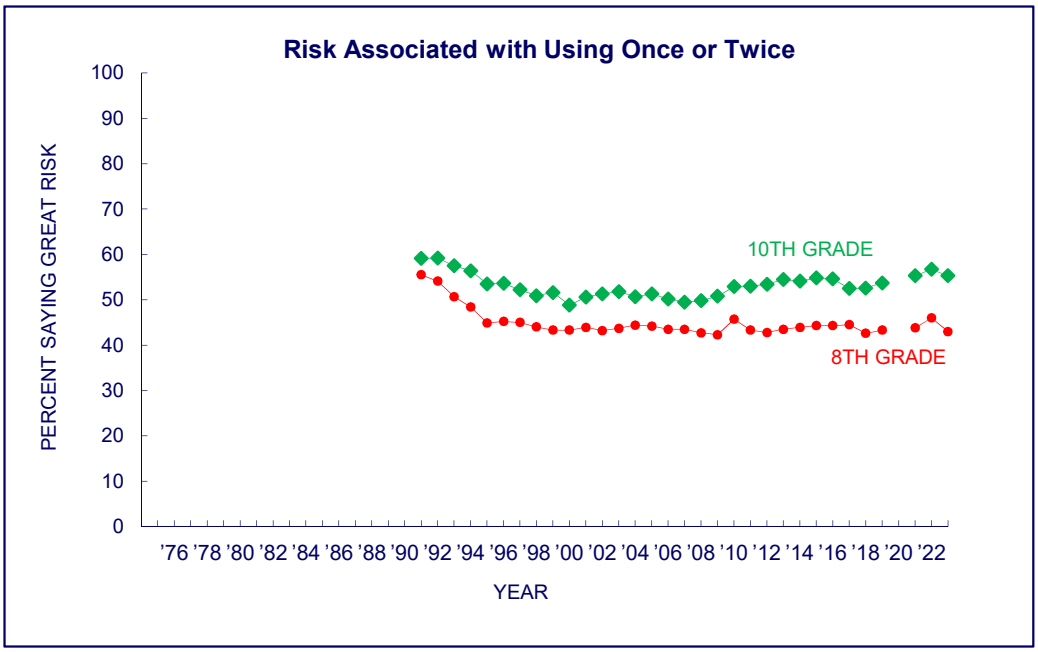


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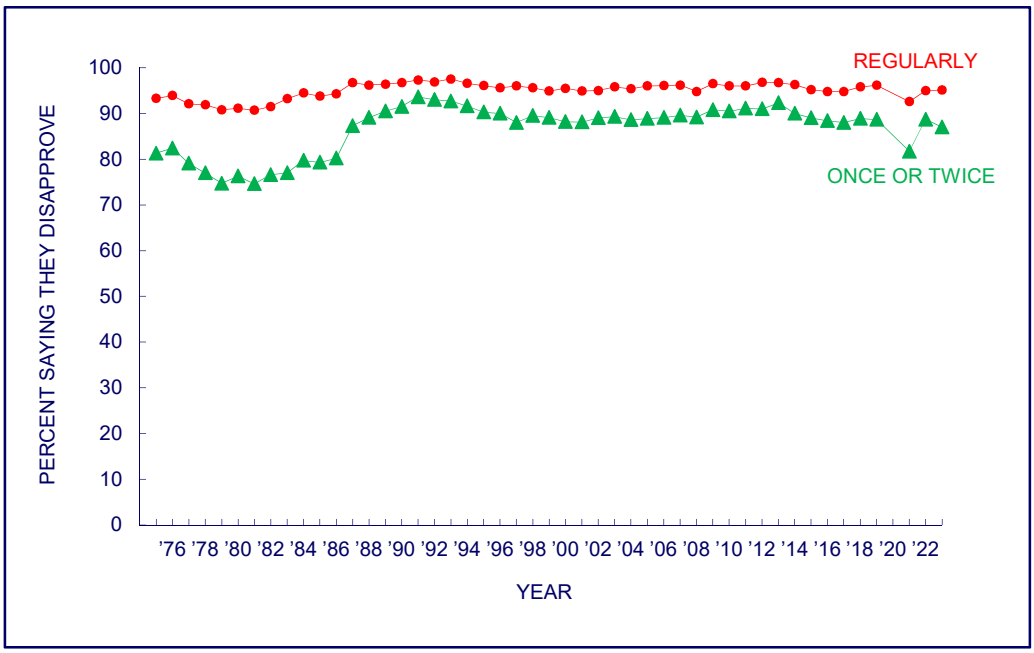
FIGURE 8-3b
COCAINE[a]
Trends in Disapproval of Different Levels of Use in Grades 8, 10, and 12

12th Graders



8th and 10th Graders

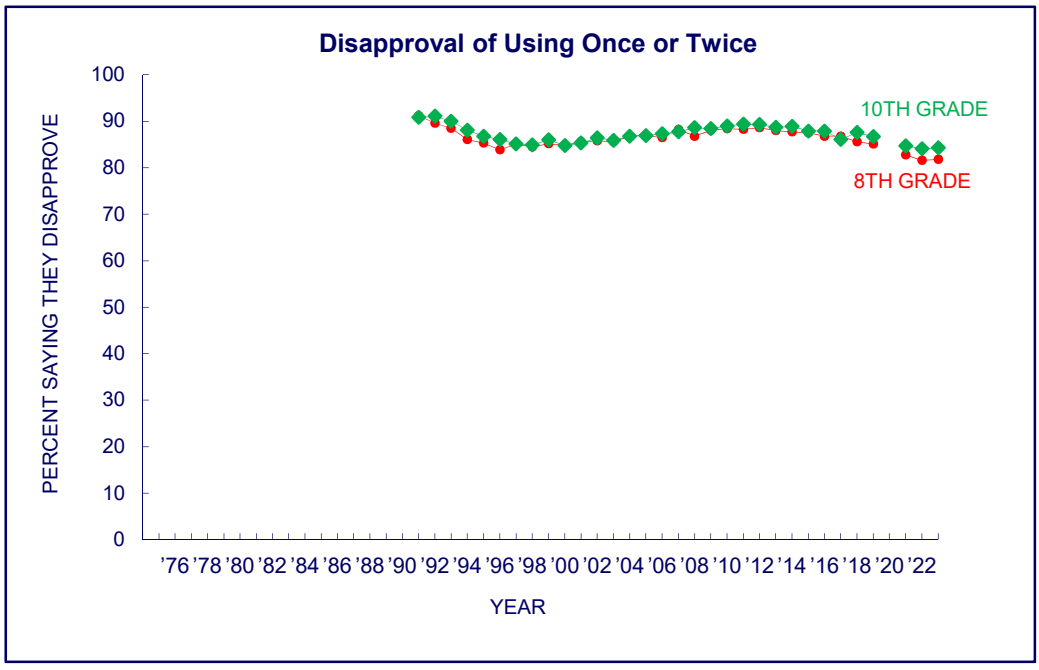


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FIGURE 8-4
MARIJUANA
Trends in Perceived Availability, Perceived Risk of Regular Use, and Prevalence of Use in Past 30 Days in Grade 12

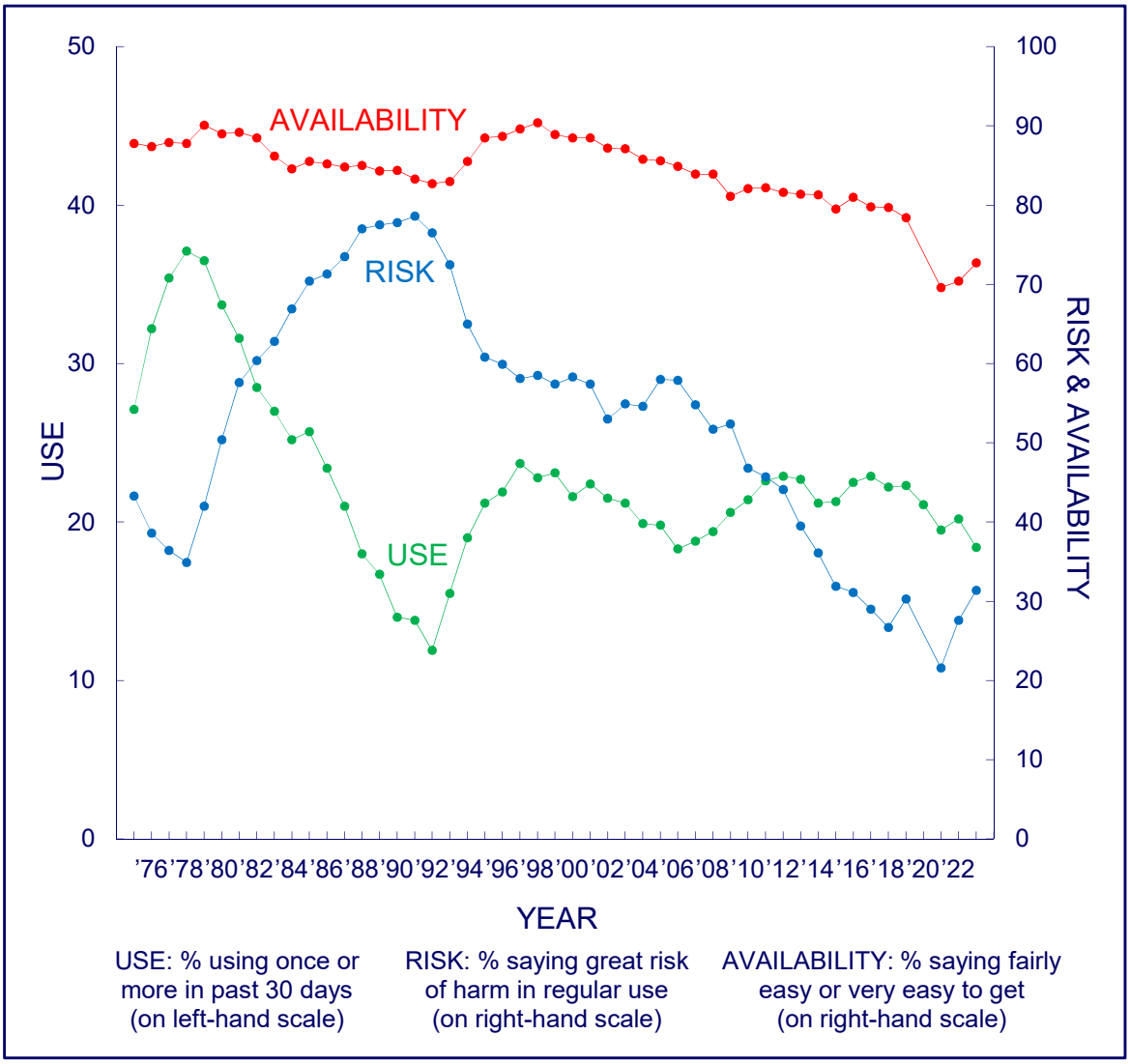

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FIGURE 8-5
COCAINE
Trends in Perceived Availability, Perceived Risk of Trying, and Prevalence of Use in Last 12 Months in Grade 12

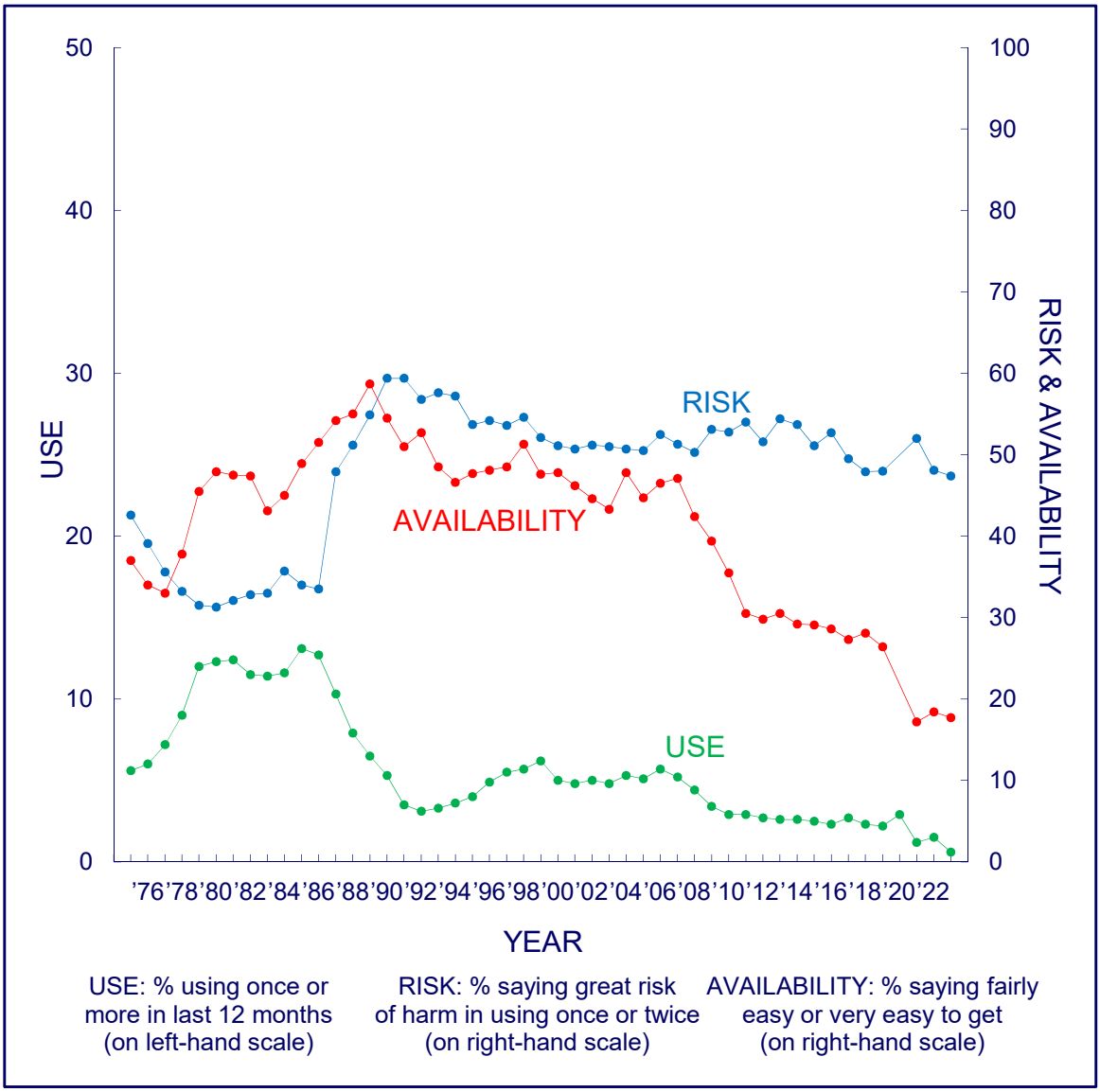

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FIGURE 8-6a

HEROIN[c]

Trends in Perceived Harmfulness for Different Levels of Use in Grade 12

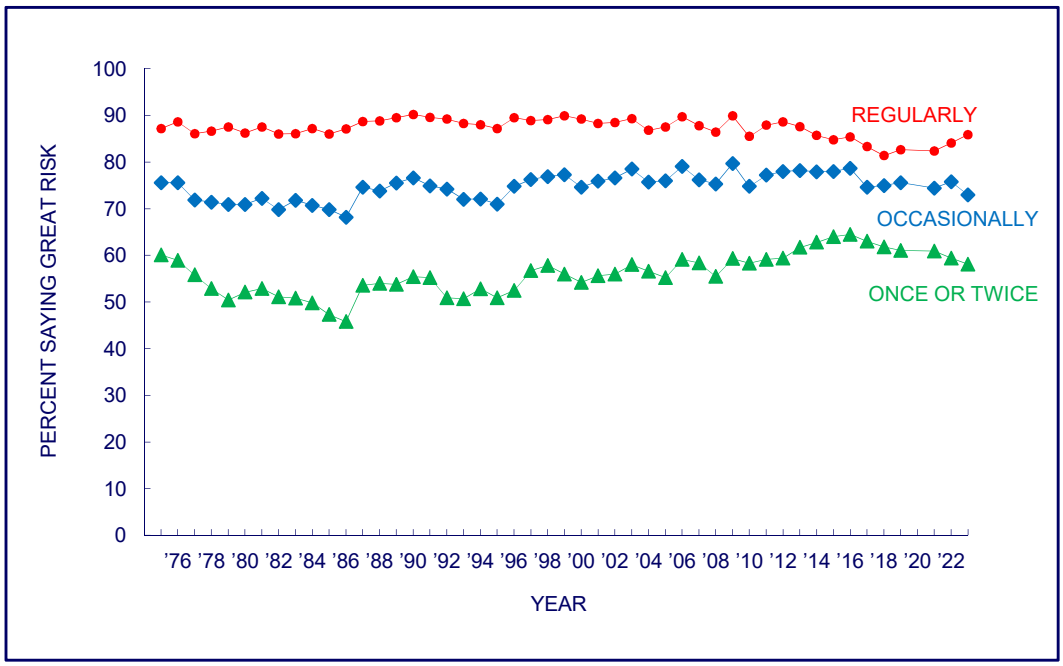

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FIGURE 8-6b
HEROIN[c]
Trends in Disapproval of Different Levels of Use in Grade 12

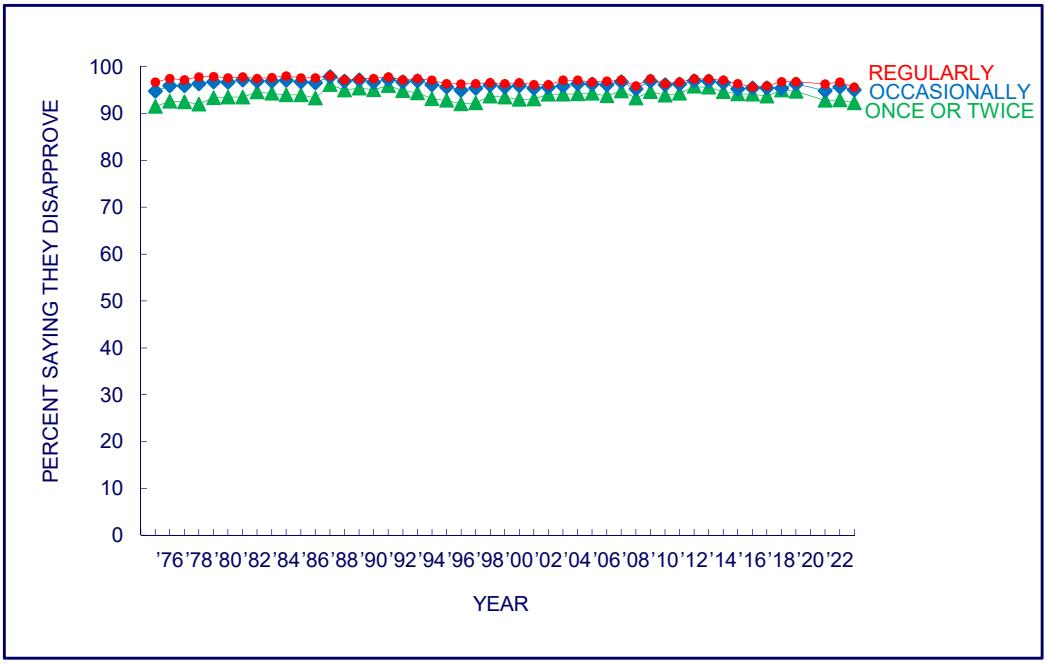

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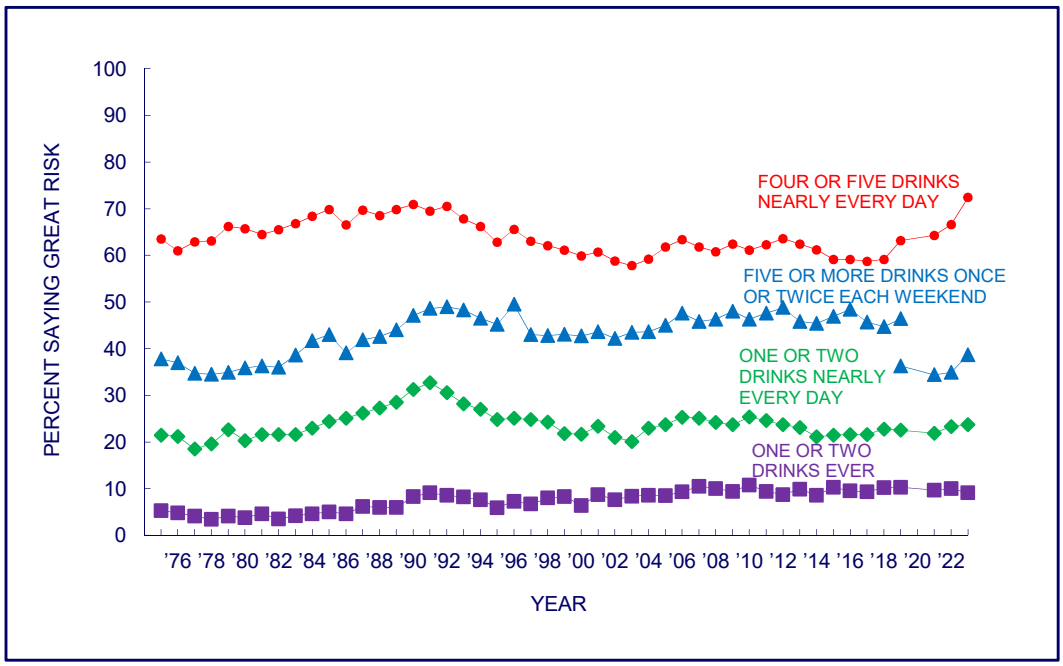
FIGURE 8-7a
ALCOHOL
Trends in Perceived Harmfulness for Different Levels of Use in Grades 8, 10, and 12

12th Graders



8th, 10th, and 12th Graders

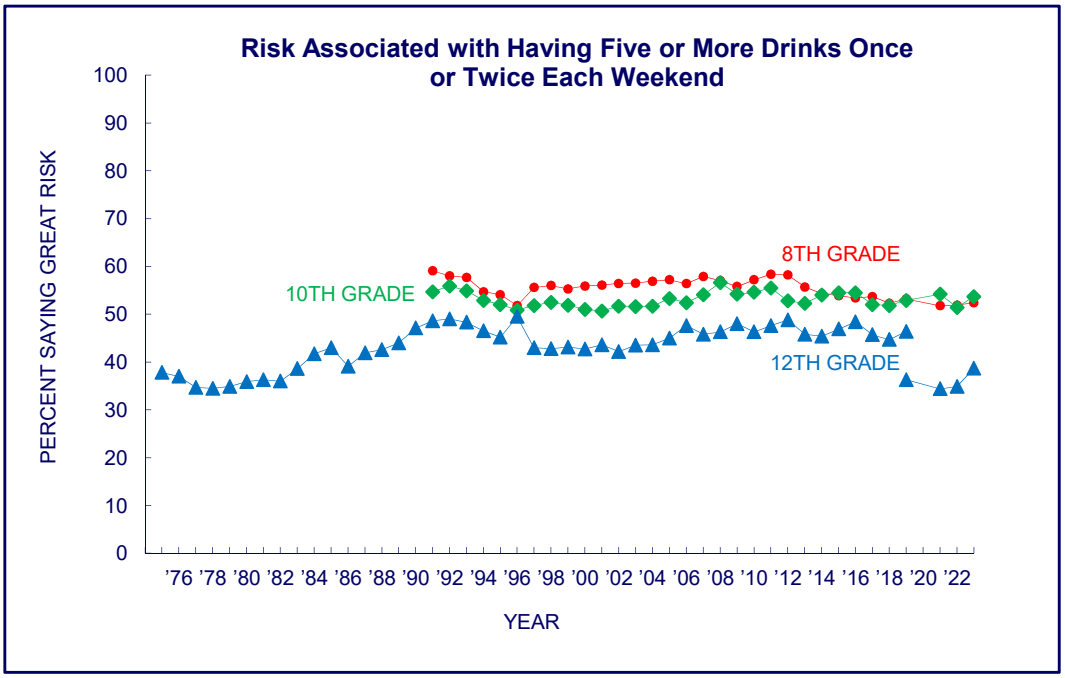


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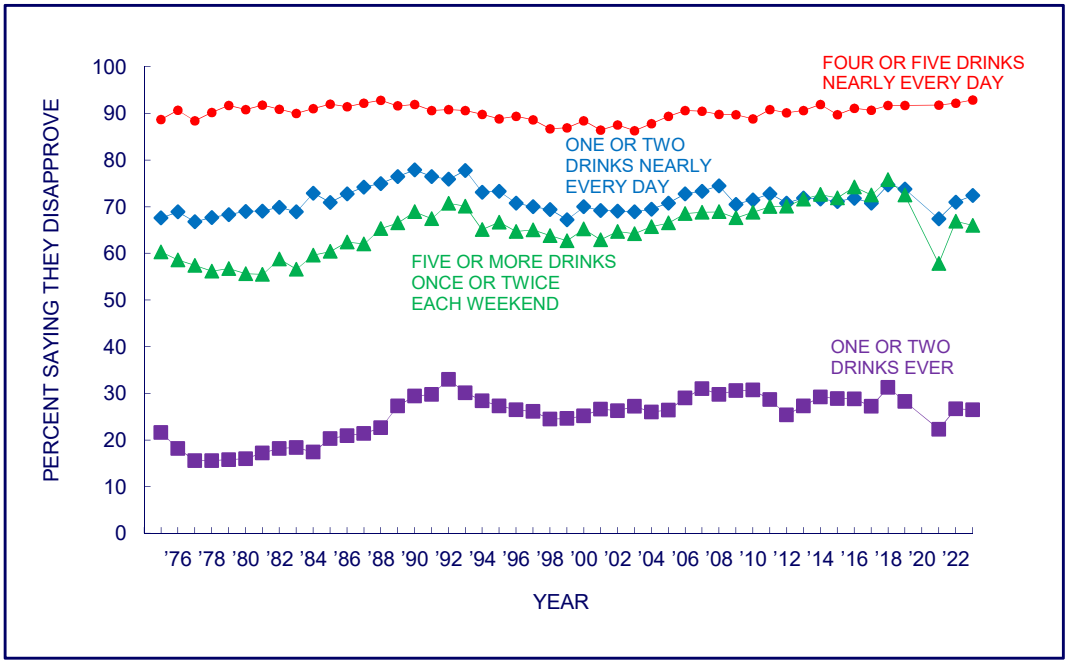
FIGURE 8-7b
ALCOHOL
Trends in Disapproval of Different Levels of Use in Grades 8, 10, and 12

12th Graders



8th, 10th, and 12th Graders

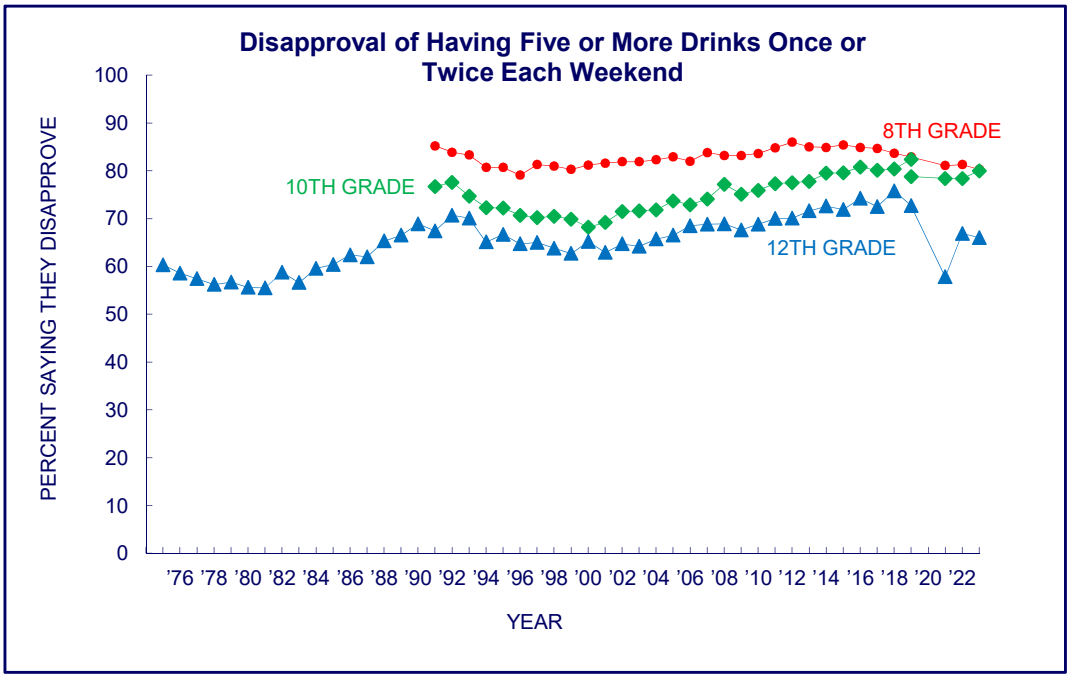


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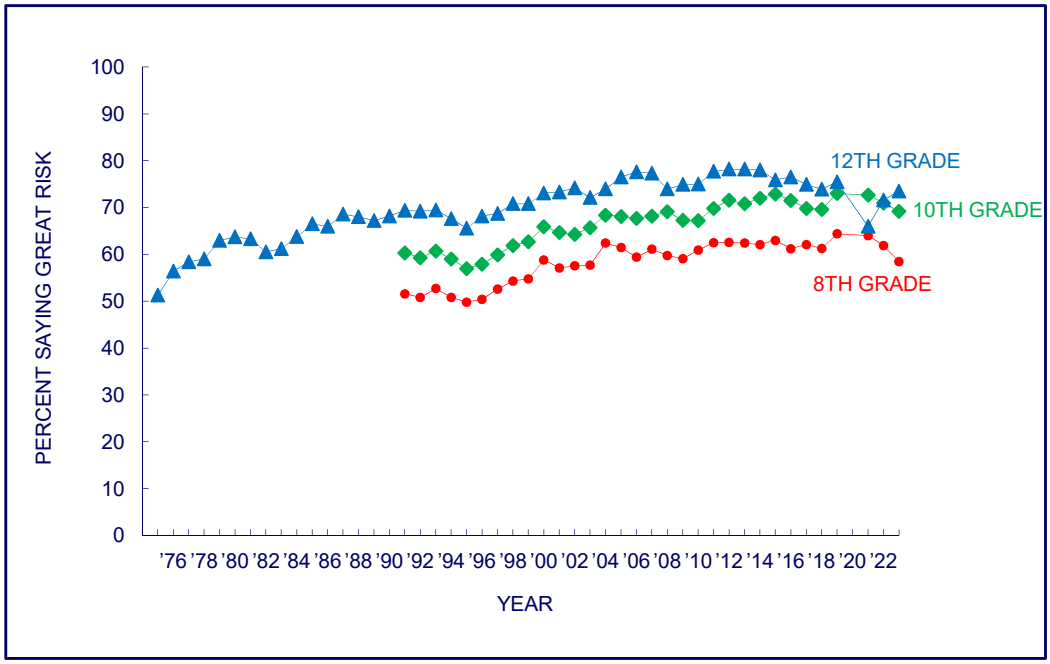
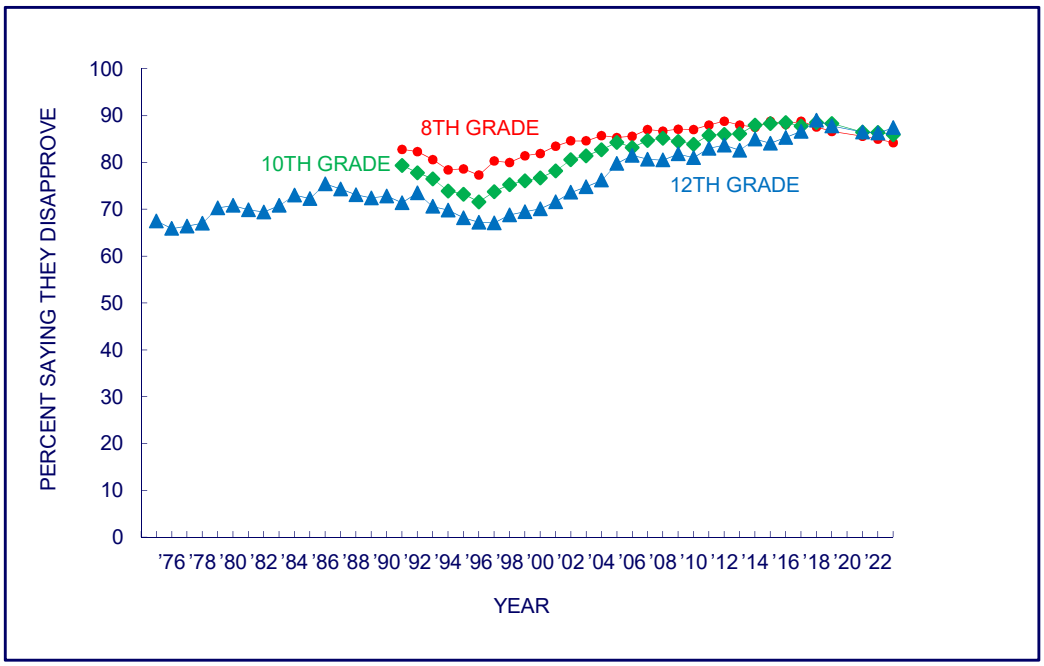
FIGURE 8-8a
CIGARETTES
Trends in Perceived Harmfulness of Smoking 1 or More Packs per Day in Grades 8, 10, and 12



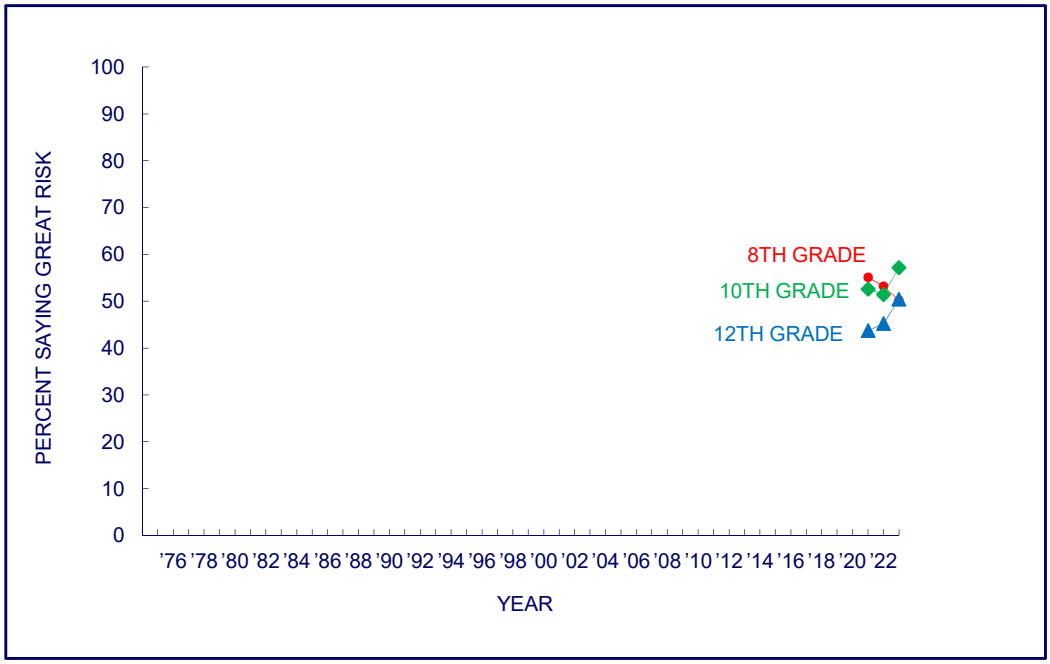
See footnotes at end of this series of Figures

FIGURE 8-8b
CIGARETTES
Trends in Disapproval of Smoking 1 or More Packs per Day in Grades 8, 10, and 12



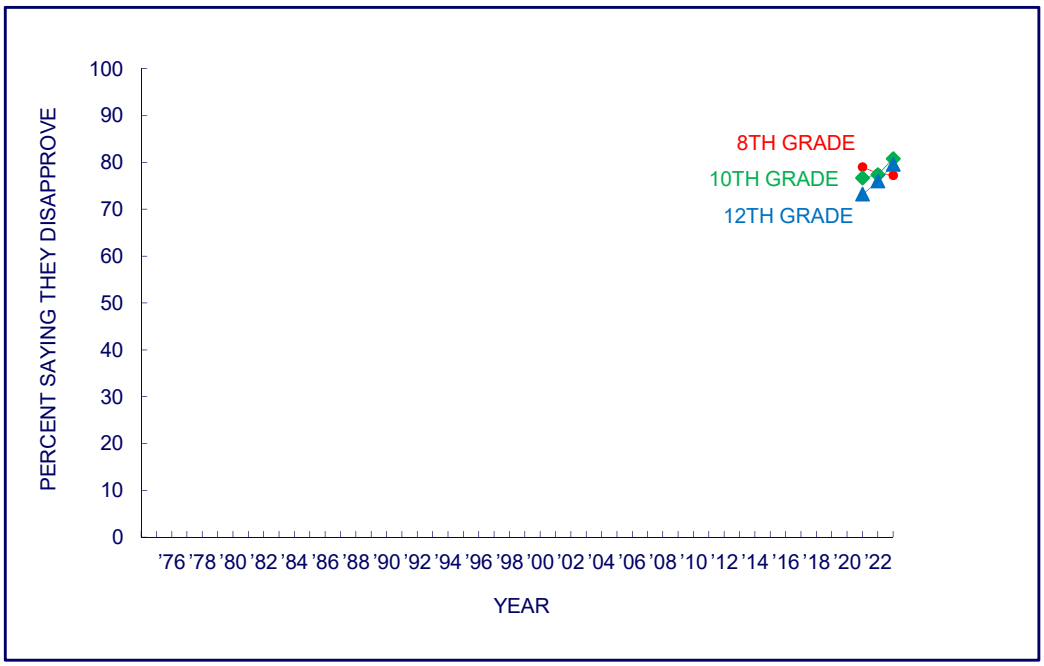
See footnotes at end of this series of Figures

FIGURE 8-9a
VAPING E-LIQUID WITH NICOTINE
Trends in Perceived Harmfulness of Smoking 1 or More Packs per Day in Grades 8, 10, and 12



See footnotes at end of this series of Figures

FIGURE 8-9b
VAPING E-LIQUID WITH NICOTINE
Trends in Disapproval of Smoking 1 or More Packs per Day in Grades 8, 10, and 12



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Chapter 9

THE SOCIAL CONTEXT

Substance misuse is an individual behavior, but it typically occurs within a social context. In this chapter we consider some of the forces in the social context that may influence adolescents' attitudes and beliefs about drugs as well as their use of them. For 8th, 10th, and 12th graders, we report the proportions of their friends who use various drugs and the perceived availability of these drugs. In addition, for 12th graders only, we report measures of perceived parents' and friends' disapproval of drug use, as well as sources from which respondents report they got prescription drugs.

Trends and the Year 2019

The year 2019 requires special consideration when evaluating trends for the measures of this chapter. All 2019 estimates are presented in two columns. The first, in column "2019p," is based on student responses in a randomly-selected half of schools that completed the MTF survey with traditional paper-and-pencil questionnaires. The second, in column "2019e," is based on students responses in the other half of schools that for the first time completed the MTF survey with electronic data collection, using tablets connected to the internet (after 2019 all surveys used electronic data collection). In some cases the estimates in the two columns are similar, while in others they are substantially different.

Attitudes and behaviors appear especially vulnerable to differences in estimates across survey mode, in part because many of these question formats required substantial modification for the electronic survey mode. When the survey used paper-and-pencil forms, questions on topics such as disapproval appeared on one page, with each line listing a specific drug and then the associated response categories (e.g., "strongly disapprove, disapprove, etc.). In the conversion to an electronic format many of these questions had to be split across multiple screens so that they would fit on an electronic display. The question groupings on the screens introduced potential question-context effects. In essence, the items that accompanied a question in its screen grouping could affect prevalence levels.

In what follows we compare estimates in the years after 2019 to the "2019e" estimates, all of which were collected with an electronic survey mode using the same screen groupings. In cases where the 2019 estimates are similar across survey modes the estimates for 2019 and subsequent years are directly comparable to all previous years. In contrast, when the 2019 estimates substantially differ across survey mode then comparisons of estimates after 2019 with previous years require consideration of the change in prevalence attributable to survey mode effects in 2019 and afterwards. (Estimates for 2020 are not presented because curtailed data collection as a result of the COVID-19 pandemic resulted in a sample size too small to produce reliable estimates for most attitude and behavior measures, which appeared on a randomly-selected subset of questionnaires.)

PERCEIVED ATTITUDES OF PARENTS

Questions on parental disapproval of drug use were added for the first time in 2017 for 8th and 10th grade students. In that year they were also reintroduced for 12th grade students after a 38 year

hiatus; they had been asked from 1975 to 1979 but were dropped afterwards because high levels of disapproval showed little trending.[1] However, adult attitudes toward teen substance use began to shift in the 2010s.[2] Today's parents may have more experience with drug use than did parents in the late 1970s, which may have changed their levels of disapproval for their children's use of marijuana and other drugs. Similarly, the growing number of states that are legalizing recreational marijuana use suggests a historical period effect in which population attitudes toward marijuana use across all ages are becoming more lenient.

Since 2017 a large majority of students in all three grades reported that their parents would disapprove of their drug use (Tables 9-1 to 9-3 and Figures 9-1a to 9-2b). In 8th and 10th grade these levels are very similar, and in 2023 ranged from 81% to 91% across all drugs, which include marijuana use, binge drinking on weekends, smoking one or more packs of cigarettes per day, and vaping either nicotine or marijuana.

In 2023, 12th grade perceived parental disapproval of experimental and occasional marijuana use was lower in comparison to levels in the younger grades. Specifically, in 12th grade 70% reported their parents would disapprove of experimental marijuana use, compared to 82% in 10th grade and 81% in 8th grade. For occasional marijuana use the parental disapproval levels in 12th, 10th, and 8th grade were 75%, 85%, and 84%, respectively.

Parental disapproval levels in 12th grade were similar to those in the lower grades for all other drugs except experimental and occasional marijuana use.

In all grades parental disapproval of regular nicotine vaping was at a similar level as parental disapproval of smoking one or more packs of cigarettes per day (the levels ranged from 85% to 93%).

Trends in Perceived Parental Disapproval up to 2023

MTF's switch to electronic questionnaires from paper-and-pencil introduced a survey mode effect that affects interpretation of trends before and after 2019. Specifically, across all three grades and for all drugs the levels of perceived parental disapproval in 2019 were 7 to 10 points lower among the random half-sample of students who completed the survey electronically compared to those who completed it with pencil and paper. The one exception is parental disapproval of smoking one or more packs of cigarettes a day, which decreased by only four points with electronic data collection in 2019, although this survey mode difference was statistically significant (denoted in Tables 9-1 through 9-3 with italicized numbers for the estimates in the 2019p and 2019e columns). Highlights of the 2023 findings include:

- The proportion of 10th grade students who perceived parental disapproval of experimental ***marijuana*** use significantly increased from 77% in 2022 to 82% in 2023. The level also

[1] The context of the parental disapproval questions on the survey was not the same when they were reintroduced in 2017 and later. In 1975–1979 the questions were preceded by questions on perceived parental attitudes on a host of topics as well as a brief preamble transitioning from these questions to items on parental disapproval of drug use. These preceding survey questions and the preamble were not included in the 2017 and later surveys. The finding that the parental disapproval results for 2017 in comparison to 1975–1979 were higher for some substances and lower for others works against the .notion that changes in question context created a general bias that affected responses for all substances.

[2] Mehus, C. J., Patrick, M. E., Schulenberg, J., & Maggs, J. L. (2022). 35-year-old parents do not approve of 17-year-olds' cigarette, marijuana, or alcohol use: U.S. national data 1993-2018. *The Journal of Adolescent Health, 70*(6), 989–992.

increased for occasional use, from 82% in 2022 to 85% in 2023. The level for regular use trended up, from 86% in 2022 to 88% in 2023, although this increase was not statistically significant. As a result of these increases, these 10th grade levels in 2023 are now nearly identical to the levels in 8th grade.

In 8th grade perceived parental disapproval of marijuana use changed little in 2023. In 12th grade levels trended upward for experimental and regular use, although these increases were not statistically significant. In all grades little systematic trending in these measures took place in the years before the pandemic, from 2017–2019.

- Trends in perceived parental disapproval of ***marijuana vaping*** were similar to those for marijuana use. In 10th grade, increases took place for both occasional use, from 84% in 2022 to 87% in 2023, and for regular use, from 86% in 2022 to 89% in 2023. No substantial changes took place in grades 8 and 12.

- The proportion of students who believed their parents would disapprove of their ***nicotine vaping*** increased in all three grades, significantly so in 10th grade. Level of parental disapproval of occasional use increased from 85% in 2022 to 89% in 2023 in 10th grade, and the level for regular use increased from 88% to 90% in these years. These increases correspond with 10th grade increases in both perceived risk and disapproval of nicotine vaping in 2023 (see Chapter 8).

PERCEIVED ATTITUDES OF FRIENDS

Since the beginning of the study in 1975, a set of questions has asked 12th graders to estimate their friends' attitudes about drug use (see Table 9-4). These questions ask, "*How do you think your close friends feel (or would feel) about you* [using the specified drug at the specified level]?" The questions parallel the questions asked of students about their own attitudes, which are discussed in Chapter 8. Disapproval is defined here as the percentage of respondents indicating that their close friends would either "disapprove" or "strongly disapprove" of their using each drug at the specified level. Highlights of the 2023 findings include the following:

- About half of 12th grade students reported that their friends would disapprove of them using ***marijuana*** experimentally (47%) or occasionally (52%). A substantially larger percentage of 68% believed their close friends would disapprove of them smoking marijuana regularly (Table 9-4). However, the converse is that about one out of three 12th grade students do not believe their close friends would disapprove of their regular marijuana use.

- Almost nine out of ten (89%) 12th graders in 2023 thought their close friends would disapprove of their ***smoking a pack or more of cigarettes a day***. This is substantially higher than disapproval of regular marijuana use and also for disapproval of vaping nicotine regularly.

- The proportion of 2023 12th grade students who perceived disapproval from friends for alcohol use varied with level of consumption: 69% for ***binge drinking on weekends***, 78% for consuming ***one or two drinks nearly every day***, and 89% for ***having four or five drinks nearly every day***.

- ***LSD***, ***amphetamines***, and ***cocaine*** had among the highest rates of perceived friends' disapproval.

In sum, perceived peer norms among 12th grade students differ considerably for various drugs and for varying degrees of involvement with those drugs, but overall they tend to be quite conservative. The majority of 12th graders have close friends who they think would disapprove of their using illicit drugs. The one exception is occasional marijuana use, for which 47% of 12th graders reported their close friends would disapprove in 2023.

Although these questions are not included in the 8th and 10th grade questionnaires, there seems to be little doubt that these students would report peer norms at least as restrictive as the 12th graders, and quite likely more restrictive ones, based on the cross-grade comparisons in levels of personal disapproval (discussed in Chapter 8). Cigarette smoking might be an exception, because there is less personal disapproval of cigarette smoking at lower grades.

A Comparison of the Attitudes of Parents, Friends, and 12th Graders

A comparison of 12th graders' perceptions of drug use disapproval by their friends versus their parents shows several other relevant findings.

- First, students' perceptions of their *parents'* attitudes shows much less variability than their perceptions of *peer* norms across drugs and across years. As mentioned previously, the great majority of 12th graders in each year indicated that their parents would disapprove of any of the drug behaviors listed. However, *peer* norms varied considerably from drug to drug and also across time, consistent with the variability in the respondents' own attitudes and use. While parental norms did not show much variance, we emphasize that this is quite different from saying that parental attitudes do not matter, or even that they matter less than peer attitudes.

- Despite differences in how students characterized parents' versus friends' disapproval of drug use, the rankings of relative degree of disapproval of specific drugs were similar for the two groups.

- A comparison with 12th graders' own attitudes regarding drug use reveals that, on average, they were much more in accord with peers than parents (see Figures 9-1a through 9-2b). The differences between 12th graders' own disapproval ratings and those attributed to their parents tended to be large, with parents seen as far more conservative overall in relation to every drug. The largest difference occurred in the case of ***marijuana*** experimentation, of which only 35% of 12th graders in 2023 said they disapproved (see Table 8-6), versus 70% who indicated that their parents would disapprove.

Trends in Perceptions of Friends' Attitudes

Below we present trends in perceptions of friends' attitudes up to 2023. We do not include 2020 results because of insufficient sample size; in 2020 the three-quarters reduction in sample size as a result of the COVID-19 pandemic considerably reduced the analysis pool for these measures, all of which are asked only of a randomly selected subsample of students.

A number of important changes in 12th graders' perceptions of peer attitudes have taken place over the life of the study. These shifts are presented graphically in Figures 9-1a through 9-2b along with data on the respondents' own attitudes and perceived parental attitudes.[3]

- In 2023 the percentage of 12th grade students who reported their friends would disapprove of them using drugs trended upward for all outcomes except one. The one exception was weekend binge drinking, which decreased a nonsignificant 1.6 points. Despite this decrease the overall level remained high at 69% in 2023. (Table 9-4).

- Friends' perceived disapproval for each level of ***marijuana*** use—trying once or twice, occasional use, and regular use—increased in 2023, although these increases were not statistically significant. Overall, all three levels have declined considerably since the early 1990s. Peer disapproval of using marijuana once or twice, for example, declined from a high of 73% in 1992 to 47% in 2023. Clearly, social norms regarding marijuana use among adolescents have relaxed across the decades.

- In general, throughout the years of the study adolescents' perceptions of disapproval from their peers have tracked closely with their own personal levels of disapproval (see Figures 9-1a, 9-1b, 9-1c, 9-2a, 9-2b). This close tracking is consistent with both socialization and selection; that is, that peers exert a substantial influence on adolescent attitudes and beliefs (socialization), and at the same time adolescents join friends groups that share similar values and behaviors (self-selection).

- The proportion of 12th grade students who reported their friends would disapprove of them using ***cocaine*** significantly increased in 2023 (Table 9-4, Figure 9-1b). For experimental use the proportion increased from 86% in 2022 to 90% in 2023, and for occasional use it increased from 91% to 94% in these years. There is not much room for these levels to increase further.

  Peer disapproval of cocaine use has been high since 1988 (Table 9-4, Figure 9-1b). The proportion of 12th graders who report that their friends disapprove of trying cocaine "once or twice" has been 87% or higher since 1988, and the proportion disapproving of "occasional" cocaine use has been 89% or higher during the same period. Questions on friends' attitudes about cocaine use were added to the study in 1986. Between 1986 and 1992, the proportion of students saying that their close friends would disapprove of their experimenting with cocaine rose from 80% to 92%. This corresponds to an even larger increase in perceived risk and also a precipitous drop in actual use, suggesting that fears of potential harm caused cocaine use to become less acceptable,[4,5] and low levels of acceptability have persisted over the past three decades. (The perception of friends'

[3] Adjusted trend lines have been used for data on friends' attitudes collected before 1980. For details see footnote 3 of Chapter 9 in the 2023 publication of this manuscript (page 388).

[4] Bachman, J. G., Johnston, L. D., & O'Malley, P. M. (1990). Explaining the recent decline in cocaine use among young adults: Further evidence that perceived risks and disapproval lead to reduced drug use. *Journal of Health and Social Behavior*, *31*, 173–184.

[5] Johnston, L. D. (1991). Toward a theory of drug epidemics. In R. L. Donohew, H. Sypher, & W. Bukoski (Eds.), Persuasive communication and drug abuse prevention (pp. 93–132). Hillsdale, NJ: Lawrence Erlbaum.

disapproval of ***crack cocaine***, first asked about in 1989, closely parallels the findings for cocaine in general, but at slightly higher levels of perceived disapproval.)

- Perceived peer disapproval of trying ***LSD*** once or twice has historically been high and among 12th graders significantly increased to 81% in 2023 from 75% the previous year (Figure 9-1b). With this 2023 increase the peer disapproval level returned to a range between 80% and 90%, where it fluctuated between 1998 and 2019.

- As is true for most of the illicit drugs other than marijuana, perceived peer disapproval of trying ***amphetamines*** once or twice has been quite high for the entire life of the study, though there have been some important fluctuations (Figure 9-1c). The level of disapproval in 2023 was 84%, a slight decline since the peak in 2007, when it was 87%. In previous years peer disapproval followed the common pattern of a decline during the 1990s drug relapse and an increase beforehand and afterwards. Once again, peer disapproval and personal disapproval tracked very closely over the life of the study.

- In 2023 the perceived proportion of peers who disapproved of ***weekend binge drinking*** was 69%, near a record high, and corresponds with historical low levels of self-reported binge drinking in recent years (Figure 9-2a and Table 9-4).

  Perceived disapproval of weekend binge drinking increased to current levels from lows of 51% in the early 1980s. This increase was interrupted by a pause and slight decline in levels of disapproval during the 1990s relapse in drug use. Prior to the relapse, during the 1983–1992 period, laws mandating an increase in the drinking age were enacted in a number of states, ad campaigns were launched aimed at deterring drinking and driving, and subsequent ad campaigns encouraged the use of designated drivers. Some divergence occurred when 12th graders' own attitudes became less tolerant while perceived peer norms among friends changed more slowly, suggesting some collective ignorance of the extent to which peers had come to disapprove of weekend binge drinking. In general, binge drinking has been in decline among 12th graders during the period of increased peer disapproval.

- The proportion of 12th grade students who believe that their friends disapprove of ***having four or five drinks nearly every day*** has been above 80% and changed little throughout the course of the study (middle panel of Figure 9-2a and Table 9-4).

- Perceived peer disapproval of having ***one or two drinks nearly every day*** (top panel of Figure 9-2a and Table 9-4) was at 78% in 2023, which is close to the record high of 79% set in 1990.

- Perceived peer disapproval of ***regular cigarette smoking*** has hovered around 85% for the past decade. In 2023 it was 89%. These high levels of disapproval coincide with self reported smoking levels reaching a historical low. In general, peer disapproval of regular cigarette smoking has steadily increased over the course of the study from a low of 64% in 1975, with an exception of a slight decline during the 1990s relapse. Clearly, smoking became a less acceptable behavior among young people over the life of the study,

particularly since 1996, and this corresponds to a period of a very considerable decline in adolescent smoking as is documented in Chapter 5.

- Perceived peer disapproval of nicotine vaping was first added to the survey in 2021. Levels for disapproval were at their highest levels in the three years this outcome has been monitored, at 67% for occasional use and 75% for regular use in 2023.

PERCEIVED USE OF DRUGS BY FRIENDS

It is generally acknowledged that peer influences are among the most powerful mechanisms of substance use initiation during adolescence. Drug use is often initiated through a peer social-learning process, and research, including our own, has shown a high correlation between an individual's illicit drug use and that of his or her friends. Such a correlation can—and probably does—reflect several causal patterns: (a) a person with friends who use a drug will be more likely to try the drug; (b) conversely, the individual who is already using a drug will be more likely to introduce friends to the experience; and (c) users are more likely to establish friendships with other people who use (and likewise, nonusers are more likely to form friendships with other nonusers).

Given the importance of exposure to drug use by others, it is useful to monitor students' beliefs about the levels of drug use among their friends, which we report below for all three grades (Tables 9-6 to 9-8).

In addition to questions on perceived levels of drug use by friends, the MTF survey also includes questions on direct exposure to drug use. These questions ask respondents how often they have been around people—not just their friends—who were using specific drugs. We present these estimates in Table 9-5, but in the interest of parsimony we do not discuss these results because of their near redundancy with the results from friends' use, reported below. (For previous discussion of these direct exposure measures see Chapter 9 of the 2022 version of this report, which reports findings for 2021.)

Friends' Use of Drugs in 2023

- Among the substances that their friends use, ***nicotine vaping*** ranks at or near the highest in all grades. In 2023 the percentage reporting that any of their friends vaped an e-liquid with nicotine was 41% in 8th grade, which was the highest of any drug measured. Among 10th grade students 54% reported their friends vape nicotine, which ranks second only to alcohol (61%). In 12th grade the level was 60%, which tied with alcohol and marijuana, and was slightly behind any illicit drug (63%).

- As would be expected, with few exceptions 10th graders are less likely than 12th graders to have friends who use most drugs, and 8th graders are less likely still (see Tables 9-6, 9-7, and 9-8). For example, 25% of 8th graders in 2023 said that they have any friends who use ***marijuana***, compared with 47% of 10th graders and 60% of 12th graders. Still, that means that a quarter of 8th graders—most of whom are 13 or 14 years old—already have some friends who use marijuana.

- ***Inhalants*** are one important exception to the typical developmental trend. Consistent with our finding that current inhalant use is more prevalent in 8th grade than in 10th or 12th grades, 12% of 8th graders said they have some friends who use inhalants versus 9% of 10th graders and 7% of 12th graders in 2023.

- Exposure to ***alcohol*** use by friends is relatively widespread even at these younger ages, with 37% of 8th graders and 61% of 10th graders reporting having friends who use alcohol. In fact, 6% of 8th graders and 15% of 10th graders said that most or all of their friends drink, and the proportions saying that most or all of their friends ***get drunk*** at least once a week are 2% in 8th grade and 5% in 10th grade, compared to 4% in 12th grade.

- About one out of five (19%) of 8th graders and about a quarter of both 10th graders (24%) and 12th graders (27%) say they have some friends who ***smoke cigarettes***.

- Slightly smaller proportions have friends who use ***smokeless tobacco***: 13% of 8th graders and 18% of 10th graders in 2023.

In sum, today's U.S. adolescents—even those in middle school—have high degrees of exposure to drug use among their peers, whether or not they use drugs themselves. Exposure levels are particularly high for nicotine vaping, marijuana use, drinking alcohol, and drunkenness.

TRENDS IN PERCEIVED USE OF DRUGS BY FRIENDS

In what follows we present perceived levels of drug use among friends up to 2023. This measure has seen important changes over the past four decades, as would be expected given variability in the levels of their self-reported use. Tables 9-6, 9-7, and 9-8 present trends for various drugs in each of the three grades. Figures 9-3a to 9-3t present graphs of these trends among 12th graders so that long term patterns are more readily discernible.

The year 2019 warrants special attention in analysis of trends in friends' drug use, as it does for all of the attitude and belief measures. The transition to electronic data collection in 2019 introduces the possibility of survey mode effects on prevalence estimates. Consequently, below we note when trends show a discontinuity in 2019, as indicated by significantly different prevalence levels across survey modes.

In general, for almost all drugs, trends in perception of friends' use of drugs move concurrently with levels of actual use and do not precede it. These results indicate that measures of friends' use serve as additional indicators of drug use, but generally do not serve as leading predictors of actual use.

Substantial decreases in drug use by friends would be expected in 2021 and afterwards, given the decline in overall prevalence of most drugs that took place after the pandemic and has since persisted (see Chapter 5).

Trends for 12th Grade Students

- The proportion of 12th graders who report that any of their friends use ***marijuana*** dropped markedly after the pandemic onset in 2021 and this decline has since persisted. It declined from 71% in 2019—previous to the pandemic as measured using electronic data collection—to 64% in 2021 and to 60% in both 2022 and 2023. Previous to the pandemic, this level had been hovering between 76% and 81% since 1994. Its peak value was 88% in 1979.

  This measure trends closely with personal use. It increased at the start of the MTF study in the late 1970s, declined for more than a decade starting in the 1980s, increased rapidly during the 1990s drug relapse, increased during the late 2000s, and dropped sharply after the onset of the pandemic.

- In 2023 the proportion of 12th grade students who reported that *most or all of their friends* use ***marijuana*** (18%) is about midway between the high set in 1979 (36%) and the nadir set at the start of the 1990s drug relapse (10%, see Figure 9-3c).

- The proportion who report that any of their friends use ***cocaine*** has been in steady decline since 2008, a decline that accelerated after the onset of the pandemic. Levels were 30% in 2007, 16% in 2019—previous to the pandemic—and 7% in 2023 (Table 9-8). It is currently at the lowest level recorded by the survey.

  These reported levels of friends' use track closely with trends in personal levels of use but do not precede it. In addition to both dropping markedly after the onset of the pandemic, they also together declined during the late 2000s, increased during the 1990s drug relapse, dropped substantially from the mid 1980s to the start of the 1990s, reached record highs in the early 1980s, and increased during the late 1970s.

  The proportions of 12th grade students who report that most or all of their friends use ***cocaine*** have been at 2% or lower for the past decade (Figure 9-3h).

- The proportions of 12th graders who report that they have any friends who use ***amphetamines*** to get high was 12% in 2023, the lowest level recorded over the life of the survey (Table 9-8). This prevalence dropped a substantial 4 percentage points after the pandemic onset, from 24% in 2019 (using electronic data collection) to 15% in 2021 and has since declined further.

  Likely the 12% in 2023 would have been even lower if assessed with paper-and-pencil questionnaires, considering that prevalence levels were lower for responses based on paper-and-pencil questionnaires as compared to electronic data collection in the randomized-controlled experiment in 2019.

  The decrease after the pandemic onset continues a steady decline that has taken place since 2009, which includes a six point drop from 2016 to 2017 (from 27% to 21%). Today's levels are much lower than the 51% recorded in 1975. After 1975 the measure unevenly declined to 28% in 1994, where it hovered until it began a sustained decline in 2017.

Trends in the percentage of 12th grade students who say that most or all of their friends use amphetamines track closely with personal use (see Figure 9-3m).

- The proportion of 12th grade students reporting that most or all of their friends use ***MDMA*** (ecstasy or more recently Molly, as well) has been under 3% for the past decade and was 1% in 2023 (Table 9-8 and Figure 9-3g). Although we did not ask students about their own use of MDMA until 1996, we did ask about friends' use beginning in 1990. Prevalence of both this measure and actual use is low, and as a result the estimates are somewhat noisy. Nevertheless, both showed a substantial spike between 1999 and 2001 and a substantial decline for the following five years.

- The proportion of 12th graders who report that most or all of their friends smoke ***cigarettes*** has declined dramatically over the course of the survey from a high of 42% in 1975 to 2% in 2023 (Table 9-8 and Figure 9-3s). As well, the proportion who reported that *any* of their friends smoked cigarettes has declined from 95% in 1975 to 27% in 2023, which is the lowest level recorded by the survey. These declines continued at about the same pace in the years before and after the onset of the pandemic.

  As these measures have declined so too has self reported prevalence of cigarette smoking. Before 1997 these measures had increased during the 1990s drug relapse.

- The proportion of 12th grade students who report that most or all of their friends use ***alcohol*** has declined substantially over the course of the survey from 68% in 1975 to 23% in 2023 (Table 9-8).

  This measure tracks very closely with past 30-day prevalence of alcohol use (Figure 9-3q). It also tracks with 12th grade student reports of their own ***binge drinking***, as both have declined over the life of the study (see Chapter 5 for prevalence trends).

- The percentage of 12th graders who reported that most or all of their friends got ***drunk*** at least once a week was at a historic low of 4% in 2023 (Figure 9-3r).

  This percentage was 33% in 2001 and has since declined with levels of self-reported prevalence of binge drinking. In prior years, the prevalence of self-reported binge drinking was higher than the reported percentage of friends who got drunk once a week. Since the mid 1980s the prevalence of binge drinking declined at a faster rate; its level converged with the friends' measure around 1990, and the two have moved largely in parallel ever since.

Trends for 8th and 10th Grade Students

As with 12th graders, data on friends' use among 8th and 10th graders (available since those grades were added to the study in 1991) show trends that are highly consistent with trends in self reported use. This includes substantial declines for both personal use and friends' use in the years after the COVID-19 pandemic onset.

Questions on friends' use are included in all 8th and 10th grade questionnaire forms through 1998 and on three of the four forms beginning in 1999, providing large sample sizes. Selected trend results for these questions are discussed below, with comparisons to 12th graders when salient, and are presented in Tables 9-6 through 9-8.

- The proportions of 8th and 10th grade students reporting that most or all of their friends use ***marijuana*** declined by nearly half after the onset of the pandemic. Among 8th graders it declined from 8% in 2019 to 4% in 2021 and was at 5% in 2023. Among 10th graders it declined from 24% in 2019 to 13% in 2021, and was at 11% in 2023.

  Over the past three decades these measures have trended in parallel with major changes in personal levels of use. All measures increased substantially during the 1990s relapse, retreated from peak levels established in 1996–1997 at the end of the 1990s, increased during the late 2000s, and dropped markedly after the onset of the pandemic.

- The proportions reporting having any friends who use ***inhalants*** was at or near record lows for 8th and 10th graders in 2023, at 12% and 9%, respectively. These proportions have been in steady decline since 2011, and this decline continued at a similar pace before and after the onset of the pandemic.

  In both grades, reported levels of having any friends who use ***inhalants*** have trended with own levels of use to the extent that both increased during the 1990s relapse with a peak in 1996–1997 and have overall declined since then, with some small pauses and temporary increases along the way. The low levels in 2023 correspond with self reported use, which is also at or near record lows in these grades.

- Reports that most friends ***got drunk at least once a week*** were at historic lows in 8th and 10th grades in 2023, at 2% and 5%, respectively (Tables 9-6 and 9-7). These measures declined at a similar pace in the years before and after the pandemic onset.

  These reports correspond with the prevalence of self reported drunkenness in these grades, which also are near historic lows.

- In 2023 the proportions who reported that most or all of their friends smoke ***cigarettes*** was 1.8% in 8th grade and 1.6% in 10th grade, which are both at or near record lows. These measures are approaching a "floor effect," and have little room left to decline further.

  Levels of reported smoking by friends has trended closely with personal levels of smoking, with both declining markedly since the late 1990s. Today's low levels accompany historic lows in personal levels of smoking in the past 30 days.

Implications for validity of self reported usage questions. We have noted a high degree of concurrence in the aggregate-level data presented in this report among students' self reports of their own drug use and that of their friends. Drug to drug comparisons in any given year across

these two measures tend to be highly parallel, as are the changes from year to year.[6] We take this consistency as additional evidence of the validity of the self report data (and of the trends in the self report data) because respondents should have little reason to distort answers about use by unidentified friends. *We believe that the consistency also provides persuasive evidence that changes in the social acceptability of drug use over time have not affected the truthfulness of self reports of use.*

SOURCES OF CERTAIN PRESCRIPTION DRUGS USED WITHOUT MEDICAL SUPERVISION

The misuse of prescription drugs—that is, their use outside of a doctor's orders—reemerged as a problem in the 1990s and into the 2000s, as is documented in Chapter 5. It was previously an issue in the late 1970s and early 1980s. To understand where students obtain such drugs, in 2007 we added a set of questions to one of the six randomly distributed 12th grade questionnaire forms asking about how the users got these drugs. Respondents who indicated that in the prior 12 months they used ***tranquilizers***, for example, were branched to a set of more detailed questions about their tranquilizer use. One of those new questions asked them to indicate where they got the tranquilizers by marking all sources that apply out of a pre-specified set of answers. Similar measures were introduced for ***narcotics other than heroin*** (most of which are opioids) and ***amphetamines***. (Sources of ***sedatives*** (***barbiturates)*** were not asked.)

Table 9-9 and Figure 9-6 provide the information on sources of prescription drugs. The years 2009–2018 and 2019–2023 are combined in order to increase sample size and provide more stable estimates.

One interesting finding is that the distribution of sources is similar for the three different types of psychotherapeutic drugs. "Given for free by a friend" and "bought from a friend" are two of the most common methods for obtaining prescription drugs and are considerably more frequently mentioned than "given for free by a relative" or "bought from a relative." Clearly the informal peer network is a major source of these drugs for adolescents, a far more common source than any family network.

"From a prescription I had" is a relatively common source for narcotic drugs and amphetamines, at 31% for both in 2019–2023. It is relatively less prevalent for tranquilizers at 16%. The fact that a significant proportion of students who misuse prescription drugs are using leftovers from previous prescriptions suggests that lowering the number of doses in the initial prescription could help reduce the supply that is diverted to nonmedically-supervised use.

Amphetamines and tranquilizers are more likely to be bought from a drug dealer or stranger, at 21% and 17%, respectively, than are narcotics other than heroin (9%).

Purchasing drugs online is one of the less common ways for 12th grade students to procure prescription amphetamines or tranquilizers from 2019–2023. The 5% who reported online purchases of amphetamines tied with "bought from a relative" for least common procurement

[6] Those minor instances of noncorrespondence may well result from the larger sampling errors in our estimates of these context variables, which are measured on a sample size one fifth or one-sixth the size of the self reported usage measures. They may also result, of course, from a lag between a change in the reality and students' recognition of that change.

method. The 7% who reported online purchases of tranquilizers was third lowest, with only "bought from a relative" (6%) and "took from a friend without asking" (5%) any lower. Online purchases were a relatively more common source of obtaining narcotics other than heroin, at 9% for 2019–2023, up from 2% in 2009–2018. As noted earlier, the sample sizes in the latter period are quite small, making precise estimates of change more difficult.

PERCEIVED AVAILABILITY OF DRUGS

One set of questions in the MTF surveys asks respondents how difficult they think it would be to obtain each of a number of different drugs if they wanted some. The answers range across five categories from "probably impossible" to "very easy."[7] We use the term "perceived availability" in discussing the responses to these questions because it is the respondent's perception that is being measured. We recognize that availability is multidimensional, and respondents may consider a variety of factors in their answers, including knowing where to get access, the difficulty of getting to an access location, the perceived danger of getting caught, and possibly even the monetary cost. We suspect, however, that for most respondents, what we are measuring is perceived access, with little or no consideration of monetary cost.

While no systematic effort has been undertaken to directly assess the validity of these measures (because such an assessment would involve actual attempts to obtain drugs), the measures do have a rather high level of face validity, particularly because it is the subjective reality of perceived availability being measured. It also seems quite reasonable to assume that, to a considerable extent, trends in perceived availability track with actual availability. In addition, differences across drugs in reported availability generally correspond to differences in reported prevalence of use, providing further evidence of their validity.

Perceived Availability of Drugs: All Grades

- Perceived availability differs substantially across drugs (Tables 9-10 to 9-12). In 2023 the percentage of 12th graders reporting it would be fairly easy or easy to get a drug varied from 12% or less for ***heroin***, crack, and crystal methamphetamines to 73% and above for ***alcohol***, ***vaping devices***, and ***marijuana***.

- In general, the more widely used drugs are reported to be available by higher proportions of the age group, as would be expected. The substances with the highest levels of use in 2023, specifically marijuana, alcohol, and vaping devices, also place in the top three in terms of perceived availability.

- Older adolescents generally perceive drugs to be more available. For example, in 2023, 26% of 8th graders said ***marijuana*** would be fairly easy or very easy to get (which we refer to as "readily available"), versus 48% of 10th graders and 73% of 12th graders.

- Higher availability among both the more widely used drugs and also older age groups is consistent with the notion that availability is largely attained through friendship circles. (Friends clearly are the leading source through which 12th graders obtain prescription

[7] In the 8th and 10th grade questionnaires, an additional answer category of "can't say, drug unfamiliar" is offered; respondents who chose this answer are included in the calculation of percentages. Generally, fewer than 20% of respondents selected this answer.

drugs, as discussed above.) The differences among age groups may also reflect less willingness and/or motivation on the part of those who deal drugs to establish contact with younger adolescents.

- ***Marijuana*** appears to be readily available to the great majority of 12th graders; in 2023, 73% reported that they think it would be very easy or fairly easy to get—far higher than the proportion who reported ever having used it (37%).

- There is a considerable drop in availability after marijuana, alcohol, cigarettes, and vaping; the next most readily available class of drugs for 12th graders is amphetamines, with 31% saying these drugs would be very or fairly easy to get, followed by hallucinogens other than LSD (31%, such as psychedelic mushrooms or peyote).

- Substances with the lowest availability among 12th grade students in 2023 are crystal methamphetamine (8%), crack (12%), heroin (12%), cocaine powder (12%), and steroids (17%).

- In each grade similar percentages of students reported they could fairly or very easily get a vaping device, e-liquids with nicotine, or flavored vaping solutions. In 8th grade the percentage were, respectively, 34%, 32%, and 30%. In 10th grade they were 55%, 52%, and 51%. In 12th grade they were 76%, 73%, and 72%.

- In 2023, 33% of 8th graders, 48% of 10th graders, and 60% of 12th graders thought that ***cigarettes*** would be fairly easy or very easy for them to get if they wanted some.

- Alcohol has the highest level of availability in each grade. The percentage saying it would be fairly easy or very easy to get in 8th grade was 41%, in 10th grade was 59%, and in 12th grade was 82%.

- Drug availability levels are lowest in 8th grade. Even so, in 2023 ***marijuana*** was reported as readily available by about one in four (26%) 8th grade students.

- Because many ***inhalants***—such as glues, butane, and aerosols—are universally available, we do not ask about their availability. See Table 9-12 for the full list of drugs included in the questions for 12th graders; a few of these drugs were not asked of the younger students (see Tables 9-10 and 9-11).

Trends in Perceived Availability for All Grades

Trend data on availability for all grades are presented in Tables 9-10 to 9-12 and are graphed for 12th grade students in Figures 9-5a through 9-5d. The figures show some substantial fluctuations in the perceived availability of most drugs over the historical interval covered by the study. Indeed, most drugs have shown a considerable decline in availability since the mid to late 1990s. As with the other measures in this chapter, we note when the transition to electronic data collection in 2019 resulted in any discontinuities in trends, and we do not include 2020 results because of insufficient sample size due to curtailed data collection as a result of the COVID-19 pandemic.

- ***Marijuana*** has been one of the most consistently available drugs and 73% of 12th grade students reported that it would be fairly or very easy for them to get it in 2023 (see Tables 9-10 through 9-12 and Figure 9-5a). The level has been edging up slightly after a large, post-pandemic drop from 79% in 2019 to 70% in 2021, which stands out as the largest two-year decrease for this measure over the life of the study. Despite small increases over the past two years levels of availability remain substantially below pre-pandemic levels. Previous to the pandemic between 80% and 90% of American 12th graders since 1975 reported they could readily obtain marijuana.

  Perceived availability of marijuana is at or near historic lows in each grade. In 2023 in 8th grade it was 26% (a historic low), in 10th grade it was 48% (tied with 2021 for a historic low), and in 12th grade it was at 73% (slightly above the 70% level in 2021 and 2022, which were historic lows). In 10th grade a survey mode effect resulting from the switch to electronic data collection in 2019 indicates that estimates based on electronic data collection are seven points lower than those based on paper-and-pencil (see the '2019p' and '2019e' columns in Table 9-11), but even with addition of seven points to the 2023 estimate it remains substantially lower than any of the paper-and-pencil estimates since first measured in 1992. These declines in perceived availability are somewhat counter-intuitive and unexpected, given the widespread adoption of medical marijuana laws and recent legalizing of recreational marijuana use for adults in many states. Because most states that have legalized marijuana in some fashion have set a minimum age of 21 for purchase it would apply to the great majority of respondents in grades 8 through 12. Perhaps the emergence of legally sanctioned sale has reduced the size of the market for illicit purchases, resulting in less overall availability to minors.

- Trends in the availability of ***vaping devices*** vary by grade. In 8th grade, 34% of students reported they could fairly or very easily get a vaping device. The level declined by about four points after the pandemic onset in 2021 and continued to decline by one point a year in 2022 and 2023.

  In 10th and 12th grade, perceived availability increased, significantly so in 12th grade. In both grades the levels of availability in 2023 remain substantially below where they were in 2019, before the pandemic onset. In 10th grade availability edged upward from 52% in 2022 to 55% in 2023, which remains below the 64% level in 2019 (using the 2019 estimate based on electronic data collection). In 12th grade availability significantly increased from 69% in 2022 to 76% in 2023, which remains below the 81% level in 2019 (using the 2019 estimate based on electronic data collection).

- The perceived availability of ***cigarettes*** continued a long term decline in 8th and 10th grade to historic low levels (Tables 9-10 and 9-12). In 2023 the percentage saying they could easily get cigarettes was 33% in 8th grade and 48% in 10th grade. After holding fairly steady at very high levels for some years, perceived availability began to decline modestly after 1996, very likely as a result of increased enforcement of laws prohibiting sale to minors under the Synar Amendment and FDA regulations. The proportion of 8th graders saying that they could get cigarettes fairly or very easily fell from 77% in 1996 to 56% in 2010, and to 33% in 2023 (Table 9-10). Over the same interval, the decline among 10th graders

fell from a high of 91% in 1996 to 48% in 2023 (Table 9-11). These are encouraging changes and suggest that federal and local efforts to reduce accessibility to adolescents—particularly younger adolescents—seem to be working.

For 12th grade students, availability of cigarettes significantly increased from 54% in 2022 to 60% in 2023. This marks an unexpected reversal of a downward trend since the implementation of the "Tobacco 21" federal legislation that was signed into law on December 20, 2019 and makes it illegal for a retailer to sell any tobacco product to anyone under 21 years of age. Until 2023 this law appeared to have its intended effect[8] and cigarette availability decreased in the years immediately following, from 71% in 2019 to 54% in 2022. However, these declines took place in the years after the onset of the COVID-19 pandemic, when availability for most substances declined, making it difficult to disentangle any independent effects of the federal legislation. The increase in cigarette availability in 2023, along with significant increases in the availability of vaping devices (see bullet above), suggests that a closer examination of the "Tobacco 21" legislation is warranted. It is possible the declines in earlier years were a result of the pandemic and/or any effect of the federal legislation is dissipating.

- Availability of ***alcohol*** among 12th grade students in 2023 was at 82%, about where it was before the pandemic in 2019 at 81%. Availability declined after the pandemic onset in 2021 to 77%, but this decline proved temporary (Table 9-10 through 9-12 and Figure 9-5a). Alcohol has long been the substance with the highest level of availability. It has been at 77% or higher up to 2023 in all years since its addition to the 12th grade survey in 1999.

  More substantial changes in the perceived availability of alcohol have taken place among 8th and 10th graders. For 8th graders availability declined from 76% in 1992 to 41% in 2023, a historic low. The estimates in 2021 and afterwards were lowered in part by a survey mode effect in which estimates based on electronic data collection are about 7 points lower than estimates based on paper-and-pencil surveys (compare columns '2019p' and '2019e' in Table 9-10). Nevertheless, even after adjusting the 2023 estimate by adding 7 points to it, the resulting level of 48% is the lowest recorded for this measure over the life of the survey and substantially lower than the 76% level in 1992. For 10th graders availability is down from the peak level of 90% in 1996 to 59% in 2023, which ties with 2022 for the lowest level recorded over the life of the survey (there was no significant mode effect in 2019 for 10th graders). This may reflect some success in state and local efforts to reduce access by those who are under age, as well as a decline in number of friends who use alcohol. It is worth noting, however, that even after these declines, alcohol remains available to a great many teens.

- The percentage of students who reported in 2023 that it would be fairly or very easy to obtain ***amphetamines*** has declined over the course of the study and was near historic lows in each grade, at 31% in 12th grade (the record low was in 2021 at 29%), 16% in 10th grade (a record low), and 10% in 8th grade (a record low, Figure 9-5a and Tables 9-10 to 9-12). These lows come despite a question change in 2011 that added Adderall and Ritalin to the

[8] Colston, D. C., Xie, Y., Patrick, M. E., Thrasher, J. F., Titus, A. R., Elliott, M. R., ... & Fleischer, N. L. (2022). Tobacco 21 laws may reduce smoking and tobacco-related health disparities among youth in the US. *Preventive Medicine Reports*, *27*, 101762.

list of examples, which slightly increased availability reports in that year and thereafter. In all grades the decline in availability has been consistent over the course of the study with the following exceptions: an increase in the late 1970s among 12th graders, possibly due to the advent of the "look-alike" drugs during that period (in these early years 8th and 10th graders were not surveyed), and an increase during the 1990s drug relapse in 10th and 12th grades along with a pause in the decline among 8th graders.

- Perceptions of the availability of ***sedatives*** (***barbiturates***) (Tables 9-10 to 9-12 and Figure 9-5b) were at or near the lowest levels recorded by the study in all grades in 2023. Among 12th graders the long, downward trend in availability over the course of the study was interrupted twice, once in 1981 when look-alikes were common, and again in 2004 when the question was updated with new examples of sedatives added to the question (see footnote in Figure 9-5b). Overall, over the life of the study availability declined by more than two-thirds for 12th graders, from 68% in 1975 to 20% in 2023 (keeping in mind that the question change in 2004 led to a jump in the availability measure in that year and thereafter).

  In 8th and 10th grades, availability of sedatives (barbiturates) has declined overall since first measured in 1992. In 8th grade this decline has been steady, while in 10th grade it was interrupted with a slight, short-lived increase during the 1990s drug relapse. In 2023 the percentage of students who reported it would be "fairly" or "very" easy to get sedatives was 8% in 8th grade (down from 27% in 1992), and in 10th grade it was 12% (down from 38% in 1992).

- Among 12th graders availability in 2023 for ***crack cocaine*** and ***cocaine powder*** was 12% for both, which are near the lowest levels recorded by the study (Figure 9-5a and Tables 9-10 to 9-12). Earlier trends in availability resemble an inverted 'U'. Availability of cocaine increased as use increased through the 1980s, and availability reached a study high of 59% in 1989, the same year study highs were also recorded for availability of the more specific measures of powder cocaine and crack. Importantly, this peak in availability occurred after cocaine use peaked in 1985, after which use began to decline sharply. Because perceived availability increased between 1986 and 1989, we are inclined to discount reduction in supply as an explanation for the significant and important decline in cocaine use observed during that period. As discussed in Chapter 8, the sharp increase in perceived risk for cocaine seems the more compelling explanation. After 1989, availability of cocaine declined steadily, with an exception of a slight rise during the 1990s drug relapse.

  In 8th and 10th grades, levels of availability of these substances in 2023 were at or near historic lows and continued a steady decline that began ten years earlier. In 2023 the percentage reporting that it would be "fairly" or "very" easy to get cocaine powder or crack in 8th grade was 8% for both cocaine powder and for crack (down from a high of 28% in the mid 1990s), and in 10th grade was 10% for powdered cocaine and 9% for crack (down from a high of 37% in the late 1990s). In these grades, levels of use of both these drugs have declined by more than half since the late 1990s.

- The availability of ***tranquilizers*** such as Xanax and Valium has trended in opposite directions in recent years for 12th grade students in comparison to 8th and 10th grade students. Availability increased in 12th grade and the percentage of students who reported they could easily get tranquilizers rose by eight points from 16% in 2019 to 24% in 2023. From 2019 to 2023 prevalence of tranquilizer *use* among adolescents declined markedly (see Chapter 5), indicating that increased availability did not translate into higher levels of use.

  In 8th and 10th grade availability of tranquilizers decreased after the onset of the pandemic and are now at the lowest levels recorded over the life of the survey. The percentage of 8th grade students who reported they could easily obtain tranquilizers was 7% in 2023, which compares with 11% in 2019 (using the '2019e' estimate). In 10th grade the percentage was 10%, which compares with 18% in 1992 (using the '2019e' estimate).

- In 2023, the perceived availability of ***LSD*** was at or near historic lows in all grades with levels of 6% in 8th grade, 11% in 10th grade, and 22% in 12th grade (Figure 9-5c and Tables 9-10 to 9-12). In 12th grade, reported availability showed a gradual increase from the mid 1980s to a peak in the mid 1990s, after which all this gain receded in the following decade. Outside of these years, availability decreased sharply in the first year of the study and then followed a slight but steady decline over the life of the study. In 2023, the 22% of 12th graders reporting ready access to LSD is less than half of the of 54% in 1995. In general, attitudes and beliefs—perceived risk and disapproval of LSD use—have not moved in ways that could explain the sharp drop in use that was observed between 2000 and 2003. It seems highly likely that it was this decrease in availability that helped to drive use down—particularly the decline in the early 2000s.

  Among 8th grade students 6% reported in 2023 that they could 'fairly' or 'very' easily procure LSD, which is the second lowest level recorded over the life of the survey (the lowest level was the year before, at 5%). Among 10th grade students the level was 11%, which ties with the previous year for the lowest level recorded by the survey. Availability of ***LSD*** dropped sharply in the early 2000s, coinciding with a steep decline in use among 8th and 10th graders. As stated above, because perceived risk and disapproval did not move in a way that could explain this decline in use, but availability did, we are inclined to believe that a change in availability was driving use in this case.

- The percentage of 12th grade students who reported it would be "fairly" or "very" easy to obtain ***hallucinogens other than LSD*** in 2023 was 31%, which was down substantially from the high of 49% in 2001, when the question was updated to include "shrooms" (psilocybin) as an example (Figure 9-5c and Tables 9-10 to 9-12). Availability of hallucinogens other than LSD is asked only of 12th graders.

  Trends in this measure followed a fairly similar trajectory to that of LSD from 1975 through 1986, but quite a different one thereafter. From 1986 to 1994, there was only a gradual rise in perceived availability of hallucinogens other than LSD, in contrast to the sharp rise for LSD. From 1995 to 2000, the availability of LSD showed a modest decline (from 54% to 47%), while the availability of other hallucinogens changed very little (from 36% to 35%).

While LSD and the other hallucinogens, taken as a set, were about equally available in the late 1970s, LSD availability was substantially higher in the 1990s (note the crossover of the lines in Figure 9-5c between 2000 and 2001). The availability of LSD declined again in 2001 (to 45%), while the availability of other hallucinogens appeared to show a sharp increase, which likely was due in considerable part to a question change. (In 2001, the question text changed from "other psychedelics" to "other hallucinogens," and the term "shrooms" was added to the list of examples. After this change, this class of drugs was actually reported to be slightly more available than LSD.)

In the year before the onset of the COVID-19 pandemic LSD and hallucinogens other than LSD had about equal levels of availability, but by 2023 hallucinogens other than LSD had an availability level about 10 points higher than LSD. Since 2019 the availability of LSD declined by about seven points, while there was a small 3 point increase in the availability of hallucinogens other than LSD.

- The proportion of 12th grade students who reported they could "fairly" or "very" easily obtain ***MDMA*** ("ecstasy" and later "Molly") in 2023 was 18%, a record low (see Figure 9-5d and Tables 9-10 to 9-12). Availability jumped sharply in 2000 to 51% and again in 2001 to 62%—nearly three times the 1991 level—an increase that probably played an important role in the sharp increase in use after 1998. In 2002, availability of MDMA declined for the first time in several years. But while use dropped quite sharply between 2001 and 2003, perceived availability declined only slightly in that interval and did not show a sharp decline until 2004, when it dropped by 10 percentage points. This was followed by another significant decline in perceived availability (eight percentage points) and a nonsignificant decrease in use in 2005. This suggests that a reduction in availability was not key to the important downturn in MDMA use, though it may have been important to the rise in use; rather, the fall in perceived availability may simply have resulted from fewer 12th graders having friends who were users. In fact, friends' use of MDMA dropped significantly in 2005. The decline in the frequency of raves, at which ecstasy was a popular drug, likely played a role too.

  Among 8th and 10th graders, availability levels of MDMA (ecstasy, Molly) were close to record lows in 2023, at 7% and 10%, respectively. These levels compare with highs of 24% in 2001 in 8th grade, and 41% in 2001 in 10th grade. As with 12th graders, the decline in availability seemed to lag behind the decline in use for this drug, suggesting that use was driving availability and not vice versa.

- The percentage of 12th grade students who reported that they could readily obtain ***heroin*** dropped markedly after the onset of the pandemic. In 2023 the percentage was 12%, which is substantially below the 18% level assessed in 2019 before the pandemic (Figure 9-5b and Tables 9-10 to 9-12). Since 1975 it increased from 24% to a high of 35% in the mid 1990s and then steadily declined in the following years. The stability of heroin *use* during the 1980s and early 1990s, despite a substantial increase in perceived *availability*, is worthy of note. It suggests that availability alone is not sufficient to stimulate use (though it may well affect the consumption pattern of established users). It was not until the 1990s that methods for taking heroin by means other than injection began to be widely known, as

purity continued to increase, and use substantially increased. The view that these methods (snorting and smoking) were less dangerous probably removed an important deterrent to use for a number of teenagers.

Among 8th and 10th graders perceived availability of heroin was near record lows in 2023, continuing an overall decrease since 1997, before which it held steady. In 8th grade a survey mode effect in 2019 indicates that using electronic data collection results in estimates about 3 points lower than paper-pencil questionnaire. Even so, adding 3 points to the 6% estimate in 2023 still results in a near-record low. As with 12th graders, trends in availability are insufficient, by themselves, to explain the increases in heroin use among 8th and 10th graders in the 1990s.

- In all grades the availability of ***narcotics other than heroin*** dropped markedly after the onset of the pandemic and these lower levels persisted into 2023 (Figure 9-5b, Tables 9-10 to 9-12). The percentage of 12th grade students who said they could easily obtain them dropped from 31% in 2019 (before the pandemic) to 17% in 2023. In 10th grade the percentage dropped from 14% in 2019 to 9% in 2023. In 8th grade the percentage dropped from 9% in 2019 to 6% in 2023.

  Until 2010 the availability question for narcotics other than heroin did not address the issue of changes in the availability of specific drugs within this general class, like OxyContin and Vicodin, and Percocet. These drugs were added in the survey text to the list of examples in 2010 (methadone and opium were dropped from the list). This update in the example drugs likely explains the large change seen in the data. For this reason, 2009 and 2010 data cannot be directly compared.

  An overall downward trend in availability after 2010, when the question was updated, seems to have continued a smaller downward trend that was present in the data from 2000 to 2009, before the question was updated. Annual prevalence of use increased from 2000 to 2004 and held steady for the next five years, making availability a poor candidate to explain this trend.

  In 8th and 10th grades availability of narcotics other than heroin has declined overall since 1997, except for a jump in 2010 that resulted from the update of the question. Prevalence of ***use*** is not reported for narcotics other than heroin in these grades.

- Narcotics other than heroin fall into the more general class of ***prescription drugs***, which are here defined as those being used outside of medical supervision (e.g., tranquilizers, sedatives, amphetamines, and narcotics). These drugs have been the subject of particular concern in the 2000s because their prevalence rose and then remained at elevated levels for some years. Substantial efforts to curb their availability to young people include "take-back" programs and efforts by various government agencies and private organizations to persuade parents and other family members not to leave any such drugs where adolescents can get them. In addition, the medical and dental communities have been alerted about the potential for the misuse of these drugs. The results reported here, showing a considerable

decline in perceived availability of these drugs to adolescents, suggest that these efforts may be working.

- As illustrated in Figure 9-5b, ***sedatives*** (***barbiturates***) and ***tranquilizers*** were much more available to 12th graders in 1975 compared to 2023.[9]

- The availability of ***anabolic steroids*** edged up a percentage point or less in each of the three grades in 2023, although none of these increases were statistically significant (Figure 9-5d and Tables 9-11 to 9-12).

  Availability in 2023 was near a record low in all grades, despite the small increases in 2023. Overall, availability has decreased considerably from its levels when first measured in 1991 for 12th grade students and 1992 for 10th and 8th grade students; specifically, from 47% to 17% in 12th grade, from 38% to 13% in 10th grade, and from 24% to 9% in 8th grade. A survey mode effect in 8th grade (compare columns '2019p' and '2019e' in Table 9-10) suggests the 2023 estimate would be about 1 point higher if based on paper-and-pencil; after such adjustment it would still be a record low.

  The scheduling of steroids by the DEA no doubt played a role in the long term decline in availability. Anabolic steroids were placed on Schedule III of the Controlled Substances Act in 1990 to take effect in early 1991, while the scheduling of the precursor ***androstenedione*** went into effect in 2005.

- In 2023 perceived availability of ***crystal methamphetamine*** was at or near a record low in all grades (Tables 9-10 to 9-12). The percentage of students saying they could easily obtain the drug was 6% in both 8th grade and 10th grade, and 8% in 12th grade. These levels contrast with a highs of 16% in 8th grade (in 1992), 23% in 10th grade (in 1997), and 30% in 12th grade (in 1998).

The Importance of Supply Reduction Versus Demand Reduction

Overall, supply reduction—that is, reducing the availability of drugs—does not appear to have played as major a role as many had assumed for a number of the most important downturns in illicit drug use that have occurred to date, namely, those for ***marijuana***, ***cocaine***, ***crack***, and ***MDMA (ecstasy***, ***Molly)*** (see, for example, Figures 8-4, 8-5, and 8-6). The case of cocaine is particularly striking, as perceived availability actually rose during much of the period of downturn in use that began in the mid 1980s. (These data are corroborated by data from the Drug Enforcement Administration on trends in the price and purity of cocaine on the streets.[10]) For ***marijuana***, perceived availability has remained very high for 12th graders since 1976, while use dropped substantially from 1979 through 1992 and has fluctuated considerably thereafter. Perceived availability for MDMA did increase in parallel with increasing use in the 1990s, but the decline phase for use appears to have been driven much more by changing beliefs about the dangers of ecstasy than by any sharp downturn in availability. Similarly, ***amphetamine*** use declined appreciably from 1981 to 1992, with only a modest corresponding change in perceived availability.

[9] Figure 9-5b shows a sharp increase in the availability of sedatives (barbiturates) in 2004, but this shift likely was caused by a change in question wording.

[10] Caulkins, J. P. (1994). *Developing price series for cocaine*. Santa Monica, CA: RAND.

Finally, until 1995, ***heroin*** use had not risen among 12th graders even though availability had increased substantially.

- What did change dramatically were young peoples' beliefs about the dangers of using ***marijuana, cocaine, crack,*** and ***MDMA (ecstasy, and later Molly)***. We believe that increases in perceived risk led to a decrease in use directly through their impact on young people's demand for these drugs and indirectly through their impact on personal disapproval and, subsequently, peer norms. Because the perceived risk of ***amphetamine*** use was changing little when amphetamine use was declining substantially (1981–1986), other factors must have helped to account for the decline in demand for that class of drugs—quite conceivably some displacement by cocaine. Because three classes of drugs (marijuana, cocaine, and amphetamines) have shown *different* patterns of change, it is highly unlikely that a general factor (e.g., a broad shift in attitudes about drug use in general) can explain their various trends.

- The increase in ***marijuana*** use in the 1990s among 12th graders added more compelling evidence to this interpretation. It was *both* preceded and accompanied by a decrease in perceived risk. (Between 1991 and 1997, the perceived risk of regular marijuana use declined 21 percentage points.) Perceived peer disapproval dropped sharply from 1993 through 1997, *after* perceived risk began to change, consistent with our interpretation that perceived risk can be an important determinant of disapproval as well as of use. Perceived availability remained fairly constant from 1991 to 1993 and then increased seven percentage points through 1998.[11]

- We do think that the expansion in the world supply of ***heroin***, particularly in the 1990s, had the effect of dramatically raising the purity of heroin available on the streets, thus allowing for new means of ingestion, such as snorting and smoking. The advent of new forms of heroin, rather than any change in respondents' beliefs about the dangers associated with injecting heroin, very likely contributed to the fairly sharp increase in heroin use in the 1990s. Evidence from this study, showing that a significant portion of the self reported heroin users are now using by means other than injection, lends credibility to this interpretation. The dramatic decline in ***LSD*** use in the early to mid 2000s is also not explainable by means of concurrent changes in perceived risk or disapproval; but availability did decline sharply during this period and very likely played a key role in reducing the use of that drug.

We should also note that other factors, such as price, could play an important role for some drugs. Analyses of MTF data have shown, for example, that price probably played an important role in

[11] In the last decade declines in perceived risk have not predicted future increases in marijuana use as expected. This disconnect results in large part from the substantial decline in adolescent cigarette smoking during the past ten years. Cigarette smoking is a strong, independent predictor of marijuana use, and the decline in cigarette prevalence has offset the expected increase in marijuana use. If cigarette smoking had not declined, we project current levels of marijuana use would be at or near record levels. For details see: Miech, R. A., Johnston, L. D., & O'Malley P. M. (2017). Prevalence and attitudes regarding marijuana use among adolescents over the past decade. *Pediatrics, 140*(6).

the decline of marijuana use in the 1980s, and in changes in cigarette use in the 1990s.[12,13] However, price does not appear to have the same influence in all periods for all drugs, as the dramatic reduction in cocaine prevalence during the late 1980s took place at the same time that the price of cocaine *decreased*,[14] contrary to the supply/demand model.

[12] Pacula, R. L., Grossman, M., Chaloupka, F. J., O'Malley, P. M., Johnston, L. D., & Farrelly, M. C. (2001). Marijuana and youth. In J. Gruber (Ed.), *Risky behavior among youths: An economic analysis* (pp. 271–326). Chicago: The University of Chicago Press. Also appears as Working Paper No. 7703, National Bureau of Economic Research, Inc. (2000).

[13] Tauras, J. A., O'Malley, P. M., & Johnston, L. D. (2001). *Effects of price and access laws on teenage smoking initiation: A national longitudinal analysis.* (ImpacTeen/Youth, Education, and Society Research Paper No. 1.) Chicago, IL: University of Illinois at Chicago and Ann Arbor, MI: The University of Michigan, Institute for Social Research.

[14] Office of National Drug Control Policy. (2001). *The Price of Illicit Drugs: 1981 through the Second Quarter of 2000*.

TABLE 9-1
Trends in Parents Disapproving of Drug Use for 8th Graders

How do you think your parents feel about you doing each of the following things?	Percentage saying parents disapprove [a]									2022–2023 change
	1975-2016	2017	2018	2019p[b]	2019e[b]	2020	2021	2022	2023	
Trying marijuana once or twice	—	90.2	90.1	*87.5*	*78.5*	§	80.4*	80.8	81.4	+0.6
Using marijuana occasionally	—	92.2	92.6	*89.5*	*81.2*	§	84.1*	84.5	84.2	-0.3
Using marijuana regularly	—	92.7	93.4	*91.6*	*82.1*	§	86.4*	85.9	85.8	-0.1
Having five or more drinks once or twice each weekend	—	92.1	93.1	*92.1*	*82.8*	§	85.9*	85.4	85.1	-0.4
Smoking one or more packs of cigarettes per day	—	93.4	93.7	*93.0*	*84.3*	§	87.8*	86.5	86.6	+0.1
Vaping nicotine occasionally	—	—	—	—	—	—	85.6	84.9	85.3	+0.3
Vaping nicotine regularly	—	—	—	—	—	—	87.0	85.9	86.0	+0.1
Vaping marijuana occasionally	—	—	—	—	—	—	85.5	84.9	85.2	+0.3
Vaping marijuana regularly	—	—	—	—	—	—	87.2	86.1	86.2	+0.2
Approximate weighted N =	—	*4,300*	*3,600*	*1,700*	*1,700*	§	*3,100*	*2,600*	*1,600*	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

See text in Chapter 9 for important details on parental disapproval survey question over the course of the survey.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

[b]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

TABLE 9-2
Trends in Parents Disapproving of Drug Use for 10th Graders

How do you think your parents feel about you doing each of the following things?	Percentage saying parents disapprove [a]									2022–2023 change
	1975-2016	2017	2018	2019p[b]	2019e[b]	2020	2021	2022	2023	
Trying marijuana once or twice	—	85.0	86.4	*83.6*	*74.4*	§	81.8*	77.2	81.5	+4.3 s
Using marijuana occasionally	—	88.6	89.7	*88.4*	*79.6*	§	85.8*	82.0	85.1	+3.2 s
Using marijuana regularly	—	91.1	92.2	*91.4*	*84.0*	§	88.2*	85.5	88.0	+2.5
Having five or more drinks once or twice each weekend	—	90.5	92.0	*92.7*	*85.1*	§	87.8*	86.3	88.2	+1.9
Smoking one or more packs of cigarettes per day	—	93.5	93.9	*95.6*	*88.0*	§	91.2*	88.7	90.5	+1.9
Vaping nicotine occasionally	—	—	—	—	—	—	88.7	85.1	89.1	+4.0 ss
Vaping nicotine regularly	—	—	—	—	—	—	90.6	87.5	90.1	+2.6 s
Vaping marijuana occasionally	—	—	—	—	—	—	88.0	84.4	87.0	+2.7 s
Vaping marijuana regularly	—	—	—	—	—	—	89.1	86.0	88.8	+2.8 s
Approximate weighted N =	—	*4,200*	*4,000*	*2,000*	*2,000*	§	*3,300*	*3,100*	*2,300*	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

See text in Chapter 9 for important details on parental disapproval survey question over the course of the survey.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

[b]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

TABLE 9-3
Trends in Parents Disapproving of Drug Use for 12th Graders

How do you think your parents feel about you doing each of the following things?	Percentage saying parents disapprove [a,b]														2022–2023 change
	1975	1976	1977	1978	1979	1980-2016	2017	2018	2019p[c]	2019e[c]	2020	2021	2022	2023	
Trying marijuana once or twice	90.8	87.4	85.8	83.2	84.9	—	77.6	78.9	*75.4*	*68.5*	§	70.3*	68.2	69.7	+1.5
Using marijuana occasionally	95.6	93.0	92.5	90.8	93.2	—	83.0	84.5	*83.5*	*74.9*	§	75.5*	75.4	75.4	0.0
Using marijuana regularly	98.1	96.3	96.5	95.6	97.2	—	87.3	88.2	*87.9*	*80.6*	§	85.3*	84.0	86.4	+2.4
Having five or more drinks once or twice each weekend	85.3	85.9	86.5	82.6	84.5	—	86.2	88.1	*86.8*	*80.0*	§	83.9*	83.9	85.9	+2.1
Smoking one or more packs of cigarettes per day	88.5	87.6	89.2	88.7	91.3	—	91.7	93.0	*93.1*	*88.8*	§	91.8*	91.1	93.4	+2.2
Vaping nicotine occasionally	—	—	—	—	—	—	—	—	—	—	—	86.4*	85.5	86.7	+1.1
Vaping nicotine regularly	—	—	—	—	—	—	—	—	*86.6*	*81.8*	§	89.6*	88.2	90.6	+2.4
Vaping marijuana occasionally	—	—	—	—	—	—	—	—	—	—	—	83.1*	81.7	80.9	-0.8
Vaping marijuana regularly	—	—	—	—	—	—	—	—	—	—	—	87.8*	87.1	86.7	-0.4
Approximate weighted N =	*2,546*	*2,807*	*3,014*	*3,054*	*2,748*	—	*1,829*	*1,833*	*897*	*908*	§	*1,304*	*1,282*	*1,019*	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

See text in Chapter 9 for important details on parental disapproval survey question over the course of the survey.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

[b]Questions on parental disapproval were not included in the surveys from 1980-2016. See here for levels of parental disapproval from 1975-1979 for trying LSD once or twice, trying an amphetamine once or twice, taking one or two drinks nearly every day, and taking four or five drinks every day.

[c]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

TABLE 9-4
Trends in Friends Disapproving of Drug Use for 12th Graders

How do you think your close friends feel (or would feel) about you . . .	Percentage saying friends disapprove [a]															
	1975[b]	1976	1977[b]	1978	1979[b]	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Trying marijuana once or twice	44.3	—	41.8	—	40.9	42.6	46.4	50.3	52.0	54.1	54.7	56.7	58.0	62.9	63.7	70.3
Using marijuana occasionally	54.8	—	49.0	—	48.2	50.6	55.9	57.4	59.9	62.9	64.2	64.4	67.0	72.1	71.1	76.4
Using marijuana regularly	75.0	—	69.1	—	70.2	72.0	75.0	74.7	77.6	79.2	81.0	82.3	82.9	85.5	84.9	86.7
Trying LSD once or twice	85.6	—	86.6	—	87.6	87.4	86.5	87.8	87.8	87.6	88.6	89.0	87.9	89.5	88.4	87.9
Trying cocaine once or twice	—	—	—	—	—	—	—	—	—	—	—	79.6	83.9	88.1	88.9	90.5
Taking cocaine occasionally	—	—	—	—	—	—	—	—	—	—	—	87.3	89.7	92.1	92.1	94.2
Trying an amphetamine once or twice [c]	78.8	—	80.3	—	81.0	78.9	74.4	75.7	76.8	77.0	77.0	79.4	80.0	82.3	84.1	84.2
Taking one or two drinks nearly every day	67.2	—	71.0	—	71.0	70.5	69.5	71.9	71.7	73.6	75.4	75.9	71.8	74.9	76.4	79.0
Taking four or five drinks nearly every day	89.2	—	88.1	—	88.5	87.9	86.4	86.6	86.0	86.1	88.2	87.4	85.6	87.1	87.2	88.2
Having five or more drinks once or twice each weekend	55.0	—	53.4	—	51.3	50.6	50.3	51.2	50.6	51.3	55.9	54.9	52.4	54.0	56.4	59.0
Smoking one or more packs of cigarettes per day	63.6	—	68.3	—	73.4	74.4	73.8	70.3	72.2	73.9	73.7	76.2	74.2	76.4	74.4	75.3
Vape nicotine occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape nicotine regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Approximate weighted N =	*2,488*	—	*2,615*	—	*2,716*	*2,766*	*3,120*	*3,024*	*2,722*	*2,721*	*2,688*	*2,639*	*2,815*	*2,778*	*2,400*	*2,184*

Table continued on next page.

TABLE 9-4 (cont.)
Trends in Friends Disapproving of Drug Use for 12th Graders

How do you think your close friends feel (or would feel) about you . . .	Percentage saying friends disapprove [a]																
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Trying marijuana once or twice	69.7	73.1	66.6	62.7	58.1	55.8	53.0	53.8	55.1	58.1	57.6	54.1	58.4	59.5	60.9	62.3	60.4
Using marijuana occasionally	75.8	79.2	73.8	69.1	65.4	63.1	59.9	60.4	61.6	63.9	64.3	60.3	64.2	65.0	67.6	68.1	65.8
Using marijuana regularly	85.9	88.0	83.5	80.6	78.9	76.1	74.1	74.7	74.5	76.1	77.8	75.3	77.0	77.3	79.5	79.8	78.3
Trying LSD once or twice	87.9	87.3	83.5	83.4	82.6	80.8	79.3	81.7	83.2	84.7	85.5	84.9	87.5	87.3	88.4	89.5	88.4
Trying cocaine once or twice	91.8	92.2	91.1	91.4	91.1	89.2	87.3	88.8	88.7	90.2	89.3	89.1	91.2	87.9	89.0	88.7	89.6
Taking cocaine occasionally	94.7	94.4	93.7	93.9	93.8	92.5	90.8	92.2	91.8	92.8	92.2	92.2	93.0	91.0	92.3	92.4	93.1
Trying an amphetamine once or twice [c]	85.3	85.7	83.2	84.5	81.9	80.6	80.4	82.6	83.0	84.1	83.8	83.3	85.9	84.7	86.1	86.7	87.3
Taking one or two drinks nearly every day	76.6	77.9	76.8	75.8	72.6	72.9	71.5	72.3	71.7	71.6	73.4	71.6	74.7	72.8	74.0	73.2	74.5
Taking four or five drinks nearly every day	86.4	87.4	87.2	85.2	84.1	82.6	82.5	82.8	82.2	82.8	84.4	80.1	83.1	82.9	82.7	83.3	84.8
Having five or more drinks once or twice each weekend	58.1	60.8	58.5	59.1	58.0	57.8	56.4	55.5	57.6	57.7	57.8	55.6	60.3	59.4	59.9	60.6	60.0
Smoking one or more packs of cigarettes per day	74.0	76.2	71.8	72.4	69.2	69.3	68.5	69.0	71.2	72.6	74.5	75.7	79.2	78.6	81.1	81.2	81.4
Vape nicotine occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vape nicotine regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Approximate weighted N =	*2,160*	*2,229*	*2,220*	*2,149*	*2,177*	*2,030*	*2,095*	*2,037*	*1,945*	*1,775*	*1,862*	*1,820*	*2,133*	*2,208*	*2,183*	*2,188*	*2,161*

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TABLE 9-4 (cont.)
Trends in Friends Disapproving of Drug Use for 12th Graders

How do you think your close friends feel (or would feel) about you . . .	Percentage saying friends disapprove [a]																	
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[d]	2019e[d]	2020	2021 [e]	2022	2023	2022–2023 change
Trying marijuana once or twice	60.8	61.4	54.9	53.0	52.9	51.2	50.4	51.0	48.6	44.3	45.8	40.9	44.7	§	44.5*	41.5	46.5	+5.0
Using marijuana occasionally	66.3	68.5	61.8	59.4	59.5	57.6	56.2	58.1	54.9	51.4	53.2	49.0	53.7	§	47.6*	49.0	51.6	+2.6
Using marijuana regularly	78.0	79.1	73.8	73.3	72.7	71.2	70.1	70.9	68.4	65.2	67.9	62.7	68.2	§	62.2*	62.7	67.9	+5.2
Trying LSD once or twice	86.3	87.2	84.5	85.6	85.0	84.9	84.6	81.9	83.3	81.3	82.7	81.3	81.3	§	76.1*	74.5	80.8	+6.3 s
Trying cocaine once or twice	88.7	90.2	89.7	89.7	89.2	89.2	88.6	87.0	89.1	88.5	88.7	89.3	87.3	§	87.2*	85.9	89.7	+3.8 s
Taking cocaine occasionally	92.0	92.7	91.8	92.9	92.8	92.5	91.4	90.6	91.5	91.7	93.1	91.6	91.5	§	89.2*	90.6	93.7	+3.1 s
Trying an amphetamine once or twice [c]	87.1	87.0	85.8	84.6	83.7	83.5	83.2	83.2	83.2	83.7	84.5	85.1	83.3	§	83.2*	82.1	84.2	+2.1
Taking one or two drinks nearly every day	75.2	75.5	75.0	74.9	74.0	75.4	74.0	76.3	76.3	77.3	77.8	76.4	76.5	§	74.8*	76.9	78.2	+1.2
Taking four or five drinks nearly every day	84.7	84.6	83.4	85.8	84.1	85.8	83.8	85.3	85.6	87.3	86.5	85.9	85.1	§	84.9*	87.5	88.7	+1.2
Having five or more drinks once or twice each weekend	62.1	63.5	62.0	62.2	62.3	65.2	65.6	68.5	70.7	69.0	72.1	70.7	72.1	§	62.5*	70.7	69.1	-1.6
Smoking one or more packs of cigarettes per day	82.5	81.6	81.4	81.6	83.2	84.4	84.0	85.1	87.1	85.3	87.0	88.8	86.8	§	84.2*	86.1	88.7	+2.7
Vape nicotine occasionally	—	—	—	—	—	—	—	—	—	—	—	—	—	—	62.8*	61.9	66.7	+4.7
Vape nicotine regularly	—	—	—	—	—	—	—	—	—	—	—	—	—	—	72.1*	71.4	75.3	+3.9
Approximate weighted N =	*2,090*	*2,033*	*2,101*	*2,132*	*2,126*	*1,916*	*1,863*	*1,992*	*1,759*	*1,893*	*1,972*	*952*	*980*	§	*1,224*	*1,434*	*1,071*	

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Don't disapprove, (2) Disapprove, and (3) Strongly disapprove. Percentages are shown for categories (2) and (3) combined.

[b]These numbers have been adjusted to correct for a lack of comparability of question context among administrations. (See text for discussion.)

[c]In 2011 pep pills and bennies were replaced in the list of examples by Adderall and Ritalin.

[d]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[e]Sample is decreased by approximately 50% for the following drugs due to survey question experiments: cocaine and alcohol.

TABLE 9-5
Trends in 12th Graders' Exposure to Drug Use

(Entries are percentages.)

During the LAST 12 MONTHS, how often have you been around people who were taking each of the following to get high?	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Any illicit drug [a]																
% saying not at all	—	17.4	16.5	15.1	15.0	15.7	17.3	18.6	20.6	22.1	22.3	24.5	26.1	28.7	31.4	32.4
% saying often	—	34.8	39.0	40.7	40.4	36.3	36.1	31.4	29.8	28.3	27.2	26.3	23.3	20.8	22.0	20.7
Any illicit drug other than marijuana [a]																
% saying not at all	—	44.9	44.2	44.7	41.7	41.5	37.4	37.5	40.6	40.2	40.7	44.7	48.3	52.2	52.9	54.6
% saying often	—	11.8	13.5	12.1	13.7	14.1	17.1	16.6	14.2	14.6	12.9	12.1	10.2	9.6	10.7	9.2
Marijuana																
% saying not at all	—	20.5	19.0	17.3	17.0	18.0	19.8	22.1	23.8	25.6	26.5	28.0	29.6	33.0	35.2	36.6
% saying often	—	32.5	37.0	39.0	38.9	33.8	33.1	28.0	26.1	24.8	24.2	24.0	20.6	17.9	19.5	17.8
LSD																
% saying not at all	—	78.8	80.0	81.9	81.9	82.8	82.6	83.9	86.2	87.5	86.8	86.9	87.1	86.6	85.0	85.1
% saying often	—	2.2	2.0	1.8	2.0	1.4	2.0	1.9	1.4	1.5	1.3	1.6	1.8	1.6	2.2	2.6
Other hallucinogens [b]																
% saying not at all	—	76.5	76.7	76.7	77.6	79.6	82.4	83.2	86.9	87.3	87.5	88.2	90.0	91.0	91.2	90.6
% saying often	—	3.1	3.2	2.9	2.2	2.2	2.0	2.6	1.1	1.7	1.4	1.5	1.2	1.1	1.3	1.2
Cocaine																
% saying not at all	—	77.0	73.4	69.8	64.0	62.3	63.7	65.1	66.7	64.4	61.7	62.6	65.1	69.8	69.8	72.3
% saying often	—	3.0	3.7	4.6	6.8	5.9	6.6	6.6	5.2	6.7	7.1	7.8	5.9	5.1	5.4	4.7
Heroin																
% saying not at all	—	91.4	90.3	91.8	92.4	92.6	93.4	92.9	94.9	94.0	94.5	94.0	94.2	94.3	93.5	94.6
% saying often	—	0.8	1.1	0.9	0.7	0.4	0.6	1.0	0.7	1.1	0.5	1.0	0.9	0.8	1.0	0.5
Narcotics other than heroin [c]																
% saying not at all	—	81.9	81.3	81.8	82.0	80.4	82.5	81.5	82.7	82.0	81.6	84.4	85.6	85.2	86.2	85.8
% saying often	—	1.8	2.4	2.0	1.7	1.7	1.7	2.4	2.2	2.0	1.8	2.1	1.7	1.7	1.7	1.6
Amphetamines [d]																
% saying not at all	—	59.6	60.3	60.9	58.1	59.2	50.5	49.8	53.9	55.0	59.0	63.5	68.3	72.1	72.6	71.7
% saying often	—	6.8	7.9	6.7	7.4	8.3	12.1	12.3	10.1	9.0	6.5	5.8	4.5	4.1	4.7	4.1
Sedatives (barbiturates) [e]																
% saying not at all	—	69.0	70.0	73.5	73.6	74.8	74.1	74.3	77.5	78.8	81.1	84.2	86.9	87.6	88.2	86.7
% saying often	—	4.5	5.0	3.4	3.3	3.4	4.0	4.3	3.0	2.7	1.7	2.1	1.5	1.4	1.7	1.7
Tranquilizers [f]																
% saying not at all	—	67.7	66.0	67.5	67.5	70.9	71.0	73.4	76.5	76.9	76.6	80.4	81.6	81.8	84.9	83.7
% saying often	—	5.5	6.3	4.9	4.3	3.2	4.2	3.5	2.9	2.9	2.2	2.5	2.6	2.2	2.1	1.9
Alcohol																
% saying not at all	—	6.0	5.6	5.5	5.2	5.3	6.0	6.0	6.0	6.0	6.0	5.9	6.1	6.9	7.7	6.4
% saying often	—	57.1	60.8	60.8	61.2	60.2	61.0	59.3	60.2	58.7	59.5	58.0	58.7	56.4	55.5	56.1
Approximate weighted N =	—	*2,950*	*3,075*	*3,682*	*3,253*	*3,259*	*3,608*	*3,645*	*3,334*	*3,238*	*3,252*	*3,078*	*3,296*	*3,300*	2,795	*2,556*

Table continued on next page.

TABLE 9-5 (cont.)
Trends in 12th Graders' Exposure to Drug Use

(Entries are percentages.)

During the LAST 12 MONTHS, how often have you been around people who were taking each of the following to get high?	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Any illicit drug [a]																	
% saying not at all	35.8	38.7	33.9	29.2	24.7	22.0	21.2	22.8	22.1	24.0	23.5	23.5	26.4	25.7	27.0	26.3	29.2
% saying often	18.2	18.0	24.0	29.3	32.3	33.8	34.7	33.2	35.6	32.6	33.6	32.6	31.8	30.3	29.9	29.7	27.8
Any illicit drug other than marijuana [a]																	
% saying not at all	60.0	58.4	57.4	54.7	52.8	50.3	52.1	52.7	53.5	52.8	50.1	50.7	53.7	51.7	54.1	54.7	54.6
% saying often	7.9	7.5	9.6	9.4	11.1	12.1	11.7	9.9	11.7	10.5	11.9	12.6	10.8	11.4	10.6	11.4	10.8
Marijuana																	
% saying not at all	40.4	43.2	39.0	32.8	27.3	24.4	23.2	24.5	24.2	26.2	25.1	25.8	28.6	27.8	29.2	28.6	31.6
% saying often	16.0	15.6	20.9	27.6	30.7	31.8	32.9	31.4	34.4	30.3	30.8	30.7	30.4	28.0	27.0	27.8	25.1
LSD																	
% saying not at all	84.3	82.2	79.0	75.8	73.9	72.4	74.1	76.9	76.4	78.0	78.4	82.8	85.8	87.6	89.2	88.4	87.6
% saying often	2.9	3.0	3.9	4.2	6.1	4.7	5.1	3.2	4.1	3.3	2.8	2.6	1.8	1.6	1.5	1.9	1.7
Other hallucinogens [b]																	
% saying not at all	90.6	90.3	87.9	86.0	84.2	83.4	82.2	84.1	82.3	83.7‡	71.9	73.6	74.2	75.2	75.7	76.2	76.5
% saying often	1.3	1.1	1.9	2.3	2.5	2.7	2.8	1.7	2.7	2.1‡	3.6	4.5	3.2	3.2	2.6	4.1	3.0
Cocaine																	
% saying not at all	78.7	80.2	80.8	81.2	78.4	75.0	74.4	73.4	74.2	75.8	75.5	75.1	75.2	75.6	74.3	71.8	74.8
% saying often	3.4	2.7	2.9	2.5	3.2	4.0	4.2	3.7	4.6	4.6	4.5	5.3	5.0	4.7	4.2	5.4	4.6
Heroin																	
% saying not at all	94.9	94.6	94.3	92.7	92.1	91.4	90.9	91.3	91.9	90.9	91.3	91.7	92.7	93.4	92.7	91.1	91.4
% saying often	0.9	0.7	1.1	0.7	1.2	1.6	1.2	0.9	1.3	1.5	0.7	1.3	1.2	1.2	0.8	1.7	1.1
Narcotics other than heroin [c]																	
% saying not at all	88.7	88.9	87.6	85.1	84.5	81.5	79.6	79.3	78.1	78.9	78.4	77.5	78.2	79.7	81.0	81.1	81.1
% saying often	1.4	1.3	1.7	1.7	2.1	3.4	2.5	2.8	3.9	2.9	3.0	3.8	3.0	3.3	2.6	3.4	3.4
Amphetamines [d]																	
% saying not at all	76.4	75.5	75.3	71.8	71.9	68.5	69.0	70.1	69.9	70.5	68.5	69.4	72.6	72.8	73.6	73.4	76.2
% saying often	3.1	3.0	3.9	4.1	4.5	5.6	5.2	4.7	6.3	4.4	6.0	6.4	4.9	5.3	4.1	5.6	4.3
Sedatives (barbiturates) [e]																	
% saying not at all	90.0	89.8	88.1	87.0	85.5	84.5	83.9	83.9	82.9	83.7	82.9	82.3	85.2‡	78.5	79.6	78.7	81.2
% saying often	1.2	1.1	1.6	1.7	2.0	2.9	2.5	2.7	3.8	2.7	2.7	4.6	2.8‡	4.1	3.7	3.9	3.9
Tranquilizers [f]																	
% saying not at all	85.8	87.3	86.2	83.5	84.3	82.1	81.1	82.7	81.8	82.3‡	76.2	77.3	79.0	77.9	79.1	78.2	80.7
% saying often	1.4	1.9	1.7	1.8	2.3	3.5	3.2	2.8	3.7	3.5‡	4.9	5.8	4.2	4.1	4.5	5.4	4.9
Alcohol																	
% saying not at all	8.3	9.4	8.2	10.0	8.8	8.5	8.6	7.8	8.2	9.3	9.2	10.5	11.7	12.4	12.6	12.4	13.5
% saying often	54.5	53.1	51.9	54.0	54.0	54.5	53.9	54.5	53.5	50.2	52.7	50.8	49.0	48.2	49.1	47.8	46.4
Approximate weighted N =	*2,525*	*2,630*	*2,730*	*2,581*	*2,608*	*2,407*	*2,595*	*2,541*	*2,312*	*2,153*	*2,147*	*2,162*	*2,454*	*2,456*	*2,469*	*2,372*	*2,448*

Table continued on next page.

TABLE 9-5 (cont.)
Trends in 12th Graders' Exposure to Drug Use

(Entries are percentages.)

During the LAST 12 MONTHS, how often have you been around people who were taking each of the following to get high?	2008	2009	2010	2011	2012	2013	2014[g]	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021	2022	2023	2022–2023 change
Any illicit drug [a]																		
% saying not at all	28.1	25.9	24.0	23.4	23.6	24.6	24.8	24.6	24.9	25.2	27.3	24.6	29.3	§	35.5*	33.4	30.8	-2.6
% saying often	28.6	31.4	33.2	34.6	34.9	32.3	31.3	32.5	33.1	32.8	30.8	*33.5*	*26.3*	§	22.3*	25.6	26.3	+0.6
Any illicit drug other than marijuana [a]																		
% saying not at all	56.2	55.7	52.8	53.4	55.0	55.8	59.0	55.7	56.2	58.3	59.9	61.9	64.5	§	74.6*	72.3	72.0	-0.3
% saying often	8.2	9.4	10.2	11.5	11.6	9.3	9.7	9.2	10.3	10.7	7.5	7.4	6.0	§	3.7*	4.7	3.1	-1.6
Marijuana																		
% saying not at all	30.2	28.2	25.8	25.4	24.9	26.3	26.6	26.8	26.9	26.5	29.9	*26.3*	*31.3*	§	36.2*	33.8	31.3	-2.5
% saying often	27.0	29.3	31.3	32.3	32.2	30.6	29.2	30.5	31.2	30.4	28.0	*32.0*	*24.6*	§	21.9*	24.1	25.2	+1.1
LSD																		
% saying not at all	87.9	88.1	85.9	86.5	87.0	86.2	87.1	84.3	84.5	82.6	84.6	84.9	85.4	§	89.0*	88.3	90.6	+2.2
% saying often	0.8	1.3	1.4	1.4	1.6	1.5	1.5	1.9	2.1	2.4	2.0	1.9	2.0	§	1.4*	1.1	0.6	-0.6
Other hallucinogens [b]																		
% saying not at all	76.4	78.0	75.0	76.2	77.3	77.7	80.2	79.6	81.4	82.5	84.5	84.3	84.2	§	87.0*	83.1	83.6	+0.6
% saying often	1.9	2.7	2.2	2.5	2.7	2.4	1.9	1.9	2.4	2.5	1.8	1.6	2.6	§	1.3*	1.5	0.9	-0.6
Cocaine																		
% saying not at all	75.9	80.0	80.0	80.7	82.6	83.3	82.4	82.0	81.8	82.4	82.9	82.9	86.1	§	91.9*	90.2	90.6	+0.3
% saying often	3.6	2.6	2.1	2.3	2.8	2.1	2.2	2.3	3.0	3.0	1.7	2.4	1.9	§	1.2*	0.9	0.3	-0.6 s
Heroin																		
% saying not at all	93.2	92.7	91.7	93.6	94.0	93.4	94.8	94.4	94.7	93.6	94.8	95.1	96.5	§	97.3*	97.1	96.2	-0.9
% saying often	0.8	0.8	1.0	1.1	1.3	0.7	0.7	1.2	0.9	1.1	0.6	0.6	0.4	§	0.7*	0.4	0.3	-0.1
Narcotics other than heroin [c]																		
% saying not at all	83.7	83.7‡	69.7	72.5	72.9	77.1	79.1	79.0	79.0	80.1	81.9	85.6	89.5	§	93.4*	92.1	91.7	-0.5
% saying often	2.1	2.7‡	5.3	5.6	5.7	3.8	3.6	2.8	3.8	3.4	1.8	1.3	1.4	§	1.1*	0.8	1.0	+0.3
Amphetamines [d]																		
% saying not at all	76.7	76.2	76.4‡	72.0	73.8	74.6	76.3	74.3	75.7	77.6	78.1	79.0	82.1	§	88.1*	85.8	87.3	+1.5
% saying often	3.0	4.3	3.3‡	6.1	5.7	5.3	5.7	5.2	5.0	5.0	3.3	4.0	2.8	§	1.4*	2.7	1.0	-1.8 ss
Sedatives (barbiturates) [e]																		
% saying not at all	83.3	82.4	81.2	83.8	84.0	85.0	86.6	86.5	87.2	88.8	88.6	90.4	90.6	§	94.2*	94.5	94.8	+0.3
% saying often	2.1	3.4	2.5	3.1	2.9	2.5	2.3	1.8	2.5	2.3	1.9	1.5	1.6	§	1.0*	0.9	0.2	-0.7 s
Tranquilizers [f]																		
% saying not at all	80.1	80.0	81.8	83.0	82.4	83.6	84.0	80.3	77.8	77.4	79.5	80.8	83.9	§	92.4*	90.2	93.6	+3.3 s
% saying often	3.7	3.9	2.8	3.4	3.3	3.4	3.4	2.6	4.6	4.7	3.1	1.9	2.3	§	1.4*	1.3	1.0	-0.3
Alcohol																		
% saying not at all	14.3	13.5	14.8	15.0	14.7	15.2	17.9	19.5	19.6	21.1	21.7	21.6	25.6	§	27.2*	27.3	24.3	-3.0
% saying often	45.4	46.3	45.8	40.7	43.0	41.7	40.3	38.0	37.4	35.4	33.6	35.1	27.4	§	26.6*	28.3	24.2	-4.2
Approximate weighted N =	*2,332*	*2,274*	*2,434*	*2,372*	*2,299*	*2,150*	*2,075*	*2,177*	*1,999*	*2,121*	*2,200*	*1,039*	*1,115*	*§*	*1,405*	*1,520*	*1,194*	

Table continued on next page.

(Table continued on next page.)

TABLE 9-5 (cont.)
Trends in 12th Graders' Exposure to Drug Use

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. ' ‡ ' indicates that the question changed the following year. See relevant footnote. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]The data presented here were derived from responses to questions on the drugs included in this table. Any illicit drug includes exposure to any of the drugs presented in this table with the exception of alcohol.

[b]In 2001 the question text was changed from other psychedelics to other hallucinogens and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

[c]In 2010 the list of examples for narcotics other than heroin was changed from methadone and opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

[d]In 2011 pep pills and bennies were replaced in the list of examples by Adderall and Ritalin. This change likely explains the discontinuity in the 2011 results.

[e]In 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

[f]In 2001 for tranquilizers, Xanax was added to the list of examples. This change likely explains the discontinuity in the 2001 results.

[g]In 2014 the phrase 'or for "kicks"' was dropped from the question.

[h]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

TABLE 9-6
Trends in Friends' Use of Drugs as Estimated by 8th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Use marijuana																	
% saying any	21.9	25.1	30.8	41.1	46.1	50.8	50.8	46.7	44.4	42.6	46.1	42.3	40.9	38.3	38.7	38.1	35.6
% saying most or all	3.3	4.1	6.0	10.5	12.7	15.2	13.8	12.6	12.1	10.4	11.4	10.0	9.4	7.8	9.1	8.9	7.7
Use inhalants																	
% saying any	20.5	23.1	26.3	29.2	32.1	32.3	32.9	31.9	31.0	29.0	29.3	25.7	27.8	27.4	28.1	28.8	25.8
% saying most or all	2.4	2.9	3.7	4.2	5.0	5.2	4.8	4.5	4.7	4.0	3.9	3.4	4.0	4.0	4.2	4.5	3.6
Take crack																	
% saying any	8.6	10.9	12.5	15.2	17.7	18.5	19.3	19.2	18.5	18.1	18.9	17.4	17.2	15.8	16.7	17.0	15.2
% saying most or all	0.9	1.0	1.3	1.6	1.6	2.0	1.8	1.9	1.9	1.6	2.0	1.6	1.7	1.7	1.7	1.8	1.6
Take cocaine powder																	
% saying any	8.4	10.7	12.1	14.3	16.2	17.4	17.6	17.1	16.7	16.1	16.3	14.8	14.9	13.8	15.0	15.6	13.4
% saying most or all	0.9	1.1	1.3	1.7	1.6	1.7	1.6	2.0	1.8	1.6	1.8	1.7	1.6	1.6	1.5	1.8	1.5
Take heroin																	
% saying any	6.1	7.3	8.9	10.3	11.6	12.0	12.2	11.8	11.4	10.9	11.2	10.5	10.2	9.4	9.8	10.3	8.9
% saying most or all	0.7	0.9	0.9	1.3	1.3	1.4	1.2	1.3	1.3	1.1	1.4	1.3	1.0	1.2	1.1	1.1	1.1
Drink alcoholic beverages																	
% saying any	72.1	76.4	75.7	77.0	75.9	77.1	75.8	74.6	73.4	72.7	72.3	68.1	65.4	65.9	63.9	64.7	63.7
% saying most or all	21.0	23.7	25.5	27.4	27.5	28.8	25.9	25.0	24.9	23.6	22.7	20.1	19.6	19.3	17.6	19.1	17.6
Get drunk at least once a week																	
% saying any	42.8	48.0	48.0	50.3	48.7	51.2	48.3	47.6	48.7	46.6	45.5	42.3	40.6	39.8	38.4	40.5	39.5
% saying most or all	7.2	8.4	9.0	10.6	9.9	10.9	9.3	8.8	9.6	9.1	8.6	7.4	7.7	7.1	6.6	6.6	6.6
Smoke cigarettes																	
% saying any	67.7	72.4	73.8	76.1	76.1	78.1	76.9	75.2	70.9	67.9	64.2	58.6	56.0	54.0	52.2	51.7	49.7
% saying most or all	11.8	14.4	16.7	19.0	20.5	22.5	19.7	19.4	16.4	13.0	10.6	9.0	8.9	8.1	7.5	7.5	6.1
Vape an e-liquid with nicotine [c]																	
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco																	
% saying any	36.5	37.5	37.3	38.6	37.8	37.9	34.5	32.7	30.0	28.0	27.3	24.5	25.1	24.9	23.3	25.5	24.6
% saying most or all	3.8	4.2	3.8	4.8	4.7	5.1	3.5	3.5	3.5	2.6	2.9	2.5	2.9	3.0	2.5	2.7	2.6
Approximate weighted N =	*16,000*	*16,600*	*16,500*	*15,800*	*15,300*	*16,100*	*16,100*	*16,000*	*10,100*	*10,000*	*9,700*	*9,200*	*10,400*	*10,500*	*10,400*	*10,200*	*9,900*

Table continued on next page.

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 8th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[b]	2019e[b]	2020	2021	2022	2023	2022-2023 change
Use marijuana																		
% saying any	37.5	39.3	43.8	41.9	41.0	42.4	40.3	40.5	35.6	37.0	36.1	38.4	34.4	§	24.2*	25.0	25.3	+0.3
% saying most or all	8.0	9.1	12.1	10.7	11.0	12.0	10.1	9.5	8.0	7.8	8.4	8.5	7.7	§	4.3*	5.7	4.7	-0.9
Use inhalants																		
% saying any	27.1	27.5	27.5	25.7	22.9	19.9	18.0	17.0	15.2	15.0	16.2	15.6	14.9	§	12.0*	11.7	12.0	+0.3
% saying most or all	3.6	4.6	4.0	3.4	3.2	2.6	2.5	2.4	1.7	1.9	2.1	2.0	2.3	§	1.7*	1.5	1.8	+0.3
Take crack																		
% saying any	16.1	15.8	16.6	15.1	14.3	12.8	11.0	10.3	8.1	8.0	7.6	8.8	8.1	§	5.9*	5.9	7.7	+1.8
% saying most or all	1.4	1.7	1.8	1.5	1.4	1.4	1.2	1.0	0.9	0.8	0.7	1.0	1.1	§	0.8*	0.6	1.2	+0.6
Take cocaine powder																		
% saying any	14.6	13.2	14.4	12.8	12.5	11.3	10.0	9.8	7.7	8.0	7.4	*8.4*	*6.2*	§	4.8*	4.5	5.5	+1.0
% saying most or all	1.4	1.6	1.5	1.4	1.2	1.1	1.2	1.0	0.8	0.8	0.7	0.8	0.7	§	0.6*	0.5	0.6	0.0
Take heroin																		
% saying any	9.3	9.5	10.1	9.2	8.1	7.9	7.1	6.5	5.6	5.5	4.9	6.1	5.5	§	3.5*	3.4	4.2	+0.9
% saying most or all	1.1	1.2	1.1	1.2	0.9	0.9	1.0	0.7	0.8	0.6	0.6	0.8	0.8	§	0.6*	0.5	0.7	+0.2
Drink alcoholic beverages																		
% saying any	64.1	62.8	63.7	59.8	57.2	54.7	51.7	51.5	47.9	48.9	48.6	*51.1*	*43.9*	§	37.0*	35.8	36.9	+1.1
% saying most or all	17.9	17.8	18.0	15.3	13.9	11.8	9.4	9.5	8.3	7.7	8.0	7.9	7.3	§	5.9*	4.3	6.0	+1.8 s
Get drunk at least once a week																		
% saying any	39.3	38.3	39.9	34.8	33.2	30.8	26.9	27.5	24.5	24.4	25.0	27.3	24.9	§	19.5*	18.3	19.4	+1.1
% saying most or all	6.2	6.9	6.9	5.6	5.1	4.4	3.7	3.9	3.3	2.7	2.8	3.1	3.6	§	2.2*	1.7	2.0	+0.3
Smoke cigarettes																		
% saying any	49.6	49.5	51.6	47.3	43.9	41.8	38.3	36.9	31.1	30.4	28.4	28.6	25.3	§	18.6*	18.1	19.3	+1.3
% saying most or all	5.7	5.7	6.3	5.1	4.5	3.9	3.0	2.8	2.2	1.5	1.5	1.8	2.1	§	1.3*	1.1	1.8	+0.7
Vape an e-liquid with nicotine[c]																		
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	39.7*	39.6	41.4	+1.8
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.9*	9.69	8.9	-0.8
Use smokeless tobacco																		
% saying any	25.1	26.7	27.4	26.7	23.9	23.1	23.7	23.7	20.5	18.8	17.5	18.6	17.1	§	11.2*	11.2	13.0	+1.8
% saying most or all	2.7	3.4	3.3	3.2	2.4	2.5	2.3	2.4	2.1	1.3	1.5	1.6	2.2	§	1.2*	0.9	1.2	+0.3
Approximate weighted N =	*9,600*	*9,200*	*9,600*	*10,200*	*9,400*	*9,000*	*8,700*	*8,900*	*10,400*	*9,300*	*9,200*	*4,200*	*4,200*	§	*5,400*	*5,800*	*3,400*	

Table continued on next page.

TABLE 9-6 (cont.)
Trends in Friends' Use of Drugs as Estimated by 8th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. In 2000, this set of questions was removed from one of the four forms in which it appeared, which resulted in a slight adjustment in the average change score that year. To correct for this, although this set of questions was asked in all four forms in 1999, the data presented here for 1999 are from only the three forms in which the questions are still asked. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Data based on two of four forms; *N* is one half of *N* indicated.

[b]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[c]Data based on two-thirds of *N* indicated.

TABLE 9-7
Trends in Friends' Use of Drugs as Estimated by 10th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Use marijuana																	
% saying any	48.3	45.9	52.7	63.4	68.5	73.5	73.4	70.4	70.5	70.6	72.8	69.6	68.0	66.2	66.2	66.3	66.4
% saying most or all	7.9	8.0	11.2	18.0	21.3	26.4	25.0	23.5	23.3	22.4	23.8	23.3	21.8	19.2	19.5	18.5	17.8
Use inhalants																	
% saying any	17.3	17.8	21.1	23.6	25.3	25.7	23.7	22.8	21.4	20.6	21.4	19.3	18.8	18.4	18.7	20.6	21.2
% saying most or all	1.4	1.5	1.8	2.0	2.1	2.2	2.2	2.5	2.1	2.2	1.8	2.1	1.9	1.7	2.0	2.2	2.1
Take crack																	
% saying any	13.2	13.2	15.1	17.3	19.8	21.4	22.0	22.2	21.2	21.1	21.4	21.0	19.3	18.7	19.6	20.5	20.1
% saying most or all	0.8	0.7	0.9	1.0	1.2	1.2	1.5	1.7	1.6	1.5	1.5	1.8	1.5	1.4	1.5	1.3	1.5
Take cocaine powder																	
% saying any	14.7	14.1	15.4	17.3	19.7	21.7	22.5	23.0	21.0	21.2	20.9	20.5	18.5	19.0	19.8	20.9	21.2
% saying most or all	0.8	0.8	0.8	1.1	1.3	1.4	1.7	2.0	1.9	1.7	1.5	2.0	1.5	1.4	1.5	1.6	1.5
Take heroin																	
% saying any	7.8	8.1	9.3	10.5	11.1	11.7	11.8	11.5	10.7	10.1	11.4	10.3	9.9	9.0	9.8	10.1	9.9
% saying most or all	0.6	0.6	0.7	0.6	0.8	0.7	0.9	1.0	1.0	0.8	0.9	1.2	1.0	0.8	1.0	0.9	0.9
Drink alcoholic beverages																	
% saying any	92.9	91.3	91.8	92.8	92.2	92.4	92.2	91.4	91.4	92.0	91.3	89.4	87.5	87.7	88.0	88.1	88.2
% saying most or all	49.6	48.2	49.9	50.3	50.7	53.4	50.7	50.1	50.3	52.0	50.2	45.7	44.9	44.5	43.9	46.2	44.7
Get drunk at least once a week																	
% saying any	75.1	72.6	74.5	76.9	75.3	76.7	76.2	74.9	75.9	77.3	76.4	73.1	72.1	71.1	71.1	72.8	73.5
% saying most or all	19.3	18.6	20.2	20.3	20.6	23.1	21.8	21.2	22.8	23.5	22.4	19.9	20.9	19.0	18.3	20.5	19.7
Smoke cigarettes																	
% saying any	81.2	82.0	85.4	86.3	88.0	89.3	88.1	87.1	85.4	84.6	82.7	77.2	75.1	73.9	73.6	72.5	72.1
% saying most or all	18.2	18.7	22.8	24.7	27.8	32.8	29.3	27.8	25.9	21.2	19.3	15.8	14.2	13.4	12.6	13.0	11.8
Vape an e-liquid with nicotine [c]																	
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Use smokeless tobacco																	
% saying any	53.1	53.1	57.5	58.4	57.9	55.0	52.0	47.5	44.8	42.3	45.5	41.8	38.6	37.6	41.5	45.3	44.5
% saying most or all	7.5	7.3	7.7	7.6	7.3	6.0	6.4	5.8	4.7	4.6	5.2	5.2	4.4	4.5	5.6	5.8	5.1
Approximate weighted N =	*14,300*	*14,000*	*14,600*	*15,000*	*16,100*	*14,800*	*14,700*	*14,400*	*8,700*	*9,100*	*9,000*	*9,100*	*10,100*	*10,500*	*10,400*	*10,500*	*10,300*

Table continued on next page.

TABLE 9-7 (cont.)
Trends in Friends' Use of Drugs as Estimated by 10th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[b]	2019e[b]	2020	2021	2022	2023	2022-2023 change
Use marijuana																		
% saying any	64.6	67.6	70.9	70.9	70.7	71.9	69.4	66.7	65.6	66.0	66.6	66.7	62.8	§	45.3*	48.3	47.2	-1.2
% saying most or all	18.9	22.0	23.9	25.6	26.2	27.8	25.1	21.4	21.2	22.7	23.6	25.1	22.7	§	12.8*	12.5	10.5	-2.0 s
Use inhalants																		
% saying any	21.1	19.7	20.2	18.1	15.3	14.9	12.6	11.1	10.2	10.4	10.3	9.9	10.0	§	8.6*	9.0	9.3	+0.3
% saying most or all	2.2	2.0	2.1	1.7	1.5	1.6	1.4	1.2	1.2	1.2	1.1	1.3	0.9	§	0.9*	0.8	0.9	+0.1
Take crack																		
% saying any	19.4	18.4	19.1	17.0	15.4	14.4	12.4	11.7	11.0	10.6	10.2	9.4	10.9	§	6.7*	6.8	6.8	0.0
% saying most or all	1.4	1.2	1.5	1.1	1.1	1.2	1.2	1.1	1.0	0.9	0.9	1.3	1.1	§	0.6*	0.8	0.7	-0.1
Take cocaine powder																		
% saying any	20.2	18.6	18.5	16.7	15.6	14.9	12.9	12.5	11.8	11.4	11.4	11.4	9.6	§	5.8*	5.3	5.8	+0.5
% saying most or all	1.4	1.4	1.4	1.0	1.1	1.3	1.0	1.1	1.0	0.8	0.9	1.5	1.0	§	0.5*	0.4	0.5	+0.1
Take heroin																		
% saying any	10.6	10.0	10.6	9.1	8.8	7.8	7.0	6.6	6.5	6.1	4.9	5.8	5.3	§	3.0*	3.6	4.0	+0.4
% saying most or all	1.1	1.1	0.9	0.6	0.8	0.9	0.8	0.8	0.7	0.7	0.5	1.0	0.8	§	0.4*	0.4	0.4	0.0
Drink alcoholic beverages																		
% saying any	87.0	87.5	87.8	85.9	84.9	83.9	80.5	78.0	75.0	75.2	75.9	74.3	70.7	§	56.9*	59.2	60.6	+1.4
% saying most or all	41.3	42.1	42.0	38.2	39.3	36.8	31.9	29.0	24.4	25.4	26.1	23.6	23.1	§	15.0*	14.4	15.0	+0.6
Get drunk at least once a week																		
% saying any	70.1	70.4	69.7	66.4	66.3	63.4	58.0	54.1	50.2	51.2	51.8	50.2	49.9	§	38.2*	38.4	37.8	-0.6
% saying most or all	16.1	16.8	16.0	15.2	15.9	14.4	12.3	9.9	8.2	8.2	8.9	7.8	8.1	§	5.5*	5.0	5.0	0.0
Smoke cigarettes																		
% saying any	70.7	71.3	72.7	70.2	66.5	62.6	57.2	51.7	46.3	43.7	43.3	35.3	36.0	§	23.4*	24.2	24.1	-0.2
% saying most or all	10.5	11.4	11.8	10.2	8.9	7.3	5.8	5.0	3.5	3.2	3.6	3.2	2.9	§	1.6*	1.6	1.6	0.0
Vape an e-liquid with nicotine[c]																		
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	53.2*	55.87	54.4	-1.5
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16.8*	16.18	15.6	-0.6
Use smokeless tobacco																		
% saying any	41.6	45.6	48.8	47.1	44.2	45.1	42.6	39.0	32.8	32.2	33.1	26.3	30.9	§	16.6*	17.8	18.4	+0.6
% saying most or all	4.8	5.7	7.3	5.5	6.0	6.1	6.1	5.2	3.9	3.0	3.7	3.2	3.5	§	1.3*	1.4	1.3	-0.1
Approximate weighted N =	*9,700*	*10,300*	*9,900*	*9,700*	*9,700*	*8,400*	*8,400*	*10,100*	*9,300*	*8,500*	*8,500*	*4,500*	*4,500*	§	*5,800*	*6,800*	*5,100*	

Table continued on next page.

TABLE 9-7 (cont.)
Trends in Friends' Use of Drugs as Estimated by 10th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. In 2000, this set of questions was removed from one of the four forms in which it appeared, which resulted in a slight adjustment in the average change scores that year. To correct for this, although this set of questions was asked in all four forms in 1999, the data presented here for 1999 are from only the three forms in which the questions are still asked. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Data based on two of four forms; *N* is one half of *N* indicated.

[b]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant ($p<.05$) differences in 2019 between the two survey modes.

[c]Data based on two-thirds of *N* indicated.

TABLE 9-8
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Take any illicit drug [a]																
% saying any	85.8	84.6	86.9	87.5	89.0	87.5	85.4	86.3	82.6	81.0	82.4	82.2	81.7	79.1	76.9	71.0
% saying most or all	31.9	31.7	33.2	36.3	37.0	32.5	29.8	26.5	23.8	20.9	22.7	21.5	18.6	15.8	15.7	11.6
Take any illicit drug other than marijuana [a]																
% saying any	66.7	55.5	57.5	56.4	61.3	62.4	63.3	64.7	61.2	61.3	61.8	63.3	62.4	56.5	56.2	50.1
% saying most or all	10.6	8.9	7.7	8.5	10.4	11.1	11.9	10.9	11.0	10.3	10.4	10.3	9.2	6.9	7.7	5.1
Use marijuana																
% saying any	83.0	82.9	85.9	86.1	87.6	86.4	83.0	84.4	80.3	77.7	79.5	79.2	78.4	75.3	72.5	68.3
% saying most or all	30.3	30.6	32.3	35.3	35.5	31.3	27.7	23.8	21.7	18.3	19.8	18.2	15.8	13.6	13.4	10.1
Use inhalants																
% saying any	24.3	18.6	18.9	20.0	19.1	17.8	16.5	18.4	16.1	19.3	21.2	22.4	24.7	20.8	22.1	20.0
% saying most or all	1.1	1.1	1.0	1.1	1.1	1.2	0.9	1.3	1.1	1.1	1.5	2.0	1.9	1.2	1.9	1.0
Take LSD																
% saying any	36.5	30.6	31.9	29.9	28.9	28.1	28.5	27.8	24.0	23.9	24.4	24.5	25.3	24.1	25.2	25.0
% saying most or all	2.7	2.8	3.0	2.0	1.9	1.8	2.2	2.4	1.4	2.0	1.5	1.8	1.6	1.5	2.4	1.9
Take other hallucinogens [b]																
% saying any	41.2	30.3	31.4	29.2	28.2	28.2	26.3	25.6	22.1	21.3	22.0	22.3	21.7	17.8	18.1	15.9
% saying most or all	4.7	3.0	2.8	2.0	2.2	2.2	2.1	1.9	1.6	1.9	1.4	1.3	1.2	0.9	1.4	1.0
Take ecstasy (MDMA) [g]																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12.4
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.2
Take cocaine																
% saying any	33.6	28.8	30.1	33.2	38.9	41.6	40.1	40.7	37.6	38.9	43.8	45.6	43.7	37.7	37.4	31.7
% saying most or all	3.4	3.2	3.6	4.0	6.0	6.1	6.3	4.9	5.1	5.1	5.8	6.2	5.1	3.4	3.7	2.1
Take crack																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	27.4	25.4	26.1	19.2
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	2.2	1.1	2.1	0.6
Take cocaine powder																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.3	24.6
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.3	2.5
Approximate weighted N =	*2,640*	*2,697*	*2,788*	*3,247*	*2,933*	*2,987*	*3,307*	*3,303*	*3,095*	*2,945*	*2,971*	*2,798*	*2,948*	*2,961*	*2,587*	*2,361*

(Table continued on next page.)

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TABLE 9-8 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Take any illicit drug [a]																	
% saying any	69.1	67.3	71.0	78.3	78.6	80.6	83.4	84.6	82.0	82.0	82.8	81.8	80.7	81.2	79.8	78.8	77.7
% saying most or all	11.7	12.0	15.5	20.3	21.7	23.8	23.7	25.9	25.5	24.5	25.2	23.1	23.5	23.0	20.2	20.9	21.7
Take any illicit drug other than marijuana [a]																	
% saying any	46.3	47.1	48.7	53.7	53.7	54.5	55.1	55.6	51.2	52.5	55.0	54.3	50.0	51.4	51.3	51.0	50.0
% saying most or all	4.6	5.3	7.1	7.1	7.7	8.9	7.0	8.9	7.4	7.4	7.0	6.1	6.7	7.3	6.7	5.3	6.5
Use marijuana																	
% saying any	65.8	63.1	67.4	75.6	76.1	78.0	81.4	83.2	80.7	80.5	81.2	79.4	78.9	79.5	77.4	76.4	74.8
% saying most or all	10.0	10.3	13.9	18.9	20.7	22.2	22.5	23.8	24.2	23.2	24.0	21.4	21.7	21.1	17.9	19.6	19.2
Use inhalants																	
% saying any	19.2	22.2	23.7	26.5	27.5	27.2	27.4	25.9	21.6	23.5	22.2	21.0	17.5	17.9	18.1	19.0	17.9
% saying most or all	0.7	1.8	1.8	2.0	2.0	2.4	1.9	2.7	1.8	1.4	1.4	1.2	1.1	1.2	2.0	1.2	1.6
Take LSD																	
% saying any	23.4	28.1	31.3	34.1	36.9	37.9	36.5	36.8	32.2	31.9	32.2	28.6	21.9	23.5	19.5	18.7	18.3
% saying most or all	1.7	2.4	3.8	4.2	4.8	5.0	3.7	4.7	3.9	3.1	2.9	1.7	1.9	1.5	1.5	0.8	1.2
Take other hallucinogens [b]																	
% saying any	15.1	17.0	19.3	21.4	23.8	26.4	26.3	27.4	22.5	24.0‡	35.4	33.6	30.1	31.9	31.0	30.1	30.1
% saying most or all	0.8	1.0	1.7	2.2	2.2	2.3	2.6	3.1	2.4	2.4‡	2.9	2.3	2.4	2.6	2.2	1.7	1.7
Take ecstasy (MDMA) [g]																	
% saying any	11.9	10.7	12.8	15.9	20.7	24.2	27.7	24.5	26.7	37.3	41.9	38.0	34.2	28.9	23.1	23.1	23.6
% saying most or all	1.7	2.1	1.2	1.7	2.8	3.0	2.6	2.5	2.7	4.8	5.2	3.7	2.7	3.2	2.5	1.9	2.1
Take cocaine																	
% saying any	26.8	26.3	24.5	26.1	24.8	28.1	28.5	31.2	27.8	27.2	27.1	26.8	23.8	29.3	28.1	29.7	29.7
% saying most or all	1.5	1.5	2.1	1.5	2.0	2.2	2.0	3.2	2.9	2.0	1.7	1.7	2.4	2.3	2.3	1.9	2.1
Take crack																	
% saying any	17.6	17.8	17.9	20.0	19.2	21.6	22.2	24.4	19.0	21.4	23.4	21.5	18.7	22.5	22.9	22.3	21.8
% saying most or all	0.6	0.7	0.9	1.0	1.1	0.9	1.1	1.7	1.5	1.4	0.8	0.8	1.4	1.6	1.6	1.0	1.3
Take cocaine powder																	
% saying any	19.8	19.7	18.1	20.7	19.2	22.8	24.8	22.9	22.0	21.3	20.1	22.4	23.2	25.4	23.2	22.8	22.3
% saying most or all	1.8	2.0	1.6	1.9	1.7	1.9	2.0	1.9	1.9	1.8	1.5	1.9	1.9	3.3	1.7	1.7	1.8
Approximate weighted N =	*2,339*	*2,373*	*2,410*	*2,337*	*2,379*	*2,156*	*2,292*	*2,313*	*2,060*	*1,838*	*1,923*	*1,968*	*2,233*	*2,271*	*2,266*	*2,217*	*2,253*

Table continued on next page.

TABLE 9-8 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021	2022	2023	2022–2023 change
Take any illicit drug [a]																		
% saying any	80.1	79.2	80.4	81.7	78.9	80.8	80.8	78.2	79.9	79.6	78.1	77.2	73.0	§	64.5*	61.9	62.9	+1.1
% saying most or all	21.3	22.4	25.4	29.1	26.4	26.7	24.6	28.0	24.9	26.1	26.7	25.4	22.2	§	19.7*	19.7	18.6	-1.1
Take any illicit drug other than marijuana [a]																		
% saying any	49.3	49.4	53.7	49.9	48.9	45.4	43.7	41.2	44.2	40.3	41.1	38.7	41.8	§	33.8*	31.5	31.6	0.0
% saying most or all	5.3	5.6	7.1	6.5	5.5	4.3	5.1	6.0	4.6	4.6	4.8	4.3	3.7	§	0.9*	2.8	2.1	-0.6
Use marijuana																		
% saying any	78.2	77.2	79.7	80.6	77.7	80.2	79.3	76.9	78.9	78.2	76.5	76.4	70.8	§	63.6*	60.4	60.4	0.0
% saying most or all	19.9	20.9	23.6	27.3	25.0	25.7	23.4	25.9	23.8	24.3	25.7	24.9	21.2	§	18.6*	18.8	17.8	-1.0
Use inhalants																		
% saying any	18.0	18.0	19.0	16.4	12.3	12.1	9.4	8.7	8.8	7.2	9.0	8.0	9.9	§	3.5*	6.5	7.3	+0.8
% saying most or all	1.1	0.9	1.8	1.4	0.9	1.1	0.7	0.8	0.8	0.7	1.1	0.7	0.9	§	0.1*	0.4	0.7	+0.3
Take LSD																		
% saying any	20.9	21.3	22.3	22.5	21.3	17.7	18.0	18.9	22.7	20.1	21.5	21.2	24.7	§	17.7*	15.7	16.1	+0.3
% saying most or all	1.1	1.1	1.5	1.4	1.3	1.2	1.2	1.6	1.0	1.5	2.0	1.9	1.2	§	0.2*	0.8	0.7	-0.1
Take other hallucinogens [b]																		
% saying any	29.4	30.5	32.3	31.8	29.5	26.9	22.0	22.1	23.7	20.0	21.5	18.8	22.2	§	21.7*	19.8	21.8	+2.0
% saying most or all	1.8	1.6	2.0	2.1	2.0	1.6	1.6	1.7	1.0	1.2	1.7	1.2	0.5	§	0.2*	0.6	0.9	+0.3
Take ecstasy (MDMA) [g]																		
% saying any	24.7	23.5	25.9	27.5	26.8	25.6	24.3	26.3	24.4	22.4	19.4	16.3	16.4	§	14.8*	13.3	10.6	-2.7
% saying most or all	2.4	2.2	2.1	2.7	2.7	1.8	2.3	2.0	2.6	2.1	2.0	1.8	2.1	§	2.5*	1.8	0.8	-1.1
Take cocaine																		
% saying any	25.2	24.0	22.9	18.8	18.1	18.8	17.9	18.3	16.9	17.0	18.1	15.7	17.8	§	9.2*	8.2	7.3	-0.8
% saying most or all	1.2	1.8	1.4	1.0	0.8	1.1	0.8	1.5	0.9	1.1	1.0	1.5	1.3	§	0.2*	0.5	0.4	-0.1
Take crack																		
% saying any	19.1	18.8	15.2	12.1	10.4	10.3	9.0	10.1	8.0	8.0	8.6	7.5	9.3	§	2.6*	3.7	3.7	+0.1
% saying most or all	1.1	1.1	1.5	0.9	0.8	0.9	0.8	1.0	0.7	1.0	0.8	1.1	0.8	§	0.2*	0.8	0.6	-0.3
Take cocaine powder																		
% saying any	22.6	19.1	17.6	15.9	17.4	15.6	15.4	14.7	16.0	17.1	15.8	12.9	12.9	§	13.0*	10.2	8.0	-2.2
% saying most or all	1.5	1.5	1.0	1.6	1.5	1.2	1.8	1.2	2.2	2.2	2.1	1.8	1.9	§	0.2*	1.9	0.6	-1.2
Approximate weighted N =	*2,125*	*2,110*	*2,195*	*2,208*	*2,144*	*1,973*	*1,920*	*2,055*	*1,828*	*1,955*	*2,002*	*946*	*976*	*§*	*1,398*	*1,339*	*1,063*	

Table continued on next page.

(List of drugs continued)

TABLE 9-8 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
Take heroin																
% saying any	15.2	13.6	12.9	14.3	12.9	13.0	12.5	13.2	12.0	13.0	14.5	15.3	13.9	12.4	14.0	11.4
% saying most or all	0.7	0.8	0.7	0.9	0.5	1.0	0.5	0.7	0.8	0.8	0.9	1.1	0.9	0.7	1.1	0.4
Take other narcotics [c]																
% saying any	28.8	24.1	23.7	23.2	23.1	22.4	23.1	23.9	20.8	21.4	22.8	21.8	23.2	19.2	19.2	17.2
% saying most or all	2.1	2.2	1.7	1.4	1.5	1.7	1.5	1.4	1.4	1.6	1.4	1.8	1.4	1.2	1.4	0.9
Take amphetamines [d]																
% saying any	51.0	42.2	41.3	40.7	40.7	43.9	48.8	50.6	46.1	45.1	43.3	41.8	39.5	33.4	33.5	28.7
% saying most or all	5.9	5.6	4.1	4.7	4.3	4.8	6.4	5.4	5.1	4.5	3.4	3.4	2.6	1.9	2.6	1.9
Take crystal methamphetamine (ice)																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.1
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.7
Take sedatives (barbiturates) [e]																
% saying any	45.0	36.3	34.7	32.5	30.7	30.5	31.1	31.3	28.3	26.6	27.1	25.6	24.3	19.7	20.3	17.4
% saying most or all	4.3	3.5	3.0	2.3	2.1	2.6	2.1	1.8	1.7	1.7	1.6	1.4	1.1	1.1	1.4	0.6
Take tranquilizers [f]																
% saying any	45.6	36.3	37.8	34.8	32.0	29.7	29.5	29.9	26.7	26.6	25.8	24.2	23.3	19.9	18.0	14.9
% saying most or all	3.5	3.1	2.7	1.8	2.0	1.9	1.4	1.1	1.2	1.5	1.2	1.3	1.0	0.7	1.5	0.5
Drink alcoholic beverages																
% saying any	96.7	95.1	94.4	94.9	95.4	96.1	94.7	95.7	95.5	94.6	94.6	95.6	95.4	95.7	95.1	92.0
% saying most or all	68.4	64.7	66.2	68.9	68.5	68.9	67.7	69.7	69.0	66.6	66.0	68.0	71.8	68.1	67.1	60.5
Get drunk at least once a week																
% saying any	82.4	80.7	81.0	82.0	83.3	83.1	81.8	83.1	83.9	81.5	82.5	84.7	85.6	84.4	82.8	79.2
% saying most or all	30.1	26.6	27.6	30.2	32.0	30.1	29.4	29.9	31.0	29.6	29.9	31.8	31.3	29.6	31.1	27.5
Smoke cigarettes																
% saying any	95.2	93.7	93.7	93.1	92.1	90.6	88.5	88.3	87.0	86.0	87.0	87.8	88.3	87.7	86.5	84.9
% saying most or all	41.5	36.7	33.9	32.2	28.6	23.3	22.4	24.1	22.4	19.2	22.8	21.5	21.0	20.2	23.1	21.4
Vape an e-liquid with nicotine [i]																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take steroids																
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25.9
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8
Approximate weighted N =	*2,640*	*2,697*	*2,788*	*3,247*	*2,933*	*2,987*	*3,307*	*3,303*	*3,095*	*2,945*	*2,971*	*2,798*	*2,948*	*2,961*	*2,587*	*2,361*

Table continued on next page.

TABLE 9-8 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders
(Entries are percentages.)

How many of your friends would you estimate . . .	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Take heroin																	
% saying any	11.4	13.2	13.3	14.3	14.5	15.6	15.6	16.5	12.7	14.9	13.1	12.9	10.3	12.7	13.1	12.8	12.9
% saying most or all	0.4	0.7	1.1	1.0	1.1	0.9	0.8	1.3	1.0	1.1	0.9	0.7	0.9	0.9	1.1	0.8	1.4
Take other narcotics [c]																	
% saying any	13.7	14.9	16.1	18.5	19.5	21.8	22.2	24.8	22.9	23.1	24.0	27.5	21.6	24.6	21.4	23.0	20.7
% saying most or all	0.5	1.1	1.2	1.0	1.6	1.5	1.4	2.9	1.8	2.0	2.0	2.1	2.4	2.4	1.9	1.9	2.6
Take amphetamines [a]																	
% saying any	24.3	24.3	27.5	28.1	30.3	32.2	32.7	33.8	30.8	32.9	33.2	34.4	28.1	31.4	28.8	29.0	27.4
% saying most or all	1.3	1.3	2.0	1.8	2.0	2.8	2.4	3.4	2.8	3.1	2.2	2.4	2.1	2.9	2.2	2.0	2.4
Take crystal methamphetamine (ice)																	
% saying any	10.2	8.9	9.4	11.8	12.9	15.9	18.6	16.8	15.7	16.9	17.0	17.5	16.2	17.8	14.3	13.4	11.9
% saying most or all	1.0	1.5	1.2	1.5	1.7	1.5	2.3	2.1	1.1	2.0	1.6	2.0	1.8	3.0	1.9	1.2	0.8
Take sedatives (barbiturates) [e]																	
% saying any	14.8	16.4	17.8	18.2	17.8	21.6	20.4	22.8	20.9	21.6	22.1	25.3	18.1‡	25.2	22.3	22.5	20.8
% saying most or all	0.5	0.6	1.0	1.1	1.4	1.6	1.1	2.5	1.4	1.7	1.1	1.7	1.9‡	2.0	1.8	1.3	1.6
Take tranquilizers [f]																	
% saying any	13.5	14.6	15.5	16.5	15.8	18.1	17.9	19.7	16.4	19.4	18.6	21.2	17.2	18.3	16.9	15.3	15.5
% saying most or all	0.4	0.7	0.9	0.9	1.1	1.4	0.8	2.3	1.3	2.1	1.3	1.6	1.5	1.7	1.6	1.2	1.8
Drink alcoholic beverages																	
% saying any	91.2	90.5	88.9	90.1	90.9	89.6	90.7	91.2	90.2	89.8	89.2	88.0	87.9	87.8	87.2	86.0	85.1
% saying most or all	58.6	56.9	57.0	59.6	56.4	56.4	60.9	61.0	58.2	57.2	59.2	53.7	53.1	53.9	55.3	52.4	52.0
Get drunk at least once a week																	
% saying any	79.8	79.9	79.2	81.4	78.9	78.5	82.4	81.1	81.5	79.5	79.6	78.3	77.3	79.0	78.7	77.4	75.5
% saying most or all	29.7	28.6	27.6	28.4	27.4	29.0	30.9	31.7	30.1	32.4	32.7	28.3	27.1	27.6	28.5	27.7	27.0
Smoke cigarettes																	
% saying any	85.7	84.4	84.8	88.1	87.9	88.3	89.9	89.5	89.3	87.2	86.8	85.4	83.3	83.7	81.8	81.4	77.1
% saying most or all	21.8	21.4	25.0	25.3	27.5	30.4	34.4	33.9	31.1	28.2	25.0	23.0	19.6	20.6	16.7	15.8	16.4
Vape an e-liquid with nicotine [i]																	
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Take steroids																	
% saying any	24.7	21.5	19.0	18.1	19.5	17.9	18.9	18.3	20.0	19.8	21.7	21.6	21.1	22.8	19.1	19.8	20.1
% saying most or all	1.0	1.7	0.9	1.2	1.3	0.8	1.7	1.4	0.9	1.9	1.2	1.5	1.5	2.6	1.5	0.9	1.2
Approximate weighted N =	*2,339*	*2,373*	*2,410*	*2,337*	*2,379*	*2,156*	*2,292*	*2,313*	*2,060*	*1,838*	*1,923*	*1,968*	*2,233*	*2,271*	*2,266*	*2,217*	*2,253*

Table continued on next page.

TABLE 9-8 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

(Entries are percentages.)

How many of your friends would you estimate . . .	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021[j]	2022	2023	2022– 2023 change
Take heroin																		
% saying any	11.2	12.7	12.4	10.2	7.7	8.5	7.9	7.1	6.0	5.3	5.8	4.6	6.8	§	2.1*	4.2	5.1	+0.9
% saying most or all	0.7	0.9	1.3	0.6	0.6	0.6	0.5	0.7	0.7	0.9	0.3	0.7	0.3	§	0.1*	0.5	0.3	-0.2
Take other narcotics[c]																		
% saying any	20.6	21.5‡	36.3	31.0	28.5	25.8	22.0	20.0	20.5	18.4	14.7	14.2	17.1	§	7.6*	6.2	7.0	+0.8
% saying most or all	1.3	1.9‡	3.8	2.6	1.8	1.9	1.8	1.5	1.7	1.7	1.3	0.9	0.9	§	0.0*	0.6	0.4	-0.2
Take amphetamines[d]																		
% saying any	27.3	30.0	31.1	31.3	30.5	25.7	25.0	24.2	27.3	21.4	21.5	*18.9*	*23.9*	§	15.1*	14.6	11.6	-3.0
% saying most or all	1.8	2.0	2.9	2.2	2.4	2.2	2.9	2.5	2.4	1.7	1.7	1.4	1.0	§	0.4*	1.2	0.7	-0.6
Take crystal methamphetamine (ice)																		
% saying any	10.9	9.4	9.2	8.9	9.6	8.9	8.2	6.8	7.9	9.0	6.2	7.0	5.6	§	4.4*	3.9	3.4	-0.6
% saying most or all	1.4	1.5	1.0	1.3	1.5	1.0	1.5	0.9	1.8	1.3	1.4	1.4	0.7	§	0.4*	0.7	0.3	-0.4
Take sedatives (barbiturates)[e]																		
% saying any	19.8	21.0	23.5	21.1	17.3	15.5	14.2	14.5	15.1	12.9	11.9	11.3	14.6	§	8.1*	8.0	8.3	+0.3
% saying most or all	1.3	1.3	1.5	1.3	1.5	1.2	1.1	1.4	1.4	1.0	0.8	1.3	0.4	§	0.1*	0.5	0.5	0.0
Take tranquilizers[f]																		
% saying any	15.0	15.8	16.1	13.9	13.3	11.7	10.1	11.5	12.0	11.1	10.5	9.9	8.9	§	11.9*	7.1	9.1	+2.0
% saying most or all	1.2	1.5	1.4	0.8	0.8	1.0	1.3	1.5	1.1	1.0	0.7	0.7	0.8	§	0.0*	0.5	0.4	-0.1
Drink alcoholic beverages																		
% saying any	85.2	83.7	83.9	82.6	82.0	82.0	79.7	75.5	77.2	75.7	74.2	71.2	70.9	§	63.6*	61.7	59.8	-2.0
% saying most or all	51.6	50.5	51.4	50.3	49.4	46.9	46.2	42.3	39.2	39.7	38.0	35.5	32.1	§	26.4*	30.1	23.4	-6.7 s
Get drunk at least once a week																		
% saying any	76.2	76.2	73.5	71.9	68.9	69.9	64.2	58.9	59.0	58.0	55.4	53.9	52.4	§	45.0*	43.8	40.3	-3.6
% saying most or all	25.2	24.4	23.7	23.8	21.2	20.7	18.5	15.5	11.5	12.4	11.6	11.2	7.6	§	7.6*	7.4	3.9	-3.5 ss
Smoke cigarettes																		
% saying any	78.4	79.6	78.0	75.4	74.3	72.1	66.4	60.2	58.4	54.0	50.9	44.4	40.8	§	37.8*	29.3	26.8	-2.5
% saying most or all	13.9	14.1	14.9	14.1	12.2	11.0	8.1	6.5	5.9	6.6	6.1	4.7	4.4	§	1.1*	2.3	2.2	-0.1
Vape an e-liquid with nicotine[i]																		
% saying any	—	—	—	—	—	—	—	—	—	—	—	—	—	—	63.8*	60.81	59.5	-1.3
% saying most or all	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20.2*	21.92	18.8	-3.1
Take steroids																		
% saying any	19.4	19.3	16.4	16.0	18.7	17.4	15.7	12.8	15.5	13.7	13.0	*11.7*	*7.8*	§	6.9*	9.8	12.3	+2.5
% saying most or all	1.3	1.5	1.7	1.1	1.8	1.5	1.7	1.0	1.9	1.7	1.5	1.3	0.9	§	0.1*	0.7	0.5	-0.2
Approximate weighted N =	*2,125*	*2,110*	*2,195*	*2,208*	*2,144*	*1,973*	*1,920*	*2,055*	*1,828*	*1,955*	*2,002*	*946*		*§*	*1,398*	*1,339*	*1,063*	

Table continued on next page.

TABLE 9-8 (cont.)
Trends in Friends' Use of Drugs as Estimated by 12th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. ' ‡ ' indicates that the quesiton changed the following year. See relevant footnote. Any apparent inconsistency betweenthe change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]These estimates were derived from responses to the questions listed. Any illicit drug includes all drugs listed except ecstasy (MDMA), cocaine powder, crystal methamphetamine (ice), alcohol, get drunk, cigarettes, and steroids. PCP and nitrites were not included from 1975 to 1978. Crack was not included from 1975 to 1986. Methaqualone was not included beginning in 2010.

[b]In 2001 the question text was changed from other psychedelics to other hallucinogens, and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

[c]In 2010 the list of examples for narcotics other than heroin was changed from methadone and opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

[d]In 2011 pep pills and bennies were replaced in the list of examples by Adderall and Ritalin.

[e]In 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

[f]In 2001 for tranquilizers, Xanax was added to the list of examples. This change likely explains the discontinuity in the 2001 results.

[g]Beginning in 2014 "molly" was added to the question on friends' use of Ecstasy (MDMA). An examination of the data did not show any effect from this wording change.

[h]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[i]Data based on three of six forms. N is approximately three times N indicated.

[j]Sample is decreased by approximately 50% for the following drugs due to survey question experiments: cigarettes, marijuana, LSD, hallucinogens other than LSD, amphetamines, sedatives (barbiturates), tranquilizers, cocaine, heroin, narcotics other than heroin, inhalants, alcohol, getting drunk, crack, cocaine powder, ecstasy (MDMA, molly), crystal methamphetamine (ice), and steroids.

TABLE 9-9
Source of Prescription Drugs
among Those Who Used in Last Year
Grade 12, 2009–2023

(Entries are percentages.)

Where did you get the [insert drug name here] you used without a doctor's orders during the past year? (Mark all that apply.)	Amphetamines		Tranquilizers		Narcotics other than Heroin	
	2009-2018	2019-2023	2009-2018	2019-2023	2009-2018	2019-2023
Bought online	5.6	4.9	4.2	7.0	1.9	9.4
Took from friend/relative without asking	10.1	18.3	14.9	20.5	20.3	11.4
Took from a friend without asking	4.1	11.4	4.0	5.3	4.1	1.6
Took from a relative without asking	7.9	8.8	13.0	13.4	18.7	12.3
Given for free by friend or relative	56.4	42.3	59.3	51.5	55.0	39.0
Given for free by a friend	51.9	30.1	49.6	30.6	47.9	23.5
Given for free by a relative	9.9	14.6	17.5	17.3	14.9	17.2
Bought from friend or relative	42.7	27.8	37.3	27.7	31.5	31.4
Bought from a friend	41.9	23.3	36.1	21.0	31.0	23.8
Bought from a relative	2.8	4.5	4.1	5.5	3.4	10.6
From a prescription I had	14.7	31.2	12.2	15.9	35.5	30.7
Bought from drug dealer/stranger	17.9	21.0	22.5	16.6	16.7	9.2
Other method	12.5	20.7	9.4	28.3	9.8	19.3
Weighted N =	*1081*	*124*	*768*	*121*	*1063*	*97*

Source. The Monitoring the Future study, the University of Michigan.

TABLE 9-10
Trends in Availability of Drugs as Perceived by 8th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get [a]																
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Marijuana	42.3	43.8	49.9	52.4	54.8	54.2	50.6	48.4	47.0	48.1	46.6	44.8	41.0	41.1	39.6	37.4	39.3
LSD	21.5	21.8	21.8	23.5	23.6	22.7	19.3	18.3	17.0	17.6	15.2	14.0	12.3	11.5	10.8	10.5	10.9
PCP [b]	18.0	18.5	17.7	19.0	19.6	19.2	17.5	17.1	16.0	15.4	14.1	13.7	11.4	11.0	10.5	9.5	10.1
MDMA (e.g. ecstasy, "Molly") [b]	—	—	—	—	—	—	—	—	—	23.8	22.8	21.6	16.6	15.6	14.5	13.4	14.1
Crack	25.6	25.9	26.9	28.7	27.9	27.5	26.5	25.9	24.9	24.4	23.7	22.5	20.6	20.8	20.9	19.7	20.2
Cocaine powder	25.7	25.9	26.4	27.8	27.2	26.9	25.7	25.0	23.9	23.9	22.5	21.6	19.4	19.9	20.2	19.0	19.5
Heroin	19.7	19.8	19.4	21.1	20.6	19.8	18.0	17.5	16.5	16.9	16.0	15.6	14.1	13.2	13.0	12.6	13.3
Narcotics other than Heroin [b,c]	19.8	19.0	18.3	20.3	20.0	20.6	17.1	16.2	15.6	15.0	14.7	15.0	12.4	12.9	13.0	11.7	12.1
Amphetamines [d]	32.2	31.4	31.0	33.4	32.6	30.6	27.3	25.9	25.5	26.2	24.4	24.4	21.9	21.0	20.7	19.9	21.3
Crystal methamphetamine (ice) [b]	16.0	15.1	14.1	16.0	16.3	15.7	16.0	14.7	14.9	13.9	13.3	14.1	11.9	13.5	14.5	12.1	12.8
Sedatives (barbiturates)	27.4	26.1	25.3	26.5	25.6	24.4	21.1	20.8	19.7	20.7	19.4	19.3	18.0	17.6	17.3	16.8	17.5
Tranquilizers	22.9	21.4	20.4	21.3	20.4	19.6	18.1	17.3	16.2	17.8	16.9	17.3	15.8	14.8	14.4	14.4	15.4
Alcohol	76.2	73.9	74.5	74.9	75.3	74.9	73.1	72.3	70.6	70.6	67.9	67.0	64.9	64.2	63.0	62.0	64.1
Cigarettes	77.8	75.5	76.1	76.4	76.9	76.0	73.6	71.5	68.7	67.7	64.3	63.1	60.3	59.1	58.0	55.6	57.4
Vaping device [e,f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) [e,f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Flavored e-liquid with nicotine (for vaping) [e,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid for marijuana vaping [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	24.0	22.7	23.1	23.8	24.1	23.6	22.3	22.6	22.3	23.1	22.0	21.7	19.7	18.1	17.1	17.0	16.8
Approximate weighted N =	*8,355*	*16,775*	*16,119*	*15,496*	*16,318*	*16,482*	*16,208*	*15,397*	*15,180*	*14,804*	*13,972*	*15,583*	*15,944*	*15,730*	*15,502*	*15,043*	*14,482*

Table continued on next page.

TABLE 9-10 (cont.)
Trends in Availability of Drugs as Perceived by 8th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get [a]																2022–2023 change
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021[i]	2022	2023	
Marijuana	39.8	41.4	37.9	36.9	39.1	36.9	37.0	34.6	35.2	35.0	34.9	32.0	§	26.7*	26.0	25.8	-0.1
LSD	10.0	10.0	9.3	7.5	7.4	6.9	6.6	6.9	6.3	6.5	6.9	7.9	§	6.3*	5.4	6.4	+1.0
PCP [b]	9.1	8.0	7.9	6.7	5.8	5.5	5.1	4.8	4.6	4.7	5.6	6.1	§	4.4*	4.0	5.8	+1.8
MDMA (e.g. ecstasy, "Molly") [b]	13.1	12.9	12.0	9.6	9.5	10.1	9.6	8.7	8.0	7.2	8.5	8.6	§	6.4*	6.0	6.7	+0.7
Crack	18.6	17.9	15.7	14.4	13.7	12.0	11.3	11.1	10.2	9.6	9.0	8.3	§	7.5*	7.1	8.4	+1.3 s
Cocaine powder	17.8	16.6	14.9	14.1	13.5	11.9	11.6	11.0	10.4	9.8	9.5	8.6	§	7.7*	7.1	8.2	+1.0
Heroin	12.0	11.6	9.9	9.4	10.0	8.6	7.8	8.9	8.1	7.8	*8.1*	*6.4*	§	5.4*	4.8	5.5	+0.8
Narcotics other than Heroin [b,c]	11.8‡	14.6	12.3	10.6	9.7	9.2	8.8	8.9	8.9	8.3	9.3	8.7	§	6.0*	5.6	5.9	+0.3
Amphetamines [d]	20.2	19.6‡	15.0	13.4	12.8	12.1	11.8	12.1	11.0	11.6	12.8	12.4	§	11.4*	10.9	9.9	-1.0
Crystal methamphetamine (ice) [b]	11.9	10.9	9.6	8.8	8.5	7.7	6.9	6.6	6.6	6.2	6.9	6.5	§	4.9*	4.8	5.5	+0.8
Sedatives (barbiturates) [e]	15.9	15.3	12.6	11.1	10.6	10.0	9.0	9.3	9.2	8.6	9.0	10.8	§	8.1*	8.2	8.4	+0.2
Tranquilizers	14.1	13.7	12.0	10.5	10.4	9.8	9.8	11.4	11.8	12.2	12.7	10.9	§	7.5*	7.2	6.8	-0.4
Alcohol	61.8	61.1	59.0	57.5	56.1	54.4	53.6	52.7	53.2	53.9	*53.1*	*46.1*	§	47.9*	41.9	41.0	-0.8
Cigarettes	55.3	55.5	51.9	50.7	49.9	47.2	47.0	45.6	46.2	45.7	42.9	39.4	§	38.0*	33.8	33.0	-0.8
Vaping device [e,f]	—	—	—	—	—	—	—	—	38.6	45.7	*49.1*	*40.9*	§	37.8*	34.6	34.1	-0.5
E-liquid with nicotine (for vaping) [e,f]	—	—	—	—	—	—	—	—	31.0	37.9	*46.1*	*39.3*	§	35.1*	32.7	31.9	-0.8
Flavored e-liquid with nicotine (for vaping) [e,j]	—	—	—	—	—	—	—	—	—	—	—	—	§	33.8*	31.2	29.9	-1.3
E-liquid for marijuana vaping [e]	—	—	—	—	—	—	—	—	—	—	—	—	§	23.8	23.2	21.9	-1.3
Steroids	15.2	14.2	13.3	12.5	12.9	11.8	11.6	12.6	11.6	10.9	*11.4*	*9.6*	§	9.1*	8.1	8.7	0.6
Approximate weighted N =	*13,989*	*14,485*	*15,233*	*14,235*	*13,605*	*13,208*	*13,494*	*15,628*	*14,042*	*12,315*	*5,712*	*6,688*	*§*	*9,790*	*8,519*	*5,081*	

Table continued on next page.

TABLE 9-10 (cont.)
Trends in Availability of Drugs as Perceived by 8th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. ' ‡ ' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Probably impossible, (2) Very difficult, (3) Fairly difficult, (4) Fairly easy, (5) Very easy, and (6) Can't say, drug unfamiliar.

[b]Beginning in 1993, data based on one of two of forms; *N* is one half of *N* indicated. Beginning in 2014 data based on one sixth of *N* indicated. For MDMA only: In 2014 the question text was changed in one form to include "Molly." In 2015 a second from was changed to including "Molly;" data based on one sixth of N indicated in 2014 and on one half of N indicated in 2015. An examination of the data did not show any effect from this wording change.

[c]In 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

[d]In 2011 the list of examples for amphetamines was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2012 results.

[e]Beginning in 2017, data based on one half of *N* indicated.

[f] Percentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the deniminator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the deniminator.

[g] Data based on three of four forms. *N* is two thirds of *N* indicated.

[h]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[i]Sample is decreased by as much as 50% for the following drugs due to survey question experiments: crack, cocaine powder, heroin, narcotics other than heroin, tranquilizers, crystal methamphetamine (ice), alcohol, cigarettes, steroids, and vaping.

[j]Question asks specifically about "e-liquid with nicotine (for vaping) with a flavor other than tobacco or menthol, such as mint or mango."

TABLE 9-11
Trends in Availability of Drugs as Perceived by 10th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get[a]																
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Marijuana	65.2	68.4	75.0	78.1	81.1	80.5	77.9	78.2	77.7	77.4	75.9	73.9	73.3	72.6	70.7	69.0	67.4
LSD	33.6	35.8	36.1	39.8	41.0	38.3	34.0	34.3	32.9	31.2	26.8	23.1	21.6	20.7	19.2	19.0	19.3
PCP [b]	23.7	23.4	23.8	24.7	26.8	24.8	23.9	24.5	25.0	21.6	20.8	19.4	18.0	18.1	15.8	15.4	14.4
MDMA (e.g. ecstasy, "Molly") [c]	—	—	—	—	—	—	—	—	—	41.4	41.0	36.3	31.2	30.2	27.4	27.7	26.7
Crack	33.7	33.0	34.2	34.6	36.4	36.0	36.3	36.5	34.0	30.6	31.3	29.6	30.6	31.0	29.9	29.0	27.2
Cocaine powder	35.0	34.1	34.5	35.3	36.9	37.1	36.8	36.7	34.5	31.0	31.8	29.6	31.2	31.5	30.7	30.0	28.2
Heroin	24.3	24.3	24.7	24.6	24.8	24.4	23.0	23.7	22.3	20.1	19.9	18.8	18.7	19.3	17.4	17.3	17.2
Narcotics other than Heroin [b]	26.9	24.9	26.9	27.8	29.4	29.0	26.1	26.6	27.2	25.8	25.4	23.5	23.1	23.6	22.2	21.5	20.3
Amphetamines [d]	43.4	46.4	46.6	47.7	47.2	44.6	41.0	41.3	40.9	40.6	39.6	36.1	35.7	35.6	34.7	33.3	32.0
Crystal methamphetamine (ice) [b]	18.8	16.4	17.8	20.7	22.6	22.9	22.1	21.8	22.8	19.9	20.5	19.0	19.5	21.6	20.8	18.8	15.8
Sedatives (barbiturates)	38.0	38.8	38.3	38.8	38.1	35.6	32.7	33.2	32.4	32.8	32.4	28.8	30.0	29.7	29.9	28.2	26.9
Tranquilizers	31.6	30.5	29.8	30.6	30.3	28.7	26.5	26.8	27.6	28.5	28.3	25.6	25.6	25.4	25.1	24.9	24.1
Alcohol	88.6	88.9	89.8	89.7	90.4	89.0	88.0	88.2	87.7	87.7	84.8	83.4	84.3	83.7	83.1	82.6	81.1
Cigarettes	89.1	89.4	90.3	90.7	91.3	89.6	88.1	88.3	86.8	86.3	83.3	80.7	81.4	81.5	79.5	78.2	76.5
Vaping device [e,f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) [e,f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Flavored e-liquid with nicotine (for vaping) [e,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid for marijuana vaping [e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	37.6	33.6	33.6	34.8	34.8	34.2	33.0	35.9	35.4	33.1	33.2	30.6	29.6	29.7	30.2	27.7	24.5
Approximate weighted N =	*7,014*	*14,652*	*15,192*	*16,209*	*14,887*	*14,856*	*14,423*	*13,112*	*13,690*	*13,518*	*13,694*	*15,255*	*15,806*	*15,636*	*15,804*	*15,511*	*14,634*

Table continued on next page.

TABLE 9-11 (cont.)
Trends in Availability of Drugs as Perceived by 10th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get[a]																
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[i]	2019e[i]	2020	2021[j]	2022	2023	2022–2023 change
Marijuana	69.3	69.4	68.4	68.8	69.7	66.9	65.6	64.0	64.6	64.5	*65.8*	*59.4*	§	47.5*	48.5	47.5	-1.0
LSD	17.8	18.3	16.6	14.9	16.3	14.8	15.5	15.2	15.9	14.9	16.2	16.7	§	13.4*	10.6	11.1	+0.5
PCP[b]	13.4	12.6	12.0	10.2	9.4	8.3	9.0	7.6	7.1	7.3	9.5	8.8	§	6.8*	6.4	6.5	+0.1
MDMA (e.g. ecstasy, "Molly")[c]	25.6	25.7	24.8	21.0	20.7	20.4	19.3	16.3	15.0	13.9	16.0	14.3	§	11.3*	9.4	9.7	+0.3
Crack	23.9	22.5	19.7	18.4	17.1	15.1	14.4	13.9	13.8	13.0	13.6	11.2	§	8.6*	8.9	9.2	+0.4
Cocaine powder	24.7	22.6	20.6	19.2	18.3	16.4	16.1	14.9	15.0	14.7	14.8	12.9	§	9.5*	9.2	9.7	+0.6
Heroin	15.0	14.5	13.2	11.9	11.9	10.9	11.0	10.6	10.6	9.7	10.5	8.2	§	6.3*	6.6	6.5	-0.1
Narcotics other than Heroin[b,g]	18.8‡	28.7	25.0	24.3	22.5	18.8	19.2	16.8	17.7	16.8	17.1	14.4	§	9.8*	9.3	8.8	-0.5
Amphetamines[d]	31.8	32.6‡	28.5	27.3	26.5	25.2	27.3	22.9	24.2	23.4	23.0	21.4	§	16.4*	16.7	16.4	-0.3
Crystal methamphetamine (ice)[b]	14.0	13.3	11.8	10.7	10.0	9.8	8.9	8.2	8.0	8.0	*9.9*	*7.8*	§	6.1*	6.5	6.2	-0.3
Sedatives (barbiturates)[e]	25.5	24.9	22.0	20.2	18.3	16.7	16.6	14.2	15.1	14.4	14.5	16.6	§	11.3*	11.1	12.4	+1.3
Tranquilizers	22.3	21.6	20.8	19.7	18.3	17.5	19.4	20.5	23.3	24.2	*22.6*	*18.1*	§	11.4*	10.9	10.2	-0.7
Alcohol	80.9	80.0	77.9	78.2	77.2	75.3	74.9	71.1	71.5	70.6	68.9	64.8	§	60.2*	58.7	59.2	+0.5
Cigarettes	76.1	75.6	73.6	72.9	71.4	69.0	66.6	62.9	62.5	61.5	58.4	55.0	§	48.0*	47.5	48.3	+0.8
Vaping device[e,f]	—	—	—	—	—	—	—	—	59.5	66.6	68.3	64.1	§	54.6*	51.9	54.7	+2.8
E-liquid with nicotine (for vaping)[e,f]	—	—	—	—	—	—	—	—	52.8	60.4	64.5	64.1	§	48.5*	50.8	52.1	+1.3
Flavored e-liquid with nicotine (for vaping)[e,k]	—	—	—	—	—	—	—	—	—	—	—	—	§	46.9*	49.4	51.0	+1.6
E-liquid for marijuana vaping[e]	—	—	—	—	—	—	—	—	—	—	—	—	§	39.5	43.7	44.4	+0.7
Steroids	20.8	20.3	18.8	18.0	17.2	16.5	17.0	15.3	15.0	14.5	13.7	11.9	§	10.9*	12.2	13.2	+1.0
Approximate weighted N =	*15,451*	*14,827*	*14,509*	*14,628*	*12,601*	*12,574*	*15,186*	*14,126*	*12,901*	*13,365*	*6,042*	*6,864*	§	*10,258*	*10,346*	*7,605*	

Table continued on next page.

TABLE 9-11 (cont.)
Trends in Availability of Drugs as Perceived by 10th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. ' ‡ ' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Probably impossible, (2) Very difficult, (3) Fairly difficult, (4) Fairly easy, (5) Very easy, and (6) Can't say, drug unfamiliar.

[b]Beginning in 1993, data based on one of two forms; *N* is one half of *N* indicated. Beginning in 2014 data based on one sixth of N indicated.

[c]Beginning in 1993, data based on one of two of forms; *N* is one half of *N* indicated. Beginning in 2014 data based on one sixth of *N* indicated for MDMA only: In 2014 the question text was changed in one form to include "Molly." In 2015 a second from was changed to including "Molly;" data based on one sixth of N indicated in 2014 and on one half of N indicated in 2015. An examination of the data did not show any effect from this wording change.

[d]In 2011 the list of examples for amphetamines was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

[e]Beginning in 2017, data based on one half of *N* indicated.

[f] Percentages for all years reported here include respondents who replied "can't say, drug unfamiliar" in the deniminator. The percentage for 2017 published in late 2017 and early 2018 did not include these respondents in the deniminator.

[g]In 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

[h] Data based on three of four forms. *N* is two thirds of *N* indicated.

[i]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant (p<.05) differences in 2019 between the two survey modes.

[j]Sample is decreased by as much as 50% for the following drugs due to survey question experiments: crack, cocaine powder, heroin, narcotics other than heroin, tranquilizers, crystal methamphetamine (ice), alcohol, cigarettes, steroids, and vaping.

[k]Question asks specifically about "e-liquid with nicotine (for vaping) with a flavor other than tobacco or menthol, such as mint or mango."

TABLE 9-12
Trends in Availability of Drugs as Perceived by 12th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get [a]																
	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
Marijuana	87.8	87.4	87.9	87.8	90.1	89.0	89.2	88.5	86.2	84.6	85.5	85.2	84.8	85.0	84.3	84.4	83.3
LSD	46.2	37.4	34.5	32.2	34.2	35.3	35.0	34.2	30.9	30.6	30.5	28.5	31.4	33.3	38.3	40.7	39.5
Some other hallucinogen [b]	47.8	35.7	33.8	33.8	34.6	35.0	32.7	30.6	26.6	26.6	26.1	24.9	25.0	26.2	28.2	28.3	28.0
MDMA (e.g. ecstasy, "molly") [c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21.7	22.0	22.1
Cocaine	37.0	34.0	33.0	37.8	45.5	47.9	47.5	47.4	43.1	45.0	48.9	51.5	54.2	55.0	58.7	54.5	51.0
Crack	—	—	—	—	—	—	—	—	—	—	—	—	41.1	42.1	47.0	42.4	39.9
Cocaine powder	—	—	—	—	—	—	—	—	—	—	—	—	52.9	50.3	53.7	49.0	46.0
Heroin	24.2	18.4	17.9	16.4	18.9	21.2	19.2	20.8	19.3	19.9	21.0	22.0	23.7	28.0	31.4	31.9	30.6
Some other narcotic (including methadone) [d]	34.5	26.9	27.8	26.1	28.7	29.4	29.6	30.4	30.0	32.1	33.1	32.2	33.0	35.8	38.3	38.1	34.6
Amphetamines [e]	67.8	61.8	58.1	58.5	59.9	61.3	69.5	70.8	68.5	68.2	66.4	64.3	64.5	63.9	64.3	59.7	57.3
Crystal methamphetamine (ice)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	24.1	24.3
Sedatives (barbiturates) [f]	60.0	54.4	52.4	50.6	49.8	49.1	54.9	55.2	52.5	51.9	51.3	48.3	48.2	47.8	48.4	45.9	42.4
Tranquilizers	71.8	65.5	64.9	64.3	61.4	59.1	60.8	58.9	55.3	54.5	54.7	51.2	48.6	49.1	45.3	44.7	40.8
Alcohol	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Cigarettes [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping device [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Flavored e-liquid with nicotine (for vaping) [g,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid for marijuana vaping [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	46.7
Approximate weighted N =	*2,627*	*2,865*	*3,065*	*3,598*	*3,172*	*3,240*	*3,578*	*3,602*	*3,385*	*3,269*	*3,274*	*3,077*	*3,271*	*3,231*	*2,806*	*2,549*	*2,476*

Table continued on next page.

TABLE 9-12 (cont.)
Trends in Availability of Drugs as Perceived by 12th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying fairly easy or very easy to get [a]																
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Marijuana	82.7	83.0	85.5	88.5	88.7	89.6	90.4	88.9	88.5	88.5	87.2	87.1	85.8	85.6	84.9	83.9	83.9
LSD	44.5	49.2	50.8	53.8	51.3	50.7	48.8	44.7	46.9	44.7	39.6	33.6	33.1	28.6	29.0	28.7	28.5
Some other hallucinogen [b]	29.9	33.5	33.8	35.8	33.9	33.9	35.1	29.5	34.5‡	48.5	47.7	47.2	49.4	45.0	43.9	43.7	42.8
MDMA (e.g. ecstasy, "Molly") [c]	24.2	28.1	31.2	34.2	36.9	38.8	38.2	40.1	51.4	61.5	59.1	57.5	47.9	40.3	40.3	40.9	41.9
Cocaine	52.7	48.5	46.6	47.7	48.1	48.5	51.3	47.6	47.8	46.2	44.6	43.3	47.8	44.7	46.5	47.1	42.4
Crack	43.5	43.6	40.5	41.9	40.7	40.6	43.8	41.1	42.6	40.2	38.5	35.3	39.2	39.3	38.8	37.5	35.2
Cocaine powder	48.0	45.4	43.7	43.8	44.4	43.3	45.7	43.7	44.6	40.7	40.2	37.4	41.7	41.6	42.5	41.2	38.9
Heroin	34.9	33.7	34.1	35.1	32.2	33.8	35.6	32.1	33.5	32.3	29.0	27.9	29.6	27.3	27.4	29.7	25.4
Some other narcotic (including methadone) [d]	37.1	37.5	38.0	39.8	40.0	38.9	42.8	40.8	43.9	40.5	44.0	39.3	40.2	39.2	39.6	37.3	34.9
Amphetamines [e]	58.8	61.5	62.0	62.8	59.4	59.8	60.8	58.1	57.1	57.1	57.4	55.0	55.4	51.2	52.9	49.6	47.9
Crystal methamphetamine (ice)	26.0	26.6	25.6	27.0	26.9	27.6	29.8	27.6	27.8	28.3	28.3	26.1	26.7	27.2	26.7	25.1	23.3
Sedatives (barbiturates) [f]	44.0	44.5	43.3	42.3	41.4	40.0	40.7	37.9	37.4	35.7	36.6	35.3‡	46.3	44.4	43.8	41.7	38.8
Tranquilizers	40.9	41.1	39.2	37.8	36.0	35.4	36.2	32.7	33.8	33.1	32.9	29.8	30.1	25.7	24.4	23.6	22.4
Alcohol	—	—	—	—	—	—	—	95.0	94.8	94.3	94.7	94.2	94.2	93.0	92.5	92.2	92.2
Cigarettes [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping device [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid with nicotine (for vaping) [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Flavored e-liquid with nicotine (for vaping) [g,j]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
E-liquid for marijuana vaping [g]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	46.8	44.8	42.9	45.5	40.3	41.7	44.5	44.6	44.8	44.4	45.5	40.7	42.6	39.7	41.1	40.1	35.2
Approximate weighted N =	*2,586*	*2,670*	*2,526*	*2,552*	*2,340*	*2,517*	*2,520*	*2,215*	*2,095*	*2,120*	*2,138*	*2,391*	*2,169*	*2,161*	*2,131*	*2,420*	*2,276*

Table continued on next page.

TABLE 9-12 (cont.)
Trends in Availability of Drugs as Perceived by 12th Graders

How difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?	Percentage saying "fairly easy" or "very easy" to get [a]																
	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019p[h]	2019e[h]	2020	2021[i]	2022	2023	2022–2023 change
Marijuana	81.1	82.1	82.2	81.6	81.4	81.3	79.5	81.0	79.8	79.7	78.0	78.8	§	69.6*	70.4	72.7	+2.4
LSD	26.3	25.1	25.1	27.6	24.5	25.9	26.5	28.0	26.3	28.0	28.2	29.2	§	23.6*	24.7	21.5	-3.3
Some other hallucinogen [b]	40.5	39.5	38.3	37.8	36.6	33.6	31.4	32.5	28.4	28.6	29.7	27.0	§	31.3*	30.6	31.1	+0.5
MDMA (e.g. ecstasy, "Molly") [c]	35.1	36.4	37.1	35.9	35.1	36.1	37.1	32.5	29.3	27.7	24.3	23.5	§	20.8*	17.5	18.0	+0.5
Cocaine	39.4	35.5	30.5	29.8	30.5	29.2	29.1	28.6	27.3	28.1	24.2	28.4	§	17.2*	18.4	17.7	-0.6
Crack	31.9	26.1	24.0	22.0	24.6	20.1	22.0	19.8	18.1	20.8	16.9	16.5	§	10.0*	11.3	11.8	+0.4
Cocaine powder	33.9	29.0	26.4	25.1	28.4	22.3	25.8	22.9	21.3	23.0	19.9	18.3	§	11.4*	12.3	11.9	-0.4
Heroin	27.4	24.1	20.8	19.9	22.1	20.2	20.4	20.0	19.1	18.4	16.1	18.1	§	9.9*	11.8	11.8	+0.0
Some other narcotic (including methadone) [d]	36.1‡	54.2	50.7	50.4	46.5	42.2	39.0	39.3	35.8	32.5	31.0	30.9	§	18.7*	19.7	17.1	-2.6
Amphetamines [e]	47.1	44.1‡	47.0	45.4	42.7	44.5	41.9	41.1	38.0	39.3	39.0	36.9	§	29.4*	33.2	31.0	-2.3
Crystal methamphetamine (ice)	22.3	18.3	17.1	14.5	17.2	13.7	15.3	14.5	13.6	13.6	11.9	12.1	§	7.6*	8.0	7.7	-0.4
Sedatives (barbiturates) [f]	37.9	36.8	32.4	28.7	27.9	26.3	25.0	25.7	23.4	23.0	23.6	24.0	§	16.3*	18.6	20.1	+1.4
Tranquilizers	21.2	18.4	16.8	14.9	15.0	14.4	14.9	15.2	14.9	13.0	14.7	15.8	§	25.5*	24.1	24.1	-0.0
Alcohol	92.1	90.4	88.9	90.6	89.7	87.6	86.6	85.4	87.1	85.5	84.4	81.4	§	76.8*	78.4	81.7	+3.3
Cigarettes [g]	—	—	—	—	—	—	—	—	77.9	75.1	74.7	71.0	§	57.9*	54.2	60.4	+6.2 ss
Vaping device [g]	—	—	—	—	—	—	—	—	78.2	80.5	82.9	81.2	§	71.5*	69.3	75.6	+6.4 ss
E-liquid with nicotine (for vaping) [g]	—	—	—	—	—	—	—	—	75.0	77.2	81.6	79.3	§	68.4*	66.5	72.6	+6.1 ss
Flavored e-liquid with nicotine (for vaping) [g,j]	—	—	—	—	—	—	—	—	—	—	—	—	§	68.0*	66.0	72.3	+6.3 ss
E-liquid for marijuana vaping [g]	—	—	—	—	—	—	—	—	—	—	—	—	§	54.8	57.2	62.1	+4.9 s
Steroids	30.3	27.3	26.1	25.0	28.5	22.0	23.7	21.3	20.1	21.1	*19.2*	*14.1*	§	12.9*	16.4	17.4	+1.1
Approximate weighted N =	*2,243*	*2,395*	*2,337*	*2,280*	*2,092*	*2,066*	*2,181*	*1,958*	*1,882*	*1,931*	*868*	*1,085*	§	*1,219*	*1,315*	*1,090*	

Table continued on next page.

TABLE 9-12 (cont.)
Trends in Availability of Drugs as Perceived by 12th Graders

Source. The Monitoring the Future study, the University of Michigan.

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' — ' indicates data not available. ' ‡ ' indicates that the question changed the following year. See relevant footnote for that drug. Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

§Estimates not presented due to insufficient data this year.

*Comparison of 2021+ estimates with previous years may be subject to a survey mode effect in 2019. The size and direction of the mode effect (if any) is indicated by the difference between the estimates in the '2019p' and the '2019e' columns. The '2019p' column reports estimates based on students in the randomly-selected half of schools that used paper-and-pencil questionnaires (used in 2018 and all previous years). The '2019e' column reports estimates on the other half that used electronic data collection on devices connected to the internet (used in 2021 and all subsequent years).

[a]Answer alternatives were: (1) Probably impossible, (2) Very difficult, (3) Fairly difficult, (4) Fairly easy, and (5) Very easy.

[b]In 2001 the question text was changed from other psychedelics to other hallucinogens and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

[c]Beginning in 2014 "molly" was added to the question on availability of Ecstasy (MDMA). An examination of the data did not show any effect from this wording change.

[d]In 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

[e]In 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.

[f]In 2004 the question text was changed from barbiturates to sedatives/barbiturates and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

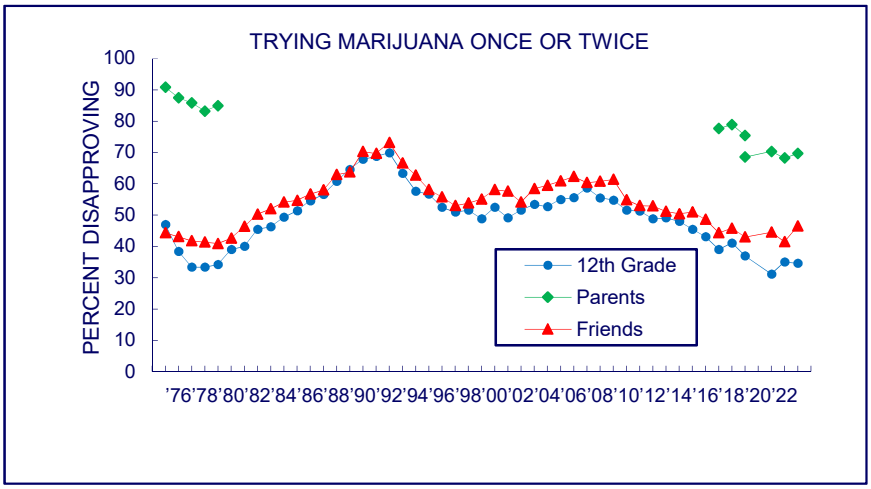
[g]Data based on 2 of 6 forms. N is twice the N indicated.

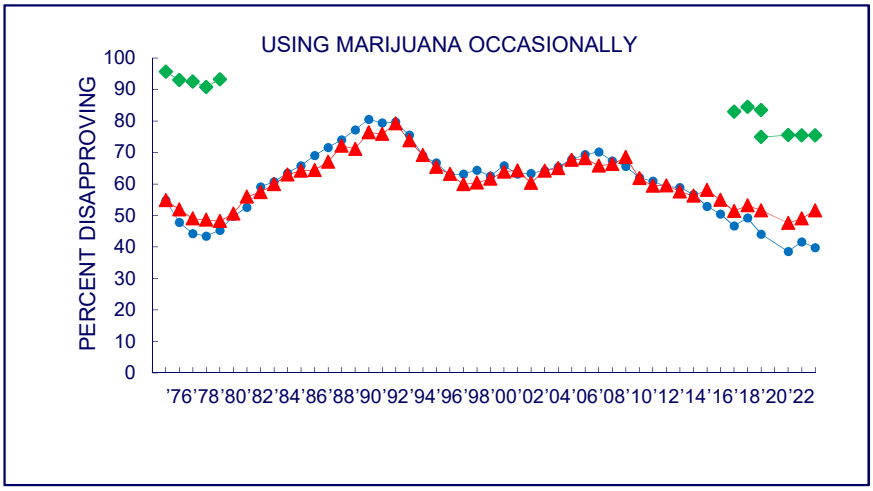
[h]The '2019p' column reports estimates from students in the randomly-selected half of schools that completed the 2019 questionnaire using paper and pencil. The '2019e' column reports estimates for the other half in schools that completed the 2019 questionnaire using web-connected electronic tablets. Estimates in italics indicate statistically significant ($p<.05$) differences in 2019 between the two survey modes.

[i]Sample is decreased by approximately 50% for the following drugs due to survey question experiments: marijuana, LSD, hallucinogens other than LSD, amphetamines, sedatives (barbiturates), tranquilizers, cocaine, heroin, and narcotics other than heroin.

[j]Question asks specifically about "e-liquid with nicotine (for vaping) with a flavor other than tobacco or menthol, such as mint or mango."

FIGURE 9-1a
MARIJUANA
Trends in Disapproval
12th Graders, Parents, and Friends[a]





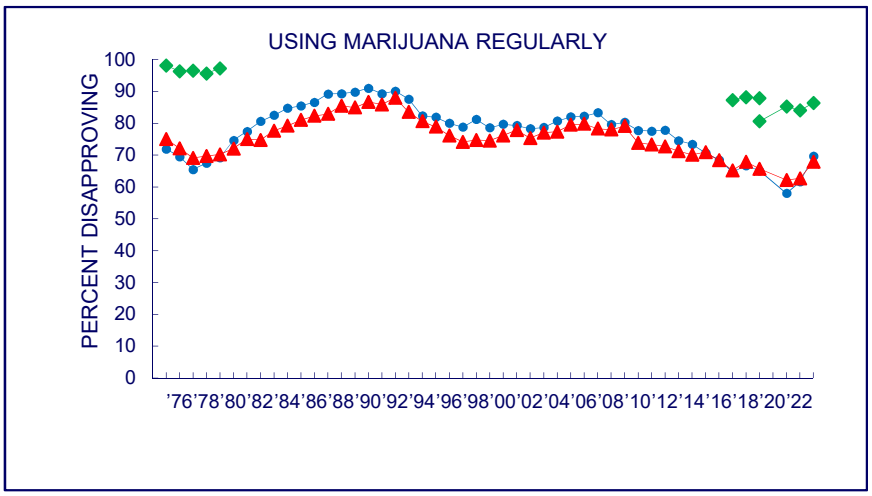


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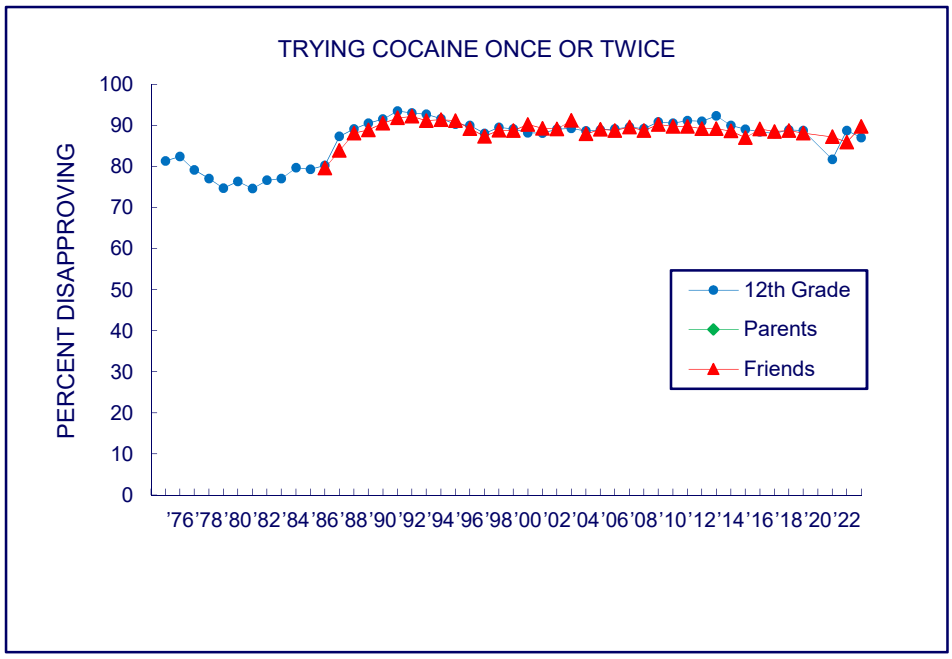
FIGURE 9-1b
COCAINE AND LSD
Trends in Disapproval
12th Graders, Parents, and Friends[a]



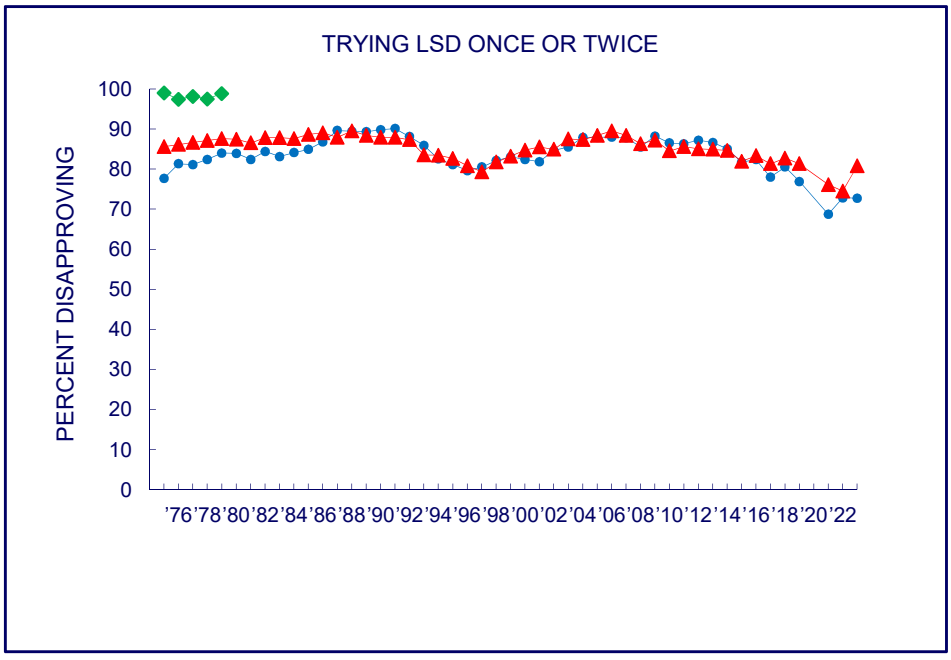


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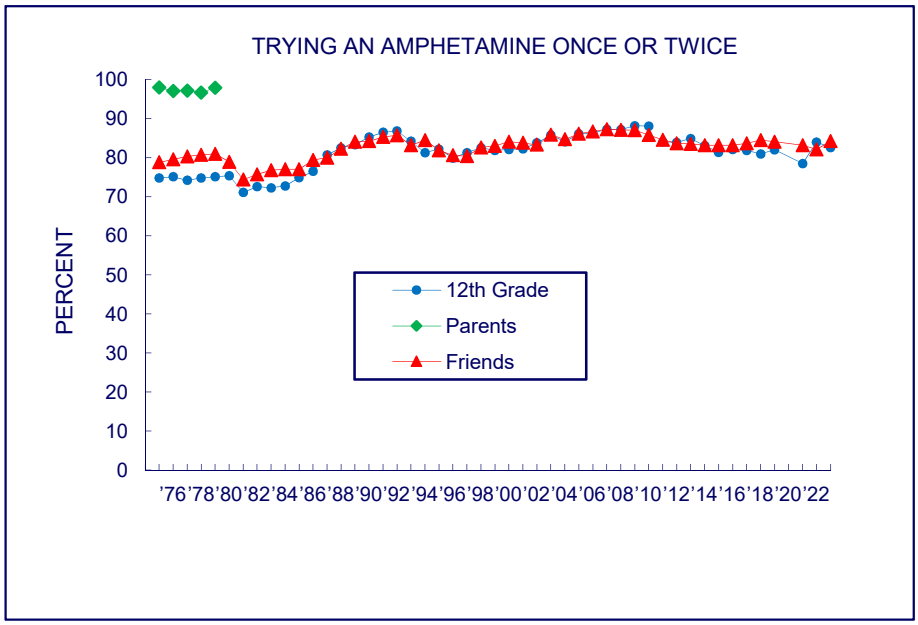
FIGURE 9-1c
AMPHETAMINES[b] AND SEDATIVES (BARBITURATES)[c]
Trends in Disapproval
12th Graders, Parents, and Friends[a]



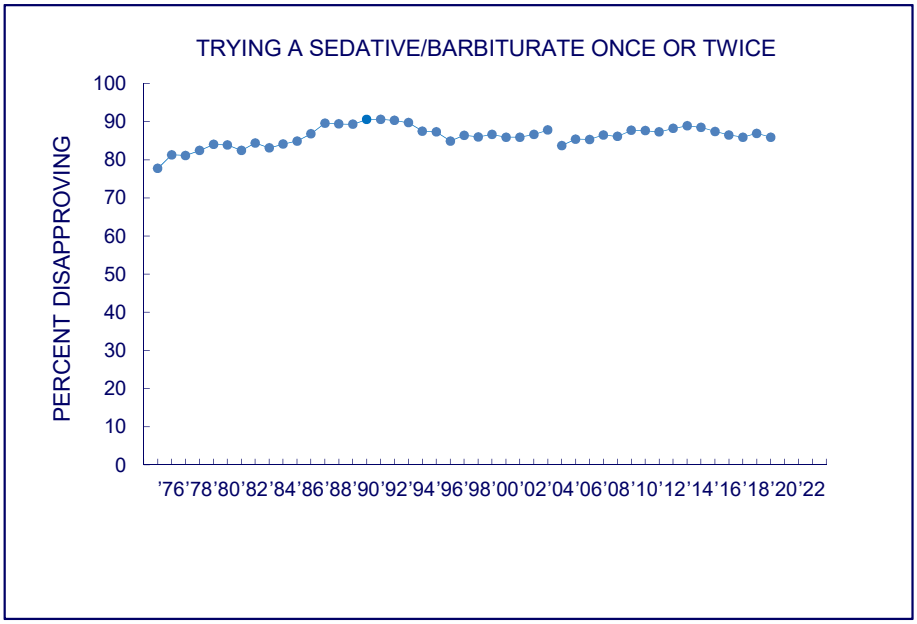


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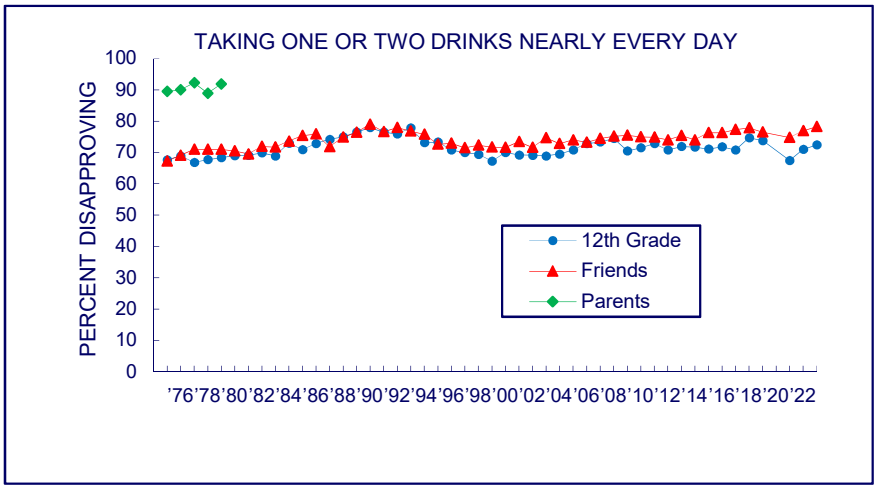
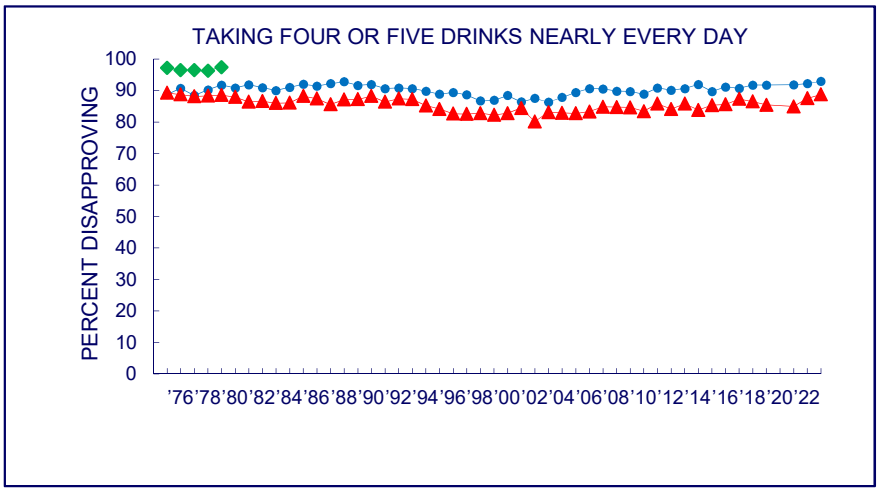
FIGURE 9-2a
ALCOHOL
Trends in Disapproval
12th Graders, Parents, and Friends





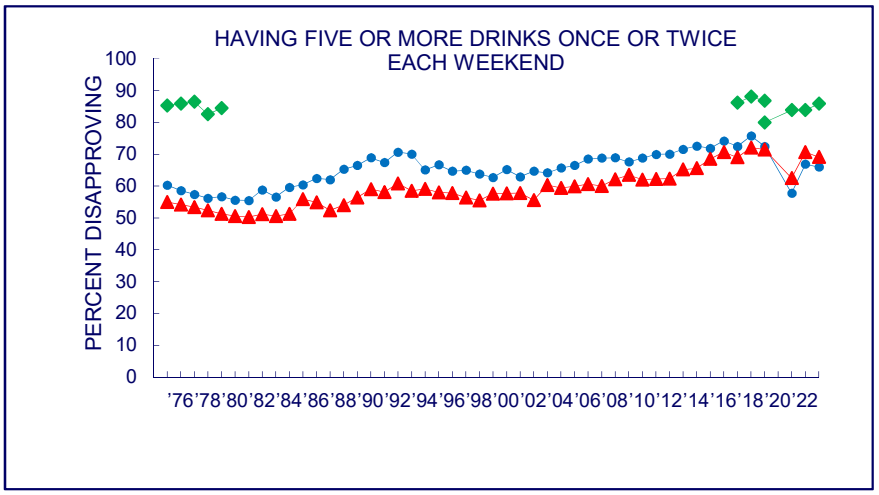


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FIGURE 9-2b
CIGARETTES
Trends in Disapproval
12th Graders, Parents, and Friends

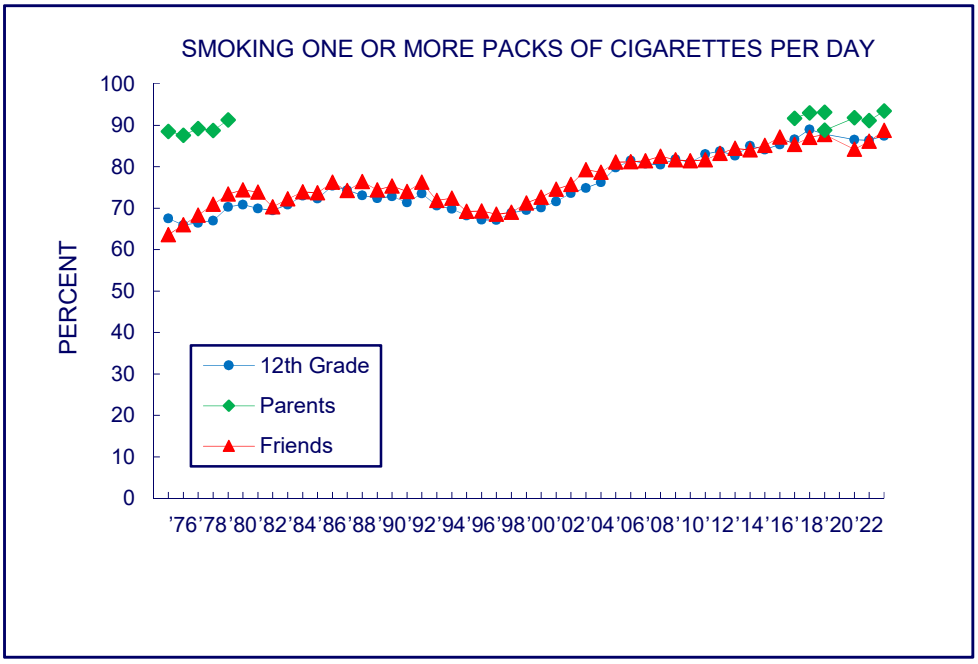

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FIGURE 9-3a
ANY ILLICIT DRUG
Trends in 30-Day Prevalence[d] and Friends' Use in Grade 12

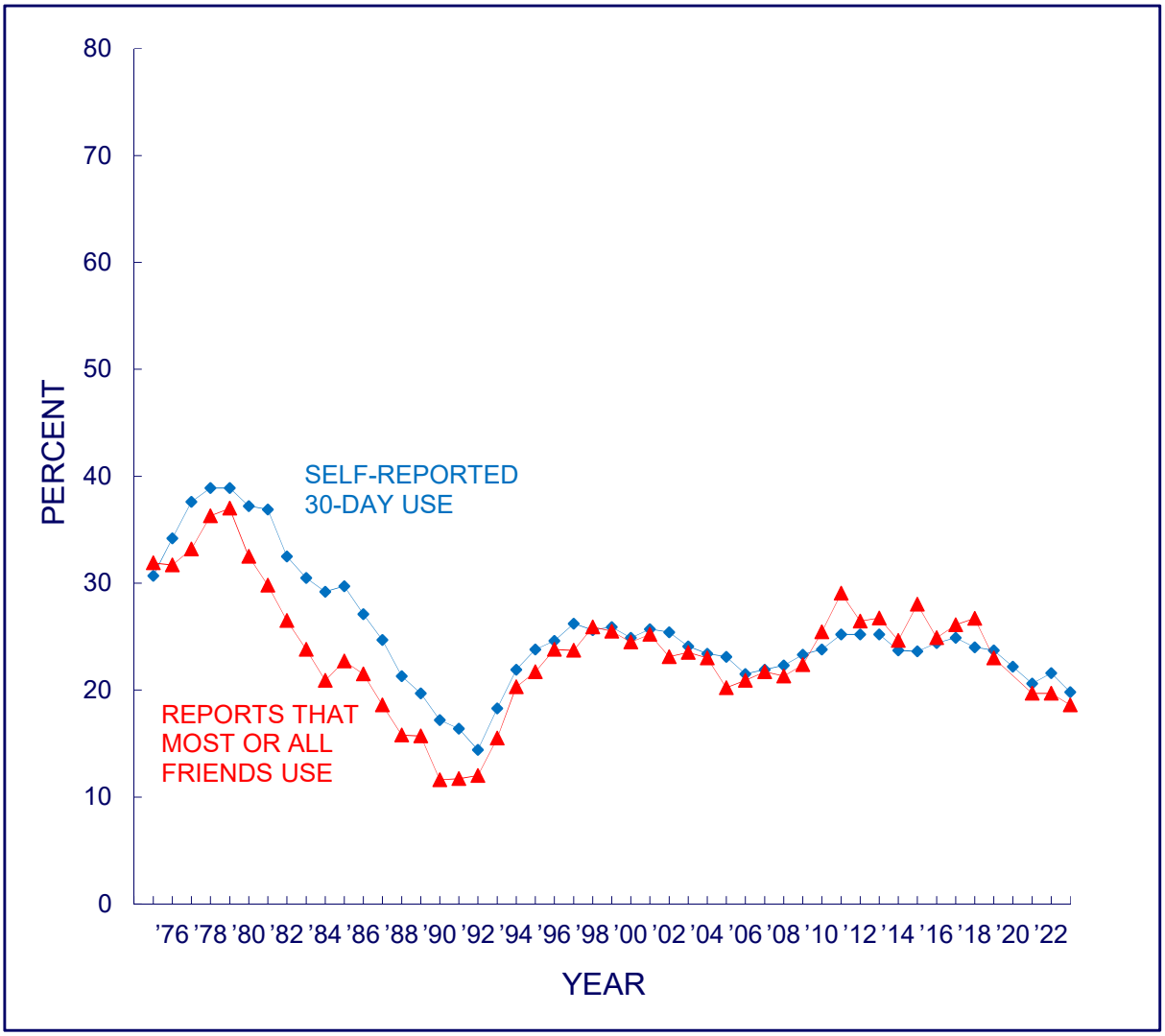

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FIGURE 9-3b
ANY ILLICIT DRUG OTHER THAN MARIJUANA
Trends in 30-Day Prevalence[d] and Friends' Use in Grade 12

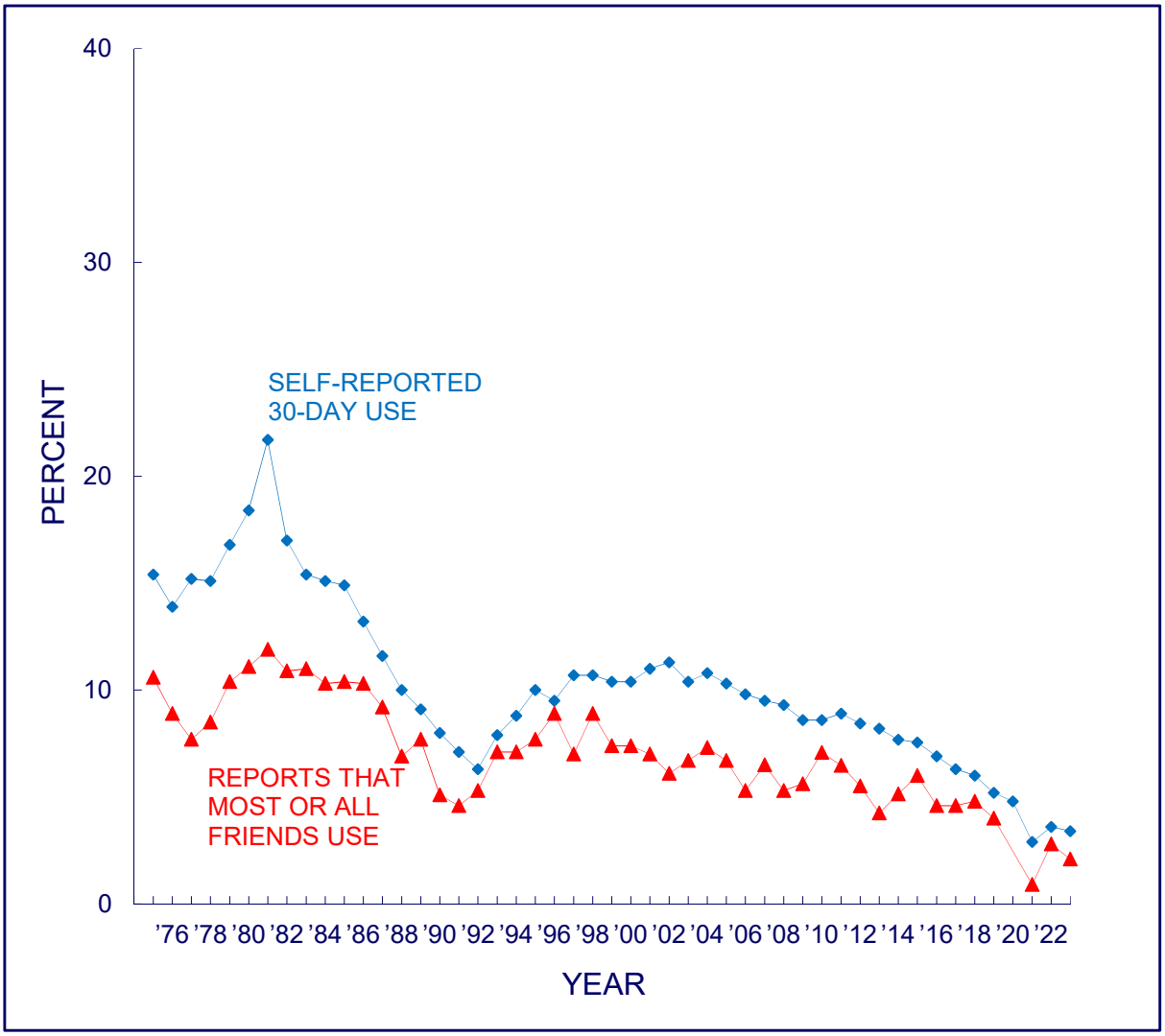

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FIGURE 9-3c
MARIJUANA
Trends in 30-Day Prevalence and Friends' Use in Grade 12

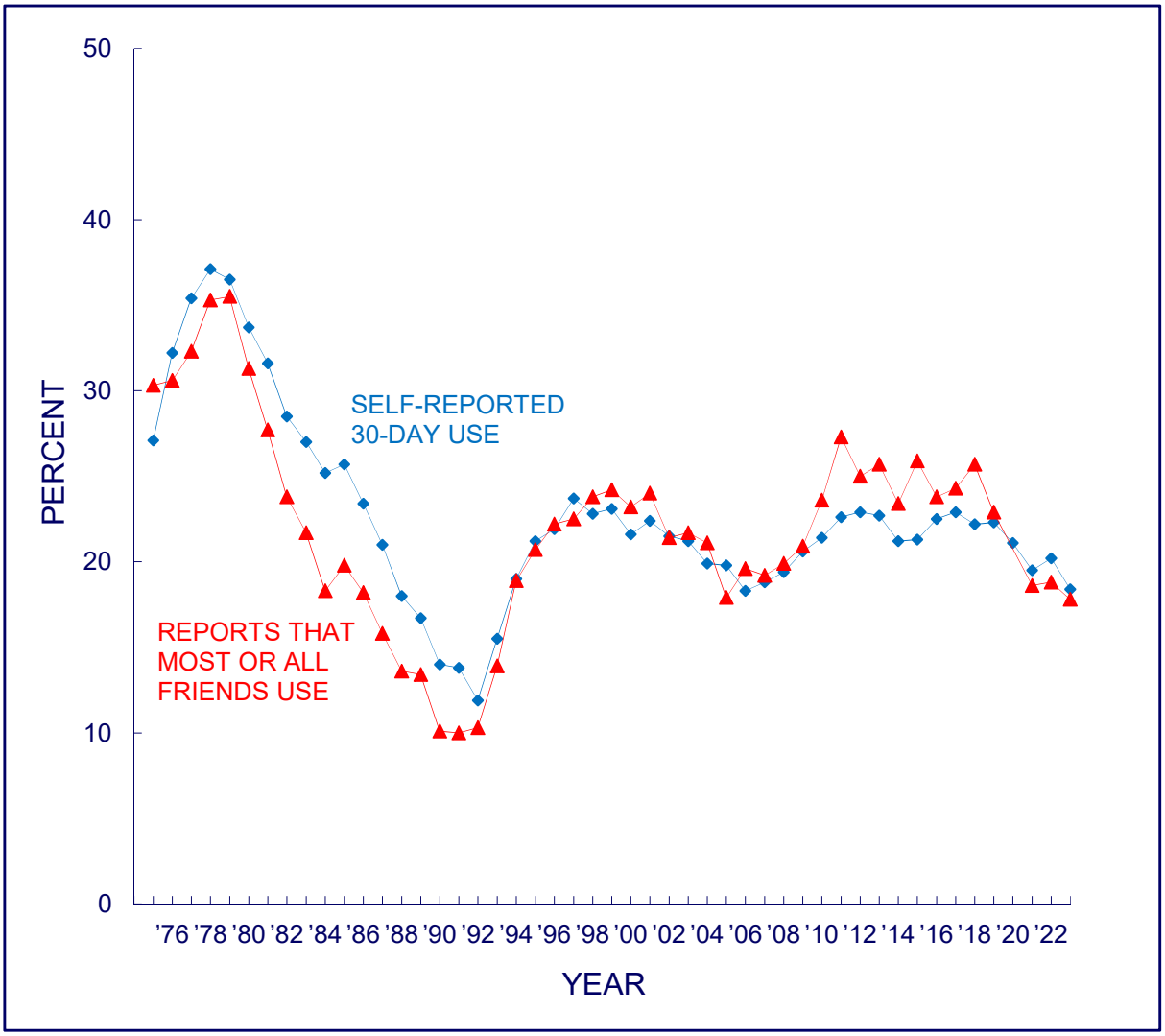

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FIGURE 9-3d
INHALANTS
Trends in 30-Day Prevalence and Friends' Use in Grade 12

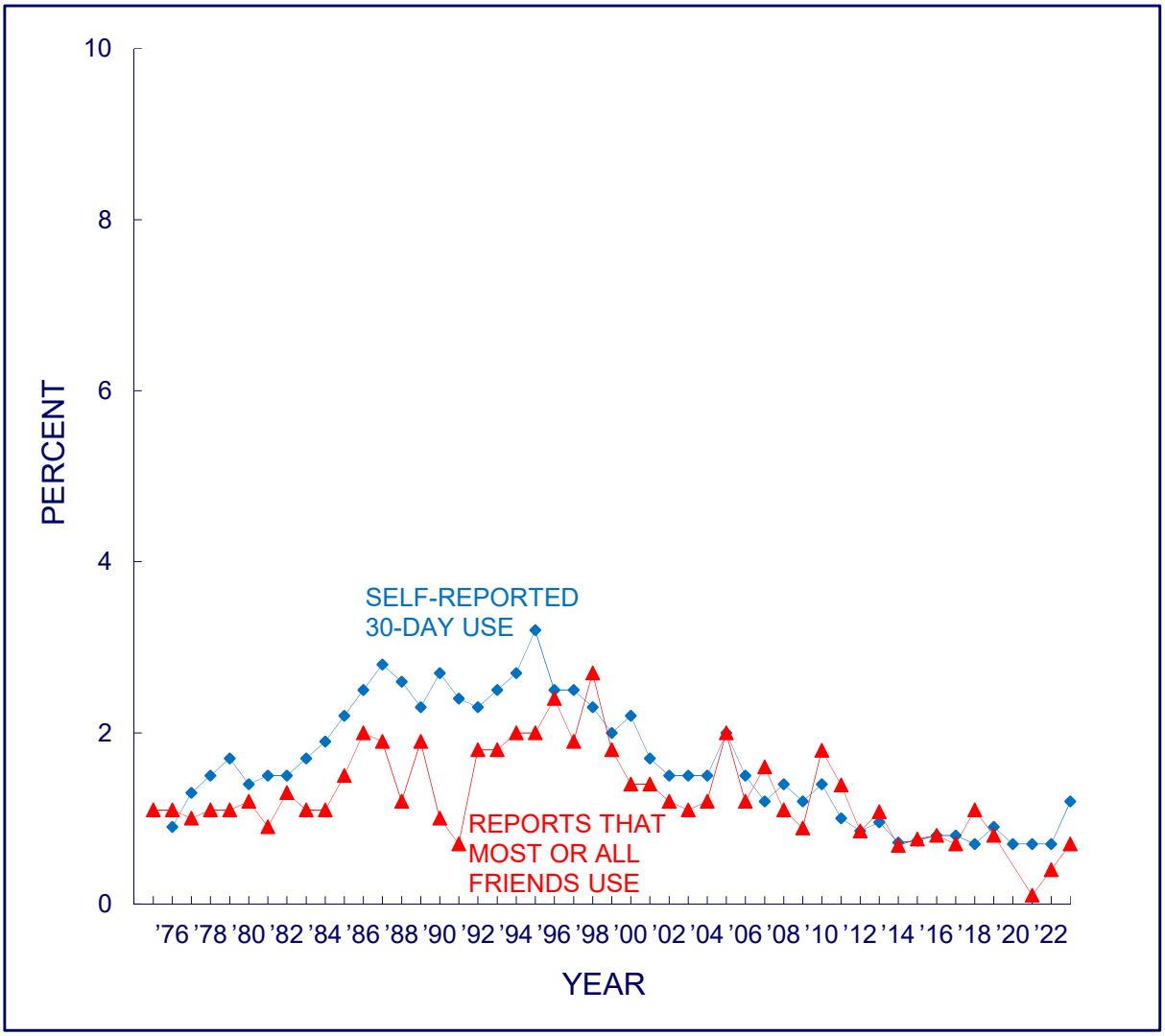

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FIGURE 9-3e
LSD
Trends in 30-Day Prevalence and Friends' Use in Grade 12

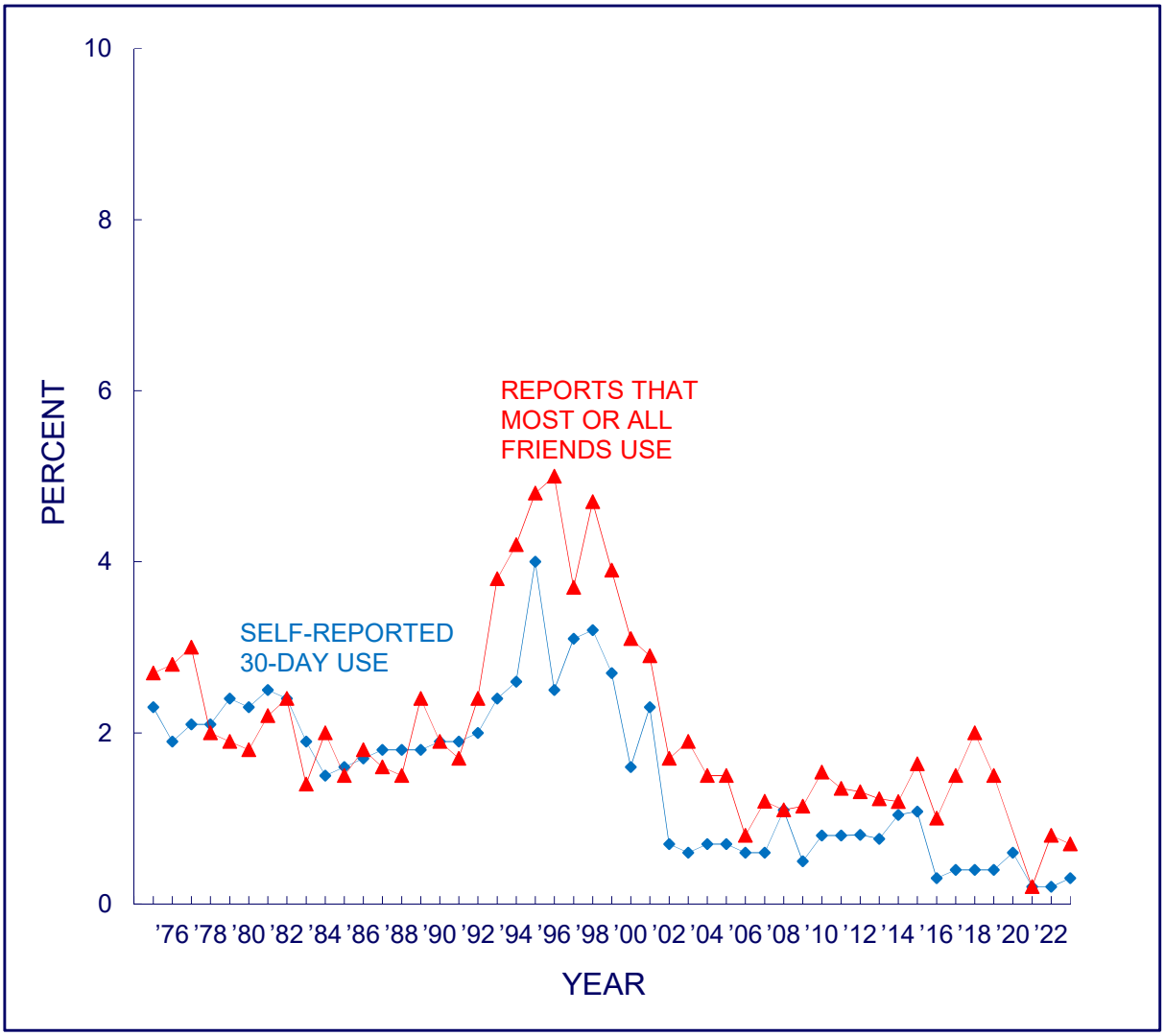

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FIGURE 9-3f
HALLUCINOGENS OTHER THAN LSD
Trends in 30-Day Prevalence[e] and Friends' Use[a] in Grade 12

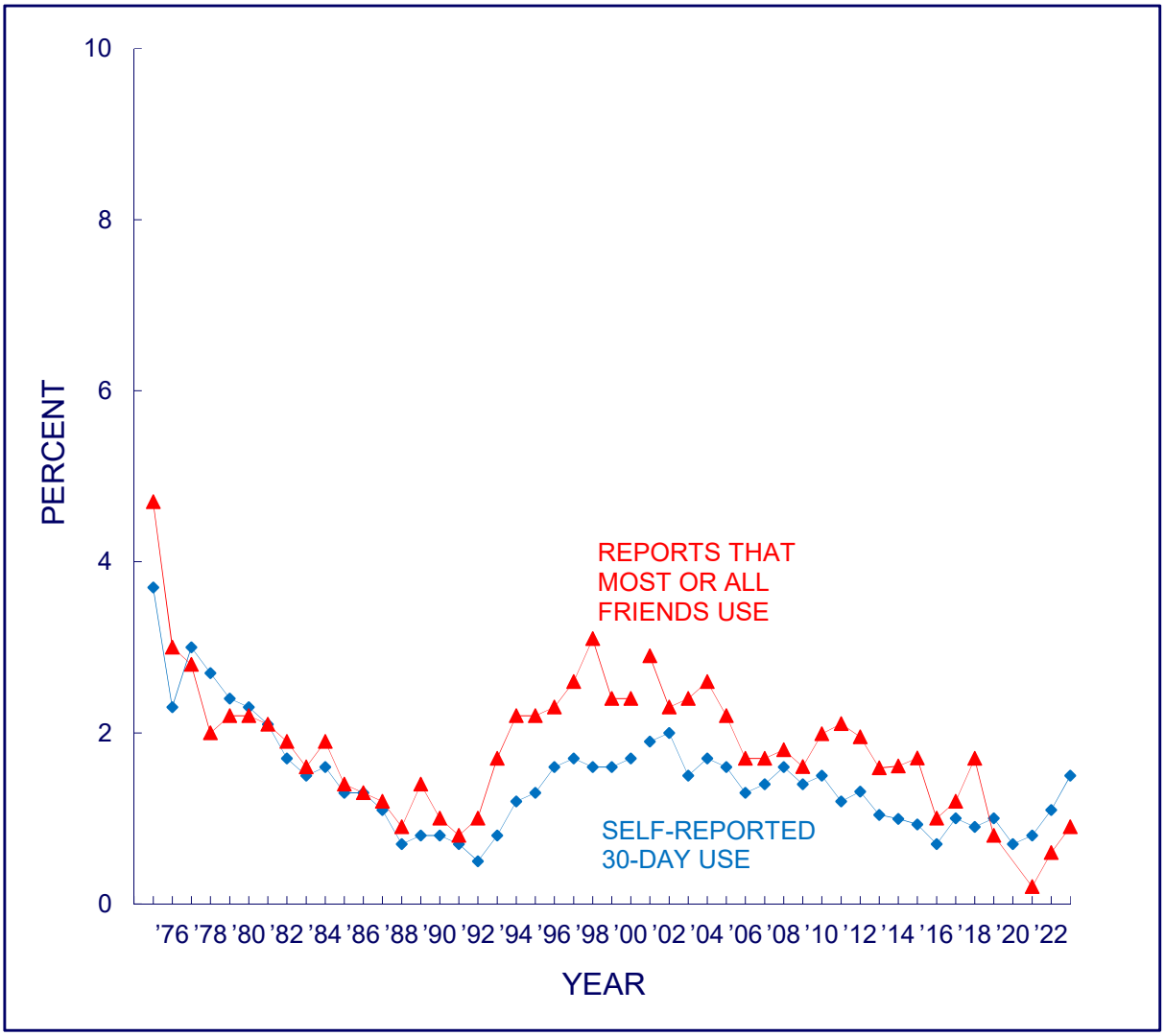

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FIGURE 9-3g
MDMA (ECSTASY, MOLLY)
Trends in 30-Day Prevalence[f] and Friends' Use in Grade 12

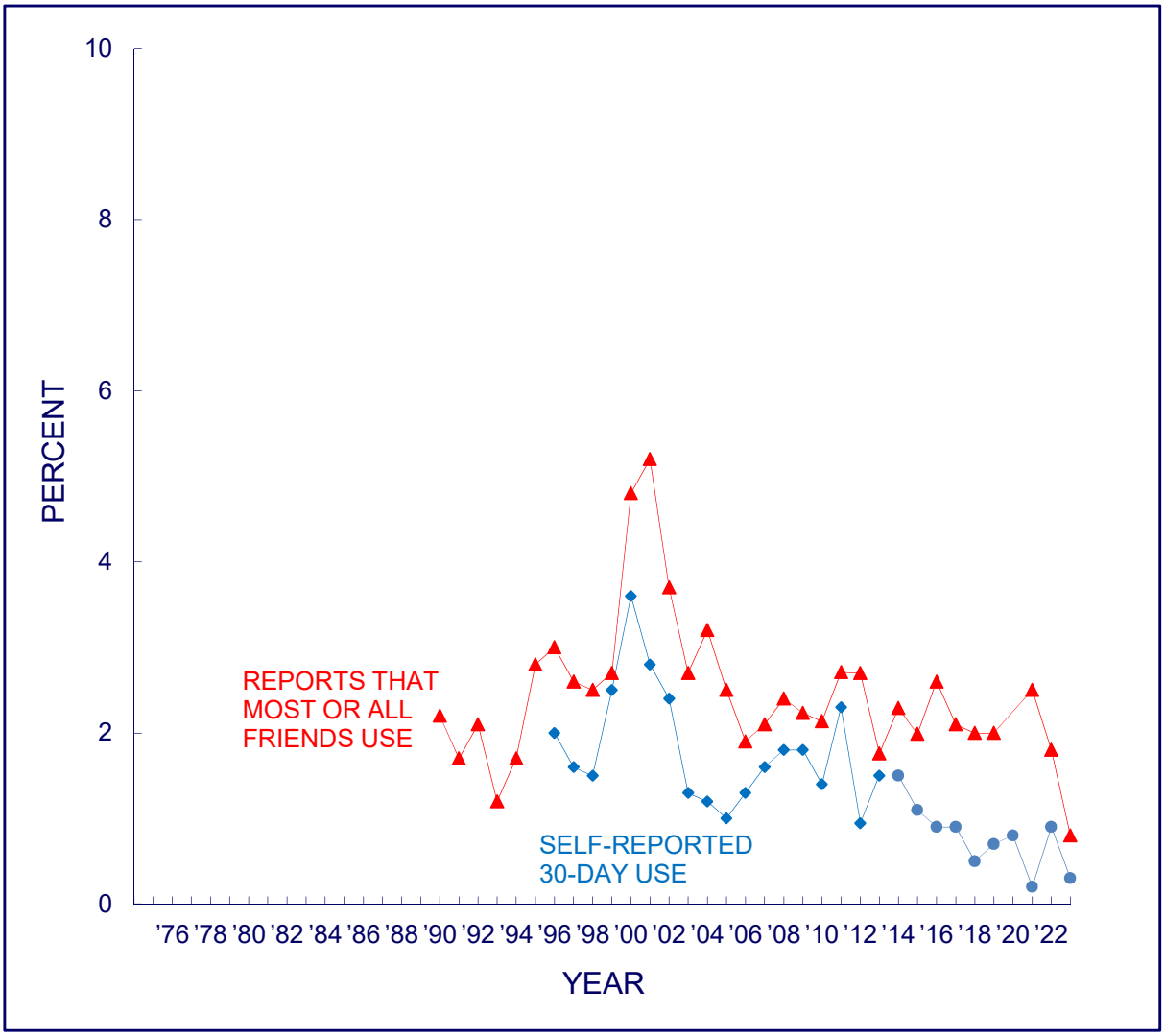

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FIGURE 9-3h
COCAINE
Trends in 30-Day Prevalence and Friends' Use in Grade 12

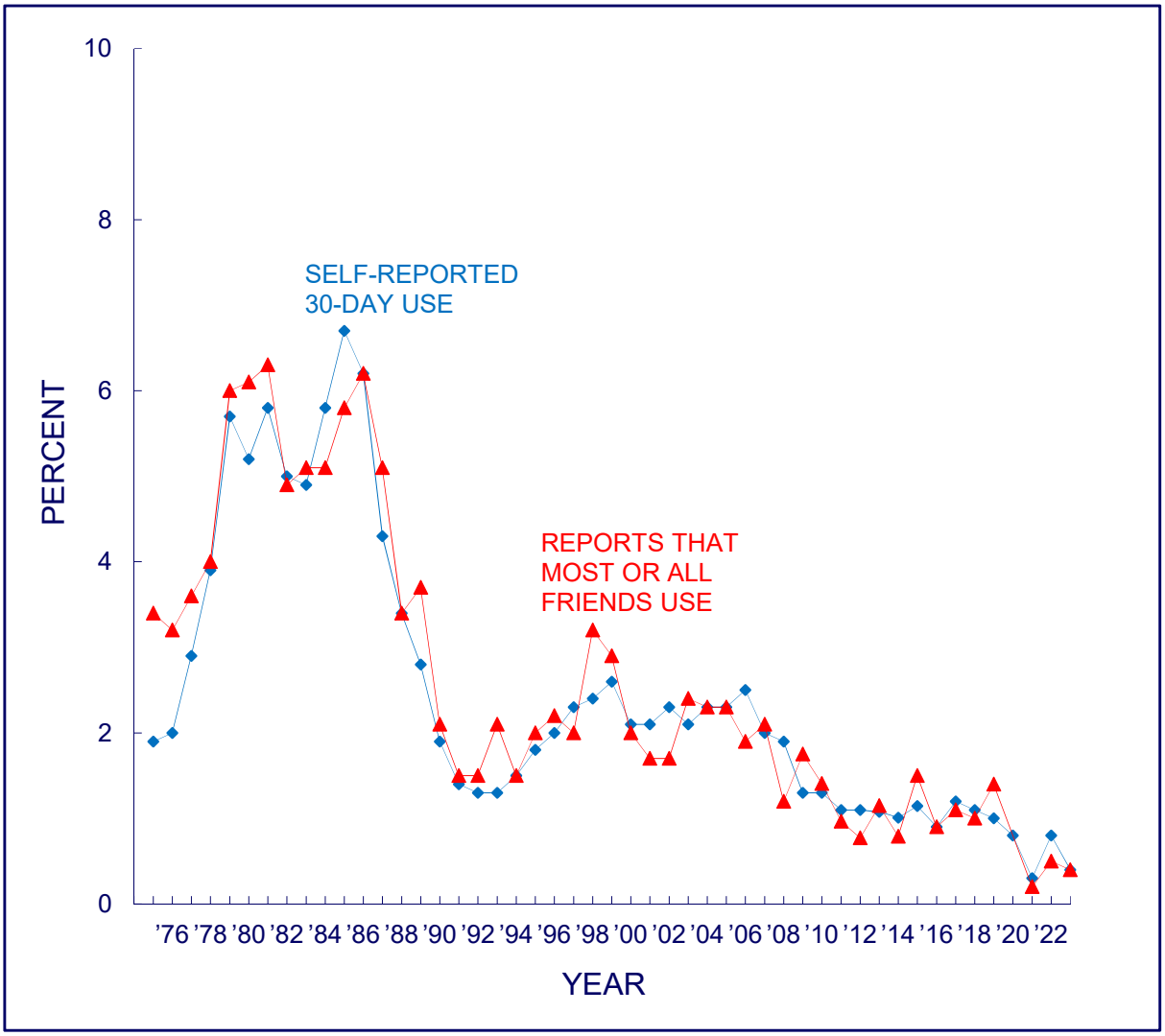

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FIGURE 9-3i
CRACK
Trends in 30-Day Prevalence and Friends' Use in Grade 12

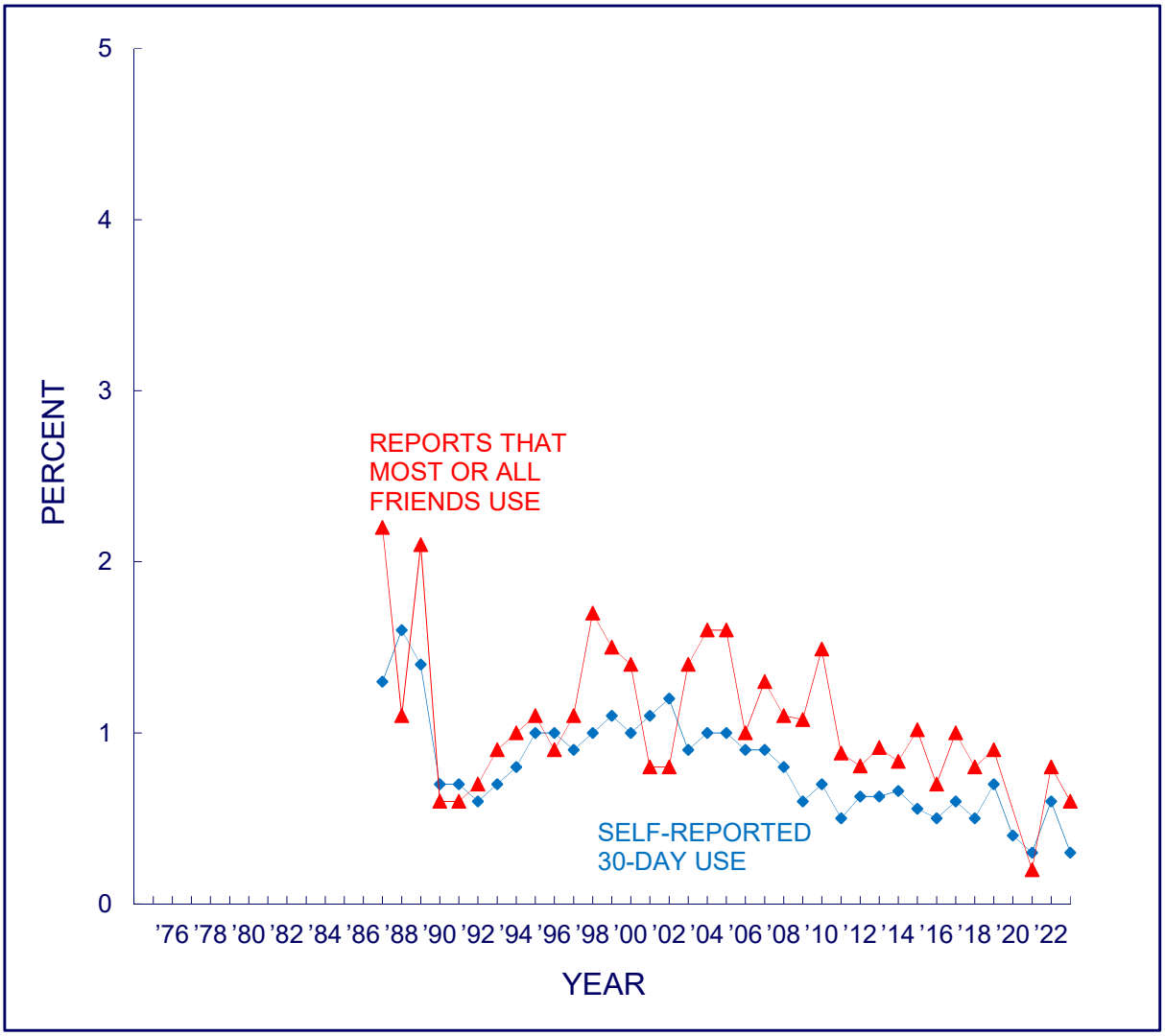

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FIGURE 9-3j
COCAINE POWDER
Trends in 30-Day Prevalence and Friends' Use in Grade 12

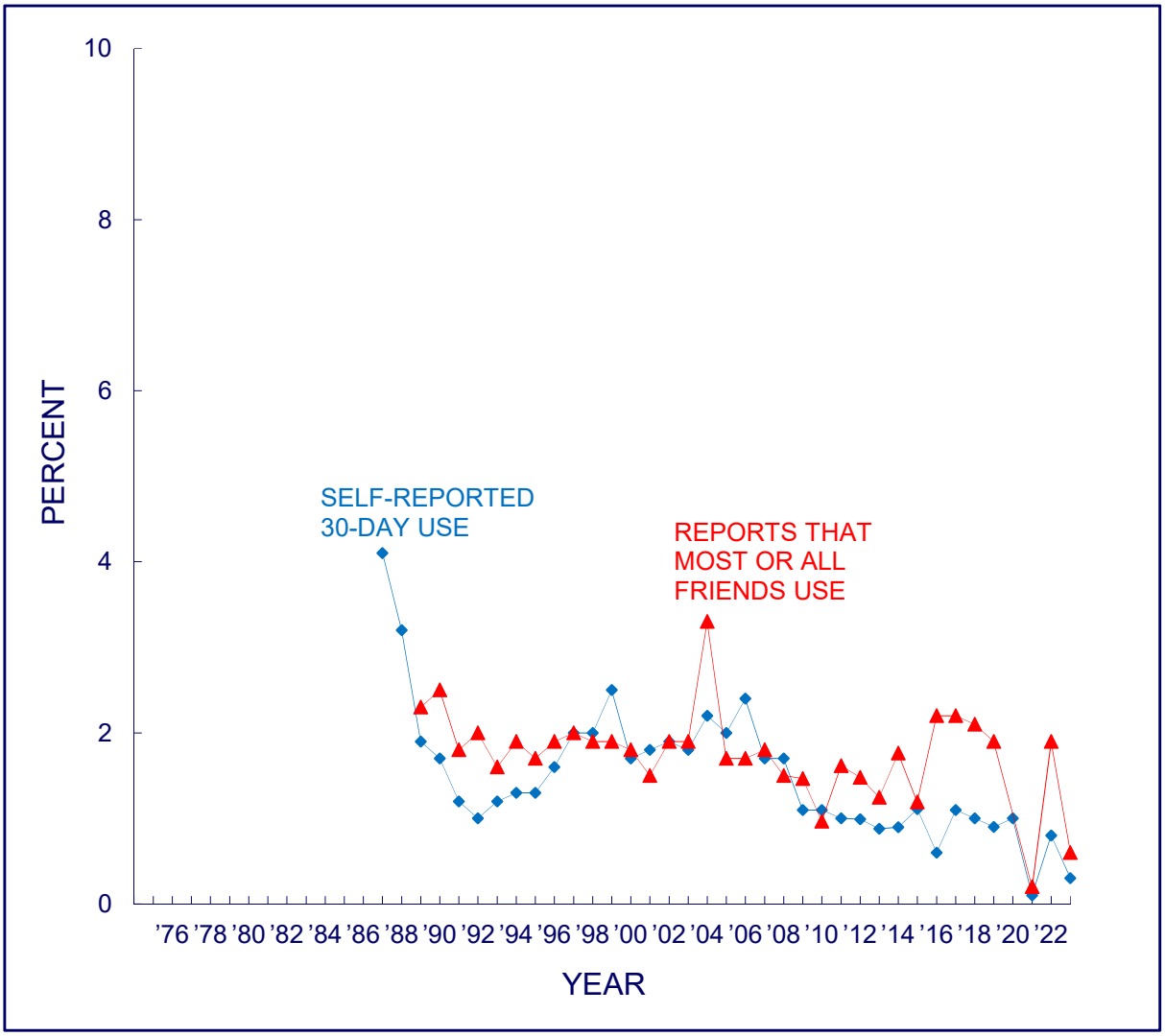

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FIGURE 9-3k
HEROIN
Trends in 30-Day Prevalence and Friends' Use in Grade 12

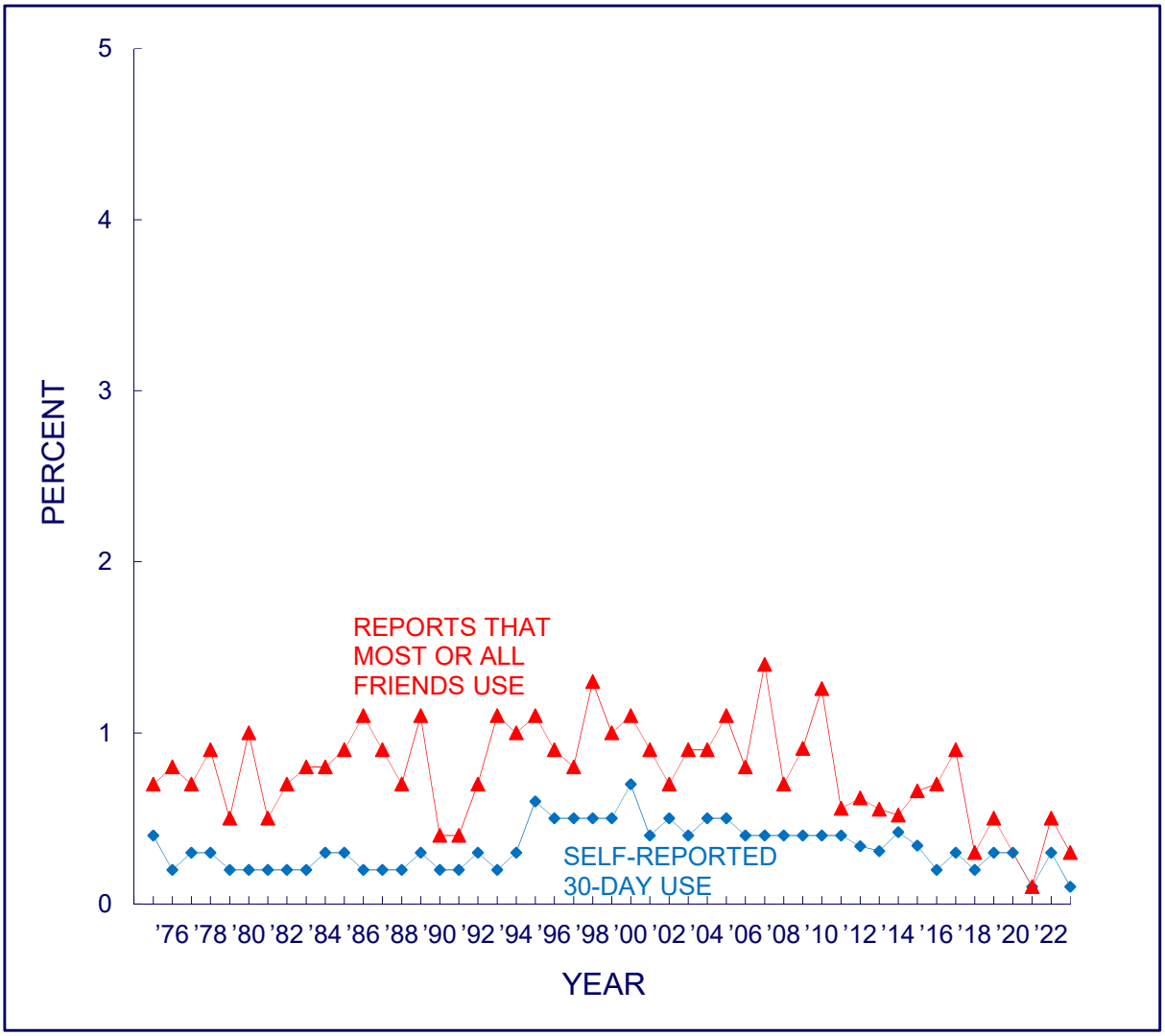

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FIGURE 9-3l
NARCOTICS OTHER THAN HEROIN
Trends in 30-Day Prevalence[g] and Friends' Use[h] in Grade 12

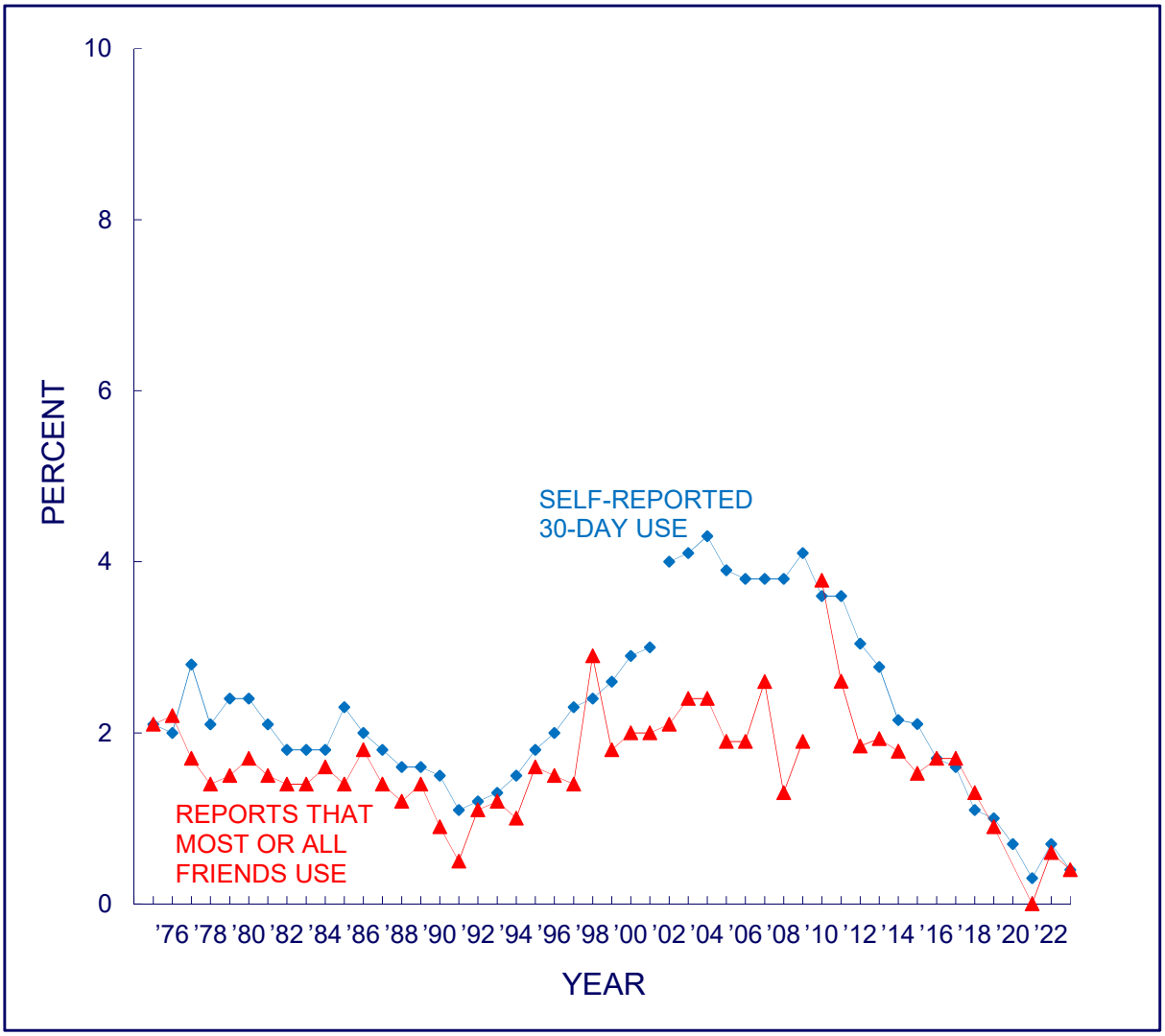

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FIGURE 9-3m
AMPHETAMINES
Trends in 30-Day Prevalence[i] and Friends' Use in Grade 12

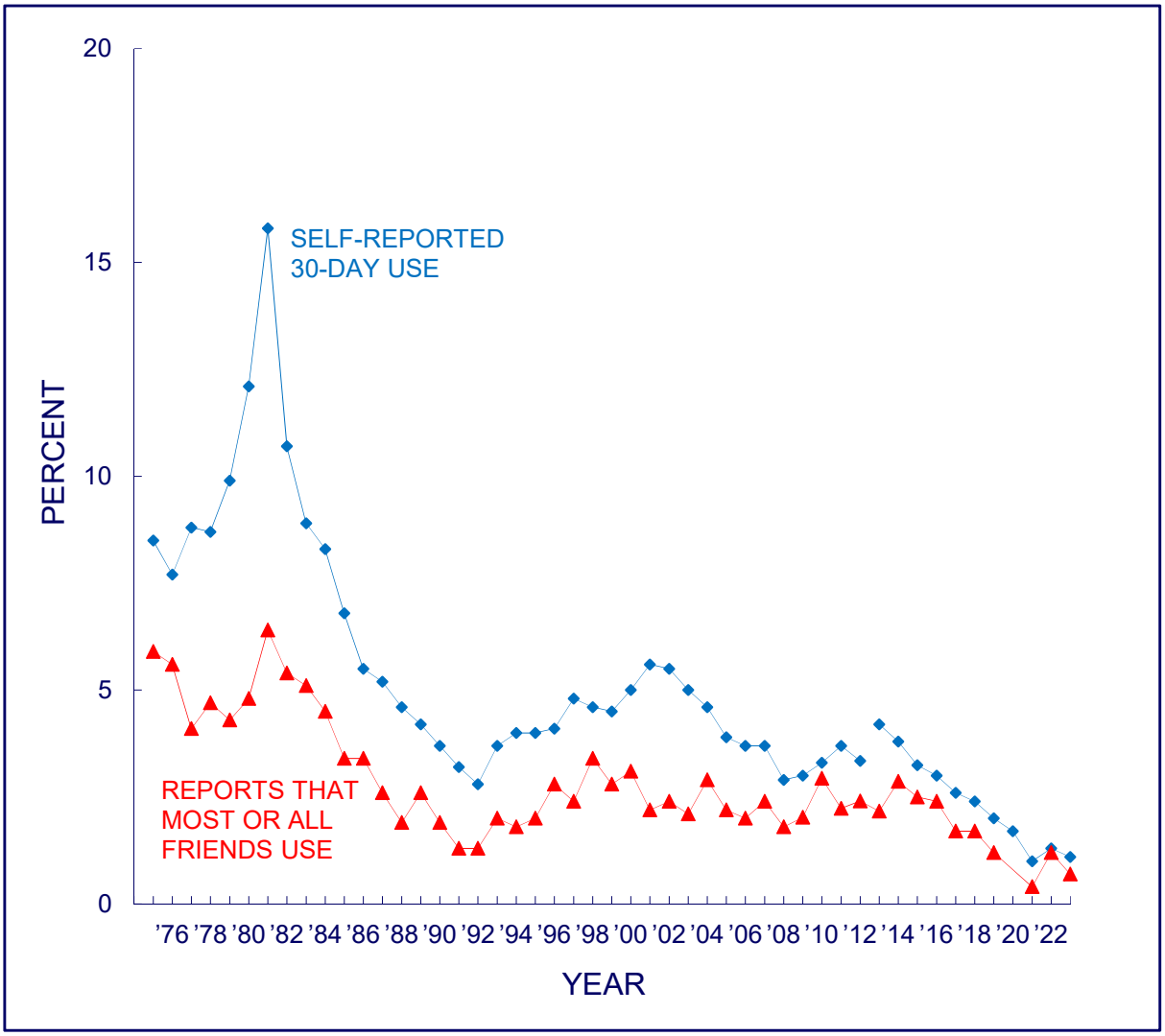

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FIGURE 9-3n
CRYSTAL METHAMPHETAMINE (ICE)
Trends in 30-Day Prevalence and Friends' Use in Grade 12

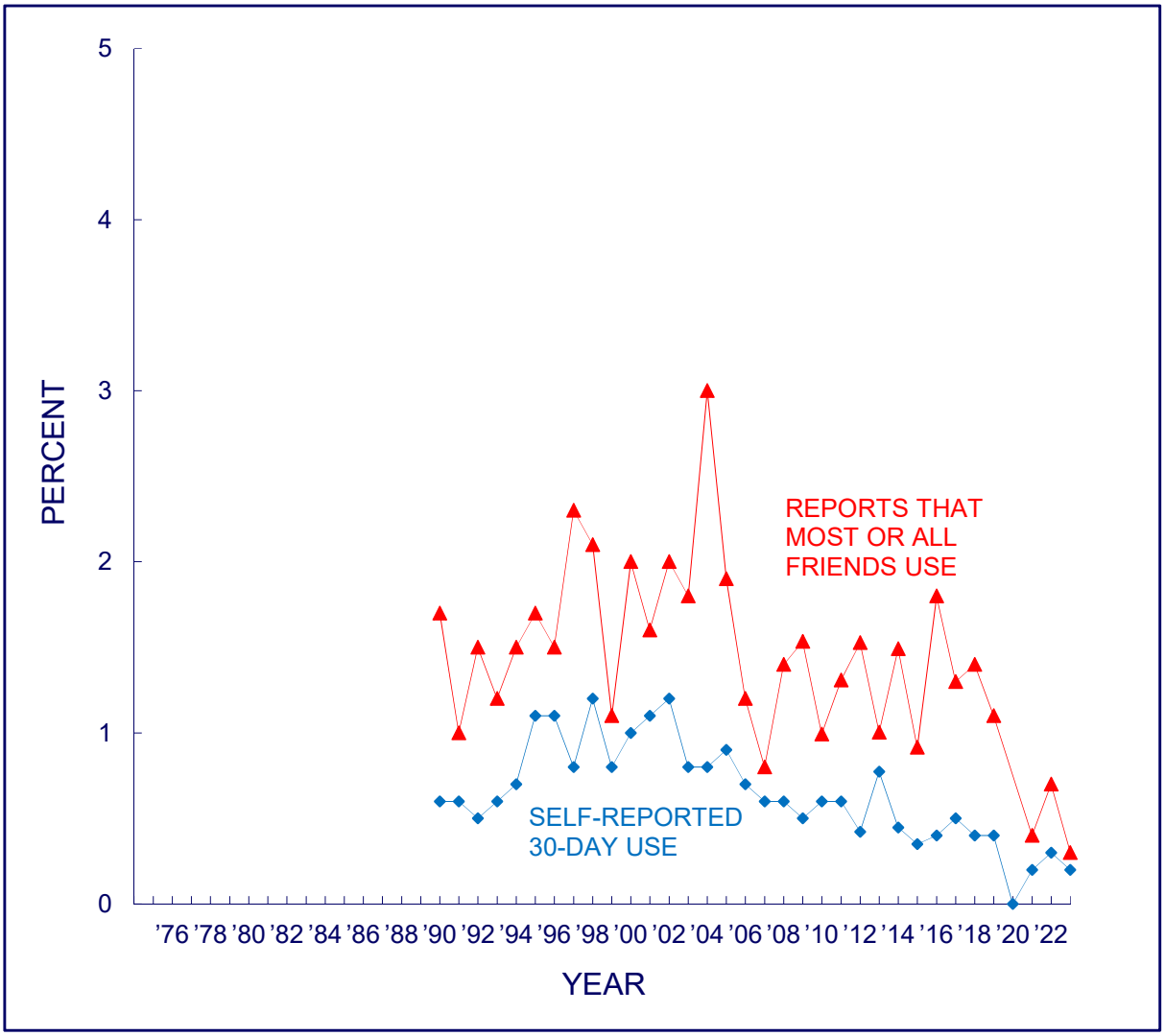

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FIGURE 9-3o
SEDATIVES (BARBITURATES)
Trends in 30-Day Prevalence and Friends' Use in Grade 12

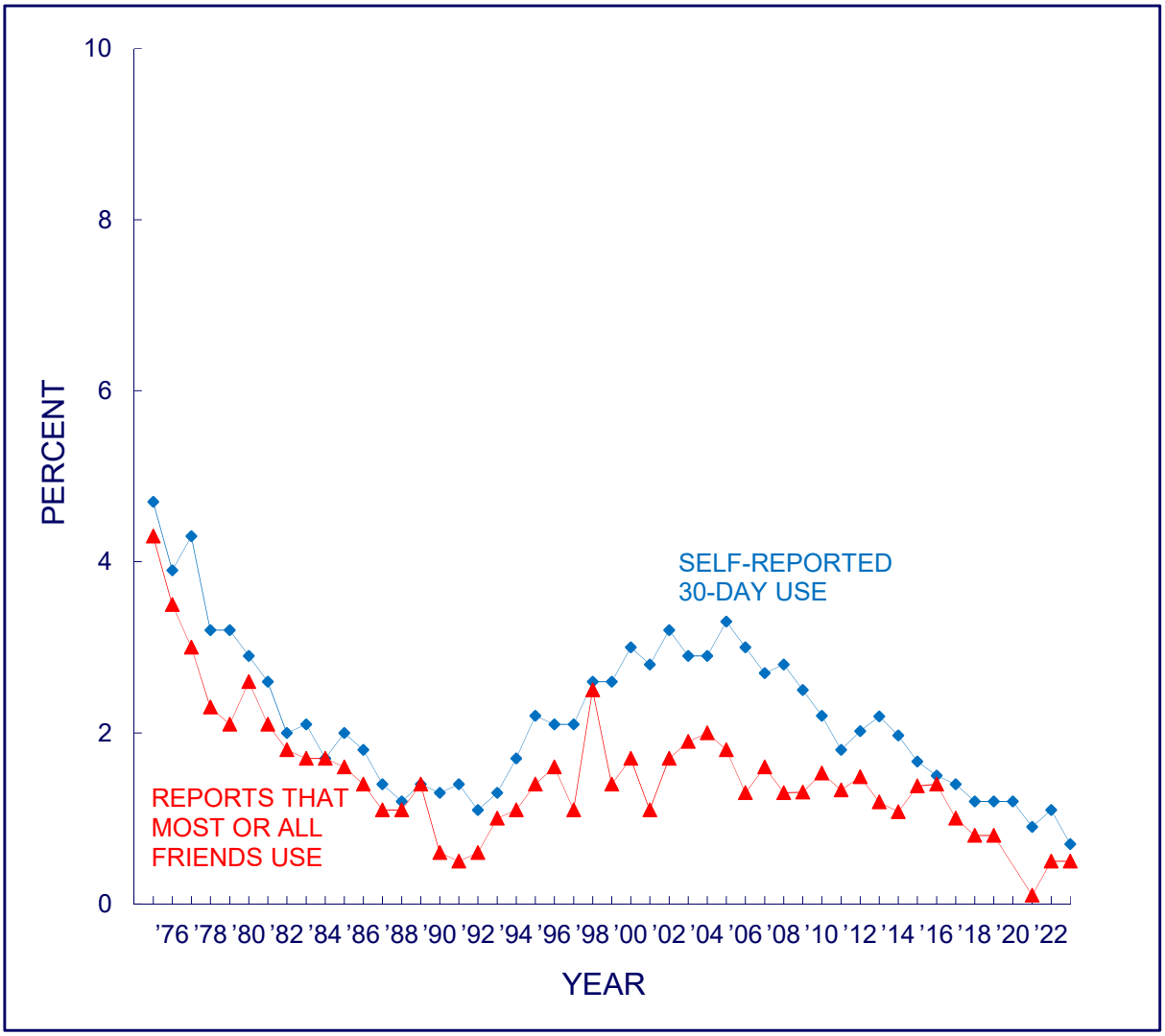

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FIGURE 9-3p
TRANQUILIZERS
Trends in 30-Day Prevalence[j] and Friends' Use in Grade 12

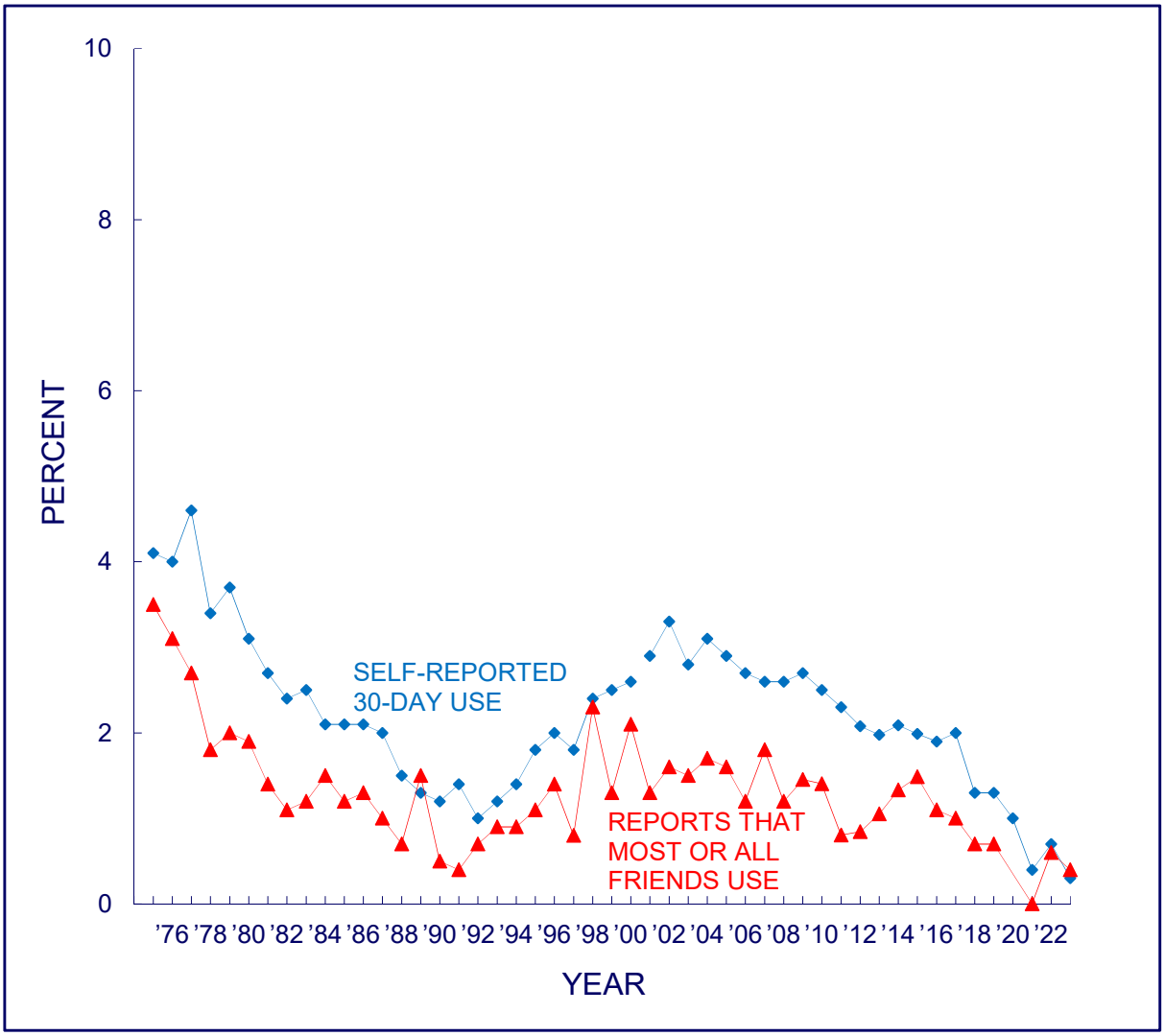

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FIGURE 9-3q
ALCOHOL
Trends in 30-Day Prevalence[k] and Friends' Use in Grade 12

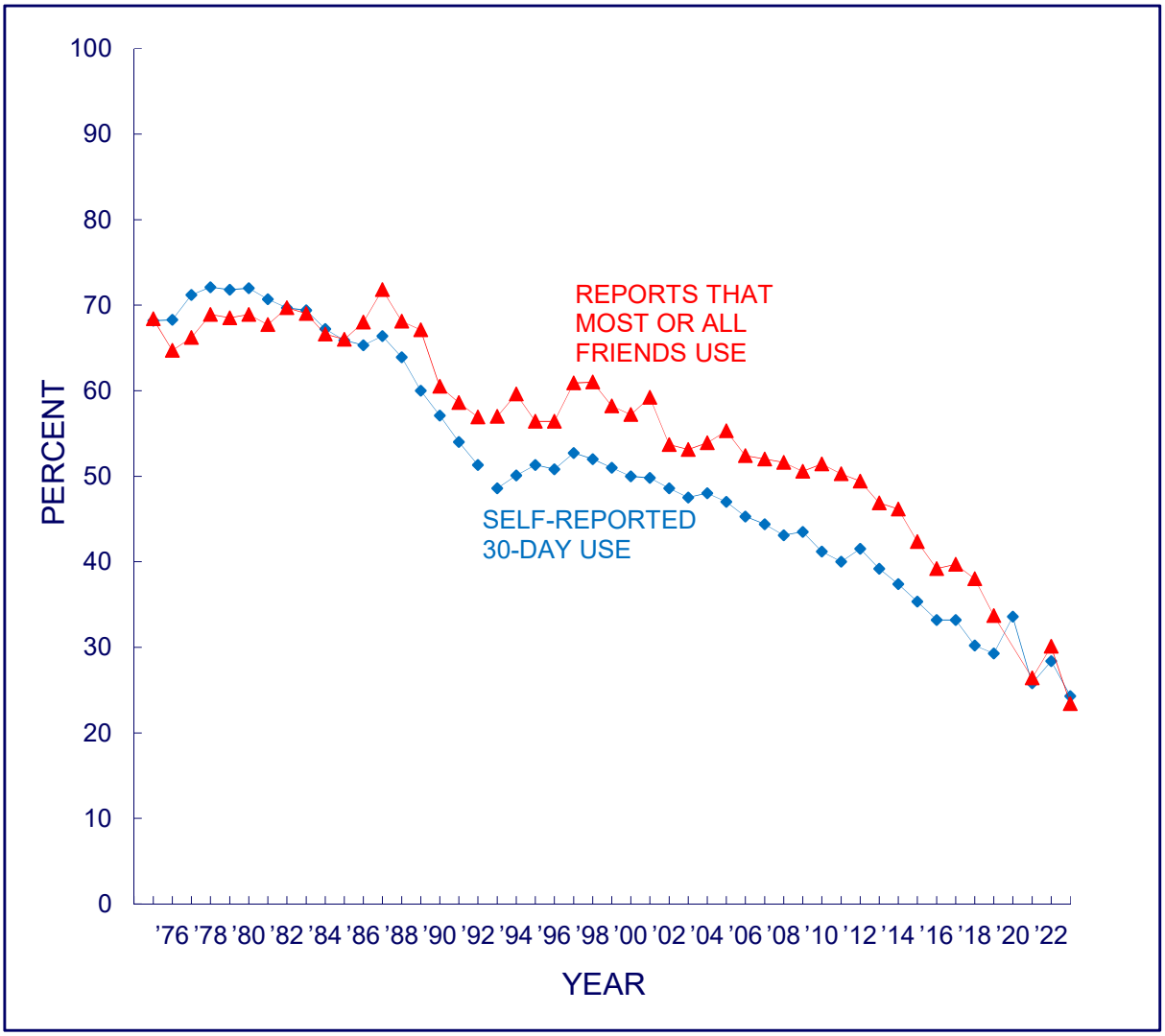

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FIGURE 9-3r
BEEN DRUNK
Trends in 30-Day Prevalence and Friends' Use in Grade 12

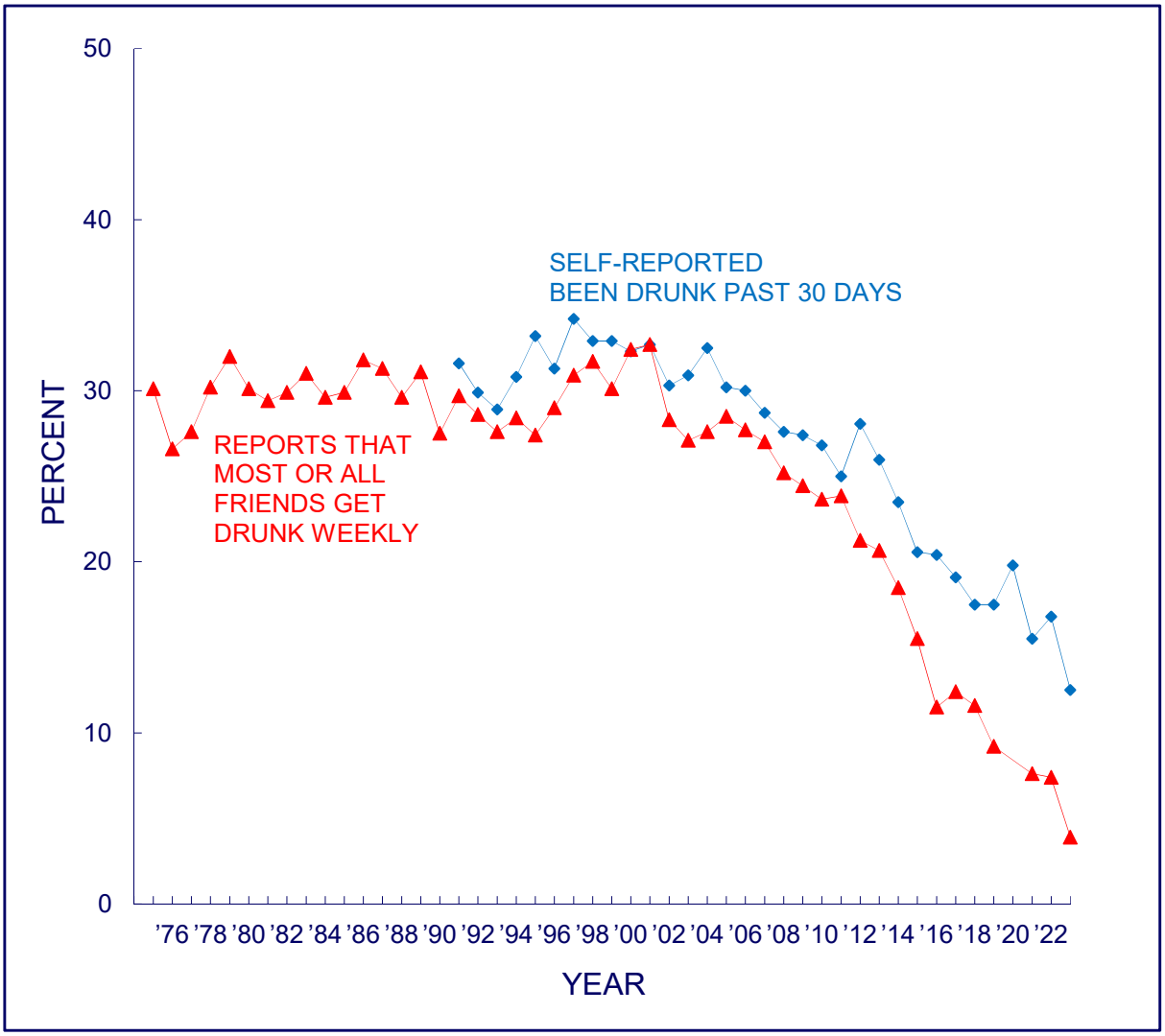

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FIGURE 9-3s
CIGARETTES
Trends in 30-Day Prevalence and Friends' Use in Grade 12

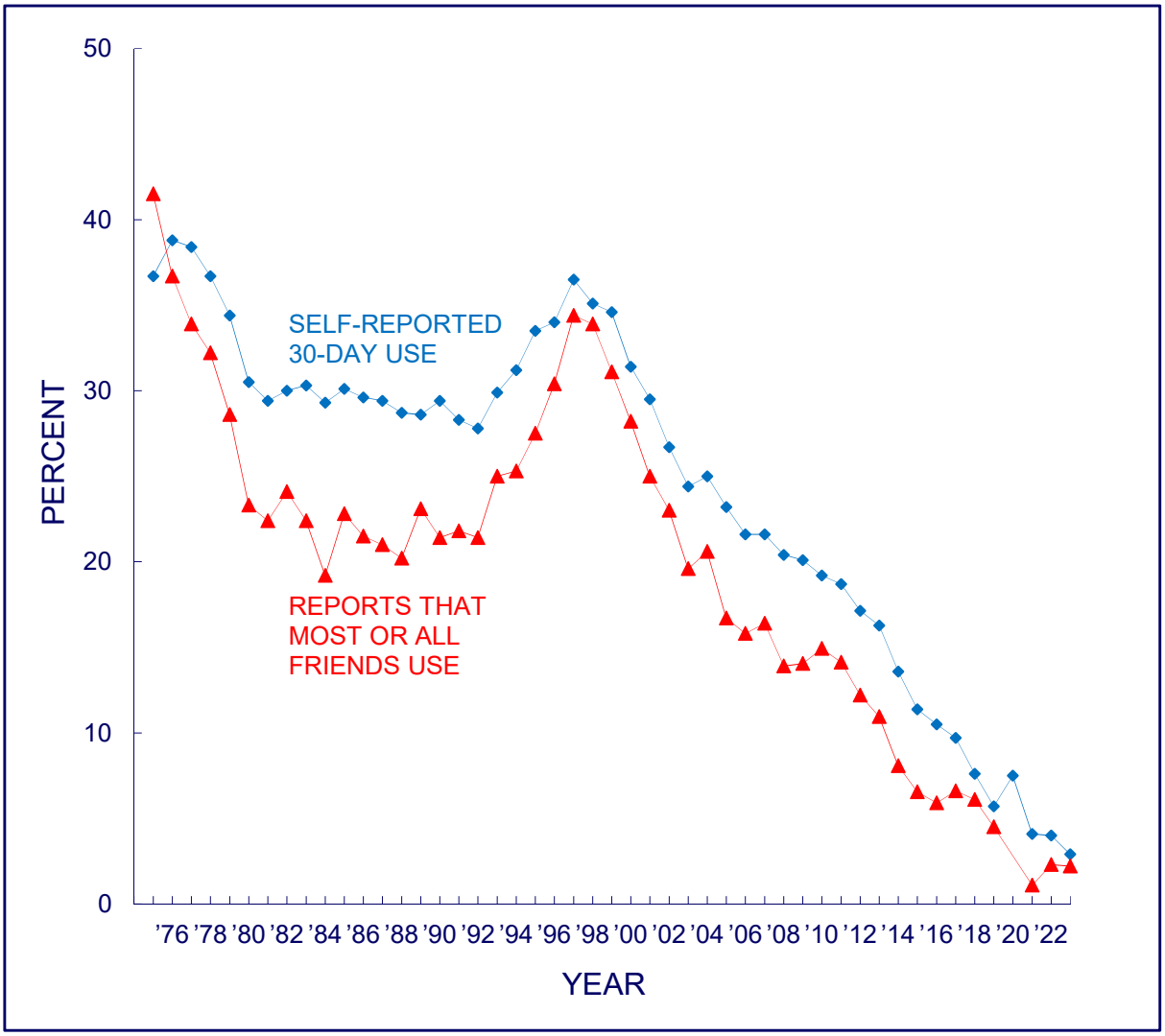

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FIGURE 9-3t
STEROIDS
Trends in 30-Day Prevalence and Friends' Use in Grade 12

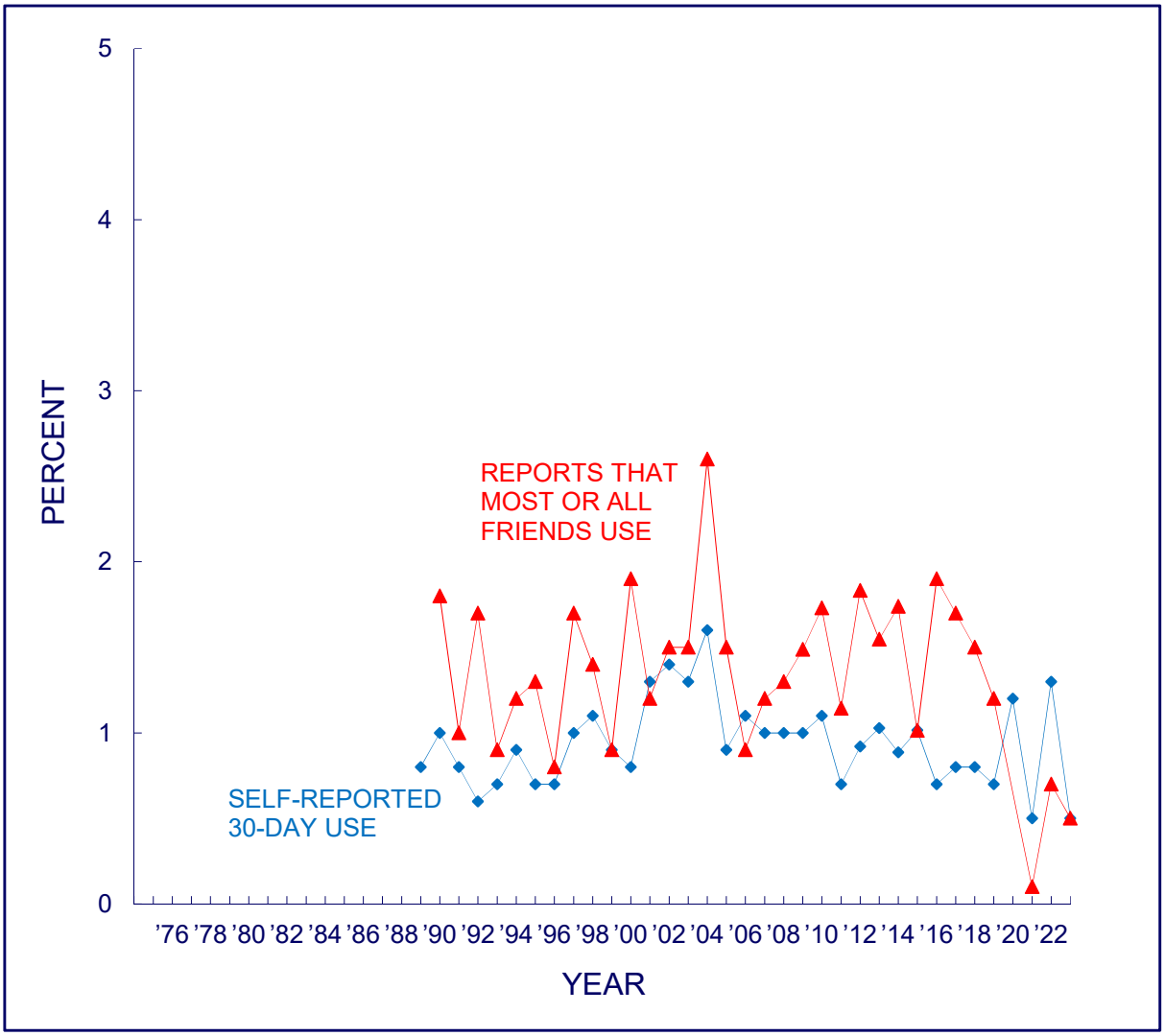

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FIGURE 9-4
Proportion of Friends Using Each Drug as Estimated by 8th, 10th, and 12th Graders, 2023

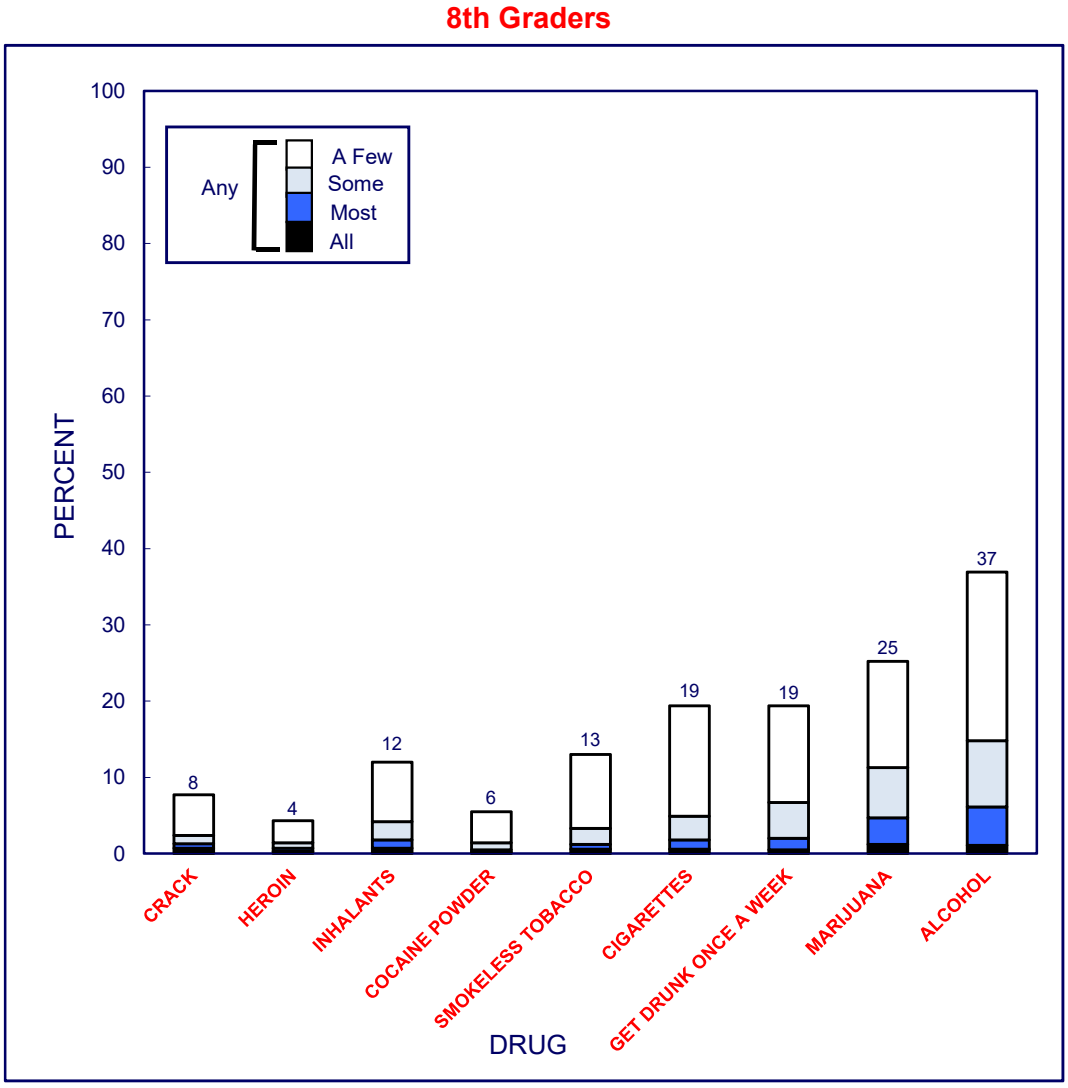

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FIGURE 9-4 (cont.)
Proportion of Friends Using Each Drug as Estimated by 8th, 10th, and 12th Graders, 2023

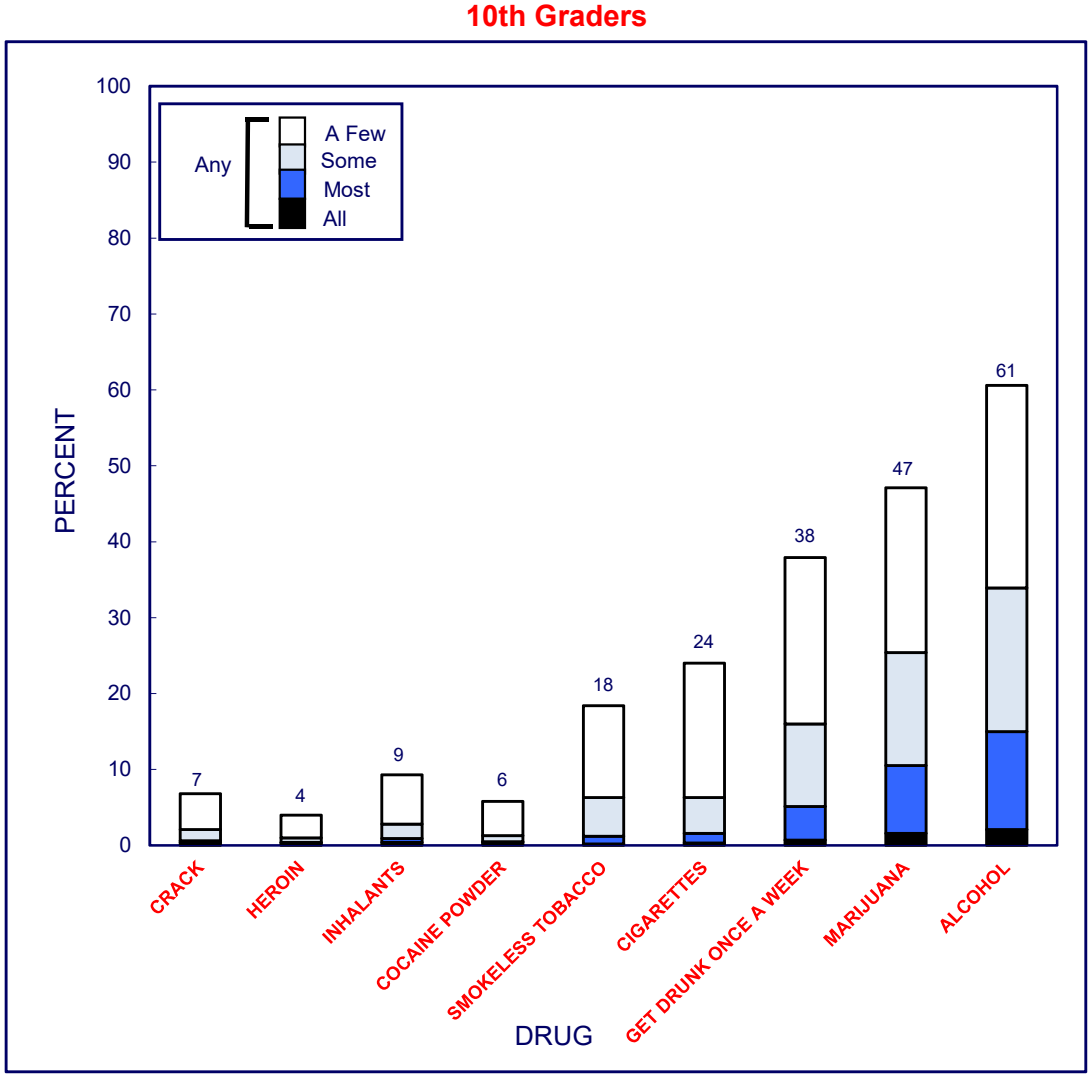

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FIGURE 9-4 (cont.)
Proportion of Friends Using Each Drug as Estimated by 8th, 10th, and 12th Graders, 2023

12th Graders

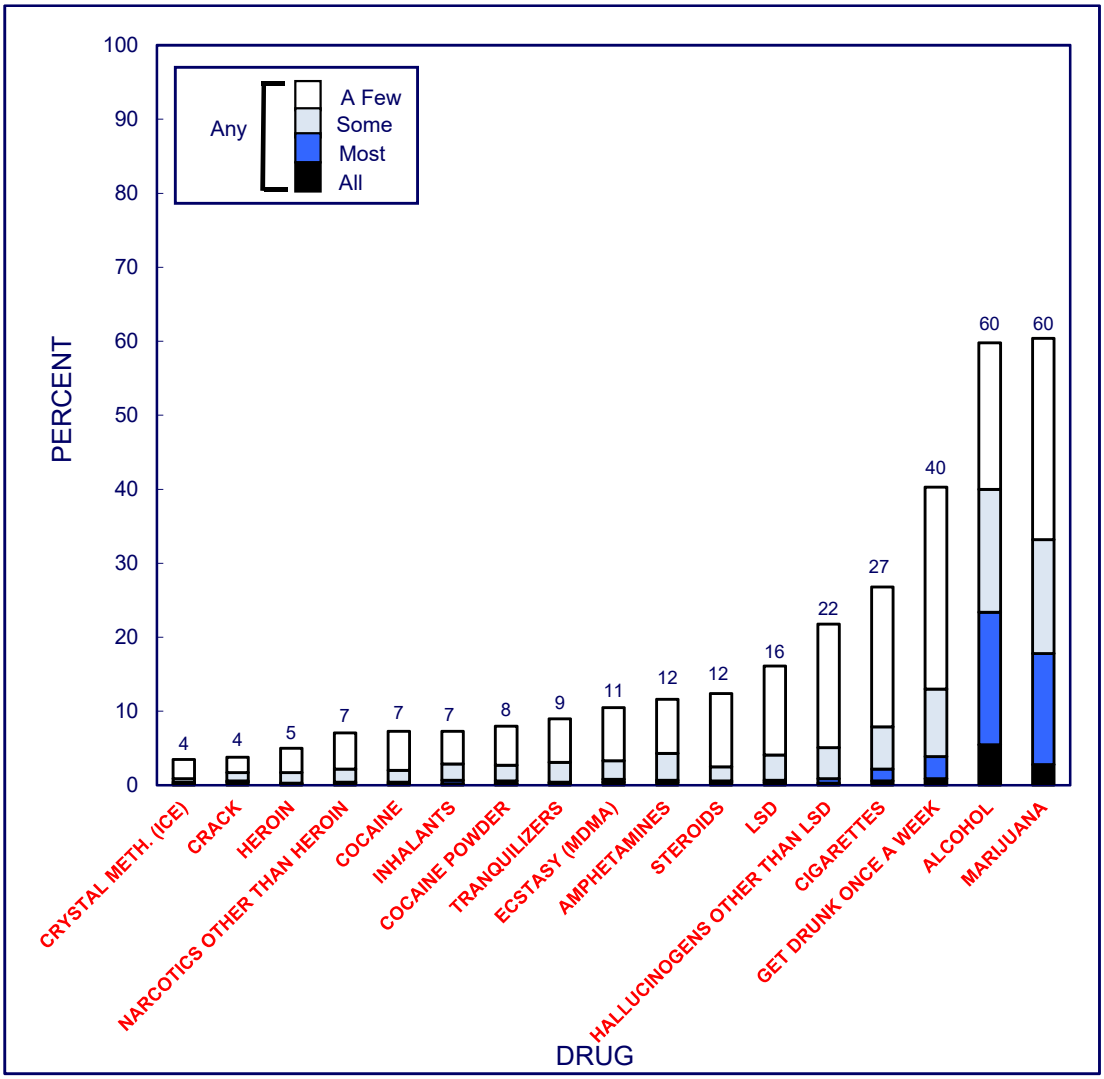

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FIGURE 9-5a[1]
Various Drugs: Trends in Perceived Availability in Grade 12

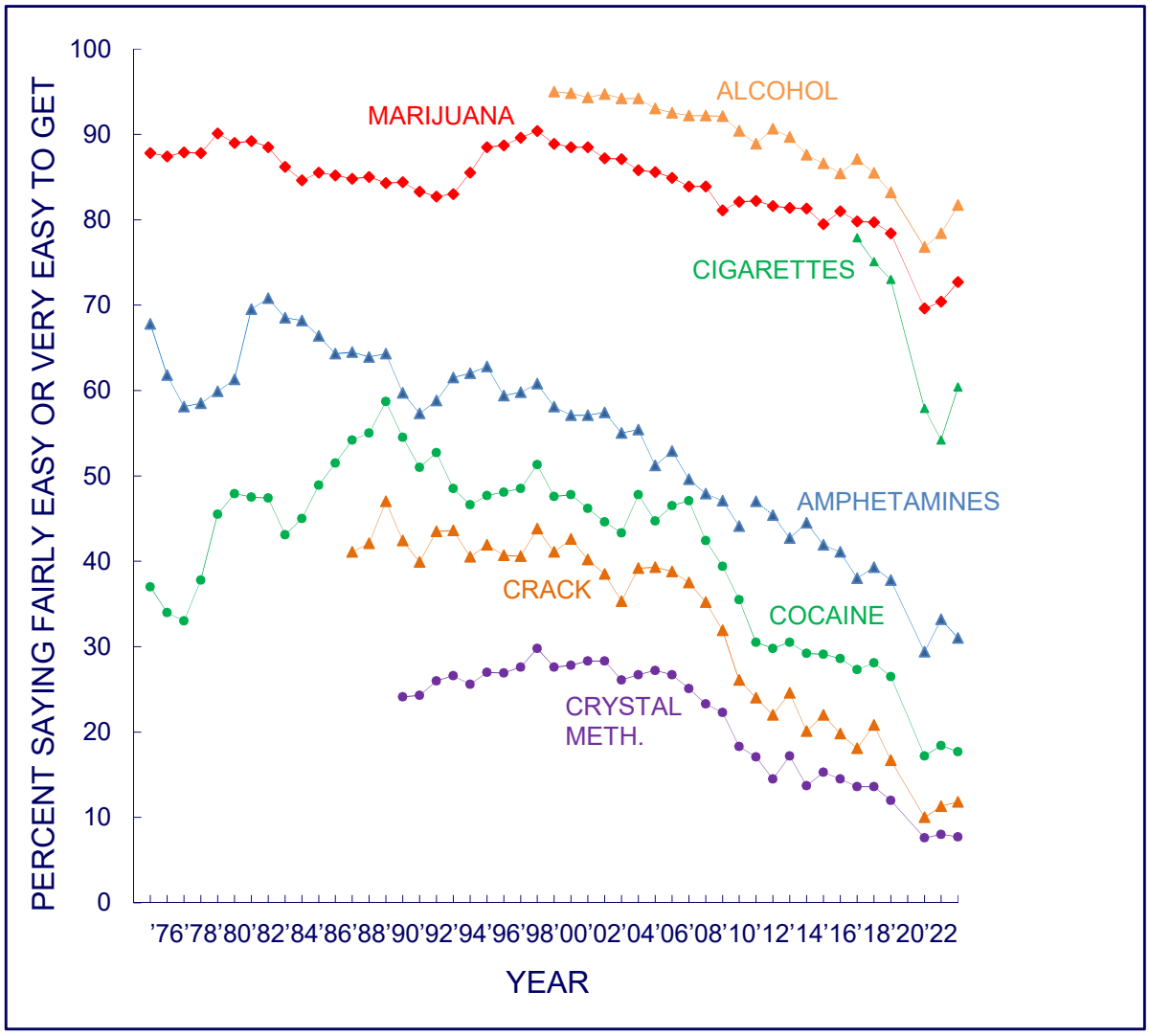

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FIGURE 9-5b[m,n]
Various Drugs: Trends in Perceived Availability in Grade 12

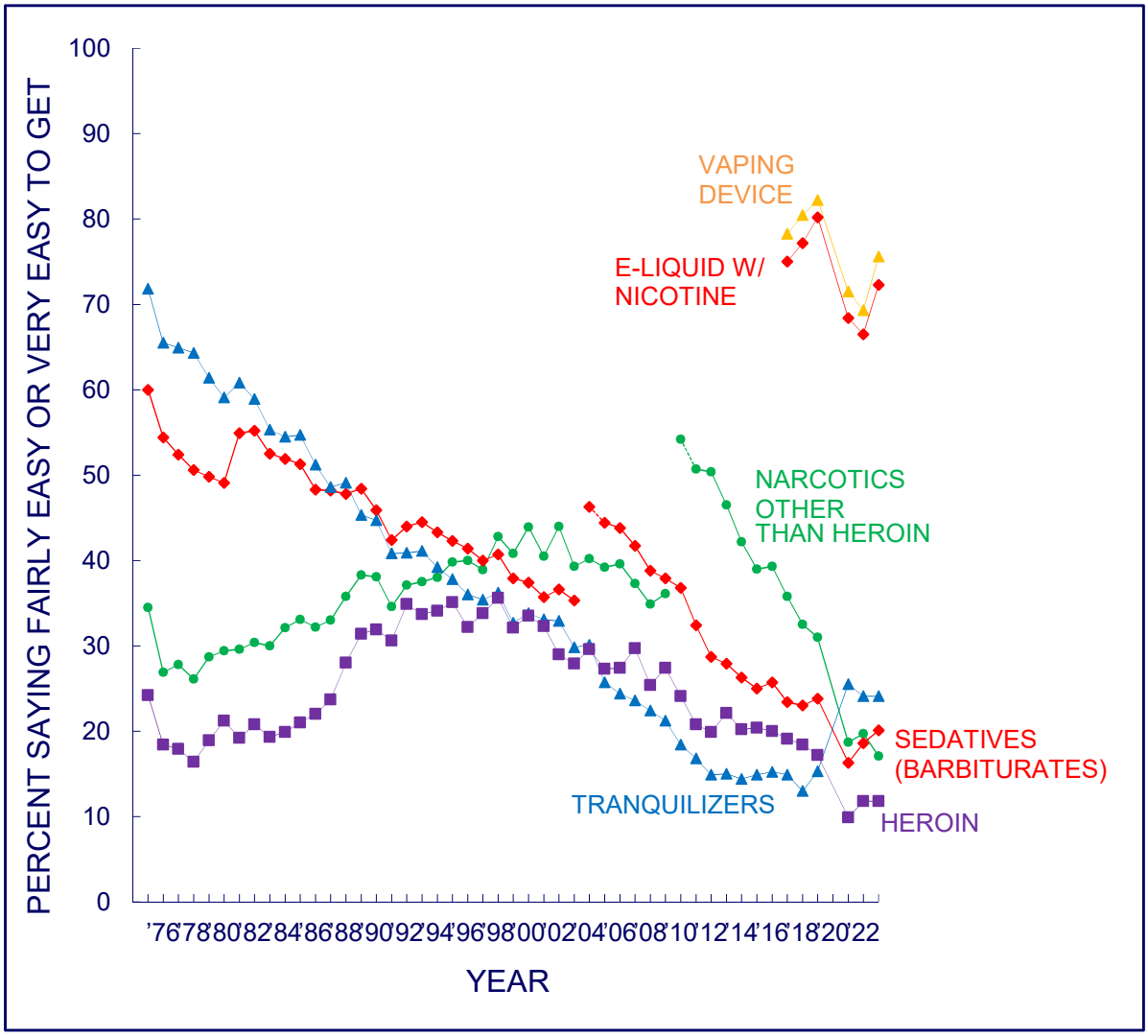

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FIGURE 9-5c[o]

LSD AND HALLUCINOGENS OTHER THAN LSD

Trends in Perceived Availability in Grade 12

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FIGURE 9-5d
ECSTASY (MDMA) AND STEROIDS
Trends in Perceived Availability in Grade 12

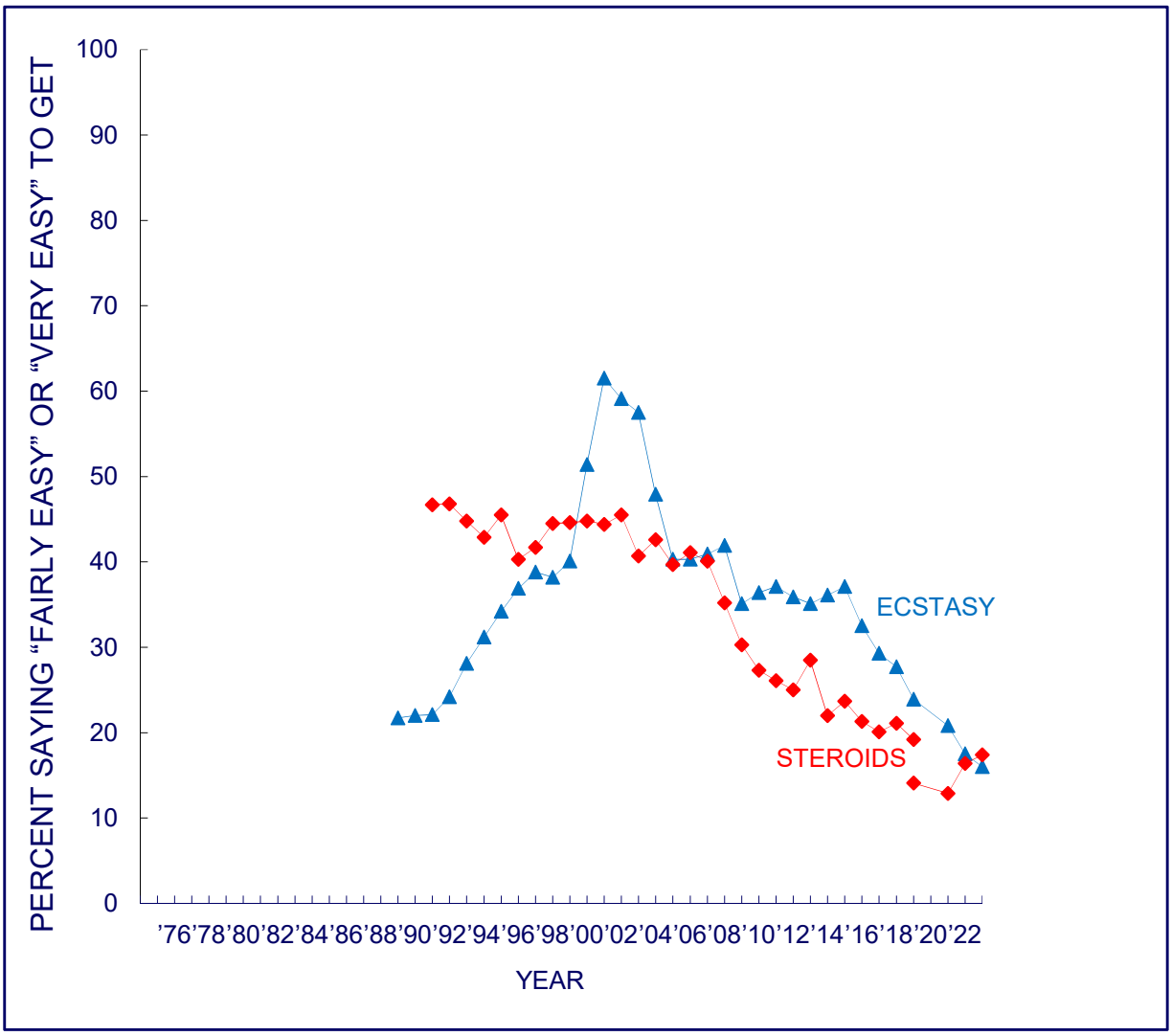

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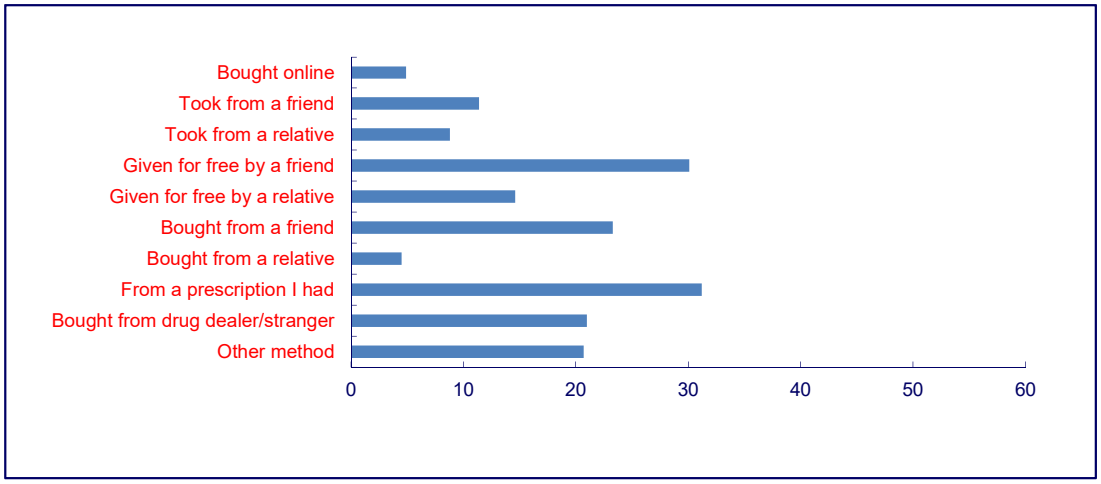
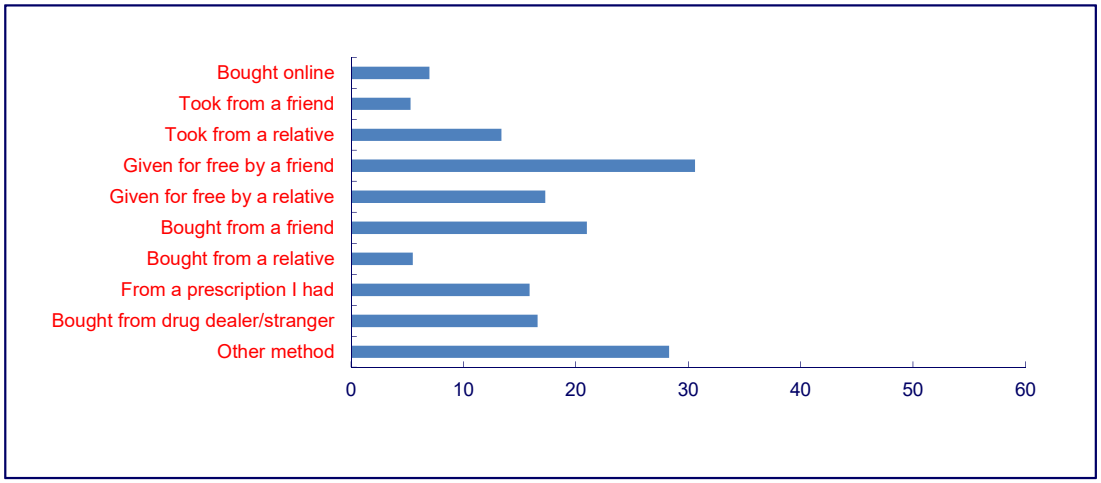
FIGURE 9-6
Source of Prescription Drugs[p]
among Those Who Used in Past Year
Grade 12, 2019-2023 Combined

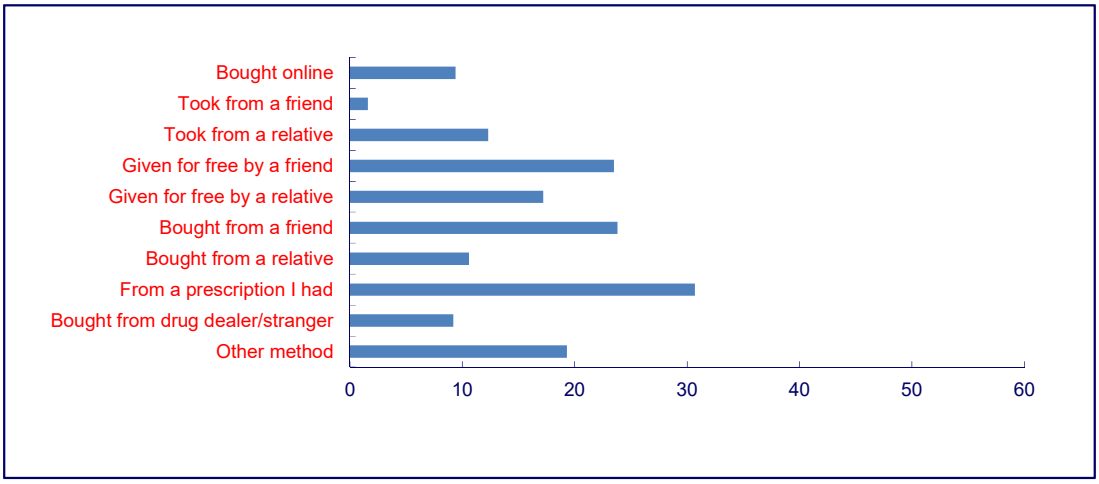
Amphetamines



Tranquilizers



Narcotics other than Heroin



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Footnotes for Figures 9-1a through 9-6

Source. The Monitoring the Future study, the University of Michigan.

Note. In the year 2019 students in a randomly-selected half of schools completed the MTF survey with paper-and-pencil questionnaires, and students in the other half of schools completed it electronically with tablets connected to the internet. When prevalence estimates significantly differ by survey mode the Figures present two 2019 estimates, with the paper-and-pencil estimate linked to years 2018 and earlier and the tablet estimate linked to years 2021 and later. When the estimates do not significantly differ the Figures use only one 2019 prevalence level, which is the estimate combining results from both survey modes.

Figures 9-1a, 9-1b, and 9-1c
[a]The 1975, 1977, and 1979 points indicating the percentage of 12th graders who said their friends would disapprove have been adjusted to compensate for lack of comparability of question context between administration years.
[b]For 12th graders only: In 2011 the list of examples was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.
[c]In 2004 the question text was changed from barbiturates to sedatives/barbiturates, and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.

Figures 9-3a, 9-3b
[d]In 2013, the question text for the use of amphetamines was changed on some of the questionnaire forms, with the remaining forms changed in 2014. This change affected the data for use of any illiict drug. Data presented here include only the changed forms.

Figure 9-3f
[e]In 2001 the question text was changed from other psychedelics to other hallucinogens, and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.

Figure 9-3g
[f]In 2014, the text was changed on one of the questionnaire forms to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

Figure 9-3l
[g]In 2002, a revised set of questions on other narcotic use was introduced. Talwin, laudanum, and paregoric were replaced with Vicodin, OxyContin, and Percocet in the list of examples. From 2002 on, data points are based on the revised question.
[n]In 2010 the list of examples for narcotics other than heroin was changed from methadone and opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.

Figure 9-3m
[i]In 2013, the question text for the use of amphetamines was changed on some of the questionnaire forms, with the remaining forms changed in 2014. Data presented here include only the changed forms.

Figure 9-3p
[j]Beginning in 2001, a revised set of questions on tranquilizer use was introduced in which Xanax replaced Miltown in the list of examples. From 2001 on data points are based on the revised question.

Figure 9-3q
[k]In 1993, a revised set of questions on alcohol use was introduced indicating that a drink meant more than a few sips. From 1993 on, data points are based on the revised question.

Figures 9-5a, 9-5b, and 9-5c
[i]For 12th graders only: In 2011 the list of examples for the question on amphetamines was changed from uppers, pep pills, bennies, speed to uppers, speed, Adderall, Ritalin, etc. These changes likely explain the discontinuity in the 2011 results.
[m]In 2010 the list of examples for narcotics other than heroin was changed from methadone, opium to Vicodin, OxyContin, Percocet, etc. This change likely explains the discontinuity in the 2010 results.
[n]In 2004 the question text was changed from barbiturates to sedatives/barbiturates, and the list of examples was changed from downers, goofballs, reds, yellows, etc. to just downers. These changes likely explain the discontinuity in the 2004 results.
[o]In 2001 the question text was changed from other psychedelics to other hallucinogens, and shrooms was added to the list of examples. These changes likely explain the discontinuity in the 2001 results.
[p]Respondents were instructed to mark all answers that apply.

Chapter 10

STUDY PUBLICATIONS

MTF results are reported in a number of other types of publications, in particular peer-reviewed journals. Selected articles published in the past year or in press as of this writing are summarized below. Further details, as well as a more complete listing, may be found on the Monitoring the Future website. In this chapter we include summaries of new publications by MTF Investigators not listed in last year's Volume that used MTF data from the 8th, 10th, and 12th grade samples, and/or the panel data.

Articles below are listed in alphabetical order by author.

Cohort effects of women's mid-life binge drinking and alcohol use disorder symptoms in the United States: Impacts of changes in timing of parenthood[1]

Background and Aims: Alcohol use is increasing among women in mid-life concurrently with societal changes in timing of parenthood and changing cultural norms, which may influence alcohol use. The aim of this study was to determine if age of first parenting was associated with excessive drinking [i.e. past 2-week binge drinking and past 5-year alcohol use disorder (AUD) symptoms] among women during mid-life in the United States and to determine if there were pronounced cohort effects influencing these relationships.

Design: This was a retrospective cohort, longitudinal study.

Setting, Participants and Measurements: Data were drawn from the Monitoring the Future survey, an annual ongoing survey of high school students' substance use behaviors in the United States. Participants were women who completed the age 35 survey between 1993 and 2019, corresponding to high school senior years 1976–2002 (n = 9988). Past 2-week binge drinking and past 5-year AUD symptoms were self-reported. Age of first parenting was self-reported.

Findings: Binge drinking and AUD symptoms were higher among women in recent than in older cohorts. Women from the 2018–19 cohort had increased odds of binge drinking [odds ratio (OR) = 1.73, 95% confidence interval (CI) = 1.41–2.12] and AUD symptoms (OR = 1.51, CI = 1.27–1.80) relative to women from the 1993–97 cohort. Throughout cohorts, there was an inverse association between transition to parenthood and excessive drinking outcomes (e.g. range for ORs for binge drinking among those without children compared with those who had had children between the ages of 18 and 24: 1.22–1.55). Simultaneously, there was a population shift towards delaying parenting in recent cohorts (i.e. 54% of women in the 1993–97 cohort had children before age 30 compared with 39% in the two recent cohorts), increasing the size of the group at highest risk for excessive drinking.

[1] Adams, R. S., McKetta, S. C., Jager, J., Stewart, M. T., & Keyes, K. M. (2023). Cohort effects of women's mid-life binge drinking and alcohol use disorder symptoms in the United States: Impacts of changes in timing of parenthood. *Addiction, 118*(10), 1932–1941.

Conclusions: In the United States, subgroups of women at highest risk of excessive drinking appear to be expanding, probably supported in part by a trend towards delayed parenting.

Nicotine use among reservation-area American Indian adolescents compared with a national sample[2]

Background: Past research has found significant nicotine use disparities for reservation-area American Indian adolescents when compared to national levels. However, adolescent nicotine use has changed markedly, with reduced smoking and rapid increases in nicotine vaping. This study presents 2021–2022 prevalence estimates of tobacco product use, perceived harm and availability for reservation-area American Indian youth, with comparisons to the Monitoring the Future (MTF) national study.

Methods: Participants were 8th, 10th and 12th grade students. American Indian data were 33 reservation-area schools in 2021–2022 (n=2420); MTF data were 308 schools in Spring 2022 (n=31,438). Measures were lifetime, 30-day cigarette smoking, smokeless tobacco use, and nicotine vaping; past-year nicotine vaping; daily smoking; perceived harmfulness and availability of these tobacco products. Prevalence and 95% confidence intervals were computed by grade.

Results: Estimated prevalence of lifetime, monthly and daily cigarette smoking among American Indian 8th and 10th graders was higher than national levels. Nicotine vaping prevalence was similar between samples. American Indian students were less likely to report tobacco product use poses great risk, but also less likely to report tobacco products are easily available.

Conclusions: Although estimated smoking prevalence among American Indian 8th and 10th graders was higher than national levels, prevalence appears lower than reported in earlier studies, suggesting declining disparities. Prevalence of nicotine vaping among reservation-area American Indian adolescents generally mirrors the national population; however, a lower percentage reported regular nicotine vaping poses a serious risk. This discrepancy suggests a need for prevention and intervention efforts culturally tailored for this population.

Negative consequences associated with daily alcohol use as a nonlinear function of number of drinks in a daily diary study[3]

Introduction: Drinking intensity among young adults is associated with greater negative alcohol-related consequences, but often studied using categorical drinking thresholds. This study examined how alcohol-related consequences varied as a continuous function of number of drinks consumed, without imposing thresholds, to identify drink ranges for which risk is greatest.

Methods: Analyses included daily surveys from the Young Adult Daily Life study (2019–22) in which individuals reported drinking 1 or more alcoholic drinks (n=5219 days; 832 individuals). Time-varying effect models estimated total number of negative alcohol-related consequences and five individual consequences (hangover, drank more than planned, nausea/vomiting, did

[2] Crabtree, M. A., Stanley, L. R., Miech, R. A., & Swaim, R. C. (2024). Nicotine use among reservation-area American Indian adolescents compared with a national sample. *Drug and Alcohol Dependence, 257*, 111124.
[3] Evans-Polce, R. J., Maggs, J. L., Lanza, S. T., & Patrick, M. E. (2024). Negative consequences associated with daily alcohol use as a nonlinear function of number of drinks in a daily diary study. *Drug and Alcohol Dependence, 256*, 111089.

something embarrassing, blacked out) as a function of the number of drinks consumed among young adult males and females.

Results: Often, increases in the number and prevalence of negative consequences were a nonlinear function of the number of drinks consumed. Females reported few negative consequences on 1-to-3-drink occasions but steep increases in consequences on 4-to-9-drink occasions. Among females, the prevalence of blacking out increased six-fold from 4-drink (3.4%; 95% CI=2.6,4.7) to 9-drink occasions (20.6%; 95% CI=16.1,26.1). Among males, the prevalence of some consequences, while not linear, increased across the full drink range. Blacking out among males increased from 9.6% (95% CI=6.2,14.7) on 10-drink occasions to 23.9% (95% CI=15.0,35.8) on 15-drink occasions.

Conclusions: Substantial heterogeneity is missed when typical drinking categories are used. In particular, variability in consequences across levels of the traditional binge drinking category suggests that important differences in risk may be missed when assessed as a uniform category.

Adolescent Δ8-THC and marijuana use in the US[4]

Importance: Gummies, flavored vaping devices, and other cannabis products containing psychoactive hemp-derived Δ8-tetrahydrocannabinol (THC) are increasingly marketed in the US with claims of being federally legal and comparable to marijuana. National data on prevalence and correlates of Δ8-THC use and comparisons to marijuana use among adolescents in the US are lacking.

Objective: To estimate the self-reported prevalence of and sociodemographic and policy factors associated with Δ8-THC and marijuana use among US adolescents in the past 12 months.

Design, Setting, and Participants: This nationally representative cross-sectional analysis included a randomly selected subset of 12th-grade students in 27 US states who participated in the Monitoring the Future Study in-school survey during February to June 2023.

Exposures: Self-reported sex, race, ethnicity, and parental education; census region; state-level adult-use (ie, recreational) marijuana legalization (yes vs no); and state-level Δ8-THC policies (regulated vs not regulated).

Main Outcomes and Measures: The primary outcome was self-reported Δ8-THC and marijuana use in the past 12 months (any vs no use and number of occasions used).

Results: In the sample of 2186 12th-grade students (mean age, 17.7 years; 1054 [48.9% weighted] were female; 232 [11.1%] were Black, 411 [23.5%] were Hispanic, 1113 [46.1%] were White, and 328 [14.2%] were multiracial), prevalence of self-reported use in the past 12 months was 11.4% (95% CI, 8.6%-14.2%) for Δ8-THC and 30.4% (95% CI, 26.5%-34.4%) for marijuana. Of those 295 participants reporting Δ8-THC use, 35.4% used it at least 10 times in the past 12 months. Prevalence of Δ8-THC use was lower in Western vs Southern census regions (5.0% vs 14.3%; risk difference [RD], −9.4% [95% CI, −15.2% to −3.5%]; adjusted risk ratio [aRR], 0.35 [95% CI, 0.16-0.77]), states in which Δ8-THC was regulated vs not regulated (5.7% vs 14.4%; RD, −8.6%

[4] Harlow, A. F., Miech, R. A., & Leventhal, A. M. (2024). Adolescent Δ8-THC and marijuana use in the US. *JAMA, 331*(10), 861–865.

[95% CI, −12.9% to −4.4%]; aRR, 0.42 [95% CI, 0.23-0.74]), and states with vs without legal adult-use marijuana (8.0% vs 14.0%; RD, −6.0% [95% CI, −10.8% to −1.2%]; aRR, 0.56 [95% CI, 0.35-0.91]). Use in the past 12 months was lower among Hispanic than White participants for Δ8-THC (7.3% vs 14.4%; RD, −7.2% [95% CI, −12.2% to −2.1%]; aRR, 0.54 [95% CI, 0.34-0.87]) and marijuana (24.5% vs 33.0%; RD, −8.5% [95% CI, −14.9% to −2.1%]; aRR, 0.74 [95% CI, 0.59-0.94]). Δ8-THC and marijuana use prevalence did not differ by sex or parental education.

Conclusions and Relevance: Δ8-THC use prevalence is appreciable among US adolescents and is higher in states without marijuana legalization or existing Δ8-THC regulations. Prioritizing surveillance, policy, and public health efforts addressing adolescent Δ8-THC use may be warranted.

Age 18-30 trajectories of binge drinking frequency and prevalence across the past 30 years for men and women: Delineating when and why historical trends reversed across age[5]

Historical analyses based on US data indicate that recent cohorts engage in lower binge drinking at age 18 relative to past cohorts, but by the mid- to late-20s the reverse is true: recent cohorts engage in higher binge drinking relative to past cohorts. We pinpoint when – both developmentally and historically – this reversal manifested, examine possible reasons for this reversal, and examine sex convergence in these developmental and historical patterns. As part of the US national Monitoring the Future Study, over 75,000 youths from the high school classes of 1976–2006 were surveyed biennially between ages 18 and 30. We found that the reversal primarily manifested between ages 18 and 24 for men and 18 and 22 for women. We also found that the reversal emerged gradually across the last three decades, suggesting it is the result of a broad and durable historical shift. Our findings indicated that historical variation in social roles and minimum legal drinking age collectively accounted for only a modest amount of the reversal, although marriage was the most influential among the factors examined here. Finally, we found evidence that sex convergence in binge drinking was developmentally limited and far more pronounced at the beginning of the transition to adulthood.

Social, educational, and psychological health correlates of e-cigarette and combustible cigarette use among adolescents in the US from 2015 to 2021[6]

Background: The prevalence of e-cigarette and vaping products has increased in the past decade, especially among adolescents. To provide data that will inform identification of youth at high risk, the goals of this study are to determine the social, educational, and psychological health outcomes associated with e-cigarette use distinct from combustible cigarettes.

Methods: Annual samples of adolescents in grade 12 (years: 2015–2021, N = 24,015) were analyzed from Monitoring the Future cross-sectional data. Students were categorized based on

[5] Jager, J., Keyes, K. M., Son, D., Patrick, M. E., Platt, J., & Schulenberg, J. E. (2023). Age 18-30 trajectories of binge drinking frequency and prevalence across the past 30 years for men and women: Delineating when and why historical trends reversed across age. *Development and Psychopathology, 35*(3), 1308–1322.
[6] Janjua, N. A., Kreski, N. T., & Keyes, K. M. (2023). Social, educational, and psychological health correlates of e-cigarette and combustible cigarette use among adolescents in the US from 2015 to 2021. *Addictive Behaviors, 144*, 107754.

vaping and smoking patterns (no use, vape only, combustible cigarette smoking only, or both). Survey-weighted prevalence and logistic regression were used to assess associations.

Results: Between 2015 and 2021, 78.7% of students used neither e-cigarettes nor combustible cigarettes, 13.2% used e-cigarettes only (vape-only), 3.7% used combustible cigarettes only (smoke-only), and 4.4% used both. Students who vaped-only (OR:1.49, CI:1.28–1.74), smoked-only (OR:2.50, CI:1.98–3.16), or both (OR:3.03, CI:2.43–3.76) had worse academic performance than non-smoking, non-vaping peers after demographic adjustment. There was no significant difference in self-esteem between the "neither" group and the other groups, though the "vaping-only", "smoking-only" and "both" groups were more likely to report unhappiness. Inconsistent differences emerged regarding personal & family beliefs.

Conclusions: Generally, adolescents who reported e-cigarette-only use had better outcomes than their peers who smoked cigarettes. However, students who vape-only reported poorer academic performance compared to those who did not vape or smoke. Vaping and smoking were not significantly related to self-esteem, but were linked to unhappiness. Still, vaping does not follow the same patterns as smoking, despite frequent comparisons in the literature.

Hallucinogen use among young adults ages 19–30 in the United States: Changes from 2018 to 2021[7]

Background and Aims: Given the shifting landscape of hallucinogen use, particularly with increased therapeutic use, understanding current changes in use is a necessary part of examining the potential risk hallucinogens pose to vulnerable populations, such as young adults. This study aimed to measure hallucinogen use among young adults aged 19–30 years from 2018 to 2021.

Design, Setting and Participants: This was a longitudinal cohort study among young adults aged 19–30 years from the US general population, interviewed between 2018 and 2021. Participants comprised 11 304 unique respondents, with an average number of follow-ups of 1.46 (standard deviation = 0.50). Of the observed data points, 51.9% were among females.

Measurements: We examined past 12-month self-reported use of lysergic acid diethylamide (LSD), as well as hallucinogens besides LSD (e.g. psilocybin), monitoring any use as well as frequency, overall and by sex.

Findings: From 2018 to 2021, past 12-month use of LSD among young adults in the US remained relatively unchanged, from 3.7% [95% confidence interval (CI) = 3.1–4.3] in 2018 to 4.2% in 2021 (95% CI = 3.4–5.0). Non-LSD hallucinogen [e.g. 'shrooms', psilocybin or PCP (phenylcyclohexyl piperidine)] use, however, increased in prevalence from 3.4% (95% CI = 2.8–4.1) to 6.6% from 2018 to 2021 (95% CI = 5.5–7.6). Across years, the odds of non-LSD use were higher for males [odds ratio (OR) = 1.86, 95% CI = 1.52–2.26] and lower for black than white participants (OR = 0.29, 95% CI = 0.19–0.47) and those without a college-educated parent (OR = 0.80, 95% CI = 0.64–0.99). Demographic disparities were similar for LSD use.

[7] Keyes, K. M., & Patrick, M. E. (2023). Hallucinogen use among young adults ages 19–30 in the United States: Changes from 2018 to 2021. *Addiction, 118*(12), 2449–2454.

Conclusion: Prevalence of past-year use non-lysergic acid diethylamide (LSD) hallucinogen was twice as high in 2021 as in 2018 among US young adults. Correlates of non-LSD hallucinogen use included being male, white and from higher socio-economic status backgrounds.

Is age of onset and duration of stimulant therapy for ADHD associated with cocaine, methamphetamine, and prescription stimulant misuse?[8]

Background: To assess whether age of onset and duration of stimulant therapy for attention-deficit/hyperactivity disorder (ADHD) are associated with cocaine, methamphetamine, and prescription stimulant misuse during adolescence.

Methods: Nationally representative samples of US 10th and 12th grade students (N = 150,395) from the Monitoring the Future study were surveyed via self-administered questionnaires from 16 annual surveys (2005–2020).

Results: An estimated 8.2% of youth received stimulant therapy for ADHD during their lifetime (n = 10,937). More than one in 10 of all youth reported past-year prescription stimulant misuse (10.4%)—past-year cocaine (4.4%) and methamphetamine (2.0%) use were less prevalent. Youth who initiated early stimulant therapy for ADHD (≤9 years old) and for long duration (≥6 years) did not have significantly increased adjusted odds of cocaine or methamphetamine use relative to population controls (ie, non-ADHD and unmedicated ADHD youth). Youth who initiated late stimulant therapy for ADHD (≥10 years old) and for short duration (<1 year) had significantly higher odds of past-year cocaine or prescription stimulant misuse in adolescence than those initiating early stimulant therapy for ADHD (≤9 years old) and for long duration (≥6 years). Youth who initiated late stimulant therapy for ADHD (≥10 years) for short duration (<1 year) had significantly higher odds of past-year cocaine, methamphetamine, and prescription stimulant misuse versus population controls during adolescence. No differences in past-year cocaine, methamphetamine, and prescription stimulant misuse were found between individuals who only used non-stimulant therapy for ADHD relative to youth who initiated early stimulant therapy (≤9 years old) and for long duration (≥6 years).

Conclusions: An inverse relationship was found between years of stimulant therapy and illicit and prescription stimulant misuse. Adolescents with later initiation and/or shorter duration of stimulant treatment for ADHD should be monitored for potential illicit and prescription stimulant misuse.

Cocaine or methamphetamine use during young adulthood following stimulant use for attention-deficit/hyperactivity disorder during adolescence[9]

Importance: The prescribing of stimulant medications for attention-deficit/hyperactivity disorder (ADHD) has increased in the US. Prescription stimulants are one of the most commonly misused controlled substances during adolescence. Despite a 10-fold increase in stimulant-related overdose

[8] McCabe, S. E., Figueroa, O., McCabe, V. V., Schepis, T. S., Schulenberg, J. E., Veliz, P. T., Werner, K. S., & Wilens, T. E. (2024). Is age of onset and duration of stimulant therapy for ADHD associated with cocaine, methamphetamine, and prescription stimulant misuse?. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 65*(1), 100–111.
[9] McCabe, S. E., Schulenberg, J. E., Wilens, T. E., Schepis, T. S., McCabe, V. V., & Veliz, P. T. (2023). Cocaine or methamphetamine use during young adulthood following stimulant use for attention-deficit/hyperactivity disorder during adolescence. *JAMA Network Open, 6*(7), e2322650.

deaths in the past decade, the transitions from prescription stimulants to illicit stimulants (eg, cocaine, methamphetamine) remain relatively unknown in longitudinal population-based studies.

Objective: To determine the longitudinal transitions from adolescents' prescription stimulant exposure (ie, stimulant therapy for ADHD and prescription stimulant misuse [PSM]) to later cocaine and methamphetamine use during young adulthood.

Design, Setting, and Participants: National longitudinal multicohort panels of US 12th grade public and private school students in the coterminous US were assessed annually (baseline cohort years 2005-2017 [between March and June]) and followed up across 3 waves over a 6-year period to 23 to 24 years of age (follow-up years 2011-2021 [between April and October]).

Exposure: History of self-reported stimulant therapy for ADHD at baseline.

Main Outcomes and Measures: Incidence and prevalence of past-year use of cocaine and methamphetamine during young adulthood (19-24 years of age).

Results: Among 5034 students enrolled at baseline (2589 [52.0%] female), 470 (10.2% [95% CI, 9.4%-11.2%]) reported use of stimulant therapy for ADHD, 671 (14.6% [95% CI, 13.5%-15.6%]) reported PSM only, and 3459 (75.2% [95% CI, 73.9%-76.4%]) reported neither (and served as population controls). In controlled analyses, there were no statistically significant differences between adolescents who reported stimulant therapy for ADHD at baseline compared with population controls in the adjusted odds of transitioning to later cocaine or methamphetamine initiation or use during young adulthood (19-24 years of age). In contrast, PSM during adolescence in those not treated with stimulants for ADHD had significantly higher odds of transitioning to later cocaine or methamphetamine initiation and use during young adulthood compared with population controls (adjusted odds ratio, 2.64 [95% CI, 1.54-4.55]).

Conclusions and Relevance: In this multicohort study, adolescents' stimulant therapy for ADHD was not associated with increased risk of later cocaine and methamphetamine use during young adulthood. Adolescents' prescription stimulant misuse offered a signal for subsequent cocaine or methamphetamine use and warrants monitoring and screening.

Attention-deficit hyperactivity disorder stimulant therapy and prescription drug misuse during transition to young adulthood[10]

Objective: Limited prospective data exist about the impact of stimulant therapy for attention-deficit hyperactivity disorder (ADHD) during adolescence on the risk for later prescription drug misuse (PDM; i.e., of benzodiazepines, opioids, and stimulants).

Methods: National longitudinal multicohort panels (baseline cohort years 2005–2017) of U.S. 12th grade students (N=11,066; ages 17 and 18 years) from the Monitoring the Future study were surveyed via self-administered questionnaires and followed up biennially during young adulthood

[10] McCabe, S. E., Schulenberg, J. E., Wilens, T. E., Schepis, T. S., Werner, K. S., McCabe, V. V., & Veliz, P. T. (2024). Attention-deficit hyperactivity disorder stimulant therapy and prescription drug misuse during transition to young adulthood. *Psychiatric Services*. Advance online publication.

(ages 19–24). A multivariable analysis was used to assess whether adolescents' lifetime history of stimulant therapy for ADHD was associated with subsequent PDM.

Results: Overall, 9.9% of adolescents reported lifetime stimulant therapy for ADHD at ages 17 and 18. No significant differences were found in the adjusted odds of later incidence or prevalence of past-year PDM during young adulthood between adolescents with lifetime stimulant therapy and adolescents with no stimulant therapy. Over the 5-year follow-up, past-year PDM during young adulthood was most prevalent among adolescents who reported both stimulant therapy and prescription stimulant misuse (53.1%) and those who reported prescription stimulant misuse only (51.5%). Compared with adolescents in a control group without lifetime stimulant therapy or misuse, adolescents reporting prescription stimulant misuse had significantly higher adjusted odds of later incidence and prevalence of PDM during young adulthood.

Conclusions: Adolescents' stimulant therapy for ADHD was not significantly associated with increased risk for later PDM during young adulthood. In contrast, adolescents' misuse of prescription stimulants strongly predicted later PDM. Monitoring adolescents for prescription stimulant misuse may help identify and mitigate the risk for future PDM.

Structural sexism moderates work and occupational risks for alcohol consumption and binge drinking among US women, 1989-2016[11]

Background: People in the labor force and in high-status careers consume alcohol at high rates. State-level structural sexism (sex inequality in political/economic status) is inversely related to alcohol use among women. We examine whether structural sexism modifies women's labor force characteristics and alcohol consumption.

Methods: We surveyed frequency of alcohol consumption in the past month and any binge drinking in the past two weeks among women ages 19–45 in Monitoring the Future from 1989 to 2016 (N = 16,571) in relation to occupational characteristics (including employment status, high-status career, and occupational gender composition) and structural sexism (measured using state-level indicators of gender inequality) with multilevel interaction models controlled for state-level and individual confounders.

Findings: Working women and women in high-status occupations had higher risks of alcohol consumption than non-working women; differences were most pronounced in lower-sexism states. At the lowest sexism levels, employed women consumed alcohol more frequently (2.61 occasions of use in past 30 days, 95% CI 2.57, 2.64) than unemployed women (2.32, 95% CI 2.27, 2.37). Patterns were more pronounced for frequency of alcohol consumption than binge drinking. Occupational gender composition did not influence alcohol consumption.

Interpretation: In lower sexism states, working and having a high-status career are associated with increased alcohol consumption for women. Labor force engagement extends positive health benefits to women, but it also confers specific risks, which are sensitive to the broader social

[11] McKetta, S., Prins, S. J., Hasin, D., Patrick, M. E., & Keyes, K. M. (2023). Structural sexism moderates work and occupational risks for alcohol consumption and binge drinking among US women, 1989-2016. *Social Science & Medicine, 324*, 115878.

context; these findings contribute to a growing literature suggesting that alcohol risks are changing in relation to shifting social landscapes.

Changes in U.S. adolescent nicotine vaping prevalence from 2022 to 2023: The role of reduced initiation three years earlier during the onset of the pandemic[12]

Introduction: The prevalence of adolescent nicotine vaping declined substantially after the COVID-19 pandemic onset in the United States during the Spring of 2020. This study examines whether the decline continued from 2022 to 2023, and the extent to which any decline reflects the lasting influence of lowered levels of initiation 3 years earlier, at the onset of the pandemic.

Aims and Methods: Data for this study come from nationally representative, cross-sectional surveys of U.S. 12th-grade (n = 9854) and 10th-grade (n = 14 663) students administered in the Spring of 2022 and 2023. The main outcomes are past 12-month nicotine vaping and grade first ever vaped nicotine.

Results: From 2022 to 2023 prevalence of past 12-month nicotine vaping declined a relative 20% for 12th-grade students, from 24.3% to 19.1%, and for 10th-grade students by a relative 16%, from 17.8% to 15.1%. Among 12th-grade students who vaped nicotine in the past 12 months, a significant decline in prevalence took place only among those who first ever vaped nicotine in ninth grade, and not among those who first ever vaped nicotine in any other grade. Among 10th grade students who vaped nicotine in the past 12 months, a significant decline in prevalence took place only among those who first ever vaped nicotine in seventh grade, and not among those who first ever vaped nicotine in any other grade.

Conclusions: These results contribute national-level evidence that forestalled initiation of nicotine use for 1 year may have a lasting effect that continues to lower adolescents' levels of use many years afterward.

Implications: These findings caution against looking to contemporaneous policy for explanations of the large, 1-year decline in nicotine vaping from 2022 to 2023. It can be tempting to interpret the decline as a victory for current efforts to restrict adolescent access to vaping products, or current education/media campaigns that warn adolescents of the dangers of vaping. The findings of this study suggest, instead, that the 1-year vaping declines primarily result from declines in initiation that were set into place 3 years ago during the pandemic onset, more so than the immediate result of contemporaneous policy.

Cannabis reduction among adolescents as spillover from successful tobacco control[13]

Background: National programs that reduce adolescent cannabis use warrant renewed attention in light of current discussions to reform cannabis legislation, including the possibility of legalization for recreational use. This study measures the size of a decrease in a country's prevalence of

[12] Miech, R. (2024). Changes in U.S. adolescent nicotine vaping prevalence from 2022 to 2023: The role of reduced initiation three years earlier during the onset of the pandemic. *Nicotine & Tobacco Research*, ntae090.
[13] Miech, R., Heeringa, S. G., Molinaro, S., & Benedetti, E. (2024). Cannabis reduction among adolescents as spillover from successful tobacco control. *The International Journal on Drug Policy, 124*, 104315.

adolescent cannabis use that accompanies a decrease in its prevalence of adolescents who had ever smoked a cigarette.

Methods: Data are from the European School Survey Project on Alcohol and Other Drugs (ESPAD), which is a collaborative effort of more than 40 European countries to surveil adolescent substance use. This study uses data from the seven survey administrations in 1995, 1999, 2003, 2007, 2011, 2015, and 2019. The main analysis is a fixed-effect regression analysis of country-level, four-year changes in adolescent lifetime cannabis use prevalence on country-level, four-year changes in adolescent lifetime cigarette use prevalence.

Results: Decreases in the national prevalence of adolescents who had ever smoked a cigarette were accompanied by decreases half as large in national prevalence of adolescent lifetime cannabis use.

Conclusion: For European countries considering the legalization of adult recreational cannabis use, tobacco control can offer a tool to help counter potential increases in cannabis use among adolescents.

Declines in adolescent substance use after the COVID-19 pandemic onset: The role of initiation in grades 7 and 9[14]

Purpose: To examine if the record declines in adolescent substance use after the onset of the COVID-19 pandemic resulted from reduced levels of initiation, defined as any lifetime use.

Methods: We analyzed data from the nationally representative, cross-sectional, annual Monitoring the Future surveys of eighth, 10th, and 12th grade students from 2019 to 2022. Measures included past 12-month use of cannabis, nicotine vaping, and alcohol as well as self-reported grade of initiation of each substance. Analyses are based on randomly selected subsamples of students who received questions on both prevalence and grade of first use, resulting in a total sample size of 96,990 students.

Results: Levels of the past 12-month substance use were markedly lower after the onset of the pandemic, in 2021 and 2022. In eighth and 10th grade, levels were at least one-third lower for cannabis and nicotine vaping and 13%–31% lower for alcohol. In 12th grade, the decreases ranged from 9% to 23%. Lower levels of initiation in seventh grade in 2020-2021 accounted for half or more of the overall prevalence decreases in eighth grade in 2021-2022. Lower levels of initiation in ninth grade in 2020-2021 accounted for 45% or more of the overall prevalence decreases in 10th grade in 2021-2022. Declines in 12th grade substance use prevalence were not consistently linked to lower initiation in earlier grades.

Discussion: Much of the declines in overall prevalence of adolescent substance use after the onset of the COVID-19 pandemic trace back specifically to declines in substance use initiation in seventh and ninth grades.

[14] Miech, R., Patrick, M. E., & Keyes, K. (2023). Declines in adolescent substance use after the COVID-19 pandemic onset: The role of initiation in grades 7 and 9. *The Journal of Adolescent Health, 73*(5), 838–844.

Historical trends in cannabis use among U.S. adults aged 19-55, 2013-2021[15]

Objective: The current study used U.S. national data to examine trends in cannabis use from 2013–2021, focusing on changes in cannabis prevalence during young and middle adulthood, and whether trends differed by sociodemographic characteristics.

Method: Data from 2013–2021 from 21,133 respondents aged 19–30 and 29,898 aged 35–55 in the national Monitoring the Future panel study (followed since they were in 12th grade in 1976-2020) were used to model historical trends in cannabis prevalence (any 12-month use, any 30-day use, and near-daily use [20+ occasions in the past 30 days]).

Results: Prevalence of 12-month, 30-day, and near-daily cannabis use significantly increased from 2013–2021 for both young and middle adults. Trends for all three behaviors indicated either consistent linear increases or two-slope increases where the slope estimate was larger in more recent years. Historical increases in 12-month and 30-day use were similar for young and middle adulthood; the historical increase in near-daily use among middle adults had some evidence for a possible pandemic-related deviation. Historical trends did not differ by race/ethnicity or college degree. Trends for 12-month and 30-day use differed by sex, with females increasing more than males over time, especially during middle adulthood.

Conclusions: Significant increases in the prevalence of cannabis use have occurred over the past decade for young and middle adults across sociodemographic groups, with some indication that near-daily use increased among middle adults at the onset of the pandemic. Although males continue to have higher prevalence than females, the gap has narrowed with greater increases in cannabis use among women.

High-intensity drinking and hours spent drinking[16]

Background: High-intensity drinking (HID) is associated with negative consequences, but it remains unclear whether a time qualifier (i.e., time spent drinking) is needed to identify individuals at highest risk. To improve the measurement and conceptualization of HID, we examined the utility of adding a time qualifier to define what constitutes an occasion of HID using repeated daily surveys in a sample of young adults.

Methods: Participants were selected from a nationally representative sample of 12th-grade students in the United States who participated in the Monitoring the Future (MTF) study in Spring 2018. In 2019 and 2020, young adults (at modal ages 19–20) responded to annual and daily (14 consecutive days per year) online surveys about their alcohol use.

Results: When we compared moderate drinking days (less than 4/5 drinks for women/men), binge drinking days (4–7/5–9 drinks), and HID days (8+/10+ drinks), HID days had the longest duration of drinking (5.2 h), highest peak estimated blood alcohol concentration (eBAC, 0.30%), and greatest drinking pace (2.58 drinks/h). HID was associated with a greater number of negative

[15] Patrick, M. E., Pang, Y. C., Terry-McElrath, Y. M., & Arterberry, B. J. (2024). Historical trends in cannabis use among U.S. adults aged 19-55, 2013-2021. *Journal of Studies on Alcohol and Drugs*. Advance online publication.
[16] Patrick, M. E., Parks, M. J., & Peterson, S. J. (2023). High-intensity drinking and hours spent drinking. *Alcohol: Clinical and Experimental Research, 47*(11), 2081–2089.

consequences than either moderate or binge drinking; adjusting for time spent drinking did not impact this interpretation. HID was reported on 10.9% of days; when defined as 8/10+ drinks in 4 h or 2 h, HID was reported on 4.8% and 1.0% of days, respectively. Nearly all differences in eBAC and negative consequences persisted across drinking intensity despite the introduction of time constraints.

Conclusions: HID days were characterized by both a longer time spent drinking and a more rapid pace of drinking. Adding a time qualifier to the definition of HID would restrict variability by only describing the minority of days and does not improve the distinctions among levels of risk.

Trends in coping reasons for marijuana use among U.S. adolescents from 2016 to 2022[17]

Objective: This study examines historical trends in coping reasons for marijuana use among adolescents (1976–2022) and explores sociodemographic variations in recent years (2016–2022).

Method: Data from U.S. national samples of 12th grade adolescents in the Monitoring the Future (MTF) study were used to examine long-term trends (1976–2022, N = 43,237) and recent differences by sociodemographic characteristics (2016–2022, N = 3,816). Measures included marijuana use, coping reasons for use, and sociodemographic characteristics.

Results: The most prevalent coping reason across time was "relax," endorsed by 52.9% of past 12-month users. Coping reasons mostly exhibited significant increases over time. Sociodemographic factors were associated with coping reasons. Females had higher odds of using marijuana to escape problems and get through the day (vs. males). Black respondents were more likely to use marijuana to get through the day, and Hispanic respondents were more likely to use to relax (vs. White respondents). Those with lower (vs. higher) parental education were more likely to use due to anger/frustration and to escape problems. Adolescents who used marijuana frequently (vs. less often) had higher odds of endorsing all coping reasons. There was no robust evidence of interactions between sociodemographic characteristics and year.

Conclusions: Results indicate a consistent increase in coping reasons for adolescent marijuana use over time, with variations based on sociodemographic characteristics. The findings highlight the importance of understanding subpopulations of adolescents who have higher risk of coping-related marijuana use.

Daily associations between affect, drinking motives, and drinking intensity among U.S. young adults[18]

Objective: We investigated the relationships between daily affect, drinking motives, likelihood of drinking, and intensity of drinking, particularly high-intensity drinking (HID), in a sample of

[17] Patrick, M. E., Peterson, S. J., Terry-McElrath, Y. M., Rogan, S. E. B., & Solberg, M. A. (2024). Trends in coping reasons for marijuana use among U.S. adolescents from 2016 to 2022. Addictive Behaviors, 148, 107845.
[18] Stevenson, B. L., Parks, M. J., & Patrick, M. E. (2023). Daily associations between affect, drinking motives, and drinking intensity among U.S. young adults. *Psychology of Addictive Behaviors, 37*(2), 275–284.

young adults. We also explored differences in our outcomes before versus during the early coronavirus disease (COVID-19) pandemic.

Method: In the springs of 2019 and 2020, young adult drinkers (N = 633) completed 14 consecutive morning surveys (each year) characterizing the prior day's affect, motives, and alcohol use. We examined between-person and within-person associations of affect and motives with two outcomes: any drinking and drinking intensity on drinking days (1 = moderate drinking [1–3 drinks for women, 1–4 drinks for men], 2 = binge drinking [4–7 for women, 5–9 for men], and 3 = HID [8 + for women, 10 + for men]).

Results: Young adults reported higher positive affect on drinking days and higher negative affect on nondrinking days. On days when young adults reported greater enhancement motives, positive affect was strongly related to HID. During the early COVID-19 pandemic, young adults were more likely to report drinking, but did not drink more heavily unless they also reported drinking for social motives.

Conclusions: These results suggest that heightened social, coping, and enhancement motives are risk factors for drinking in young adults. They also suggest that young adults perceive their mood to be better on drinking days, particularly when they were drinking to enhance positive affect. Results are consistent with a positive affect regulation model (i.e., drinking to increase positive affect), but not a negative affect regulation model (i.e., drinking to cope with negative affect).

Trends in diversion sources for prescription stimulant misuse in U.S. adolescents[19]

The diagnosis of attention-deficit/hyperactivity disorder (ADHD) increased significantly among U.S. adolescents over the past 2 decades,1 potentially increasing the availability for diversion or misuse of prescription stimulants among this population.2 Currently, no research assesses the recent trends in diversion sources for nonmedical prescription stimulant misuse (PSM) among U.S. adolescents. Accordingly, analyses estimated trends in past-year diversion sources for nonmedical PSM among a national sample of adolescents between 2009 and 2021.

OTHER MTF RESULTS

People interested in MTF results not presented in this monograph or in the papers above have three options to calculate their own MTF estimates. First, they can download at no charge a publicly-available version of the MTF data from the National Addiction and HIV Data Archive Program at the Inter-University Consortium of Political and Social Research. In these data a few variables, such as date of birth and family composition, are not included because they could aid in deductive disclosure of the identity of the MTF respondents.

Second, interested users can use the online interface at the National Addiction and HIV Data Archive Program (NAHDAP, sponsored in part by the National Institute on Drug Abuse) to produce cross-tabulations for variables of interest.

Third, researchers can also use the restricted-access online portal, which contains the variables not

[19] Veliz, P. T., Wilens, T. E., Schepis, T. S., McCabe, V. V., & McCabe, S. E. (2023). Trends in diversion sources for prescription stimulant misuse in U.S. adolescents. *American Journal of Preventive Medicine, 65*(3), 543–546.

included in the public release. To use these data researchers complete an application that requires them to obtain approval from the Institutional Review Board of their home institution. They also sign a contract stipulating that they will not attempt to identify the respondents. In addition, NAHDAP staff review all user-generated results before releasing them to ensure that they do not contain information that could lead to deductive disclosure of students or schools.

The online portal allows researchers to use both the cross-sectional, school-based studies of 8th, 10th, and 12th grade students, and also the longitudinal panels.

WEBSITE

Any reader wishing to obtain more information on the study, or to check for recent findings and publications, may visit the MTF website.

Appendix A

PREVALENCE AND TREND ESTIMATES ADJUSTED FOR ABSENTEES AND DROPOUTS

To what extent do the MTF prevalence and trend estimates derived from 12th graders represent trends among *all* young people in the same class or age cohort, including those who have dropped out of school by senior year as well as those who were absent from school on the day of the survey administration? To address this question, we published an extensive report[1] that considers the conceptual and empirical issues as they relate to MTF estimates, and this appendix summarizes the main points and updates the empirical analyses to measure the size of possible bias.

We begin by noting that two segments of a given age cohort are missing from the 12th grade data: (a) those who are still enrolled in school but are absent the day of data collection (absentees) and (b) those who have left school and are not likely to complete high school (dropouts). Because refusal rates are very low, absentees and dropouts constitute virtually all nonrespondents.

Nationally, the percentage of absentees increased substantially during the pandemic and has stayed elevated since,[2] a trend apparent in MTF. Up until the 2020 survey, which was completed before the pandemic onset, the absentee rate was about 20%, and afterwards it was closer to 30% (see Table 3-1). Adjusting for absentees offers the opportunity to evaluate what role (if any) absentees may have played in estimates of drug use trends after the pandemic. In contrast, there has been little recent trending in the dropout rate, which currently is about 5% of the class/age cohort, a level that has declined gradually and steadily since 2002, when it was 15% and had been at that level since the beginning of the survey in 1975.[3]

The methods we use to estimate prevalence for these two missing segments are summarized briefly here. Then, estimates of the effects of adding the two segments to the calculation of the overall prevalence estimates are presented, along with their impact on the trends. Four drugs are highlighted for illustrative purposes: marijuana, alcohol, and any illicit drug use—each of which has have high levels of use—as well as cocaine, one of the more dangerous and less prevalent drugs. Estimates for 12th graders are presented for both lifetime and 30-day prevalence.

CORRECTIONS FOR 8th AND 10th GRADES

Potential underestimation of drug use is likely higher among 12th graders than among 8th and 10th graders because the rates of dropping out and absenteeism are lower for 8th and 10th grades than for 12th grade. With respect to dropping out, only very few members of an age cohort have ceased attending school by grade 8, when most are age 13 or 14. In fact, Census data suggest that less

[1] Johnston, L. D. & O'Malley, P. M. (1985). Issues of validity and population coverage in student surveys of drug use. In B. A. Rouse, N. J. Kozel, & L. G. Richards (Eds.), *Self-report methods of estimating drug use: Meeting current challenges to validity* (NIDA Research Monograph No. 57 (ADM) 85-1402). Washington, DC: U.S. Government Printing Office.

[2] The White House. (2023, September 13). Chronic absenteeism and disrupted learning require an all-hands-on-deck approach. Whitehouse.gov.

The Learning Network. (2024, April 11). What students are saying about why school absences have 'exploded'. *The New York Times*.

[3] National Center for Education Statistics. (2023, May). Status Dropout Rates. Condition of Education. U.S. Department of Education, Institute of Education Sciences. Retrieved 5 December 2023

than 2% have dropped out at this stage. Most 10th graders are about age 15, and Census data indicate that only a small proportion—less than 3%—have dropped out by then.[4] Thus, any correction for the missing dropouts should be negligible at 8th grade and quite small at 10th grade.

While in 2023 absentees comprised 28% of the 12th graders who should be in school, they comprised 15% of 10th graders and 20% of 8th graders (see Table 3-1). Thus, the prevalence estimate adjustments that would result from corrections for this missing segment would also be less for 8th and 10th graders than for 12th graders.

In sum, it is clear that corrections for dropouts and absentees would be smaller at 8th grade and 10th grade. For this reason, and because the corrections estimated below for 12th graders turn out to be modest ones, we have not made estimates of the comparable corrections for 8th and 10th graders.

THE EFFECTS OF MISSING ABSENTEES

Taking into account the influence on drug prevalence of absentees requires two key estimates: the size of the absentee group and their drug prevalence levels.

The size of the absentee group in 12th grade is reported in Chapter 3 in Table 3-1 and has hovered around 20% over the course of the study up to 2020. In 2023 it was at the higher end of this range at 28%. As mentioned above, these students qualify as absentees because they had not formally dropped out of school by the time of the survey and may have still graduated.

Drug prevalence levels of absentees are estimated with available MTF data. We included a question asking students how many days of school they had missed in the previous four weeks. Using this variable, we can place individuals into different strata as a function of how often they tend to be absent from school. For example, all students who had been absent 50% of the time could form one stratum. Assuming that absence on the particular day of administration is a fairly random event, we can give the actual survey participants in this stratum a double weight to represent all students in their stratum, including the ones who happen to be absent that particular day. Those who say they were absent two thirds of the time would get a weight of three to represent themselves plus the two thirds in their stratum who were not there on the day of the administration, and so forth. Using this method, we found that absentees as a group have appreciably higher than average estimated prevalence levels for all licit and illicit drugs.

THE EFFECTS OF MISSING DROPOUTS

Taking into account the influence on drug prevalence of 12th graders who have dropped out of school also requires the key estimates: information on the size of this group and its drug prevalence levels.

As for the size of the dropout group, the National Center for Education Statistics currently estimates it is about 5% of the 12th grade age population.[3] The size of this group has declined gradually and appreciably since 2002, when it was 15% and had been at that level since the beginning of the survey in 1975 (see Figure A-1). MTF surveys probably include some 12th grade

[4] According to the Digest of Education Statistics 2023, in 2022 the proportion of the U.S. civilian noninstitutionalized population enrolled in school was 97.7% among 10 to 13 year olds and 97.5% among 14 to 15 year olds.

students who will eventually drop out of school because the surveys of 12th graders take place before graduation, and not quite all will graduate. At the same time, perhaps 1–2% of the age group actually left high school before completing 12th grade but then earned a Certificate of General Education Development (GED), and thus may not be covered by MTF samples. So these two factors probably cancel each other out. Thus, we used 15% as our estimate of the proportion of an age cohort not covered through 2002; since then, we have used the gradually decreasing annual proportion as reported by the National Center for Education Statistics.

To estimate the drug usage levels for dropouts, we use two quite different approaches. The first approach uses the best national data available on drug use among dropouts—namely the National Survey on Drug Use and Health (NSDUH, formerly the National Household Surveys on Drug Abuse, or NHSDA). This survey is household-based and not school-based and provides estimates of drug prevalence for dropouts who would have been 12th graders had they remained in school.[5]

We use these NSDUH estimates in two ways. First, using only NSDUH data we estimate drug prevalence levels with and without the dropouts. Second, with this information we calculate the absolute difference in prevalence levels attributable to dropouts. We then add this difference to the MTF estimates of drug prevalence for 12th graders who have not dropped out of school (discussed in the section above) to get an estimate for drug prevalence levels including dropouts.

The second approach is based entirely on MTF data. We estimate the drug prevalence level of dropouts to be 1.5 times the difference between absentees and 12th grade respondents. If this approximation works well, then it would be possible to derive drug prevalence estimates for all 12th grade age youth across all years of MTF surveys from 1975 to 2023. NSDUH data does not provide consistent estimates of dropouts for all these years because it was not fielded in all years, and the questions used to measure high school dropout status change substantially across years and are not directly comparable.

DRUG PREVALENCE ESTIMATES TAKING INTO ACCOUNT ABSENTEES AND DROPOUTS

Table A-1 presents estimates for drug prevalence among all 12th grade age youth, taking into account dropouts and absentees. These results are based on 2022 data, which are the most recent available from NSDUH.

Columns 1 through 5 use only MTF data to estimate the influence of absentees and dropouts. Adjusting for absentees increases prevalence levels for all drugs to a limited degree, with the largest difference of 1.7 points for lifetime use of any illicit drug (compare Columns 3 and 1). This increases the estimate from 41.0% to 42.7%. Adjusting for the additional influence of dropouts (compare Columns 5 and 3) also increases overall prevalence for 12th grade age youth, albeit again to a limited degree with no increase larger than one percentage point.

[5] Starting in 2021 NSDUH changed the data it releases on age of participants, which has implications for analysis of dropouts. Prior to 2021 it was possible narrow the NSDUH sample pool to participants age 16, 17, and 18, which are key ages to examine dropouts. However, in 2021+ NSDUH released age data only in groupings of "16-17" and "18-20," with no way to identify and remove the participants aged 19 and 20. With one exception, our analysis of pre-2021 data showed only negligible differences in drug prevalence estimates of dropouts when using our algorithm with participants age 19 and 20 included in the sample pool. The one exception was cigarette smoking prevalence, which increased substantially. Consequently, we do not include cigarette smoking in these dropout analyses, as we had in previous years.

Columns 6 through 9 use NSDUH data only and focus on the influence of dropouts. For all eight drug use measures, estimates with dropouts (Column 9) and without them (Column 6) are similar and in all cases differ by 1.2 percentage points or less. The small size of the dropout group precludes it from having a large impact on overall estimates of drug prevalence levels. For example, levels of lifetime marijuana use are 17 points higher for dropouts as compared to their peers in school, but taking this group into account increases overall prevalence for 12th grade youth by only 1.2 points, from 31.6% to 32.8%.

Columns 10 and 11 use both MTF and NSDUH data to estimate overall prevalence of drug use among 12th grade age youth. This approach estimates the drug use levels of MTF dropouts (Column 10) as drug prevalence levels of MTF students who have not dropped out of high school (Column 3, calculated with MTF data) plus the additional increase in prevalence for dropouts as compared to their peers in school (Column 8, calculated with NSDUH data). Adjustments for dropouts have little effect on overall drug prevalence for 12th grade aged youth, consistent with the other methods discussed above, with no increase larger than 1.2 percentage points (compare Columns 11 and 3).

We highlight two main findings from these results. First, while adjustments for absentees and high school dropouts raise drug prevalence levels, as would be expected, they do not raise them substantially. In no case did the combined influence of these two groups increase prevalence by more than 2.8 percentage points (compared Column 1 with Columns 5 and 11). Even when dropouts and absentees have substantially higher levels of drug prevalence, the small size of these groups precludes them from having a large influence on overall prevalence estimates.

Second, our adjustment to MTF prevalence levels for dropouts using only MTF data matches quite closely parallel adjustments informed by actual data on drug prevalence levels of dropouts based on NSDUH data. These two different approaches produce estimates that differ from each other by a maximum of 0.6 percentage points (compare Columns 11 and 5). These results support MTF-based adjustment for dropouts as reasonable approximations when information from NSDUH is not available.

We should note that there are a number of reasons for dropping out, many of which are not necessarily associated with drug use, including unstable housing and economic hardship, as well as certain learning disabilities and health problems. At the national level, the extreme groups such as those in jail or without a permanent residence are a small proportion of the total age group and probably a small proportion of all dropouts. Thus, regardless of their levels of drug use, their inclusion would not influence the overall prevalence estimates by much except possibly in the case of low-prevalence drugs such as heroin, crack cocaine, or crystal methamphetamine. We do believe that it is probably impossible to get an entirely accurate survey-based prevalence estimate of use of these drugs—especially an estimate of youth who use them on a regular basis—even with the corrections used in this report (although the trend estimates should be affected less, if at all). For the remaining drugs, we conclude that our estimates based on participating 12th graders, though somewhat low, are nevertheless good approximations for the age group as a whole. And, of course, the samples are selected to be representative of students *in* school, not all persons in an age cohort.

Effects of Omitting Dropouts on Trend Estimates

Whether the omission of dropouts affects the estimates of trends in prevalence is a separate question from the degree to which it affects absolute estimates at a given point in time. The relevant issues parallel those discussed earlier regarding the possible effects on trends of omitting the absentees. Most important is the question of whether the rate of dropping out has changed appreciably, because a substantial change would mean that 12th graders studied in different years would represent noncomparable segments of their whole class/age cohort. The U.S. Census data provided in Figure A-1 indicate a quite stable rate of dropping out from 1972 to 2002, followed by a decline since then.

One possible reason that 12th graders' trend data might deviate from trends for the entire age cohort (including dropouts) would be dropouts showing trends that differed from 12th grade trends. Even then, because of their small numbers, dropouts would have to show dramatically different trends to change the whole age group trend.

One hypothesis occasionally voiced was that more teens were being expelled from school, or voluntarily leaving school, because of their drug use, and that this explained the downturn in the use of many drugs being reported by MTF in the 1980s. However, it is hard to reconcile this hypothesis with the virtually flat (or, if anything, slightly declining) dropout rates reported by the U.S. Census during this period. Further, the reported prevalence of some drugs (e.g., alcohol and narcotics other than heroin) remained remarkably stable throughout those years, and the prevalence of others rose (cocaine until 1987 and amphetamines until 1981). These facts are inconsistent with the hypothesis that there had been an increased rate of departure by the most drug prone. Certainly, more teens leaving school in the 1980s had drug problems than was true in the 1960s. (So did more of those who stayed in.) However, the teens leaving school still seem likely to be very much the same segment of the population, given the degree of association that exists between drug use, deviance, and problem behaviors in general. In recent years, with a decline in dropping out, one might predict an increase in observed usage levels among 12th graders since 2002; this assumes, of course, that everything else was equal and that the higher retention rate involved some staying in school who were more likely to be drug users. In fact, however, in the in-school population there actually was a pattern of decline in the years immediately after 2002, most likely because everything else did not remain equal.

EXAMPLES OF TREND ESTIMATES FOR TWO DRUGS

Figure A-2 provides the prevalence and trend estimates of marijuana and cocaine for both the lifetime and 30-day prevalence periods, showing (a) the original estimates based on participating 12th graders only; (b) the empirically derived, revised estimates based on all 12th graders, including absentees; and (c) estimates for the entire class/age cohort (developed using the assumption described above—namely, that drug use prevalence for dropouts differs from the drug use prevalence for participating 12th graders by 1.5 times the amount that the drug use prevalence for absentees does). Estimates were calculated separately for each year, thus taking into account any differences from year to year in the participation or absentee rates. The dropout rate was taken as a constant 15% of the age group through 2002, then at the declining rates reported by the U.S. Census for each subsequent year through 2020.

As Figure A-2 illustrates, any differences in the slopes of the trend lines between the original and revised estimates are extremely small. The prevalence estimates are higher, of course, but not dramatically so, and certainly not enough to have any serious policy implications. It also may be seen in Figure A-2 that as the dropout rates declined in recent years, the differences between the 12th graders present and the estimates for the total population the same age have narrowed some, but again not so much as to have any serious policy implications.

It is also worth noting that adjusting for absenteeism has little effect on the major declines in drug use that took place after the pandemic onset. For example, lifetime marijuana prevalence among the surveyed 12th grade students dropped by 5.4 points in two years from 2020 to 2022 (from 43.7% to 38.3%). Estimates adjusted for absentees and dropouts show a parallel trend, with a 5.0 point drop from 2020 to 2022 (from 45.4% to 40.4%). These results suggest that substantive factors are the dominant drivers of the changes in adolescent drug prevalence after the pandemic, and any effect of absenteeism on population estimates plays a relatively minor role.

As stated earlier, the corrections for 8th and 10th grade samples should be considerably less than for 12th grade. *Therefore, we have confidence that the trends that have appeared for the in-school populations represented in this study are very similar to those for the entire age cohorts.*

SUMMARY AND CONCLUSIONS

While we believe that the prevalence of drug use for the entire age cohort is somewhat underestimated in the MTF results, due to the study's omission of dropouts and absentees (whose substance use levels are above average), the degree of underestimation appears rather limited for most drugs; more importantly, trend estimates are not greatly affected.

TABLE A-1
Estimated Prevalence Levels for Selected Drug Outcomes in 2022, Based on Data from Monitoring the Future and the National Survey on Drug Use and Health

	1	2	3	4	5	6	7	8	9	10	11
	MTF					NSDUH				MTF and NSDUH	
	Seniors Present	Absentees, Estimated	Absent & Present Estimated	Dropouts,	Total	Seniors in School	Dropouts [a]	Difference	Combined	Dropouts	Total
Marijuana											
Lifetime	38.3	44.5	39.8	47.7	40.3	31.6	48.1	16.5	32.8	56.3	41.0
30-Day	20.2	24.7	21.3	27.0	21.7	15.0	29.4	14.4	16.0	35.7	22.3
Cocaine											
Lifetime	2.4	2.9	2.5	3.1	2.6	1.1	2.1	1.0	1.2	3.5	2.6
30-Day	0.8	0.9	0.8	0.9	0.8	0.1	0.3	0.2	0.1	1.0	0.8
Any Illicit Drug											
Lifetime	41.0	47.7	42.7	51.0	43.2	38.1	53.8	15.7	39.2	58.4	43.8
30-Day	21.6	26.3	22.8	28.6	23.1	15.9	29.9	14.0	16.9	36.8	23.8
Alcohol Use											
Lifetime	61.6	67.1	63.0	69.9	63.4	45.5	55.0	9.5	46.2	72.5	63.7
30-Day	28.4	31.6	29.2	33.1	29.4	19.1	22.1	3.0	19.3	32.2	29.4

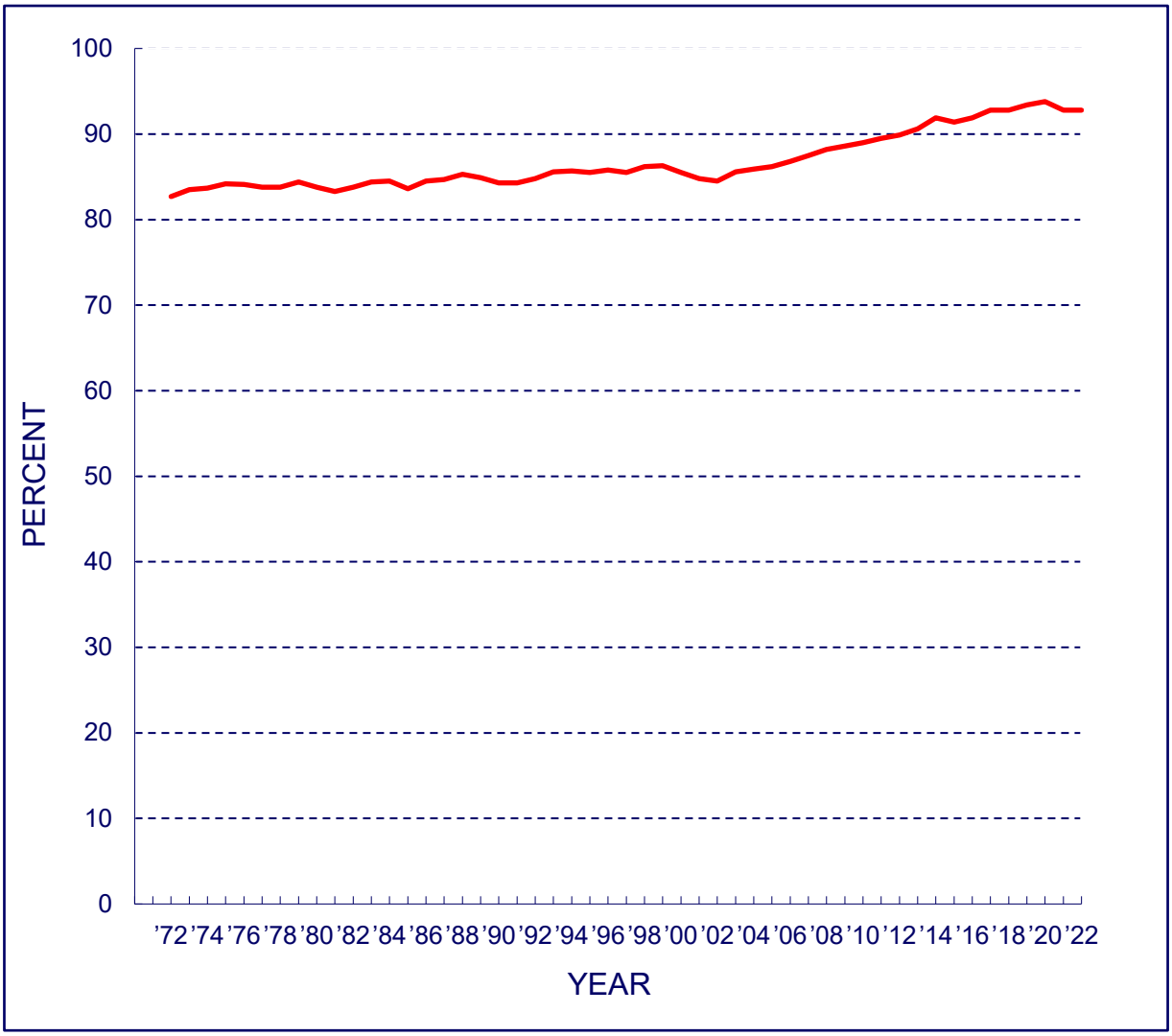
Source. The Monitoring the Future study, the University of Michigan and the National Survey on Drug Use and Health.

[a] Lower prevalence levels in NSDUH versus MTF reflect in part different survey designs; see here for further details.

Notes: For size of the 12th grade aged population that has dropped out of high school these analyses use the NCES estimate of 5.0%. Size of group of 12th grade students who were not in school on the date of the MTF survey administration is estimated at 28% (see Table 3-1).

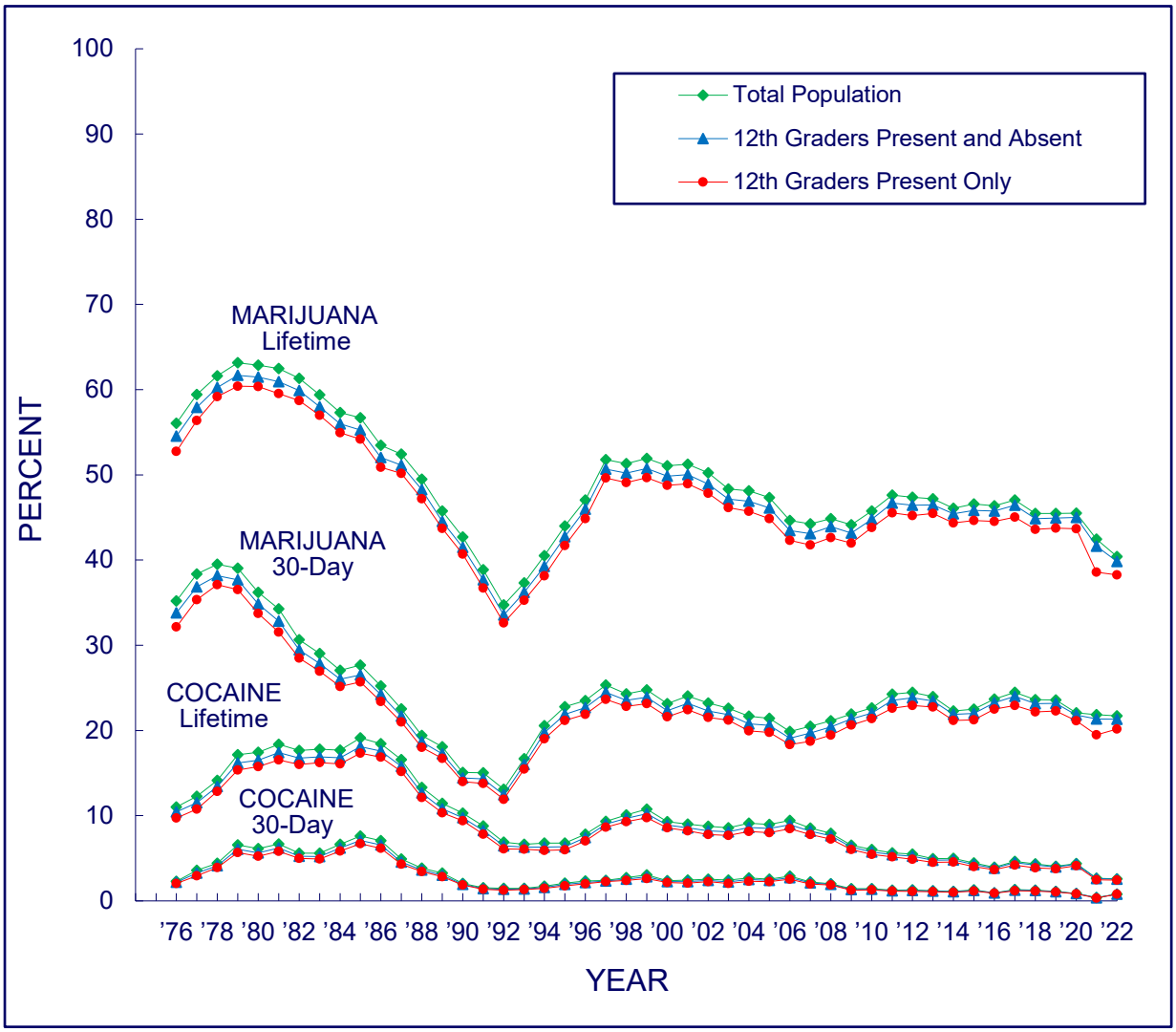
Column 1: Estimated directly from MTF data
Column 2: Estimated directly from MTF data, as described in text
Column 3: Columns 1 and 2 combined per their size as estimated by MTF (see Table 3-1): .75(Column 1) + .25(Column 2)
Column 4: Column 1 + 1.5(Column 2 - Column 1)
Column 5: Columns 3 and 4 combined per their size as estimated using the NCES estimate of 7.2%: i.e. .928(Column 3) + .072(Column 4)
Column 6: Estimated directly from NSDUH data
Column 7: Estimated directly from NSDUH data, using the NSDUH methodology described here
Column 8: Column 7 - Column 6
Column 9: Columns 6 and 7 combined per their size as estimated using the U.S. Census for 2022: .95(Column 1) + .05(Column 2)
Column 10: Column 3 + Column 8
Column 11: Columns 3 and 10 combined per their size as estimated using the NCES estimate of 5%: i.e., .95(Column 3) + .05(Column 10)

FIGURE A-1
High School Completion by 20- to 24-Year-Olds



Source. U.S. Census Bureau

FIGURE A-2
Estimates of Prevalence and Trends for the Entire Age/Class Cohort (Adjusting for Absentees and Dropouts) for 12th Graders



Source. The Monitoring the Future study, the University of Michigan.

Appendix B

DEFINITION OF BACKGROUND AND DEMOGRAPHIC SUBGROUPS

The following are brief definitions of the background and demographic subgroups explored in the Monitoring the Future (MTF) national surveys of 8th, 10th, and 12th graders' attitudes toward and use of drugs (including alcohol and tobacco). Additional information on subgroup trends, such as the tables and figures depicting subgroup trends through the 2023 MTF survey, can be found in Occasional Paper 101.[1] MTF does not present subgroup trends in 2020 because the pandemic-restricted sample size was insufficient to produce reliable estimates. (Data collection was curtailed in 2020 as a result of the COVID-19 pandemic, resulting in a three-quarters reduction in the sample size.)

Total: The total sample of respondents in a given year based on weighted cases (set to equal the total number of actual cases).

Gender: ***Male and female.*** Respondents are asked "What is your sex?" with response categories of "Male" and "Female." In 2021 the question was updated to include an additional response category of "Other or prefer not to answer." In 2022 the question was further updated so that "other" and "prefer not to answer" were presented as separate response options. These new groups are not included in the demographic subgroup tables because they are too small to support statistical analysis stratified by year. Multiple years can be combined by interested researchers to support detailed analysis of this group.

College Plans: Respondents are asked how likely it is that they will graduate from a four-year college program. College plans groupings are defined as follows:

None or under four years. Respondents who indicate they "definitely won't" or "probably won't" graduate from a four-year college program. (Note that, among those who do not expect to complete a four-year college program, a number still expect to get some postsecondary education.)

Complete four years. Respondents who indicate they "definitely will" or "probably will" graduate from a four-year college program.

Those not answering the college plans question are omitted from both groupings.

Region: Region of the country in which the respondent's school is located. There are four mutually exclusive regions in the US based on Census Bureau categories, defined as follows:

[1] Johnston, L. D., Miech, R. A., Patrick, M. E., & O'Malley, P. M. (2024). Demographic subgroup trends among adolescents in the use of various licit and illicit drugs, 1975-2023. Monitoring the Future Occasional Paper No. 101. Ann Arbor, MI: Institute for Social Research, University of Michigan.

Northeast. Census classifications of New England and Middle Atlantic states consist of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania.

Midwest. Census classifications of East North Central and West North Central states consist of Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, and Kansas.

South. Census classifications of South Atlantic, East South Central, and West South Central states consist of Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas.

West. Census classifications of Mountain and Pacific states consist of Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, and California (Alaska and Hawaii are also included in this Census region, but are not included in the MTF study).

Population Density: Population density of the area in which the schools are located. There are three mutually exclusive groups into which schools have been placed in a given year based on population density. The 1975–1985 samples were based on the 1970 Census; in 1986, one-half of the sample was based on the 1970 Census and the other half was based on the 1980 Census. In 1987 through 1993, all samples were based on the 1980 Census; in 1994, half of the sample was based on the 1980 Census and half on the 1990 Census. Starting in 2006 until 2013, each first-year half-sample of schools comes from a sample design that utilizes 2000 Census counts as the measure of size for first-stage units. Counts from the 2010 Census were used for the samples beginning in 2014.

The three levels of population density were defined in terms of Standard Metropolitan Statistical Area (SMSA) designations through 1985 and then changed to the new Office of Management and Budget (OMB) classifications of Metropolitan Statistical Areas (MSAs).[2] Except in the New England states, an MSA is a county or group of contiguous counties that contain at least one city of 50,000 inhabitants or more or twin cities with a combined population of at least 50,000. In the New England states, MSAs consisted of towns and cities instead of counties until 1994, after which New England Consolidated Metropolitan Areas (NECMAs) were used to define MSAs. Each MSA must include at least one central city, and the complete title of an MSA identifies the central city or cities. For the complete description of the criteria used in defining MSAs, see the OMB publication, Metropolitan Statistical Areas, 1990 (NTIS-PB90-214420), Washington, D.C. Although MTF has updated the measures of size of the MSAs

[2] The U.S. Office of Management and Budget (OMB) utilizes several names for geographic areas, such as Primary Metropolitan Statistical Areas (PMSAs) which are component parts of Consolidated Metropolitan Statistical Areas (CMSAs). For example, in June 1990, the Ann Arbor MI PMSA and Detroit MI PMSA constituted the Detroit-Ann Arbor MI CMSA. For the sake of simplicity, this document utilizes MSA throughout.

and non-MSAs following the 2000 and 2010 Censuses, the project has not altered MSA definitions since the introduction of its new sample design in 1994. Thus, MTF continues to utilize the MSAs as defined by OMB in June 1990.[3] The population living in an MSA is designated as the metropolitan population. The levels of population density used in MTF include those described here:

Large MSAs. These were the 12 largest SMSAs as of the 1970 Census and were used for the 1975–1985 samples: New York, Los Angeles, Chicago, Philadelphia, Detroit, San Francisco, Washington, Boston, Pittsburgh, St. Louis, Baltimore, and Cleveland. As of the 1980 Census, the Large MSA group consisted of the 16 largest MSAs in the nation. This new structure was used for the 1986–1994 samples. These 16 MSAs include all of those mentioned above except Cleveland, plus Dallas-Fort Worth, Houston, Nassau-Suffolk, Minneapolis-St. Paul, and Atlanta.

A new sample design was developed based on the 1990 Census, beginning with the first-year half-sample of schools chosen in 1994. In the 1990s sample, only the eight largest MSAs are represented with certainty at all three grade levels; 16 other large MSAs are divided into pairs, with half randomly assigned to both the 8^{th} and 12^{th} grade samples and the other half assigned to the 10^{th} grade sample. The eight largest MSAs are New York, Los Angeles-Long Beach, Chicago, Philadelphia PA-NJ, Detroit, Washington DC-MD-VA, Dallas-Ft. Worth, and Boston-Lawrence-Salem-Lowell-Brockton. The other 16 large MSAs are Houston, Atlanta, Seattle-Tacoma, Minneapolis-St. Paul MN-WI, St. Louis MO-IL, San Diego, Baltimore, Pittsburgh, Phoenix, Oakland, Cleveland, Miami, Newark, Denver, San Francisco, and Kansas City MO-KS.

Other MSAs. This category consists of all other, smaller MSAs, as defined by OMB, except those listed previously.

Non-MSAs. This category consists of all areas not designated as MSAs—in other words, they do not contain a town (or twin cities) of at least 50,000 inhabitants. The population living outside of MSAs constitutes the nonmetropolitan population.

Parental Education: This is a dichotomous variable with a value of 1 if either parent has a college degree and a value of 0 if neither parent has a college degree.

Race/ Ethnicity: From 1975 through 2004, respondents were asked "How do you describe yourself?" and presented with a list of various racial/ethnic categories. A general instruction told them to select the one best response for each question. In 2005 the instructions in half of the questionnaire forms were revised in order to be more consistent with the guidelines of the Office of Management and Budget for assessing race/ethnicity. In the changed forms, respondents were presented with

[3] For example, the U.S. Office of Management and Budget (OMB) currently defines the Detroit-Warren-Dearborn MSA as Wayne, Oakland, Macomb, Livingston, St. Clair, and Lapeer Counties, while MTF continues to define the Detroit MSA as Wayne, Oakland, Macomb, Livingston, St. Clair, Monroe, and Lapeer Counties, as OMB defined Detroit in June 1990.

a list of racial/ethnic categories and instructed to "select one or more responses." In 2005 relatively few respondents (about 6%) selected more than one racial/ethnic category, and internal analyses suggested this change had only minor effects on estimates in that year. In 2006 and thereafter the revised instruction was used in all forms. The group that selected one ore more responses has since grown and in 2023 was about 15% of the population in 8th grade, in 10th grade, and in 12th grade.

White. Consists of those respondents who describe themselves as White or Caucasian (from 1975 forward), or as Middle Eastern (response category first added in 2021). For the revised question in 2005 and for all forms in 2006 and beyond, those who checked these categories and no other racial/ethnic group were categorized as White.

Black/African American. Consists of those respondents who in 1975–1990 describe themselves as Black or Afro American or who, in 1991–2004, describe themselves as Black or African American. In 2005 the unchanged questionnaire forms were treated in a similar manner; for the revised question in 2005 and for all forms in 2006 and beyond, only those checking Black or African American and no other racial ethnic group were categorized as Black/African American.

Hispanic. Consists of those respondents who in 1975–1990 describe themselves as Mexican American or Chicano, or Puerto Rican or other Latin American. After 1990 this group includes those respondents who describe themselves as Mexican American or Chicano, Cuban American, Puerto Rican American, or other Latin American. The term "Puerto Rican American" was shortened to "Puerto Rican" after 1994. In 2005 the unchanged questionnaire forms were treated in a similar manner; the changed forms in 2005 and for all forms in 2006 and beyond, only those checking Mexican American or Chicano, Cuban American, Puerto Rican, or Other Hispanic or Latino and no other racial/ethnic group were categorized as Hispanic.

Multiple race/ethnicity. Respondents who marked more than one of the above categories in 2006 or afterwards.

Appendix C

TRENDS IN DRUG USE FOR THREE GRADES COMBINED

This appendix presents drug trends for grades 8, 10, and 12 combined. (Data were first gathered on all three grades in 1991, so these tables cover the interval 1991–2023.) These combined figures provide simplicity, but in doing so lose some important distinctions. For example, inflections either up or down in use have sometimes occurred first among 8th graders and then radiated up the age spectrum on a lagged basis; such cohort effects are masked when the data are combined across grade. But for those seeking an easier way of summarizing the overall historical trend results, this simplification may be useful at times.

Tables C-1 through C-4 present detailed estimates of drug prevalence of the three grades combined from 1991 to 2023. The averages across grades in the use of each drug are calculated using a weighting procedure that takes into account the estimated number of students in the 48 contiguous states and the District of Columbia who are enrolled in each of the three grade levels each year. The original sampling weights used at each grade level to correct for probability of selection within grade have been retained. Only drugs reported for all three grades are included in the figures and tables in this appendix.

These tables also show the absolute change in use between the most recent year and the recent peak level observed for each drug, along with the statistical significance of that change. Most of these changes from recent peaks are statistically significant, in part because the sample sizes are so large. The proportional change since the recent peak year is also provided. In addition, the two far right-hand columns show absolute and proportional changes from the recent lowest level to the most recent year.

Figures C-1 through C-3 provide graphical representations of trends in selected drugs. In Chapter 5 these trends are presented separately by grade and discussed in detail.

It should be noted that two important classes of drugs that MTF routinely reports are not included in the tables and figures because we report the data only for 12th graders—***narcotics other than heroin*** and ***sedatives*** (barbiturates). The 12th grade trend data for these drugs may be found in Chapter 5. Several other drugs for which we lack data for the lower grades are also not included here.

TABLE C-1

Trends in Lifetime Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Any Illicit Drug[b]	30.4	29.8	32.1	35.7	38.9	42.2	*43.3*	42.3	41.9	41.0	40.9	39.5	37.5	36.4	35.7	34.0	32.7
Any Illicit Drug other than Marijuana[b]	19.7	19.7	21.2	22.0	23.6	*24.2*	24.0	23.1	22.7	22.1‡	*23.2*	21.1	19.8	19.3	18.6	18.2	17.7
Any Illicit Drug including Inhalants[b]	36.8	36.3	38.8	41.9	44.9	47.4	*48.2*	47.4	46.9	46.2	45.5	43.7	41.9	41.3	41.0	39.3	38.0
Marijuana/Hashish	22.7	21.1	23.4	27.8	31.6	35.6	**37.8**	36.5	36.4	35.3	35.3	34.0	32.4	31.4	30.8	28.9	27.9
Inhalants	17.0	16.9	18.2	18.6	**19.4**	19.1	18.6	18.1	17.5	16.4	15.3	13.6	13.4	13.7	14.1	13.7	13.5
Hallucinogens	6.1	6.3	7.0	7.7	8.9	10.0	*10.2*	9.5	9.0	8.5‡	**9.2**	7.6	6.9	6.3	5.9	5.7	5.8
LSD	5.5	5.7	6.5	6.9	8.1	8.9	**9.1**	8.3	7.9	7.2	6.5	5.0	3.7	3.0	2.6	2.5	2.6
Hallucinogens other than LSD	2.4	2.5	2.7	3.6	3.9	4.8	*4.9*	4.8	4.4	4.5‡	**6.7**	6.0	5.8	5.6	5.4	5.2	5.1
Ecstasy (MDMA)[c]	—	—	—	—	—	4.9	5.2	4.5	5.3	7.2	**8.0**	6.9	5.4	4.7	4.0	4.3	4.5
Cocaine	4.6	4.0	4.1	4.5	5.1	6.0	6.6	7.0	**7.2**	6.5	5.9	5.7	5.3	5.5	5.5	5.3	5.2
Crack	2.0	1.9	2.0	2.5	2.8	3.2	3.4	3.8	**3.8**	3.5	3.2	3.2	2.9	2.9	2.8	2.6	2.5
Other cocaine	4.1	3.5	3.6	3.9	4.2	5.2	5.9	6.1	**6.3**	5.6	5.1	4.8	4.5	4.7	4.7	4.7	4.6
Heroin	1.1	1.3	1.3	1.6	1.9	2.1	2.1	2.2	**2.2**	2.1	1.7	1.7	1.5	1.5	1.5	1.4	1.4
Amphetamines[b]	12.9	12.5	13.8	14.3	15.2	*15.5*	15.2	14.5	14.0	13.5	13.9	13.1	11.8	11.2	10.3	10.1	9.5
Methamphetamine	—	—	—	—	—	—	—	—	**6.5**	6.2	5.8	5.3	5.0	4.5	3.9	3.4	2.5
Tranquilizers	5.5	5.3	5.4	5.5	5.8	6.5	6.6	6.9	*7.0*	6.9‡	**7.9**	7.9	7.3	7.1	6.8	7.0	6.7
Alcohol	*80.1*	79.2‡	68.4	68.4	68.2	68.4	**68.8**	67.4	66.4	66.6	65.5	62.7	61.7	60.5	58.6	57.0	56.3
Been drunk	**46.3**	44.9	44.6	44.3	44.5	45.1	45.7	44.0	43.7	44.0	43.4	40.5	38.9	39.4	38.4	37.6	36.6
Flavored alcoholic beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	**54.7**	54.7	53.1	51.3
Cigarettes	53.5	53.0	54.0	54.6	55.8	**57.8**	57.4	56.0	54.5	51.8	49.1	44.2	40.8	39.6	37.4	35.0	33.3
Smokeless tobacco	—	26.2	25.6	**26.3**	26.0	25.7	22.7	21.1	19.4	17.9	16.6	15.2	14.1	13.6	13.8	13.3	12.9
Any Vaping[d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	1.9	1.8	1.8	2.1	2.1	1.8	2.1	2.3	2.8	3.0	**3.3**	3.3	3.0	2.5	2.1	2.0	1.8

Table continued on next page.

TABLE C-1 (continued)
Trends in Lifetime Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 [e]	2020	2021	2022	2023	2022–2023 change	Peak year–2023 change: Absolute change	Peak year–2023 change: Proportional change (%) [a]	Low year–2023 change: Absolute change	Low year–2023 change: Proportional change (%) [a]
Any Illicit Drug[b]	32.6	33.2	34.4	34.7	34.1	36.0‡	**34.9**	34.3	32.6	33.4	33.9	34.8	34.7	27.0	28.4	27.2	-1.2	-7.7 sss	-22.2	+0.2	+0.8
Any Illicit Drug other than Marijuana[b]	16.8	16.5	16.8	16.1	15.5	16.8‡	**15.8**	15.1	14.3	14.0	14.2	14.2	14.3	10.1	10.7	9.9	-0.7	-5.9 sss	-37.3	—	—
Any Illicit Drug including Inhalants[b]	37.9	37.9	38.8	38.7	37.9	39.3‡	37.9	37.4	34.9	36.5	36.6	37.8	**38.3**	31.0	31.9	30.6	-1.3	-7.7 sss	-20.0	—	—
Marijuana/Hashish	27.9	29.0	30.4	31.0	30.7	32.0	30.5	30.0	28.6	29.3	29.7	30.6	30.2	23.1	24.4	23.1	-1.3	-14.7 sss	-38.8	—	—
Inhalants	13.1	12.5	12.1	10.6	10.0	8.9	8.8	7.5	6.5	6.7	6.6	7.3	8.1	7.9	7.7	7.3	-0.5	-12.1 sss	-62.5	+0.8	+12.2
Hallucinogens	5.6	5.3	5.8	5.7	5.0	5.0	4.3	4.3	4.3	4.2	4.1	4.6	5.0	4.0	4.1	4.0	-0.0	-5.2 sss	-56.3	—	—
LSD	2.7	2.5	2.8	2.7	2.5	2.6	2.4	2.8	3.1	3.1	3.0	3.5	3.9	2.8	2.4	2.1	-0.3	-7.0 sss	-77.1	—	—
Hallucinogens other than LSD	4.8	4.7	5.0	4.9	4.3	4.1	3.5	3.1	3.0	2.9	2.8	3.1	3.3	3.0	3.2	3.4	+0.1	-3.3 sss	-49.6	+0.5 s	+19.0
Ecstasy (MDMA)[c]	4.1	4.6	5.5	5.5	4.6	4.7‡	**5.0**	4.0	3.1	3.0	2.7	2.7	2.6	1.7	1.8	1.3	-0.5	-3.8 sss	-74.5	—	—
Cocaine	4.8	4.2	3.8	3.4	3.3	3.1	2.9	2.7	2.3	2.5	2.6	2.4	2.4	1.4	1.3	1.1	-0.2	-6.1 sss	-84.7	—	—
Crack	2.2	2.0	1.9	1.6	1.5	1.5	1.3	1.3	1.0	1.1	1.1	1.1	1.0	0.9	0.8	0.7	-0.1	-3.2 sss	-82.0	—	—
Other cocaine	4.1	3.7	3.4	3.1	2.9	2.7	2.5	2.3	2.1	2.1	2.3	2.1	2.2	1.2	1.0	0.9	-0.2	-5.4 sss	-85.9	—	—
Heroin	1.3	1.4	1.4	1.2	1.0	1.0	0.9	0.7	0.6	0.6	0.6	0.6	0.4	0.4	0.5	0.5	0.0	-1.7 sss	-77.4	+0.1	+27.6
Amphetamines[b]	8.6	8.6	8.9	8.6	8.3	10.5‡	**9.7**	9.1	8.1	7.7	7.7	7.6	7.8	5.3	5.6	5.0	-0.6	-4.7 sss	-48.2	—	—
Methamphetamine	2.5	2.2	2.2	1.8	1.6	1.5	1.4	1.1	0.8	0.9	0.7	0.8	1.2	0.4	0.7	0.5	-0.3	-6.1 sss	-93.0	+0.1	+16.3
Tranquilizers	6.3	6.5	6.6	6.0	5.8	5.2	5.3	5.2	5.5	5.6	5.4	5.3	5.2	2.8	3.0	2.5	-0.5 s	-5.4 sss	-68.3	—	—
Alcohol	55.1	54.6	53.6	51.5	50.0	48.4	46.4	45.2	41.9	41.7	41.2	41.5	44.0	36.3	41.3	35.7	-5.6 sss	-33.1 sss	-48.1	—	—
Been drunk	35.1	35.9	34.2	32.5	32.8	31.7	29.2	28.2	26.4	26.0	25.6	25.0	26.4	21.1	21.0	18.7	-2.3 ss	-27.5 sss	-59.5	—	—
Flavored alcoholic beverages	49.3	47.9	46.7	44.5	42.7	41.1	38.8	37.4	33.8	33.5	34.3	30.6	32.8	26.9	30.0	27.2	-2.8 s	-27.5 sss	-50.2	+0.3	+0.9
Cigarettes	31.3	31.2	30.9	28.7	27.0	25.6	22.9	21.1	18.2	17.0	16.1	15.3	16.2	11.4	10.9	9.9	-1.0	-47.9 sss	-82.9	—	—
Smokeless tobacco	12.3	13.5	14.5	13.8	13.5	12.8	12.1	11.3	10.3	8.7	8.8	8.7	12.0	6.0	6.6	5.9	-0.7	-20.4 sss	-77.7	—	—
Any Vaping[d]	—	—	—	—	—	—	—	*29.9*	26.6‡	28.2	33.4	36.7	**37.2**	28.9	29.1	26.1	-3.0 sss	-11.1 sss	-29.8	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	18.9	25.2	32.3	**35.0**	27.6	27.7	24.8	-2.9 sss	-10.2 sss	-29.2	+5.9 sss	+31.4
Vaping marijuana	—	—	—	—	—	—	—	—	—	8.5	11.7	18.1	**20.1**	15.9	17.6	16.6	-1.0	-3.5 sss	-17.2	+8.1 sss	+95.9
Vaping just flavoring	—	—	—	—	—	—	—	—	—	24.9	**28.3**	25.3	25.0	18.8	18.2	17.2	-1.0	-11.1 sss	-39.3	—	—
Steroids	1.6	1.5	1.5	1.5	1.4	1.5	1.4	1.5	1.3	1.2	1.3	1.6	1.9	0.9	1.3	1.1	-0.2	-2.2 sss	-66.4	+0.2	+20.3

(Table continued on next page.)

TABLE C-1 (continued)
Trends in Lifetime Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' – ' indicates data not available. ' ‡ ' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.
Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.
Level of significance of difference between classes: s = .05, ss = .01, sss = .001.
Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

[a]The proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

[b]In 2013, for the questions on the use of amphetamines, the text was changed on two of the questionnaire forms for 8th and 10th graders and four of the questionnaire forms for 12th graders. This change also impacted the any illicit drug indices. Data presented here include only the changed forms beginning in 2013.

[c]In 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

[d]In 2017, the surveys switched from asking about vaping in general to asking separately about vaping nicotine, marijuana, and just flavoring. Beginning in 2017, data presented for any vaping are based on these new questions.

[e]Drug prevalence results in 2019 combine results from paper-and-pencil surveys with those completed using electronic tablets. In 2019, students in a randomly-selected half of schools completed MTF surveys on paper-and-pencil and students in the other half completed the surveys using electronic tablets. Analysis of this randomized controlled trial demonstrated that these results did not significantly differ across survey mode (Miech, R.A., Couper, M.P., Heeringa, S.G., and Patrick, M.E. The Impact of Survey Mode on US National Estimates of Adolescent Drug Prevalence: Results from a Randomized Controlled Study, Addiction).

TABLE C-2
Trends in Annual Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Any Illicit Drug[c]	20.2	19.7	23.2	27.6	31.0	33.6	*34.1*	32.2	31.9	31.4	31.8	30.2	28.4	27.6	27.1	25.8	24.8
Any Illicit Drug other than Marijuana[c]	12.0	12.0	13.6	14.6	16.4	*17.0*	16.8	15.8	15.6	15.3‡	*16.3*	14.6	13.7	13.5	13.1	12.7	12.4
Any Illicit Drug including Inhalants[c]	23.5	23.2	26.7	31.1	34.1	36.6	*36.7*	35.0	34.6	34.1	34.3	32.3	30.8	30.1	30.1	28.7	27.6
Marijuana/Hashish	15.0	14.3	17.7	22.5	26.1	29.0	**30.1**	28.2	27.9	27.2	27.5	26.1	24.6	23.8	23.4	22.0	21.4
Inhalants	7.6	7.8	8.9	9.6	**10.2**	9.9	9.1	8.5	7.9	7.7	6.9	6.1	6.2	6.7	7.0	6.9	6.4
Hallucinogens	3.8	4.1	4.8	5.2	6.6	*7.2*	6.9	6.3	6.1	5.4‡	**6.0**	4.5	4.1	4.0	3.9	3.6	3.8
LSD	3.4	3.8	4.3	4.7	5.9	**6.3**	6.0	5.3	5.3	4.5	4.1	2.4	1.6	1.6	1.5	1.4	1.7
Hallucinogens other than LSD	1.3	1.4	1.7	2.2	2.7	*3.2*	*3.2*	3.1	2.9	2.8‡	**4.0**	3.7	3.6	3.6	3.4	3.3	3.3
Ecstasy (MDMA)[d]	—	—	—	—	—	3.1	3.4	2.9	3.7	5.3	**6.0**	4.9	3.1	2.6	2.4	2.7	3.0
Cocaine	2.2	2.1	2.3	2.8	3.3	4.0	4.3	4.5	**4.5**	3.9	3.5	3.7	3.3	3.5	3.5	3.5	3.4
Crack	1.0	1.1	1.2	1.5	1.8	2.0	2.1	**2.4**	2.2	2.1	1.8	2.0	1.8	1.7	1.6	1.5	1.5
Other cocaine	2.0	1.8	2.0	2.3	2.8	3.4	3.7	3.7	**4.0**	3.3	3.0	3.1	2.8	3.1	3.0	3.1	2.9
Heroin	0.5	0.6	0.6	0.9	1.2	**1.3**	1.3	1.2	1.3	**1.3**	0.9	1.0	0.8	0.9	0.8	0.8	0.8
OxyContin	—	—	—	—	—	—	—	—	—	—	—	2.7	3.2	3.3	3.4	3.5	3.5
Vicodin	—	—	—	—	—	—	—	—	—	—	—	6.0	**6.6**	5.8	5.7	6.3	6.2
Amphetamines[c]	7.5	7.3	8.4	9.1	10.0	10.4	10.1	9.3	9.0	9.2	9.6	8.9	8.0	7.6	7.0	6.8	6.5
Ritalin	—	—	—	—	—	—	—	—	—	—	**4.2**	3.8	3.5	3.6	3.3	3.5	2.8
Adderall	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Methamphetamine	—	—	—	—	—	—	—	—	**4.1**	3.5	3.4	3.2	3.0	2.6	2.4	2.0	1.4
Tranquilizers	2.8	2.8	2.9	3.1	3.7	4.1	4.1	4.4	4.4	*4.5*‡	**5.5**	5.3	4.8	4.8	4.7	4.6	4.5
OTC Cough/Cold Medicines	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	**5.4**	5.0
Rohypnol	—	—	—	—	—	*1.1*	*1.1*	*1.1*	0.8	0.7	0.9‡	0.8	0.8	0.9	0.8	0.7	0.8
Alcohol	67.4	66.3‡	59.7	60.5	60.4	60.9	**61.4**	59.7	59.0	59.3	58.2	55.3	54.4	54.0	51.9	50.7	50.2
Been drunk	35.8	34.3	34.3	35.0	35.9	36.7	**36.9**	35.5	36.0	35.9	35.0	32.1	31.2	32.5	30.8	30.7	29.7
Flavored alcoholic beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	**44.5**	43.9	42.4	40.8
Alcoholic beverages containing caffeine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Any Vaping	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Snus	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	1.2	1.1	1.0	1.2	1.3	1.1	1.2	1.3	1.7	1.9	2.0	**2.0**	1.7	1.6	1.3	1.3	1.1

Table continued on next page.

TABLE C-2 (continued)
Trends in Annual Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 ‘	2020	2021	2022	2023	2022–2023 change	Peak year–2023 change: Absolute change	Peak year–2023 change: Proportional change (%) [a]	Low year–2023 change: Absolute change	Low year–2023 change: Proportional change (%) [a]
Any Illicit Drug[c]	24.9	25.9	27.3	27.6	27.1	28.6‡	27.2	26.8	25.3	26.5	27.1	**27.7**	27.3	19.9	21.7	20.3	-1.3	-7.4 sss	-26.6	+0.4	+2.0
Any Illicit Drug other than Marijuana[c]	11.9	11.6	11.8	11.3	10.8	11.4‡	**10.9**	10.5	9.7	9.4	9.3	9.0	9.2	5.6	6.1	5.6	-0.5	-5.3 sss	-48.4	0.0	+0.7
Any Illicit Drug including Inhalants[c]	27.6	28.5	29.7	29.8	29.0	30.5‡	28.5	28.4	26.3	28.3	28.8	29.0	**29.2**	21.5	23.0	21.9	-1.0	-7.3 sss	-24.9	+0.5	+2.2
Marijuana/Hashish	21.5	22.9	24.5	25.0	24.7	25.8	24.2	23.7	22.6	23.9	24.3	25.2	24.6	17.9	19.4	18.0	-1.4	-12.0 sss	-40.0	+0.1	+0.6
Inhalants	6.4	6.1	6.0	5.0	4.5	3.8	3.6	3.2	2.6	2.9	2.9	2.9	3.4	2.9	2.6	2.8	+0.2	-7.4 sss	-72.5	+0.2	+7.6
Hallucinogens	3.8	3.5	3.8	3.7	3.2	3.1	2.8	2.8	2.8	2.7	2.7	2.9	3.4	2.4	2.5	2.5	0.0	-3.4 sss	-57.5	+0.2	+7.2
LSD	1.9	1.6	1.8	1.8	1.6	1.6	1.7	1.9	2.0	2.1	2.0	2.2	2.5	1.5	1.4	1.0	-0.4 s	-5.3 sss	-83.8	—	—
Hallucinogens other than LSD	3.2	3.0	3.3	3.1	2.7	2.5	2.1	1.9	1.8	1.8	1.7	1.9	2.0	1.7	2.0	2.2	+0.2	-1.9 sss	-46.5	+0.5 s	+28.4
Ecstasy (MDMA)[d]	2.9	3.0	3.8	3.7	2.5	2.8‡	**3.4**	2.4	1.8	1.7	1.5	1.6	1.3	0.8	0.9	0.6	-0.3 s	-2.8 sss	-82.0	—	—
Cocaine	2.9	2.5	2.2	2.0	1.9	1.8	1.6	1.7	1.4	1.6	1.5	1.4	1.4	0.7	0.7	0.5	-0.2	-4.0 sss	-88.8	—	—
Crack	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.8	0.6	0.7	0.6	0.7	0.6	0.4	0.5	0.3	-0.2 s	-2.1 sss	-86.0	—	—
Other cocaine	2.6	2.1	1.9	1.7	1.7	1.5	1.5	1.5	1.2	1.3	1.3	1.3	1.4	0.5	0.6	0.4	-0.2	-3.6 sss	-90.8	—	—
Heroin	0.8	0.8	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.0	-1.0 sss	-80.0	+0.1	+69.6
OxyContin	3.4	**3.9**	3.8	3.4	2.9	2.9	2.4	2.3	2.1	1.9	1.7	1.7	1.4	0.9	1.1	0.6	-0.5 ss	-3.3 sss	-84.8	—	—
Vicodin	6.1	6.5	5.9	5.1	4.3	3.7	3.0	2.5	1.8	1.3	1.1	1.0	0.9	0.6	1.0	0.6	-0.4	-6.0 sss	-91.3	—	—
Amphetamines[c]	5.8	5.9	6.2	5.9	5.6	7.0‡	**6.6**	6.2	5.4	5.0	5.0	4.6	4.6	2.7	3.1	2.6	-0.5	-4.0 sss	-61.2	—	—
Ritalin	2.6	2.5	2.2	2.1	1.7	1.7	1.5	1.4	1.1	0.8	0.8	0.9	1.0	0.5	0.8	0.6	-0.3	-3.6 sss	-86.6	+0.1	+14.5
Adderall	—	4.3	**4.5**	4.1	4.4	4.4	4.1	4.5	3.9	3.5	3.5	3.1	3.3	1.7	2.9	1.8	-1.0 sss	-2.7 sss	-58.9	+0.1	+7.4
Methamphetamine	1.3	1.3	1.3	1.2	1.0	1.0	0.8	0.6	0.5	0.5	0.5	0.5	0.7	0.2	0.3	0.2	-0.1	-3.9 sss	-94.0	+0.1	+53.2
Tranquilizers	4.3	4.5	4.4	3.9	3.7	3.3	3.4	3.4	3.5	3.6	3.2	3.1	2.7	1.2	1.5	1.0	-0.5 ss	-4.5 sss	-81.6	—	—
OTC Cough/Cold Medicines	4.7	5.2	4.8	4.4	4.4	4.0	3.2	3.1	3.2	3.0	3.2	2.8	3.7	2.7	3.2	3.1	-0.1	-2.2 sss	-41.4	+0.5	+17.9
Rohypnol	0.7	0.6	0.8	0.9	0.7	0.6	0.5	0.5	0.7	0.5	0.4	0.5	**1.0**	0.2	0.3	0.1	-0.2 s	-0.8 sss	-90.4	—	—
Alcohol	48.7	48.4	47.4	45.3	44.3	42.8	40.7	39.9	36.7	36.7	36.1	35.9	38.3	30.2	32.2	30.0	-2.2 ss	-31.3 sss	-51.1	—	—
Been drunk	28.1	28.7	27.1	25.9	26.4	25.4	23.6	22.5	20.7	20.4	20.0	19.5	22.1	15.5	15.9	13.9	-1.9 ss	-23.0 sss	-62.2	—	—
Flavored alcoholic beverages	39.0	37.8	35.9	33.7	32.5	31.3	29.4	28.8	25.3	25.9	26.1	24.6	26.5	20.0	22.8	21.2	-1.6	-23.3 sss	-52.4	+1.2	+5.9
Alcoholic beverages containing caffeine	—	—	—	**19.7**	18.6	16.6	14.3	13.0	11.2	10.6	10.1	9.2	8.6	7.8	7.7	8.8	+1.1 ss	-10.9 sss	-55.2	1.1 ss	14.5
Any Vaping	—	—	—	—	—	—	—	—	—	21.5	28.9	**31.9**	30.7	22.1	23.0	20.5	-2.5 ss	-11.4 sss	-35.8	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	13.9	21.6	**27.3**	27.1	19.2	19.7	17.2	-2.5 ss	-10.1 sss	-37.0	+3.3 sss	+23.5
Vaping marijuana	—	—	—	—	—	—	—	—	—	6.8	9.9	15.6	**16.3**	11.6	13.6	12.9	-0.8	-3.5 ss	-21.2	+6.0 sss	+88.0
Vaping just flavoring	—	—	—	—	—	—	—	—	—	17.2	**21.8**	18.6	15.8	10.0	10.4	9.9	-0.5	-11.9 sss	-54.5	—	—
Snus	—	—	—	—	**5.6**	4.8	4.1	3.8	3.6	2.6	3.0	2.2	2.7	1.6	1.6	1.1	-0.5 s	-4.5 sss	-80.1	—	—
Steroids	1.1	1.0	0.9	0.9	0.9	0.9	0.9	1.0	0.8	0.8	0.8	0.9	1.1	0.4	0.8	0.6	-0.2 s	-1.4 sss	-70.2	+0.2 s	+45.7

(Table continued on next page.)

TABLE C-2 (continued)
Trends in Annual Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' – ' indicates data not available. ' ‡ ' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.

Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.

Level of significance of difference between classes: s = .05, ss = .01, sss = .001.

Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

[a]The proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

[b]Question was discontinued among 8th and 10th graders in 2012.

[c]In 2013, for the questions on the use of amphetamines, the text was changed on two of the questionnaire forms for 8th and 10th graders and four of the questionnaire forms for 12th graders. This change also impacted the any illicit drug indices. Data presented here include only the changed forms beginning in 2013.

[d]In 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

[e]Drug prevalence results in 2019 combine results from paper-and-pencil surveys with those completed using electronic tablets. In 2019, students in a randomly-selected half of schools completed MTF surveys on paper-and-pencil and students in the other half completed the surveys using electronic tablets. Analysis of this randomized controlled trial demonstrated that these results did not significantly differ across survey mode (Miech, R.A., Couper, M.P., Heeringa, S.G., and Patrick, M.E. The Impact of Survey Mode on US National Estimates of Adolescent Drug Prevalence: Results from a Randomized Controlled Study, Addiction).

TABLE C-3
Trends in 30-Day Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Any Illicit Drug[b]	10.9	10.5	13.3	16.8	18.6	*20.6*	20.5	19.5	19.5	19.2	19.4	18.2	17.3	16.2	15.8	14.9	14.8
Any Illicit Drug other than Marijuana[b]	5.4	5.5	6.5	7.1	*8.4*	*8.4*	*8.4*	8.2	7.9	8.0‡	*8.2*	7.7	7.1	7.0	6.7	6.4	6.4
Any Illicit Drug including Inhalants[b]	13.0	12.5	15.4	18.9	20.7	*22.4*	22.2	21.1	21.1	21.0	20.8	19.5	18.6	17.5	17.5	16.5	16.5
Marijuana/Hashish	8.3	7.7	10.2	13.9	15.6	17.7	**17.9**	16.9	16.9	16.3	16.6	15.3	14.8	13.6	13.4	12.5	12.4
Inhalants	3.2	3.3	3.8	4.0	**4.3**	3.9	3.7	3.4	3.3	3.2	2.8	2.7	2.7	2.9	2.9	2.7	2.6
Hallucinogens	1.5	1.6	1.9	2.2	*3.1*	2.7	3.0	2.8	2.5	2.0‡	**2.3**	1.7	1.5	1.5	1.5	1.3	1.4
LSD	1.3	1.5	1.6	1.9	**2.8**	2.1	2.4	2.3	2.0	1.4	1.5	0.7	0.6	0.6	0.6	0.6	0.6
Hallucinogens other than LSD	0.5	0.5	0.7	1.0	1.0	*1.2*	*1.2*	*1.2*	1.1	1.1‡	**1.4**	1.4	1.2	1.3	1.2	1.1	1.1
Ecstasy (MDMA)[c]	—	—	—	—	—	1.5	1.3	1.2	1.6	**2.4**	2.4	1.8	1.0	0.9	0.9	1.0	1.1
Cocaine	0.8	0.9	0.9	1.2	1.5	1.7	1.8	**1.9**	1.9	1.7	1.5	1.6	1.4	1.6	1.6	1.6	1.4
Crack	0.4	0.5	0.5	0.7	0.8	0.9	0.8	**1.0**	0.9	0.9	0.9	1.0	0.8	0.8	0.8	0.7	0.7
Other cocaine	0.7	0.7	0.8	1.1	1.2	1.3	1.5	1.6	**1.7**	1.4	1.3	1.3	1.2	1.4	1.3	1.4	1.1
Heroin	0.2	0.3	0.3	0.4	0.6	0.6	0.6	**0.6**	0.6	0.6	0.4	0.5	0.4	0.5	0.5	0.4	0.4
Amphetamines[b]	3.0	3.3	3.9	4.0	4.5	*4.8*	4.5	4.3	4.2	4.5	4.7	4.4	3.9	3.6	3.3	3.0	3.2
Methamphetamine	—	—	—	—	—	—	—	—	1.5	**1.5**	1.4	1.5	1.4	1.1	0.9	0.7	0.5
Tranquilizers	1.1	1.1	1.1	1.3	1.6	1.7	1.7	1.9	1.9	*2.1*‡	2.3	**2.4**	2.2	2.1	2.1	2.1	2.0
Alcohol	*39.8*	38.4‡	36.3	37.6	37.8	**38.8**	38.6	37.4	37.2	36.6	35.5	33.3	33.2	32.9	31.4	31.0	30.1
Been drunk	19.2	17.8	18.2	19.3	20.3	20.4	**21.2**	20.4	20.6	20.3	19.7	17.4	17.7	18.1	17.0	17.4	16.5
Flavored alcoholic beverages	—	—	—	—	—	—	—	—	—	—	—	—	—	**23.0**	21.6	21.7	20.4
Cigarettes	20.7	21.2	23.4	24.7	26.6	28.3	**28.3**	27.0	25.2	22.6	20.2	17.7	16.6	16.1	15.3	14.4	13.6
Smokeless tobacco	–	9.2	9.1	**9.7**	9.6	8.5	8.0	7.0	6.3	5.8	6.1	5.2	5.3	5.1	5.3	5.1	5.2
Any Vaping[d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Large Cigars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Flavored Little Cigars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Regular Little Cigars	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Tobacco using a hookah	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Steroids	0.6	0.6	0.6	0.7	0.6	0.5	0.7	0.7	0.9	0.9	0.9	**1.0**	0.9	0.9	0.7	0.7	0.6

Table continued on next page.

TABLE C-3 (continued)
Trends in 30-Day Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 [e]	2020	2021	2022	2023	2022–2023 change	Peak year–2023 change: Absolute change	Peak year–2023 change: Proportional change (%) [a]	Low year–2023 change: Absolute change	Low year–2023 change: Proportional change (%) [a]
Any Illicit Drug[b]	14.6	15.8	16.7	17.0	16.8	17.3‡	**16.5**	15.9	15.5	16.1	16.3	17.2	16.2	12.2	13.6	12.3	-1.3 s	-4.2 sss	-25.3	+0.1	+0.8
Any Illicit Drug other than Marijuana[b]	5.9	5.7	5.7	5.7	5.2	5.4‡	**5.4**	5.1	4.6	4.4	4.4	4.3	4.0	2.6	2.8	2.8	0.0	-2.7 sss	-49.2	+0.2	+7.6
Any Illicit Drug including Inhalants[b]	16.1	17.3	18.0	18.3	17.6	18.4‡	17.3	16.8	16.0	17.2	17.1	**17.9**	17.4	12.8	14.5	13.4	-1.1	-4.5 sss	-25.4	+0.5	+4.0
Marijuana/Hashish	12.5	13.8	14.8	15.2	15.1	15.6	14.4	14.0	13.7	14.5	14.6	15.6	14.6	11.0	12.3	10.9	-1.4 s	-7.0 sss	-39.2	—	—
Inhalants	2.6	2.5	2.4	2.1	1.7	1.5	1.4	1.3	1.2	1.3	1.1	1.4	1.6	1.1	1.3	1.5	+0.3	-2.8 sss	-64.5	+0.4 s	+35.5
Hallucinogens	1.4	1.3	1.4	1.3	1.1	1.1	1.0	1.0	1.0	1.0	0.9	1.2	1.3	0.7	0.8	1.0	+0.1	-1.3 sss	-57.7	+0.3	+37.8
LSD	0.7	0.5	0.7	0.7	0.5	0.6	0.6	0.7	0.7	0.8	0.6	0.9	1.0	0.4	0.5	0.4	-0.1	-2.4 sss	-86.6	0.0	+0.6
Hallucinogens other than LSD	1.1	1.0	1.2	1.0	0.9	0.8	0.7	0.6	0.5	0.6	0.6	0.7	0.8	0.5	0.6	0.8	+0.2	-0.6 sss	-43.8	+0.3 ss	+47.6
Ecstasy (MDMA)[c]	1.2	1.2	1.5	1.4	0.8	1.0‡	**1.1**	0.8	0.6	0.6	0.5	0.6	0.5	0.2	0.5	0.3	-0.2 ss	-0.8 s	-74.0	+0.1 s	+64.1
Cocaine	1.3	1.0	0.9	0.8	0.8	0.8	0.7	0.8	0.5	0.7	0.7	0.6	0.4	0.3	0.4	0.4	-0.1	-1.5 sss	-81.0	+0.1	+38.2
Crack	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.4	0.3	0.4	0.3	0.2	0.3	0.2	-0.1	-0.7 sss	-75.4	+0.0	23.0
Other cocaine	1.1	0.8	0.8	0.7	0.7	0.6	0.6	0.7	0.4	0.6	0.6	0.5	0.5	0.2	0.4	0.3	-0.1	-1.4 sss	-83.5	+0.1	+62.8
Heroin	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.1	0.2	0.2	0.0	-0.4 sss	-63.1	+0.1 s	+120.1
Amphetamines[b]	2.6	2.7	2.7	2.8	2.5	3.2‡	**3.2**	2.7	2.5	2.2	2.2	2.2	2.0	1.4	1.5	1.3	-0.2	-1.8 sss	-58.3	—	—
Methamphetamine	0.7	0.5	0.6	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.4	0.1	0.2	0.1	0.0	-1.4 sss	-90.5	+0.1	+94.5
Tranquilizers	1.9	1.9	1.9	1.7	1.5	1.5	1.5	1.5	1.4	1.4	1.2	1.2	0.9	0.4	0.6	0.4	-0.2 ss	-2.0 sss	-83.2	—	—
Alcohol	28.1	28.4	26.8	25.5	25.9	24.3	22.6	21.8	19.8	19.9	18.7	18.2	20.9	15.1	15.6	14.3	-1.3 s	-24.5 sss	-63.1	—	—
Been drunk	14.9	15.2	14.6	13.5	14.7	13.5	11.9	11.0	10.1	9.8	9.1	9.4	10.5	7.4	7.7	6.2	-1.5 ss	-15.0 sss	-70.8	—	—
Flavored alcoholic beverages	18.6	17.9	17.0	15.2	14.9	14.0	12.9	12.8	10.9	12.3	11.4	11.2	11.9	9.0	11.3	9.4	-1.9 ss	-13.6 sss	-59.2	+0.4	+4.2
Cigarettes	12.6	12.7	12.8	11.7	10.6	9.6	8.0	7.0	5.9	5.4	4.6	3.7	4.2	2.3	2.1	2.1	0.0	-26.2 sss	-92.6	0.0	+0.3
Smokeless tobacco	4.9	6.0	6.5	5.9	5.6	5.7	5.4	4.7	4.1	3.5	3.4	3.1	4.9	1.8	2.3	2.1	-0.2	-7.6 sss	-78.0	+0.3	+16.2
Any Vaping[d]	—	—	—	—	—	—	—	*12.8*	9.9‡	12.0	19.2	**22.5**	21.2	15.9	17.0	14.9	-2.1 sss	-7.6 sss	-33.9	+2.9 sss	+24.2
Vaping nicotine	—	—	—	—	—	—	—	—	—	7.5	14.2	**18.1**	18.0	13.3	13.8	11.8	-2.0 sss	-6.4 sss	-35.1	+4.3 sss	+57.2
Vaping marijuana	—	—	—	—	—	—	—	—	—	3.6	5.7	**10.1**	9.2	7.8	9.6	8.6	-0.9 s	-1.4 sss	-14.3	+5.0 sss	+139.7
Vaping just flavoring	—	—	—	—	—	—	—	—	—	8.0	**11.5**	9.6	8.5	6.1	6.8	6.4	-0.4	-5.1 sss	-44.5	+0.3	+5.5
Large Cigars	—	—	—	—	—	—	3.9	**4.2**	3.3	3.2	3.2	2.8	1.8	1.5	1.2	1.0	-0.2	-3.2 sss	-76.4	—	—
Flavored Little Cigars	—	—	—	—	—	—	**7.4**	7.1	5.6	5.4	5.5	4.5	3.1	1.5	1.4	1.3	-0.2	-6.2 sss	-83.2	—	—
Regular Little Cigars	—	—	—	—	—	—	4.5	**4.9**	3.6	3.6	3.4	3.0	2.4	1.3	1.2	1.0	-0.1	-3.9 sss	-79.0	—	—
Tobacco using a hookah	—	—	—	—	—	—	—	—	**4.3**	3.4	2.7	2.5	1.1	0.9	1.2	0.8	-0.4	-3.5 sss	-80.6	—	—
Steroids	0.6	0.6	0.6	0.5	0.5	0.6	0.5	0.5	0.4	0.4	0.5	0.5	0.6	0.2	0.7	0.4	-0.3 sss	-0.6 sss	-61.6	+0.2 ss	+64.1

(Table continued on next page.)

TABLE C-3 (continued)
Trends in 30-Day Prevalence of Use of Various Drugs for Grades 8, 10, and 12 Combined

(Entries are percentages.)

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' – ' indicates data not available. ' ‡ ' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.

Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.

Level of significance of difference between classes: s = .05, ss = .01, sss = .001.

Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

[a]The proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

[b]In 2013, for the questions on the use of amphetamines, the text was changed on two of the questionnaire forms for 8th and 10th graders and four of the questionnaire forms for 12th graders. This change also impacted the any illicit drug indices. Data presented here include only the changed forms beginning in 2013.

[c]In 2014, the text was changed on one of the questionnaire forms for 8th, 10th, and 12th graders to include "molly" in the description. The remaining forms were changed in 2015. Data for both versions of the question are presented here.

[d]In 2017, the surveys switched from asking about vaping in general to asking separately about vaping nicotine, marijuana, and just flavoring. Beginning in 2017, data presented for any vaping are based on these new questions.

[e]Drug prevalence results in 2019 combine results from paper-and-pencil surveys with those completed using electronic tablets. In 2019, students in a randomly-selected half of schools completed MTF surveys on paper-and-pencil and students in the other half completed the surveys using electronic tablets. Analysis of this randomized controlled trial demonstrated that these results did not significantly differ across survey mode (Miech, R.A., Couper, M.P., Heeringa, S.G., and Patrick, M.E. The Impact of Survey Mode on US National Estimates of Adolescent Drug Prevalence: Results from a Randomized Controlled Study, Addiction).

TABLE C-4
Trends in Daily Prevalence of Use of Selected Drugs and Heavy Use of Alcohol and Tobacco for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Marijuana	0.9	0.9	1.2	2.1	2.7	3.2	3.4	3.4	3.5	3.5	3.7	3.5	3.4	3.0	2.9	2.8	2.7
Alcohol	*1.7*	1.6‡	2.0	1.8	1.9	2.0	2.1	**2.2**	2.0	1.7	2.0	1.9	1.7	1.5	1.5	1.5	1.6
5+ drinks in a row in last 2 weeks	20.0	19.0	19.5	20.3	21.1	21.9	**21.9**	21.5	21.7	21.2	20.4	18.9	18.6	18.8	17.5	17.4	17.2
Been drunk	0.4	0.4	0.5	0.6	0.7	0.7	0.9	0.8	**0.9**	0.8	0.7	0.6	0.7	0.7	0.6	0.7	0.6
Cigarettes	12.4	11.9	13.5	14.0	15.5	16.8	**16.9**	15.4	15.0	13.4	11.6	10.2	9.3	9.0	8.0	7.6	7.1
1/2 pack+/day	6.5	6.1	6.9	7.2	7.9	**8.7**	8.6	7.9	7.6	6.4	5.7	4.9	4.5	4.1	3.7	3.4	3.0
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Smokeless tobacco	—	**3.0**	2.7	2.9	2.5	2.3	2.5	2.1	1.7	1.9	2.0	1.4	1.6	1.7	1.6	1.5	1.6

Table continued on next page.

TABLE C-4 (continued)
Trends in Daily Prevalence of Use of Selected Drugs and Heavy Use of Alcohol and Tobacco for Grades 8, 10, and 12 Combined

(Entries are percentages.)

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019 [b]	2020	2021	2022	2023	2022–2023 change	Peak year–2023 change: Absolute change	Peak year–2023 change: Proportional change (%) [a]	Low year–2023 change: Absolute change	Low year–2023 change: Proportional change (%) [a]
Marijuana	2.8	2.8	3.4	3.6	3.6	3.7	3.3	3.3	3.0	3.1	3.2	**4.1**	4.1	3.1	3.2	3.3	+0.1	-0.8 sss	-20.3	+2.4 sss	+256.9
Alcohol	1.4	1.3	1.4	1.0	1.2	1.1	1.0	0.8	0.7	0.7	0.6	0.8	1.3	0.5	0.7	0.5	-0.2 s	-1.7 sss	-77.6	—	—
5+ drinks in a row in last 2 weeks	15.5	16.1	14.9	13.6	14.3	13.2	11.7	10.7	9.4	9.9	8.6	8.7	10.1	6.6	6.7	5.7	-1.0 s	-16.2 sss	-73.9	—	—
Been drunk	0.6	0.5	0.6	0.5	0.6	0.5	0.5	0.3	0.3	0.4	0.3	0.4	0.4	0.2	0.3	0.3	0.0	-0.6 sss	-69.2	+0.1	+41.1
Cigarettes	6.4	6.4	6.4	5.7	5.2	4.7	3.6	3.2	2.5	2.3	2.0	1.5	1.6	1.0	0.8	0.7	-0.1	-16.2 sss	-95.7	—	—
1/2 pack+/day	2.7	2.6	2.5	2.1	1.9	1.8	1.4	1.1	0.9	0.8	0.8	0.5	0.6	0.4	0.4	0.5	0.0	-8.3 sss	-94.7	0.0	+8.8
Vaping nicotine	—	—	—	—	—	—	—	—	—	—	—	**9.2**	2.9	2.9	3.5	3.1	-0.4	-6.1 sss	-66.4	+0.2	+5.2
Vaping marijuana	—	—	—	—	—	—	—	—	—	—	—	**2.4**	0.9	1.1	1.3	1.3	0.0	-1.1 sss	-46.6	+0.4 ss	+41.9
Vaping just flavoring	—	—	—	—	—	—	—	—	—	—	—	**2.0**	1.0	0.7	1.1	1.1	0.0	-0.9 sss	-45.5	+0.4 ss	+53.1
Smokeless tobacco	1.6	1.8	2.1	1.8	1.9	1.7	1.8	1.7	1.4	1.0	1.0	0.8	1.6	0.5	0.7	0.5	-0.2	-2.5 sss	-84.0	—	—

Source. The Monitoring the Future study, the University of Michigan.

Notes. ' – ' indicates data not available. ' ‡ ' indicates a change in the question text. When a question change occurs, peak levels after that change are used to calculate the peak year to current year difference.

Values in bold equal peak levels since 1991. Values in italics equal peak level before wording change. Underlined values equal lowest level since recent peak level.

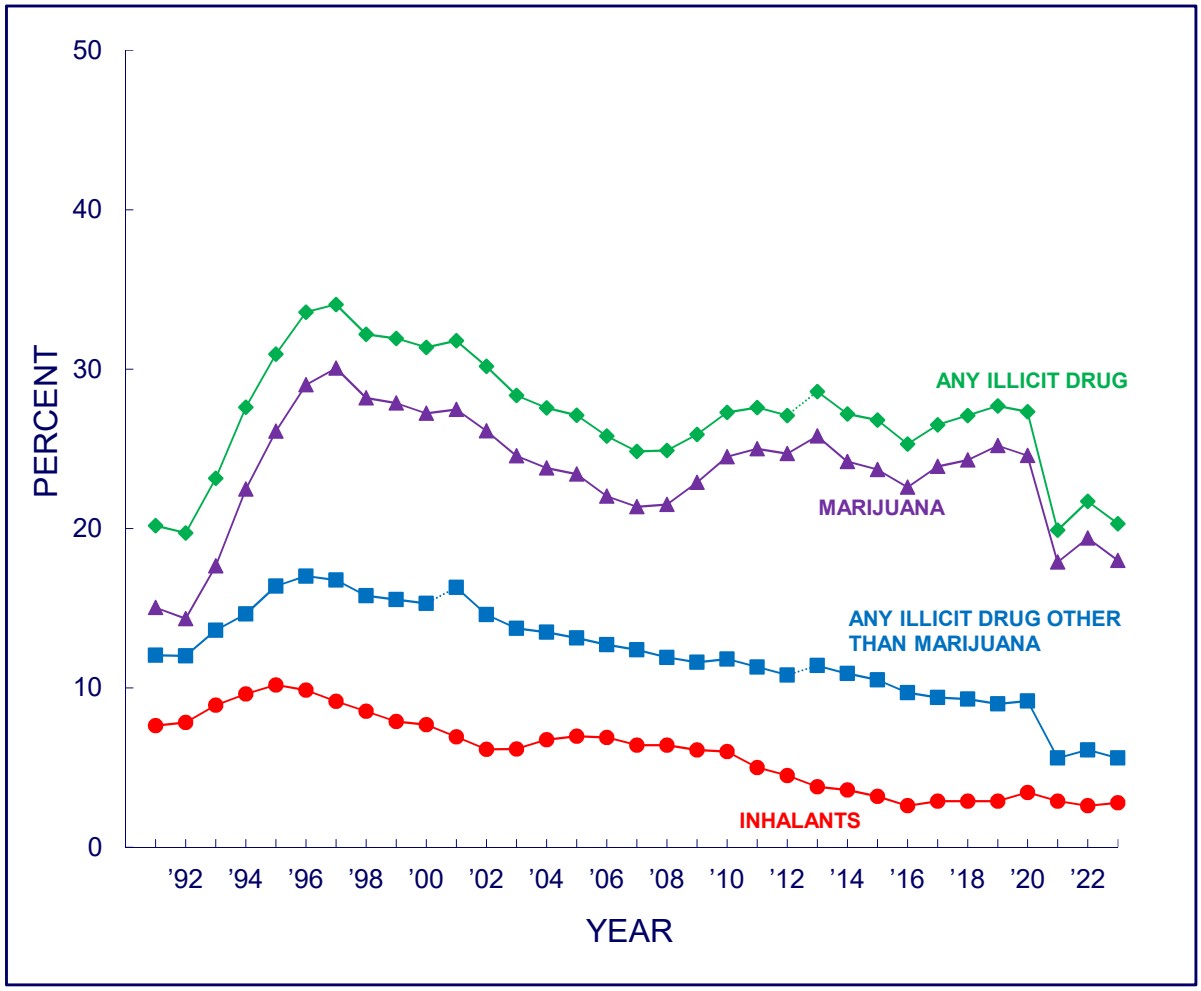
Level of significance of difference between classes: s = .05, ss = .01, sss = .001.

Any apparent inconsistency between the change estimate and the prevalence estimates for the two most recent years is due to rounding.

[a]The proportional change is the percent by which the most recent year deviates from the peak year [or the low year] for the drug in question. So, if a drug was at 20% prevalence in the peak year and declined to 10% prevalence in the most recent year, that would reflect a proportional decline of 50%.

[b]Drug prevalence results in 2019 combine results from paper-and-pencil surveys with those completed using electronic tablets. In 2019, students in a randomly-selected half of schools completed MTF surveys on paper-and-pencil and students in the other half completed the surveys using electronic tablets. Analysis of this randomized controlled trial demonstrated that these results did not significantly differ across survey mode (Miech, R.A., Couper, M.P., Heeringa, S.G., and Patrick, M.E. The Impact of Survey Mode on US National Estimates of Adolescent Drug Prevalence: Results from a Randomized Controlled Study, Addiction).

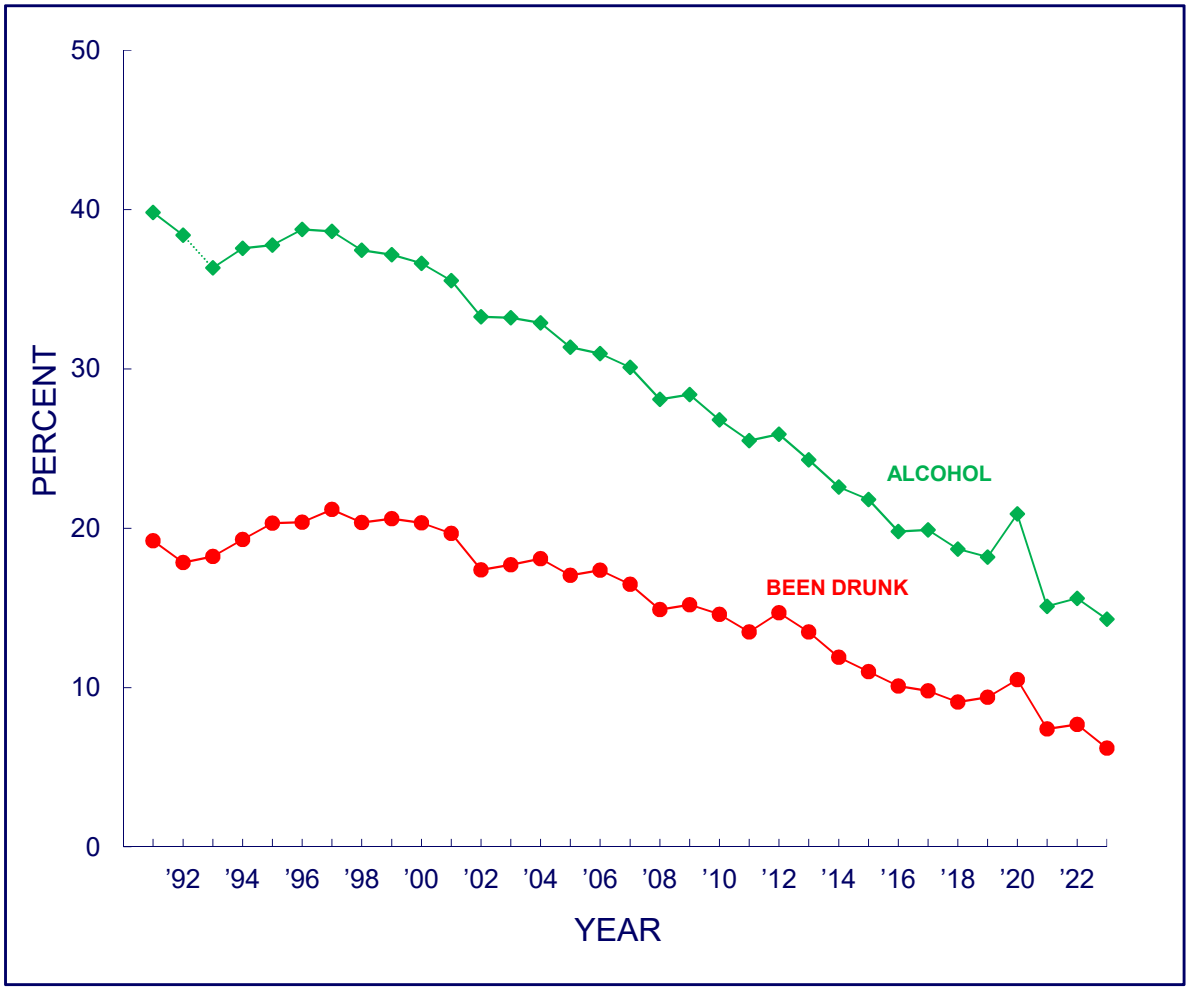
FIGURE C-1
ANY ILLICIT DRUG, MARIJUANA, AND INHALANTS
Trends in Annual Prevalence
for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects.
In 2001, revised sets of questions on other hallucinogen and tranquilizer use were introduced. Data for any illicit drug other than marijuana are slightly affected by these changes. In 2013, a revised set of questions on amphetamine use were introduced. Data for any illicit drug and any illicit drug other than marijuana were affected by this change.

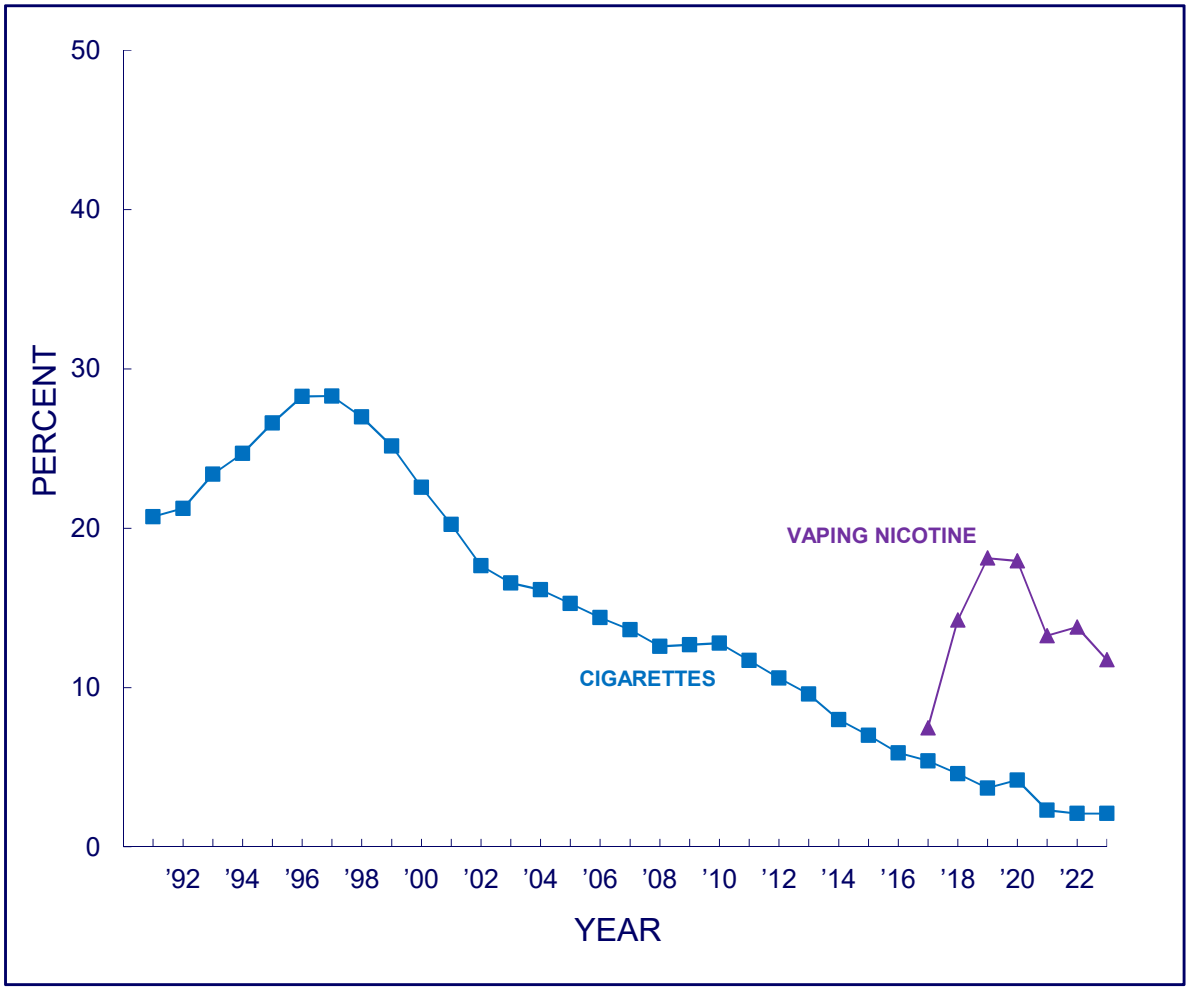
FIGURE C-2
ALCOHOL AND BEEN DRUNK
Trends in 30-Day Prevalence for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

Notes. A dashed line indicates a change in the question text between the years it connects. Beginning in 1993, a revised set of questions on use of alcohol was introduced in which a drink was defined as more than just a few sips. From 1993 on, data points are based on the revised questions.

FIGURE C-3
CIGARETTES AND VAPING NICOTINE
Trends in 30-Day Prevalence for Grades 8, 10, and 12 Combined



Source. The Monitoring the Future study, the University of Michigan.

Appendix D

Trend Tables for All Substances, 1975–2023

The tables in this appendix present data on prevalence trends up to 2023 in a tabular format. With these tables MTF publishes drug prevalence trends for all drugs in a single document for the historical record. This appendix provides a complementary way to view and search the MTF drug prevalence results presented in Chapter 5, which is organized around external links to drug-specific tables and graphs.

Table of Contents

TABLE D-1

ANY ILLICIT DRUG: [a,jj] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	18.7	20.6	22.5	25.7	28.5	31.2	29.4	29.0	28.3	26.8	26.8	24.5	22.8	21.5	21.4	20.9	19.0	19.6	19.9	21.4	20.1	18.5‡	21.1	20.3	20.5	17.2	18.2
10th Grade	30.6	29.8	32.8	37.4	40.9	45.4	47.3	44.9	46.2	45.6	45.6	44.6	41.4	39.8	38.2	36.1	35.6	34.1	36.0	37.0	37.7	36.8‡	**39.1**	37.4	34.7	33.7	34.3
12th Grade	44.1	40.7	42.9	45.6	48.4	50.8	54.3	54.1	54.7	54.0	53.9	53.0	51.1	51.1	50.4	48.2	46.8	47.4	46.7	48.2	49.9	49.1‡	**49.8**	49.1	48.9	48.3	48.9
Last 12 Months																											
8th Grade	11.3	12.9	15.1	18.5	21.4	23.6	22.1	21.0	20.5	19.5	19.5	17.7	16.1	15.2	15.5	14.8	13.2	14.1	14.5	16.0	14.7	13.4‡	**15.2**	14.6	14.8	12.0	12.9
10th Grade	21.4	20.4	24.7	30.0	33.3	37.5	38.5	35.0	35.9	36.4	37.2	34.8	32.0	31.1	29.8	28.7	28.1	26.9	29.4	30.2	31.1	30.1‡	**32.1**	29.9	27.9	26.8	27.8
12th Grade	29.4	27.1	31.0	35.8	39.0	40.2	42.4	41.4	42.1	40.9	41.4	41.0	39.3	38.8	38.4	36.5	35.9	36.6	36.5	38.3	40.0	39.7‡	**40.1**	38.7	38.6	38.3	39.9
Last 30 Days																											
8th Grade	5.7	6.8	8.4	10.9	12.4	14.6	12.9	12.1	12.2	11.9	11.7	10.4	9.7	8.4	8.5	8.1	7.4	7.6	8.1	9.5	8.5	7.7‡	8.7	8.3	8.1	6.9	7.0
10th Grade	11.6	11.0	14.0	18.5	20.2	23.2	23.0	21.5	22.1	22.5	22.7	20.8	19.5	18.3	17.3	16.8	16.9	15.8	17.8	18.5	19.2	18.6‡	19.2	18.5	16.5	15.9	17.2
12th Grade	16.4	14.4	18.3	21.9	23.8	24.6	26.2	25.6	25.9	24.9	25.7	25.4	24.1	23.4	23.1	21.5	21.9	22.3	23.3	23.8	25.2	25.2‡	**25.2**	23.7	23.6	24.4	24.9

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TABLE D-1 (continued)
ANY ILLICIT DRUG: [a,jj] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	18.7	20.4	**21.3**	15.9	16.6	16.2	-0.3	-5.0 s	-4.7 s	-5.4 s	-2.5	-13.4	-5.0 s	-23.7	+0.3	+1.9
10th Grade	36.3	37.5	37.3	25.0	27.7	26.6	-1.1	-10.7 sss	-9.6 sss	-12.3 sss	-9.7 sss	-26.8	-12.5 sss	-32.0	+1.6	+6.4
12th Grade	47.8	47.4	46.6	41.3	41.0	39.9	-1.2	-6.7 s	-5.5 s	-5.3 s	-8.0 sss	-16.6	-10.0 sss	-20.0	—	—
Last 12 Months																
8th Grade	13.4	14.8	**15.6**	10.2	11.0	10.9	-0.1	-4.6 ss	-4.5 ss	-5.4 sss	-2.4 s	-18.3	-4.6 ss	-29.8	+0.8	+7.6
10th Grade	29.9	31.0	30.4	18.7	21.5	19.8	-1.7	-10.6 sss	-8.9 sss	-11.7 sss	-10.1 sss	-33.8	-12.3 sss	-38.2	+1.1	+6.0
12th Grade	38.8	38.0	36.8	32.0	32.6	31.2	-1.4	-5.6 s	-4.2	-4.8 s	-7.6 sss	-19.5	-8.9 sss	-22.2	—	—
Last 30 Days																
8th Grade	7.3	8.5	**8.7**	5.9	6.5	6.5	0.0	-2.2	-2.2 s	-2.8 s	-0.7	-10.1	-2.2	-25.2	+0.6	+10.4
10th Grade	18.3	**19.8**	18.2	10.9	12.9	11.3	-1.5	-6.8 sss	-5.3 sss	-7.2 sss	-6.9 sss	-37.9	-8.5 sss	-42.8	+0.4	+3.6
12th Grade	24.0	23.7	22.2	20.6	21.6	19.8	-1.8	-2.4	-0.6	-1.6	-4.2 s	-17.4	-5.4 sss	-21.4	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-2

ANY ILLICIT DRUG OTHER THAN MARIIJUANA: [a,b] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	14.3	15.6	16.8	17.5	18.8	19.2	17.7	16.9	16.3	15.8‡	17.0	13.7	13.6	12.2	12.1	12.2	11.1	11.2	10.4	10.6	9.8	8.7‡	10.4	10.0	10.3	8.9	9.3
10th Grade	19.1	19.2	20.9	21.7	24.3	25.5	25.0	23.6	24.0	23.1‡	23.6	22.1	19.7	18.8	18.0	17.5	18.2	15.9	16.7	16.8	15.6	14.9‡	**16.4**	15.9	14.6	14.0	13.7
12th Grade	26.9	25.1	26.7	27.6	28.1	28.5	30.0	29.4	29.4	29.0‡	30.7	29.5	27.7	28.7	27.4	26.9	25.5	24.9	24.0	24.7	24.9	24.1‡	**24.8**	22.6	21.1	20.7	19.5
Last 12 Months																											
8th Grade	8.4	9.3	10.4	11.3	12.6	13.1	11.8	11.0	10.5	10.2‡	10.8	8.8	8.8	7.9	8.1	7.7	7.0	7.4	7.0	7.1	6.4	5.5‡	6.3	6.4	6.3	5.4	5.8
10th Grade	12.2	12.3	13.9	15.2	17.5	18.4	18.2	16.6	16.7	16.7‡	17.9	15.7	13.8	13.5	12.9	12.7	13.1	11.3	12.2	12.1	11.2	10.8‡	11.2	**11.2**	10.5	9.8	9.4
12th Grade	16.2	14.9	17.1	18.0	19.4	19.8	20.7	20.2	20.7	20.4‡	21.6	20.9	19.8	20.5	19.7	19.2	18.5	18.3	17.0	17.3	17.6	17.0‡	**17.8**	15.9	15.2	14.3	13.3
Last 30 Days																											
8th Grade	3.8	4.7	5.3	5.6	6.5	6.9	6.0	5.5	5.5	5.6‡	5.5	4.7	4.7	4.1	4.1	3.8	3.6	3.8	3.5	3.5	3.4	2.6‡	**3.6**	3.3	3.1	2.7	2.7
10th Grade	5.5	5.7	6.5	7.1	8.9	8.9	8.8	8.6	8.6	8.5‡	8.7	8.1	6.9	6.9	6.4	6.3	6.9	5.3	5.7	5.8	5.4	5.0‡	4.9	**5.6**	4.9	4.4	4.5
12th Grade	7.1	6.3	7.9	8.8	10.0	9.5	10.7	10.7	10.4	10.4‡	11.0	11.3	10.4	10.8	10.3	9.8	9.5	9.3	8.6	8.6	8.9	8.4‡	**8.2**	7.7	7.6	6.9	6.3

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TABLE D-2 (continued)

ANY ILLICIT DRUG OTHER THAN MARIIJUANA: [a,b] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	9.8	**10.8**	12.5	8.8	9.3	8.2	-1.1	-4.3 ss	-3.2 s	-3.8 s	-1.6	-16.1	-4.3 ss	-34.3	—	—
10th Grade	14.2	13.8	13.2	9.1	9.7	9.4	-0.3	-3.8 sss	-3.5 sss	-4.1 sss	-4.8 sss	-33.8	-7.0 sss	-42.7	+0.3	+3.7
12th Grade	18.9	18.4	17.5	12.8	13.2	12.4	-0.8	-5.1 sss	-4.3 ss	-4.6 sss	-6.6 sss	-34.7	-12.5 sss	-50.2	—	—
Last 12 Months																
8th Grade	6.1	6.5	**7.7**	4.6	4.9	4.6	-0.3	-3.1 s	-2.8 s	-3.1 s	-1.5 s	-24.2	-3.1 s	-40.4	—	—
10th Grade	9.6	9.1	8.6	5.1	5.7	5.1	-0.6	-3.5 sss	-2.9 sss	-3.5 sss	-4.5 sss	-46.6	-6.1 sss	-54.4	—	—
12th Grade	12.4	11.5	11.4	7.2	8.0	7.4	-0.6	-4.0 sss	-3.5 s	-4.2 sss	-5.1 sss	-40.6	-10.4 sss	-58.4	+0.2	+2.3
Last 30 Days																
8th Grade	3.0	3.4	3.5	2.4	2.5	2.6	+0.1	-0.9	-1.0	-1.1	-0.4	-11.9	-0.9 s	-25.9	+0.3	+11.9
10th Grade	4.2	4.2	3.7	2.5	2.4	2.3	-0.1	-1.4 ss	-1.3 ss	-1.2 ss	-1.9 sss	-45.8	-3.3 sss	-59.2	—	—
12th Grade	6.0	5.2	4.8	2.9	3.6	3.4	-0.1	-1.4 s	-1.3	-1.9 sss	-2.6 sss	-42.9	-4.8 sss	-58.4	+0.5	+18.4

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-3

ANY ILLICIT DRUG INCLUDING INHALANTS: [a,c,jj] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	28.5	29.6	32.3	35.1	38.1	39.4	38.1	37.8	37.2	35.1	34.5	31.6	30.3	30.2	30.0	29.2	27.7	28.3	27.9	28.6	26.4	25.1‡	25.9	25.2	24.9	20.6	23.3
10th Grade	36.1	36.2	38.7	42.7	45.9	49.8	50.9	49.3	49.9	49.3	48.8	47.7	44.9	43.1	42.1	40.1	39.8	38.7	40.0	40.6	40.8	40.0‡	**41.6**	40.4	37.2	35.9	37.0
12th Grade	47.6	44.4	46.6	49.1	51.5	53.5	56.3	56.1	56.3	57.0	56.0	54.6	52.8	53.0	53.5	51.2	49.1	49.3	48.4	49.9	51.8	50.3‡	**52.3**	49.9	51.4	49.3	50.3
Last 12 Months																											
8th Grade	16.7	18.2	21.1	24.2	27.1	28.7	27.2	26.2	25.3	24.0	23.9	21.4	20.4	20.2	20.4	19.7	18.0	19.0	18.8	20.3	18.2	17.0‡	17.6	16.8	17.0	13.5	15.8
10th Grade	23.9	23.5	27.4	32.5	35.6	39.6	40.3	37.1	37.7	38.0	38.7	36.1	33.5	32.9	31.7	30.7	30.2	28.8	31.2	31.8	32.5	31.5‡	**33.2**	31.0	28.9	27.7	29.1
12th Grade	31.2	28.8	32.5	37.6	40.2	41.9	43.3	42.4	42.8	42.5	42.6	42.1	40.5	39.1	40.3	38.0	37.0	37.3	37.6	39.2	41.5	40.2‡	**42.3**	39.2	40.2	38.7	41.2
Last 30 Days																											
8th Grade	8.8	10.0	12.0	14.3	16.1	17.5	16.0	14.9	15.1	14.4	14.0	12.6	12.1	11.2	11.2	10.9	10.1	10.4	10.6	11.7	10.5	9.5‡	10.0	9.5	9.3	7.9	8.6
10th Grade	13.1	12.6	15.5	20.0	21.6	24.5	24.1	22.5	23.1	23.6	23.6	21.7	20.5	19.3	18.4	17.7	18.1	16.8	18.8	19.4	20.1	19.3‡	20.0	19.1	17.1	16.4	18.0
12th Grade	17.8	15.5	19.3	23.0	24.8	25.5	26.9	26.6	26.4	26.4	26.5	25.9	24.6	23.3	24.2	22.1	22.8	22.8	24.1	24.5	26.2	25.2‡	**26.5**	24.3	24.7	24.6	25.7

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TABLE D-3 (continued)

ANY ILLICIT DRUG INCLUDING INHALANTS: [a,c,jj] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	23.2	25.4	**28.4**	22.4	22.2	21.5	-0.7	-6.9 ss	-6.2 ss	-6.0 ss	-1.8	-7.6	-6.9 ss	-24.5	+0.8	+4.1
10th Grade	38.7	39.8	39.7	28.5	31.1	29.3	-1.8	-10.4 sss	-8.6 sss	-11.2 sss	-9.4 sss	-24.3	-12.3 sss	-29.6	+0.8	+2.9
12th Grade	49.0	49.1	47.6	43.3	44.0	42.3	-1.8	-5.4	-3.6	-4.3	-6.7 sss	-13.7	-10.1 sss	-19.3	—	—
Last 12 Months																
8th Grade	16.0	17.5	**18.5**	12.6	13.1	13.5	+0.4	-5.0 ss	-5.4 sss	-5.9 ss	-2.5	-15.6	-5.0 ss	-27.1	+0.9	+6.8
10th Grade	31.0	31.7	31.3	19.6	22.7	20.7	-2.0	-10.6 sss	-8.6 sss	-11.7 sss	-10.3 sss	-33.3	-12.5 sss	-37.6	+1.1	+5.5
12th Grade	40.2	38.8	38.7	33.2	34.3	32.6	-1.7	-6.1 s	-4.4	-5.4 s	-7.5 sss	-18.8	-9.7 sss	-22.9	—	—
Last 30 Days																
8th Grade	8.3	9.7	**10.2**	6.9	7.7	8.3	+0.5	-2.0	-2.5 s	-3.4 ss	0.0	0.0	-2.0	-19.2	+1.4	+20.2
10th Grade	18.7	**20.4**	18.7	11.4	13.7	11.8	-2.0	-6.9 sss	-5.0 sss	-7.2 sss	-7.0 sss	-37.2	-8.6 sss	-42.3	+0.3	+2.8
12th Grade	25.0	24.1	23.8	21.0	22.6	20.7	-1.8	-3.0	-1.2	-2.8	-4.3 s	-17.1	-5.7 ss	-21.6	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-4

ABSTAINERS: [jj,ss] Trends in Lifetime and 30-Day Abstention from Marijuana, Alcohol, and Nicotine in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																		
8th Grade	—	67.9	64.9	63.1	63.9	69.9	67.1	**70.0**	+2.9	+6.1	+3.1	+6.0 s	+5.1 s	+7.9	—	—	+6.9 ss	+10.9
10th Grade	—	44.6	42.7	41.7	40.3	**55.8**	48.8	54.4	+5.6 ss	+14.1 sss	+8.5 ss	+15.5 sss	+11.7 sss	+27.3	-1.4	-2.5	+14.1 sss	+34.9
12th Grade	—	26.5	26.4	29.7	29.4	35.3	31.0	**37.5**	+6.5 sss	+8.1 ss	+1.6	+5.9 s	+11.1 sss	+42.1	—	—	+11.1 sss	+42.1
Last 30 Days																		
8th Grade	—	87.0	84.2	82.2	82.7	86.9	**87.1**	87.0	-0.1	+4.3	+4.5 s	+4.2 s	+2.8	+3.4	-0.1	-0.1	+4.8 ss	+5.8
10th Grade	—	68.9	65.2	64.8	65.4	**77.4**	75.2	76.9	+1.7	+11.4 sss	+9.8 sss	+12.0 sss	+11.7 sss	+17.9	-0.5	-0.7	+12.1 sss	+18.6
12th Grade	—	52.6	51.8	53.8	53.1	60.1	58.3	**62.6**	+4.3 s	+9.5 s	+1.6	+5.9 s	+10.8 sss	+20.9	—	—	+10.8 sss	+20.9

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-5
MARIJUANA: [jj] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	10.2	11.2	12.6	16.7	19.9	**23.1**	22.6	22.2	22.0	20.3	20.4	19.2	17.5	16.3	16.5	15.7	14.2	14.6	15.7	17.3	16.4	15.2	16.5	15.6	15.5	12.8	13.5
10th Grade	23.4	21.4	24.4	30.4	34.1	39.8	**42.3**	39.6	40.9	40.3	40.1	38.7	36.4	35.1	34.1	31.8	31.0	29.9	32.3	33.4	34.5	33.8	35.8	33.7	31.1	29.7	30.7
12th Grade	36.7	32.6	35.3	38.2	41.7	44.9	49.6	49.1	**49.7**	48.8	49.0	47.8	46.1	45.7	44.8	42.3	41.8	42.6	42.0	43.8	45.5	45.2	45.5	44.4	44.7	44.5	45.0
Last 12 Months																											
8th Grade	6.2	7.2	9.2	13.0	15.8	**18.3**	17.7	16.9	16.5	15.6	15.4	14.6	12.8	11.8	12.2	11.7	10.3	10.9	11.8	13.7	12.5	11.4	12.7	11.7	11.8	9.4	10.1
10th Grade	16.5	15.2	19.2	25.2	28.7	33.6	**34.8**	31.1	32.1	32.2	32.7	30.3	28.2	27.5	26.6	25.2	24.6	23.9	26.7	27.5	28.8	28.0	29.8	27.3	25.4	23.9	25.5
12th Grade	23.9	21.9	26.0	30.7	34.7	35.8	**38.5**	37.5	37.8	36.5	37.0	36.2	34.9	34.3	33.6	31.5	31.7	32.4	32.8	34.8	36.4	36.4	36.4	35.1	34.9	35.6	37.1
Last 30 Days																											
8th Grade	3.2	3.7	5.1	7.8	9.1	**11.3**	10.2	9.7	9.7	9.1	9.2	8.3	7.5	6.4	6.6	6.5	5.7	5.8	6.5	8.0	7.2	6.5	7.0	6.5	6.5	5.4	5.5
10th Grade	8.7	8.1	10.9	15.8	17.2	20.4	**20.5**	18.7	19.4	19.7	19.8	17.8	17.0	15.9	15.2	14.2	14.2	13.8	15.9	16.7	17.6	17.0	18.0	16.6	14.8	14.0	15.7
12th Grade	13.8	11.9	15.5	19.0	21.2	21.9	**23.7**	22.8	23.1	21.6	22.4	21.5	21.2	19.9	19.8	18.3	18.8	19.4	20.6	21.4	22.6	22.9	22.7	21.2	21.3	22.5	22.9
Daily [d]																											
8th Grade	0.2	0.2	0.4	0.7	0.8	**1.5**	1.1	1.1	1.4	1.3	1.3	1.2	1.0	0.8	1.0	1.0	0.8	0.9	1.0	1.2	1.3	1.1	1.1	1.0	1.1	0.7	0.8
10th Grade	0.8	0.8	1.0	2.2	2.8	3.5	3.7	3.6	3.8	3.8	4.5	3.9	3.6	3.2	3.1	2.8	2.8	2.7	2.8	3.3	3.6	3.5	4.0	3.4	3.0	2.5	2.9
12th Grade	2.0	1.9	2.4	3.6	4.6	4.9	5.8	5.6	6.0	6.0	5.8	6.0	6.0	5.6	5.0	5.0	5.1	5.4	5.2	6.1	6.6	6.5	6.5	5.8	6.0	6.0	5.9
Ever Used Daily for Month or More in Lifetime [g]																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	9.0	8.4	9.6	11.3	12.1	15.7	**18.8**	18.0	17.9	17.0	18.0	15.5	16.4	17.8	14.5	16.6	15.7	15.1	14.9	15.5	17.4	18.2	15.8	13.7	12.4	14.3	13.9

Table continued on next page

TABLE D-5 (continued)
MARIJUANA: [jj] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	13.9	15.2	14.8	10.2	11.0	11.5	+0.5	-3.3	-3.8 s	-4.6 ss	-2.4	-17.0	-11.6 sss	-50.1	+1.3	+12.9
10th Grade	32.6	34.0	33.3	22.0	24.2	22.5	-1.7	-10.7 sss	-9.1 sss	-11.3 sss	-10.0 sss	-30.8	-19.8 sss	-46.7	+0.5	+2.4
12th Grade	43.6	43.7	43.7	38.6	38.3	36.5	-1.8	-7.2 s	-5.4 s	-5.1 s	-7.1 sss	-16.3	-13.2 sss	-26.5	—	—
Last 12 Months																
8th Grade	10.5	11.8	11.4	7.1	8.3	8.3	0.0	-3.1	-3.1 s	-4.3 ss	-2.1	-20.5	-10.0 sss	-54.5	+1.2	+17.2
10th Grade	27.5	28.8	28.0	17.3	19.5	17.8	-1.8	-10.2 sss	-8.5 sss	-10.7 sss	-9.7 sss	-35.2	-17.0 sss	-48.9	+0.5	+2.7
12th Grade	35.9	35.7	35.2	30.5	30.7	29.0	-1.7	-6.2 s	-4.5	-4.7 s	-6.9 sss	-19.2	-9.5 sss	-24.6	—	—
Last 30 Days																
8th Grade	5.6	6.6	6.5	4.1	5.0	4.7	-0.3	-1.8	-1.5	-2.4 s	-0.9	-15.9	-6.5 sss	-58.1	+0.6	+14.8
10th Grade	16.7	18.4	16.6	10.1	12.1	10.3	-1.8	-6.3 sss	-4.5 ss	-6.6 sss	-6.4 sss	-38.1	-10.2 sss	-49.8	+0.2	+2.4
12th Grade	22.2	22.3	21.1	19.5	20.2	18.4	-1.8	-2.8	-0.9	-1.7	-3.8 s	-17.2	-5.3 ss	-22.3	0.0	+0.3
Daily [d]																
8th Grade	0.7	1.3	1.1	0.6	0.7	0.9	+0.2	-0.1	-0.3	-0.4	+0.2	+32.2	-0.6	-37.2	+0.2	+32.2
10th Grade	3.4	**4.8**	4.4	3.2	2.1	2.7	+0.6	-1.7 s	-2.3 sss	-1.3 s	-0.7	-20.7	-2.1 ss	-43.1	+0.6	+27.1
12th Grade	5.8	6.4	**6.9**	5.8	6.3	6.5	+0.1	-0.4	-0.6	-1.1	+0.7	+12.3	-0.4	-6.2	+0.7	+12.3
Ever Used Daily for Month or More in Lifetime [g]																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	12.3	14.9	§	12.4	13.6	11.6	-1.9									

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-6

MARIJUANA USE UNDER A DOCTOR'S ORDERS: [k] Trends in Lifetime Prevalence in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																		
8th Grade	—	1.1	1.1	1.3	1.0	1.3	**1.7**	1.4	-0.4	+0.3	+0.7	+0.3	+0.3	+24.6	-0.4	-20.2	+0.3	+32.1
10th Grade	—	1.1	1.3	2.0	2.0	1.4	1.6	**2.4**	+0.9	+0.4	-0.5	-0.7	+1.2 s	+90.2	—	—	+1.4 ss	+127.0
12th Grade	—	1.5	1.2	2.0	§	2.3	**3.6**	2.9	-0.7	—	—	—	+1.7 ss	+134.7	-0.7	-18.6	+1.7 ss	+134.7

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-7
DELTA-8: [k] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991-2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months												
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	11.4	—	—	—	—	—	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-8

INHALANTS: [c,f] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	17.6	17.4	19.4	19.9	**21.6**	21.2	21.0	20.5	19.7	17.9	17.1	15.2	15.8	17.3	17.1	16.1	15.6	15.7	14.9	14.5	13.1	11.8	10.8	10.8	9.4	7.7	8.9
10th Grade	15.7	16.6	17.5	18.0	19.0	**19.3**	18.3	18.3	17.0	16.6	15.2	13.5	12.7	12.4	13.1	13.3	13.6	12.8	12.3	12.0	10.1	9.9	8.7	8.7	7.2	6.6	6.1
12th Grade	17.6	16.6	17.4	**17.7**	17.4	16.6	16.1	15.2	15.4	14.2	13.0	11.7	11.2	10.9	11.4	11.1	10.5	9.9	9.5	9.0	8.1	7.9	6.9	6.5	5.7	5.0	4.9
Last 12 Months																											
8th Grade	9.0	9.5	11.0	11.7	**12.8**	12.2	11.8	11.1	10.3	9.4	9.1	7.7	8.7	9.6	9.5	9.1	8.3	8.9	8.1	8.1	7.0	6.2	5.2	5.3	4.6	3.8	4.7
10th Grade	7.1	7.5	8.4	9.1	**9.6**	9.5	8.7	8.0	7.2	7.3	6.6	5.8	5.4	5.9	6.0	6.5	6.6	5.9	6.1	5.7	4.5	4.1	3.5	3.3	2.9	2.4	2.3
12th Grade	6.6	6.2	7.0	7.7	**8.0**	7.6	6.7	6.2	5.6	5.9	4.5	4.5	3.9	4.2	5.0	4.5	3.7	3.8	3.4	3.6	3.2	2.9	2.5	1.9	1.9	1.7	1.5
Last 30 Days																											
8th Grade	4.4	4.7	5.4	5.6	**6.1**	5.8	5.6	4.8	5.0	4.5	4.0	3.8	4.1	4.5	4.2	4.1	3.9	4.1	3.8	3.6	3.2	2.7	2.3	2.2	2.0	1.8	2.1
10th Grade	2.7	2.7	3.3	**3.6**	3.5	3.3	3.0	2.9	2.6	2.6	2.4	2.4	2.2	2.4	2.2	2.3	2.5	2.1	2.2	2.0	1.7	1.4	1.3	1.1	1.2	1.0	1.1
12th Grade	2.4	2.3	2.5	2.7	**3.2**	2.5	2.5	2.3	2.0	2.2	1.7	1.5	1.5	1.5	2.0	1.5	1.2	1.4	1.2	1.4	1.0	0.9	1.0	0.7	0.7	0.8	0.8

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TABLE D-8 (continued)
INHALANTS: [c,f] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	8.7	9.5	12.6	11.3	9.8	9.0	-0.8	-3.7 s	-2.9 s	-1.4	+0.3	+2.9	-12.7 sss	-58.6	+1.3	+16.9
10th Grade	6.5	6.8	7.4	7.2	7.5	6.5	-0.9	-0.9	+0.0	-0.2	0.0	+0.7	-12.8 sss	-66.2	+0.4	+6.8
12th Grade	4.4	5.3	3.8	5.0	5.8	6.3	+0.4	+2.5 ss	+2.0 s	+1.2	+1.9 ss	+42.4	-11.5 sss	-64.6	+2.5 ss	+65.0
Last 12 Months																
8th Grade	4.6	4.7	6.1	4.8	3.6	4.3	+0.7	-1.8	-2.5 s	-1.3	-0.2	-4.6	-8.4 sss	-66.0	+0.7	+20.6
10th Grade	2.4	2.8	2.9	2.0	2.4	2.0	-0.3	-0.8 s	-0.5	-0.8 s	-0.3	-14.2	-7.6 sss	-78.8	+0.0	+1.5
12th Grade	1.6	1.9	1.1	1.8	1.8	2.0	+0.2	+0.9	+0.7	+0.6	+0.4	+25.4	-6.0 sss	-75.0	+0.9	+77.6
Last 30 Days																
8th Grade	1.8	2.1	2.9	1.8	1.9	2.6	+0.7	-0.3	-1.0	-1.1	+0.8 s	+46.7	-3.6 sss	-58.1	+0.8 s	+46.7
10th Grade	1.0	1.1	1.2	0.9	1.2	0.9	-0.3	-0.4	-0.1	-0.3	-0.1	-9.6	-2.8 sss	-76.2	—	—
12th Grade	0.7	0.9	0.7	0.7	0.7	1.2	+0.5	+0.5	0.0	0.0	+0.5 s	+76.4	-2.0 sss	-63.9	+0.5 s	+76.4

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-9
HALLUCINOGENS: [b,h] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	3.2	3.8	3.9	4.3	5.2	5.9	5.4	4.9	4.8	4.6‡	**5.2**	4.1	4.0	3.5	3.8	3.4	3.1	3.3	3.0	3.4	3.3	2.8	2.5	2.0	2.0	1.9	1.9
10th Grade	6.1	6.4	6.8	8.1	9.3	10.5	10.5	9.8	9.7	8.9‡	**8.9**	7.8	6.9	6.4	5.8	6.1	6.4	5.5	6.1	6.1	6.0	5.2	5.4	5.0	4.6	4.4	4.2
12th Grade	9.6	9.2	10.9	11.4	12.7	14.0	15.1	14.1	13.7	13.0‡	**14.7**	12.0	10.6	9.7	8.8	8.3	8.4	8.7	7.4	8.6	8.3	7.5	7.6	6.3	6.4	6.7	6.7
Last 12 Months																											
8th Grade	1.9	2.5	2.6	2.7	3.6	4.1	3.7	3.4	2.9	2.8‡	**3.4**	2.6	2.6	2.2	2.4	2.1	1.9	2.1	1.9	2.2	2.2	1.6	1.6	1.3	1.3	1.2	1.1
10th Grade	4.0	4.3	4.7	5.8	7.2	7.8	7.6	6.9	6.9	6.1‡	**6.2**	4.7	4.1	4.1	4.0	4.1	4.4	3.9	4.1	4.2	4.1	3.5	3.4	3.3	3.1	2.9	2.8
12th Grade	5.8	5.9	7.4	7.6	9.3	10.1	9.8	9.0	9.4	8.1‡	**9.1**	6.6	5.9	6.2	5.5	4.9	5.4	5.9	4.7	5.5	5.2	4.8	4.5	4.0	4.2	4.3	4.4
Last 30 Days																											
8th Grade	0.8	1.1	1.2	1.3	1.7	1.9	1.8	1.4	1.3	1.2‡	**1.6**	1.2	1.2	1.0	1.1	0.9	1.0	0.9	0.9	1.0	1.0	0.6	0.8	0.5	0.6	0.6	0.5
10th Grade	1.6	1.8	1.9	2.4	3.3	2.8	3.3	3.2	2.9	2.3‡	**2.1**	1.6	1.5	1.6	1.5	1.5	1.7	1.3	1.4	1.6	1.4	1.2	1.1	1.2	0.9	0.9	1.1
12th Grade	2.2	2.1	2.7	3.1	4.4	3.5	3.9	3.8	3.5	2.6‡	**3.3**	2.3	1.8	1.9	1.9	1.5	1.7	2.2	1.6	1.9	1.6	1.6	1.4	1.5	1.6	1.4	1.6

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TABLE D-9 (continued)
HALLUCINOGENS: [b,h] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	2.2	2.4	3.0	1.8	2.0	2.1	+0.1	-1.0	-1.1 s	-1.3 s	-0.2	-7.6	-3.1 sss	-60.3	+0.3	+15.5
10th Grade	3.9	4.7	4.8	3.5	3.4	3.6	+0.2	-1.2 s	-1.4 ss	-1.3 ss	-0.3	-8.3	-5.3 sss	-59.4	+0.2	+5.7
12th Grade	6.6	6.9	7.5	7.1	7.1	6.6	-0.5	-0.9	-0.4	-0.4	0.0	-0.5	-8.3 sss	-55.7	+0.2	+2.5
Last 12 Months																
8th Grade	1.4	1.3	1.7	1.0	1.2	1.3	+0.1	-0.4	-0.5	-0.7	-0.1	-5.3	-2.1 sss	-61.3	+0.3	+27.1
10th Grade	2.7	3.1	3.4	2.2	2.1	2.2	+0.1	-1.2 ss	-1.3 ss	-1.2 ss	-0.6	-20.4	-4.1 sss	-65.2	+0.1	+4.7
12th Grade	4.3	4.6	5.3	4.1	4.4	4.3	-0.1	-1.0	-0.9	-1.3	0.0	+0.6	-4.9 sss	-53.2	+0.3	+6.9
Last 30 Days																
8th Grade	0.6	0.6	0.9	0.4	0.5	0.5	0.0	-0.4	-0.4	-0.5 s	-0.1	-15.4	-1.1 sss	-70.2	+0.1	+35.2
10th Grade	0.8	1.3	1.4	0.8	0.7	0.8	+0.1	-0.6 s	-0.7 ss	-0.6 ss	0.0	-1.7	-1.2 sss	-60.1	+0.1	+18.9
12th Grade	1.4	1.8	1.8	1.0	1.4	1.6	+0.2	-0.2	-0.3	-0.8 s	+0.2	+12.3	-1.7 sss	-51.2	+0.7 s	+67.2

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-10

LSD: [b] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	2.7	3.2	3.5	3.7	4.4	**5.1**	4.7	4.1	4.1	3.9	3.4	2.5	2.1	1.8	1.9	1.6	1.6	1.9	1.7	1.8	1.7	1.3	1.4	1.1	1.3	1.2	1.3
10th Grade	5.6	5.8	6.2	7.2	8.4	9.4	**9.5**	8.5	8.5	7.6	6.3	5.0	3.5	2.8	2.5	2.7	3.0	2.6	3.0	3.0	2.8	2.6	2.7	2.6	3.0	3.2	3.0
12th Grade	8.8	8.6	10.3	10.5	11.7	12.6	**13.6**	12.6	12.2	11.1	10.9	8.4	5.9	4.6	3.5	3.3	3.4	4.0	3.1	4.0	4.0	3.8	3.9	3.7	4.3	4.9	5.0
Last 12 Months																											
8th Grade	1.7	2.1	2.3	2.4	3.2	**3.5**	3.2	2.8	2.4	2.4	2.2	1.5	1.3	1.1	1.2	0.9	1.1	1.3	1.1	1.2	1.1	0.8	1.0	0.7	0.9	0.8	0.9
10th Grade	3.7	4.0	4.2	5.2	6.5	**6.9**	6.7	5.9	6.0	5.1	4.1	2.6	1.7	1.6	1.5	1.7	1.9	1.8	1.9	1.9	1.8	1.7	1.7	1.9	2.0	2.1	2.1
12th Grade	5.2	5.6	6.8	6.9	8.4	**8.8**	8.4	7.6	8.1	6.6	6.6	3.5	1.9	2.2	1.8	1.7	2.1	2.7	1.9	2.6	2.7	2.4	2.2	2.5	2.9	3.0	3.3
Last 30 Days																											
8th Grade	0.6	0.9	1.0	1.1	1.4	**1.5**	1.5	1.1	1.1	1.0	1.0	0.7	0.6	0.5	0.5	0.4	0.5	0.5	0.5	0.6	0.5	0.3	0.5	0.3	0.4	0.4	0.3
10th Grade	1.5	1.6	1.6	2.0	**3.0**	2.4	2.8	2.7	2.3	1.6	1.5	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.5	0.7	0.7	0.5	0.6	0.6	0.6	0.7	0.8
12th Grade	1.9	2.0	2.4	2.6	**4.0**	2.5	3.1	3.2	2.7	1.6	2.3	0.7	0.6	0.7	0.7	0.6	0.6	1.1	0.5	0.8	0.8	0.8	0.8	1.0	1.1	1.0	1.2

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TABLE D-10 (continued)
LSD: [b] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.4	1.6	2.1	1.2	1.0	1.1	+0.2	-1.0	-1.2 s	-0.9	-0.2	-17.0	-3.9 sss	-77.4	+0.2	+19.8
10th Grade	2.8	3.6	3.8	2.5	2.1	2.1	0.0	-1.7 sss	-1.7 sss	-1.3 ss	-0.7 s	-24.7	-7.3 sss	-77.5	+0.0	+2.2
12th Grade	5.1	5.6	5.9	4.9	4.4	3.1	-1.4 s	-2.8 ss	-1.4	-0.9	-2.0 sss	-39.5	-10.5 sss	-77.4	—	—
Last 12 Months																
8th Grade	0.9	0.9	1.1	0.7	0.6	0.7	+0.1	-0.4	-0.5	-0.4	-0.3	-28.2	-2.8 sss	-81.0	+0.1	+10.6
10th Grade	2.0	2.3	2.5	1.5	1.3	1.2	0.0	-1.3 ss	-1.3 ss	-1.1 ss	-0.7 ss	-37.3	-5.7 sss	-82.2	—	—
12th Grade	3.2	3.6	3.9	2.5	2.5	1.2	-1.3 sss	-2.7 ss	-1.4	-1.4	-2.0 sss	-62.5	-7.6 sss	-86.6	—	—
Last 30 Days																
8th Grade	0.4	0.4	0.6	0.2	0.2	0.3	+0.1	-0.3	-0.4	-0.4	-0.1	-21.8	-1.2 sss	-78.0	+0.1	+46.5
10th Grade	0.5	1.1	1.0	0.4	0.4	0.4	0.0	-0.6 ss	-0.7 ss	-0.7 ss	-0.1	-27.5	-2.6 sss	-87.0	0.0	+8.7
12th Grade	1.0	1.4	1.4	0.5	0.8	0.4	-0.4 ss	-1.0 ss	-0.6	-0.9 ss	-0.6 sss	-61.0	-3.6 sss	-90.3	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-11
HALLUCINOGENS OTHER THAN LSD: [b] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	1.4	1.7	1.7	2.2	2.5	3.0	2.6	2.5	2.4	2.3‡	**3.9**	3.3	3.2	3.0	3.3	2.8	2.6	2.5	2.4	2.7	2.8	2.3	1.9	1.5	1.2	1.3	1.2
10th Grade	2.2	2.5	2.8	3.8	3.9	4.7	4.8	5.0	4.7	4.8‡	**6.6**	6.3	5.9	5.8	5.2	5.5	5.7	4.8	5.4	5.3	5.2	4.5	4.4	4.1	3.3	3.1	2.9
12th Grade	3.7	3.3	3.9	4.9	5.4	6.8	7.5	7.1	6.7	6.9‡	**10.4**	9.2	9.0	8.7	8.1	7.8	7.7	7.8	6.8	7.7	7.3	6.6	6.4	5.1	4.8	4.7	4.8
Last 12 Months																											
8th Grade	0.7	1.1	1.0	1.3	1.7	2.0	1.8	1.6	1.5	1.4‡	**2.4**	2.1	2.1	1.9	2.0	1.8	1.6	1.6	1.5	1.8	1.8	1.3	1.2	1.0	0.8	0.8	0.7
10th Grade	1.3	1.4	1.9	2.4	2.8	3.3	3.3	3.4	3.2	3.1‡	**4.3**	4.0	3.6	3.7	3.5	3.7	3.8	3.3	3.5	3.5	3.5	3.0	2.7	2.6	1.9	2.0	1.8
12th Grade	2.0	1.7	2.2	3.1	3.8	4.4	4.6	4.6	4.3	4.4‡	**5.9**	5.4	5.4	5.6	5.0	4.6	4.8	5.0	4.2	4.8	4.3	4.0	3.7	3.0	2.9	2.7	2.9
Last 30 Days																											
8th Grade	0.3	0.4	0.5	0.7	0.8	0.9	0.7	0.7	0.6	0.6‡	**1.1**	1.0	1.0	0.8	0.9	0.7	0.7	0.7	0.7	0.8	0.7	0.5	0.5	0.4	0.3	0.3	0.3
10th Grade	0.4	0.5	0.7	1.0	1.0	1.0	1.2	1.4	1.2	1.2‡	1.4	1.4	1.2	1.4	1.3	1.3	**1.4**	1.0	1.1	1.2	1.1	0.9	0.8	0.8	0.6	0.5	0.6
12th Grade	0.7	0.5	0.8	1.2	1.3	1.6	1.7	1.6	1.6	1.7‡	1.9	**2.0**	1.5	1.7	1.6	1.3	1.4	1.6	1.4	1.5	1.2	1.3	1.0	1.0	0.9	0.7	1.0

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TABLE D-11 (continued)
HALLUCINOGENS OTHER THAN LSD: [b] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.5	1.7	2.0	1.3	1.7	1.4	-0.2	-0.6	-0.3	-0.7	-0.1	-4.5	-2.4 sss	-63.1	+0.2	+14.9
10th Grade	2.7	3.3	3.4	2.5	2.7	3.0	+0.4	-0.4	-0.8	-0.9 s	+0.4	+14.1	-3.5 sss	-53.7	+0.5	+20.9
12th Grade	4.5	4.3	4.7	5.3	5.6	5.9	+0.2	+1.1	+0.9	+0.5	+1.4	+31.3	-4.5 sss	-43.7	+1.5	+35.3
Last 12 Months																
8th Grade	0.9	0.9	1.1	0.8	1.0	0.9	-0.1	-0.2	-0.1	-0.3	0.0	+1.7	-1.5 sss	-61.6	+0.2	+33.5
10th Grade	1.7	2.1	2.2	1.5	1.6	1.7	+0.1	-0.5	-0.6	-0.7 s	0.0	+1.5	-2.6 sss	-59.9	+0.2	+12.9
12th Grade	2.7	2.7	2.8	2.9	3.4	4.0	+0.6	+1.2	+0.6	+0.1	+1.3	+49.0	-1.9 s	-31.6	+1.3	+49.0
Last 30 Days																
8th Grade	0.4	0.4	0.6	0.2	0.4	0.2	-0.1	-0.4	-0.3	-0.4	-0.1	-34.8	-0.9 sss	-79.4	—	—
10th Grade	0.5	0.8	0.9	0.6	0.5	0.7	+0.2	-0.2	-0.4	-0.3	+0.2	+48.7	-0.7 sss	-50.6	+0.2	+48.7
12th Grade	0.9	1.0	0.7	0.8	1.1	1.5	+0.5	+0.8 s	+0.4	+0.1	+0.6 s	+63.6	-0.5	-24.8	+0.8 s	+118.8

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-12

PCP: [g] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	2.9	2.4	2.9	2.8	2.7	**4.0**	3.9	3.9	3.4	3.4	3.5	3.1	2.5	1.6	2.4	2.2	2.1	1.8	1.7	1.8	2.3	1.6	1.3	—	—	—	—
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.4	1.4	1.4	1.6	1.8	**2.6**	2.3	2.1	1.8	2.3	1.8	1.1	1.3	0.7	1.3	0.7	0.9	1.1	1.0	1.0	1.3	0.9	0.7	0.8	1.4	1.3	1.0
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.5	0.6	1.0	0.7	0.6	**1.3**	0.7	1.0	0.8	0.9	0.5	0.4	0.6	0.4	0.7	0.4	0.5	0.6	0.5	0.8	0.8	0.5	0.4	—	—	—	—

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TABLE D-12 (continued)
PCP: [g] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.1	1.1	§	0.7	1.2	0.5	-0.7	—	—	—	-0.6	-52.9	-2.1 sss	-80.3	—	—
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-13

MDMA (ECSTASY, MOLLY): [i] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																							
8th Grade		3.4	3.2	2.7	2.7	4.3	5.2	4.3	3.2	2.8	2.8	2.5	2.3	2.4	2.2	3.3	2.6	2.0	1.8‡	**2.4**	2.3	1.7	1.5
10th Grade		5.6	5.7	5.1	6.0	7.3	8.0	6.6	5.4	4.3	4.0	4.5	5.2	4.3	5.5	6.4	6.6	5.0	5.7‡	**5.2**	3.8	2.8	2.8
12th Grade		6.1	6.9	5.8	8.0	11.0	11.7	10.5	8.3	7.5	5.4	6.5	6.5	6.2	6.5	7.3	8.0	7.2	7.1‡	**7.9**	5.9	4.9	4.9
Last 12 Months																							
8th Grade		2.3	2.3	1.8	1.7	3.1	3.5	2.9	2.1	1.7	1.7	1.4	1.5	1.7	1.3	2.4	1.7	1.1	1.1‡	**1.5**	1.4	1.0	0.9
10th Grade		4.6	3.9	3.3	4.4	5.4	6.2	4.9	3.0	2.4	2.6	2.8	3.5	2.9	3.7	4.7	4.5	3.0	3.6‡	**3.8**	2.4	1.8	1.7
12th Grade		4.6	4.0	3.6	5.6	8.2	9.2	7.4	4.5	4.0	3.0	4.1	4.5	4.3	4.3	4.5	5.3	3.8	4.0‡	**5.0**	3.6	2.7	2.6
Last 30 Days																							
8th Grade		1.0	1.0	0.9	0.8	1.4	1.8	1.4	0.7	0.8	0.6	0.7	0.6	0.8	0.6	1.1	0.6	0.5	0.5‡	**0.7**	0.5	0.3	0.4
10th Grade		1.8	1.3	1.3	1.8	2.6	2.6	1.8	1.1	0.8	1.0	1.2	1.2	1.1	1.3	1.9	1.6	1.0	1.2‡	**1.1**	0.9	0.5	0.5
12th Grade		2.0	1.6	1.5	2.5	3.6	2.8	2.4	1.3	1.2	1.0	1.3	1.6	1.8	1.8	1.4	2.3	0.9	1.5‡	**1.5**	1.1	0.9	0.9

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TABLE D-13 (continued)
MDMA (ECSTASY, MOLLY): [i] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.6	1.7	1.7	1.0	1.2	0.9	-0.3	-0.9	-0.5	-0.7	-0.8 ss	-48.2	-1.6 sss	-64.7	—	—
10th Grade	2.4	3.2	2.6	1.4	1.4	1.4	0.0	-1.2 s	-1.2 ss	-1.2 sss	-1.0 s	-42.2	-3.8 sss	-73.2	—	—
12th Grade	4.1	3.3	3.6	2.8	3.0	1.6	-1.3 ss	-2.0 ss	-0.6	-0.8	-1.0 s	-42.2	-6.3 sss	-79.5	—	—
Last 12 Months																
8th Grade	1.1	1.1	0.8	0.6	0.6	0.4	-0.1	-0.4	-0.3	-0.2	-0.6 sss	-60.2	-1.1 sss	-71.4	—	—
10th Grade	1.4	1.7	1.2	0.7	0.7	0.7	0.0	-0.5	-0.5	-0.5	-0.7 ss	-49.6	-3.1 sss	-81.3	—	—
12th Grade	2.2	2.2	1.8	1.1	1.4	0.7	-0.7 s	-1.2 ss	-0.5	-0.7	-1.5 sss	-68.6	-4.4 sss	-86.4	—	—
Last 30 Days																
8th Grade	0.4	0.5	0.3	0.2	0.2	0.3	0.0	0.0	0.0	-0.0	-0.2	-38.7	-0.4 s	-62.2	0.0	+14.1
10th Grade	0.4	0.7	0.5	0.1	0.3	0.3	0.0	-0.2	-0.2	-0.4 ss	-0.1	-23.9	-0.8 ss	-70.4	+0.2	+166.8
12th Grade	0.5	0.7	0.8	0.2	0.9	0.3	-0.7 s	-0.5 s	+0.1	-0.6 s	-0.3	-52.0	-1.3 sss	-83.4	+0.1	+52.9

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-14
COCAINE: Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	2.3	2.9	2.9	3.6	4.2	4.5	4.4	4.6	**4.7**	4.5	4.3	3.6	3.6	3.4	3.7	3.4	3.1	3.0	2.6	2.6	2.2	1.9	1.7	1.8	1.6	1.4	1.3
10th Grade	4.1	3.3	3.6	4.3	5.0	6.5	7.1	7.2	**7.7**	6.9	5.7	6.1	5.1	5.4	5.2	4.8	5.3	4.5	4.6	3.7	3.3	3.3	3.3	2.6	2.7	2.1	2.1
12th Grade	7.8	6.1	6.1	5.9	6.0	7.1	8.7	9.3	**9.8**	8.6	8.2	7.8	7.7	8.1	8.0	8.5	7.8	7.2	6.0	5.5	5.2	4.9	4.5	4.6	4.0	3.7	4.2
Last 12 Months																											
8th Grade	1.1	1.5	1.7	2.1	2.6	3.0	2.8	**3.1**	2.7	2.6	2.5	2.3	2.2	2.0	2.2	2.0	2.0	1.8	1.6	1.6	1.4	1.2	1.0	1.0	0.9	0.8	0.8
10th Grade	2.2	1.9	2.1	2.8	3.5	4.2	4.7	4.7	**4.9**	4.4	3.6	4.0	3.3	3.7	3.5	3.2	3.4	3.0	2.7	2.2	1.9	2.0	1.9	1.5	1.8	1.3	1.4
12th Grade	3.5	3.1	3.3	3.6	4.0	4.9	5.5	5.7	**6.2**	5.0	4.8	5.0	4.8	5.3	5.1	5.7	5.2	4.4	3.4	2.9	2.9	2.7	2.6	2.6	2.5	2.3	2.7
Last 30 Days																											
8th Grade	0.5	0.7	0.7	1.0	1.2	1.3	1.1	**1.4**	1.3	1.2	1.2	1.1	0.9	0.9	1.0	1.0	0.9	0.8	0.8	0.6	0.8	0.5	0.5	0.5	0.5	0.3	0.4
10th Grade	0.7	0.7	0.9	1.2	1.7	1.7	2.0	**2.1**	1.8	1.8	1.3	1.6	1.3	1.7	1.5	1.5	1.3	1.2	0.9	0.9	0.7	0.8	0.8	0.6	0.8	0.4	0.5
12th Grade	1.4	1.3	1.3	1.5	1.8	2.0	2.3	2.4	**2.6**	2.1	2.1	2.3	2.1	2.3	2.3	2.5	2.0	1.9	1.3	1.3	1.1	1.1	1.1	1.0	1.1	0.9	1.2

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TABLE D-14 (continued)
COCAINE: Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.4	1.2	1.6	0.6	0.8	1.0	+0.1	-0.6	-0.7	-0.9 s	-0.5	-32.0	-3.7 sss	-79.2	+0.3	+51.1
10th Grade	2.6	2.5	1.6	1.2	0.8	1.0	+0.3	-0.6	-0.8	-0.4	-1.5 ss	-60.2	-6.7 sss	-86.8	+0.3	+33.7
12th Grade	3.9	3.8	4.1	2.5	2.4	1.3	-1.1 ss	-2.8 sss	-1.7 s	-1.7 s	-2.5 sss	-65.8	-8.4 sss	-86.4	—	—
Last 12 Months																
8th Grade	0.8	0.7	0.5	0.2	0.5	0.4	-0.1	-0.1	0.0	-0.2	-0.4 s	-50.5	-2.7 sss	-87.6	0.14	58.85
10th Grade	1.5	1.5	1.1	0.6	0.3	0.5	+0.2	-0.5	-0.8 s	-0.5	-1.0 ss	-66.1	-4.4 sss	-89.3	+0.2	+66.0
12th Grade	2.3	2.2	2.9	1.2	1.5	0.6	-0.9 sss	-2.3 sss	-1.4 s	-1.7 s	-1.7 sss	-74.0	-5.6 sss	-90.4	—	—
Last 30 Days																
8th Grade	0.3	0.3	0.1	0.1	0.3	0.3	0.0	+0.2	+0.2	0.0	0.0	+6.4	-1.1 sss	-77.0	+0.2	+195.2
10th Grade	0.6	0.6	0.4	0.3	0.2	0.4	+0.2	0.0	-0.2	0.0	-0.2	-37.5	-1.7 sss	-82.1	+0.2	+95.3
12th Grade	1.1	1.0	0.8	0.3	0.8	0.4	-0.4 s	-0.5	0.0	-0.5	-0.8 sss	-67.5	-2.2 sss	-85.9	0.0	+9.3

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-15
CRACK: Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	1.3	1.6	1.7	2.4	2.7	2.9	2.7	**3.2**	3.1	3.1	3.0	2.5	2.5	2.4	2.4	2.3	2.1	2.0	1.7	1.5	1.5	1.0	1.2	1.2	1.0	0.9	0.8
10th Grade	1.7	1.5	1.8	2.1	2.8	3.3	3.6	3.9	**4.0**	3.7	3.1	3.6	2.7	2.6	2.5	2.2	2.3	2.0	2.1	1.8	1.6	1.4	1.5	1.0	1.1	0.8	0.8
12th Grade	3.1	2.6	2.6	3.0	3.0	3.3	3.9	4.4	**4.6**	3.9	3.7	3.8	3.6	3.9	3.5	3.5	3.2	2.8	2.4	2.4	1.9	2.1	1.8	1.8	1.7	1.4	1.7
Last 12 Months																											
8th Grade	0.7	0.9	1.0	1.3	1.6	1.8	1.7	**2.1**	1.8	1.8	1.7	1.6	1.6	1.3	1.4	1.3	1.3	1.1	1.1	1.0	0.9	0.6	0.6	0.7	0.5	0.5	0.5
10th Grade	0.9	0.9	1.1	1.4	1.8	2.1	2.2	**2.5**	2.4	2.2	1.8	2.3	1.6	1.7	1.7	1.3	1.3	1.3	1.2	1.0	0.9	0.8	0.8	0.5	0.7	0.4	0.6
12th Grade	1.5	1.5	1.5	1.9	2.1	2.1	2.4	2.5	**2.7**	2.2	2.1	2.3	2.2	2.3	1.9	2.1	1.9	1.6	1.3	1.4	1.0	1.2	1.1	1.1	1.1	0.8	1.0
Last 30 Days																											
8th Grade	0.3	0.5	0.4	0.7	0.7	0.8	0.7	**0.9**	0.8	0.8	0.8	0.8	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.5	0.3	0.3	0.3	0.3	0.2	0.3
10th Grade	0.3	0.4	0.5	0.6	0.9	0.8	0.9	**1.1**	0.8	0.9	0.7	1.0	0.7	0.8	0.7	0.7	0.5	0.5	0.4	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.3
12th Grade	0.7	0.6	0.7	0.8	1.0	1.0	0.9	1.0	1.1	1.0	1.1	**1.2**	0.9	1.0	1.0	0.9	0.9	0.8	0.6	0.7	0.5	0.6	0.6	0.7	0.6	0.5	0.6

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TABLE D-15 (continued)
CRACK: Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	0.9	0.9	0.9	0.4	0.7	0.6	0.0	-0.3	-0.3	-0.5	-0.3	-29.3	-2.6 sss	-80.5	+0.2	+40.2
10th Grade	1.0	0.9	0.7	0.7	0.4	0.7	+0.2	0.0	-0.2	0.0	-0.3	-29.5	-3.3 sss	-83.0	+0.2	+54.6
12th Grade	1.5	1.7	1.6	1.5	1.3	0.8	-0.5 s	-0.8 s	-0.3	-0.1	-0.7 sss	-48.3	-3.8 sss	-83.0	—	—
Last 12 Months																
8th Grade	0.4	0.4	0.2	0.2	0.4	0.3	-0.1	+0.1	+0.2 s	0.0	-0.1	-34.2	-1.9 sss	-86.8	+0.1	+47.4
10th Grade	0.6	0.6	0.5	0.3	0.2	0.3	0.0	-0.3	-0.3 s	-0.2	-0.3 s	-53.8	-2.2 sss	-89.7	0.0	+22.4
12th Grade	0.9	1.0	1.2	0.7	0.9	0.5	-0.4 s	-0.7 s	-0.3	-0.5	-0.4 s	-48.0	-2.2 sss	-82.1	—	—
Last 30 Days																
8th Grade	0.2	0.2	0.1	0.1	0.3	0.2	0.0	+0.1	+0.1	0.0	0.0	+8.1	-0.7 sss	-74.8	0.2	+234.0
10th Grade	0.3	0.3	0.3	0.2	0.1	0.2	0.0	-0.1	-0.1	-0.1	-0.1	-39.2	-1.0 sss	-85.4	0.0	+14.2
12th Grade	0.5	0.7	0.4	0.3	0.6	0.3	-0.3	-0.1	+0.2	-0.1	-0.2	-33.7	-0.8 sss	-71.3	0.0	+4.0

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-16

COCAINE OTHER THAN CRACK: [1] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	2.0	2.4	2.4	3.0	3.4	3.8	3.5	3.7	**3.8**	3.5	3.3	2.8	2.7	2.6	2.9	2.7	2.6	2.4	2.1	2.1	1.8	1.6	1.4	1.4	1.3	1.1	1.0
10th Grade	3.8	3.0	3.3	3.8	4.4	5.5	6.1	6.4	**6.8**	6.0	5.0	5.2	4.5	4.8	4.6	4.3	4.8	4.0	4.1	3.4	3.0	3.0	2.9	2.2	2.3	1.9	1.9
12th Grade	7.0	5.3	5.4	5.2	5.1	6.4	8.2	8.4	**8.8**	7.7	7.4	7.0	6.7	7.3	7.1	7.9	6.8	6.5	5.3	5.1	4.9	4.4	4.2	4.1	3.4	3.3	3.5
Last 12 Months																											
8th Grade	1.0	1.2	1.3	1.7	2.1	**2.5**	2.2	2.4	2.3	1.9	1.9	1.8	1.6	1.6	1.7	1.6	1.5	1.4	1.3	1.3	1.1	1.0	0.8	0.8	0.8	0.6	0.6
10th Grade	2.1	1.7	1.8	2.4	3.0	3.5	4.1	4.0	**4.4**	3.8	3.0	3.4	2.8	3.3	3.0	2.9	3.1	2.6	2.3	1.9	1.7	1.8	1.6	1.3	1.5	1.1	1.2
12th Grade	3.2	2.6	2.9	3.0	3.4	4.2	5.0	4.9	**5.8**	4.5	4.4	4.4	4.2	4.7	4.5	5.2	4.5	4.0	3.0	2.6	2.6	2.4	2.4	2.4	2.1	2.0	2.3
Last 30 Days																											
8th Grade	0.5	0.5	0.6	0.9	1.0	1.0	0.8	1.0	**1.1**	0.9	0.9	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.5	0.6	0.3	0.3	0.4	0.4	0.3	0.3
10th Grade	0.6	0.6	0.7	1.0	1.4	1.3	1.6	**1.8**	1.6	1.6	1.2	1.3	1.1	1.5	1.3	1.3	1.1	1.0	0.8	0.7	0.6	0.7	0.7	0.5	0.7	0.3	0.4
12th Grade	1.2	1.0	1.2	1.3	1.3	1.6	2.0	2.0	**2.5**	1.7	1.8	1.9	1.8	2.2	2.0	2.4	1.7	1.7	1.1	1.1	1.0	1.0	0.9	0.9	1.1	0.6	1.1

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TABLE D-16 (continued)
COCAINE OTHER THAN CRACK: [1] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.2	1.0	1.3	0.5	0.7	0.8	+0.1	-0.6	-0.7 s	-0.8 s	-0.4	-35.7	-3.1 sss	-80.4	+0.3	+54.5
10th Grade	2.4	2.3	1.5	1.0	0.6	0.9	+0.3	-0.6	-0.9	-0.5	-1.5 ss	-62.0	-5.9 sss	-86.7	+0.3	+47.5
12th Grade	3.3	3.2	4.0	2.2	2.0	1.0	-1.0 ss	-3.0 sss	-2.1 ss	-1.8 s	-2.3 sss	-70.1	-7.8 sss	-88.6	—	—
Last 12 Months																
8th Grade	0.7	0.6	0.5	0.2	0.4	0.2	-0.1	-0.3	-0.2	-0.4 s	-0.4 sss	-65.2	-2.2 sss	-90.8	+0.1	+41.3
10th Grade	1.4	1.4	1.0	0.5	0.2	0.5	+0.3 s	-0.5	-0.8 s	-0.5	-0.9 ss	-65.5	-3.9 sss	-88.7	+0.3 s	+106.1
12th Grade	2.0	1.9	2.9	0.9	1.3	0.4	-1.0 sss	-2.6 sss	-1.6 s	-2.0 s	-1.6 sss	-80.6	-5.4 sss	-93.5	—	—
Last 30 Days																
8th Grade	0.3	0.2	0.1	0.1	0.2	0.2	0.0	0.0	+0.1	0.0	-0.1	-37.8	-1.0 sss	-85.4	+0.1	+89.7
10th Grade	0.5	0.6	0.3	0.3	0.1	0.4	+0.2 s	+0.1	-0.2	0.0	-0.2	-34.7	-1.4 sss	-80.0	+0.2 s	+189.5
12th Grade	1.0	0.9	1.0	0.1	0.8	0.3	-0.5 s	-0.7	-0.3	-0.9 s	-0.7 sss	-69.6	-2.1 sss	-87.6	+0.2	+131.3

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-17
HEROIN: [m,n] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	1.2	1.4	1.4	2.0	2.3	**2.4**	2.1	2.3	2.3	1.9	1.7	1.6	1.6	1.6	1.5	1.4	1.3	1.4	1.3	1.3	1.2	0.8	1.0	0.9	0.5	0.5	0.7
10th Grade	1.2	1.2	1.3	1.5	1.7	2.1	2.1	2.3	**2.3**	2.2	1.7	1.8	1.5	1.5	1.5	1.4	1.5	1.2	1.5	1.3	1.2	1.1	1.0	0.9	0.7	0.6	0.4
12th Grade	0.9	1.2	1.1	1.2	1.6	1.8	2.1	2.0	2.0	**2.4**	1.8	1.7	1.5	1.5	1.5	1.4	1.5	1.3	1.2	1.6	1.4	1.1	1.0	1.0	0.8	0.7	0.7
Last 12 Months																											
8th Grade	0.7	0.7	0.7	1.2	1.4	**1.6**	1.3	1.3	1.4	1.1	1.0	0.9	0.9	1.0	0.8	0.8	0.8	0.9	0.7	0.8	0.7	0.5	0.5	0.5	0.3	0.3	0.3
10th Grade	0.5	0.6	0.7	0.9	1.1	1.2	**1.4**	1.4	1.4	1.4	0.9	1.1	0.7	0.9	0.9	0.9	0.8	0.8	0.9	0.8	0.8	0.6	0.6	0.5	0.5	0.3	0.2
12th Grade	0.4	0.6	0.5	0.6	1.1	1.0	1.2	1.0	1.1	**1.5**	0.9	1.0	0.8	0.9	0.8	0.8	0.9	0.7	0.7	0.9	0.8	0.6	0.6	0.6	0.5	0.3	0.4
Last 30 Days																											
8th Grade	0.3	0.4	0.4	0.6	0.6	**0.7**	0.6	0.6	0.6	0.5	0.6	0.5	0.4	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.2	0.3	0.3	0.1	0.2	0.2
10th Grade	0.2	0.2	0.3	0.4	0.6	0.5	0.6	**0.7**	0.7	0.5	0.3	0.5	0.3	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.4	0.2	0.2	0.1
12th Grade	0.2	0.3	0.2	0.3	0.6	0.5	0.5	0.5	0.5	**0.7**	0.4	0.5	0.4	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.2	0.3

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TABLE D-17 (continued)
HEROIN: [m,n] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	0.6	0.7	0.5	0.5	0.4	0.8	+0.4	+0.3	-0.1	0.0	+0.2	+25.6	-1.7 sss	-68.5	+0.4	+94.0
10th Grade	0.4	0.4	0.3	0.3	0.5	0.5	0.0	+0.2	+0.2	0.0	+0.2	+44.5	-1.8 sss	-77.9	+0.2	+71.1
12th Grade	0.8	0.6	0.4	0.4	0.5	0.2	-0.3 s	-0.2	+0.1	+0.1	-0.6 sss	-73.7	-2.2 sss	-91.7	—	—
Last 12 Months																
8th Grade	0.3	0.3	0.2	0.2	0.3	0.4	+0.1	+0.2	+0.1	0.0	0.0	+12.5	-1.2 sss	-74.8	+0.2	+116.8
10th Grade	0.2	0.3	0.2	0.1	0.2	0.3	0.0	+0.1	+0.1	0.0	+0.1	+54.5	-1.2 sss	-81.3	+0.1	+85.0
12th Grade	0.4	0.4	0.3	0.1	0.3	0.1	-0.2 s	-0.3	-0.1	-0.2	-0.3 ss	-75.7	-1.4 sss	-94.1	—	—
Last 30 Days																
8th Grade	0.1	0.1	0.2	0.1	0.2	0.3	+0.1	+0.1	0.0	-0.2	+0.2	+187.4	-0.4 s	-55.0	+0.3	+323.7
10th Grade	0.1	0.2	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	+0.1	+112.9	-0.6 sss	-77.5	+0.1	+112.9
12th Grade	0.2	0.3	0.3	0.1	0.3	0.1	-0.2	-0.2	0.0	-0.2	-0.1	-42.8	-0.6 sss	-85.0	0.0	+20.4

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-18

NARCOTICS OTHER THAN HEROIN: [o,p] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	6.6	6.1	6.4	6.6	7.2	8.2	9.7	9.8	10.2	10.6	9.9‡	13.5	13.2	**13.5**	12.8	13.4	13.1	13.2	13.2	13.0	13.0	12.2	11.1	9.5	8.4	7.8	6.8
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.5	3.3	3.6	3.8	4.7	5.4	6.2	6.3	6.7	7.0	6.7‡	9.4	9.3	**9.5**	9.0	9.0	9.2	9.1	9.2	8.7	8.7	7.9	7.1	6.1	5.4	4.8	4.2
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.1	1.2	1.3	1.5	1.8	2.0	2.3	2.4	2.6	2.9	3.0‡	4.0	4.1	**4.3**	3.9	3.8	3.8	3.8	4.1	3.6	3.6	3.0	2.8	2.2	2.1	1.7	1.6

Table continued on next page

TABLE D-18 (continued)
NARCOTICS OTHER THAN HEROIN: [o,p] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	6.0	5.3	5.3	2.3	3.2	2.4	-0.8 s	-2.9 sss	-2.0 ss	-3.0 sss	-3.6 sss	-60.4	-11.1 sss	-82.2	+0.1	+3.6
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.4	2.7	2.1	1.0	1.7	1.0	-0.7 s	-1.1 ss	-0.4	-1.1 ss	-2.4 sss	-70.5	-8.5 sss	-89.5	0.0	+2.1
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.1	1.0	0.7	0.3	0.7	0.4	-0.3	-0.3	0.0	-0.4 s	-0.6 sss	-59.0	-3.9 sss	-89.9	+0.1	+26.5

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-19
OXYCONTIN: [j,o,q] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months																	
8th Grade	—	1.3	1.7	1.7	1.8	**2.6**	1.8	2.1	2.0	2.1	1.8	1.6	2.0	1.0	0.8	0.9	0.8
10th Grade	—	3.0	3.6	3.5	3.2	3.8	3.9	3.6	**5.1**	4.6	3.9	3.0	3.4	3.0	2.6	2.1	2.2
12th Grade	—	4.0	4.5	5.0	**5.5**	4.3	5.2	4.7	4.9	5.1	4.9	4.3	3.6	3.3	3.7	3.4	2.7

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TABLE D-19 (continud)
OXYCONTIN: [j,o,q] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	0.8	1.2	0.9	0.8	0.7	0.8	+0.1	0.0	-0.2	0.0	+0.1	+8.0	-1.8 sss	-68.4	+0.1	+19.4
10th Grade	2.2	2.0	1.0	0.9	0.9	0.4	-0.5 s	-0.6 s	-0.1	-0.1	-1.8 sss	-81.6	-4.7 sss	-92.1	—	—
12th Grade	2.3	1.7	2.4	0.9	1.9	0.6	-1.4 sss	-1.8	-0.5	-1.5	-1.7 sss	-75.3	-4.9 sss	-89.6	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-20
VICODIN: [j,o,q] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months																	
8th Grade	—	2.5	2.8	2.5	2.6	**3.0**	2.7	2.9	2.5	2.7	2.1	1.3	1.4	1.0	0.9	0.8	0.7
10th Grade	—	6.9	7.2	6.2	5.9	7.0	7.2	6.7	**8.1**	7.7	5.9	4.4	4.6	3.4	2.5	1.7	1.5
12th Grade	—	9.6	**10.5**	9.3	9.5	9.7	9.6	9.7	9.7	8.0	8.1	7.5	5.3	4.8	4.4	2.9	2.0

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TABLE D-20 (continued)
VICODIN: [j,o,q] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	0.6	0.9	0.5	0.6	0.7	0.9	+0.2	+0.4	+0.2	+0.1	+0.3	+55.5	-2.2 sss	-71.1	+0.4	+72.0
10th Grade	1.1	1.1	0.9	0.5	1.0	0.3	-0.8 ss	-0.6 s	+0.1	-0.4	-0.9 sss	-77.8	-7.9 sss	-96.9	—	—
12th Grade	1.7	1.1	1.2	0.9	1.3	0.6	-0.7 s	-0.7	+0.1	-0.4	-1.1 sss	-66.0	-9.9 sss	-94.4	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-21

AMPHETAMINES: [o,r] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	10.5	10.8	11.8	12.3	13.1	13.5	12.3	11.3	10.7	9.9	10.2	8.7	8.4	7.5	7.4	7.3	6.5	6.8	6.0	5.7	5.2	4.5‡	6.9	6.7	6.8	5.7	5.7
10th Grade	13.2	13.1	14.9	15.1	17.4	17.7	17.0	16.0	15.7	15.7	16.0	14.9	13.1	11.9	11.1	11.2	11.1	9.0	10.3	10.6	9.0	8.9‡	**11.2**	10.6	9.7	8.8	8.2
12th Grade	15.4	13.9	15.1	15.7	15.3	15.3	16.5	16.4	16.3	15.6	16.2	16.8	14.4	15.0	13.1	12.4	11.4	10.5	9.9	11.1	12.2	12.0‡	**13.8**	12.1	10.8	10.0	9.2
Last 12 Months																											
8th Grade	6.2	6.5	7.2	7.9	8.7	9.1	8.1	7.2	6.9	6.5	6.7	5.5	5.5	4.9	4.9	4.7	4.2	4.5	4.1	3.9	3.5	2.9‡	4.2	4.3	4.1	3.5	3.5
10th Grade	8.2	8.2	9.6	10.2	11.9	12.4	12.1	10.7	10.4	11.1	11.7	10.7	9.0	8.5	7.8	7.9	8.0	6.4	7.1	7.6	6.6	6.5‡	**7.9**	7.6	6.8	6.1	5.6
12th Grade	8.2	7.1	8.4	9.4	9.3	9.5	10.2	10.1	10.2	10.5	10.9	11.1	9.9	10.0	8.6	8.1	7.5	6.8	6.6	7.4	8.2	7.9‡	**9.2**	8.1	7.7	6.7	5.9
Last 30 Days																											
8th Grade	2.6	3.3	3.6	3.6	4.2	4.6	3.8	3.3	3.4	3.4	3.2	2.8	2.7	2.3	2.3	2.1	2.0	2.2	1.9	1.8	1.8	1.3‡	**2.3**	2.1	1.9	1.7	1.7
10th Grade	3.3	3.6	4.3	4.5	5.3	5.5	5.1	5.1	5.0	5.4	5.6	5.2	4.3	4.0	3.7	3.5	4.0	2.8	3.3	3.3	3.1	2.8‡	3.3	**3.7**	3.1	2.7	2.5
12th Grade	3.2	2.8	3.7	4.0	4.0	4.1	4.8	4.6	4.5	5.0	5.6	5.5	5.0	4.6	3.9	3.7	3.7	2.9	3.0	3.3	3.7	3.3‡	**4.2**	3.8	3.2	3.0	2.6

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TABLE D-21 (continued)
AMPHETAMINES: [o,r] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	5.9	6.8	**8.9**	5.8	6.0	5.0	-1.0	-4.0 sss	-3.0 s	-3.1 s	-1.0	-16.1	-4.0 sss	-44.3	—	—
10th Grade	8.6	8.2	7.0	5.2	5.4	5.7	+0.2	-1.3	-1.5 ss	-1.8 ss	-2.9 sss	-34.0	-5.6 sss	-49.6	+0.5	+9.4
12th Grade	8.6	7.7	7.3	4.9	5.3	4.3	-1.0	-3.0 ss	-2.1 s	-2.5 sss	-4.3 sss	-50.2	-9.5 sss	-68.7	—	—
Last 12 Months																
8th Grade	3.7	4.1	**5.3**	3.0	3.2	2.8	-0.5	-2.5 sss	-2.0 ss	-2.3 ss	-0.9 s	-24.9	-2.5 sss	-47.3	—	—
10th Grade	5.7	5.2	4.3	2.7	3.1	2.7	-0.3	-1.5 s	-1.2 s	-1.6 ss	-2.9 sss	-51.8	-5.2 sss	-65.4	+0.1	+2.0
12th Grade	5.5	4.5	4.3	2.3	2.8	2.1	-0.7 s	-2.1 ss	-1.5 s	-1.9 sss	-3.4 sss	-61.7	-7.1 sss	-77.1	—	—
Last 30 Days																
8th Grade	1.8	2.2	2.2	1.7	1.9	1.6	-0.3	-0.7	-0.4	-0.6	-0.2	-13.0	-0.7 s	-29.9	—	—
10th Grade	2.4	2.4	1.9	1.4	1.3	1.3	0.0	-0.6	-0.6	-0.5	-1.1 sss	-46.9	-2.4 sss	-65.2	—	—
12th Grade	2.4	2.0	1.7	1.0	1.3	1.1	-0.2	-0.7 s	-0.5	-0.7 s	-1.3 sss	-55.5	-3.1 sss	-74.5	+0.1	+5.3

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-22

RITALIN: [j,k,o] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months																		
8th Grade	—	**2.9**	2.8	2.6	2.5	2.4	2.6	2.1	1.6	1.8	1.5	1.3	0.7	1.1	0.9	0.6	0.8	0.4
10th Grade	—	4.8	**4.8**	4.1	3.4	3.4	3.6	2.8	2.9	3.6	2.7	2.6	1.9	1.8	1.8	1.6	1.2	0.8
12th Grade	—	**5.1**	4.0	4.0	5.1	4.4	4.4	3.8	3.4	2.1	2.7	2.6	2.6	2.3	1.8	2.0	1.2	1.3

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TABLE D-22 (continued)
RITALIN: [j,k,o] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	0.5	1.0	0.5	0.6	0.7	0.6	0.0	+0.1	+0.1	+0.1	+0.1	+18.8	-2.3 sss	-77.8	+0.2	+49.6
10th Grade	0.9	0.7	1.0	0.3	0.7	0.5	-0.3	-0.5	-0.2	-0.6 s	-0.5 s	-49.7	-4.3 sss	-90.5	+0.1	+32.9
12th Grade	0.9	1.1	1.7	0.5	1.1	0.6	-0.5	-1.1	-0.6	-1.2	-0.3	-35.9	-4.5 sss	-88.5	0.0	+6.8

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-23
ADDERALL: [j,k,o] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months										
8th Grade	—	2.0	2.3	1.7	1.7	1.8	1.3	1.0	1.5	1.3
10th Grade	—	**5.7**	5.3	4.6	4.5	4.4	4.6	5.2	4.2	4.0
12th Grade	—	5.4	6.5	6.5	**7.6**	7.4	6.8	7.5	6.2	5.5

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TABLE D-23 (continued)
ADDERALL: [j,k,o] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	1.8	2.5	**2.7**	1.8	2.3	1.7	-0.7	-1.1	-0.4	-0.9	-0.1	-8.3	-1.1	-39.9	+0.6	+57.3
10th Grade	4.1	3.1	2.9	1.6	2.9	2.1	-0.7	-0.7	0.0	-1.3 ss	-1.9 ss	-47.1	-3.6 sss	-62.6	+0.5	+34.1
12th Grade	4.6	3.9	4.4	1.8	3.4	1.7	-1.7 ss	-2.6 s	-0.9	-2.6 s	-2.9 sss	-62.3	-5.9 sss	-77.4	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-24

METHAMPHETAMINE: [j,k] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																				
8th Grade	—	**4.5**	4.2	4.4	3.5	3.9	2.5	3.1	2.7	1.8	2.3	1.6	1.8	1.3	1.3	1.4	1.0	0.8	0.6	0.7
10th Grade	—	**7.3**	6.9	6.4	6.1	5.2	5.3	4.1	3.2	2.8	2.4	2.8	2.5	2.1	1.8	1.6	1.4	1.3	0.7	0.9
12th Grade	—	**8.2**	7.9	6.9	6.7	6.2	6.2	4.5	4.4	3.0	2.8	2.4	2.3	2.1	1.7	1.5	1.9	1.0	1.2	1.1
Last 12 Months																				
8th Grade	—	**3.2**	2.5	2.8	2.2	2.5	1.5	1.8	1.8	1.1	1.2	1.0	1.2	0.8	1.0	1.0	0.6	0.5	0.4	0.5
10th Grade	—	**4.6**	4.0	3.7	3.9	3.3	3.0	2.9	1.8	1.6	1.5	1.6	1.6	1.4	1.0	1.0	0.8	0.8	0.4	0.4
12th Grade	—	**4.7**	4.3	3.9	3.6	3.2	3.4	2.5	2.5	1.7	1.2	1.2	1.0	1.4	1.1	0.9	1.0	0.6	0.6	0.6
Last 30 Days																				
8th Grade	—	1.1	0.8	**1.3**	1.1	1.2	0.6	0.7	0.6	0.6	0.7	0.5	0.7	0.4	0.5	0.4	0.2	0.3	0.3	0.2
10th Grade	—	1.8	**2.0**	1.5	1.8	1.4	1.3	1.1	0.7	0.4	0.7	0.6	0.7	0.5	0.6	0.4	0.3	0.3	0.2	0.1
12th Grade	—	1.7	**1.9**	1.5	1.7	1.7	1.4	0.9	0.9	0.6	0.6	0.5	0.5	0.6	0.5	0.4	0.5	0.4	0.3	0.3

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TABLE D-24 (continued)
METHAMPHETAMINE: [j,k] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	0.7	0.9	1.1	0.3	0.5	0.3	-0.2	-0.8	-0.7	-0.9	-0.4	-56.5	-4.2 sss	-93.2	+0.1	+22.2
10th Grade	0.8	0.7	0.8	0.4	0.6	0.5	-0.1	-0.3	-0.2	-0.4	-0.3	-39.4	-6.9 sss	-93.3	+0.1	+29.5
12th Grade	0.7	0.8	1.7	0.6	1.1	0.6	-0.5	-1.1	-0.6	-1.1	-0.1	-16.3	-7.6 sss	-92.7	0.0	+3.4
Last 12 Months																
8th Grade	0.4	0.5	0.5	0.2	0.2	0.0	-0.2	-0.5	-0.2	-0.3	—	—	—	—	—	—
10th Grade	0.4	0.5	0.3	0.2	0.3	0.4	+0.1	+0.1	0.0	-0.1	0.0	-10.6	-4.2 sss	-91.9	+0.2	+145.6
12th Grade	0.5	0.5	1.4	0.2	0.5	0.4	0.2	-1.0	-0.8	-1.2	-0.2	-31.1	-4.3 sss	-92.0	0.2	+108.6
Last 30 Days																
8th Grade	0.1	0.1	0.1	0.0	0.1	0.0	-0.1	-0.1	-0.1	-0.1	—	—	—	—	—	—
10th Grade	0.1	0.3	0.2	0.1	0.1	0.3	+0.2	+0.1	-0.1	-0.1	+0.2	+126.5	-1.7 sss	-84.4	+0.2	+286.6
12th Grade	0.3	0.3	0.8	0.1	0.4	0.1	-0.3	-0.7 s	-0.4	-0.7 s	-0.2	-59.7	-1.8 sss	-94.1	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-25

CRYSTAL METHAMPHETAMINE (ICE): [k] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.3	2.9	3.1	3.4	3.9	4.4	4.4	**5.3**	4.8	4.0	4.1	4.7	3.9	4.0	4.0	3.4	3.4	2.8	2.1	1.8	2.1	1.7	2.0	1.3	1.2	1.4	1.5
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.4	1.3	1.7	1.8	2.4	2.8	2.3	3.0	1.9	2.2	2.5	**3.0**	2.0	2.1	2.3	1.9	1.6	1.1	0.9	0.9	1.2	0.8	1.1	0.8	0.5	0.8	0.8
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.6	0.5	0.6	0.7	1.1	1.1	0.8	1.2	0.8	1.0	1.1	**1.2**	0.8	0.8	0.9	0.7	0.6	0.6	0.5	0.6	0.6	0.4	0.8	0.4	0.3	0.4	0.5

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TABLE D-25 (continued)
CRYSTAL METHAMPHETAMINE (ICE): [k] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.1	1.3	0.2	0.7	0.8	0.9	+0.2	+0.8 ss	+0.6 ss	+0.6 s	-0.2	-19.8	-4.3 sss	-82.6	+0.8 ss	+485.5
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.6	0.6	0.0	0.4	0.3	0.3	0.0	+0.2 s	+0.3 ss	+0.3 s	-0.3	-52.5	-2.8 sss	-91.3	+0.2 s	+1101.1
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.4	0.4	0.0	0.2	0.3	0.2	-0.1	+0.1	+0.2 s	+0.1	-0.2	-56.8	-1.0 sss	-86.5	+0.1	+625.7

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-26

SEDATIVES (BARBITURATES): [o,s] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	6.2	5.5	6.3	7.0	7.4	7.6	8.1	8.7	8.9	9.2	8.7	9.5	8.8	9.9	**10.5**	10.2	9.3	8.5	8.2	7.5	7.0	6.9	7.5	6.8	5.9	5.2	4.5
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.4	2.8	3.4	4.1	4.7	4.9	5.1	5.5	5.8	6.2	5.7	6.7	6.0	6.5	**7.2**	6.6	6.2	5.8	5.2	4.8	4.3	4.5	4.8	4.3	3.6	3.0	2.9
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.4	1.1	1.3	1.7	2.2	2.1	2.1	2.6	2.6	3.0	2.8	3.2	2.9	2.9	**3.3**	3.0	2.7	2.8	2.5	2.2	1.8	2.0	2.2	2.0	1.7	1.5	1.4

Table continued on next page

TABLE D-26 (continued)
SEDATIVES (BARBITURATES): [o,s] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grade 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	4.2	4.2	4.4	3.5	3.6	2.9	-0.7	-1.5 ss	-0.8	-0.9	-1.3 ss	-31.7	-7.6 sss	-72.7	—	—
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	2.7	2.5	2.4	1.8	2.0	1.5	-0.6	-1.0 ss	-0.4	-0.6	-1.2 sss	-44.6	-5.7 sss	-79.5	—	—
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.2	1.2	1.2	0.9	1.1	0.7	-0.4 s	-0.6	-0.1	-0.4	-0.5 ss	-42.6	-2.6 sss	-79.3	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-27

TRANQUILIZERS: [b,o] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	3.8	4.1	4.4	4.6	4.5	5.3	4.8	4.6	4.4	4.4‡	**5.0**	4.3	4.4	4.0	4.1	4.3	3.9	3.9	3.9	4.4	3.4	3.0	2.9	2.9	3.0	3.0	3.4
10th Grade	5.8	5.9	5.7	5.4	6.0	7.1	7.3	7.8	7.9	8.0‡	**9.2**	8.8	7.8	7.3	7.1	7.2	7.4	6.8	7.0	7.3	6.8	6.3	5.5	5.8	5.8	6.1	6.0
12th Grade	7.2	6.0	6.4	6.6	7.1	7.2	7.8	8.5	9.3	8.9‡	10.3	**11.4**	10.2	10.6	9.9	10.3	9.5	8.9	9.3	8.5	8.7	8.5	7.7	7.4	6.9	7.6	7.5
Last 12 Months																											
8th Grade	1.8	2.0	2.1	2.4	2.7	3.3	2.9	2.6	2.5	2.6‡	**2.8**	2.6	2.7	2.5	2.8	2.6	2.4	2.4	2.6	2.8	2.0	1.8	1.8	1.7	1.7	1.7	2.0
10th Grade	3.2	3.5	3.3	3.3	4.0	4.6	4.9	5.1	5.4	5.6‡	**7.3**	6.3	5.3	5.1	4.8	5.2	5.3	4.6	5.0	5.1	4.5	4.3	3.7	3.9	3.9	4.1	4.1
12th Grade	3.6	2.8	3.5	3.7	4.4	4.6	4.7	5.5	5.8	5.7‡	6.9	**7.7**	6.7	7.3	6.8	6.6	6.2	6.2	6.3	5.6	5.6	5.3	4.6	4.7	4.7	4.9	4.7
Last 30 Days																											
8th Grade	0.8	0.8	0.9	1.1	1.2	1.5	1.2	1.2	1.1	1.4‡	1.2	1.2	**1.4**	1.2	1.3	1.3	1.1	1.2	1.2	1.2	1.0	0.8	0.9	0.8	0.8	0.8	0.7
10th Grade	1.2	1.5	1.1	1.5	1.7	1.7	2.2	2.2	2.2	2.5‡	2.9	**2.9**	2.4	2.3	2.3	2.4	2.6	1.9	2.0	2.2	1.9	1.7	1.6	1.6	1.7	1.5	1.5
12th Grade	1.4	1.0	1.2	1.4	1.8	2.0	1.8	2.4	2.5	2.6‡	2.9	**3.3**	2.8	3.1	2.9	2.7	2.6	2.6	2.7	2.5	2.3	2.1	2.0	2.1	2.0	1.9	2.0

Table continued on next page

TABLE D-27 (continued)
TRANQUILIZERS: [b,o] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	3.5	4.0	3.9	2.5	3.1	2.3	-0.8	-1.6	-0.8	-1.4	-1.2 ss	-35.3	-2.7 sss	-54.6	—	—
10th Grade	6.0	5.7	4.9	2.6	2.7	2.5	-0.2	-2.4 sss	-2.2 sss	-2.3 sss	-3.5 sss	-58.3	-6.7 sss	-72.7	—	—
12th Grade	6.6	6.1	7.0	3.3	3.3	2.7	-0.6	-4.3 sss	-3.8 sss	-3.8 sss	-3.9 sss	-59.2	-8.7 sss	-76.5	—	—
Last 12 Months																
8th Grade	2.0	2.4	2.2	1.1	1.4	0.9	-0.5	-1.3	-0.8	-1.1	-1.2 sss	-56.5	-1.9 sss	-68.6	—	—
10th Grade	3.9	3.4	2.6	1.3	1.5	1.2	-0.4	-1.5 sss	-1.1 ss	-1.4 sss	-2.7 sss	-69.9	-6.2 sss	-84.2	—	—
12th Grade	3.9	3.4	3.2	1.2	1.5	1.0	-0.6 ss	-2.2 sss	-1.6 sss	-1.9 sss	-2.9 sss	-74.6	-6.7 sss	-87.3	—	—
Last 30 Days																
8th Grade	0.9	1.2	1.1	0.4	0.6	0.4	-0.2	-0.7	-0.5	-0.7	-0.4 ss	-48.5	-1.0 sss	-69.0	0.0	+7.3
10th Grade	1.3	1.3	0.7	0.5	0.6	0.4	-0.1	-0.3	-0.2	-0.2	-0.9 sss	-66.7	-2.4 sss	-84.5	—	—
12th Grade	1.3	1.3	1.0	0.4	0.7	0.3	-0.4 sss	-0.7 ss	-0.3	-0.6 ss	-1.0 sss	-77.2	-3.0 sss	-91.0	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-28
ANY PRESCRIPTION DRUG: [II] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grade 12

(Entries are percentages.)

	1991-2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	24.0	23.9	22.2	21.5	20.9	21.6	21.7	21.2‡	**22.2**	19.9	18.3	18.0	16.5
Last 12 Months														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	17.1	16.8	15.8	15.4	14.4	15.0	15.2	14.8‡	**15.9**	13.9	12.9	12.0	10.9
Last 30 Days														
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	8.6	8.1	7.8	7.2	7.3	6.9	7.2	7.0‡	**7.1**	6.4	5.9	5.4	4.9

Table continued on next page

TABLE D-28 (continued)
ANY PRESCRIPTION DRUG: [ii] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grade 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	15.5	14.6	14.2	8.8	9.3	8.5	-0.8	-5.7 sss	-4.9 sss	-5.4 sss	-7.0 sss	-45.2	-13.7 sss	-61.6	—	—
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	9.9	8.6	7.6	4.4	5.0	4.2	-0.8	-3.4 sss	-2.5 sss	-3.1 sss	-5.7 sss	-57.7	-11.7 sss	-73.7	—	—
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	4.5	3.6	3.3	2.1	2.6	2.1	-0.5	-1.3 ss	-0.8	-1.2 ss	-2.4 sss	-54.3	-5.0 sss	-71.1	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-29
OVER-THE-COUNTER COUGH/COLD MEDICATION: [j,k] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months													
8th Grade	—	4.2	4.0	3.6	3.8	3.2	2.7	3.0	2.9	2.0	1.6	2.6	2.1
10th Grade	—	5.3	5.4	5.3	**6.0**	5.1	5.5	4.7	4.3	3.7	3.3	3.0	3.6
12th Grade	—	**6.9**	5.8	5.5	5.9	6.6	5.3	5.6	5.0	4.1	4.6	4.0	3.2

Table continued on next page

TABLE D-29 (continued)
OVER-THE-COUNTER COUGH/COLD MEDICATION: [j,k] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	2.8	3.2	**4.6**	3.5	3.2	4.0	+0.8	-0.6	-1.4	-1.1	+1.2	+44.6	-0.6	-12.8	+2.4 sss	+151.8
10th Grade	3.3	2.6	3.3	2.7	3.9	3.0	-0.9	-0.3	+0.6	-0.6	-0.4	-10.9	-3.0 sss	-50.6	+0.4	+13.5
12th Grade	3.4	2.5	3.2	1.7	2.4	2.4	0.0	-0.9	-0.8	-1.5	-1.1	-30.8	-4.5 sss	-65.6	+0.7	+38.0

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-30

ROHYPNOL: [t] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																							
8th Grade	—	1.5	1.1	1.4	1.3	1.0	1.1	0.8	1.0	1.0	1.1	1.0	1.0	0.7	0.7	0.9	**2.0**	1.0	0.7	0.6	0.8	0.9	0.6
10th Grade	—	1.5	1.7	**2.0**	1.8	1.3	1.5	1.3	1.0	1.2	1.0	0.8	1.3	0.9	0.7	1.4	1.2	0.8	1.1	1.0	0.5	1.0	0.7
12th Grade	—	1.2	1.8	**3.0**	2.0	1.5	1.7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Last 12 Months																							
8th Grade	—	**1.0**	0.8	0.8	0.5	0.5	0.7	0.3	0.5	0.6	0.7	0.5	0.7	0.5	0.4	0.5	0.8	0.4	0.4	0.3	0.3	0.5	0.4
10th Grade	—	1.1	**1.3**	1.2	1.0	0.8	1.0	0.7	0.6	0.7	0.5	0.5	0.7	0.4	0.4	0.6	0.6	0.5	0.6	0.5	0.2	0.5	0.3
12th Grade	—	1.1	1.2	1.4	1.0	0.8	0.9‡	1.6	1.3	1.6	1.2	1.1	1.0	1.3	1.0	1.5	1.3	1.5	0.9	0.7	1.0	1.1	0.8
Last 30 Days																							
8th Grade	—	0.5	0.3	0.4	0.3	0.3	0.4	0.2	0.1	0.2	0.2	0.4	0.3	0.1	0.2	0.2	**0.6**	0.1	0.1	0.2	0.1	0.2	0.1
10th Grade	—	0.5	0.5	0.4	**0.5**	0.4	0.2	0.4	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.1	0.4	0.1	0.3	0.0
12th Grade	—	**0.5**	0.3	0.3	0.3	0.4	0.3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table continued on next page

TABLE D-30 (continued)
ROHYPNOL: [t] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	0.7	0.6	§	0.3	0.4	0.5	+0.1	—	—	—	-0.2	-26.9	-1.5 ss	-75.3	+0.2	+78.4
10th Grade	0.5	0.9	§	0.6	0.2	0.6	+0.4	—	—	—	+0.1	+24.6	-1.4 ss	-69.1	+0.4	+185.9
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Last 12 Months																
8th Grade	0.3	0.4	§	0.2	0.2	0.0	-0.2	—	—	—	—	—	—	—	—	—
10th Grade	0.3	0.6	§	0.2	0.0	0.1	+0.1	—	—	—	-0.2	-77.2	-1.2 sss	-94.5	+0.1	+365.1
12th Grade	0.7	0.5	§	0.4	0.7	0.2	-0.5	—	—	—	-0.5	-70.8	-1.9	-90.1	—	—
Last 30 Days																
8th Grade	0.3	0.4	§	0.1	0.2	0.0	-0.2	—	—	—	—	—	—	—	—	—
10th Grade	0.1	0.2	§	0.1	0.0	0.0	0.0	—	—	—	-0.1	-66.1	-0.5 sss	-94.7	0.0	+84.7
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-31
GHB: [j,u] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months																			
8th Grade	—	**1.2**	1.1	0.8	0.9	0.7	0.5	0.8	0.7	1.1	0.7	0.6	0.6	—	—	—	—	—	—
10th Grade	—	1.1	1.0	1.4	**1.4**	0.8	0.8	0.7	0.6	0.5	1.0	0.6	0.5	—	—	—	—	—	—
12th Grade	—	1.9	1.6	1.5	1.4	**2.0**	1.1	1.1	0.9	1.2	1.1	1.4	1.4	1.4	1.0	1.0	0.7	0.9	0.4

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TABLE D-31 (continued)
GHB: [j,u] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.3	0.4	§	0.4	0.5	0.3	-0.3	—	—	—	-0.1	-21.0	-1.7 sss	-86.7	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-32
KETAMINE: [j,v] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months																			
8th Grade	—	**1.6**	1.3	1.3	1.1	0.9	0.6	0.9	1.0	1.2	1.0	1.0	0.8	—	—	—	—	—	—
10th Grade	—	2.1	2.1	**2.2**	1.9	1.3	1.0	1.0	0.8	1.0	1.3	1.1	1.2	—	—	—	—	—	—
12th Grade	—	2.5	2.5	**2.6**	2.1	1.9	1.6	1.4	1.3	1.5	1.7	1.6	1.7	1.5	1.4	1.5	1.4	1.2	1.2

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TABLE D-32 (continued)
KETAMINE: [j,v] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.7	0.7	1.3	0.9	1.2	1.0	-0.2	-0.3	0.0	-0.4	+0.3	+36.7	-1.6 sss	-61.9	+0.3	+41.9

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-33

ALCOHOL: [w,kk] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	70.1	69.3‡	55.7	**55.8**	54.5	55.3	53.8	52.5	52.1	51.7	50.5	47.0	45.6	43.9	41.0	40.5	38.9	38.9	36.6	35.8	33.1	29.5	27.8	26.8	26.1	22.8	23.1
10th Grade	83.8	82.3‡	71.6	71.1	70.5	71.8	**72.0**	69.8	70.6	71.4	70.1	66.9	66.0	64.2	63.2	61.5	61.7	58.3	59.1	58.2	56.0	54.0	52.1	49.3	47.1	43.4	42.2
12th Grade	88.0	87.5‡	80.0	80.4	80.7	79.2	**81.7**	81.4	80.0	80.3	79.7	78.4	76.6	76.8	75.1	72.7	72.2	71.9	72.3	71.0	70.0	69.4	68.2	66.0	64.0	61.2	61.5
Last 12 Months																											
8th Grade	54.0	53.7‡	45.4	**46.8**	45.3	46.5	45.5	43.7	43.5	43.1	41.9	38.7	37.2	36.7	33.9	33.6	31.8	32.1	30.3	29.3	26.9	23.6	22.1	20.8	21.0	17.6	18.2
10th Grade	72.3	70.2‡	63.4	63.9	63.5	65.0	65.2	62.7	63.7	**65.3**	63.5	60.0	59.3	58.2	56.7	55.8	56.3	52.5	52.8	52.1	49.8	48.5	47.1	44.0	41.9	38.3	37.7
12th Grade	77.7	76.8‡	72.7	73.0	73.7	72.5	**74.8**	74.3	73.8	73.2	73.3	71.5	70.1	70.6	68.6	66.5	66.4	65.5	66.2	65.2	63.5	63.5	62.0	60.2	58.2	55.6	55.7
Last 30 Days																											
8th Grade	25.1	26.1‡	24.3	25.5	24.6	**26.2**	24.5	23.0	24.0	22.4	21.5	19.6	19.7	18.6	17.1	17.2	15.9	15.9	14.9	13.8	12.7	11.0	10.2	9.0	9.7	7.3	8.0
10th Grade	42.8	39.9‡	38.2	39.2	38.8	40.4	40.1	38.8	40.0	**41.0**	39.0	35.4	35.4	35.2	33.2	33.8	33.4	28.8	30.4	28.9	27.2	27.6	25.7	23.5	21.5	19.9	19.7
12th Grade	54.0	51.3‡	48.6	50.1	51.3	50.8	**52.7**	52.0	51.0	50.0	49.8	48.6	47.5	48.0	47.0	45.3	44.4	43.1	43.5	41.2	40.0	41.5	39.2	37.4	35.3	33.2	33.2
Daily [d]																											
8th Grade	0.5	0.6‡	1.0	1.0	0.7	1.0	0.8	0.9	**1.0**	0.8	0.9	0.7	0.8	0.6	0.5	0.5	0.6	0.7	0.5	0.5	0.4	0.3	0.3	0.3	0.2	0.2	0.2
10th Grade	1.3	1.2‡	1.8	1.7	1.7	1.6	1.7	**1.9**	1.9	1.8	1.9	1.8	1.5	1.3	1.3	1.4	1.4	1.0	1.1	1.1	0.8	1.0	0.9	0.8	0.5	0.5	0.6
12th Grade	3.6	3.4‡	3.4	2.9	3.5	3.7	3.9	**3.9**	3.4	2.9	3.6	3.5	3.2	2.8	3.1	3.0	3.1	2.8	2.5	2.7	2.1	2.5	2.2	1.9	1.9	1.3	1.6
5+ drinks in a row in last 2 weeks [w]																											
8th Grade	10.9	11.3	11.3	12.1	12.3	**13.3**	12.3	11.5	13.1	11.7	11.0	10.3	9.8	9.4	8.4	8.7	8.3	8.1	7.8	7.2	6.4	5.1	5.1	4.1	4.6	3.4	3.7
10th Grade	21.0	19.1	21.0	21.9	22.0	22.8	23.1	22.4	23.5	**24.1**	22.8	20.3	20.0	19.9	19.0	19.9	19.6	16.0	17.5	16.3	14.7	15.6	13.7	12.6	10.9	9.7	9.8
12th Grade	29.8	27.9	27.5	28.2	29.8	30.2	31.3	**31.5**	30.8	30.0	29.7	28.6	27.9	29.2	27.1	25.4	25.9	24.6	25.2	23.2	21.6	23.7	22.1	19.4	17.2	15.5	16.6
10+ drinks in a row in last 2 weeks [g,rr]																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.2	1.1
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.0	**3.6**
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	10.6	**12.9**	11.1	10.4	10.6	9.9	9.8	10.4	8.1	7.1	6.1	4.4	6.0
15+ drinks in a row in last 2 weeks [g]																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.7	**7.2**	5.6	5.6	6.0	6.3	4.6	5.5	4.4	4.1	3.5	2.3	3.1

Table continued on next page

TABLE D-33 (continued)
ALCOHOL: [w,kk] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	23.5	24.5	25.6	21.7	23.1	20.1	-3.0	-5.5 s	-2.5	-3.9	-3.5 s	-14.7	-35.7 sss	-64.0	—	—
10th Grade	43.0	43.1	46.4	34.7	41.1	35.8	-5.3 ss	-10.6 ss	-5.2	-11.6 sss	-7.2 sss	-16.8	-36.2 sss	-50.3	+1.1	+3.1
12th Grade	58.5	58.5	61.5	54.1	61.6	52.8	-8.9 sss	-8.7 s	+0.1	-7.4 s	-5.7 ss	-9.8	-28.9 sss	-35.4	—	—
Last 12 Months																
8th Grade	18.7	19.3	20.5	17.2	15.2	15.1	-0.1	-5.3 s	-5.2 s	-3.2	-3.5 s	-18.9	-31.7 sss	-67.7	—	—
10th Grade	37.8	37.7	40.7	28.5	31.3	30.6	-0.7	-10.0 ss	-9.3 s	-12.2 sss	-7.2 sss	-19.0	-34.7 sss	-53.1	+2.1	+7.5
12th Grade	53.3	52.1	55.3	46.5	51.9	45.7	-6.1 ss	-9.6 ss	-3.4	-8.8 ss	-7.6 sss	-14.2	-29.0 sss	-38.8	—	—
Last 30 Days																
8th Grade	8.2	7.9	9.9	7.3	6.0	5.9	-0.1	-4.0 ss	-3.9 ss	-2.6 s	-2.3 ss	-27.9	-20.4 sss	-77.6	—	—
10th Grade	18.6	18.4	20.3	13.1	13.6	13.7	+0.1	-6.6 ss	-6.7 ss	-7.2 sss	-4.9 sss	-26.6	-27.3 sss	-66.6	+0.6	+4.7
12th Grade	30.2	29.3	33.6	25.8	28.4	24.3	-4.1 s	-9.3 s	-5.2	-7.7 s	-5.9 ss	-19.6	-28.4 sss	-53.9	—	—
Daily [d]																
8th Grade	0.1	0.2	0.4	0.3	0.1	0.2	0.0	-0.2	-0.3	-0.1	+0.0	+37.7	-0.8 sss	-82.4	+0.0	+37.7
10th Grade	0.5	0.6	1.0	0.4	0.4	0.4	0.0	-0.5	-0.5	-0.5	-0.1	-14.0	-1.5 sss	-78.3	—	—
12th Grade	1.2	1.7	2.7	0.9	1.5	0.9	-0.6 s	-1.8	-1.2	-1.8	-0.3	-22.6	-3.0 sss	-76.9	—	—
5+ drinks in a row in last 2 weeks [w]																
8th Grade	3.7	3.8	4.5	2.8	2.2	2.0	-0.2	-2.6 ss	-2.3 ss	-1.8 s	-1.7 sss	-45.5	-11.4 sss	-85.1	—	—
10th Grade	8.7	8.5	9.6	5.9	5.9	5.4	-0.5	-4.1 sss	-3.7 ss	-3.7 sss	-3.2 sss	-37.2	-18.7 sss	-77.4	—	—
12th Grade	13.8	14.4	16.8	11.8	12.6	10.2	-2.4	-6.6 s	-4.2	-5.0 s	-3.6 s	-26.3	-21.3 sss	-67.7	—	—
10+ drinks in a row in last 2 weeks [g,rr]																
8th Grade	1.1	**1.7**	0.9	1.0	0.6	1.1	+0.5	+0.2	-0.3	+0.1	-0.1	-7.8	-0.6	-37.0	+0.5	+75.7
10th Grade	3.3	3.3	2.5	2.1	1.9	2.1	+0.2	-0.4	-0.6	-0.4	-1.2 s	-35.6	-1.5 s	-41.4	+0.2	+11.3
12th Grade	4.6	5.3	§	3.2	4.3	2.2	-2.1 s	—	—	—	-2.3 ss	-50.8	-10.7 sss	-82.6	—	—
15+ drinks in a row in last 2 weeks [g]																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	2.5	3.2	§	1.3	2.4	1.7	-0.7	—	—	—	-0.7	-29.5	-5.4 sss	-75.8	+0.4	+32.6

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-34

BEEN DRUNK: [k] Trends in Lifetime, Annual, 30-Day, and Daily Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	26.7	26.8	26.4	25.9	25.3	**26.8**	25.2	24.8	24.8	25.1	23.4	21.3	20.3	19.9	19.5	19.5	17.9	18.0	17.4	16.3	14.8	12.8	12.2	10.8	10.9	8.6	9.2
10th Grade	**50.0**	47.7	47.9	47.2	46.9	48.5	49.4	46.7	48.9	49.3	48.2	44.0	42.4	42.3	42.1	41.4	41.2	37.2	38.6	36.9	35.9	34.6	33.5	30.2	28.6	26.0	25.1
12th Grade	**65.4**	63.4	62.5	62.9	63.2	61.8	64.2	62.4	62.3	62.3	63.9	61.6	58.1	60.3	57.5	56.4	55.1	54.7	56.5	54.1	51.0	54.2	52.3	49.8	46.7	46.3	45.3
Last 12 Months																											
8th Grade	17.5	18.3	18.2	18.2	18.4	**19.8**	18.4	17.9	18.5	18.5	16.6	15.0	14.5	14.5	14.1	13.9	12.6	12.7	12.2	11.5	10.5	8.6	8.4	7.3	7.7	5.7	6.4
10th Grade	40.1	37.0	37.8	38.0	38.5	40.1	40.7	38.3	40.9	**41.6**	39.9	35.4	34.7	35.1	34.2	34.5	34.4	30.0	31.2	29.9	28.8	28.2	27.1	24.6	23.4	20.5	20.4
12th Grade	52.7	50.3	49.6	51.7	52.5	51.9	**53.2**	52.0	53.2	51.8	53.2	50.4	48.0	51.8	47.7	47.9	46.1	45.6	47.0	44.0	42.2	45.0	43.5	41.4	37.7	37.3	35.6
Last 30 Days																											
8th Grade	7.6	7.5	7.8	8.7	8.3	**9.6**	8.2	8.4	9.4	8.3	7.7	6.7	6.7	6.2	6.0	6.2	5.5	5.4	5.4	5.0	4.4	3.6	3.5	2.7	3.1	1.8	2.2
10th Grade	20.5	18.1	19.8	20.3	20.8	21.3	22.4	21.1	22.5	**23.5**	21.9	18.3	18.2	18.5	17.6	18.8	18.1	14.4	15.5	14.7	13.7	14.5	12.8	11.2	10.3	9.0	8.9
12th Grade	31.6	29.9	28.9	30.8	33.2	31.3	**34.2**	32.9	32.9	32.3	32.7	30.3	30.9	32.5	30.2	30.0	28.7	27.6	27.4	26.8	25.0	28.1	26.0	23.5	20.6	20.4	19.1
Daily [d]																											
8th Grade	0.1	0.1	0.2	0.3	0.2	0.2	0.2	0.3	**0.4**	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0
10th Grade	0.2	0.3	0.4	0.4	0.6	0.4	0.6	0.6	**0.7**	0.5	0.6	0.5	0.5	0.4	0.4	0.5	0.5	0.3	0.4	0.3	0.2	0.4	0.3	0.3	0.1	0.1	0.2
12th Grade	0.9	0.8	0.9	1.2	1.3	1.6	**2.0**	1.5	1.9	1.7	1.4	1.2	1.6	1.8	1.5	1.6	1.3	1.4	1.1	1.6	1.3	1.5	1.3	1.1	0.8	0.8	1.1

Table continued on next page

TABLE D-34 (continued)
BEEN DRUNK: [k] Trends in Lifetime, Annual, 30-Day, and Daily Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	9.2	10.1	10.1	8.3	8.0	7.3	-0.7	-2.8	-2.1	-1.8	-1.9 s	-21.1	-19.6 sss	-73.0	—	—
10th Grade	26.2	25.5	28.8	17.8	19.8	17.6	-2.2	-11.2 sss	-9.0 ss	-10.9 sss	-8.7 sss	-33.1	-32.5 sss	-64.9	—	—
12th Grade	42.9	40.8	41.7	38.9	36.7	32.7	-4.0	-9.0 s	-5.0	-2.8	-10.2 sss	-23.7	-32.7 sss	-50.0	—	—
Last 12 Months																
8th Grade	6.5	6.6	7.5	5.7	4.7	4.6	-0.1	-2.9 s	-2.8 s	-1.8	-1.8 s	-28.5	-15.2 sss	-76.6	—	—
10th Grade	20.9	20.2	23.1	13.4	14.6	13.1	-1.4	-10.0 ss	-8.6 ss	-9.7 sss	-7.7 sss	-37.1	-28.5 sss	-68.4	—	—
12th Grade	33.9	32.8	36.9	28.8	29.6	25.1	-4.5	-11.8 ss	-7.3	-8.2 s	-8.8 sss	-26.0	-28.1 sss	-52.8	—	—
Last 30 Days																
8th Grade	2.1	2.6	3.4	2.0	1.5	1.5	0.0	-1.8 ss	-1.9 ss	-1.4 s	-0.5	-26.3	-8.1 sss	-84.1	0.0	+1.8
10th Grade	8.4	8.8	9.3	5.4	5.7	5.1	-0.6	-4.1 sss	-3.5 ss	-3.9 sss	-3.3 sss	-39.1	-18.4 sss	-78.2	—	—
12th Grade	17.5	17.5	19.8	15.5	16.8	12.5	-4.3 s	-7.3 s	-3.0	-4.3	-5.0 s	-28.5	-21.7 sss	-63.4	—	—
Daily [d]																
8th Grade	0.0	0.1	0.2	0.1	0.0	0.1	+0.1	-0.1	-0.1	-0.1	+0.1	+172.1	-0.2 s	-65.6	+0.1	+315.5
10th Grade	0.2	0.2	0.3	0.1	0.2	0.2	0.0	-0.1	-0.2	-0.2	0.0	-4.2	-0.5 sss	-70.9	+0.1	+65.7
12th Grade	0.7	1.1	0.8	0.4	0.8	0.5	-0.2	-0.3	0.0	-0.4	-0.2	-21.9	-1.5 sss	-73.2	+0.1	+32.2

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-35
BEER: [x] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	**58.7**	58.2	47.1	47.5	46.6	47.6	45.5	45.7	43.5	44.1	41.8	37.8	33.5	38.5	35.6	36.0	34.2	34.3	31.0	33.0	29.4	26.4	24.7	21.2	22.2	19.6	19.8
10th Grade	**73.9**	73.3	63.5	63.1	62.7	64.9	64.4	60.5	61.5	63.2	61.0	56.3	54.2	56.1	57.0	56.0	53.7	51.8	51.2	51.5	49.8	46.9	45.7	43.9	40.8	35.5	37.2
12th Grade	**81.9**	80.8	80.7	76.0	78.4	77.8	78.7	79.3	74.7	76.9	74.9	73.1	72.9	70.8	68.8	66.9	67.8	66.0	66.6	64.4	64.0	63.6	62.0	60.5	54.4	52.5	55.4
Last 12 Months																											
8th Grade	35.4	**36.2**	33.4	34.0	34.0	34.7	33.1	32.0	32.1	31.1	28.7	25.4	23.8	29.3	25.6	26.4	25.1	25.0	22.3	23.6	21.8	18.1	17.0	14.2	16.4	12.5	13.3
10th Grade	**55.0**	52.7	50.3	50.6	51.2	53.2	52.3	47.9	49.6	51.4	48.5	43.4	41.7	47.0	45.8	46.1	43.8	41.8	42.3	41.7	39.3	37.7	37.1	34.8	33.2	27.6	29.2
12th Grade	65.9	62.9	63.9	62.1	64.8	**66.8**	64.4	65.0	63.4	62.3	61.8	59.3	59.4	58.6	56.0	55.1	55.4	54.3	55.3	52.8	51.5	52.3	50.2	48.3	43.4	41.9	43.4
Last 30 Days																											
8th Grade	16.2	16.9	17.4	18.3	**18.8**	18.4	16.6	16.2	16.6	15.2	15.0	12.3	12.0	14.4	12.8	12.5	12.2	11.8	10.0	10.6	9.8	7.9	6.8	6.3	7.3	4.7	5.7
10th Grade	**31.1**	28.9	28.7	30.2	29.9	30.5	30.4	28.3	29.5	30.6	28.0	24.6	23.2	26.5	24.8	26.8	24.4	22.4	22.6	22.4	19.6	19.6	18.4	17.3	15.7	13.0	14.0
12th Grade	**47.2**	42.0	43.4	42.6	44.9	46.9	44.4	45.6	42.7	42.7	41.4	39.7	37.8	38.3	38.0	35.5	36.6	33.7	34.9	31.7	29.0	32.2	30.8	28.6	25.4	23.6	25.5
5+ drinks in a row in last 2 weeks																											
8th Grade	7.2	7.3	8.2	8.5	8.5	**9.2**	7.6	8.0	8.3	7.5	8.1	6.1	5.5	6.8	5.8	5.5	5.4	5.1	4.9	4.8	4.3	3.5	3.0	2.5	2.5	2.0	2.6
10th Grade	16.4	15.1	16.1	17.0	17.1	17.9	17.5	16.0	**18.1**	17.5	16.3	14.1	13.8	13.6	13.1	14.5	13.7	10.8	11.3	10.9	10.3	10.4	9.1	8.2	7.4	5.6	6.4
12th Grade	28.5	25.4	25.5	24.5	27.6	**29.2**	26.7	28.5	25.6	27.5	26.7	26.1	21.4	23.7	22.4	21.4	22.0	20.9	20.8	19.5	16.8	18.8	17.3	16.8	13.6	11.5	14.7

Table continued on next page

TABLE D-35 (continued)
BEER: [x] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	22.0	19.1	22.0	17.0	18.4	14.2	-4.2 s	-7.9 sss	-3.7	-5.0 s	-7.8 sss	-35.6	-44.5 sss	-75.8	—	—
10th Grade	38.2	35.4	37.6	26.5	30.6	27.3	-3.3	-10.4 s	-7.1	-11.2 ss	-10.9 sss	-28.5	-46.6 sss	-63.1	+0.8	+3.0
12th Grade	52.6	51.4	§	46.7	47.8	42.3	-5.5	—	—	—	-10.4 ss	-19.7	-39.6 sss	-48.4	—	—
Last 12 Months																
8th Grade	15.2	13.5	17.5	11.8	11.0	9.3	-1.8	-8.2 sss	-6.4 sss	-5.6 ss	-6.0 sss	-39.2	-26.9 sss	-74.4	—	—
10th Grade	29.9	27.2	30.8	19.4	20.8	19.3	-1.6	-11.5 ss	-9.9 ss	-11.4 ss	-10.6 sss	-35.5	-35.8 sss	-65.0	—	—
12th Grade	42.1	41.5	§	32.1	33.6	31.7	-1.9	—	—	—	-10.4 sss	-24.7	-35.1 sss	-52.6	—	—
Last 30 Days																
8th Grade	6.8	5.8	8.4	5.2	3.9	3.4	-0.5	-5.1 ss	-4.5 ss	-3.3 s	-3.4 sss	-50.4	-15.4 sss	-82.1	—	—
10th Grade	14.1	12.2	13.5	8.7	8.6	8.5	-0.1	-5.0 s	-4.8 s	-4.8 s	-5.6 sss	-39.8	-22.6 sss	-72.7	—	—
12th Grade	21.8	21.9	§	16.5	17.5	15.9	-1.7	—	—	—	-5.9 s	-27.2	-31.3 sss	-66.3	—	—
5+ drinks in a row in last 2 weeks																
8th Grade	2.9	2.5	3.2	1.9	—	—	—	—	—	-1.3	—	—	—	—	—	—
10th Grade	6.8	5.4	6.1	3.9	—	—	—	—	—	-2.2	—	—	—	—	—	—
12th Grade	11.2	11.5	§	8.8	—	—	—	—	—	—	—	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-36
LIQUOR: [g] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	72.2	71.2	70.0	70.0	69.7	73.1	72.7	**76.6**	74.0	72.0	70.7	72.2	71.1	69.9	68.2	67.1	66.1	69.3	67.2	64.2	64.0	64.2	63.1	60.9	56.0	54.2	58.0
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	57.1	54.2	54.6	56.6	56.7	60.9	59.9	**62.8**	61.6	60.6	59.5	60.4	58.6	58.5	58.7	57.1	57.0	58.1	57.5	53.8	53.5	54.2	53.4	52.4	47.3	46.2	49.0
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	31.3	28.6	31.4	28.0	34.3	34.7	34.6	**37.3**	34.3	36.0	35.1	36.0	34.3	35.6	36.4	34.2	34.1	32.4	33.2	29.8	29.8	31.2	31.0	28.1	26.1	25.1	26.8
5+ drinks in a row in last 2 weeks																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	17.4	16.0	18.2	17.1	20.2	21.6	21.1	23.6	22.3	23.8	22.7	**25.6**	21.1	23.8	25.0	23.3	22.9	22.1	21.5	20.3	18.3	22.1	21.0	18.2	16.7	14.6	18.8

Table continued on next page

TABLE D-36 (continued)
LIQUOR: [g] Trends in Use over Various Prevalence Periods in Grade 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	52.7	50.5	§	45.3	49.3	44.7	-4.6	—	—	—	-8.0 ss	-15.1	-31.9 sss	-41.7	—	—
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	43.9	42.5	§	36.4	39.6	36.0	-3.6	—	—	—	-7.9 ss	-18.0	-26.8 sss	-42.7	—	—
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	21.8	22.4	§	18.2	20.6	19.2	-1.4	—	—	—	-2.6	-12.0	-18.1 sss	-48.4	+1.0	+5.7
5+ drinks in a row in last 2 weeks																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	12.9	14.6	§	11.4	—	—	—	—	—	—	—	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-37

WINE: [g] Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	**67.0**	65.2	64.2	62.1	62.8	62.5	63.9	63.7	62.6	63.9	59.1	56.6	55.8	55.4	52.1	50.1	51.0	49.3	46.5	43.3	45.1	43.5	42.9	42.2	36.1	35.5	38.9
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	44.0	41.4	40.4	41.8	41.4	44.3	44.6	43.7	44.2	**45.1**	40.7	38.3	36.5	37.6	36.5	33.1	35.2	32.8	30.2	28.7	30.5	29.4	29.4	29.3	23.5	26.4	28.4
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	16.1	16.9	14.9	14.2	14.3	**18.3**	17.0	16.0	15.8	16.2	14.1	13.4	13.4	13.9	14.4	12.6	14.1	14.0	11.5	9.3	10.2	10.6	11.5	11.5	8.4	9.5	10.8
5+ drinks in a row in last 2 weeks																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	5.8	5.7	5.8	4.9	5.8	**7.0**	6.4	6.4	5.0	5.4	5.8	4.7	5.0	4.9	5.4	4.4	5.1	5.0	4.0	3.7	3.5	3.9	4.0	4.9	4.5	3.6	4.4

Table continued on next page

TABLE D-37 (continued)
WINE: [g] Trends in Use over Various Prevalence Periods in Grade 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	33.7	35.1	§	31.9	36.8	35.2	-1.6	—	—	—	+1.5	+4.4	-31.8 sss	-47.5	+3.3	+10.4
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	23.7	25.3	§	21.1	25.6	23.0	-2.6	—	—	—	-0.6	-2.7	-22.0 sss	-48.9	+1.9	+9.0
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	9.7	10.3	§	8.5	9.7	7.0	-2.6	—	—	—	-2.6	-27.4	-11.2 sss	-61.6	—	—
5+ drinks in a row in last 2 weeks																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.6	3.6	§	3.2	—	—	—	—	—	—	—	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-38

FLAVORED ALCOHOLIC BEVERAGES: [g,j] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																
8th Grade	—	—	**37.9**	35.5	35.5	34.0	32.8	29.4	30.0	27.0	23.5	21.9	19.2	19.3	16.3	16.0
10th Grade	—	—	58.6	**58.8**	58.1	55.7	53.5	51.4	51.3	48.4	46.7	44.9	42.3	38.7	33.3	34.8
12th Grade	—	—	71.0	**73.6**	69.9	68.4	65.5	67.4	62.6	62.4	60.5	58.9	57.5	55.6	53.6	51.2
Last 12 Months [y]																
8th Grade	—	—	**30.4**	27.9	26.8	26.0	25.0	22.2	21.9	19.2	17.0	15.7	13.4	13.4	11.2	10.8
10th Grade	—	—	**49.7**	48.5	48.8	45.9	43.4	41.5	41.0	38.3	37.8	35.6	33.2	31.4	26.1	28.3
12th Grade	—	55.2	55.8	**58.4**	54.7	53.6	51.8	53.4	47.9	47.0	44.4	44.2	43.6	42.8	40.0	39.6
Last 30 Days																
8th Grade	—	—	**14.6**	12.9	13.1	12.2	10.2	9.5	9.4	8.6	7.6	6.3	5.7	5.5	4.0	4.4
10th Grade	—	—	**25.1**	23.1	24.7	21.8	20.2	19.0	19.4	15.8	16.3	15.5	14.0	12.8	11.0	12.9
12th Grade	—	—	**31.1**	30.5	29.3	29.1	27.4	27.4	24.1	23.1	21.8	21.0	19.9	20.8	18.3	20.2

Table continued on next page

TABLE D-38

FLAVORED ALCOHOLIC BEVERAGES: [g,j] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	18.0	15.1	18.3	13.8	16.2	12.4	-3.8 s	-5.9 s	-2.1	-4.5	-5.6 ss	-31.3	-25.6 sss	-67.3	—	—
10th Grade	35.9	33.2	36.4	24.9	29.0	26.4	-2.5	-9.9 s	-7.4	-11.5 ss	-9.5 sss	-26.4	-32.3 sss	-55.0	+1.6	+6.2
12th Grade	50.4	44.7	§	43.7	46.4	44.3	-2.1	—	—	—	-6.1 s	-12.0	-29.2 sss	-39.7	+0.6	+1.5
Last 12 Months [y]																
8th Grade	12.1	10.7	14.7	10.2	10.1	8.9	-1.2	-5.8 s	-4.6 s	-4.5 s	-3.2 s	-26.2	-21.5 sss	-70.6	—	—
10th Grade	28.8	26.8	29.6	18.8	22.0	19.8	-2.2	-9.8 s	-7.6	-10.9 ss	-8.9 sss	-31.1	-29.9 sss	-60.1	+1.1	+5.8
12th Grade	38.4	37.5	§	32.1	37.5	36.1	-1.4	—	—	—	-2.2	-5.8	-22.2 sss	-38.1	+4.0	+12.4
Last 30 Days																
8th Grade	4.9	4.5	6.6	4.6	3.9	3.2	-0.6	-3.4 s	-2.7	-2.0	-1.7 s	-34.9	-11.4 sss	-78.0	—	—
10th Grade	11.8	11.1	12.5	7.8	9.7	7.9	-1.8	-4.5 s	-2.8	-4.7 s	-3.9 ss	-33.0	-17.2 sss	-68.5	+0.1	+1.6
12th Grade	18.1	18.5	§	15.3	21.2	17.9	-3.3	—	—	—	-0.2	-0.9	-13.2 sss	-42.4	+2.6	+17.1

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-39
ALCOHOLIC BEVERAGES CONTAINING CAFFEINE: [z] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months								
8th Grade	—	**11.8**	10.9	10.2	9.5	8.4	6.5	5.6
10th Grade	—	**22.5**	19.7	16.9	14.3	12.8	10.6	9.9
12th Grade	—	26.4	**26.4**	23.5	20.0	18.3	17.0	16.9

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TABLE D-39 (continued)
ALCOHOLIC BEVERAGES CONTAINING CAFFEINE: [z] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	6.0	7.3	5.7	6.2	4.7	7.5	+2.7 s	+1.8	-0.9	+0.5	+1.4	+24.0	-4.3 sss	-36.6	+2.7 s	+57.6
10th Grade	9.8	8.4	8.3	7.5	7.1	7.6	+0.6	-0.6	-1.2	-0.7	-2.2 s	-22.1	-14.8 sss	-66.0	+0.6	+7.8
12th Grade	14.7	12.3	12.3	9.9	11.6	11.6	0.0	-0.8	-0.7	-2.4	-3.2 s	-21.6	-14.8 sss	-56.2	+1.7	+16.7

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-40
CIGARETTES: Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	44.0	45.2	45.3	46.1	46.4	**49.2**	47.3	45.7	44.1	40.5	36.6	31.4	28.4	27.9	25.9	24.6	22.1	20.5	20.1	20.0	18.4	15.5	14.8	13.5	13.3	9.8	9.4
10th Grade	55.1	53.5	56.3	56.9	57.6	**61.2**	60.2	57.7	57.6	55.1	52.8	47.4	43.0	40.7	38.9	36.1	34.6	31.7	32.7	33.0	30.4	27.7	25.7	22.6	19.9	17.5	15.9
12th Grade	63.1	61.8	61.9	62.0	64.2	63.5	**65.4**	65.3	64.6	62.5	61.0	57.2	53.7	52.8	50.0	47.1	46.2	44.7	43.6	42.2	40.0	39.5	38.1	34.4	31.1	28.3	26.6
Last 30 Days																											
8th Grade	14.3	15.5	16.7	18.6	19.1	**21.0**	19.4	19.1	17.5	14.6	12.2	10.7	10.2	9.2	9.3	8.7	7.1	6.8	6.5	7.1	6.1	4.9	4.5	4.0	3.6	2.6	1.9
10th Grade	20.8	21.5	24.7	25.4	27.9	**30.4**	29.8	27.6	25.7	23.9	21.3	17.7	16.7	16.0	14.9	14.5	14.0	12.3	13.1	13.6	11.8	10.8	9.1	7.2	6.3	4.9	5.0
12th Grade	28.3	27.8	29.9	31.2	33.5	34.0	**36.5**	35.1	34.6	31.4	29.5	26.7	24.4	25.0	23.2	21.6	21.6	20.4	20.1	19.2	18.7	17.1	16.3	13.6	11.4	10.5	9.7
Daily [d]																											
8th Grade	7.2	7.0	8.3	8.8	9.3	**10.4**	9.0	8.8	8.1	7.4	5.5	5.1	4.5	4.4	4.0	4.0	3.0	3.1	2.7	2.9	2.4	1.9	1.8	1.4	1.3	0.9	0.6
10th Grade	12.6	12.3	14.2	14.6	16.3	**18.3**	18.0	15.8	15.9	14.0	12.2	10.1	8.9	8.3	7.5	7.6	7.2	5.9	6.3	6.6	5.5	5.0	4.4	3.2	3.0	1.9	2.2
12th Grade	18.5	17.2	19.0	19.4	21.6	22.2	**24.6**	22.4	23.1	20.6	19.0	16.9	15.8	15.6	13.6	12.2	12.3	11.4	11.2	10.7	10.3	9.3	8.5	6.7	5.5	4.8	4.2
1/2 pack+/day																											
8th Grade	3.1	2.9	3.5	3.6	3.4	**4.3**	3.5	3.6	3.3	2.8	2.3	2.1	1.8	1.7	1.7	1.5	1.1	1.2	1.0	0.9	0.7	0.6	0.7	0.5	0.4	0.3	0.2
10th Grade	6.5	6.0	7.0	7.6	8.3	**9.4**	8.6	7.9	7.6	6.2	5.5	4.4	4.1	3.3	3.1	3.3	2.7	2.0	2.4	2.4	1.9	1.5	1.5	1.2	1.0	0.6	0.7
12th Grade	10.7	10.0	10.9	11.2	12.4	13.0	**14.3**	12.6	13.2	11.3	10.3	9.1	8.4	8.0	6.9	5.9	5.7	5.4	5.0	4.7	4.3	4.0	3.4	2.6	2.1	1.8	1.7

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TABLE D-40 (continued)
CIGARETTES: Trends in Use over Various Prevalence Periods in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	9.1	10.0	11.5	7.0	6.1	5.8	-0.3	-5.7 sss	-5.4 ss	-4.5 ss	-3.3 sss	-36.3	-43.4 sss	-88.3	—	—
10th Grade	16.0	14.2	13.9	10.0	10.2	9.4	-0.9	-4.5 ss	-3.7 ss	-3.9 sss	-6.6 sss	-41.2	-51.9 sss	-84.7	—	—
12th Grade	23.8	22.3	24.0	17.8	16.8	15.0	-1.8	-9.0 ss	-7.1 s	-6.1	-8.8 sss	-37.1	-50.4 sss	-77.1	—	—
Last 30 Days																
8th Grade	2.2	2.3	2.2	1.1	0.8	1.1	+0.3	-1.0 s	-1.3 ss	-1.0 s	-1.0 ss	-47.4	-19.9 sss	-94.6	+0.3	+35.3
10th Grade	4.2	3.4	3.2	1.8	1.7	2.3	+0.7	-0.9	-1.6 ss	-1.4 ss	-1.9 sss	-45.4	-28.1 sss	-92.4	+0.7	+39.7
12th Grade	7.6	5.7	7.5	4.1	4.0	2.9	-1.1	-4.6 s	-3.5	-3.4	-4.7 sss	-61.9	-33.6 sss	-92.0	—	—
Daily [d]																
8th Grade	0.8	0.8	0.8	0.4	0.3	0.4	+0.1	-0.3	-0.5	-0.4	-0.4 s	-50.1	-10.0 sss	-95.9	+0.1	+36.4
10th Grade	1.8	1.3	1.2	0.8	0.7	1.0	+0.3	-0.1	-0.5 s	-0.4	-0.8 s	-43.4	-17.3 sss	-94.4	+0.3	+51.1
12th Grade	3.6	2.4	3.1	2.0	1.6	0.7	-0.9 sss	-2.4 ss	-1.5 s	-1.1	-2.9 sss	-79.7	-23.8 sss	-97.0	—	—
1/2 pack+/day																
8th Grade	0.3	0.2	0.1	0.2	0.1	0.3	+0.2	+0.3 s	+0.1	+0.1	0.0	-9.4	-3.9 sss	-92.7	+0.3 s	+410.9
10th Grade	0.7	0.5	0.6	0.3	0.3	0.6	+0.3	0.0	-0.3	-0.2	-0.1	-11.7	-8.8 sss	-93.6	+0.3	+97.8
12th Grade	1.5	0.9	1.4	0.8	0.9	0.5	-0.5 ss	-0.9 s	-0.4	-0.6	-1.0 sss	-69.1	-13.9 sss	-96.8	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-41

TOBACCO USING A HOOKAH: [e,g] Trends in Annual and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months									
8th Grade	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—
12th Grade	—	17.1	18.5	18.3	21.4	**22.9**	19.8	13.0	10.1
Last 30 Days									
8th Grade	—	—	—	—	—	—	—	**2.8**	2.5
10th Grade	—	—	—	—	—	—	—	**4.0**	3.0
12th Grade	—	—	—	—	—	—	—	**6.1**	5.0

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TABLE D-41 (continued)
TOBACCO USING A HOOKAH: [e,g] Trends in Annual and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	7.8	5.6	§	2.1	3.3	2.7	-0.6	—	—	—	-5.1 sss	-65.3	-20.2 sss	-88.2	+0.6	+28.9
Last 30 Days																
8th Grade	1.6	1.3	0.7	1.1	1.0	0.7	-0.3	+0.1	+0.4	+0.4	-0.9 ss	-54.42	-2.1 sss	-74.0	+0.1	+11.0
10th Grade	2.4	2.4	1.0	0.7	1.0	0.5	-0.5	-0.5	0.0	-0.3	-1.8 sss	-77.95	-3.5 sss	-86.9	—	—
12th Grade	4.4	4.0	§	1.7	2.1	1.3	-0.8	—	—	—	-3.1 sss	-70.5	-4.8 sss	-78.8	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-42

LITTLE CIGARS or CIGARILLOS: [e,g] Trends in Annual and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months									
Small cigars									
8th Grade	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—
12th Grade*	—	**23.1**	19.5	19.9	20.4	18.9	15.9	15.6	13.3
Last 30 Days									
Flavored little cigars or cigarillos									
8th Grade	—	—	—	—	—	4.1	**4.1**	2.8	2.6
10th Grade	—	—	—	—	—	**6.9**	6.1	4.9	4.0
12th Grade*	—	—	—	—	—	**11.9**	11.4	9.5	10.1
Regular little cigars or cigarillos									
8th Grade	—	—	—	—	—	2.5	**3.3**	1.9	1.6
10th Grade	—	—	—	—	—	**4.4**	3.8	3.0	3.0
12th Grade*	—	—	—	—	—	7.0	**7.8**	6.1	6.6

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TABLE D-42 (continued)
LITTLE CIGARS or CIGARILLOS: [e,g] Trends in Annual and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
Small cigars																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade*	9.2	7.8	§	3.4	5.6	4.4	-1.3	—	—	—	-4.8 sss	-52.4	-18.7 sss	-81.1	+1.0	+29.8
Last 30 Days																
Flavored little cigars or cigarillos																
8th Grade	2.6	2.2	2.3	1.0	0.7	0.6	-0.1	-1.7 s	-1.6 s	-1.3	-2.0 sss	-76.4	-3.5 sss	-84.9	—	—
10th Grade	5.3	3.7	3.0	1.5	1.4	1.2	-0.2	-1.8 s	-1.5 s	-1.4	-4.1 sss	-77.7	-5.8 sss	-82.9	—	—
12th Grade*	8.9	7.7	§	2.4	2.7	2.0	-0.7	—	—	—	-6.8 sss	-77.2	-9.9 sss	-83.1	—	—
Regular little cigars or cigarillos																
8th Grade	1.6	1.6	1.4	0.8	0.8	0.8	0.0	-0.6	-0.6	-0.5	-0.8 s	-51.6	-2.6 sss	-77.0	0.0	+1.9
10th Grade	3.1	2.6	2.4	1.2	1.1	0.5	-0.6 s	-1.9 sss	-1.3 s	-1.2 s	-2.6 sss	-83.5	-3.9 sss	-88.6	—	—
12th Grade*	5.8	4.9	§	1.8	2.2	1.9	-0.3	—	—	—	-3.9 sss	-67.2	-5.9 sss	-75.5	+0.1	+6.6

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

* 12th grade annual small cigar use and 30-day flavored and regular little cigars or cigarillos questions are asked in separate questionnaires.

TABLE D-43

LARGE CIGARS: [e,g] Trends in 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2013	2014	2015	2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 30 Days																					
8th Grade	—	1.9	**2.4**	1.5	1.5	1.7	1.3	1.5	1.1	0.5	1.0	0.5	-0.5	-1.0	-0.4	-0.7	-41.5	-1.4 sss	-59.0	+0.5	+98.7
10th Grade	—	**3.9**	3.4	2.3	2.6	2.8	2.1	1.2	1.3	0.8	0.3	-0.5 ss	-0.9 s	-0.4	+0.1	-2.5 sss	-88.9	-3.6 sss	-92.2	—	—
12th Grade	—	6.4	**7.0**	6.5	5.6	5.2	5.3	§	2.3	2.3	1.8	-0.4	—	—	—	-3.5 sss	-66.4	-5.3 sss	-74.9	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-44

SMOKELESS TOBACCO: [aa] Trends in Lifetime, 30-Day, and Daily Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	**22.2**	20.7	18.7	19.9	20.0	20.4	16.8	15.0	14.4	12.8	11.7	11.2	11.3	11.0	10.1	10.2	9.1	9.8	9.6	9.9	9.7	8.1	7.9	8.0	8.6	6.9	6.2
10th Grade	28.2	26.6	28.1	**29.2**	27.6	27.4	26.3	22.7	20.4	19.1	19.5	16.9	14.6	13.8	14.5	15.0	15.1	12.2	15.2	16.8	15.6	15.4	14.0	13.6	12.3	10.2	9.1
12th Grade	—	**32.4**	31.0	30.7	30.9	29.8	25.3	26.2	23.4	23.1	19.7	18.3	17.0	16.7	17.5	15.2	15.1	15.6	16.3	17.6	16.9	17.4	17.2	15.1	13.2	14.2	11.0
Last 30 Days																											
8th Grade	6.9	7.0	6.6	**7.7**	7.1	7.1	5.5	4.8	4.5	4.2	4.0	3.3	4.1	4.1	3.3	3.7	3.2	3.5	3.7	4.1	3.5	2.8	2.8	3.0	3.2	2.5	1.7
10th Grade	10.0	9.6	10.4	**10.5**	9.7	8.6	8.9	7.5	6.5	6.1	6.9	6.1	5.3	4.9	5.6	5.7	6.1	5.0	6.5	7.5	6.6	6.4	6.4	5.3	4.9	3.5	3.8
12th Grade	—	11.4	10.7	11.1	**12.2**	9.8	9.7	8.8	8.4	7.6	7.8	6.5	6.7	6.7	7.6	6.1	6.6	6.5	8.4	8.5	8.3	7.9	8.1	8.4	6.1	6.6	4.9
Daily [d]																											
8th Grade	1.6	1.8	1.5	**1.9**	1.2	1.5	1.0	1.0	0.9	0.9	1.2	0.8	0.8	1.0	0.7	0.7	0.8	0.8	0.8	0.9	0.8	0.5	0.5	0.5	0.8	0.6	0.4
10th Grade	3.3	3.0	**3.3**	3.0	2.7	2.2	2.2	2.2	1.5	1.9	2.2	1.7	1.8	1.6	1.9	1.7	1.6	1.4	1.9	2.5	1.7	2.0	1.9	1.8	1.6	1.0	0.6
12th Grade	—	4.3	3.3	3.9	3.6	3.3	**4.4**	3.2	2.9	3.2	2.8	2.0	2.2	2.8	2.5	2.2	2.8	2.7	2.9	3.1	3.1	3.2	3.0	3.4	2.9	2.7	2.0

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TABLE D-44 (continued)
SMOKELESS TOBACCO: [aa] Trends in Lifetime, 30-Day, and Daily Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	6.4	7.1	7.8	4.6	3.9	4.5	+0.6	-3.3 s	-3.8 ss	-3.2 s	-1.8 s	-28.8	-17.6 sss	-79.6	+0.6	+15.1
10th Grade	10.0	9.2	9.3	4.9	5.8	5.5	-0.4	-3.8 s	-3.4 ss	-4.3 sss	-4.5 sss	-45.4	-23.7 sss	-81.3	+0.5	+10.5
12th Grade	10.1	9.8	§	8.6	10.3	7.8	-2.5	—	—	—	-2.3	-23.0	-24.6 sss	-76.0	—	—
Last 30 Days																
8th Grade	2.1	2.5	2.3	1.6	1.2	1.6	+0.4	-0.7	-1.1 s	-0.6	-0.4	-21.5	-6.1 sss	-79.1	+0.4	+36.6
10th Grade	3.9	3.2	3.5	1.7	2.5	2.3	-0.2	-1.2	-1.0	-1.8 ss	-1.6 ss	-40.7	-8.2 sss	-78.1	+0.6	+37.2
12th Grade	4.2	3.5	§	2.2	3.2	2.5	-0.8	—	—	—	-1.7	-40.9	-9.7 sss	-79.7	+0.3	+12.3
Daily [d]																
8th Grade	0.3	0.5	0.5	0.4	0.3	0.5	+0.2	0.0	-0.2	-0.1	+0.1	+45.3	-1.4 ss	-75.2	+0.2	+74.8
10th Grade	1.0	0.9	0.7	0.4	0.7	0.5	-0.2	-0.2	0.0	-0.3	-0.5 s	-49.6	-2.8 sss	-84.1	+0.2	+45.6
12th Grade	1.6	1.1	§	0.7	1.1	0.4	-0.7	—	—	—	-1.2 ss	-73.8	-4.0 sss	-90.4	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-45

ANY VAPING: [dd,gg] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2014	2015	2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																				
8th Grade	—	21.7	17.5‡	18.5	21.5	**24.3**	24.1	17.5	18.1	17.5	-0.6	-6.6 s	-6.0 s	-6.6 ss	-4.0 s	-18.4	-6.8 sss	-27.9	0.0	+0.2
10th Grade	—	32.8	29.0‡	30.9	36.9	**41.0**	41.0	29.7	29.6	26.0	-3.5 s	-14.9 sss	-11.4 sss	-11.3 sss	-10.9 sss	-29.5	-15.0 sss	-36.5	—	—
12th Grade	—	35.5	33.8‡	35.8	42.5	45.6	**47.2**	40.5	40.7	35.7	-5.0 s	-11.6 ss	-6.6	-6.7 s	-6.9 ss	-16.2	-11.6 ss	-24.5	—	—
Last 12 Months																				
8th Grade	—	—	—	13.3	17.6	**20.1**	19.2	13.4	13.8	13.2	-0.5	-5.9 s	-5.4 s	-5.7 ss	-4.4 ss	-24.8	-6.9 sss	-34.3	—	—
10th Grade	—	—	—	23.9	32.3	**35.7**	34.6	22.2	23.8	20.3	-3.6 s	-14.3 sss	-10.7 sss	-12.4 sss	-12.1 sss	-37.4	-15.5 sss	-43.3	—	—
12th Grade	—	—	—	27.8	37.3	**40.6**	39.0	31.5	32.1	28.8	-3.3	-10.2 ss	-6.9	-7.5 s	-8.5 sss	-22.8	-11.8 sss	-29.0	+1.0	+3.4
Last 30 Days																				
8th Grade	—	8.0	6.2‡	6.6	10.4	12.2	**12.5**	8.9	8.9	8.7	-0.2	-3.8 s	-3.6 s	-3.6 s	-1.7	-16.2	-3.8 s	-30.5	+2.1	+30.9
10th Grade	—	14.2	11.0‡	13.1	21.7	**25.0**	23.5	15.6	17.3	14.4	-2.9 s	-9.1 sss	-6.2 ss	-7.9 sss	-7.3 sss	-33.5	-10.5 sss	-42.2	+1.3	+9.6
12th Grade	—	16.3	12.5‡	16.6	26.7	**30.9**	28.2	24.0	25.6	22.1	-3.5 s	-6.1 s	-2.6	-4.2	-4.6 s	-17.1	-8.8 sss	-28.4	+5.4 ss	+32.0

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-46

VAPING NICOTINE: [gg] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																		
8th Grade	—	10.6	13.5	20.3	**22.7**	16.6	17.0	16.5	-0.4	-6.2 s	-5.7 s	-6.1 ss	+3.1	+22.9	-6.2 s	-27.1	+6.0 sss	+56.5
10th Grade	—	21.4	28.6	36.3	**38.7**	28.4	28.2	25.1	-3.1	-13.6 sss	-10.5 ss	-10.3 sss	-3.5	-12.4	-13.6 sss	-35.2	+3.6 s	+17.0
12th Grade	—	25.0	34.0	40.8	**44.3**	38.7	38.8	33.5	-5.3 s	-10.8 ss	-5.5	-5.6	-0.5	-1.5	-10.8 ss	-24.4	+8.5 sss	+34.1
Last 12 Months																		
8th Grade	—	7.5	10.9	16.5	**16.6**	12.1	12.0	11.4	-0.6	-5.2 s	-4.6 s	-4.5 s	+0.6	+5.2	-5.2 s	-31.2	+3.9 ss	+52.2
10th Grade	—	15.8	24.7	**30.7**	30.7	19.5	20.5	17.6	-2.9 s	-13.1 sss	-10.2 sss	-11.2 sss	-7.1 sss	-28.8	-13.2 sss	-42.8	+1.8	+11.2
12th Grade	—	18.8	29.7	**35.3**	34.5	26.6	27.3	23.2	-4.2 s	-11.3 ss	-7.2	-7.9 s	-6.6 ss	-22.1	-12.1 sss	-34.4	+4.3	+23.1
Last 30 Days																		
8th Grade	—	3.5	6.1	9.6	**10.5**	7.6	7.1	7.0	-0.1	-3.5	-3.4	-2.9	+0.8	+13.6	-3.5	-33.3	+3.4 sss	+97.5
10th Grade	—	8.2	16.1	**19.9**	19.3	13.1	14.2	11.9	-2.3 s	-7.4 sss	-5.1 s	-6.2 ss	-4.2 ss	-26.3	-8.0 sss	-40.4	+3.7 ss	+44.8
12th Grade	—	11.0	20.9	**25.5**	24.7	19.6	20.7	16.9	-3.9 s	-7.8 s	-4.0	-5.1	-4.0	-19.4	-8.6 sss	-33.8	+5.9 ss	+53.9
Daily [d]																		
8th Grade	—	—	—	2.0‡	0.8	1.1	1.2	**1.4**	+0.2	+0.6	+0.4	+0.3	—	—	—	—	+0.6	+77.9
10th Grade	—	—	—	6.8‡	3.0	2.5	**3.3**	2.4	-0.9 s	-0.7	+0.2	-0.5	—	—	-0.9 s	-28.0	—	—
12th Grade	—	—	—	11.6‡	5.2	5.4	**6.2**	5.8	-0.4	+0.6	+1.0	+0.2	—	—	-0.4	-6.6	+0.6	+11.8

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-47

VAPING MARIJUANA: [gg] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																		
8th Grade	—	4.0	5.5	9.0	**10.2**	6.5	7.7	8.4	+0.7	-1.8	-2.5 s	-3.7 ss	+2.9 s	+52.2	-1.8	-17.7	+4.4 sss	+110.9
10th Grade	—	9.8	14.2	21.8	**22.7**	16.5	18.6	16.8	-1.8	-5.9 ss	-4.1	-6.3 sss	2.57 s	18.06	-5.9 ss	-26.0	+7.0 sss	+71.0
12th Grade	—	11.9	15.6	23.7	**27.9**	25.7	27.5	25.5	-2.0	-2.5	-0.5	-2.3	+9.8 sss	+62.9	-2.5	-8.9	+13.6 sss	+114.4
Last 12 Months																		
8th Grade	—	3.0	4.4	7.0	**8.1**	4.7	6.0	6.5	+0.5	-1.7	-2.2	-3.4 ss	+2.1 s	+47.5	-1.7	-20.4	+3.4 sss	+112.8
10th Grade	—	8.1	12.4	**19.4**	19.1	12.4	15.0	13.1	-1.9	-6.0 ss	-4.1 s	-6.7 sss	0.73	5.87	-6.3 sss	-32.4	+5.0 sss	+61.2
12th Grade	—	9.5	13.1	20.8	**22.1**	18.3	20.6	19.6	-1.0	-2.5	-1.5	-3.8	+6.5 sss	+49.6	-2.5	-11.3	+10.1 sss	+105.8
Last 30 Days																		
8th Grade	—	1.6	2.6	3.9	**4.2**	2.9	4.2	4.2	0.0	0.0	0.0	-1.3	+1.5 s	+58.9	0.0	-0.2	+2.5 sss	+153.7
10th Grade	—	4.3	7.0	**12.6**	11.3	8.4	10.3	8.5	-1.8	-2.8 s	-1.1	-2.9 s	+1.5	+21.5	-4.1 sss	-32.5	+4.2 sss	+97.6
12th Grade	—	4.9	7.5	14.0	12.2	12.4	**14.8**	13.7	-1.1	+1.5	+2.5	+0.2	+6.3 sss	+83.9	-1.1	-7.2	+8.8 sss	+177.0
Daily [d]																		
8th Grade	—	—	—	0.8‡	0.2	0.4	0.6	**0.8**	+0.2	+0.6	+0.3	+0.2	—	—	—	—	+0.6	+259.4
10th Grade	—	—	—	3.0‡	0.9	1.2	**1.3**	0.9	-0.3	0.0	+0.4	+0.3	—	—	-0.3	-26.1	0.0	+5.1
12th Grade	—	—	—	3.5‡	1.6	1.7	2.1	**2.2**	0.0	+0.5	+0.5	+0.1	—	—	—	—	+0.5	+31.6

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-48

VAPING JUST FLAVORING: [gg] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																		
8th Grade	—	17.0	**19.4**	18.9	17.8	12.0	12.8	12.8	-0.1	-5.1 ss	-5.0 ss	-5.8 sss	-6.6 sss	-34.0	-6.6 sss	-34.0	+0.7	+6.1
10th Grade	—	27.5	**31.7**	28.3	27.7	19.6	18.5	17.4	-1.1	-10.3 sss	-9.1 sss	-8.0 sss	-14.3 sss	-45.2	-14.3 sss	-45.2	—	—
12th Grade	—	30.7	**34.1**	29.0	29.8	25.2	23.7	21.7	-2.0	-8.0 ss	-6.1 s	-4.6 s	-12.3 sss	-36.2	-12.3 sss	-36.2	—	—
Last 12 Months																		
8th Grade	—	11.8	**15.1**	14.7	12.3	7.7	8.2	7.7	-0.5	-4.6 sss	-4.1 ss	-4.6 sss	-7.4 sss	-48.8	-7.4 sss	-48.8	—	—
10th Grade	—	19.3	**24.7**	20.8	18.4	10.6	11.3	10.5	-0.9	-8.0 sss	-7.1 sss	-7.8 sss	-14.2 sss	-57.6	-14.2 sss	-57.6	—	—
12th Grade	—	20.6	**25.7**	20.3	16.6	11.7	11.8	11.7	-0.2	-5.0 s	-4.8 s	-4.9 ss	-14.1 sss	-54.7	-14.1 sss	-54.7	—	—
Last 30 Days																		
8th Grade	—	5.3	**8.1**	7.7	6.8	4.6	4.9	4.5	-0.4	-2.2 s	-1.8	-2.1 s	-3.5 sss	-43.8	-3.5 sss	-43.8	—	—
10th Grade	—	9.2	**13.1**	10.5	10.4	6.3	7.4	6.7	-0.7	-3.7 ss	-3.0 s	-4.1 sss	-6.4 sss	-48.9	-6.4 sss	-48.9	+0.4	+6.3
12th Grade	—	9.7	**13.5**	10.7	8.4	7.4	8.3	8.1	-0.2	-0.3	-0.1	-1.0	-5.4 sss	-39.9	-5.4 sss	-39.9	+0.7	+9.6
Daily [d]																		
8th Grade	—	—	—	1.2‡	0.4	0.5	0.6	**0.7**	+0.1	+0.4	+0.2	+0.1	—	—	—	—	+0.4	+97.8
10th Grade	—	—	—	2.0‡	**1.2**	0.9	1.0	1.0	0.0	-0.2	-0.2	-0.3	—	—	-0.2	-14.3	+0.2	+17.8
12th Grade	—	—	—	2.8‡	1.4	0.8	**1.7**	1.6	-0.1	+0.2	+0.3	-0.6	—	—	-0.1	-7.2	+0.7 ss	+89.2

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-49

VAPED FLAVORING AND DID NOT VAPE NICOTINE DURING REPORTING INTERVAL: [gg]

Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																		
8th Grade	—	**7.8**	7.8	3.6	1.3	0.8	1.1	0.8	-0.3	-0.5	-0.2	-0.6 s	-6.9 sss	-89.5	-7.0 sss	-89.5	—	—
10th Grade	—	**9.0**	7.6	3.7	1.6	0.9	0.7	0.5	-0.1	-1.1 sss	-0.9 sss	-0.7 ss	-7.1 sss	-92.9	-8.5 sss	-94.0	—	—
12th Grade	—	**10.1**	7.6	3.7	2.1	1.1	0.9	0.9	-0.1	-1.2 ss	-1.1 ss	-1.0 ss	-6.7 sss	-88.6	-9.2 sss	-91.4	—	—
Last 12 Months																		
8th Grade	—	5.5	**6.2**	3.0	2.0	1.0	1.2	1.2	0.0	-0.8 s	-0.8 s	-1.1 ss	-5.0 sss	-80.6	-5.0 sss	-80.6	+0.3	+27.1
10th Grade	—	**7.0**	6.4	2.9	2.0	1.0	1.0	0.7	-0.3	-1.4 sss	-1.0 ss	-1.0 sss	-5.7 sss	-89.6	-6.3 sss	-90.5	—	—
12th Grade	—	**7.5**	6.0	3.1	1.9	1.2	1.1	1.2	+0.1	-0.7	-0.8	-0.7	-4.8 sss	-80.3	-6.3 sss	-84.1	+0.1	+10.7
Last 30 Days																		
8th Grade	—	2.7	**3.6**	1.9	1.2	0.9	0.9	1.0	0.0	-0.2	-0.2	-0.3	-2.6 sss	-72.8	-2.6 sss	-72.8	+0.1	+9.2
10th Grade	—	3.8	**4.1**	2.0	2.0	0.7	0.8	0.5	-0.3 s	-1.5 sss	-1.1 ss	-1.2 sss	-3.6 sss	-87.9	-3.6 sss	-87.9	—	—
12th Grade	—	**4.2**	4.0	2.3	0.8	0.7	1.1	0.9	-0.2	0.0	+0.2	-0.1	-3.1 sss	-78.3	-3.3 sss	-79.3	+0.1	+19.6

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-50

NICOTINE POUCHES: [e,k] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime												
8th Grade	—	1.2	—	—	—	—	—	—	—	—	—	—
10th Grade	—	2.6	—	—	—	—	—	—	—	—	—	—
12th Grade	—	3.6	—	—	—	—	—	—	—	—	—	—
Last 12 Months												
8th Grade	—	0.6	—	—	—	—	—	—	—	—	—	—
10th Grade	—	1.9	—	—	—	—	—	—	—	—	—	—
12th Grade	—	2.9	—	—	—	—	—	—	—	—	—	—
Last 30 Days												
8th Grade	—	0.4	—	—	—	—	—	—	—	—	—	—
10th Grade	—	1.1	—	—	—	—	—	—	—	—	—	—
12th Grade	—	1.4	—	—	—	—	—	—	—	—	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-51

SNUS: [g,j] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months								
8th Grade	—	—	**2.4**	2.0	2.2	1.9	2.2	1.1
10th Grade	—	—	**6.9**	5.2	4.5	4.0	3.0	2.6
12th Grade	—	7.9	**7.9**	7.7	5.8	5.8	5.8	4.2

Table continued on next page

TABLE D-51

SNUS: [g,j] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	1.3	1.5	1.6	1.2	1.0	0.3	-0.7 s	-1.3 s	-0.6	-0.3	-1.0 sss	-78.3	-2.1 sss	-88.2	—	—
10th Grade	3.1	2.3	2.2	1.0	1.5	1.3	-0.2	-0.9	-0.7	-1.2 s	-1.8 sss	-58.2	-5.6 sss	-81.0	+0.3	+28.0
12th Grade	4.7	2.7	§	2.6	2.4	1.8	-0.5	—	—	—	-2.9 sss	-61.6	-6.0 sss	-76.8	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-52

ANY NICOTINE USE: [nn,oo] Trends in 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991-2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 30 Days																		
8th Grade	—	—	—	**12.3**	11.2	9.4	8.7	9.0	+0.3	-2.2	-2.6	-1.8	—	-91.0	-3.3 ss	-27.0	+0.3	+3.9
10th Grade	—	—	—	**24.0**	18.8	15.7	15.1	12.7	-2.4 s	-6.1 sss	-3.7 s	-3.2	—	-87.3	-11.3 sss	-46.9	—	—
12th Grade	—	25.6	32.5	**33.6**	§	24.6	24.8	19.5	-5.3 s	—	—	—	-13.0 sss	-39.9	-14.1 sss	-41.9	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-53

ANY NICOTINE USE OTHER THAN VAPING: [mm,nn] Trends in 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991-2016	2017	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 30 Days																		
8th Grade	—	—	—	**5.9**	4.7	3.2	2.7	3.1	+0.4	-1.7	-2.0	-1.5	—	-96.9	-2.8 ss	-47.9	+0.4	+14.6
10th Grade	—	—	—	**8.3**	6.6	4.2	4.2	3.5	-0.7	-3.1 sss	-2.4 ss	-2.4 ss	—	-96.5	-4.8 sss	-57.5	—	—
12th Grade	—	**20.6**	18.5	15.7	§	7.7	8.3	5.9	-2.4 s	—	—	—	-12.5 sss	-67.8	-14.7 sss	-71.1	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-54

STEROIDS: [o,bb] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	1.9	1.7	1.6	2.0	2.0	1.8	1.8	2.3	2.7	**3.0**	2.8	2.5	2.5	1.9	1.7	1.6	1.5	1.4	1.3	1.1	1.2	1.2	1.1	1.0	1.0	0.9	1.1
10th Grade	1.8	1.7	1.7	1.8	2.0	1.8	2.0	2.0	2.7	3.5	3.5	**3.5**	3.0	2.4	2.0	1.8	1.8	1.4	1.3	1.6	1.4	1.3	1.3	1.4	1.2	1.3	1.1
12th Grade	2.1	2.1	2.0	2.4	2.3	1.9	2.4	2.7	2.9	2.5	3.7	**4.0**	3.5	3.4	2.6	2.7	2.2	2.2	2.2	2.0	1.8	1.8	2.1	1.9	2.3	1.6	1.6
Last 12 Months																											
8th Grade	1.0	1.1	0.9	1.2	1.0	0.9	1.0	1.2	**1.7**	1.7	1.6	1.5	1.4	1.1	1.1	0.9	0.8	0.9	0.8	0.5	0.7	0.6	0.6	0.6	0.5	0.5	0.6
10th Grade	1.1	1.1	1.0	1.1	1.2	1.2	1.2	1.2	1.7	2.2	2.1	**2.2**	1.7	1.5	1.3	1.2	1.1	0.9	0.8	1.0	0.9	0.8	0.8	0.8	0.7	0.7	0.7
12th Grade	1.4	1.1	1.2	1.3	1.5	1.4	1.4	1.7	1.8	1.7	2.4	2.5	2.1	**2.5**	1.5	1.8	1.4	1.5	1.5	1.5	1.2	1.3	1.5	1.5	1.7	1.0	1.1
Last 30 Days																											
8th Grade	0.4	0.5	0.5	0.5	0.6	0.4	0.5	0.5	0.7	**0.8**	0.7	0.8	0.7	0.5	0.5	0.5	0.4	0.5	0.4	0.3	0.4	0.3	0.3	0.2	0.3	0.3	0.3
10th Grade	0.6	0.6	0.5	0.6	0.6	0.5	0.7	0.6	0.9	1.0	0.9	**1.0**	0.8	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.3	0.3
12th Grade	0.8	0.6	0.7	0.9	0.7	0.7	1.0	1.1	0.9	0.8	1.3	1.4	1.3	**1.6**	0.9	1.1	1.0	1.0	1.0	1.1	0.7	0.9	1.0	0.9	1.0	0.7	0.8

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TABLE D-54 (continued)
STEROIDS: [o,bb] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.1	1.5	2.0	1.2	1.6	1.2	-0.4	-0.9	-0.4	-0.9 s	+0.1	+7.0	-1.8 sss	-61.0	+0.3	+29.3
10th Grade	1.2	1.6	1.7	0.7	0.9	1.2	+0.2	-0.5	-0.7 s	-0.9 s	0.0	-1.8	-2.3 sss	-66.3	+0.4 s	+59.0
12th Grade	1.6	1.6	2.0	0.8	1.5	0.9	-0.6	-1.1	-0.5	-1.2	-0.6	-40.0	-3.0 sss	-76.3	+0.1	+11.3
Last 12 Months																
8th Grade	0.6	0.8	1.1	0.5	0.8	0.6	-0.1	-0.5	-0.3	-0.7 s	0.0	+1.0	-1.0 sss	-61.2	+0.2	+43.0
10th Grade	0.6	0.8	0.9	0.3	0.5	0.5	0.0	-0.4	-0.4 s	-0.6 sss	-0.1	-18.6	-1.7 sss	-76.3	+0.2 s	+80.3
12th Grade	1.1	1.0	1.2	0.5	1.3	0.7	-0.7	-0.6	+0.1	-0.7	-0.5	-41.3	-1.9 sss	-74.3	+0.1	+26.2
Last 30 Days																
8th Grade	0.3	0.3	0.3	0.2	0.5	0.3	-0.2	0.0	+0.2	-0.2	0.0	+10.0	-0.5 sss	-61.4	+0.2	+99.9
10th Grade	0.4	0.4	0.5	0.1	0.3	0.4	+0.1	-0.1	-0.2	-0.3 ss	0.0	-5.5	-0.7 sss	-64.9	+0.2 s	+150.7
12th Grade	0.8	0.7	1.2	0.5	1.3	0.5	-0.7 s	-0.6	+0.1	-0.7	-0.3	-32.1	-1.0 ss	-65.2	+0.1	+20.0

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-55

STEROIDS: [o,bb,cc] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

Males

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	3.0	2.6	2.5	2.8	2.6	2.1	2.4	2.9	3.8	**3.9**	3.8	3.2	3.2	2.3	1.9	2.2	2.1	1.8	1.6	1.3	1.6	1.4	1.3	1.2	1.0	0.9	1.1
10th Grade	3.1	2.9	2.8	3.0	3.3	2.6	2.9	3.0	4.2	**5.6**	5.0	4.9	3.8	3.5	2.8	2.6	2.7	2.1	1.7	2.2	2.1	1.8	1.8	1.8	1.5	1.4	1.4
12th Grade	3.6	3.5	3.5	3.8	3.8	3.2	4.1	4.5	5.2	3.6	5.7	**5.9**	5.2	4.4	4.2	4.3	3.6	3.5	3.7	3.1	2.7	2.4	3.2	2.5	3.3	2.1	2.2
Last 12 Months																											
8th Grade	1.8	1.7	1.4	1.8	1.3	1.1	1.3	1.6	**2.5**	2.2	2.3	1.8	1.8	1.3	1.2	1.2	1.1	1.2	1.0	0.7	1.0	0.8	0.7	0.6	0.5	0.5	0.6
10th Grade	1.9	1.9	1.7	1.9	2.0	1.7	1.8	1.9	2.8	**3.6**	3.3	3.2	2.3	2.3	1.8	1.9	1.7	1.4	1.2	1.3	1.4	1.3	1.3	1.1	1.0	0.9	0.8
12th Grade	2.4	2.1	2.5	2.1	2.4	2.2	2.5	2.8	3.1	2.5	**3.8**	3.8	3.2	3.3	2.6	2.7	2.3	2.5	2.5	2.5	1.8	1.7	2.2	2.0	2.5	1.3	1.4
Last 30 Days																											
8th Grade	0.7	0.9	0.8	0.9	0.7	0.6	0.7	0.7	**1.1**	1.1	1.1	1.0	0.9	0.6	0.7	0.8	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.2	0.3	0.3
10th Grade	1.1	1.0	0.9	1.0	1.0	0.8	1.0	1.1	**1.7**	1.5	1.4	1.6	1.2	1.3	0.8	1.0	0.8	0.9	0.7	0.8	0.8	0.8	0.6	0.6	0.5	0.5	0.3
12th Grade	1.5	1.1	1.4	1.2	0.8	1.0	1.8	1.9	1.5	1.0	1.7	**2.2**	1.8	2.1	1.6	1.6	1.6	1.7	1.6	1.8	1.0	1.3	1.4	1.3	1.3	0.8	0.9

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TABLE D-55 (continued)
STEROIDS: [o,bb,cc] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12
Males

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.0	1.5	2.3	1.0	1.9	1.2	-0.6	-1.1	-0.5	-1.3 s	+0.2	+19.6	-2.7 sss	-68.9	+0.3	+33.2
10th Grade	1.3	1.9	1.8	0.7	1.0	1.3	+0.3	-0.4	-0.7	-1.0 s	0.0	+2.5	-4.3 sss	-76.1	+0.6 s	+87.7
12th Grade	2.2	2.0	3.1	1.5	1.5	0.9	-0.6	-2.2	-1.5	-1.5	-1.2 s	-57.8	-5.0 sss	-84.5	—	—
Last 12 Months																
8th Grade	0.6	0.7	1.2	0.5	0.7	0.5	-0.2	-0.6	-0.4	-0.7	0.0	-2.5	-1.9 sss	-77.9	+0.1	+11.1
10th Grade	0.6	1.1	1.0	0.3	0.5	0.8	+0.3	-0.2	-0.6	-0.7 s	+0.2	+34.3	-2.8 sss	-77.5	+0.5 s	+142.2
12th Grade	1.5	1.4	1.9	1.0	1.3	0.6	-0.7	-1.3	-0.6	-0.9	-0.9 s	-61.6	-3.2 sss	-84.5	—	—
Last 30 Days																
8th Grade	0.3	0.2	0.5	0.2	0.5	0.1	-0.4 ss	-0.4 s	0.0	-0.3	-0.2 s	-69.0	-1.0 sss	-91.2	—	—
10th Grade	0.4	0.6	0.6	0.2	0.3	0.6	+0.3	0.0	-0.3	-0.5 s	+0.2	+43.4	-1.1 sss	-65.4	+0.4 s	+277.3
12th Grade	1.2	0.8	1.6	0.8	1.2	0.4	-0.9 s	-1.2	-0.4	-0.8	-0.8 s	-70.5	-1.9 sss	-84.1	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-56
STEROIDS: [o,bb,cc] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12
Females

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	0.8	0.9	0.8	1.1	1.3	1.4	1.2	1.6	1.6	1.9	**1.9**	1.9	**1.9**	1.6	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	1.0	0.9	1.0
10th Grade	0.5	0.5	0.6	0.7	0.8	1.1	1.1	1.1	1.4	1.4	2.0	2.1	**2.2**	1.4	1.2	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.7	1.0	0.8	1.1	0.7
12th Grade	0.4	0.7	0.6	0.9	0.8	0.6	0.9	0.8	0.8	1.4	1.8	2.1	1.7	**2.3**	1.0	1.2	0.8	0.8	0.6	0.7	0.7	0.9	0.9	1.2	1.0	0.9	0.9
Last 12 Months																											
8th Grade	0.3	0.5	0.3	0.6	0.8	0.7	0.7	0.7	0.9	1.0	1.0	**1.2**	1.1	1.0	0.9	0.6	0.4	0.5	0.5	0.3	0.4	0.3	0.4	0.5	0.5	0.5	0.6
10th Grade	0.3	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.7	0.8	1.0	**1.2**	1.1	0.9	0.7	0.5	0.4	0.5	0.4	0.5	0.4	0.4	0.5	0.5	0.4	0.5	0.5
12th Grade	0.2	0.1	0.1	0.5	0.6	0.4	0.5	0.3	0.6	0.9	1.1	1.3	1.1	**1.7**	0.4	0.7	0.6	0.4	0.4	0.3	0.5	0.7	0.7	0.7	0.7	0.6	0.5
Last 30 Days																											
8th Grade	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.4	0.5	0.4	**0.6**	0.5	0.5	0.4	0.2	0.2	0.2	0.2	0.1	0.3	0.1	0.2	0.2	0.3	0.3	0.3
10th Grade	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.4	**0.5**	0.4	0.4	0.4	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.2
12th Grade	0.0	0.1	0.0	0.3	0.5	0.3	0.2	0.2	0.4	0.6	0.8	0.6	0.7	**1.0**	0.3	0.4	0.4	0.2	0.4	0.2	0.3	0.3	0.6	0.3	0.4	0.3	0.4

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TABLE D-56 (continued)
STEROIDS: [o,bb,cc] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12
Females

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	1.1	1.5	1.7	1.2	1.1	1.0	0.0	-0.7	-0.6	-0.5	-0.1	-7.2	-0.9 ss	-46.7	+0.2	+25.9
10th Grade	0.9	1.2	1.5	0.7	0.7	0.8	+0.2	-0.6	-0.8 s	-0.8 s	-0.1	-11.0	-1.4 sss	-62.7	+0.2	+26.3
12th Grade	0.8	1.2	1.1	0.2	1.1	0.4	-0.7 s	-0.7	0.0	-0.9	-0.4	-51.8	-1.9 ss	-83.1	+0.2	+84.3
Last 12 Months																
8th Grade	0.7	0.9	1.1	0.4	0.6	0.6	0.0	-0.5	-0.5	-0.7	0.0	-3.5	-0.6 s	-47.5	+0.3	+119.8
10th Grade	0.6	0.6	0.7	0.2	0.4	0.1	-0.3	-0.5 ss	-0.2	-0.4 s	-0.5 sss	-76.0	-1.0 sss	-87.9	—	—
12th Grade	0.4	0.6	0.7	0.1	0.9	0.3	-0.6	-0.4	+0.2	-0.6	-0.1	-29.8	-1.4 sss	-81.5	+0.2	+313.3
Last 30 Days																
8th Grade	0.2	0.4	0.1	0.1	0.4	0.4	0.0	+0.3	+0.3 s	0.0	+0.1	+65.2	-0.3	-41.4	+0.3	+274.9
10th Grade	0.3	0.3	0.2	0.1	0.2	0.1	-0.2	-0.2 s	0.0	-0.1	-0.2 ss	-81.8	-0.4 sss	-89.0	—	—
12th Grade	0.3	0.5	0.8	0.1	0.9	0.3	-0.6	-0.5	+0.1	-0.7	0.0	-0.4	-0.6	-67.1	+0.2	+166.0

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-57
ANDROSTENEDIONE: [e] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months																		
8th Grade	—	1.1	**1.2**	1.0	0.9	0.6	1.0	0.9	0.9	0.8	0.9	0.6	0.6	0.7	0.4	0.4	—	—
10th Grade	—	**2.2**	1.9	1.7	1.1	0.9	0.9	0.6	0.9	1.1	1.0	0.8	0.9	0.9	0.9	0.7	—	—
12th Grade	—	**3.0**	2.5	2.5	2.1	1.7	1.1	0.9	1.3	1.1	1.5	0.7	1.0	0.7	1.1	0.9	0.9	0.6

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TABLE D-57 (continued)
ANDROSTENEDIONE: [e] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	0.5	0.5	§	0.6	1.9	1.4	-0.5	—	—	—	+0.9 s	+167.2	-1.6 ss	-53.4	+1.0 s	+244.1

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-58
CREATINE: [e] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Last 12 Months																		
8th Grade	—	2.7	2.3	2.3	1.9	1.3	2.2	2.0	2.0	1.9	1.9	1.9	1.9	2.0	1.6	1.2	1.8	1.7
10th Grade	—	7.9	7.6	5.8	5.3	5.1	6.5	6.1	5.8	6.0	6.0	7.1	6.8	5.7	6.0	6.0	7.8	6.8
12th Grade	—	11.7	8.5	8.3	8.1	8.1	7.8	8.0	8.3	9.1	9.2	8.6	9.5	9.3	10.0	8.8	9.0	8.1

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TABLE D-58 (continued)
CREATINE: [e] Trends in Annual Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Last 12 Months																
8th Grade	1.7	2.0	2.5	3.2	4.3	**4.7**	+0.4	+2.2	+1.8	+0.7	+3.0 ss	+172.9	—	—	+3.5 sss	+284.9
10th Grade	6.2	5.4	4.5	6.0	10.7	**11.0**	+0.3	+6.5 sss	+6.1 sss	+1.4	+4.7 sss	+75.9	—	—	+6.5 sss	+142.7
12th Grade	9.3	7.6	7.2	7.4	11.8	**11.9**	+0.1	+4.7 s	+4.6 s	+0.2	+2.5 s	+27.3	—	—	+4.7 s	+66.0

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-59

LEGAL USE OF OVER-THE-COUNTER DIET PILLS: [g] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
12th Grade	17.2	15.0	14.8	14.9	15.6	16.0	16.6	15.7	17.1	16.6	17.1	**21.0**	17.9	15.6	13.7	13.0	10.4	10.5	9.5	7.2	7.7	7.7	8.1	9.1	7.9	6.4	6.7
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
12th Grade	8.8	8.4	8.0	9.3	9.8	9.3	9.8	9.6	10.2	11.1	11.8	**15.1**	13.0	10.7	10.0	9.4	6.7	7.2	6.1	4.3	4.9	5.5	5.3	6.4	5.1	4.5	4.0
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
12th Grade	3.7	4.0	3.8	4.2	3.8	4.3	4.6	4.8	5.4	5.8	6.3	**9.2**	6.5	5.6	4.4	5.3	3.8	3.7	2.6	2.1	2.4	3.4	2.4	3.6	2.1	2.1	2.4

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TABLE D-59 (continued)

LEGAL USE OF OVER-THE-COUNTER DIET PILLS: [g] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grade 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	6.2	5.1	§	4.6	3.8	2.8	-1.0	—	—	—	-3.4 sss	-55.4	-18.2 sss	-86.8	—	—
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.5	3.1	§	2.5	1.6	1.1	-0.5	—	—	—	-2.4 sss	-68.5	-14.0 sss	-92.6	—	—
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.9	1.9	§	1.1	1.1	0.4	-0.7	—	—	—	-1.5 sss	-78.8	-8.7 sss	-95.5	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-60

LEGAL USE OF OVER-THE-COUNTER STAY-AWAKE PILLS: [g] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grade 12

(Entries are percentages.)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
12th Grade	**37.0**	35.6	30.5	31.3	31.2	30.5	31.0	29.6	25.5	23.0	25.6	22.5	19.8	18.4	15.8	14.8	12.3	9.6	7.6	6.4	6.3	5.9	5.2	4.5	3.8	3.6	3.8
Last 12 Months																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
12th Grade	**22.2**	20.4	19.1	20.7	20.3	19.0	19.7	19.0	15.7	15.0	17.3	14.9	12.5	11.8	10.4	10.0	7.6	6.3	4.8	3.2	3.9	3.8	3.2	3.5	2.7	2.5	2.5
Last 30 Days																											
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—	—	—	—	—	—	—
12th Grade	6.8	7.2	7.0	6.3	7.3	7.5	**7.8**	7.4	6.8	7.3	7.2	5.8	5.0	4.5	4.2	4.2	3.3	2.6	2.3	1.6	2.2	1.9	1.5	1.7	1.2	1.7	1.6

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TABLE D-60 (continued)

LEGAL USE OF OVER-THE-COUNTER STAY-AWAKE PILLS: [g] Trends in Lifetime, Annual, and 30-Day Prevalence of Use in Grade 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	3.6	3.4	§	3.4	2.6	2.0	-0.6	—	—	—	-1.6 s	-43.9	-35.0 sss	-94.6	—	—
Last 12 Months																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	2.4	1.8	§	1.5	1.6	0.8	-0.7	—	—	—	-1.6 ss	-65.1	-21.4 sss	-96.2	—	—
Last 30 Days																
8th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
10th Grade	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12th Grade	1.2	1.1	§	0.5	0.8	0.4	-0.4	—	—	—	-0.7 s	-63.8	-7.4 sss	-94.6	—	—

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-61

LEGAL USE OF STIMULANT-TYPE PRESCRIPTION ADHD DRUGS: [e,pp,qq] Trends in Lifetime and Current Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime														
8th Grade	—	8.3	9.3	8.3	8.1	7.8	8.2	7.6	7.7	7.1	7.2	7.1	7.5	6.6
10th Grade	—	8.7	8.5	8.4	7.8	8.2	8.6	7.2	8.0	8.3	6.8	**8.8**	7.1	6.5
12th Grade	—	8.5	7.8	7.6	8.6	8.2	8.3	8.4	9.0	9.6	9.1	9.9	8.4	8.6
Current														
8th Grade	—	3.9	3.5	3.1	3.5	3.7	3.4	3.3	3.5	3.4	3.2	3.6	3.7	3.4
10th Grade	—	3.4	2.8	2.8	2.9	3.3	3.1	2.8	3.8	3.7	3.4	4.2	3.0	3.0
12th Grade	—	2.9	2.3	2.6	2.9	2.9	3.0	3.3	3.8	4.4	3.8	4.0	3.9	3.4

Table continued on next page

TABLE D-61 (continued)

LEGAL USE OF STIMULANT-TYPE PRESCRIPTION ADHD DRUGS: [e,pp,qq] Trends in Lifetime and Current Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	7.1	6.5	5.0	9.0	**9.7**	7.5	-2.2	+2.5	+4.7 sss	+3.9 sss	+0.4	+5.2	-2.2	-22.3	+2.5	+50.1
10th Grade	8.2	6.6	6.0	7.0	8.5	8.3	-0.2	+2.3	+2.5 s	+1.0	+0.2	+2.1	-0.5	-5.4	+2.3	+38.2
12th Grade	8.6	7.9	7.5	8.0	**11.2**	11.0	-0.2	+3.5 s	+3.7 s	+0.5	+2.5 s	+29.1	-0.2	-1.7	+3.5 s	+46.7
Current [qq]																
8th Grade	3.7	2.8	2.0	**4.2**	4.2	2.9	-1.3	+0.9	+2.2 s	+2.2 ss	-0.8	-21.2	-1.3	-31.7	+0.9	+43.5
10th Grade	3.9	2.9	2.5	3.6	**4.3**	3.7	-0.6	+1.1	+1.8 s	+1.0	-0.2	-5.1	-0.6	-14.3	+1.1	+44.6
12th Grade	3.5	3.2	3.1	3.4	**5.6**	4.7	-0.9	+1.6	+2.5 s	+0.4	+1.3	+36.6	-0.9	-15.8	+2.4 ss	+103.7

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-62

LEGAL USE OF NON-STIMULANT-TYPE PRESCRIPTION ADHD DRUGS: [e,pp] Trends in Lifetime and Current Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime														
8th Grade	—	7.3	**7.9**	6.3	6.3	5.8	5.8	6.1	5.1	5.1	4.8	5.1	5.7	4.9
10th Grade	—	8.3	**8.3**	6.7	6.8	6.8	6.1	6.4	5.2	4.9	5.8	5.8	5.2	4.6
12th Grade	—	6.2	6.1	**7.0**	6.4	5.4	6.7	5.8	5.9	5.4	5.6	5.6	5.8	6.4
Current														
8th Grade	—	**2.2**	1.9	1.4	1.6	1.2	1.4	1.5	1.2	1.4	1.2	1.2	2.0	1.1
10th Grade	—	**2.3**	2.3	1.6	1.7	1.9	1.6	1.3	1.3	1.3	1.4	1.7	1.2	1.0
12th Grade	—	1.6	1.6	1.7	1.9	1.5	2.3	1.9	1.8	1.8	2.2	1.5	2.1	2.5

Table continued on next page

TABLE D-62 (continued)

LEGAL USE OF NON-STIMULANT-TYPE PRESCRIPTION ADHD DRUGS: [e,pp] Trends in Lifetime and Current Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	4.4	4.5	4.2	2.8	3.5	2.8	-0.7	-1.4	-0.6	-1.4	-1.6 s	-36.0	-5.1 sss	-64.6	0.0	+1.0
10th Grade	5.1	5.2	5.1	3.0	3.4	2.8	-0.6	-2.2 ss	-1.7 s	-2.1 ss	-2.3 sss	-44.7	-5.5 sss	-65.7	—	—
12th Grade	6.1	5.7	4.8	4.5	5.8	5.4	-0.4	+0.6	+1.0	-0.3	-0.7	-12.1	-1.6 s	-22.9	+0.9	+18.9
Current [qq]																
8th Grade	1.2	1.4	1.4	0.9	1.3	0.7	-0.5	-0.7	-0.2	-0.5	-0.5	-40.0	-1.4 sss	-66.3	—	—
10th Grade	1.4	1.8	1.8	1.5	1.3	1.4	+0.1	-0.4	-0.5	-0.3	0.0	+0.1	-0.8 s	-36.7	+0.4	+40.8
12th Grade	**2.6**	2.3	1.7	2.3	3.5	2.0	-1.5 s	+0.3	+1.8 s	+0.6	-0.6	-22.0	-0.6	-22.0	+0.6	+37.5

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-63

LEGAL USE OF EITHER STIMULANT- OR NON-STIMULANT-TYPE PRESCRIPTION ADHD DRUGS: [e,pp]

Trends in Lifetime and Current Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Lifetime														
8th Grade	—	13.7	**15.8**	13.4	13.1	12.8	12.8	12.4	11.6	11.5	11.2	11.4	12.1	10.9
10th Grade	—	**14.3**	14.2	12.9	12.8	13.0	12.7	12.0	12.0	11.7	11.3	13.1	11.5	10.1
12th Grade	—	12.4	11.7	12.1	13.1	11.0	12.7	12.2	12.7	13.2	12.6	13.7	12.7	13.0
Current														
8th Grade	—	**6.1**	5.2	4.5	5.1	4.9	4.7	4.9	4.7	5.0	4.6	4.9	5.6	4.7
10th Grade	—	5.6	4.8	4.2	4.5	5.0	4.6	4.2	5.1	5.0	4.8	**5.8**	4.3	4.0
12th Grade	—	4.5	3.7	4.1	4.4	4.3	5.2	5.1	5.5	6.0	5.5	5.3	5.6	5.7

Table continued on next page

TABLE D-63 (continued)

LEGAL USE OF EITHER STIMULANT- OR NON-STIMULANT-TYPE PRESCRIPTION ADHD DRUGS: [e,pp]

Trends in Lifetime and Current Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Lifetime																
8th Grade	11.0	9.8	7.3	11.5	12.0	10.0	-2.0	+2.7	+4.7 ss	+4.3 ss	-1.0	-9.2	-5.9 sss	-37.0	+2.7	+37.1
10th Grade	12.1	9.8	9.3	9.0	10.6	10.6	0.0	+1.3	+1.3	-0.3	-1.5	-12.1	-3.7 ss	-25.7	+1.6	+17.7
12th Grade	12.7	11.1	9.9	10.9	**14.6**	14.3	-0.3	+4.4 ss	+4.7 ss	+1.0	+1.6	+12.4	-0.3	-2.3	+4.4 ss	+44.4
Current [qq]																
8th Grade	5.2	3.8	2.7	5.5	5.4	3.9	-1.5	+1.2	+2.7 s	+2.8 ss	-1.3	-25.6	-2.2 ss	-36.1	+1.2	+45.1
10th Grade	5.1	4.4	4.0	4.8	5.3	5.1	-0.1	+1.1	+1.2	+0.8	0.0	+0.6	-0.6	-11.1	+1.1	+28.2
12th Grade	5.9	5.0	4.2	5.2	**8.4**	6.7	-1.6	+2.5	+4.1 ss	+1.0	+0.8	+14.3	-1.6	-19.7	+3.1 ss	+83.4

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

TABLE D-64
ENERGY DRINKS OR ENERGY SHOTS: [e,g] Trends in Daily Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	1991–2009	2010	2011	2012	2013	2014	2015	2016	2017
Energy Drinks									
1 or More Daily									
8th Grade	—	**18.6**	17.7	16.3	14.2	12.8	12.1	11.3	10.1
10th Grade	—	13.6	11.4	10.8	10.3	9.6	7.8	9.2	8.8
12th Grade	—	12.3	9.5	9.2	8.2	8.3	7.8	9.8	9.4
Energy Shots									
1 or More Daily									
8th Grade	—	6.4	**6.8**	5.7	5.6	4.2	5.3	4.4	4.0
10th Grade	—	4.3	4.6	4.0	4.0	3.4	2.6	3.3	3.3
12th Grade	—	**4.3**	4.0	2.7	2.5	2.1	3.1	4.1	3.8
Either Energy Drinks or Energy Shots									
1 or More Daily									
8th Grade	—	**19.5**	18.9	17.2	15.4	13.5	13.0	12.3	11.1
10th Grade	—	14.4	12.4	11.8	11.3	10.1	8.4	10.0	9.5
12th Grade	—	13.5	11.0	9.9	9.1	9.3	9.0	10.9	10.9

Table continued on next page

TABLE D-64 (continued)
ENERGY DRINKS OR ENERGY SHOTS: [e,g] Trends in Annual and 30-Day Prevalence of Use in Grades 8, 10, and 12

(Entries are percentages.)

	2018	2019[ii]	2020	2021	2022	2023	2022-2023 change	2020-2023 change	2020-2022 change	2020-2021 change	2018-2023 change	Proportional change	Peak year–2023 change	Proportional change	Low year–2023 change	Proportional change
Energy Drinks																
1 or More Daily																
8th Grade	10.3	10.5	§	13.8	15.0	13.1	-1.9	—	—	—	+2.8 s	+27.6	-5.5 ss	-29.5	+3.0 s	+29.9
10th Grade	9.1	10.5	§	12.6	16.2	**17.5**	+1.2	—	—	—	+8.3 sss	+91.4	—	—	+9.7 sss	+124.3
12th Grade	10.1	11.6	§	13.1	16.5	**16.8**	+0.2	—	—	—	+6.6 sss	+65.3	—	—	+9.0 sss	+116.0
Energy Shots																
1 or More Daily																
8th Grade	3.7	4.6	§	3.7	4.5	4.0	-0.6	—	—	—	+0.2	+6.0	-2.9 ss	-42.2	+0.2	+6.0
10th Grade	3.8	4.1	§	2.6	**4.7**	3.5	-1.2	—	—	—	-0.3	-7.9	-1.2	-25.9	+0.9	+34.9
12th Grade	4.2	4.1	§	2.9	3.3	3.3	0.0	—	—	—	-0.8	-20.3	-1.0	-23.0	+1.2	+54.8
Either Energy Drinks or Energy Shots																
1 or More Daily																
8th Grade	11.4	11.7	§	14.5	16.1	14.2	-2.0	—	—	—	+2.8 s	+24.6	-5.3 ss	-27.2	+3.0 s	+27.2
10th Grade	9.9	11.6	§	13.2	17.5	**18.2**	+0.7	—	—	—	+8.3 sss	+83.8	—	—	+9.8 sss	+116.0
12th Grade	11.2	12.8	§	14.3	**17.5**	17.5	-0.1	—	—	—	+6.2 ss	+55.3	-0.1	-0.4	+8.5 sss	+93.9

Source. The Monitoring the Future study, the University of Michigan.

Note. See last four pages for relevant footnotes.

Footnotes for Tables D-1 through D-64

Notes. Level of significance of difference between the two most recent classes: s = .05, ss = .01, sss = .001. ' ~ ' indicates close to a significant change (.05 < P-value < .06). ' — ' indicates data not available. ' ‡ ' indicates some change in the question. See relevant footnote for that drug. Any apparent inconsistency between the change estimates and the prevalence estimatesis due to rounding. Values in bold equal peak levels. Underlined values equal lowest level.

§This estimate is not presented in 2020 due to small sample size. The survey question for this estimate appears on a randomly-selected 1/6 of the questionnaires, and the number of responses is uniquely small in 2020 when the COVID-19 pandemic halted MTF data collection prematurely and the resulting sample size was only 25% of the target.

Approximate Weighted *N*s	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
8th Graders	17,500	18,600	18,300	17,300	17,500	17,800	18,600	18,100	16,700	16,700	16,200	15,100	16,500	17,000	16,800	16,500	16,100
10th Graders	14,800	14,800	15,300	15,800	17,000	15,600	15,500	15,000	13,600	14,300	14,000	14,300	15,800	16,400	16,200	16,200	16,100
12th Graders	15,000	15,800	16,300	15,400	15,400	14,300	15,400	15,200	13,600	12,800	12,800	12,900	14,600	14,600	14,700	14,200	14,500

Approximate Weighted *N*s	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
8th Graders	15,700	15,000	15,300	16,000	15,100	14,600	14,600	14,400	16,900	15,300	14,000	13,600	3,100	10,700	9,300	5,700
10th Graders	15,100	15,900	15,200	14,900	15,000	12,900	13,000	15,600	14,700	13,500	14,300	14,000	4,800	11,000	11,200	8,100
12th Graders	14,000	13,700	14,400	14,100	13,700	12,600	12,400	12,900	11,800	12,600	13,300	12,900	3,500	8,300	8,900	7,100

[a]For 12th graders only: Use of any illicit drug includes any use of marijuana, LSD, other hallucinogens, crack, other cocaine, or heroin; or any use of narcotics other than heroin, amphetamines, sedatives (barbiturates), or tranquilizers not under a doctor's orders. For 8th and 10th graders only: The use of narcotics other than heroin and sedatives (barbiturates) has been excluded because these younger respondents appear to overreport use (perhaps because they include the use of nonprescription drugs in their answers). Due to changes in the amphetamine questions 2013 data are based on half the forms for all grades; *N* is one half of *N* indicated except for 12th grade any illicit use including inhalants which are based on one form; *N* is one sixth of *N* indicated. See amphetamine note for details. 2014 data based on all forms.

[b]In 2001 the question text was changed on half of the questionnaire forms for each age group. Other psychedelics was changed to other hallucinogens and shrooms was added to the list of examples. For the tranquilizer list of examples, Miltown was replaced with Xanax. For 8th, 10th, and 12th graders: The 2001 data presented here are based on the changed forms only; *N* is one half of *N* indicated. In 2002 the remaining forms were changed to the new wording. The data are based on all forms beginning in 2002. Data for any illicit drug other than marijuana and data for hallucinogens are also affected by these changes and have been handled in a parallel manner. For 12th graders only: Data based on five of six forms beginning in 2014; *N* is five sixths of *N* indicated. For 12th graders only: In 2015 LSD and hallucinogens other than LSD were dropped from one form. Data for hallucinogens are also affected by this change.

[c]For 12th graders only: Data based on five of six forms in 1991–1998; *N* is five sixths of *N* indicated. Data based on three of six forms beginning in 1999; *N* is three sixths of *N* indicated. For 8th and 10th graders only: Data based on three of four forms beginning in 2014; *N* is two thirds of *N* indicated.

[d]Daily use is defined as use on 20 or more occasions in the past 30 days except for cigarettes and smokeless tobacco, for which actual daily use is measured, 5+ drinks, for which the prevalence of having five or more drinks in a row in the last two weeks is measured, and for vaping, for which it is defined as using every day for the past 30 days.

[e]For 8th and 10th graders only: Data based on one of four forms; *N* is one third of *N* indicated. For flavored and regular little cigars or cigarillos, large cigars, and tobacco with a hookah, data based on two of four forms until 2019 and one of four forms beginning in 2019; N is two sixths of N indicated.
Androstenedione was dropped from the study in 2016. For 12th graders only: Data based on two of six forms; *N* is two sixths of *N* indicated. Small cigar data based on one of six forms; *N* is one sixth of *N* indicated. Androstenedione was dropped from one form in 2016; N is one sixth of *N* indicated.

[f]Inhalants are unadjusted for underreporting of amyl and butyl nitrites.

[g]For 12th graders only: Data based on one of six forms; *N* is one sixth of *N* indicated. For flavored alcoholic beverages: In 2011 Skyy Blue and Zima were deleted from the list of examples. An examination of the data did not show any effect from the wording change. In 2014 PCP was dropped from one form and the annual use was moved to another form.

(Footnotes continued on next page.)

Footnotes for Tables D-1 through D-64 (cont.)

[h]Hallucinogens are unadjusted for underreporting of PCP.

[i]For 8th and 10th graders only: Data based on one of two forms in 1996; *N* is one half of *N* indicated. Data based on one third of *N* indicated in 1997–2001 due to changes in the questionnaire forms. Data based on two of four forms beginning in 2002; *N* is one half of *N* indicated. For 12th graders only: Data based on one of six forms in 1996–2001; *N* is one sixth of *N* indicated. Data based on two of six forms beginning in 2002; *N* is two sixths of *N* indicated. For MDMA, grades 8th, 10th, and 12th: In 2014 a revised question on use of ecstast (MDMA) was added to one form in each grade. The 2013 and 2014 "Original wording" data reported here are only for the questionnaires using the original question wording (for 8th and 10th graders *N* is one half of *N* indicated, for 12th graders *N* is two sixths of *N* indicated). The 2014 and 2015 data reported here for the "Revised wording" which includes "Molly" are for only the questionnaires using the revised wording (for 8th and 10th graders *N* is one sixth of the *N* indicated in 2014 and five sixths of the *N* indicated in 2015, for 12th graders *N* is one sixth of the *N* indicated for 2014 and three sixths of the *N* indicated in 2015.

[j]For 8th and 10th graders only: Data based on one of four forms; *N* is one third of *N* indicated. For flavored alcoholic beverages: In 2011 Skyy Blue and Zima were deleted from the list of examples. An examination of the data did not show any effect from the wording change.

[k]For 12th graders only: Data based on two of six forms; *N* is two sixths of *N* indicated. For bidis only: Data based on one of six forms beginning in 2009; *N* is one sixth of *N* indicated. For Kreteks only: Data based on one of six forms beginning in 2009; *N* is one sixth of *N* indicated.

[l]For 12th graders only: Data based on four of six forms; *N* is four sixths of *N* indicated.

[m]In 1995 the heroin question was changed in one of two forms for 8th and 10th graders and in three of six forms for 12th graders. Separate questions were asked for use with and without injection. In 1996, the heroin question was changed in all remaining 8th- and 10th-grade forms. Data presented here represent the combined data from all forms.

[n]For 8th and 10th graders only: Data based on one of two forms in 1995; *N* is one half of *N* indicated. Data based on all forms beginning in 1996. For 8th and 10th graders: In 2015 for use of heroin with and without a needle, the components of heroin use, were dropped from one form; *N* is four sixth of *N* indicated. For 12th graders only: Data based on three of six forms; *N* is three sixths of *N* indicated.

[o]Only drug use not under a doctor's orders is included here.

[p]In 2002 the question text was changed in half of the questionnaire forms. The list of examples of narcotics other than heroin was updated: Talwin, laudanum, and paregoric—all of which had negligible rates of use by 2001—were replaced with Vicodin, OxyContin, and Percocet. The 2002 data presented here are based on the changed forms only; *N* is one half of *N* indicated. In 2003, the remaining forms were changed to the new wording. The data are based on all forms beginning in 2003. In 2013 the list of examples was changed on one form: MS Contin, Roxycodone, Hydrocodone (Lortab, Lorcet, Norco), Suboxone, Tylox, and Tramadol were added to the list. An examination of the data did not show any effect from the wording change.

[q]For 12th graders only: Data based on two of six forms in 2002–2005; *N* is two sixths of *N* indicated. Data based on three of six forms beginning in 2006; *N* is three sixths of *N* indicated.

[r]For 8th, 10th, and 12th graders: In 2009, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. In 2010 the remaining forms were changed in a like manner. In 2011 the question text was changed slightly in one form; bennies, Benzedrine, and Methedrine were dropped from the list of examples. An examination of the data did not show any effect from the wording change. In 2013 the question wording was changed in two of the 8th and 10th grade questionnaire forms and in three of the 12th grade questionnaires. The new wording in 2013 asked "On how many occasions (if any) have you taken amphetamines or other prescription stimulant drugs…" In contrast, the old wording did not include the text highlighted in red. Results in 2013 indicated higher prevalence in questionnaires with the new as compared to the old wording; it was proportionally 61% higher in 8th grade, 34% higher in 10th grade, and 21% higher in 12th grade. 2013 data are based on the changed forms only; for 8th, 10th, and 12th graders *N* is one half of *N* indicated. Beginning in 2014 all questionnaires included the new, updated wording.

[s]For 12th graders only: In 2004 the barbiturate question text was changed on half of the questionnaire forms. Barbiturates was changed to sedatives including barbiturates, and "have you taken barbiturates . . . " was changed to "have you taken sedatives . . . " In the list of examples downs, downers, goofballs, yellow, reds, blues, rainbows were changed to downs, or downers, and include Phenobarbital, Tuinal, Nembutal, and Seconal. An examination of the data did not show any effect from the wording change. In 2005 the remaining forms were changed in a like manner. In 2013 the question text was changed in all forms: Tuinal, Nembutal, and Seconal were replaced with Ambien, Lunesta, and Sonata. In one form the list of examples was also changed: Tuinal was dropped from the list and Dalmane, Restoril, Halcion, Intermezzo, and Zolpimist were added. An examination of the data did not show any effect from the wording change.

(Footnote continued on next page.)

Footnotes for Tables D-1 through D-64 (cont.)

[t]For 8th and 10th graders only: Data based on one of two forms in 1996; *N* is one half of *N* indicated. Data based on three of four forms in 1997–1998; *N* is two thirds of *N* indicated. Data based on two of four forms in 1999–2001; *N* is one third of *N* indicated. Data based on one of four forms beginning in 2002; *N* is one sixth of *N* indicated. For 12th graders only: Data based on one of six forms in 1996–2001; *N* is one sixth of *N* indicated. Data based on two of six forms beginning in 2002; *N* is two sixths of *N* indicated. Data for 2001 and 2002 are not comparable due to changes in the questionnaire forms. Data based on one of six forms beginning in 2010; *N* is one sixth of *N* indicated.

[u]For 12th graders only: Data based on two of six forms in 2000; *N* is two sixths of *N* indicated. Data based on three of six forms in 2001; *N* is three sixths of *N* indicated. Data based on one of six forms beginning in 2002; *N* is one sixth of *N* indicated.

[v]Data based on two of six forms in 2000; *N* is two sixths of *N* indicated. Data based on three of six forms beginning in 2001; *N* is three sixths of *N* indicated. Data based on two of six forms beginning in 2010; *N* is two sixths of *N* indicated.

[w]For 8th, 10th, and 12th graders: In 1993, the question text was changed slightly in half of the forms to indicate that a drink meant more than just a few sips. The 1993 data are based on the changed forms only; *N* is one half of *N* indicated for these groups. In 1994 the remaining forms were changed to the new wording. The data are based on all forms beginning in 1994. In 2004, the question text was changed slightly in half of the forms. An examination of the data did not show any effect from the wording change. The remaining forms were changed in 2005.

[x]For 8th and 10th graders, data based on one of two forms in 1991–1996; *N* is one half of *N* indicated. Data based on one of four forms beginning in 1997; *N* is one third of *N* indicated. For 12th graders, data based on one of six forms; *N* is one sixth of *N* indicated.

[y]The 2003 flavored alcoholic beverage data were created by adjusting the 2004 data to reflect the change in the 2003 and 2004 alcopops data.

[z]For 8th and 10th graders only: Data based on one of four forms; *N* is one third of *N* indicated. For 12th graders only: Data based on two of six forms; *N* is two sixths of *N* indicated. For all grades: In 2011 the question text was "…had an alcoholic beverage containing caffeine (like Four Loko or Joose)." In 2012 the question text was changed to "…had an alcoholic beverage mixed with an energy drink (like Red Bull)." An examination of the data did not show any effect from the wording changes.

[aa]For 8th and 10th graders only: Data based on one of two forms for 1991–1996 and on two of four forms beginning in 1997; *N* is one half of *N* indicated. For 12th graders only: Data based on one of six forms; *N* is one sixth of *N* indicated. In 2011 snus and dissolvable tobacco were added to the list of examples. An examination of the data did not show any effect from the wording change.

[bb]For 8th, 10th, and 12th graders: In 2006, the question text was changed slightly in some of the forms. An examination of the data did not show any effect from the wording change. In 2007 the remaining forms were changed in a like manner. In 2008 and 2009 the question text was changed slightly. An examination of the data did not show any effect from the wording change. For 12th graders only: Data based on two of six forms in 1991–2005 and beginning again in 2019; *N* is two sixths of *N* indicated. Data based on three of six forms from 2006-2018; *N* is three sixths of *N* indicated.

[cc]For 8th and 10th graders, see Tables D-S1 and D-S2 in *Volume I*, Appendix D for sample sizes. For 12th graders, data based on two of six forms in 1991–2005; *N* is two sixths of *N* indicated in Table D-S3. Data based on three of six forms beginning in 2006; *N* is three sixths of *N* indicated in Table D-S3 in *Volume I*, Appendix D.

[dd]In 2017, the surveys switched from asking about vaping in general to asking separately about vaping nicotine, marijuana, and just flavoring. Beginning in 2017, data presented for any vaping are based on these new questions.

[ee]For 12th graders, in 2005 data omitted for one of the questionnaire forms due to an error in the skip pattern in the questionnaire. In 2005 data based on one of six questionnaire forms and *N* is one sixth of *N* indicated. Beginning in 2006, data based on two of six forms and *N* is two sixths of *N* indicated.

[ff]The question about current use of prescription ADHD drugs is asked differently than that for other drugs presented here. Therefore, the estimates indicate youth who reported "Yes, I take them now."

[gg]For 8th and 10th graders only: data based on one of four forms until 2019; *N* is one third of *N* indicated. In 2019, data based on two of four forms; *N* is two thirds of *N* indicated. Beginning in 2020, data based on all available forms. For 12th graders only: data based on two of six forms until 2019; N is two sixths of *N* indicated. In 2019, data based on four of six forms; *N* is four sixths of N indicated. Beginning in 2020, data based on all available forms.

[hh]For 8th and 10th graders only: In 2019, data based on one of four forms; *N* is one sixth of *N* indicated. Beginning in 2020, data based on all available forms. For 12th graders only: In 2019, data based on one of six forms. *N* is one sixth of *N* indicated. Beginning in 2020, data based on all available forms.

(Footnote continued on next page.)

Footnotes for Tables D-1 through D-64 (cont.)

[ii]Drug prevalence results in 2019 combine results from paper-and-pencil surveys with those completed using electronic tablets. In 2019 students in a randomly-selected half of schools completed MTF surveys on paper-and-pencil and students in the other half completed the surveys using electronic tablets. Analysis of this randomized controlled trial demonstrated that these results did not significantly differ across survey mode (Miech, R.A., Couper, M.P., Heeringa, S. G., and Patrick M. E. Forthcoming. The Impact of Survey Mode on US National Estimates of Adolescent Drug Prevalence: Results from a Randomized Controlled Study, Addiction). Results for student attitudes and beliefs in 2019 are based on answers from electronic tablets only because these appear more susceptible to survey mode effects. Readers are cautioned that large changes in these results from 2018 to 2019 may stem from survey mode effects.

[jj]For 8th and 10th graders only: In 2021 and 2022, the question on marijuana use was changed in half of the questionnaire forms to include smoking, vaping, and edibles in the list of examples. Data presented here for 2021 and 2022 based on the forms that included the original question wording. N is one half of N indicated. Any illicit drug use, any illicit drug use including inhalants, and abstainers were also impacted by this change. Data based on all four forms again beginning in 2023.

[kk]A survey change that removed a skip pattern in 2022 resulted in higher levels of inconsistent responses for alcohol use among 8th and 10th grade students. Specifically, as a result of the change adolescents were more likely to indicate an inconsistent pattern (i.e., report lifetime alcohol use early in the survey but then later report that they had never used alcohol). These inconsistent responders were coded as missing in 2022; the skip pattern was reintroduced into the survey in 2023.

[ll]The use of any prescription drug includes use of any of the following: amphetamines, sedatives (barbiturates), narcotics other than heroin, or tranquilizers "…without a doctor telling you to use them."

[mm]Includes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, or smokeless tobacco.

[nn]For 8th and 10th graders only: Data based on one third of *N* indicated. For 12th graders only: Data based on one of six forms; *N* is one sixth of *N* indicated.

[oo]Includes use of any of the following: cigarettes, large cigars, flavored small cigars, regular small cigars, tobacco using a hookah, smokeless tobacco, or vaping nicotine.

[pp]In 2005, data omitted for one of the questionnaire forms due to an error in the skip pattern in the questionnaire. In 2005, data based on one of six forms and *N* is one sixth of *N* indicated. Beginning in 2006, data based on two of six forms and *N* is two sixths of *N* indicated.

[qq]For the use of prescription ADHD drugs, the question is asked differently than that for other drugs presented here. Therefore, the estimates indicate youth who reported "Yes, I take them now."

[rr]For 8th and 10th graders only: Data based on one third of *N* indicated. For 12th graders only: Data based on one of six forms; *N* is one sixth of *N* indicated.

[ss]Respondents who report no use of alcohol, marijuana, or nicotine (either vaping or cigarettes).

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508
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