The Social Demography of Drug Use

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E XCELLENT DATA BASES EXIST IN THE UNITED STATES to assess the extent of use of various drugs in the population and changes in patterns of use over time. Because of the striking increases in use that occurred in the 1970s and the potential health hazards of drug use, particularly to young people, the federal government has played an important role in initiating and supporting systematic data-gathering efforts. However, most monitoring efforts have focused on the epidemiology of patterns of drug use rather than abuse and/or dependence and have examined drug use as a behavior rather than a clinical state.

In this review, I describe (1) overall current patterns of the use of mood-changing legal and illegal drugs; (2) the epidemiology of substance use disorders; (3) trends over time in patterns of use; and (4) variations in subgroups of the population—by sex, age, geographical location, socioeconomic status, and ethnicity.

The prevalence, patterns, and trends in nonmedical drug use can be assessed from two types of data: (1) data systems that compile statistics based on individuals whose drug use has brought them to the attention of official medical, treatment, or legal agencies; (2) surveys designed to determine the extent of various types of drug use in the noninstitutionalized population.

I will review the major sources of data briefly in order to highlight their strengths and limitations. Several data systems are ongoing and provide important information about trends in use over time.

Data Sources

Institutional Data Systems

The two major institutional data systems ongoing at this time monitor medical and criminal drug-related cases.

The Drug Abuse Warning Network (DAWN), established in 1972, monitors the consequences of drug abuse using two indicators: drug-related hospital emergency room visits and drug-related deaths recorded in medical examiners' offices. Information is obtained from 770 hospital emergency rooms drawn primarily from 21 metropolitan areas and 87 medical examiners located in 37 metropolitan areas throughout the United States. (The panel of hospitals is currently being changed to a national representative sample.) For several years, drug-related deaths occurring in New York City were not included in the data because of incomplete reporting by the medical examiner's office, which resumed reporting in 1988 (National Institute on Drug Abuse 1988b; 1990e; 1991d,e).

The Drug Use Forecasting program (DUF), established in 1986 by the National Institute of Justice to measure the rates of drug use among persons arrested for serious crimes, included 22 participating cities in 1989. The DUF sample, however, is not at this time a national probability sample of arrestees. Drug use assessments are based on urinalysis for ten drugs, including cocaine, marijuana, PCP, methamphetamine, heroin, and opium (National Institute of Justice 1990, 1991). The urine tests can detect most drugs used within the previous two or three days, and up to several weeks later for marijuana and PCP.

Periodic data on the scope and capabilities (e.g., services, slots) of drug and alcohol treatment and prevention programs in public and private agencies in the United States are currently provided by the National Drug and Alcohol Treatment Unit Survey (NDATUS), a point prevalence survey sponsored by the National Institute on Drug Abuse (NIDA) and the National Institute on Alcohol Abuse and Alcoholism (NIAAA) and carried out intermittently since 1974. The two most recent surveys, conducted in 1987 and 1989, provide very limited infor-

mation on the age, sex, and race/ethnicity of clients in the reporting units (NIDA, 1989b, 1990e).

A continuing treatment-based monitoring system (the Client Data System) will be operative in 1992 and will provide regular and comprehensive data on clients in drug treatment programs (NIDA NOTES 1991). Such data have not been systematically available since 1982, when the implementation of the block grant system eliminated federal mandatory requirements for reporting of client admissions, the Client Oriented Acquisition Process (CODAP). Only a small number of selected states continued to submit data voluntarily. As a result, comprehensive data on individuals currently in treatment are not available, and trend data are only available for a select subsample of states in a truncated period of time from 1979 to 1984.

These institutional data are based upon selected members of the drug-using population: those who are experiencing medical problems, are seeking treatment, have come to the attention of the criminal justice system, or have died from drug abuse. Institutional reporting can be spotty and uneven. Except for deaths, the data reflect counts of episodes or incidents and not individuals, which means that the extent of multiple admissions cannot be assessed in most cases. In addition, the population base from which the cases are drawn is not defined, making it impossible to ascertain what proportions of the general population and of various subgroups of users are represented by these data. Not only is the numerator ill defined in terms of independent individual units, but there is also no denominator.

Large-Scale Surveys: The Epidemiology of Substance Use

Several large-scale population surveys of drug use, which include questions about the use of different classes of illicit drugs, were initiated in the early 1970s under the impetus of the National Commission on Marijuana and Drug Abuse. Most of our recent knowledge derives from two major continuing nationwide monitoring efforts sponsored by NIDA: the National Household Survey on Drug Abuse and Monitoring the Future.

The National Household Survey on Drug Abuse is based on repeated cross-sectional household surveys of national multistage probability samples of household residents 12 years old and over, carried out every two

or three years up to 1988 and annually as of 1990 (NIDA 1990a). There have been ten surveys since 1971. The drug questions are self-administered by respondents and the answers placed in a sealed envelope. The last two surveys included an oversample of blacks and Hispanics to provide stable race-specific rates, which up to now have not been readily available. Indeed, larger sample sizes in these strata give rise to smaller standard errors and more precise parameter estimates. Monitoring the Future uses a sophisticated cohort-sequential design, in which new cohorts of high school seniors are surveyed annually and a subsample of each cohort is followed over time. Initiated in 1975 by the Institute of Survey Research of the University of Michigan, the study involves successive annual surveys of over 16,000 high school seniors, drawn from 130 public and private schools throughout the United States, who answer structured self-administered questionnaires in their classrooms; and biannual longitudinal mail follow-ups of 2,000 to 3,000 former students drawn from each senior cohort (Johnston, O'Malley, and Bachman 1991). There now have been 16 annual surveys. These two epidemiological programs are evolving over time in order to provide data on groups that were previously either unrepresented or represented in numbers too small to provide stable estimates. Beginning in 1991, the National Household Survey on Drug Abuse oversamples six large cities and Monitoring the Future includes eighth and tenth graders.

These two studies are based on representative samples of the general population or well-defined population segments and have used the same methodology over time. Changes in reported rates of drug use can be attributed to changes in individuals' behaviors (or perhaps changes in the willingness to report drug use) rather than be confounded with changes in methods.

In addition to these regular monitoring activities, NIDA sponsors one-time data collection efforts designed to assess drug use in special populations. These include the addition of drug-related questions on drug use in the 1988 National Maternal and Infant Health Survey, and a soon to be fielded National Pregnancy and Health Survey, designed to estimate the number of drug-exposed babies. The Washington, D.C., Metropolitan Area Drug Study, initiated in 1990 as a series of 16 studies, aims to collect information on hidden and hard-to-reach populations, such as school dropouts, the homeless, and institutionalized populations. As of the writing of this article, no data are yet available from any of these more specialized studies. There are also periodic na-

tional surveys that focus on a single legal drug, either smoking (e.g., National Center for Health Statistics 1989) or alcohol (Hilton 1988). Because of the inclusion of a broad spectrum of substances and the repeated waves of data collection, I will discuss almost exclusively population-based data derived from the two NIDA-sponsored ongoing surveys.

In these surveys, respondents are typically asked whether they have ever used each class of drugs of interest and how frequently they have used each within specified periods of time. An individual is defined as a user if he or she reports having used the drug at least once. Rarely are questions included about problems related to drug use or any other information that could provide a basis for relating patterns of use to clinical syndromes. Limited questions regarding drug-related problems and dependence have been included in the household surveys beginning in 1985. However, these surveys provide excellent information about the prevalence of drug use in the general population, the distribution of users among different sociodemographic groups, and trends over time. Although these data provide information on the population at risk for problems of substance abuse, they provide little information about the extent of this risk.

The ECA Studies: Epidemiology of Substance Abuse Disorders

By contrast, in the early 1980s, the National Institute of Mental Health (NIMH) sponsored an epidemiological program of research designed to measure the extent of psychiatric disorders in the American population, both household residents and those in institutions or other group quarters, based on criteria specified by the American Psychiatric Association to define these disorders (American Psychiatric Association 1980, 1987). The criteria were incorporated in a structured interview administered by lay interviewers: the Diagnostic Interview Schedule (DIS). The Epidemiologic Catchment Area study (ECA) was implemented from 1980 to 1984 in five sites in the United States: New Haven, St. Louis, Baltimore, Durham, and Los Angeles (Robins and Regier 1991). A notable feature of the ECA is that the community sample was supplemented by a sample of individuals in institutions, drug and alcohol treatment centers, nursing homes, chronic hospitals, psychiatric hospitals, and prisons to provide more correct estimates of the prevalence of various disorders

(Regier et al. 1990). Algorithms were developed to identify cases according to DSM-III nosological rules, the most current ones at the time the studies were conducted. Because case identification in these community samples is not biased by factors leading individuals into treatment, the studies provide excellent information about the prevalence of various psychiatric disorders, including substance abuse disorders. However, because the ECA studies did not contain the usual measures of patterns of drug behavior included in the traditional epidemiological drug surveys, the number of individuals who ever used specific classes of drugs and are therefore at risk for abuse of these drugs is mostly not available. In the ECA, the number of individuals who ever used *any* illicit drug was ascertained, but not those who ever used *each specific* class of illicit drugs.

Specific items were included in the interview schedule to measure the major groups of symptoms required for a diagnosis of substance use disorder, abuse, and/or dependence, as specified in DSM-III. Substance use disorders subsume alcohol and other drug-related disorders. (In line with accepted terminology [e.g., Anthony and Helzer 1991]. I use the term "drug abuse/dependence" to refer to disorders involving an illicit drug or the nonmedical use of substances that should only be used by medical prescription.) Substance abuse involves pathological use, impairment in social or psychological functioning resulting from substance use, and minimal duration of disturbance of at least one month. The more severe substance dependence diagnosis requires tolerance or withdrawal for all substances, as well as pathological use or impairment in social or psychological functioning for alcohol dependence and cannabis dependence (slightly different criteria are specified for tobacco dependence) (American Psychiatric Association 1980, 163–4). In DSM-III, the diagnosis of abuse can be made for all classes of psychoactive drugs; the diagnosis of dependence can be made for all drugs, except cocaine, phencyclidine, and hallucinogens. These diagnoses can be exclusive or concurrent. In DSM-III-R, by contrast, the same diagnostic rules apply to all classes of drugs, dependence requires that any three of nine symptoms be present for one month, and drug abuse becomes a residual category (American Psychiatric Association 1987; Kosten and Kosten 1990).

Preliminary results from the ECA were first published in 1984. More detailed findings, especially for substance use disorders, were reported more recently by Robins and Regier (1991). In this article, I draw

heavily from the chapter in that volume, "Syndromes of Drug Abuse and Dependence," by Anthony and Helzer.

Advantages and Limitations of the Epidemiological Approach

These surveys, as well as others, are based on large, representative samples and, despite their limitations, have provided unique information and new insights about the epidemiology of drug behavior.

By focusing on unselected samples rather than the most extreme and deviant groups included in treatment programs or clinical practices, epidemiological studies provide normative data from which new understanding of drug behavior can be gained. Especially when the studies are based on large representative samples of the general population, epidemiological data provide information on the distribution of the phenomenon in the population free from selection and referral bias into treatment. Longitudinal studies, which follow individuals over time, make it possible to assess the natural history of involvement across the life span of individuals and changes in patterns of use over time and among different groups and to identify the risk factors and consequences of drug involvement. Epidemiological data help refine nosological classifications and assess the extent of comorbidity in the population as well as the need for services.

It must be emphasized, however, that surveys based on household or school samples generally exclude the individuals most likely to be involved in nonconforming activities, including drug use: those without regular addresses, the homeless, the school absentees or dropouts, or those living in institutions (Ginsberg and Greenley 1978; Johnston, O'Malley, and Bachman 1991; Johnston, O'Malley, and Eveland 1978; Kandel 1975). Because these deviant individuals constitute presumably a relatively small proportion of the general population, however, their exclusion does not significantly bias the overall epidemiological estimates reported (see Clayton and Voss 1982; Kandel 1975), although the less frequently used drugs and heaviest patterns of use may be underrepresented. Another limitation of the data is that self-reports of sensitive behaviors, such as drug use, may be subject to reporting bias, which is not randomly distributed throughout the population. In particular, blacks appear to be more likely than other ethnic groups to underreport their infrequent use of illicit drugs (Mensch and Kandel 1988a).

The two types of measures — patterns of drug use and diagnostic assessments for drug use disorders — have not yet been included simultaneously in these national investigations. It is important, however, to assess the rates of drug use disorders among individuals who have ever used each class of drugs. The monitoring surveys, Monitoring the Future and the National Household Survey on Drug Abuse, provide very good information about the denominator, that is, the population of users who are at risk for abuse. The ECA provides very good data on the numerator: the population of abusers. Currently, it is very difficult to combine the two types of information and estimate the risk of dependence or abuse among those who ever experimented with specific drugs. A newly initiated investigation of the comorbidity of psychiatric disorders, directed by Ronald Kessler at the University of Michigan, promises to provide the necessary data (Kessler 1990).

Prevalence of Drug Use

Because patterns of use vary greatly over time, it is essential when examining the data to take account of the year of data collection. I will discuss only selected findings and trends in this article.

Overall Prevalence

The rates of self-reported experiences with various classes of drugs provide important information about the extent of the population at risk, not only for serious substance use disorders, but also for health and psychosocial consequences associated with patterns of use that do not necessarily meet criteria for abuse or dependence. Indeed, these consequences appear to increase linearly with degree of drug involvement (Kandel 1984). Traditionally, the illicit usage monitored in the drug surveys includes, in addition to alcohol, cigarettes, and illegal substances, the nonmedical use of psychoactive substances, such as minor tranquilizers or stimulants, which should only be used under medical prescription.

Illustrative data are presented in table 1 for the data most recently released from the 1990 surveys both for the high school seniors (Johnston, O'Malley, and Bachman 1991) and the population aged 12 and over (NIDA 1991a–c). By and large, the ranking of the various classes of drugs is identical in both samples, with the exception of cocaine. Differ-

TABLE 1

Lifetime Prevalence Rates of the Use of Different Drugs in 1990 Among High School Seniors and the General U.S. Population Aged 12 and Over

	Ever using drugs (%)	
Substance	Seniors[a]	General population[b]
Alcohol	89.5	83.2
Cigarettes	64.4	73.2
Marijuana	40.7	33.1
Stimulants	17.5	6.9
Inhalants	18.5	5.1
Cocaine	9.4	11.3
Crack	3.5	1.4
Hallucinogens	9.4	7.6
Analgesics	8.3	5.7
Tranquilizers	7.2	4.3
Sedatives	5.3	3.7
Heroin	1.3	0.8
Any illicit drug	47.9	37.0
Total (N)	(15,200)	(9,259)

[a] *Source:* Johnston, O'Malley, and Bachman 1991, table 3.
[b] *Source:* NIDA 1991a.

ences in the age distribution of the two samples affect the overall prevalence levels reported in each study.

Prevalence of use differs markedly for various drugs, with the drugs that are legal for adults, alcohol and tobacco cigarettes, being used much more frequently than illegal substances. Overall, in 1990, almost half (47.9 percent) of the high school seniors have experimented with one illicit drug; more than one-third (37 percent) of the American population aged 12 and over have done so. Among the illicit drugs, use of marijuana is the most prevalent for both samples. Among adolescents, stimulants and inhalants (i.e., glue and gasoline) are next in prevalence and are twice as prevalent as cocaine. Among young adults, cocaine ranks next in prevalence after marijuana, and is twice as prevalent as stimulants (table 2). Thus, among adolescents aged 12 to 17, 2.6 percent have used cocaine compared with 4.5 percent for nonmedical use of stimulants; by contrast, among those 18 to 25 years old, 19.4 percent

TABLE 2
Lifetime Prevalence Rates of the Use of Different Drugs in 1990
in the General Population, by Age

Drug	Ever using drugs (%)			
	Age 12–17	Age 18–25	Age 26–34	Age 35+
Alcohol	48.2	88.2	92.0	85.0
Cigarettes	40.2	70.5	79.8	77.4
Marijuana	14.8	52.2	60.8	21.9
Stimulants	4.5	9.0	13.4	4.6
Inhalants	7.8	10.4	7.2	2.6
Cocaine	2.6	19.4	25.6	5.9
Hallucinogens	3.3	12.0	15.7	4.5
Analgesics	6.5	8.1	8.1	4.1
Tranquilizers	2.7	5.9	8.2	2.9
Sedatives	3.3	4.0	7.0	2.6
Any illicit drug	22.7	55.8	62.6	25.9
Total (N)	(2,177)	(2,052)	(2,355)	(2,675)

Source: NIDA 1991a.

have used cocaine and 9.0 percent have used stimulants (NIDA 1991a). This age reversal in relative ranking is explained by the fact that the age-defined period of risk for initiation into cocaine lasts for a longer interval than for most other illicit drugs—at least into the late twenties for the former as compared with the late teens for the latter (Raveis and Kandel 1987).

In 1990, one third of the cocaine users among the high school seniors (3.5 percent) have used crack. Crack appears to have spread rapidly across different communities in the last several years. Monitoring the Future identified crack use among half the sample schools in 1986, but recorded a rise to about 76 percent in 1988 (Johnston, O'Malley, and Bachman 1989, 63).

A substantial proportion of those who have used cocaine have smoked it, especially younger users. In the 1990 National Household Survey, among those who used cocaine in the last year, 31 percent of those aged 18 to 25 and 33 percent of those aged 26 to 34 reported having freebased it, compared with 57 percent of those aged 12 to 17

(NIDA 1991c, table 4.7). Thus, the majority of adolescents appear to have adopted a pattern of use that is particularly harmful to their health. Data from clinical treatment centers indicate that individuals who freebase use much more cocaine than those who consume cocaine in other ways (Gawin and Kleber 1985). In the general population, those who freebase or smoke cocaine report experiencing more cocaine-related problems than other types of cocaine users (Adams, Rouse, and Gfroerer 1990).

Similar rankings among the various drugs obtain in the prevalence of annual or recent use (within the last 30 days) as lifetime, except for one reversal involving daily use of cigarettes.

Daily Drug Use. As noted above, with the exception of the ECA study, which I will discuss, epidemiological studies do not include systematic criteria that would permit the identification of cases of drug abuse or dependence meeting diagnostic criteria. Daily use is taken as a measure of sustained and regular drug use. Data for daily use are reported mainly for high school seniors in Monitoring the Future. The National Household Survey on Drug Abuse reports mostly data on weekly use.

Daily use of most illicit drugs is rare in the noninstitutionalized population. Among high school seniors, almost no daily drug use is reported, with the exception of tobacco cigarettes, alcohol, and marijuana. In 1990, almost a fifth of seniors (19.1 percent) were smoking cigarettes daily (defined as use at least 20 times in the previous 30 days). Daily use of marijuana (2.2 percent) or alcohol (3.7 percent) was lower than that of cigarettes (Johnston, O'Malley, and Bachman 1991, table 13). The same proportion (2 percent) of "daily" (i.e., used 20 days or more in the past month) marijuana users (the only drug for which such data are presented from the National Household Survey) was observed among young adults in the general population 18 to 25 years old as among high school seniors; the proportion (1.6 percent) among those aged 26 to 34 was lower (NIDA 1991c, table 3.7). A much high proportion of young people persist in their use of cigarettes than of any other class of drugs. In 1990, the proportions of current daily users represent 29.7 percent of high school seniors who ever smoked, but 4.5 percent of those who ever used marijuana and 4.1 percent of those who ever drank alcohol.

Daily marijuana users are much more likely than other users to be extensive users of other substances (Clayton and Ritter 1985; Johnston, Bachman, and O'Malley 1981; Kandel and Davies 1991c). Daily drug

users are also much more likely than nonusers to experience drug-related problems, as illustrated by data from the ECA studies, to be discussed in greater detail below. In the ECA, 24 percent of cocaine users who had ever used cocaine daily for at least two weeks reported that they felt dependent on the drug and 28 percent reported social problems with cocaine, compared with 2 percent and 4 percent, respectively, of cocaine users who had never used cocaine daily for at least two weeks (Anthony and Trinkoff 1989, table 1).

Symptoms of Dependence. The General Household Survey on Drug Abuse attempts to assess the extent of dependence experienced by users of selected drugs in terms of five components of use in the last year: whether they tried to cut down on use, used in larger amounts, used daily for two or more weeks, felt he or she needed the drug and was dependent on it, and whether he or she experienced withdrawal symptoms. A substantial proportion of all the past year users 18 years old and over report having experienced at least one such symptom in the last year: 40 percent for marijuana, 38 percent for cocaine, 31 percent for alcohol, and 85 percent for cigarettes (based on NIDA 1991a, tables 14, 19A, 20A, 21A; 1991c, tables 1.2, 9.3–9.6). However, the proportions reporting specific feelings of dependence are lower, especially for substances other than cigarettes: 9 percent reported such symptoms for marijuana, 6 percent each for cocaine and for alcohol, but 66 percent for cigarettes. From these data, I estimate that the proportions having experienced at least one symptom represent 4.1 percent of the general population 18 years old and over for marijuana, 1.2 percent for cocaine, 22.1 percent for alcohol, and 28 percent for cigarettes. As we will see shortly, except for marijuana, these rates differ somewhat from those observed on the basis of DSM–III diagnostic criteria observed among persons 18 and older sampled in 1980–1984 by the ECA.

Age Patterns in Drug Use

To highlight the relative popularity of different classes of drugs, data from the General Household Survey have been presented for the U.S. population for all ages combined. However, striking differences in prevalence of use can be observed over the life cycle. Illicit drug use is a youth phenomenon. The proportion in the general population having

ever used any illicit drug is more than twice as high among those aged 18 to 34 as among those 35 and older (table 2).

In contrast to lifetime rates, annual age-specific rates are less likely to be confounded with historical factors and more closely reflect age-related maturational patterns. In order to place the age-related patterns in a broader behavioral context, data for drugs obtained legally (such as cigarettes or alcohol) or illegally (such as marijuana or cocaine) are compared with psychoactive drugs prescribed by a physician (such as minor tranquilizers) for narrowly defined age groups. The most current data on annual use of medically prescribed minor tranquilizers are available only for 1982, the most recent year for which data on prescribed psychotropic drugs were collected (table 3).

The age-graded nature of the use of marijuana and other illicit drugs is highlighted when the use of these drugs is compared with the socially accepted substances such as alcohol or cigarettes, on the one hand, and

TABLE 3

Annual Prevalence Rates of Selected Licit and Illicit Substances in 1990 and Medically Prescribed Psychotropic Drugs in 1982 in the General Population by Age

Age	1990 Cigarettes[a] (%)	1990 Alcohol[a] (%)	1990 Marijuana[a] (%)	1990 Cocaine[a] (%)	1982 — Any Rx psychoactive[b] (%)	Total (N) 1990	Total (N) 1982
12–13	11	20	3	—[c]	10	(709)	(515)
14–15	26	42	12	1	15	(728)	(511)
16–17	28	59	18	5	18	(740)	(555)
18–21	39	77	28	7	25	(999)	(546)
22–25	40	83	21	8	24	(1,053)	(737)
26–29	47	81	22	7	30	(1,045)	(693)
30–34	41	77	15	6	25	(1,310)	(878)
35–39	31	73	10	3	{	(543)	{
40–44	35	71	6	1	23[d]	(374)	(505)[d]
45–49	37	73	3	—[c]	{	(331)	{
50+	23	54	1	—[c]	27	(1,427)	(684)

[a] *Source:* NIDA 1991c, tables 8-4, 7-4, 3-4, 4-4.
[b] *Source:* Miller et al. 1983, table 63.
[c] Low precision. No estimate reported.
[d] Figures cited for age groups 35–49.

the medically prescribed psychotropic drugs such as minor tranquilizers, on the other. The most striking age-related pattern of use is the peaking in the use of illicit drugs in the late teens and the twenties. The highest rates overall are observed in the age span 16 to 29 for marijuana and 18 to 34 for cocaine. The current use of illicit drugs declines sharply after age 39. (The same trends characterize the use of illicit drugs and the nonmedical use of psychoactive substances, such as the stimulants.) By contrast, following increases in adolescence, current use of cigarettes (or alcohol) and especially use of medically prescribed psychotropic drugs continue at approximately the same levels throughout adulthood, although the use of cigarettes declines gradually beginning in the late thirties and that of alcohol in the fifties.

For most substances, a higher proportion of men than women are users. The sex differences increase with age and with increasing drug involvement. (In order to control for cohort differences, I present data for the prevalence rates of use in the last year. Similar results obtain for lifetime prevalence rates.) The sex differences in prevalence are small or even nonexistent in the teens (table 4). Overall, the proportion who has ever experimented with an illicit drug is 45 percent higher among men than among women.

The sex differences are accentuated with increasing degree of involvement. For instance, three times as many male as female high school seniors reported in 1990 that they were using marijuana or drinking alcohol on a daily basis (3.2 percent compared with 1 percent for marijuana; 5.2 percent compared with 1.9 percent for alcohol) (Johnston, O'Malley, and Bachman 1991, table 9). In the general population aged 12 and over in 1990, of those who had used marijuana in the last year, 3.8 percent of men but only 1.4 percent of women reported using marijuana at least once a week in the preceding year (NIDA 1991a, table 19B). Among the past-year users of cocaine, 1.5 percent of men but .7 percent of women reported using it 12 or more times within the past year (based on data from NIDA 1991a, table 20A). In 1990, more than twice as many men (2.3 percent) as women (1 percent) reported lifetime needle use of any illicit drug (NIDA 1991a, table 18).

These rates of drug use typically include anyone who reports having experimented with the drug even if only once and are obviously much higher than the proportions identified as cases. The only available epidemiological data on cases of substance use disorders in the general population are available from the ECA program of research.

TABLE 4

Annual Prevalence Rates of the Use of Selected Drugs in the General Population by Age and Sex in 1990

Using in past year (%)

Substance	Age 12-17		Age 18-25		Age 26-34		Age 35+		Total	
	M	F	M	F	M	F	M	F	M	F
Alcohol	41	41	86	75	83	75	68	57	71	62
Cigarettes	24	21	44	36	46	41	32	25	35	29
Marijuana	12	11	29	21	21	15	4	3	12	8
Cocaine	3	2	10	5	9	4	1	1	4	2
Stimulants	2	4	4	3	3	2	0.5	N/A	1.7	1.4
Tranquilizers	1	2	3	2	2	2	1	1	1	1
Any illicit drug	15	17	34	24	25	18	7	5	16	11
Total (N)	(1,051)	(1,126)	(977)	(1,076)	(991)	(1,364)	(1,146)	(1,529)	(4,165)	(5,094)

Source: NIDA 1991a.

Prevalence of Substance Use Disorders

Overall Rates

The ECA data were gathered in the early 1980s, prior to the downturn in overall patterns of use in the general population and in drug-related medical cases, which I will discuss below. Were the study conducted now, the rates might well be lower, although, as we will see, there may be a lag of several years between starting to experiment with drugs and experiencing symptoms required for diagnosis as a case of drug abuse/dependence.

In the five sites aggregated and weighted to reflect rates in the United States as a whole, including the weighted representation of institutionalized persons, 6.2 percent of the population 18 and older receive a lifetime diagnosis of drug abuse/dependence involving an illicit drug (Anthony and Helzer 1991) (see table 5). (The rate is almost identical, i.e., 5.9 percent, when the institutionalized cases are excluded [Regier et al. 1988].) The most frequent diagnosis is cannabis related. Only .2 percent of the total population receives a diagnosis of cocaine abuse (Anthony and Helzer 1991, table 6-4). (This low rate may be due to di-

TABLE 5
Lifetime Prevalence Rates of DSM-III Drug Abuse/Dependence Disorders
in the General Population, 1980 to 1984[a]

Lifetime disorder	Percentage
Any illicit drug	6.2
Cannabis	4.4
Stimulants	1.7
Sedatives	1.2
Opioids	0.7
Hallucinogens[b]	0.4
Cocaine[b]	0.2
Alcohol[c]	13.8
Tobacco[d]	36.0

[a] *Source:* Anthony and Helzer 1991, ECA table 6-4. N = 19,417.
[b] Abuse only as per DSM-III.
[c] *Source:* Robins, Locke, and Regier 1991, table 13-7.
[d] Data for St. Louis site only: Robins et al. 1984, 952. N = 3,004.

agnostic criteria specified in DSM-III.) By contrast, one person in seven (13.8 percent) receives a lifetime diagnosis of alcohol abuse/dependence. Only one site (St. Louis) asked about cigarette smoking; more than a third of respondents (36 percent) received a diagnosis of tobacco abuse/dependence. Substance abuse disorders involving an illicit drug are much less frequent than those involving a licit drug. For all diagnoses taken together, the lifetime rates of drug abuse/dependence are 60 percent higher among men than among women (7.7 percent compared with 4.8 percent). These rates are lower for cocaine and alcohol but higher for tobacco than those estimated for the 1990 general population from any of five dependence symptoms.

Of the cases with a drug abuse or dependence diagnosis, almost 40 percent among men and women involve abuse only, 25 percent involve dependence only, and about the same proportion involves both abuse and dependence. Thus, 59 percent of male and 55 percent of female drug abuse/dependence cases meet criteria for a drug dependence diagnosis (Anthony and Helzer 1991, table 6-8).

Rates presented for the total population are useful indicators of the relative prevalence of various disorders. However, substance use disorders, as is true of drug use more generally, are concentrated in the younger age groups in the population aged 18 to 29 (table 6). One in six

TABLE 6
Lifetime Prevalence Rates of DSM-III Drug Abuse/Dependence
by Age in the Total Population and Among Users
of Any Illicit Drug by Sex, 1980 to 1984

Age	In population (%)			Among users of any illicit drug (%)		
	Total	Men	Women	Total	Men	Women
18–29	13.5	16.0	10.9	22.3	24.5	19.8
30–44	6.7	8.4	5.1	18.7	19.1	18.0
45–64	0.8	0.8	0.8	10.9	8.5	14.5[a]
65+	0.1	0.1	0.1	5.1	4.2	9.4[a]
Total	6.2	7.7	4.8	20.2	21.4	18.8

Source: Anthony and Helzer 1991, ECA table 6.6 and appendix table A-1a. Raw base frequencies not available.
[a] Rates reported in original table 6.6 were revised by the authors.

males aged 18 to 29 meets criteria for a lifetime diagnosis of drug abuse/dependence. Among men and women, the prevalence is almost twice as high among those aged 18 to 29 as among those aged 30 to 44. There are almost no cases beyond the age of 44. The same age-related patterns appear among males and females. However, for each age group below age 45, the rates of diagnosed cases are about 50 percent higher among males than among females.

Rate of Drug Use Disorders Among Users

From these data, we may begin to ascertain the rate of developing abuse or dependence, given that an individual has ever experimented with any illicit substance.

For the five sites together, this rate can only be ascertained for any illicit drug use disorder because lifetime experience with specific drugs was not ascertained for each drug separately. In four of the five sites, this rate can be ascertained only among those who report using each drug at least six times. This restriction eliminates many of the lifetime users of certain classes of illicit drugs. In our own follow-up study of a cohort of former New York state high school students, we have found that whereas 40 percent of males reported to have ever used cocaine by age 29, more than half (56 percent) had used it fewer than ten times (Kandel and Davies 1991b). Similarly, 30 percent of the cocaine users identified in the general population in 1988 had used cocaine only once or twice; 61 percent had used it at most ten times (NIDA 1990a, table 4-6).

Overall Risk of Drug Abuse/Dependence. The rate of a drug disorder diagnosis among lifetime users of any illicit drug appears to be one in five for men and for women (table 6). The rate of abuse/dependence among users decreases substantially after age 44 and is higher for the younger than for the older age groups, although the latter have had a longer period of exposure to the risk. The rate of abuse/dependence is six times higher (25 percent) among males aged 18 to 29 who have ever used an illicit drug than among those 65 and over (4 percent). Once having experimented with an illicit drug, sex differences in the liability for abuse/dependence appears to reverse over the life course: liability is slightly higher for men than for women at the youngest ages, it is equal in adulthood, and becomes higher for women than men after the age of 44 (see table 6).

The declining rate of drug dependence and/or abuse with increasing age follows patterns observed for other psychiatric diagnoses, in particular depressive disorders (Klerman et al. 1985). This decline may be due to various factors. The declining rate may be real. Alternately, with increasing age individuals may tend to forget their earlier symptoms. There may be greater mortality of abusers, leaving a smaller number with advancing age. Historical differences in drug availability or patterns of use may also be a significant explanatory factor. Increasing strength of substances or different ways of using them, for example smoking instead of snorting cocaine, may lead to increased abuse in the younger cohorts.

Drug-specific Risk. The rate of abuse/dependence (based on the DSM-III criteria), given some degree of use, varies greatly for specific drugs. Among those who have used each specific drug at least six times in their lives, the proportion meeting criteria for a diagnosis is 20 percent for marijuana and 44 percent for heroin, but only 3 percent for cocaine (Anthony and Trinkoff 1989, table 2). Anthony and Trinkoff (1989) attribute the rather surprisingly high rate of marijuana disorders and the low rate of cocaine disorders to particularities of the algorithm used to define the diagnoses in DSM-III (and reflected in the diagnostic interview schedule employed in the ECA), and to the fact that DSM-III does not allow dependence to be included as a diagnosis for cocaine. There is evidence that dependence occurs with sustained cocaine use (Cacciola and Woody 1990; Kosten et al. 1987).

Thus, the 14 percent of ECA participants who reported ever using cocaine daily for a two-week period would probably meet the criteria for dependence (Anthony and Trinkoff 1989, table 2). Perhaps four times as many individuals in the ECA would receive a diagnosis of cocaine use disorders if dependence had been accepted as a diagnostic category in DSM-III. Cocaine dependence is included in DSM-III-R (American Psychiatric Association 1987; Kosten and Kosten 1990) and will probably continue to be included in DSM-IV.

Comorbidity in Disorders

From a public health point of view, it is important to note that there is great comorbidity of psychiatric disorders in the population and that comorbidity is highest among individuals who receive a diagnosis of drug abuse/dependence disorder. The majority of such persons (72 percent)

also meet criteria for another psychiatric diagnosis: 76 percent among men and 65 percent among women (Anthony and Helzer 1991a, table 6-23). The most frequently concurrent diagnosis is that of alcohol abuse/dependence (47 percent); 53 percent also meet lifetime criteria for a psychiatric disorder other than alcohol disorder. Compared with persons who have no history of drug abuse/dependence, among persons with such a history the odds of having an alcohol disorder is seven times higher, that of having another psychiatric disorder is 4.5 times higher, and that of having either a psychiatric or alcohol disorder is 6.5 times higher (Regier et al. 1990, table 2).

Taking into account the co-occurrence of drug- and alcohol-related disorders, a third of adult men aged 18 to 44 in the general population receive a lifetime diagnosis of any substance abuse disorder: 33 percent among those aged 18 to 29 and 31 percent among those aged 30 to 44. The proportions decline to 21 percent among those aged 45 to 64 and 14 percent among those aged 65 and older (Anthony and Helzer 1991, table 6-27). The proportion is only half as large among young women aged 18 to 29 (14 percent), only a third as high among women aged 30 to 44 (9 percent), and a seventh as high among those aged 45 to 64 (3 percent). Only 1.5 percent of women aged 65 and over meet criteria for lifetime substance abuse/dependence disorders. This increasing sex differential in substance abuse disorders with increasing age reflects the growing prevalence of alcohol-related disorders among men compared with women.

Trends in Drug Use Prevalence over Time

Patterns of Declining Use

General Population Samples. The lifetime and period-specific prevalence rates observed in 1990 represent important downward changes in the usage of drugs, which began in 1980 for the use of most illicit drugs and in 1985 for cocaine. These peak periods in usage followed striking increases in the use of illicit drugs in the 1960s and 1970s.

The results of different studies, including studies carried out in Canada (Smart and Adlaf 1986), converge in documenting that throughout the 1980s there have been downward trends in the prevalence of licit and especially illicit drug use in all age groups in the population, al-

though these appear to have slowed down over the last two years (1989 and 1990) compared with prior years. There have been downward trends in the proportions who ever experimented with illicit drugs, of those who used within the last year or within the last month. The trends seem to be stronger the more current the measure of use.

As a result, the proportion (48 percent) of high school seniors who report having ever used any illicit drug in 1990 represents a decline of 25 percent over the proportions recorded in the peak usage years of 1981 to 1982 and is lower than the proportion reported in 1975 (55 percent) (Johnston, O'Malley, and Bachman 1991, table 10). Although the proportions of seniors reporting marijuana use is lower in 1990 than in 1975, the proportions reporting cocaine use in 1990 (9.4 percent) are the same as in 1975 (9 percent), and represent a 46 percent decline from the peak (17 percent) recorded in 1985. The trends are even stronger regarding current use compared with lifetime experience. Almost half as many high school seniors report using any illicit drugs within the last month in 1990 as in 1975 (17.2 percent compared with 30.7 percent). The proportions of current (last 30 days) cocaine users are the same at both periods (1.9 percent) (Johnston, O'Malley, and Bachman 1991, table 12). A third as many report using marijuana on a daily basis: 2.2 percent compared with 6.0 percent, and close to five times fewer than at the peak of 10.7 percent recorded in 1978 (Johnston, O'Malley, and Bachman 1991, table 13).

The very same trends appear in the general population. From 1985 to 1990, the proportion of those who had ever used any illicit drugs declined in all age groups, except those older than 35. By 1990, the proportions of lifetime marijuana users (15 percent) among adolescents aged 12 to 17 was similar to what it was in 1972 (14 percent). Because the lifetime rates in the older groups reflect the cumulative experiences of different birth cohorts who passed through the periods of risk for initiation into drugs at different historical periods, prevalence rates for more restricted and current periods of time, such as past year, more accurately reflect historical changes. In the five-year period from 1985 to 1990, the proportions of past-year users of any illicit drug declined by 32 percent, from 20 percent to 13 percent; the proportion of current (last-month) users declined by 47 percent, from 12 percent to 6 percent (NIDA 1990a, table 2.15 and 2.16; 1991a, table 2A). The proportions who used cocaine at least once in the past month declined from 2.9 percent to .8 percent (NIDA 1988a, table 30; 1991a, table 4A). In 1990,

the proportion of last-month (current) users was actually lower (5 percent) than in 1972 (7 percent) (NIDA 1991c, tables 2.2 and 2.10). In that same period, the decline in last-month marijuana use among those aged 18 to 25, the group with the highest rates of drug use of any age group, was even more striking: 13 percent versus 28 percent (NIDA 1991c, table 2.11). A smaller proportion of that same age group also reported using cocaine within the last month in 1990 than in 1974: 2 percent compared with 3 percent (NIDA 1991c, table 2.11). Trend data for the annual use of various substances by age in the general population from 1974 to 1990 are presented in table 7.

With the exception of cocaine, the downward trends are reflected not only in lifetime, annual, and current prevalences, but also in the proportions of individuals who are the most regular current users of those drugs. There has been a striking decline in daily use of marijuana, cigarette smoking, and alcohol drinking, both as a proportion of the total population and as proportions of the users (Johnston, O'Malley, and Bachman 1991, table 13). For example, among high school seniors from Monitoring the Future, daily marijuana users in 1990 represent 5 percent of those who ever experimented with marijuana, whereas they represented 18 percent in 1978.

The decline in daily use, however, does not appear to characterize cocaine users in the general population, undifferentiated as to age. On the contrary, heavy involvement in cocaine appears to have increased. Compared with 1985, in 1990 as in 1988, more than twice as many of those who used cocaine in the past year reported using it daily (4 percent in 1988, 5 percent in 1990 versus 2 percent in 1985) or at least once a week (11 percent in 1988 and 1990 versus 5 percent in 1985) (Adams et al. 1990, 8; NIDA 1990b, 1991a, table 20-A). (Although data for specific age groups are not presented, there may be age-related differences in these patterns of change and possible similarity in the behavior over time of adolescents in the National Household Survey and of high school seniors in Monitoring the Future.) The proportions of last-year cocaine users in the general population reporting problems associated with the use of the drug, whether physiological, psychological, or family related, was almost double in 1990 and 1988 what it was among the users in 1985 (NIDA 1988a, table 72; 1990a, table 9.2; 1991c, table 9.2). These increases may have resulted from shifts in the manner of cocaine consumption, as reflected in the increases since 1985 in the proportions reporting to freebase or smoke cocaine, especially in the group aged 18 to

TABLE 7

Annual Prevalence of the Use of Selected Drugs in the Population, 1974 to 1990

Age group and drug class		1974 (%)	1976 (%)	1977 (%)	1979 (%)	1982 (%)	1985 (%)	1988 (%)	1990 (%)
Youth (age 12–17)	N =	(952)	(986)	(1,272)	(2,165)	(1,581)	(2,246)	(3,095)	(2,177)
Marijuana		18.5	18.4	22.3	24.1	20.6	19.7	12.6	11.3
Cocaine		2.7	2.3	2.6	4.2	4.1	4.0	2.9	2.2
Alcohol		51.0	49.3	47.5	53.6	52.4	51.7	44.6	41.0
Cigarettes[a]		—[b]	—[b]	—[b]	13.3	24.8	25.8	22.8	22.2
Any illicit use		—[b]	—[t]	—[t]	26.0	22.0	23.7	16.8	15.9
Young adults (age 18–25)	N =	(849)	(882)	(1,500)	(2,044)	(1,283)	(1,813)	(1,505)	(2,052)
Marijuana		34.2	35.0	38.7	46.9	40.4	36.9	27.9	24.6
Cocaine		8.1	7.0	10.2	19.6	18.8	16.3	12.1	7.5
Alcohol		77.1	77.9	79.8	86.6	87.1	87.2	81.7	80.2
Cigarettes[a]		—[b]	—[b]	—[b]	46.7	47.2	44.3	44.7	39.7
Any illicit use		—[b]	—[b]	—[b]	49.4	43.4	42.6	32.0	28.7
Older adults (age 26+)	N =	(2,221)	(1,708)	(1,822)	(3,015)	(2,760)	(3,979)	(4,214)	(7,385)
Marijuana		3.8	5.4	6.4	9.0	10.6	9.5	6.9	7.3
Cocaine		—[c]	0.6	0.9	2.0	3.8	4.2	2.7	2.4
Alcohol		62.7	64.2	65.8	72.4	72.0	73.6	68.6	66.6
Cigarettes[a]		—[t]	—[t]	—[t]	39.7	38.2	36.0	33.7	31.9
Any illicit use		—[t]	—[t]	—[t]	10.0	11.8	13.3	10.2	10.0

Source: NIDA 1991c, National Household Surveys table 2-6, 2-7, and 2-8. Annual prevalences not available for 1972 survey.
[a] Includes only persons who ever smoked at least five packs.
[b] Estimate not available.
[c] Low precision. No estimate reported.

25, which has the highest annual prevalence of self-reported cocaine use. In 1988 and 1990, 31 percent of those who used cocaine within the last year had freebased or smoked it, compared with 21 percent in 1985 (NIDA 1990a, table 4.7; 1991c, table 4.7; 1988a, table 34).

Institutional Samples. The decline in number of clinical cases related to illicit drug use began in 1989 or 1990, with a time lag of almost three years compared with school or community samples. The data from general population samples reflect, as I noted, a decline, starting in the mid-1980s, in the proportion of individuals using cocaine, following stabilization from 1981 to 1985, and sharp increases in the late 1970s.

By contrast, the number of cocaine-related emergency-room admissions and cocaine-related deaths in medical examiner offices recorded in the DAWN system showed striking increases from 1980 to 1989 but substantial and continuing declines since 1989. The number of hospital emergency-room mentions of cocaine increased 300 percent from 1981 to 1985 and almost doubled in the succeeding yearly interval. The number more than doubled again by 1988, when it reached 46,020 annual mentions (NIDA 1989a, C-84-04, 3; 1990c) and continued to increase through the first two quarters of 1989. Increases were also observed in drug-related deaths recorded by medical examiners (NIDA 1989a, 3). Striking increases in cocaine admissions also appeared in a panel of 596 consistently reporting drug-treatment programs in 15 states from 1979 to 1984, although not in the total number of admissions to these programs (NIDA 1988b). The number of clients admitted primarily for cocaine increased almost 400 percent. In great part, the increase in casualties may have been due to apparently sharper increases in the smoking of cocaine among clinical cases than among cocaine users in the general population (Schuster 1990a). Indeed, the percentages of cocaine-related emergency room admissions of patients who reported smoking cocaine more than tripled from 1985 (11 percent) to 1989 (37 percent). In those same years, the percentages injecting cocaine decreased from 38 percent to 22 percent (Adams et al. 1990, 9).

A decline in drug-related emergency-room admissions began in the third quarter of 1989 and accelerated, especially for cocaine-related admissions, with the result that in 1990 the total number of drug-related mentions was 13 percent below the number of 1989 and the number of admissions specifically related to cocaine was 27 percent below 1989 (NIDA 1991d, table 4.03). The rate of increase from 1988 to 1989 in drug-related deaths recorded in medical examiner offices slowed down

(Office of National Drug Control Policy 1990, 13); the number of these deaths recorded in 1990 was lower by 18.6 percent than the number recorded in 1989 (NIDA 1991e, table 4.03). The trends regarding arrestees are ambiguous; there appear to be declines in the rates of cocaine-positive urines among arrestees in selected cities (National Institute of Justice 1990). The rates of drug use in this group are extremely high compared with those observed in other institutionalized or clinical groups.

How Real and Widespread Is the Decline in Drug Use? The findings from population-based studies have been criticized and their validity questioned, with three criticisms, in particular, emerging. One argument has been that the lower rates observed in surveys do not reflect a true decrease in drug-use utilization, but rather increasing social disapproval of drug use and respondents' reluctance to admit to their drug use in the face of this disapproval. A second argument has been that the decline characterizes middle-class conventional youths or adults who attend school and reside in stable households included in surveys, who may be for the most part casual users, but does not hold for other more disadvantaged and heavily using populations. In particular, Monitoring the Future omits data for about 35 percent of the age group: those absent from school on survey day and the dropouts. According to this argument, there are countervailing trends going on in the underclass and in the ghettos, with the rates there increasing rather than declining. The third objection has been based on the observation that, whereas the rates of use were declining in the population surveys, the morbidity and mortality indices based on clinical or treated samples were increasing sharply. However, these indices are now also reflecting downward trends.

In my opinion, the downward trend is real and affects most segments in society, although the decline may occur at different rates in different groups. The trends have been sharpest among whites, and not as strong among blacks, especially those 26 to 34 years old. Among Hispanics, past-year prevalence appears to increase slightly after the age of 25 (see table 12). However, with increasing age, fewer individuals in every ethnic group remain current users of drugs following initiation (table 15).

There is overwhelming consistency of results across studies. For instance, the results from a statewide survey that we conducted in 1988 document sharp downward trends among New York state junior and senior high school students over a five-year period. The proportion of high school students in the state reporting ever having used cocaine de-

creased from 14 percent to 6 percent from 1983 to 1988 (Kandel and Davies 1991a). Similarly, in studies of the military conducted by the Pentagon since 1980, the rates of use of all drugs were at their lowest in the latest 1988 survey. Drug-related admissions to all emergency rooms and drug-positive urines among arrestees in selected cities are declining. Drug-related mortality is decreasing.

Because there are no trend data about dropouts or youths in disadvantaged ghetto communities, it is not possible to document patterns of use over time in these groups. Internal evidence within Monitoring the Future provides support for a widespread decline among all groups of young people, including the high-risk group of truants. School absenteeism is one of the strongest predictors of school dropout, with the risk increasing as a direct function of the number of such absences (Coleman and Hoffer 1987). Truancy and school dropout are highly related to drug involvement (Kandel, Davies, and Davis 1990; Mensch and Kandel 1988b). Among the high school seniors, downward trends in drug use over time have been observed among all subgroups varying in self-reported number of school absences (University of Michigan 1991, figure C). Although the absolute prevalence of drug use increases with more absences, all groups show a decline. Those most truant show the steepest decline since 1986, the peak year of cocaine use among the seniors.

Cocaine use peaked in 1985–1986 in the general population, in 1989 in emergency room admissions and in drug-related deaths recorded in medical examiner offices. The reasons for the discrepancies in timing between the trends observed in the general population and in clinical cases are not well understood. There may be a time lag between the time that individuals start to experiment with cocaine, continue to use it, and experience medical problems severe enough to require treatment or emergency medical care. More potent forms of the drug may be on the market or users may be involved in more dangerous patterns of use. Thus, freebasing of cocaine has increased. An hypothesized three- to five-year time lag is supported by ECA data on the length of time elapsed between onset into the use of specific drugs and the occurrence of the first problem with that drug, and by data from treatment programs. In the ECA, the majority of individuals in the community (sampled from 1980 to 1984) meeting criteria for drug abuse or dependence experienced their first drug problem two to three years after their first

experimentation (Anthony and Helzer 1991, 133). The median time was four to five years from first experiencing a problem to being currently diagnosed as a case of drug disorder (Anthony and Helzer 1991, 135). Data from selected treatment programs for the period 1979 to 1984 indicate that the average length of time between first use of cocaine and first admission ranged from 3.9 to 5 years (NIDA 1988b, 54). Because of changing methods of use and changing strength of cocaine, the time lag may be shorter in recent years than in the early 1980s.

Sociodemographic Distribution of Drug Use

The use of drugs varies across subgroups of the population. Age and sex differences were discussed earlier. Here, I focus in particular on ethnicity, as the epidemiological data reveal an interesting paradox, reflected in the divergent ethnic distribution of drug users in general population and institutional samples. Data on marital status and income are not included in published reports for the National Household Survey on Drug Abuse.

Ecological Context

Prevalence varies according to areas of the country and population density (table 8). Lifetime experimentation with most drugs, in particular marijuana, and current cocaine use are most prevalent in the West, with very small differences among the other three geographical areas. Illicit drug use is less common in nonmetropolitan than small or large metropolitan areas (NIDA 1991c).

Socioeconomic Status

Education. Lifetime prevalence reveals a curvilinear relationship of educational attainment with the use of illicit drugs and no relationship with smoking. The lowest lifetime rates of illicit drugs are observed among those who have not completed high school and the highest rates among those with some college. However, for all substances, there is a substantial inverse relationship of education with current usage and with

TABLE 8

Lifetime Use, Last Month Use, and Persistence Ratios[a] of the Use of Marijuana, Cocaine, and Cigarettes in 1990 in the General Population by Selected Demographic Characteristics

Demographic characteristic	Marijuana use (%)			Cocaine use (%)			Cigarette use (%)			(N)
	Ever	Last month	Ratio	Ever	Last month	Ratio	Ever	Last month	Ratio	
Region										
Northeast	29.9	5.5	.18	11.1	.9	.08	72.3	24.4	.34	(1,421)
North Central	35.4	5.7	.16	9.9	.7	.07	74.5	28.0	.38	(1,491)
South	29.0	4.0	.14	8.9	.7	.08	73.6	29.8	.40	(4,350)
West	40.2	5.7	.14	17.0	.9	.05	71.9	22.1	.31	(1,997)
Population density										
Large metropolitan	35.5	5.6	.16	13.2	1.0	.08	71.9	24.5	.34	(5,674)
Small metropolitan	33.1	5.1	.15	11.7	.6	.05	75.3	27.1	.36	(2,154)
Nonmetropolitan	28.4	4.0	.14	6.9	.6	.09	72.6	30.2	.42	(1,431)
Education										
Less than high school	23.8	5.2	.22	7.3	.8	.11	75.9	34.7	.46	(1,817)
High school graduate	36.0	5.1	.14	12.0	.9	.08	78.1	33.2	.43	(2,451)
Some college	43.3	6.6	.15	16.1	1.2	.07	80.1	37.2	.34	(1,482)
College graduate	38.7	3.2	.08	14.8	.4	.03	72.3	12.9	.18	(1,332)
Current employment										
Full time	45.5	5.7	.13	16.5	1.1	.07	81.7	32.3	.40	(3,969)
Part time	34.0	6.2	.18	11.3	—[b]		71.3	22.3	.31	(886)
Unemployed	44.0	12.3	.28	19.8	2.7	.14	78.4	43.2	.55	(454)

Source: NIDA 1991c, tables 1-1, 3-1, 3-3, 4-1, 4-3, 8-1, 8-3.
[a] Persistence ratio = last month use divided by ever use.
[b] Low precision; no estimate reported.

persistence of use among those who ever experimented with a particular substance. High-school dropouts are much more likely and college graduates much less likely than any other group to be current users of the different classes of drugs. Indeed, there is a positive relationship between education and cessation of drug use, once having experimented with a drug (table 8). The ratio of past-month use to any lifetime use, which can be considered to constitute a measure of persistence of use, is much higher among those who failed to graduate from high school than among college graduates. In the ECA sample, drug abuse/dependence was highest among persons who had received no diploma, either from high school or from college (Anthony and Helzer 1991, table 6-15). Low educational attainment was a strong predictor of the onset of drug abuse/dependence over a one-year interval (Anthony 1990).

Employment. There is no consistent relationship between lifetime drug use patterns and current employment status. Those unemployed, however, are much more likely to be current users and to persist in the use of drugs, following initiation. For example, among persons 26 to 34 years old, 6.8 percent of those working full time reported using cocaine in the last year compared with 12.7 percent of those unemployed (NIDA 1991c, table 4.2). However, in the ECA, an excess of diagnosed cases of drug dependence/abuse among the unemployed compared with the employed (10.4 percent versus 4.6 percent) was observed only among men aged 30 to 44 who had been currently using drugs within the last year. Among all other age and sex groups of active users or of those experiencing a drug-related problem within the last year, the proportions meeting criteria for a diagnosis were the same for both unemployed and employed (Anthony and Helzer 1991, table 6-17).

Income. Data on the relationship between income and patterns of drug use are rarely published. Selected data from the National Household Survey on Drug Abuse for employed men and women aged 18 to 40 in 1988 were described in an unpublished manuscript (Kopstein and Gfroerer, n.d.) and were first published in 1990 for the entire population engaging in last-year use of marijuana and cocaine (NIDA 1991c, table 11.2). The data suggest a negative relationship between income and current (past month) use of any illicit drugs only among employed men and only for marijuana and not cocaine use (table 9). In the general population in 1990, there is a higher proportion reporting marijuana and cocaine use among those who earn less than $20,000 than among those earning more than $20,000 (NIDA 1991c, table 11.2).

TABLE 9

Prevalence Rates of the Use of Selected Drugs Among Full-time Employed
Men and Woman Aged 18 to 40 in the General Population
by Sex and Personal Income, in 1988

Annual personal income	Past month use of any illicit drug (%)		Past month use of marijuana (%)		Past year use of cocaine (%)	
	Male	Female	Male	Female	Male	Female
Less than $12,000	24.8	8.4	22.8	7.7	13.9	5.8
$12,000 to $19,999	19.6	9.3	18.9	7.4	10.0	7.3
$20,000 to $29,999	15.2	4.3	12.0	3.6	12.5	4.7
$30,000 or over	8.6	10.8	8.1	5.6	9.4	7.8

Source: Kopstein and Gfroerer, n.d., National Household Survey on Drug Abuse 1988,
table 3. Base frequencies not available.

Similarly, in the ECA sample of persons in full-time employment, there
is a strong inverse relationship of income with abuse/dependence
among men, both lifetime and current: the rate among men earning
less than $10,000 is four times higher than the rate among those earn-
ing $35,000 and over (Anthony and Helzer 1991, table 6-18). However,
as Anthony and Helzer (1991, 143) point out, drug use and abuse/de-
pendence are concentrated among younger workers who earn less than
older ones. When the confound between age and income is controlled
for, there are no consistent patterns of association between income and
drug disorder diagnosis among employed males aged 18 to 29 (Anthony
and Helzer 1991, table 6-18). By contrast, in a sample of junior and se-
nior high school students from New York state schools, a positive rela-
tionship with family income was observed for similar measures of drug
use as those reported for employed adult men in the National House-
hold Survey (table 10).

   In part, the inconsistencies between studies may stem from differ-
ences in samples, age, employment status, historical periods, and time
frame used to define patterns of drug use. The cross-sectional nature of
these data does not permit an assessment of the causal order between so-
cioeconomic status and drug use. Longitudinal analyses from other stud-
ies suggest that drug use is a positive risk factor for dropping out of
school in adolescence (Mensch and Kandel 1988b) as well as job insta-

TABLE 10
Prevalence Rates of the Use of Selected Drugs by Household Income Among
Junior and Senior High School Students in New York State in 1988

Household income	Lifetime use of any illicit drug (%)	Past month use of any illicit drug (%)	Past month use of marijuana (%)	Past year use of cocaine (%)	Total (N)
Less than $20,000	26.2	10.5	8.0	3.2	(1,713)
$20–$49,999	33.0	14.0	12.1	4.0	(2,890)
$50,000 and over	35.3	16.7	14.1	5.1	(2,156)

Source: Kandel, Davies, and Davis 1990, tables 2-3, 2-4, and 2-5.

bility in young adulthood (Kandel and Yamaguchi 1985). Correlatively, low job prestige but not unemployment was a risk for developing drug abuse/dependence in adulthood in the ECA sample (Anthony 1990).

Ethnicity

The relationships between ethnicity and drug behavior are complex, and appear to be changing rapidly. It should be noted that most published epidemiological prevalence rates for different ethnic groups do not control for socioeconomic status.

In adolescence and early adulthood, lower lifetime rates of reported illicit drugs, particularly cocaine, are generally observed among blacks than whites, with Hispanics in between these two groups. American Indians report the highest rates of any group, Asian Americans the lowest (e.g., Bachman et al. 1991; De La Rosa, Khalsa, and Rouse 1990; Gillmore et al. 1990; Hartford 1986; Kandel, Davies, and Davis 1990; NIDA 1991b; Oetting and Beauvais 1990). In the national sample of high school seniors, the ethnic differences persisted with controls for sociodemographic characteristics, including parental education and urban–rural location (Bachman et al. 1991). However, by 1990, ethnic differences between blacks and whites characterize mainly lifetime rates in the population younger than 35 years old. In the general population sample of the 1990 National Household Survey on Drug Abuse, 40 to 50 percent *fewer* blacks than whites report any *lifetime* experience with cocaine among those younger than 35, while 20 percent *more* blacks

than whites report such experiences among those aged 35 and over
(NIDA 1991a). Regarding use in the last year, lower rates among blacks
than whites appear among adolescents 12 to 17 years old, but higher
rates among those 26 and older; differences have disappeared for those
aged 18 to 26. Rates for use in the last month, however, are consistently
higher among blacks beginning at age 18 (table 11).

The relative prevalence of the use of illicit drugs, especially cocaine,
among different ethnic groups in the general population, appears to be
changing. Up to and including 1985, the higher rates of illicit drug use,
especially cocaine use, among blacks compared with other groups ap-
peared only among those older than 35 for every prevalence rate,

TABLE 11

Lifetime, Past Year and Past Month Prevalence Rates of the Use of Cocaine
by Ethnicity in the General Population, in 1990

Age/ethnicity	Ever used (%)	Past year (%)	Past month (%)	Total (N)
Age 12–17				
White	2.7	2.3	.4	(1,136)
Black	2.0	1.7	—	(448)
Hispanic	3.2	3.1	—	(526)
Age 18–25				
White	21.0	7.2	1.9	(1,126)
Black	12.3	7.3	3.6	(414)
Hispanic	18.7	9.7	3.1	(448)
Age 26–34				
White	27.7	6.4	1.3	(1,359)
Black	20.3	9.7	4.2	(460)
Hispanic	20.4	8.6	2.5	(462)
Age 35+				
White	5.9	.8	—	(1,620)
Black	7.1	1.0	—	(520)
Hispanic	6.1	2.0	—	(479)
Total white	11.7	2.8	.6	(5,241)
Total black	10.0	4.0	1.7	(1,842)
Total Hispanic	11.5	5.2	1.9	(1,915)

Source: NIDA 1991a, National Household Survey on Drug Abuse 1990, tables 1-A, 1-B,
4-B, 4-C.

whether lifetime, last year, or last month. Consistently lower rates among blacks than whites were observed among those younger than 35. Over the last several years, however, the differential in favor of blacks appears to be gradually spreading into younger age groups and to be reflected first in the most current prevalence rates (table 12). In the oldest age group 35 and older, the differences are sharpest in 1985. In the age group 26 to 34, the annual rate for blacks is lower than for whites in 1985, only slightly higher in 1988, and almost 50 percent higher in 1990. In the age group 18 to 25, blacks have the lowest rates in 1985 and 1988 for all three measures of use; blacks and whites have identical annual rates only as of 1990 and Hispanics have the highest rates. In 1990, as in 1988 and 1985, in the youngest age group 12 to 17 years old, blacks have consistently lower prevalence rates than whites for lifetime, past year, and past month use.

Data in the National Household Survey are not available broken down simultaneously by sex, ethnicity, and age. In general, sharper ethnic differences characterize patterns of cocaine use among women than men. Black women are especially likely to report lower lifetime experience with cocaine than other women. Black and Hispanic women also report lower rates of use of the legal drugs and of marijuana than whites. Among men, ethnic differences appear only with respect to illicit drugs other than marijuana.

The lower prevalence of reported use of a variety of drugs by blacks compared with whites has also been reported by most other surveys that have examined ethnic patterns in drug use (Prendergast et al. 1989), whether the data are obtained by household interviews (Kandel and Davies 1991b) or in-school self-administered questionnaires (Bachman et al. 1991; Gillmore et al. 1990; Johnston, O'Malley, and Bachman 1991; Kandel, Davies, and Davis 1990; Kandel, Single, and Kessler 1976; Maddahian, Newcomb, and Bentler 1986; Trimble, Padilla, and Bell 1987; Welte and Barnes 1987; Zabin et al. 1985). The household survey of a national sample of young men interviewed in 1974 by O'Donnell et al. (1976) is the only representative national study to report overall higher rates for blacks than for whites. As noted above, self-reported drug rates by blacks may be subject to greater underreporting than self-reports by other ethnic groups (Mensch and Kandel 1988a). Furthermore, large national samples are not the best source of data for comparing the ethnic distribution of treated cases, which tend to come disproportionately from large urban centers (Brunswick 1988). The only population surveys to report very high rates of illicit drug use for blacks
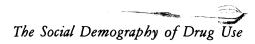
TABLE 12

Trends in Past Year Prevalence Rates of Cocaine Use by Age Group and Race/Ethnicity in the General Population in 1985,[a] 1988,[b] and 1990[c]

Race/ ethnicity	Age 12–17 (%)			Age 18–25 (%)			Age 26–34 (%)			Age 35 and over (%)			Total (%)		
	1985	1988	1990	1985	1988	1990	1985	1988	1990	1985	1988	1990	1985	1988	1990
White	4.2	3.2	2.3	17.7	12.6	7.2	13.8	7.9	6.4	.9	.7	.8	6.4	4.0	2.8
N	(993)	(1,518)	(1,136)	(794)	(700)	(1,126)	(1,082)	(1,096)	(1,359)	(1,080)	(1,237)	(1,620)	(3,949)	(4,551)	(5,241)
Black	2.4	1.4	1.7	10.6	8.1	7.3	10.4	8.7	9.7	3.7	1.9	1.0	6.2	4.4	4.0
N	(590)	(747)	(448)	(461)	(320)	(414)	(499)	(366)	(460)	(395)	(455)	(520)	(1,945)	(1,888)	(1,842)
Hispanic	5.8	3.6	3.1	12.4	12.6	9.7	6.2	8.0	8.6	1.0	1.7	2.0	5.1	5.7	5.2
N	(627)	(763)	(526)	(528)	(454)	(448)	(534)	(475)	(462)	(307)	(501)	(479)	(1,996)	(2,193)	(1,915)

[a] *Source:* NIDA 1988a, table 29.
[b] *Source:* NIDA 1990a, tables 1.1 and 4.2.
[c] *Source:* NIDA 1991a, tables 1-B, 4-B, 4-C, and 4-D.

are community surveys of urban low-income blacks (Brunswick, Merzel, and Messeri 1985). Such surveys, however, typically do not have matched comparison groups of poor urban whites. As the analysis of the data from successive general population surveys indicate, ethnic patterns of use seem to have evolved over time depending upon individuals' age and recency of use. Most studies do not have the data regarding trends, age, and pattern of use to reveal these complex patterns.

Ambiguous results regarding ethnic patterns in drug use disorders are provided by the ECA data. Slightly lower rates of cases of drug abuse/dependence meeting diagnostic criteria were observed among minorities in the general population from 1980 to 1984. The overall lifetime prevalence for drug disorders was 6.4 among whites, 5.5 among blacks, and 4.4 among Hispanics; one-year prevalence was 2.7, 2.7, and 2.0, respectively (Anthony and Helzer 1991, table 6-6). The ethnic differences are more pronounced among women than among men (table 13). At ages 18 to 44, the years in the life span of highest rates for drug-use disorders, whites have the highest rates of any group; Hispanics have the

TABLE 13
Prevalence Rates of Lifetime Drug Abuse/Dependence Disorders,
by Sex, Age, and Ethnicity in ECA Sample, 1980 to 1984

Age/ethnicity	Males		Females		Total	
	%	(N)	%	(N)	%	(N)
Age 18–29						
White	16.4	(1,363)	11.9	(1,387)	14.4	(2,750)
Black	12.7	(681)	8.5	(815)	10.5	(1,496)
Hispanic	10.7	(342)	3.9	(276)	7.4	(818)
Age 30–44						
White	8.6	(1,335)	5.5	(1,488)	7.0	(2,823)
Black	7.6	(508)	3.6	(809)	5.4	(1,317)
Hispanic	5.0	(280)	2.9	(250)	3.9	(530)
All ages 18+						
White	—[a]		—[a]		6.4	(13,980)
Black	—[a]		—[a]		5.5	(4,962)
Hispanic	—[a]		—[a]		4.4	(1,620)

Source: Anthony and Helzer 1991, tables 6-6 and 6-12.
[a] Data not available.

lowest rates of any group, although Hispanics generally report higher
rates of drug use than blacks (Kandel, Davies, and Davis 1990; NIDA
1991a,c). There are no ethnic differences in the prevalence of currently
(last month) active cases (Anthony and Helzer 1991, table 6-12). Fur-
thermore, when restricted to those who had ever used one or more illicit
drugs, the race differences are reduced and are small and nonsignificant
(Anthony and Helzer 1991, table 6-6). In a prospective one-year follow-
up of incidence of new cases, controlling for census tract location,
race/ethnicity was not a risk factor for developing drug abuse/depen-
dence in adulthood (Anthony 1990).

Although there is ambiguity in the data, whether indexed by simple
patterns of use or diagnostic criteria, at least as many if not more whites
than blacks or Hispanics appear to be involved in using drugs.

General Population versus Treated Cases: A Paradox. The juxta-
position of data on cocaine use from general population samples and
data from cases that come to the attention of various treatment centers
presents a paradox. As discussed above, a smaller or, at most, an equal
proportion of blacks than whites report having experimented with illicit
drugs, with the Hispanics generally in an intermediate position, and at
least as many whites as minorities meet criteria for drug disorders. Yet
morbidity and mortality cases of illicit drug users, and especially of co-
caine users who have come to the attention of various medical treatment
or criminal institutions, such as drug-related emergency rooms, treat-
ment programs, or medical examiners' offices, consistently show an
overrepresentation of blacks compared with their distribution in the
population (table 14).

For example, of cocaine-related emergency-room episodes recorded in
1989, 25 percent involved whites and 58 percent blacks. In 1989, 49
percent of charts included in the NDATUS survey of drug treatment fa-
cilities covered white clients and 27 percent covered blacks. By contrast,
in the 1990 household sample, 81 percent of the self-reported lifetime
cocaine users were white and only 10 percent black. The overrepresenta-
tion of blacks in clinical samples of drug users compared with their rep-
resentation in the population or their distribution among drug users in
the community seems to be increasing over time. The proportions of
blacks in cocaine-related admissions in the DAWN system increased
from 41 percent in 1984 to 54 percent in 1990; the proportions of
whites and Hispanics declined from 36 percent to 30 percent and 14
percent to 8 percent, respectively (NIDA 1990c, 1991d). Similarly, the

TABLE 14

Race/Ethnicity of All Drug Admissions, Cocaine Admissions, or Cocaine Users in Treated and General Population Samples, 1988 to 1990

Race/ethnicity	Drug abuse treatment programs[a] 1989 (%) All admissions	Emergency-room episodes[b] 1989 (%)		Deaths in medical examiners[c] 1989 (%)		National household sample[d] 1990 (%) Cocaine users	New York state high school survey[e] 1988 (%) Cocaine users
		All drug admissions	Cocaine admissions	All drug-abuse deaths	Cocaine deaths		
White	49.0	42.4	25.2	51.2	36.1	81.1	72.4
Black	26.5	37.8	57.9	32.8	45.9	10.0	6.8
Hispanic	17.5	10.1	8.7	13.7	16.8	8.0	12.9
Other/unknown	7.0	9.8	8.2	3.0	1.2	10.9	7.9
Total (N)	(351,430)	(249,349)	(61,665)	(7,162)	(3,618)	(22,739)	(427)

a *Source:* NIDA 1990d, table 26.
b *Source:* NIDA 1990e, table 6–13.
c *Source:* Based on NIDA 1990e, tables 3.01, III-2.
d *Source:* NIDA 1991a, table 4-A-D.
e *Source:* Based on Kandel, Davies, and Davis 1990, table 2-10a: 7th–12th graders.

proportion of white admissions recorded in treatment programs by
NDATUS declined from 58 percent in 1987 to 49 percent in 1989
(NIDA 1989b, 1990d).

One common explanation advanced to account for ethnic differences
is that there is a bias involved in who appears for treatment, especially
in public programs funded by states or the federal government. Whites
may seek care from private physicians and may be underrepresented in
government-financed programs.

I believe that another factor may also come into play. That is, al-
though fewer blacks than whites experiment with various illicit drugs, a
higher proportion of blacks than whites become heavily involved in
using these drugs and develop problems with these drugs, although not
necessarily to the extent of meeting criteria for drug abuse/dependence
disorders.

Although fewer blacks than whites may initiate the use of cocaine,
following initial experimentation blacks are more likely than whites to
persist in its use (table 15). Only 5 percent of whites who ever experi-
mented with cocaine reported using the drug within the last 30 days
preceding the 1990 household population survey compared with 17 per-
cent among blacks and Hispanics. These ethnic differences in persis-
tence of use have become accentuated over time. The proportions
persisting were 1.3 times higher in 1985, over 1.8 times higher in 1988,
but 3.4 times higher in 1990. In 1990, more blacks reported using crack
than any other group. The proportions of lifetime users among those
aged 26 to 34 were 7.8 percent compared with 2.5 percent among
whites and 2.8 percent among Hispanics (NIDA 1991a, tables 5-B,C,D).

Of those who ever used cocaine, blacks (and Hispanics) became more
heavily involved than whites. In the 1990 National Household Survey, .2
percent of whites, but .7 percent of blacks and 1.1 percent of Hispanics
had used cocaine at least once a week within the last year (NIDA 1991a,
table 20-B-D), representing, respectively, 8 percent, 17 percent, and 21
percent of the last-year 1990 users in each ethnic group. Parallel differ-
ences were observed in a national sample of young men and women
aged 19 to 27 surveyed in 1984 (Kandel and Davies 1991b, table 8).

Blacks are more likely than any other group to use drugs intrave-
nously. In 1990, twice as many reported needle use of cocaine, heroin,
or amphetamines in the past year (.06) as whites or Hispanics (NIDA
1991a, table 18). (For lifetime use of needles, however, only blacks 35
or older reported more use than whites [NIDA 1991c, table 10.6].) Fur-
thermore, the blind seroprevalence surveys indicate much higher rates of

TABLE 15
Persistence in the Use of Cocaine by Ethnicity and Age
in the General Population in 1985,[a] 1988,[b] and 1990[c]

Age/ethnicity	Persistence into past year use[d]			Persistence into last month use[e]		
	1985	1988	1990	1985	1988	1990
Total sample: 12+						
White	.52	.37	.24	.24	.12	.05
Black	.63	.47	.40	.32	.22	.17
Hispanic	.70	.52	.45	.33	.24	.17
Age 18–25						
White	.63	.59	.34	.29	.20	.09
Black	.79	.78	.59	.48	.41	.29
Hispanic	.83	.67	.52	.44	.36	.17
Age 26–34						
White	.51	.28	.23	.25	.08	.05
Black	.60	.44	.48	.30	.15	.21
Hispanic	.63	.37	.42	.28	.18	.12

[a] *Source:* NIDA 1988a, tables 28–30.
[b] *Source:* NIDA 1990a, tables 4-1, 4-2, and 4-3.
[c] *Source:* NIDA 1991a, tables 4B, 4C, and 4D.
[d] Ratio of last year over lifetime use.
[e] Ratio of last month over lifetime use.

HIV-positive childbearing women and HIV-positive newborns among blacks than any other group. In New York state, for the period 11/1987 to 3/1990, the rate of HIV-positive newborns was 2.19 for blacks compared with .34 for whites and 1.43 for Hispanic babies (Novick et al. 1991). These results are free of any self-reported or sampling biases. Because of the known association between intravenous drug use and AIDS (DesJarlais, Friedman, Novick et al. 1989), the seroprevalence results provide strong supporting evidence for ethnic differences in problematic drug use.

We would assume that persistence in use and degree of involvement would increase the risk of meeting criteria for drug abuse and/or dependence. The data from the ECA, however, are not consistent with this interpretation (Anthony and Helzer 1991). Although a higher proportion of drug users among blacks would be expected to meet these criteria, such does not appear to be the case (table 14).

Discussion

Epidemiological data about patterns of drug use in the population have important implications for our understanding of the nature of substance use and substance use disorders and for policy regarding drug abuse.

The downward trends observed over the last decade in the use of various illicit substances are as striking as the upward trends observed in the 1970s. The rates of decline appear to be slowing down, however. It is difficult to identify a single cause to account for the decline. The implementation of numerous school- and community-based drug-prevention programs, drug-treatment initiatives, extensive media interventions from the Partnership for a Drug Free America since 1987, the simple JUST SAY NO campaign, the formation of parent groups against drinking and illicit drug use, the mobilization of communities against the use of drugs by young people, the AIDS epidemic and associated national educational efforts linking it to drug use, a general emphasis in our society on health and diet, and the dynamic processes underlying the spread and constriction of epidemics all may play a role.

Whatever the causal factors, they probably have a major impact by changing individuals' attitudes toward drugs and their willingness to use drugs. Several studies demonstrate convincingly that in the same period when the prevalence of drug use has declined, the perceived harmfulness and the risks associated with using drugs have increased sharply. Both Monitoring the Future and the National Household Survey on Drug Abuse document the increased perceived risk of using drugs. From 1985 to 1990, the proportions of high school seniors saying there is "great risk" to themselves of using cocaine occasionally increased from 54 percent to 74 percent (Johnston, O'Malley, and Bachman 1991, table 18). The proportions disapproving of people older than 18 trying cocaine increased from 79 percent to 92 percent (Johnston, O'Malley, and Bachman 1991, table 19). Among 12- to 17-year-olds in the population, the proportion who perceived "great risk" in smoking marijuana occasionally increased from 37 percent in 1985 to 52 percent in 1990 (Schuster 1990b; NIDA 1991c, table 11.1). There is also increased perceived disapproval from peers and parents about using drugs (Johnston, O'Malley, and Bachman 1991; table 22 and figures 26–27).

Availability does not appear to be a strong facilitating factor. In that same five-year period the perceived availability of illicit drugs actually improved slightly. For instance, among high school seniors, 55 percent said that it would be "fairly" or "very" easy for them to get cocaine

(Johnston, O'Malley, and Bachman 1991, figure 29a). Attitudes appear to be the crucial proximal determinant of drug use.

The epidemiological data further our understanding of the phenomenology of addictive states in the general population. Despite the limitations of DSM-III-based diagnoses, their implementation in the ECA community-based sample survey provide the most systematic information to date on substance abuse disorders in the population. Furthermore, data from three different data bases—the surveillance surveys of drug use patterns in the general population, the ECA program of research on the epidemiology of psychiatric disorders in the population, and drug-related emergency room admissions—suggest that the mean length of time between first use of an illicit substance and the appearance of serious problems that form the basis of the diagnostic nosology seems to be around three to four years. A significant proportion of those who ever experiment with drugs progress to stages of abuse/dependence. The risk of abuse/dependence is not constant across all groups who experiment with a particular class of drugs nor is it constant across the life span or across historical time. The overall risk of drug abuse/dependence decreases over the life cycle.

From a public health perspective, it must be emphasized that illicit drug use and substance abuse/dependence are a phenomenon of youth, adolescence, and young adulthood. Differences in usage patterns according to most socioeconomic characteristics are either small or inconsistent. The contrast between the ethnic distribution of drug users in the community and in drug treatment, medical, or other institutional samples illustrate clearly that the treated and clinical population do not constitute a representative sample of users and abusers in the community. Indeed, the ECA study documents that only a fraction of drug abusers or drug-dependent individuals seek help for their drug-related problems. Only 30 percent of those with a lifetime or current diagnosis of drug abuse/dependence had mentioned their drug problem to a doctor or another professional (Anthony and Helzer 1991, table 6-25). Fifteen percent of cases active within the last year, who experienced a drug-specific problem in that period, received mental health services on an outpatient basis, 1 percent did so on an inpatient basis; 63 percent received medical care on an outpatient basis and 11 percent on an inpatient basis (Anthony and Helzer 1991, table 6-26). Consonant with the fact that women have more extensive contacts with health providers than men, the proportion of diagnosed individuals who told a doctor or other professional about their drug problems is one third higher among females

(37 percent) than among males (26 percent) (Anthony and Helzer 1991, table 6-25). Much remains to be understood about the pathways to treatment and care for drug abuse/dependence.

Planning for drug-related treatment facilities must take into account that changes in the number of individuals using drugs over time and potentially in need of help will be a function not only of age-specific rates of use, but also of the size of the groups at risk for abuse/dependence, the age distribution of the U.S. population, and changes in that distribution over time. For example, although the rate of weekly use among individuals who used cocaine within the last year did not change between 1988 and 1990 (10.5 percent and 10.6 percent), the number of these weekly users declined by 23 percent, from 862,000 to 662,000, because of declines in the absolute number of past-year cocaine users (NIDA 1990b, 1991a). A certain ambiguity in the presentation and interpretation of epidemiological data occurs when a clear distinction between rates of use within a particular age group and the absolute number of persons in that age group is not made.

Epidemiological studies, especially longitudinal studies, have clearly demonstrated that drug initiation is influenced by contextual factors, especially peers (e.g., Kandel 1985; Elliott, Huizinga, and Ageton 1985). The epidemiological data reviewed in this article suggest that the behavior of users within a culture is also determined by broader social–cultural factors, and in particular the overall pervasiveness of the use of drugs in that society. Concurrently with the decline in the overall rates of lifetime and current experimentation with different drugs, there have been even more striking declines in the proportions of daily users, both of the total population and of lifetime users. For instance, from 1978 to 1990, lifetime rates of marijuana use among all high school seniors declined by 30 percent (from 59 percent to 41 percent), but rates of daily use declined by 80 percent (10.8 percent versus 2.2 percent) (Johnston, O'Malley, and Bachman 1991, tables 10 and 13). If dependence were solely under the control of physiological factors, we could expect the number of daily users to constitute a constant fraction of the marijuana using-population — holding all other factors constant, including drug strength and purity. This does not appear to be the case. In fact, as I noted several years ago, on the basis of cross-cultural studies, degree and persistence of drug involvement appear to be directly related to the overall levels of use in a society (Kandel 1984). There may be exceptions, however, particularly with respect to cocaine. Generally, it appears that the higher the overall societal levels, the greater the involvement in

drugs on the part of the users, the more persistent the use, the earlier the age of onset into the use of drugs, and the greater the spread of the phenomenon throughout all groups in society, with an attenuation of intergroup differences in patterns of use (Kandel 1984).

There may also be social structural influences on drug behavior, which derive from demographic changes in the population. The downward trend in illicit drug use prevalence over the last decade since the peak in drug use prevalence observed in 1978–1980 has taken place in parallel with the aging of the population. The demographic shifts involve a decrease in the number of young people in the ages of greatest risk for initiation into drugs and an increase in the number of older age groups. From 1980 to 1990 the ratio of youths (aged 15 to 24) to the parental generation (aged 34 to 44) declined from 1.8 to 1.0 (based on data from U.S. Bureau of the Census 1988, 1989; 1990 data were projections). The upward trend in prevalence from 1960 to 1980 paralleled the upward trend in the ratio of youths to adults. Demographers have stressed that fewer members in the cohorts of young people and smaller relative cohort size will reduce opportunities for social interactions with peers (a most important factor in drug use initiation), and increase social control by the older generation (Easterlin 1987; Ryder 1965).

Structural factors may also partially explain rates of decline in drug use when changes in individual behaviors depend not only on opportunities for peer interactions, but also on group norms and drug users' characteristics. Perceived risks and disapproval associated with illicit drug use have increased. The rate of decline in drug use may follow a reverse diffusion process characteristic of epidemics in their expansion phase, and may accelerate as a function of the number of individuals initially exposed and at risk for initiation, especially if proscriptive norms also become more negative and individuals at risk for drug involvement are less deviant (Kandel and Davies 1991a). In periods with high prevalence of drug use, less deviant youths will be drawn into drug use, mainly through peer influence. These processes would be magnified with demographic changes. The rates of decline would accelerate when the pool of existing and potential users would include not only fewer individuals in the ages of greatest risk for initiation into drugs, but also fewer individuals committed to using drugs.

The trends regarding increasingly negative attitudes toward the use of drugs, despite the absence of changes in the perceived availability of drugs, provide strong support for the argument that changing the demand for drugs is the key to controlling drug abuse. Changes at the in-

dividual level may be amplified further by structural and demographic changes in society.

Addendum

The results both of the 1991 National Household Survey on Drug Abuse and of drug-related emergency room admissions from DAWN for the first two quarters of 1991 were released after this article had been typeset. The latest data indicate the following: (1) the rates of illicit drug use are continuing to decline among adolescents aged 12 to 17 years; (2) the rates are leveling off among young adults aged 18 to 25; and (3) they are increasing slightly among individuals older than 35 (NIDA 1991f). This increase is greater proportionally for the use of cocaine than for any other drug: 1.6 percent of respondents 35 years old and over reported having used cocaine in the last year in 1991, compared with .9 percent in 1990. For the first time, in 1991 NIDA released very limited trend data for the years 1985–1991 by level of education achieved (for individuals 20 to 34 years old) and by employment status (for individuals 18 to 34 years old).

These data suggest that rates among disadvantaged groups, such as school dropouts and the unemployed, have not followed the same systematic downward trends as the rates observed in the general population. From 1985 to 1991, past month use of any illicit drug declined in parallel among employed and unemployed persons as well as among high school graduates. The rates declined from 1985 to 1988 among individuals who did not complete high school, but have remained stable since 1988. In the same five-year period from 1985 to 1991, past year use of cocaine declined systematically among high school graduates and employed persons, but the rates of use remained stable among those who did not complete high school and, since 1988, among the unemployed (NIDA 1991g). Between 1990 and 1991 there has been an increase in drug-related admissions to hospital emergency rooms. All drug-related admissions increased by 12 percent and admissions related specifically to cocaine increased 31 percent in the second quarter of 1991, compared with the number in the fourth quarter of 1990. This fourth quarter marked the lowest number of admissions recorded since the peak in the second quarter of 1989 (NIDA 1991g).

Interestingly, the preliminary general population data for 1991 (NIDA 1991f) confirm the important link between drug behavior and

attitudes. From 1990 to 1991 attitudes and perceptions toward drugs have not changed or may even have become less negative at the same time that the downward trend in usage patterns is slowing.

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