

## 5. Trends in Initiation of Substance Use

Estimates of substance use incidence, or initiation (i.e., the number of new users during a given year), provide another measure of the Nation's substance use problem. Where prevalence estimates describe the extent of current use of substances, incidence data describe emerging patterns of use, particularly among young people. In the past, increases and decreases in incidence have usually been followed by corresponding changes in the prevalence of use, particularly among youths.

The incidence estimates in this report are based on National Household Survey on Drug Abuse (NHSDA) data from 1999, 2000, and 2001 collected with computer-assisted interviewing methods. These data should not be compared with previously published NHSDA data based on paper-and-pencil interviewing methods. Not only is the mode of data collection different for the incidence estimates produced prior to the 1999 NHSDA, but the estimation methodology has been revised as well. The estimation methodology is described in Appendix B in Volume II and summarized below.

The incidence estimates are based on the NHSDA questions on age at first use, year and month of first use for recent initiates, the respondent's date of birth, and the interview date. Using this information along with editing and imputation when necessary, an exact date of first use is determined for each substance used by each respondent. For age-specific incidence rates, the period of exposure is defined for each respondent and age group for the time that the respondent was in the age group during the calendar year. Incidents of first use also are classified by year of occurrence and age at the date of first use. By applying sample weights to incidents of first use, estimates of the number of new users of each substance for each year are developed. These estimates include new users at any age (including those younger than age 12) and also are shown for two specific age groups—youths aged 12 to 17 and young adults aged 18 to 25. In addition, the average age of new users in each year and age-specific rates of first use are estimated.

The incidence rates are presented in this report as the number of new users per 1,000 potential new users because they indicate the rate of new use among persons who have not yet used the substance (i.e., potential new users). More precisely, the rates are actually the number of new users per 1,000 person-years of exposure. This measure is widely used in describing the incidence of disease. The numerator of each rate is the number of persons in the age group who first used the substance in the year, while the denominator is the person-time exposure measured in thousands of years. Each person's drug-specific exposure time ends on the date of first use of the respective drug. For age-specific estimates, exposure is limited to time during the year that the person was in the age group. Persons who first used the substance in a prior year have zero exposure to first use in the current year, and persons who still have never used the substance by the end of the current year had a full year of exposure to risk.

Because the incidence estimates are based on retrospective reports of age at first substance use by survey respondents interviewed during 1999, 2000, and 2001, they may be subject to several sources of bias. These include bias due to differential mortality of users and nonusers of each substance, bias due to memory errors (recall decay and telescoping), and

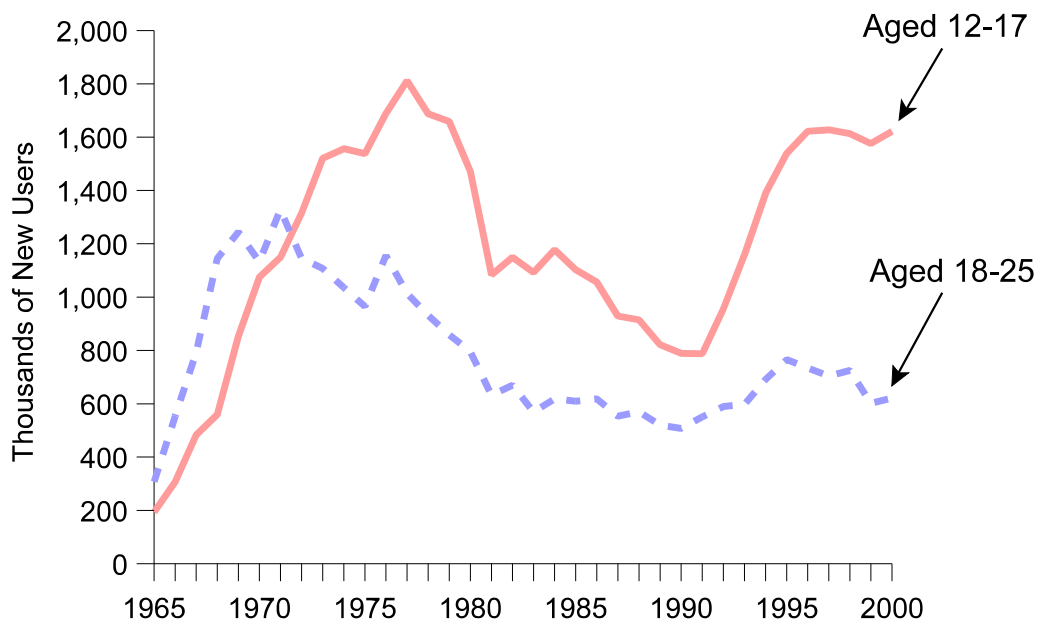
underreporting bias due to social acceptability and fear of disclosure. See Appendix B in Volume II for a discussion of these biases. As explained in Appendix B, it is possible that some of these biases, particularly telescoping and underreporting because of fear of disclosure, may be affecting estimates for the most recent years more significantly. To account for this bias in the interpretation of the trends, a more stringent standard for determining statistical significance involving estimates from the most recent years (1997 and later) is used in this chapter. Differences are reported to be statistically significant only if they differ at the  $\alpha = .01$  level. The usual standard in the rest of the report is the  $\alpha = .05$  level. This is an arbitrary standard that provides some protection against incorrect conclusions in the face of potential biases that can fluctuate and even change direction from year to year. A more thorough analysis of the problem will be conducted in the future.

Because the incidence estimates are based on retrospective reports of age at first use, the most recent year available for these estimates is 2000, based on the 2001 NHSDA. Estimates for the year 2000 are based only on data from the 2001 survey, estimates for the year 1999 are based only on data from the 2000 and 2001 surveys, and estimates for earlier years are based on the combined 1999 to 2001 data. For two of the measures, first alcohol use and first cigarette use, initiation before age 12 is common. A 2-year lag in reporting for "all ages" estimates is applied for these measures because the NHSDA sample does not cover youths under age 12. The 2-year lag ensures that initiation at ages 10 and 11 is captured in the estimation.

## **Marijuana**

- In 1965, there were an estimated 0.6 million new users of marijuana. The annual number of marijuana initiates increased until reaching a peak in 1976 and 1977 (2 years before the past month prevalence rate among youths peaked in 1979) at around 3.2 million new users per year. After that, the number of initiates declined to 1.4 million in 1990 (2 years before the youth past month prevalence rate reached a low point in 1992). Between 1990 and 1996, the estimated annual number of new marijuana users increased steadily from 1.4 million to 2.5 million and has remained at this plateau since. An estimated 2.4 million Americans used marijuana for the first time in 2000.
- Prior to 1970, the majority of marijuana initiates each year were young adults aged 18 to 25 years. Since 1972, the number of new users among youths aged 12 to 17 years has been uniformly greater than among young adults. The number of marijuana initiates among 12 to 17 year olds steadily increased from 0.8 million in 1990 to a plateau of 1.6 million per year between 1996 and 2000 (Figure 5.1). Incidence among 18 to 25 year olds has generally held steady since 1990, ranging between 0.5 and 0.8 million initiates per year.
- The average age of initiation of marijuana use in 2000 was 17.5 years. The average age of marijuana initiates has generally declined since 1965.

**Figure 5.1 Annual Numbers of New Users of Marijuana: 1965-2000**



### Cocaine

- Beginning in 1965, the estimated incidence of cocaine use rose steadily to its 1983 peak (1.5 million new users). Subsequently, the number of new users per year declined steadily until 1992 (0.5 million new users) and then began a steady increase to 0.9 million new users in 2000.
- Age-specific incidence rates generally have mirrored the overall incidence rate. The number of new users aged 18 to 25 reached a peak of 0.9 million in 1983, while the most recent low point for this group was 0.3 million from 1991 to 1994. Incidence among 12 to 17 year olds has not varied as greatly over the years, but peaked in 1980 at 0.3 million new users and reached a recent low point in 1991 with 90,000 new users.
- The 2000 estimates of the number of cocaine initiates and age-specific incidence rates were slightly larger than their 1999 counterparts, but none of the increases was statistically significant.
- The average age of cocaine initiates rose from 17.2 years in 1967 to 23.8 years in 1991 and subsequently declined to approximately 20 years from 1997 to 2000.
- The annual number of new cocaine users has generally increased over time. In 1975, there were 30,000 new users. The number increased from 300,000 in 1986 to 361,000 in 2000.

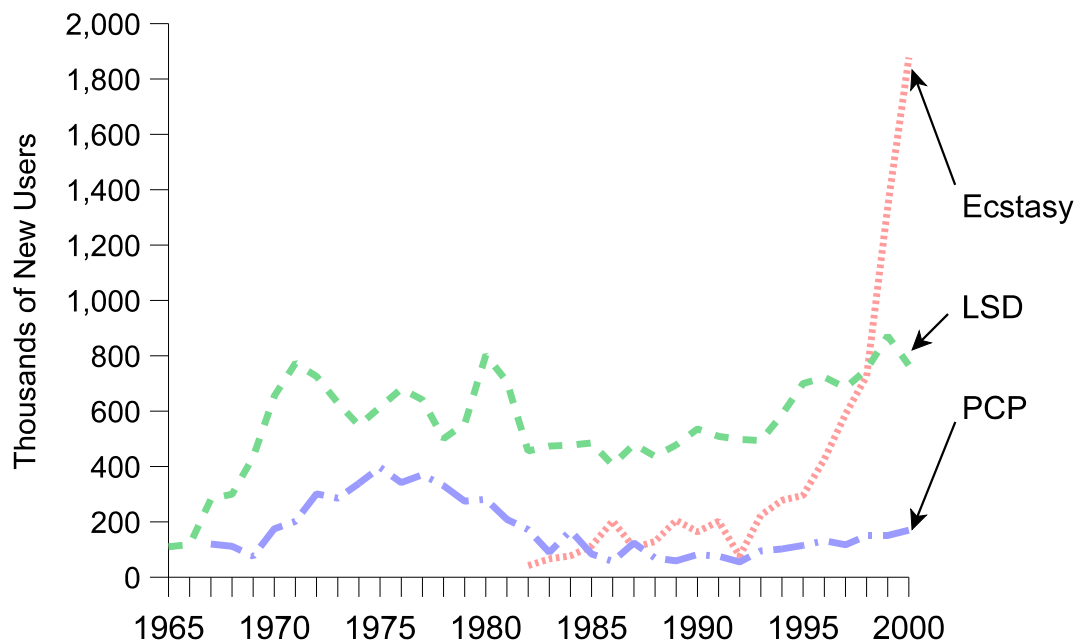
## Heroin

- During the 1990s, heroin incidence rates rose to a level not reached since the 1970s. The annual number of new users ranged from 55,000 to 69,000 between 1989 and 1992. However, there were 110,000 new heroin users in 1994 and 146,000 in 2000. Between 1975 and 1977, there were approximately 120,000 to 140,000 new users of heroin per year.

## Hallucinogens

- The incidence of hallucinogen use has exhibited two notable periods of increase. Between 1965 and 1971, the number of initiates rose tenfold, from 90,000 to 900,000. The second period of increase began in 1990 when there were approximately 600,000 new users. By 2000, the number of initiates rose nearly threefold, to 1.5 million.
- Initiation of Ecstasy (i.e., MDMA) use has been rising steadily since 1992 (Figure 5.2). The increase from 1.3 million new users in 1999 to 1.9 million in 2000 was statistically significant, as were the age-specific increases among 12 to 17 year olds and 18 to 25 year olds. The increase from 1998 to 1999 also was statistically significant, from 0.7 million to 1.3 million new users, as were the age-specific increases.

**Figure 5.2 Annual Numbers of New Users of Ecstasy, LSD, and PCP: 1965-2000**



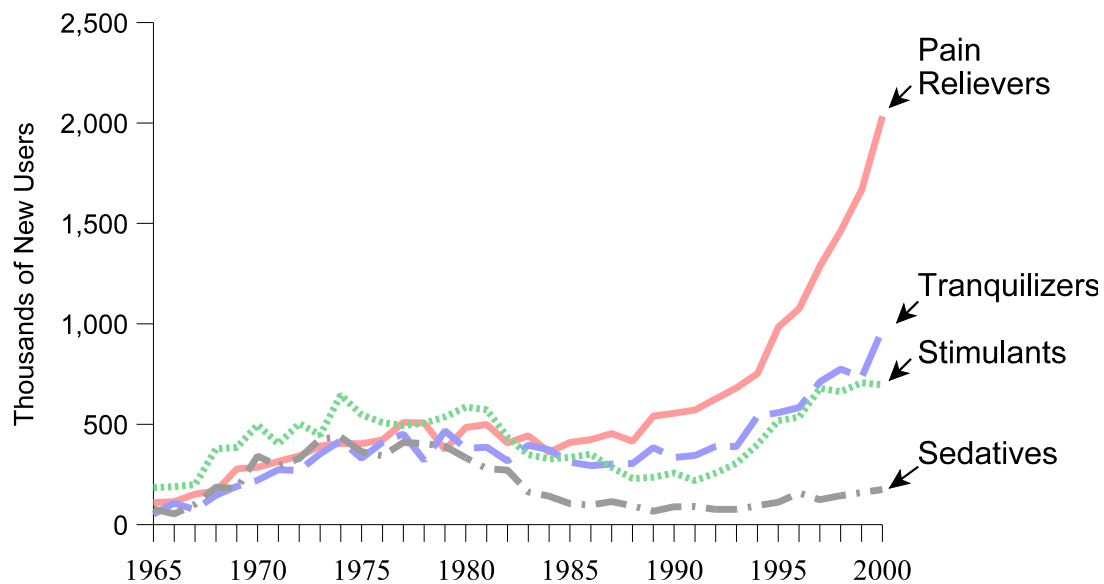
## Inhalants

- Between 1994 and 2000, the number of new inhalant users increased more than 50 percent, from 618,000 new users in 1994 to 979,000 in 2000. These estimates were higher than a previous peak in 1978 (662,000 new users).

## Psychotherapeutics

- This category includes nonmedical use of any prescription-type pain reliever, tranquilizer, stimulant, or sedative; it also includes methamphetamines. This category does not include over-the-counter substances.
- Pain reliever incidence has been increasing since the mid-1980s when there were approximately 400,000 initiates annually. The number of initiates reached 2.0 million in 2000 (Figure 5.3). Between 1998 and 2000, there were significantly more new users among 12 to 17 year olds than among 18 to 25 year olds.
- First use of stimulants increased steadily during the last decade, from 219,000 in 1991 to 697,000 in 2000. Incidence levels this high had not been observed since the mid-1970s, when incidence peaked at 646,000 new users in 1974 (Figure 5.3).

**Figure 5.3 Annual Numbers of New Nonmedical Users of Psychotherapeutics: 1965-2000**



- Between 1994 and 2000, the number of new stimulants users among 12 to 17 year olds was significantly larger than the number among 18 to 25 year olds. This pattern was not observed prior to 1994.
- Incidence of methamphetamine use rose steadily between 1990 (164,000 new users) and 2000 (344,000 new users). Methamphetamine incidence was at its highest level in 1975 when there were 400,000 new users.
- Between 1973 and 1982, methamphetamine incidence exhibited a plateau of about 300,000 to 400,000 new users per year. During this period, the majority of new users were aged 18 to 25. The new users during the rise in incidence in the 1990s, however, were approximately evenly split between 12 to 17 year olds and 18 to 25 year olds. This shift in age distribution was reflected in the average age of new users, which fell from 22.3 years in 1990 to 18.4 years in 2000.
- Initiation of tranquilizer use has been increasing steadily since 1986. The number of initiates increased significantly from 734,000 in 1999 to 973,000 in 2000. Further, the age distribution of initiates shifted during the 1990s. In 1990, about 15 percent of initiates were youths aged 12 to 17; by the late 1990s, about one third of all initiates were youths.
- The number of sedatives initiates remained just under 100,000 per year between 1988 and 1994. In 1995, the number of initiates rose to 111,000 and continued increasing thereafter to 175,000 in 2000.

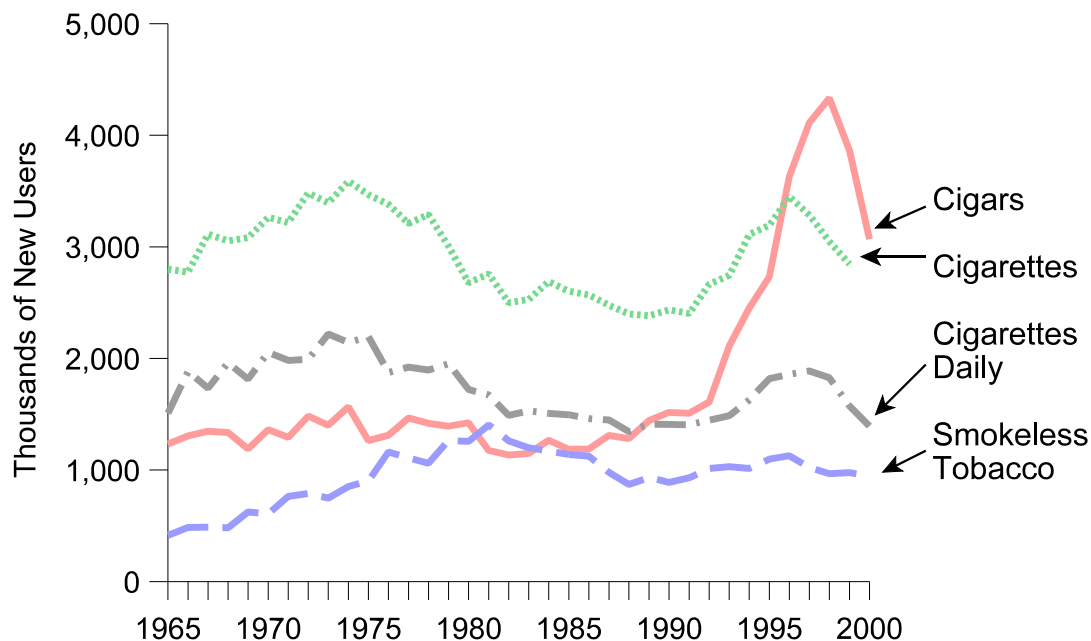
### **Alcohol**

- Alcohol incidence has increased steadily since 1989. Between 1995 and 1999, the total number of initiates significantly increased from 3.5 million to 5.0 million. Between 1995 and 2000, the number of initiates aged 12 to 17 years significantly increased from 2.2 million to 3.1 million. The average age of initiation has generally decreased since 1965.

### **Tobacco**

- Cigarette initiation increased from 2.4 million in 1991 to 3.5 million in 1996, then decreased to 2.8 million in 1999 (Figure 5.4). Initiation of cigarette use among youths aged 12 to 17 significantly decreased from 2.0 million in 1999 to 1.6 million in 2000, continuing a decline observed since 1996.
- Initiates of daily smoking increased from 1.4 million per year during the late 1980s to 1.9 million in 1997 and decreased back to 1.4 million in 2000. This pattern was mirrored in the incidence rates for 12 to 17 year olds and 18 to 25 year olds.
- The annual number of new daily smokers aged 12 to 17 decreased from 1.1 million in 1997 to 747,000 in 2000. This translates into a reduction from 3,000 per day to 2,000 per day in the number of youths who begin smoking on a daily basis.

**Figure 5.4 Annual Numbers of New Users of Tobacco: 1965-2000**



- The largest increase in initiation of cigar smoking occurred during the late 1980s to 1990s, from 1.3 million in 1988 to 4.3 million in 1998. After 1998, cigar initiation decreased to 3.1 million in 2000. From 1965 until 1996, there were more cigar initiates among 18 to 25 year olds than among 12 to 17 year olds. From 1997 to 2000, the number of new cigar users aged 12 to 17 exceeded the number of 18- to 25-year-old initiates.

