United States General Accounting Office

150661

GAO

Report to the Chairman, Subcommittee on Children, Family, Drugs, and Alcoholism, Committee on Labor and Human Resources, U.S. Senate

December 1993

DRUG USE AMONG YOUTH

No Simple Answers to Guide Prevention

GAO/HRD-94-24

GAO

United States
General Accounting Office
Washington, D.C. 20548

Human Resources Division

B-246366

December 29, 1993

The Honorable Christopher J. Dodd
Chairman, Subcommittee on Children,
Family, Drugs, and Alcoholism
Committee on Labor and Human Resources
United States Senate

Dear Mr. Chairman:

Although use[1] of illicit drugs and alcohol among adolescents has declined from the peak levels of the late 1970s and early 1980s, it remains widespread. The numerous social ills that often accompany drug and alcohol use continue to be a serious public policy concern throughout American society.

Based on your request, our objectives for this study were to (1) describe the prevalence of drug and alcohol use among various groups of young people; (2) describe the relationship between drug and alcohol use; (3) identify risk factors most related to drug and alcohol use by youth; (4) identify and describe federal programs aimed at drug risk factors; and (5) based on our analysis, describe what set of policies might constitute a reasonable prevention/intervention strategy.

Background

Risk factors are conditions or characteristics which, when present, increase the probability of drug use. A risk factor approach to prevention seeks to alter conditions associated with drug use or to identify at-risk youth who may benefit from early intervention. It should be noted that the presence of a risk factor does not mean that drug use will in fact take place.

Of the hundreds of factors examined, researchers state that no single factor or set of factors has been found to explain drug use. Some researchers believe that drug use develops from the interaction of multiple risk factors and the numerous combinations of risk factors that occur. Several researchers have suggested that "...the number of factors an individual must cope with is more important than exactly what those factors are."[2] That is, it is not the specific risk factors themselves but the

[1]The term "use" includes the range of drug and alcohol involvement discussed in this report, including experimental use and abuse. (See "Background" for a discussion of use and abuse distinction.)

[2]Brenna H. Bry, Patricia McKeon, and Robert J. Pandina, "Extent of Drug Use as a Function of Number of Risk Factors," Journal of Abnormal Psychology, Vol. 91, No. 4 (1982), p. 277.

number of factors present for an individual that appears to be associated with use. For example, one study[3] found that more than half of those wit seven or more risk factors reported using marijuana every day as compared to just 1 percent who reported no risk factors present.

In developing a strategy for analyzing data to determine risk factors, we faced a serious limitation—the lack of generally agreed-upon measures of drug use and drug abuse. Although researchers generally agree that ther is a continuum of drug use, beginning with experimental use, moving to abuse and ending with dependence, they do not agree on how the points along the continuum should be determined. Generally, use refers to experimentation with or infrequent, irregular use of illicit drugs, whereas abuse encompasses some element of harm or maladaptive patterns of us but not dependence. Dependence occurs when physiological tolerance develops or when withdrawal symptoms occur if the drug is reduced or stopped, although psychological symptoms may occur without physiological symptoms.[4]

The use-abuse distinction is important because researchers suggest that the factors associated with use are likely to differ from those associated with abuse.[5] If this is true, then in theory strategies intended to prevent use should differ from those to prevent abuse. It may also be true that strategies aimed at preventing use may be ineffective at preventing abus because they may be targeting different motivators. For example, prevention efforts that focus on resistance training may succeed in helpi those who would have been encouraged to use drugs because of peer pressure; however, resistance training would be ineffective for young people who might engage in drugs or alcohol use to dull the pain from traumatic experiences.

[3]Michael D. Newcomb, E. Maddahian, and P.M. Bentler, "Risk Factors for Drug Use Among Adolescents: Concurrent and Longitudinal Analyses," American Journal of Public Health, Vol. 76, N (1986), pp. 525-531.

[4]HHS offers three broad definitions for three types of drinkers. The first group are those adults who experience few, if any, problems. The second group are abusers, that is, those who develop difficult related to alcohol use because of poor judgment or lack of concern about damage to themselves or others. The third category of drinkers are those who are dependent on alcohol; dependence is characterized by four main features—tolerance, physical dependence, impaired control over regula alcohol intake, and craving for alcohol.

[5]The distinction between experimental or casual use and abuse is important from a research perspective; it does not imply that preventing use is less important than preventing abuse.

Scope and Methodology

To determine the current prevalence of drug use among young people, we reviewed research from two recent National Institute on Drug Abuse surveys, the National Household Survey on Drug Abuse and the High School Senior Survey (see app. I for descriptions). To describe the relationship between drug and alcohol use and to determine the characteristics and conditions associated with those who reported using marijuana,[6] those who reported using cocaine, and those who reported early drinking,[7] we analyzed data from the National Longitudinal Survey of Youth (NLSY) using multivariate analysis (see app. I for a description of NLSY). We tested seven models. For marijuana and for cocaine, we sought to determine factors associated with (1) whether or not the respondents had ever used, (2) whether first use occurred at an early or late age, and (3) whether or not those who had reported use in 1984 also reported use in 1988. We also tested another model that looked at factors associated with initiating weekly drinking at an early age among those who reported they had engaged in weekly drinking. We supplemented our analysis of the NLSY with reviews of other current research on risk factors. In addition, researchers in the field reviewed our work.

To identify drug abuse[8] prevention programs and the extent to which they stated risk factors in the criteria for funding, we performed a content analysis on descriptions of federal programs listed in the Catalog of Federal Domestic Assistance (see app. I for a description of our methodology). Our content analysis used a composite list of possible risk factors developed by the Office for Substance Abuse Prevention (OSAP) (see app. II). In addition, in collaboration with the Office of Technology Assessment, we convened a workshop of federal substance abuse prevention officials to gain a broad overview of their current work and the extent to which their programs address risk factors (see app. III for a list of the participants). We also discussed the issues in this report with selected prevention professionals.

We did our work between April 1992 and July 1993 in accordance with generally accepted government auditing standards.

[6]Respondents were asked about marijuana or hashish use. In this report, we refer to any cannibus use as use of marijuana.

[7]Beginning to drink on a weekly basis before age 15.

[8]Abuse tends to be used as an inclusive term by federal prevention programs; no distinction is made between use and abuse. Generally, all use is considered abuse.

Results in Brief

While fewer adolescents report alcohol and illicit drug use in current surveys[9] than in past years, adolescents still report use. Overall, adolescent use of alcohol and/or drugs cuts across all socioeconomic an demographic groups. Generally speaking, available data from national surveys show little difference in illicit drug use and underage drinking by minority youth and white youth.

Alcohol remains the drug of choice among adolescents, with more than 57 percent of high school seniors reporting current use. In addition, our analysis of the NLSY found that those who began to drink weekly before t age of 15 were more likely to use marijuana, more likely to use cocaine, and more likely to begin use of each of those drugs at an early age.

Our analyses of the NLSY identified some risk factors. We found that delinquency was significantly associated with the use of marijuana, the u of cocaine, and the use of those drugs over time. Early alcohol use was associated with early use of marijuana and with early cocaine use. While the causes of drug use cannot be determined, delinquency and early alcohol use serve as indicators of youth who are at risk of engaging in illegal drug use. However, our findings appear to contradict the percepti that drug use is associated with poverty or inner cities; we found no statistically significant differences based on either poverty or urban/rura residence.

The federal government funded 19 substance abuse prevention programs in 1992; another 40 programs allowed funds to be used for substance abuse prevention in broader program objectives. Most substance abuse prevention programs are targeted toward risk factors. Of the 19 preventi programs, our analysis indicates that 11 programs target youth engaged i substance use and 6 programs target delinquency.

Risk factor research reveals no simple answers to explain why young people use alcohol and/or drugs; no evidence exists that if prevention efforts were targeted to just a few conditions, we could prevent most adolescents from experimenting with or abusing alcohol or drugs. Our analyses suggested that the factors associated with the larger population who has used drugs at least once are likely to differ from the factors associated with a smaller group who may have been involved with drugs over time. These findings suggest that further research that separates us

[9]National Institute on Drug Abuse's National Household Survey on Drug Abuse and the High School Senior Survey. As noted in our report, Drug Use Measurement: Strengths, Limitations, and Recommendations for Improvement (PEMD-93-18, June 25, 1993), these surveys are likely to report low estimates of use since they rely on self-reports.

from abuse might provide information to develop more targeted prevention approaches.

Neither our work nor other risk factor research to date can provide answers for the optimum mix of prevention programs and strategies. A consensus seems to be emerging among experts that approaches to prevention that are comprehensive, community based, and collaborative hold the most promise for successful outcomes.

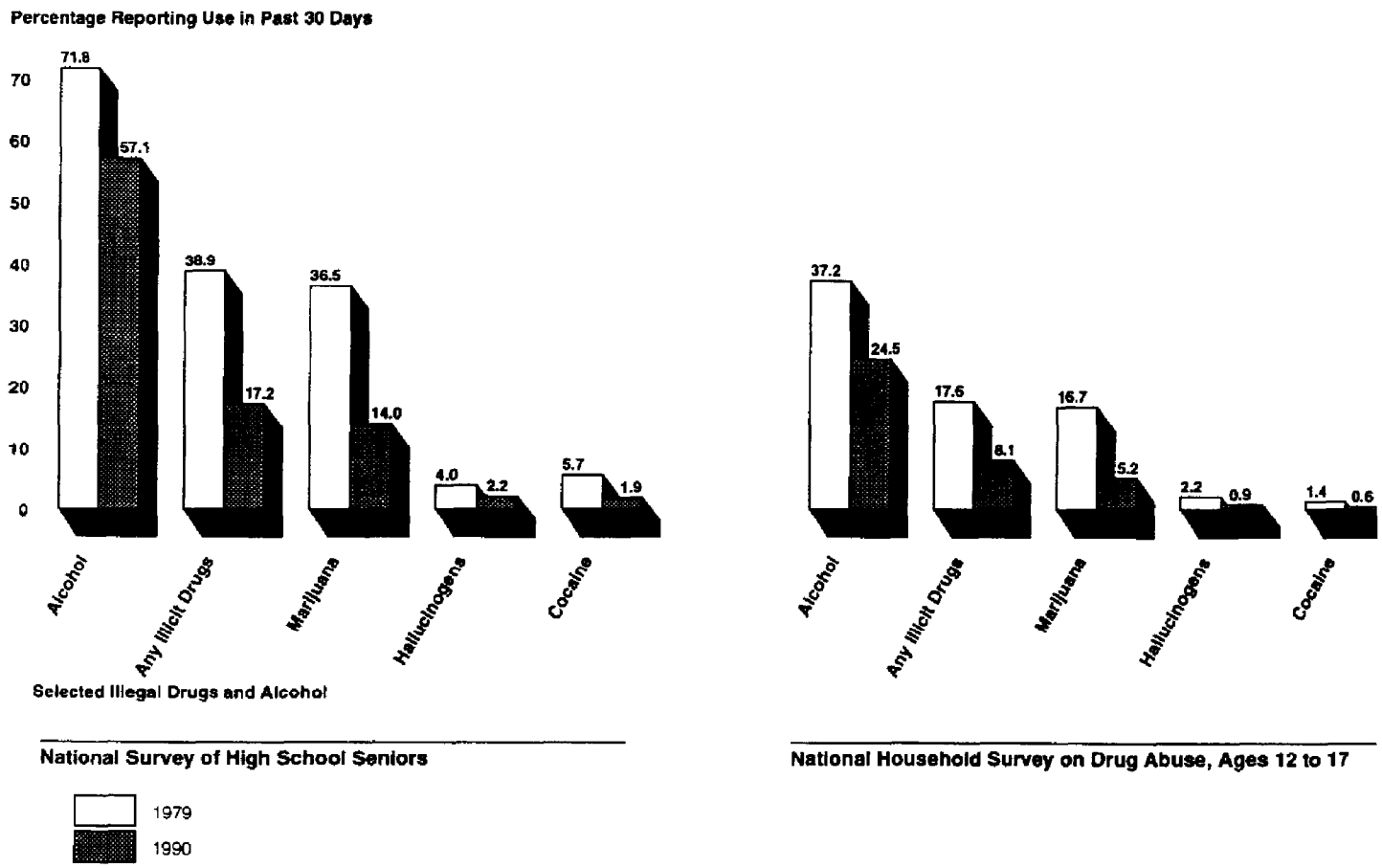
GAO Analysis

Many Young People Still Use Alcohol and Drugs

Although rates of use have generally declined since the peak levels of the late 1970s and early 1980s, the National Institute on Drug Abuse (NIDA) national surveys[10] still found considerable underage drinking and use of illicit drugs by young people in 1990 (see fig. 1).

[10]These surveys are based on self-reports of drug use; self-reported data of illegal behaviors are likely to be under-reported.

Figure 1: National Surveys Show Decline in Adolescent Drinking and Drug-Taking Between 1979 and 1990



Note 1: Substance use rates are higher in the high school seniors survey possibly because it covers an older population than the household survey data for adolescents.

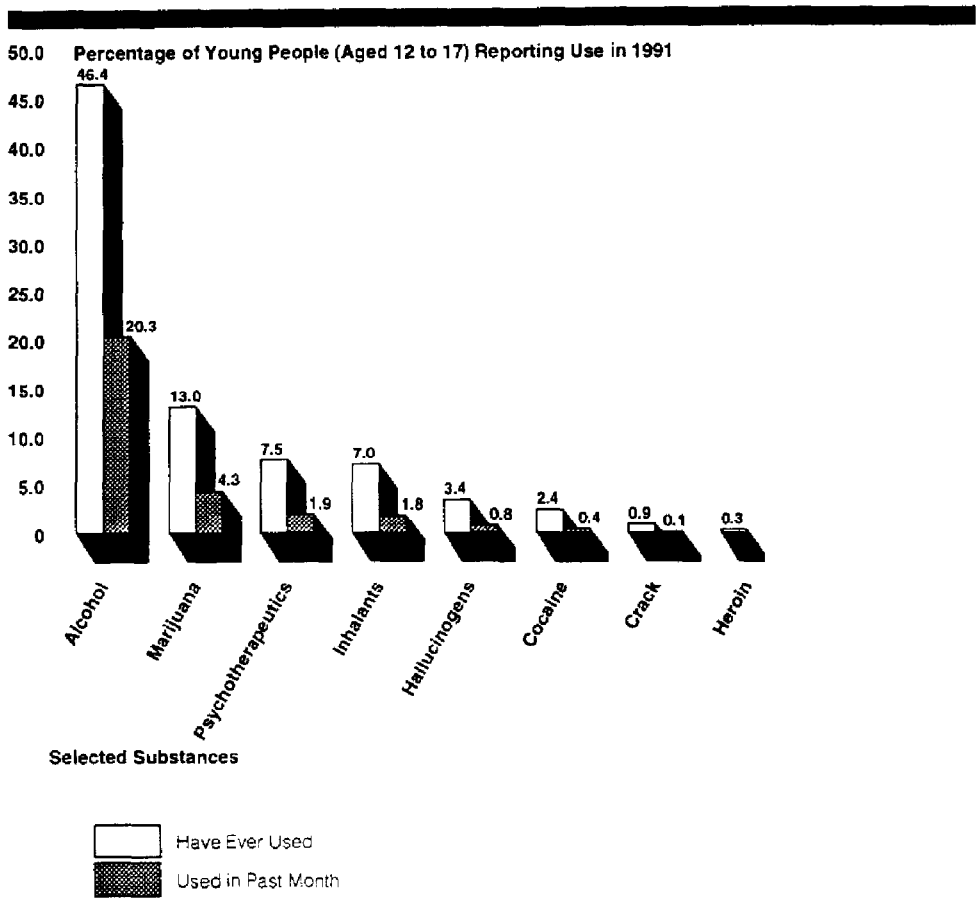
Note 2: Illicit drugs include marijuana, hallucinogens, cocaine as well as other drugs such as inhalants and psychotherapeutics.

Sources: NIDA, National Household Survey on Drug Abuse: Main Findings 1990, 1991. NIDA, Drug Use Among American High School Seniors, College Students and Young Adults, 1975-1990, Volume I, 1991.

In 1991 about 13 percent of the young people aged 12 to 17 had used marijuana at least once and 4 percent reported use in the past month.

Psychotherapeutics[11] and inhalants had been used at least once by 7 percent of the young people, and about 2 percent reported use in the past month. Cocaine had been used at least once by 2 percent of the youth, and less than 0.5 percent reported use in the past month (see fig. 2).

Figure 2: Young People Are Most Likely to Use Alcohol; Marijuana Is Most Commonly Used Illicit Drug



Note: Heroin use was provided for "ever used," but no data were given for use in past month.

Source: NIDA, National Household Survey on Drug Abuse: Population Estimates 1991, 1991.

Although the focus of the federal drug war has been on illicit drug use, underage drinking was a more prevalent practice according to the survey data. NIDA describes alcohol as "the most frequently used drug in the

[11]This refers to nonmedical use of any prescription-type stimulant, sedative, tranquilizer, or analgesic.

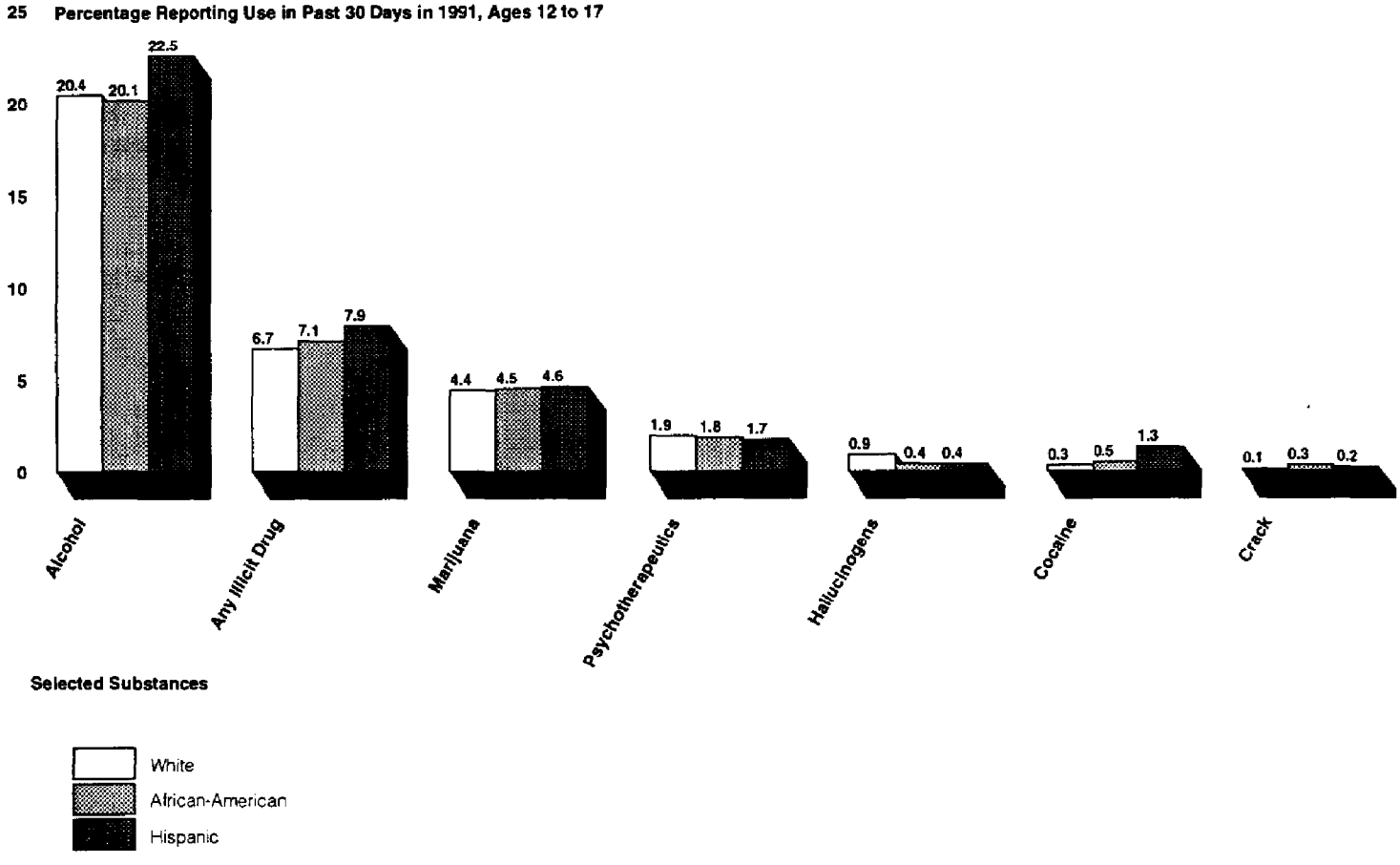
United States." More than 46 percent of youth aged 12 to 17 and about 90 percent of high school seniors reported having used alcohol at least once. NIDA found that about one-fourth of those aged 12 to 13 had used alcohol at least once, and 8 percent reported using it in the past month.

Specific Drug Use Varies, but Use Cuts Across Demographic Groups

NIDA's National Household Survey on Drug Abuse found little difference i overall current drug use among whites, African-Americans, and Hispanic: (see fig. 3). The High School Seniors Survey (HSSS) found use among all groups.[12] Unlike the National Household Survey, the HSSS collected data c Native Americans. They found Native Americans tended to have the highest prevalence rates for most illicit drugs, followed by whites.

[12]Gerald G. Bachman et. al. "Racial/Ethnic Differences in Smoking, Drinking, and Illicit Drug Use Among American High School Seniors, 1976-89," American Journal of Public Health, Vol. 81, No.3 (1991), pp. 372-377.

Figure 3: Current Drug and Alcohol Use Differs Little by Race/Ethnicity



Source: NIDA, National Household Survey on Drug Abuse: Population Estimates 1991, 1991.

Drug use existed in all demographic groups, although it varied somewhat by group and type of substance. A few examples help illustrate the variation. Boys aged 12 to 17 were more likely to use cocaine, while girls aged 12 to 17 were more likely to use psychotherapeutics. Boys were more likely than girls to have drunk alcohol in the month before the survey and to have engaged in heavy drinking.

Alcohol Use Is Associated With Drug Use

Our analyses showed that early use of alcohol and heavy[13] drinking are associated with marijuana use and cocaine use. (See fig. IV.1 in app. IV fc details.) Those who had begun to drink before age 15 were more likely to use marijuana or cocaine and to begin using these substances early. Thos who had drunk heavily in 1988 were more likely to report use of marijuar or cocaine over time. It is unclear, however, whether alcohol use actually caused subsequent illicit drug use; that is, other root causes may exist tha explain early use of alcohol and drugs. Early initiation into alcohol use may serve as a possible "indicator" of youth at risk of drug use.

Risk Factors: A Few Emerge

Our analysis showed that the factors in our models varied in complex ways, although a few general observations are possible. (See fig. IV.1 in app. IV for details.)

- Delinquency: Young people who reported engaging in three or more delinquent activities in 1979 and 1980 were more likely to have used marijuana or cocaine; delinquency was also significantly associated with marijuana use over time and with cocaine use over time. Delinquent activities included running away from home, truancy, fighting and violence, and theft. Underlying factors, however, may be associated with both drug use and delinquent activities.
- Religiosity: Those who had not attended religious services in the year before the 1979 survey were more likely to have used marijuana or cocaine. However, it is not clear whether this variable is measuring spirituality or capturing some dimension of family life, values, bonding with the community, or reduced free time.

Equally important are those factors that were not significant in the multivariate analysis. For example, those who were in poverty in 1979 were no more likely to have used marijuana or cocaine, to have used drug at a younger age, or to have used drugs over time than those who were no poor. Similarly, those living in rural areas were just as likely to have used marijuana or cocaine as those in urban areas.

[13]For purposes of the NLSY analysis, heavy drinking is defined as having six or more drinks on six or more occasions in the month before the survey. This is different from NIDA's definition of five or mc drinks on 5 or more days in the past month because NLSY coded the data differently.

Risk Factors Not the Same for Those Who Used Drugs at Least Once as for Those Who Used in 1984 and 1988

Our analysis of NLSY data showed that the factors associated with having ever used marijuana or having ever used cocaine were generally different from factors associated with the use of these drugs over time. (See fig. IV.1 in app. IV for details.) Factors significantly associated with having used marijuana at least once and with having used cocaine at least once included

- delinquency,
- living in a high-crime area,
- living in a household without two parents at age 14,
- having an alcoholic parent,
- low religiosity,
- early use of cigarettes, and
- early drinking.

However, few of these factors were significant for marijuana use over time. Of these factors, only two—living in a household without two parents at age 14 and engaging in three or more delinquent activities—were related to marijuana use in the 1984 and 1988 surveys. Of these factors, only involvement in delinquent acts was significantly associated with having used cocaine at least once and with having used cocaine in 1984 and 1988.

Within a risk factor, such as race, the results differed for having used at least once and use over time. For example, whites were more likely than African-Americans to have used cocaine at least once. But of those respondents who reported cocaine use in 1984, African-Americans were more likely than whites to report cocaine use again in 1988.

Our analysis showed that few factors were significantly associated with either marijuana or cocaine use over time. This suggests that factors other than those tested may be more important. Recent risk factor research suggests that early family experiences, especially physical, emotional, or sexual abuse, are important factors.[14] Availability of substances has also been suggested as another important factor. However, these factors were not present in the NLSY survey and therefore were not included in our models. In addition, multiple contextual factors may be interacting in ways that models such as ours cannot discern. Some researchers have

[14]Bayatpour, Mahin, Robert D. Wells, and Susan Holford, "Physical and Sexual Abuse as Predictors of Substance Use and Suicide Among Pregnant Teenagers," Journal of Adolescent Health, Vol. 13, No. 2 (1992), pp. 128-132 and Dembro, Richard et al. "Physical Abuse, Sexual Victimization and Illicit Drug Use: A Structural Analysis Among High Risk Adolescents," Journal of Adolescence, Vol. 10 (1987), pp. 13-33.

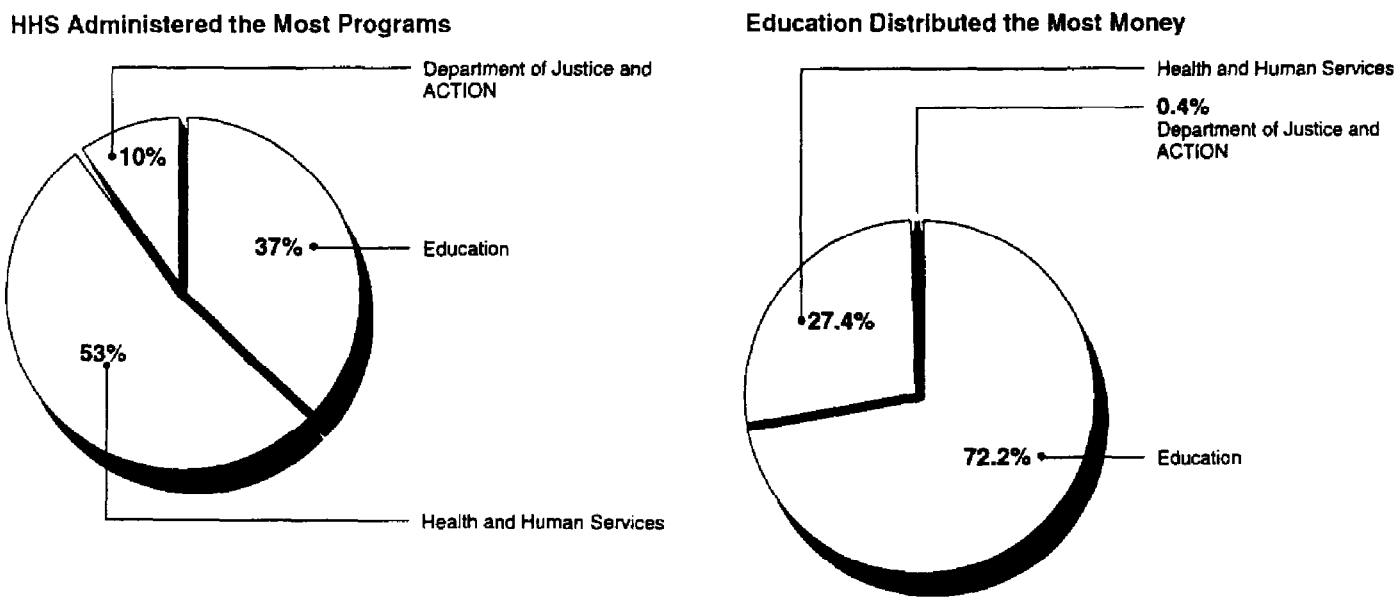
suggested that the total number of factors, rather than any specific factor contributes to drug use and abuse.

The Federal Government Supports Many Prevention Programs

In 1992 the federal government administered 19 programs[15] that specifically support substance abuse prevention, as described in the Catalog of Federal Domestic Assistance. (See table V.1 in app. V for details.) These programs awarded about $880 million in fiscal year 1992 t state and local government agencies and nonprofit groups to develop and operate substance abuse prevention programs. The Departments of Heal and Human Services (HHS) and Education administered 17 of these programs; the Department of Justice and ACTION administered the remaining two. HHS administered the most programs, while Education distributed the most money (see fig. 4).

[15]As of 1993, there were 17 programs.

Figure 4: HHS and Education Administered the Most Programs



Note 1: Total funding was $880 million.

Note 2: A total of 19 programs funded only substance abuse prevention.

Source: Catalog of Federal Domestic Assistance.

The Department of Education's programs tend to be directed at the general youth population. A major program is the Drug-Free Schools and Communities State Grants program, with funding of $546.9 million in fiscal year 1992. HHS programs are more often directed at high-risk youth groups, including the High Risk Youth Program,[16] Community Youth Activity Program block grants, and the Drug Abuse Prevention Program for Runaway and Homeless Youth.

Other Federal Prevention Funding

Federal assistance is also available through 40 other programs that enable funds to be used for substance abuse prevention activities within broader programs objectives. (See app. V for details.) For example, the Project

[16]The program provides demonstration grants for the prevention of alcohol and other drug abuse among high-risk youth.

Grants for Health Services to the Homeless is designed to address other individual or community needs as well as substance abuse. Similarly, the Juvenile Justice and Delinquency Prevention Special Emphasis Program supports projects to prevent and control juvenile delinquency by addressing behaviors that contribute to delinquency, including substance abuse.

Most Federally Supported Substance Abuse Programs Target At-Risk Youth

We found that more than half of the 19 federal substance abuse prevention programs are aimed at addressing risk factors identified in OSAP's composite list of possible risk factors. (See fig. II.1 in app. II.) Figure 5 shows categories of risk factors addressed by each of these programs. Eleven of these programs focus on behavioral factors such as delinquency and prior substance use. One-third focus on family factors. Some programs target multiple factors. For example, HHS's High-Risk Youth Program Demonstration Grants are available for a wide variety of risk factors, giving local communities flexibility in targeting for their specific needs.

Figure 5: Majority of Prevention Programs Cited Risk Factors

Program name	Economic/environmental factors	Family factors	Biological/constitutional vulnerability factors	Social/peer factors	Psychological factors	Behavioral factors	Minority group status	Other factors indicated but could not be specifically identified	No risk factors specified/ could not be determined
Public Education on Drug Abuse Information									●
Drug Alliance									●
Drug-Free Schools and Communities—National Programs									●
Drug-Free Schools and Communities—State Grants						●		●	
Drug-Free Schools and Communities— Regional Centers									●
Drug-Free Schools and Communities—School Personnel Training	●							●	
Drug-Free Schools and Communities—Emergency Grants	●					●		●	
Training Programs for Educators—Alcohol Abuse		●				●		●	
Counselor Training									●
Demonstration Grants for the Prevention of Alcohol and Other Drug Abuse Among High-Risk Youth	●	●	●	●	●	●	●		
Demonstration Grants on Model Projects for Pregnant and Postpartum Women and Their Infants		●	●			●		●	
Community Youth Activity Demonstration Grants						●		●	
Community Youth Activity Block Grants						●		●	
Conference Grant (Substance Abuse)									●
Community Partnership Study Demonstration Grant									●
Drug Abuse Prevention Program for Runaway and Homeless Youth		●				●			
Drug Abuse Prevention and Education Relating to Youth Gangs		●				●			
Communication Programs Aimed Toward the Prevention of Alcohol and Other Drug Problems						●		●	
Comprehensive Residential Drug Prevention and Treatment Projects for Substance-Using Women and Their Children		●				●		●	
Total	3	6	2	1	1	11	1	9	7

The specific risk factors most frequently cited in federal grant program descriptions were

- early or other substance use or abuse (11 programs, 1 of which targets only alcohol use);
- involvement in delinquency or violent and antisocial acts (6 programs); and
- alcohol and drug dependency of parents (3 programs).

Other federal programs that do not support substance abuse prevention services nevertheless do address possible risk factors identified in the Anti-Drug Abuse Act of 1986. We identified 124 such programs in the Catalog of Federal Domestic Assistance, including

- HHS's Head Start, which addresses the economically disadvantaged, including the disabled;
- HHS's Social Services Block Grant, under which grantees can address physically, psychologically, or sexually abused individuals, and the economically disadvantaged; and
- the Department of Justice's Juvenile Justice and Delinquency Prevention State Formula Grants, which address involvement in juvenile delinquency

To the extent that the risk factors addressed by these programs are related to youth substance abuse, they may also help prevent youth substance abuse.

A Variety of Prevention Approaches Are Being Used

Some researchers believe that prevention approaches in which many different segments of a community are mobilized in unison—sometimes referred to as "comprehensive" approaches—have promise. One example of a program taking this approach is the Midwestern Drug Abuse Prevention Research Project,[17] which involves schools, parents, and the community. Activities promoted by the program include resistance training in the schools, homework assignments encouraging parents to establish family rules concerning substance use, development and dissemination of materials for mass media campaigns, encouragement and support from community leaders for healthy and rewarding activities for young people, and policy changes such as implementing laws to prohibit smoking in public places and the sale of alcohol to minors.

[17]The two sites for this project are Kansas City (Kansas and Missouri), and Indianapolis, Indiana.

The 19 federal substance abuse prevention programs support a variety of prevention approaches. (See fig. V.1 in app. V.) These approaches include education, peer counseling, resistance training, family counseling, and community media campaigns. Many of the programs support multiple approaches.

Right Combination of Programs Unknown

Our analysis leads us to agree with other researchers who concluded that "Current knowledge about the risk factors for drug abuse does not provide a formula for prevention, but it does point to potential targets for preventive intervention."[18]

GAO Observations

Alcohol is the substance young people use most frequently. Our analysis suggests that (1) a connection between early alcohol use seems to exist with early use of marijuana and cocaine and (2) a connection between heavy drinking and continued use of marijuana and cocaine seems to exist among young adults. These connections suggest that addressing underage alcohol use should be considered along with addressing drug use in developing substance use and abuse prevention strategies.

The federal government currently funds a combination of prevention programs aimed at all youth and programs more narrowly targeted to those youth at higher risk of substance use. If we had found a few factors associated with most of the alcohol and drug use among young people, we could have offered advice on what that combination ought to be. However, we found no simple answers to guide prevention efforts. Current prevention efforts do address the risk factors that we identified. Developing policies that enable local decisionmakers to direct efforts at those risk factors prevalent in their communities is a possible approach to prevention based on current knowledge.

[18]J. David Hawkins, Richard F. Catalano and Janet Y. Miller, "Risk and Protective Factors for Alcohol and Other Drug Problems in Adolescence and Early Adulthood: Implications for Substance Abuse Prevention," Psychological Bulletin, Vol. 112, No. 1 (1992), p. 65.

Unless you publicly announce its contents, we plan no further distribution of this report until 30 days from the date of this letter. At that time we will send copies of this report to the Secretary of Health and Human Services, the Secretary of Education, and other interested parties. We also will mak copies available to others on request. Please call me at (202) 512-6807 if you or your staff have any questions concerning the report. Major contributors to this report are listed in appendix VI.

Sincerely yours,

Gregory J. McDonald
Director, Human Services Policy
and Management Issues

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Abbreviations

HHS	Department of Health and Human Services
HSSS	High School Senior Survey
NHSDA	National Household Survey on Drug Abuse
NIDA	National Institute on Drug Abuse
NLSY	National Longitudinal Survey of Youth
OSAP	Office for Substance Abuse Prevention
PATH	Projects for Assistance in Transition from Homelessness
SAMSA	Substance Abuse and Mental Health Services Administration

Objectives, Scope, and Methodology

Objectives

Our objectives for this study were to (1) describe the prevalence of drug and alcohol use among various groups of young people; (2) describe the relationship between drug and alcohol use; (3) identify risk factors most related to drug and alcohol use by youth; (4) identify and describe federal programs aimed at drug risk factors; and, (5) based on our analysis, describe what combined policies might constitute a reasonable prevention intervention strategy.

Limitations

Research about drug and alcohol use among young people has several limitations that affected our analyses. First, most studies rely on self-reported data. Because drug use and underage drinking are illegal, low estimates of use are likely. Second, because rates of drug use in specific localities may vary from national findings, interpreting risk factors based on national surveys must be done cautiously. In addition, different surveys may systematically exclude specific subpopulations. Finally, it is difficult to determine causality because it is not always possible to determine which behavior came first. In addition, not all the variables needed to eliminate all other possible explanations of alcohol and drug use are in the data sets.

Prevalence of Alcohol and Drug Use

We used two national surveys sponsored by the National Institute on Drug Abuse to describe the prevalence of drug and alcohol use among young people. One was the National Household Survey on Drug Abuse, a national sample of more than 32,500 noninstitutionalized civilians aged 12 and older in the United States in 1991. We used only the data for adolescents—those aged 12 to 17. The sampling design systematically excluded those with no fixed address (for example, the homeless not in shelters); military personnel; and those in institutions, such as jails. The surveys collected data through interviews.

The second survey was the High School Seniors Survey, also called Monitoring the Future project. This is a nationally representative sample of high school seniors conducted every spring, which comprised about 15,600 randomly selected people in 1990. Respondents completed self-administered questionnaires. The survey systematically excludes those who drop out of school before completing their senior year.

The household survey estimates of drug use tended to be lower than those from the High School Senior Survey. A possible explanation is that the

high school seniors are an older population and therefore more likely to have used drugs.

Risk Factor Analyses

We analyzed data from the National Longitudinal Survey of Youth (see description that follows) to (1) describe the relationship between drug and alcohol use and (2) determine the risk factors associated with those who reported using marijuana and for those who reported using cocaine. We used multivariate analysis to examine the relationship between potential risk factors and the probability of drug use using seven different models. (See app. IV for details and results.)

Our multivariate analysis separately examined the use of marijuana, cocaine, and alcohol because the factors related to one substance might not be the same for other substances. For marijuana, we developed one model that included all respondents and whether they used marijuana. Since research suggested that early use of marijuana is associated with use of other drugs, we developed a second model that allowed us to determine factors associated with whether the first use occurred before age 15 or at age 15 or older. In this model we included only respondents who reported marijuana use. A third model included only those who had reported use in 1984 to determine factors associated with use in 1988. Because many people try drugs but do not engage in use over time, it was important to have separate analyses for those who had ever used drugs from those who had reported use at two points in time. While this model represents a different point along a theoretical drug use continuum, we did not define this model as abuse.[1] We tested three similar models for cocaine. Finally, we tested another model that looked at factors associated with weekly drinking at a younger age among those who reported they had engaged in weekly drinking. We developed this model because research suggested that early drinking was a correlate of marijuana or cocaine use.

Our multivariate models included demographic variables (gender, race, and geographic location); economic and environmental variables (poverty status in 1979, unemployment rate of area, and crime rate of area); individual behavior variables (delinquent activities, religiosity); family variables (family structure at age 14, having an alcoholic parent); and substance use history (age when cigarette smoking, weekly drinking, or marijuana use began; current heavy drinking).

[1]While this is an imperfect measure, it does separate out a smaller group engaged in use over time in contrast to those who used in 1984 but did not report use in 1988.

Description of NLSY

Our multivariate analysis was based on data from NLSY, a national survey funded by the Department of Labor's Bureau of Labor Statistics designed to represent the population of youth born in the United States between 1957 and 1964. The initial NLSY interviews were conducted in 1979 when the persons selected for the survey were 14 to 21 years old. Follow-up interviews have been conducted annually since 1979 to collect data on trends over time.

In 1979 the NLSY's sample comprised 11,406 people selected from two groups: (1) a cross-sectional sample designed to represent noninstitutionalized civilians as of January 1, 1979, and (2) a supplemental sample designed to oversample civilian Hispanic, African-American, and economically disadvantaged white youth.[2] A complex sampling procedure was used.

Although the primary impetus for NLSY was to collect information on labor market experiences of young people, questions about drug and alcohol use were asked during several survey years. We used these questions to develop our dependent variables on marijuana and cocaine use and early use of alcohol. (See app. IV for more details.) Because this is a longitudinal data set, we were able to use a variety of independent variables gathered over time.

Our analysis was based on the sample of approximately 10,500 people who were interviewed in the 1988 NLSY.[3] We analyzed this group because 1988 was the most recent year available for which the survey contained questions about drug use. To provide information that reflected national 1988 totals, we used 1988 sampling weights that were provided for each case in the NLSY data tape. In addition, we based statistical significance tests on a computer procedure that accounted for the complex sampling design of NLSY.

Advantages of NLSY

NLSY has several advantages for the purposes of our study. It is a large national sample, with oversampling of particular subpopulations (minority and poor). While the NLSY is not generalizable to today's young people because this sample was drawn from young people in 1979, these data provide a rich source of information about youth during the peak years of

[2]African-Americans, Hispanics, and disadvantaged whites were overrepresented in the sample so that their numbers would be large enough to provide reliable information about these groups.

[3]The number of cases included was smaller than the initial 1979 sample because of attrition.

the drug epidemic.[4] It is longitudinal, which enabled us to look at drug use behavior of individuals over time. It allowed us to look at factors associated with both those who used drugs and stopped as well as those who used drugs over time. The annual surveying also allows us to correct for some underreporting that may have occurred because of respondents' forgetting drug use in earlier years. By referring to earlier surveys, we could include those who said "yes" to using drugs in earlier surveys even though they said "no" in the 1988 survey. Lastly, NLSY includes a wide variety of variables asked at different times during the 10 years. For example, NLSY asked questions about delinquent activities, family structure, self-esteem, financial status, educational attainment, and marital status, as well as demographic information. As a result, NLSY provides a potentially rich source of data for examining many possible variables that may be related to an individual's involvement with drugs.

Limitations of NLSY

NLSY also has some limitations. For example, it relies on self-reported data, which are likely to result in low estimates of use. In addition, although longitudinal data provide a way to look at behavior over time, they may not reflect the behavior of current youth. Social or historical factors may have affected this NLSY cohort that may not be present now. Hence, we cannot generalize to the current population of youth based on these data. Another limitation of using existing data is that they may not contain all the variables that may be correlated with drug use. Our analysis is limited to the data as collected by NLSY.

Prevention Programs

To identify substance abuse[5] prevention programs and the extent to which they stated risk factors in the criteria for funding, we performed a content analysis on descriptions of federal programs listed in the Catalog of Federal Domestic Assistance. (See app. V for details and results.) Our content analysis used a composite list of possible risk factors, shown in appendix II, developed by the Office for Substance Abuse Prevention. While our analysis was limited by the detail and accuracy of the program descriptions in the catalog, it does provide an overview of federally funded prevention activities in a single, easily accessible source. We also identified other programs in the catalog that were not aimed at preventing substance abuse but did provide interventions for high-risk youth as defined by the risk factors specified in the Anti-Drug Abuse Act of 1986.

[4]Generally, this period covered the late 1970s to early 1980s.

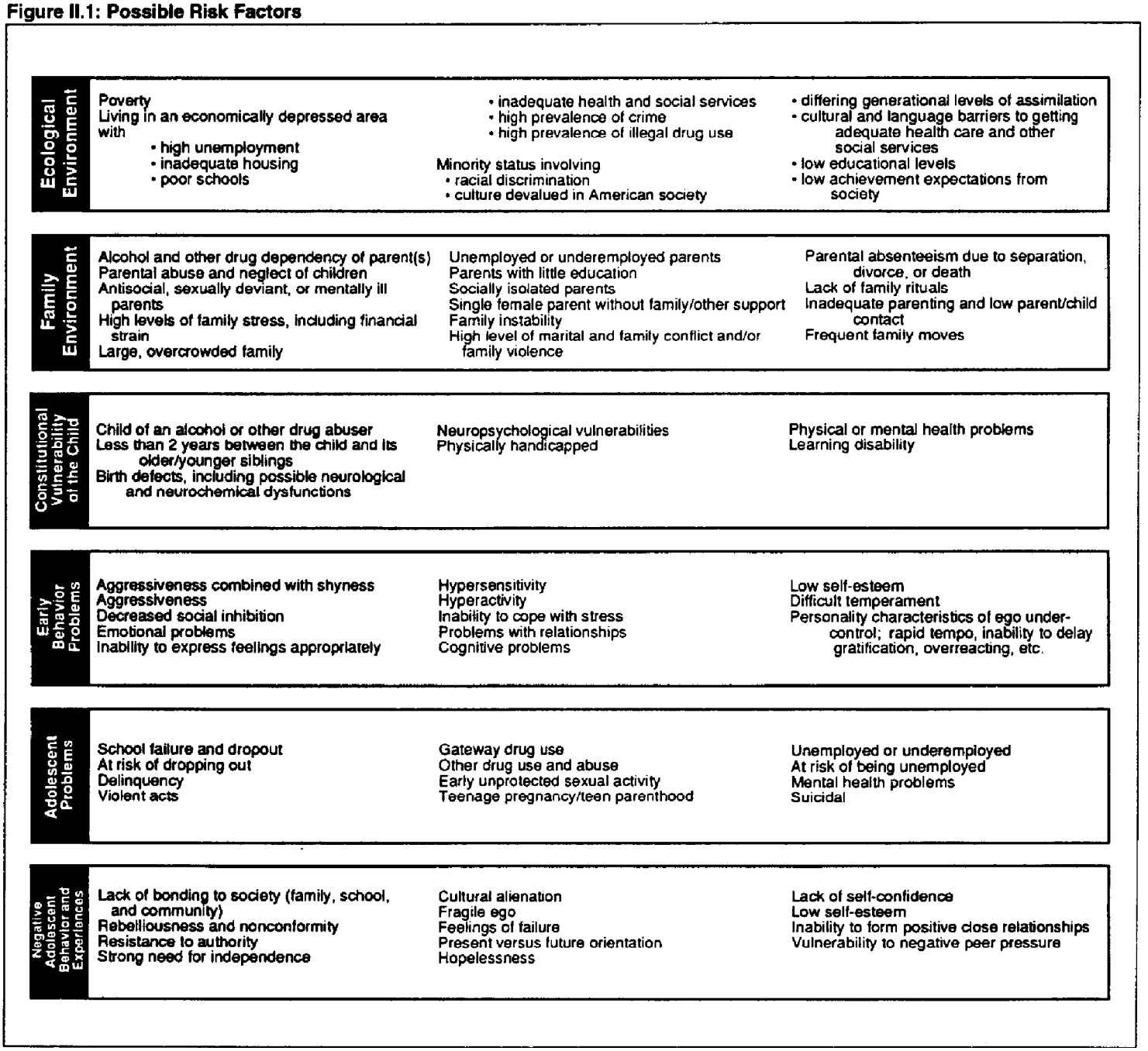
[5]Substance abuse is how most federal prevention programs are labeled. The use/abuse distinction is not acknowledged; substance is the term of choice, since it may include alcohol and cigarettes.

Because we identified more than 60 possible risk factors, we limited the analysis of programs not aimed at substance abuse prevention to the risk factors specified in the Anti-Drug Abuse Act of 1986. This was because they encompass the risk factors we found to be strongly associated with substance abuse and because of the emphasis the Congress placed on them. In addition, in collaboration with the Office of Technology Assessment, we convened a workshop of federal substance abuse prevention officials to gain a broad overview of their current work and the extent to which their programs address risk factors. (See app. III for a list of the participants.) In addition, we discussed the issues in this report with selected prevention professionals.

Possible Risk Factors

Researchers have examined a wide variety of characteristics and conditions to determine which ones increase the likelihood of drug use among adolescents. Figure II.1 shows many of the most widely examined possible risk factors. Not all, however, have been consistently found to be risk factors.

Figure II.1: Possible Risk Factors



Source: Breaking New Ground for Youth At Risk: Program Summaries, HHS, Office for Substance Abuse Prevention, 1990.

Participants in Federal Substance Abuse Prevention Program Workshop, January 1993

Walter Barbee
Office of Justice Programs
Washington, DC

Karen Dodge
Department of Health and Human Services
Washington, DC

Jane Boorman
Small Business Administration
Washington, DC

William Bukoski
National Institute on Drug Abuse
Rockville, MD

Tom Burns
Indian Health Service
Albuquerque, NM

Judith De Jong
Center for Substance Abuse Prevention
Rockville, MD

Robin Dinerman
Federal Bureau of Investigation
Washington, DC

Bob Simpson
Department of Energy
Washington, DC

Ella Lankford
Bureau of Indian Affairs
Washington, DC

Bernard McColgan
Center for Substance Abuse Prevention
Rockville, MD

William Modzeleski
Department of Education
Washington, DC

Judith Peterson
Department of Labor
Washington, DC

Robyn Prichard
Department of Housing and Urban Development
Washington, DC

John Rogers
Office of Personnel Management
Washington, DC

Jan Howard
National Institute on Alcohol Abuse and Alcoholism
Rockville, MD

Gary Johnson
Department of Interior
Washington, DC

Ingrid Kolb
Office of National Drug Control Policy
Washington, DC

G. Gary Kowalczyk
ACTION
Washington, DC

Harri Kramer
Department of Justice
Washington, DC

Tom Stewart
Drug Enforcement Agency
Washington, DC

Richard Suchinsky
Department of Veterans Affairs
Washington, DC

Maria Vegega
Department of Transportation
Washington, DC

Megan Walline
Department of Justice
Washington, DC

Michael Wermuth
Department of Defense
Washington, DC

James Wilcox
United States Information Agency
Washington, DC

Judith Cherrington
Department of Education
Washington, DC

Multivariate Analysis of NLSY

Scope

Our analysis of NLSY focused on the use of marijuana, cocaine, and the early use of alcohol. Because these are different types of substances, we conducted separate analyses for each. For marijuana and cocaine, we examined variables that may be associated with (1) having used at least once; (2) having used at an early age; and (3) having used at two points in time (that is, use over time). (See table IV.1.) Because many people try drugs but most do not engage in use over time, we believed it was important to have separate analyses for those who had ever used a drug from those who had used it at two points in time. This analysis of use over time provided a way to examine whether the associated risk factors differed from those associated with having ever used a drug. For alcohol, we only examined variables that may be associated with early initiation of weekly drinking.

We began our work with a review of the literature to identify those variables that researchers have suggested are risk factors. (See "Bibliography.") We then did bivariate analysis of more than 50 variables that matched many of the variables suggested by the literature. This analysis helped us decide which variables to include in our multivariate analysis (see table IV.2). The bivariate results for the variables used in the multivariate analyses are presented in table IV.3.

The research community has yet to develop quantifiable measures of use and abuse. Although our models try to distinguish different degrees of involvement with drugs, we do not offer these as definitions of use or abuse. For each of our dependent variables, respondents may have used drugs many times or few times; some may have experienced no problems related to their drug use while others may have experienced many problems. In addition, we cannot tell from NLSY data whether those who used drugs in 1984 and 1988 used drugs consistently or frequently throughout that period. Our analyses are intended to provide insight into different kinds of drug involvement, not definitions of use and abuse.

Methodology

We used multivariate analysis to understand the separate effects of each of the variables when considered with many other factors at the same time; each analysis is referred to as a model. To estimate the statistical relationship between the likelihood of drug use and our selected potential risk factors, we obtained maximum likelihood estimates from a logistic function.[1] We selected logistic regression because our dependent variables

[1]The logistic function is a nonlinear estimation technique that is appropriate when the dependent variable is dichotomous. See Robert S. Pindyck and Daniel L. Rubinfeld, Econometric Models and Economic Forecasts, 2nd ed. (New York: McGraw-Hill, 1981).

were categorical: (1) respondents either used drugs or they did not use drugs; (2) respondents' initial use was early or not; (3) they used the drug in both 1984 and 1988, or they used it in 1984 but not 1988. (See table IV.1 for a description of each of the dependent variables used in the models.)

Logistic regression analysis provides the odds ratio or likely effect of each independent variable in each model while controlling for the effects of the other variables in the model. About 16 independent variables, such as demographics, economics, family characteristics, individual behaviors, and history of substance use, were included in the multivariate models (see fig. IV.1). Age of initiation was used as a dependent variable and an independent variable in different models. (See table IV.2 for a description of the independent variables.)

Table IV.1: Dependent Variables in the Various Logistic Models

Model	Title	Description	Cases
Marijuana			
1	Ever/never used	The dependent variable is whether the respondent had ever used marijuana. Respondents were categorized as "ever used" if they indicated use in any of three survey years (1980, 1984, 1988). If not, they were categorized as "never used." Percent: 76% used at least once.[b]	8,494[a]
2	Age began	The dependent variable is the age at which the respondent first used marijuana. Only respondents who had ever used marijuana were included. We categorized the respondents into two groups based on research indicating that first use of marijuana typically occurs at a young age. The variable was coded 1 for first use before age 15 and 0 for first use at age 15 or older. Percent: Of those who ever used, 21% reported first use before age 15.	5,543
3	Use over time (continued use)	The dependent variable is whether respondents who used marijuana within 30 days of the 1984 survey had also used the drug within 30 days of the 1988 survey. The variable was coded 1 for those respondents who continued to use marijuana and 0 for those who had not used the drug within 30 days of the 1988 survey. Percent: Of those who used marijuana in the month before the 1984 survey, 42% reported current use in 1988.	1,470
Cocaine			
4	Ever/never used	The dependent variable is whether the respondent ever used cocaine. The dependent variable equals 1 if the respondent indicated cocaine use in 1984 or 1988 and 0 if respondent indicated no cocaine use in either survey year. Percent: 34% had used cocaine at least once.	7,692

(continued)

Model	Title	Description	Cases
5	Age began	The dependent variable is the age at which the respondent first used cocaine. Only respondents who had ever used cocaine were included in the model. The variable was coded 1 for respondents whose first use occurred before age 18 and 0 for respondents whose first use was at age 18 or older. These categories were based on research indicating that most first uses of cocaine occur at 18 or older. Percent: Of those who ever used, 16% reported first use before age 18.	2,416
6	Use over time (continued use)	The dependent variable is whether respondents who used cocaine in the year preceding the 1984 survey had also used the drug in the year preceding the 1988 survey. The variable was coded 1 for those respondents who had continued to use cocaine and 0 for those who had not used the drug in the year before the 1988 survey. We looked at the past year for cocaine users to increase the number of cases for this model. Percent: Of those who used cocaine in the year before the 1984 survey, 47% reported use in the year before the 1988 survey.	662
Alcohol			
7	Age began weekly drinking	The dependent variable is the age at which the respondent first reported weekly drinking. The variable was coded 1 for respondents who began before age 15 and 0 for respondents who began at age 15 or older. Percent: Of those who responded that they drank on a weekly basis in the 1983 survey, 4% reported that they started before age 15.	4,576

[a]The number of cases included in each model varies. Each model identifies different subgroups in NLSY. In addition, any respondent who had missing values for any of the independent variables in the model was excluded. The number of cases reflects only those with data for each of the variables in the model.

[b]Based on the percentages of all cases that had data for the dependent variable.

Independent Variables Included in the Risk Factor Models

The independent variables included in our models were based on the literature and our bivariate analysis of NLSY. Our considerations were

- selection of early years rather than later years for similar variables, such as residence and poverty status, to capture the situation when the respondents were youngest;
- variables for which the literature either presented strong evidence of correlation or strong sentiment about what should be an important factor (such as race or poverty); and
- variables that our bivariate analysis indicated were significantly associated.

Many variables in the model are antecedent. However, some variables may have captured behavior occurring at about the same time while others were used even though time order could not be determined. For example, respondents may have been involved in delinquent activities at around the same time they first used drugs, but the data were insufficient to determine which behavior came first.

Not all variables were used in every model. For example, heavy drinking was used only in the use-over-time models for marijuana and cocaine. Age of initiation of marijuana use was used in the cocaine models because research suggests that early use of marijuana is a risk factor for initiation of cocaine.

Table IV.2: Definitions of the Independent Variables

Demographics	
Race	NLSY categorized the respondents as Hispanic, black, and white (nonblack, non-Hispanic).
Residence	This variable categorized the residences of the respondents as of 1979, the first year of NLSY, as either urban or rural.
Region	The respondents' 1979 residences were classified into one of four areas of the country: Northeast, North Central, West, or South.
Age	The respondents' ages in 1979 were categorized as under 18 or 18 and over. We created this grouping to control for age differences in substance use in the NLSY cohort.
Environment	
Poverty	NLSY determined whether respondents lived in poverty in 1979 based on total net family income, family size, and the poverty-level index.
Unemployment	NLSY provided information on the unemployment rate for the area of the respondents' 1979 residences. We created three categories of area unemployment: less than 6%, 6 to 8.9%, and 9% or more.
Crime rate	NLSY provided the 1976 county crime rate known to police; rates are for the number of crimes per 100,000 population. We created three crime rate categories: 1-3,999; 4,000-6,999; and 7,000 or more.
Family	
Family structure	In 1979 NLSY asked respondents who they were living with when they were 14 years old. We categorized the responses into four groups: both parents, single parent, parent and stepparent, and other.
Alcoholic parents	In 1988 the respondents were asked whether they had any alcoholic relatives. We created a variable for each respondent who indicated whether he or she had an alcoholic parent.
Individual behaviors	
Religious attendance	In 1979 the respondents were asked how often they attended religious services in the past year. We categorized the responses into three groups: not at all, infrequently (less than weekly), and frequently (at least weekly).

(continued)

Delinquent activities	In 1980 the respondents were asked the number of times they had performed any of 20 delinquent, illegal, or antisocial activities, including running away from home, truancy, fighting, and other violent behavior, and various types of stealing. We created a scale that represented the number of activities the respondent had reported for the past year. We grouped these into three categories: none, one to two, and three or more activities. We did not include the responses to four questions dealing with drug use and drug selling.
Substance use history	
Age began smoking	In 1984 the respondents were asked how old they were when they first tried a cigarette. We grouped the responses into three categories: never smoked, smoked at younger than age 15, and smoked at age 15 or older.
Age began weekly drinking	In 1983 the respondents were asked how old they were when they began drinking alcoholic beverages at least once a week. We grouped the responses into three categories: never began weekly drinking, began at younger than age 15, and began at age 15 or older.
Age began marijuana	In 1984 and 1988, the respondents were asked how old they were when they first used marijuana or hashish. We grouped the responses into three categories: never used, first used when younger than age 15, and first used at age 15 years or older.
Age began cocaine	In 1984 and 1988, the respondents were asked how old they were when they first used cocaine. We grouped the responses into two categories: first used when younger than age 18 and first used at age 18 or older.
Heavy drinking	In 1988 respondents who drank within 30 days of the survey were asked the number of times they drank six or more drinks on a single occasion. We classified the responses into three groups: none, one to five occasions, six or more occasions.
Frequent marijuana use	In 1984 respondents were asked how many times they had used marijuana within 30 days of the survey. We classified the responses into two categories: less than 10 times and 10 or more times.

Interpreting Logistic Regression

We summarized the impact of the independent variables in our logistic models on drug use by presenting the results in odds ratios. An odds ratio represents the change in the likelihood of a particular outcome (for example, drug use, early drug use, or use over time) when comparing one category of a variable to a "reference" category for that variable. The closer the odds ratio is to 1.00, the smaller the difference between groups. An odds ratio greater than 1.00 indicates an increased likelihood; a ratio between 0 and 1.00 indicates a decreased likelihood compared to the reference group. For example, the odds ratio for the gender variable in model 4 of figure IV.1 is 1.25. This ratio compares the likelihood that males ever used cocaine to the likelihood that females ever used cocaine. Thus, after accounting for the effects of other variables in the model, males were about 25 percent more likely to have used cocaine. On the other hand, the odds ratio for the gender variable in model 5 of figure IV.1 is .71. This result indicates that the likelihood of cocaine use before age 18 was about 29 percent lower for males than females (among those who ever used cocaine).

Figure IV.1: Logistic Results: Odd Ratios

	Marijuana			Cocaine			Alcohol
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Race							
Hispanic vs. white [a]	.62	1.07	.60	.76	.90	1.18	1.21
African-American vs. white	.84	.80	.81	.67	.99	2.65	.91
Rural vs. urban	.93	.91	1.04	.94	.88	1.23	1.25
Male vs. female	.90	1.01	1.13	1.25	.71	.88	.97
Region							
Northeast vs. South	1.31	1.13	1.16	1.65	1.08	1.31	.96
North Central vs. South	.95	1.16	1.08	.87	.91	1.33	.78
West vs. South	1.39	1.51	1.42	1.83	1.68	.94	.93
Nonpoverty vs. poverty	1.00	.85	.90	1.10	.90	1.06	.61
Unemployment rate							
9%+ vs. <6%	1.15	.96	.73	.67	1.72	1.82	1.78
6-8.9% vs. <6%	1.02	.94	1.39	.80	1.70	1.13	1.02
Crime rate							
7,000+ vs. <4,000	1.96	1.22	1.27	1.41	1.16	1.72	1.68
4,000-6,999 vs./or 4,000	1.79	1.19	1.08	1.40	.98	1.30	1.00
Family structure at age 14							
Single parent vs. both parents	1.29	1.53	1.26	1.20	1.07	.68	1.63
Parent w/stepparent vs. both parents	1.53	1.27	1.28	1.36	1.52	.92	1.01
Other vs. both parents	1.38	1.58	1.67	1.06	1.18	.85	.71
Alcoholic parent vs. no alcoholic parent	1.35	1.57	.63	1.40	1.19	.70	1.48
Religiosity (attendance)							
None vs. frequent	2.10	1.62	1.12	1.43	1.04	1.89	1.44
Infrequent vs. frequent	1.70	1.23	1.16	1.49	.89	1.61	1.30

	Marijuana			Cocaine			Alcohol
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Delinquent activities							
1-2 Acts vs. none	2.19	1.27	1.09	1.36	1.18	1.37	.61
3 or More vs. none	4.65	2.07	1.44	1.95	1.33	2.24	.96
Age began smoking							
Before 15 vs. never began	7.24	3.81	1.04	1.51	1.30	1.27	3.97
Began 15 or older vs. never	6.58	.70	.92	1.35	1.06	1.07	.46
Age began weekly Drinking							
Before 15 vs. never began	5.96	4.87	1.54	3.46	3.39	.65	NA
Began 15 or older vs. never	3.29	1.19	.76	2.47	1.08	1.05	NA
Over 18 in 1979 vs. under 18	1.23	.81	1.00	1.08	.80	.77	.98
Frequent vs. infrequent use in 1984	NA	NA	2.18	NA	NA	NA	NA
Heavy drinking in 1988							
1-5 times vs. none	NA	NA	1.80	NA	NA	3.24	NA
6 or more times vs. none	NA	NA	2.50	NA	NA	5.73	NA
Age began marijuana							
Began before 15 vs. never	NA	NA	NA	100.3	.67	NA	NA
Began 15 or older vs. never	NA	NA	NA	38.7	2.67	NA	NA
Began before 15 vs. 15 or older	NA	NA	1.40	NA	NA	1.23	NA
Began cocaine before 18 vs. 18 or older	NA	NA	NA	NA	NA	1.05	NA

Legend
Model 1 = Ever used marijuana; Model 2 = Early marijuana use; Model 3 = Marijuana use over time; Model 4 = Ever used cocaine; Model 5 = Early cocaine use; Model 6 = Cocaine use over time; Model 7 = Early weekly drinking.

[a]This is the reference category: the odds of Hispanics using marijuana compared to nonblack or non-Hispanic (i.e., white) individuals.

Shaded figures are statistically at .05 level.

NA = Not applicable.

It should also be noted that in our tables and report we only focus on odc ratios that were determined to be significantly different from 1.00 at the 95-percent confidence level. This criterion enabled us to feel reasonably certain that the differences described could not be attributed to chance.

Results of the Multivariate Analysis

Our analysis found that risk factors vary in complex ways, although a fev general observations are possible. Delinquency was significant in five of the seven models tested. Those who had engaged in three or more delinquent acts were more than four times more likely to have ever used marijuana and almost twice as likely to have ever used cocaine than thos who did not report any delinquent activity in 1980. Living in the West rather than the South in 1979 was also significant in four of the seven models.

Another general observation is that most of the variables that were significant for having ever used marijuana were also significant for havin ever used cocaine. However, the factors that were significantly associate with having ever used marijuana were generally not found to be significa in our model for continued marijuana use. Similarly, the factors associat with having ever used cocaine were generally not found to be significant associated with cocaine use over time.

The use of cigarettes and alcohol were significant factors in some, but nc all, models. Those who began smoking before age 15 were seven times more likely to have ever used marijuana and almost four times more like to use it early than those who did not smoke cigarettes. However, for those who had used marijuana in 1984, early smoking was not associatec with use in 1988. Those who had begun to drink weekly were more likely to have ever used marijuana and were also more likely to have ever used cocaine. Those who began to drink weekly before age 15 were more like than those who never began drinking weekly to first use marijuana befor they were 15. They were also more likely to use cocaine before age 18. Those who began weekly drinking at age 15 or older did not differ significantly from those who never began weekly drinking in using marijuana early or using cocaine early. Of those who used marijuana or cocaine in 1984, early drinking was not significant for continued use in 1988.

These multivariate analyses did not support some commonly held beliefs about drug use. For instance, the analyses indicated that whites were mc likely to have ever used marijuana and to have used cocaine than

Hispanics or African-Americans. No significant urban/rural differences or differences based on poverty status appeared in any of our drug models.

However, a few broad generalizations based on demographics can be made from our logistic models. For example, although African-Americans were less likely than whites to have ever used cocaine, of those who used cocaine in 1984, African-Americans were more likely than whites to have also used cocaine in 1988. As for gender difference, we found none for marijuana use but did find a difference for cocaine. Men were somewhat more likely than women to have ever used cocaine. But, for those who had used cocaine at least once, men were less likely than women to have used it before age 18. In addition, several regional differences were observed. Those living in the Northeast or the West in 1979 were more likely to have ever used marijuana or cocaine than those living in the South. Of those who had ever used marijuana or cocaine, those in the West were more likely to have used the drug early than those in the South. However, no significant regional differences were found in our continued-use models for either drug.

For each drug, the factors associated with having ever used it were generally not significant for use over time, suggesting that risk factors may vary along some type of continuum of use. For example, not attending or infrequently attending religious services was associated with having ever used marijuana or cocaine. But infrequent religious service attendance was not significant for marijuana use over time or for cocaine use over time. Similarly, those living in a single-parent or stepparent household at age 14 were more likely to have ever used marijuana or cocaine than those living with both parents. However, among those who had used marijuana or cocaine in 1984, family structure was not significant for marijuana or cocaine use over time. Another example was living in high-crime areas: Those who had lived in areas with a high-crime rate were more likely than those from low-crime-rate areas to have ever used marijuana or cocaine. But, among those who had ever used marijuana or cocaine in 1984, we found no significant associations between crime rate and use of either drug in 1988.

Table IV.3: Bivariate Analysis: Variables in Logistic Models

	Marijuana			Cocaine			Alcohol
Variables	Use marijuana (model 1)	Began before 15 (model 2)	Used in 1984 and 1988 (model 3)	Used cocaine (model 4)	Began before 18 (model 5)	Used in 1984 and 1988 (model 6)	Wee drinki before (model
	Used=76%	< Age 15=21%	Continued=42%	Used=34%	< Age 18=16%	Continued=47%	< A 15
Race							
African-American	73%	16%	35%	25%	12%	56%	
Hispanic	69	25	37	31	17	49	
White[a]	77	22	43	35	17	46	
Urban/rural							
Rural	68	18	40	24	13	45	
Urban	77	22	42	36	17	47	
Gender							
Male	80	24	44	39	15	50	
Female	72	19	37	28	18	41	
Region							
Northeast	79	21	40	40	16	47	
North Central	75	21	42	29	13	52	
South	71	18	39	26	14	44	
West	82	28	48	47	21	44	
Poverty							
No	76	21	42	34	16	47	
Yes	75	22	41	30	17	48	
Unemployment rate							
< 6%	75	22	39	34	14	45	
6-8.9%	75	21	45	33	17	48	
9% or more	78	24	42	34	25	52	
Crime rate (#/100,000)							
1-3,999	69	18	41	26	15	43	
4,000-6,999	79	22	41	38	16	48	
7,000+	80	24		38	19	48	
Family structure at age 14							
Single parent	80	29	43	38	21	37	
Parent with stepparent	84	28	48	42	20	42	
Other	78	28	50	34	16	48	
Both parents	74	19	40	32	15	49	

(continue

Variables	Marijuana			Cocaine			Alcohol
	Use marijuana (model 1)	Began before 15 (model 2)	Used in 1984 and 1988 (model 3)	Used cocaine (model 4)	Began before 18 (model 5)	Used in 1984 and 1988 (model 6)	Weekly drinking before 15 (model 7)
Alcoholic parent							
None	73	18	43	30	14	48	4
At least one	84	30	39	45	20	44	6
Religious attendance (1979)							
None	85	29	45	44	19	49	5
Infrequent	79	21	42	37	15	46	4
Frequent	65	16	36	22	15	44	3
Delinquent activity							
None	57	13	32	19	11	30	4
1-2 activities	77	16	37	31	14	38	3
3 or more activities	89	28	46	47	18	54	5
Age began smoking							
Never began	38	10	38	12	10	37	2
< 15	86	31	43	43	19	48	6
15 or older	81	6	39	31	9	44	1
Age began weekly drinking							
Never began	60	17	40	17	15	36	N/A
< 15	94	63	63	66	40	47	N/A
15 or older	87	22	41	45	15	48	N/A
Under 18 in 1979							
No	76	19	41	34	14	42	4
Yes	75	25	43	34	19	53	5
Use of marijuana in 1984							
Infrequent	N/A	N/A	34	N/A	N/A	N/A	N/A
Frequent	N/A	N/A	54	N/A	N/A	N/A	N/A
Heavy drinking in 1988							
None reported	N/A	N/A	32	N/A	N/A	30	N/A
1-5 times	N/A	N/A	46	N/A	N/A	55	N/A
6 or more times	N/A	N/A	55	N/A	N/A	64	N/A
Age began marijuana							
< 15	N/A	N/A	51	70	32	52	N/A
15 or older	N/A	N/A	37	41	8	43	N/A
Never	N/A	N/A	N/A	1	10	59	N/A

(continued)

Variables	Marijuana			Cocaine			Alcohol
	Use marijuana (model 1)	Began before 15 (model 2)	Used in 1984 and 1988 (model 3)	Used cocaine (model 4)	Began before 18 (model 5)	Used in 1984 and 1988 (model 6)	Weel drinki before (model
Age began cocaine							
< 18	N/A	N/A	N/A	N/A	N/A	55	N
18 or older	N/A	N/A	N/A	N/A	N/A	45	N

[a]nonblack, non-Hispanic.

Identification and Analysis of Federal Assistance Programs for Substance Abuse Prevention

Scope and Methodology

We reviewed the Catalog of Federal Domestic Assistance to identify federal programs that support substance abuse prevention efforts. The catalog is a compendium of federal programs, projects, services, and activities that provide assistance or benefits to the American public, and it provides the most complete single source of these efforts. Using key words relating to substance use and abuse, we identified specific substance abuse prevention programs by searching an automated edition of the June 1992 catalog. We then used content analysis of the program descriptions to categorize risk factors, target populations, and types of approaches used by each program.

We obtained additional information from federal program officials through discussions at a workshop that we conducted jointly with Congress's Office of Technology Assessment.

Three limitations apply to the catalog's information. First, it may not fully describe every federal substance abuse prevention effort. For example, some agencies, such as HHS's Office for Substance Abuse Prevention, help communities develop effective prevention efforts through workshops, training programs, cooperation efforts, and information dissemination; these activities are not listed in the catalog.

The second limitation is a lack of specific information in some of the program descriptions. The amount of detail depends on what each agency reports and varys widely. Some programs may support more approaches or address other risk factors than indicated in the descriptions, limiting our ability to capture all program details. We were especially limited in identifying all risk factors addressed and prevention approaches supported. We describe instances in which this constraint limited our analysis below.

Third, the catalog describes what activities are allowed under the program but does not always provide details of the types of projects that are actually being implemented. For example, we learned in the course of our work that most projects supported by HHS's High-Risk Youth Demonstration Grants Program are directed at minority youth populations, although, according to the catalog, this is not a criterion or requirement for funding projects.

Nineteen Federal Programs Support Substance Abuse Prevention

We identified 19 programs in the catalog that support services or activiti related only to substance abuse prevention.[1] Table V.1 briefly describes these programs.

Table V.1: Substance Abuse Prevention Programs in Fiscal Year 1992

Program name	Description	FY 1 func ($ in millic
Department of Education		
Drug-Free Schools and Communities—State Grants	Supports the establishment of state and local alcohol and drug abuse education and prevention programs aimed at the student population that are coordinated with other community antidrug efforts. States receive formula grants and must allocate 90% of their grant to local educational agencies.	$5
Drug-Free Schools and Communities—Emergency Grants	Supports combatting drug and alcohol abuse by students through project grants to local school districts serving areas with large numbers or high percentages of youth arrested or convicted for drug- or alcohol-related crimes or referred to drug and alcohol abuse treatment programs.	
Drug-Free Schools and Communities—School Personnel Training	Supports the establishment, expansion, or enhancement of programs and activities to train teachers and other school personnel in drug and alcohol abuse education and prevention through project grants to state and local educational agencies and institutions of higher education.	
Drug-Free Schools and Communities—Regional Centers	Awards project grants to maintain five regional centers to train school prevention teams and assist educators in developing, strengthening, evaluating, and disseminating alcohol and drug abuse education and prevention programs.	
Drug-Free Schools and Communities—National Programs	Supports drug and alcohol abuse prevention and education activities aimed at the school population through project grants to state and local education authorities, institutions of higher education, and nonprofit groups.	
Counselor Training	Supports the establishment, expansion, or enhancement of programs and activities to train counselors, social workers, psychologists, or nurses who provide drug abuse prevention, counseling, or referral services in elementary and secondary schools through project grants to state and local education agencies, institutions of higher education, or nonprofit organizations under service agreements with local agencies.	
Training Programs for Educators—Alcohol Abuse	Supports training of educators of children in grades 5 through 8 on alcoholism's effects on families through project grants to state and local education agencies, institutions of higher education, or other public and private entities.	
Subtotal		**$6**

(contin

[1]We did not identify programs that only support substance abuse treatment or law enforcement services.

Program name	Description	FY 1992 funding ($ in millions)
Department of Health and Human Services		
Community Partnership Study Demonstration Grant	Supports the formation of coalitions or partnerships to establish and operate communitywide alcohol and other drug abuse planning and program models. Project grants are awarded to local governments and nonprofit agencies to supplement other prevention and early intervention efforts in the community.	88.0
Demonstration Grants for the Prevention of Alcohol and Other Drug Abuse Among High-Risk Youth	Supports community-based demonstration projects that are aimed at reducing drug and alcohol use among high-risk youth, identifying and reducing factors that place youth at high risk, and increasing resiliency and protective factors among high-risk youth. Programs with client or service orientations are supported with project grants to nonprofit organizations.	52.0
Demonstration Grants on Model Projects for Pregnant and Post-Partum Women and Their Infants	Supports the establishment of integrated, comprehensive services to increase the availability and accessibility of prevention, early intervention, and treatment services and decrease alcohol and drug use among pregnant and postpartum women and their families. Project grants are awarded to nonprofit or for-profit groups or state and local governments.	50.0
Drug Abuse Prevention Program for Runaway and Homeless Youth	Supports the expansion and improvement of projects to improve drug abuse prevention services for runaway and homeless youth and their families through project grants to state and local governments, U.S. territories, Indian tribes, and nonprofit organizations.	15.3
Drug Abuse Prevention and Education Relating to Youth Gangs	Supports programs that provide activities designed to prevent and reduce the participation of youth in gangs that engage in illicit drug-related activity through project grants to state and local governments, U.S. territories, Indian tribes, and nonprofit organizations.	10.9
Comprehensive Residential Drug Prevention and Treatment Projects for Substance-Using Women and Their Children	Supports projects demonstrating effective models for comprehensive prevention and treatment services in residential facilities for substance-using women and their children through project grants to nonprofit or for-profit organizations and state or local government agencies.	10.3
Community Youth Activity Demonstration Grants[a]	Supports the establishment of innovative drug and alcohol abuse prevention services in communities where youth are at greatest risk of drug and alcohol use through project grants to states.	7.0
Communications Programs Aimed Toward the Prevention of Alcohol and Other Drug Problems	Supports the development and evaluation of promising communications-based approaches to the prevention of alcohol and other drug problems for high-risk groups through project grants to nonprofit and for-profit organizations and state, local, or federal government agencies.	3.1
Community Youth Activity Program Block Grants[a]	Supports prevention services and partnerships designed to develop education, training, and recreation activities targeted towards substance abuse prevention among high-risk youth through formula grants to states.	2.4
Conference Grant (substance abuse)	Supports domestic conferences designed to coordinate, exchange, and disseminate information on alcohol and other drug abuse prevention through project grants to nonprofit and for-profit organizations, federal agencies, or units of state and local government.	2.1
Subtotal		**$241.2**
Department of Justice		
Public Education on Drug Abuse Information	Provides technical assistance publications and information for use in drug prevention activities to law enforcement agencies and the general public.	$2.9
Subtotal		**$2.9**

(continued)

Program name	Description	FY 1 func ($ in millic
ACTION		
Drug Alliance	Supports the use of volunteer groups in drug use prevention and education activities in communities combatting drug use through project grants to state, local, and nonprofit organizations.	
Subtotal		
Total funding		**$8**

[a]Budget authority for these programs expired in fiscal year 1993.

Forty Additional Programs May Have Substance Abuse Prevention Activities

We identified another 40 programs in the catalog that provide funds to support substance abuse prevention activities within broader or more diverse social service efforts. The following lists these programs. Becau the catalog did not report expenditures for prevention activities, we do report funding levels.

Department of Education

- Federal, State, and Local Partnerships for Educational Improvement
- Public Library Services

Department of Health and Human Services

- Alcohol and Drug Abuse Clinical or Service-Related Training
- Alcohol National Research Service Awards for Research Training
- Alcohol Research Center Grants
- Alcohol Research Programs
- Alcohol Scientist Development Award and Research Scientist Development Award for Clinicians
- Alcohol, Drug Abuse and Mental Health Services Block Grant[2]
- Community Coalition Demonstration Projects to Support Health and Human Services Needs for Minority Males
- Community Demonstration Grant Projects for Alcohol and Drug Abuse Treatment of Homeless Individuals
- Drug Abuse National Research Service Awards for Research Training
- Drug Abuse Research Programs
- Drug Abuse Scientist Development Award for Clinicians—Scientist Development Awards and Research Scientist Awards
- Emergency Protection Grants—Substance Abuse
- Family Violence Prevention and Services

[2]Budget authority expired in 1993 and program was replaced by Block Grants for Prevention and treatment of Substance Abuse.

	• Health Services in the Pacific Basin • HIV/AIDS and Related Diseases Among Substance Abusers: Community-Based Outreach and Intervention Demonstration Program • Indian Health Service—Health Management Development Program • Indian Health Service Research • Integrated Community-Based Primary Care and Drug Abuse Treatment Services • Mental Health Research Grants • Minority AIDS and Related Risk Factors Education/Prevention Grants[3] • Occupational Safety and Health Research Grants • Project Grants for Health Services to the Homeless • Projects for Assistance in Transition from Homelessness • Small Business Innovation Research • National Institute of Alcohol Abuse and Alcoholism, NIDA, and National Institute of Mental Health Small Instrumentation Program Grants[3] • Urban Indian Health Services
Department of Housing and Urban Development	• Public and Indian Housing Drug Elimination Program
Department of Justice	• Criminal Justice Research and Development - Graduate Research • Drug Control and System Improvement - Formula Grant • Drug Control and System Improvement - Discretionary Grant • Justice Research, Development, and Evaluation Project Grants • Juvenile Justice and Delinquency Prevention - Special Emphasis • National Institute of Justice Visiting Fellowship • Part D-Juvenile Gangs and Drug Abuse and Drug Trafficking
Department of Transportation	• Alcohol Traffic Safety and Drunk Driving Prevention Incentive Grants
ACTION	• Senior Companion Program • Student Community Service Program • Volunteers in Service to America

[3]Program elements have been incorporated into other programs due to reorganization in 1993.

Programs Most Often Provide Services to Individuals

More than half of the 19 substance abuse prevention programs that we identified provide services aimed at preventing individuals from startin increasing their use of alcohol and other drugs. About one-quarter of th programs provide administrative support for service providers only. Th support includes such activities as training and technical assistance for local prevention programs. Table V.2 shows the number of programs supporting services to individuals and administrative support for prevention service providers.

Table V.2: Most Federal Prevention Programs Support Services to Individuals

	Number of programs provide only subst abuse prever assist
Services to individuals	
Administrative support for service providers	
Both services to individuals and administrative support	
Total	

Source: Catalog of Federal Domestic Assistance, June 1992 edition.

Most Substance Abuse Prevention Services Are Funded by Project Grants

Project grants are the most commonly available form of assistance amc the 19 programs we examined. These grants are usually awarded to projects at the discretion of agency administrators for a fixed or knowr time.

In contrast, a few programs provide formula grants that are awarded tc states or their subdivisions to support program activities not limited to specific projects (see table V.3). Funds are distributed by a legislatively administratively prescribed formula.

Table V.3: Most Federal Prevention Programs Are Project Grants

	Number of programs	FY fun
Project grants	16	$328,19
Formula grants	2	550,27
Information	1	2,40
Total	**19**	**$880,87**

Source: Catalog of Federal Domestic Assistance, June 1992 edition.

Most Prevention Programs Address One or More Specific Risk Factors

We found, based on our review of program descriptions, that more than half of the 19 federal substance abuse prevention programs are aimed at addressing specifically identified risk factors (see fig. 5). We grouped risk factors into the following categories:

- Economic/environmental factors: Poverty, living in economically depressed areas, community laws or norms favorable towards substance use, availability of or access to substances, low neighborhood attachment, and community disorganization.
- Family factors: Alcohol and drug dependency of parents, parental abuse and neglect of children, large or overcrowded family, parents with little education or employment experience, single parent, absentee parent, inadequate parenting or low parent-child contact, high family conflict and instability, homelessness, or running away.
- Biological/constitutional vulnerability factors: Physical handicap or health problems, mental health problem or learning disability, and biological or genetic factors.
- Social/peer factors: Lack of positive role models, negative peer pressure, or drug-using peers.
- Psychological factors—early behavior problems: Aggressiveness, emotional problems, low self-esteem, and peer rejection in primary school.
- Psychological factors—adolescent behaviors, problems, and experiences: Mental health problems and suicidal tendencies or depression, alienation, rebelliousness or nonconformance, and low self-esteem or self-confidence.
- Behavioral factors: School failure or dropping out, involvement in delinquency or violence and antisocial acts, early or other substance use or abuse, early sexual activity and teen parenthood, and unemployment or underemployment.

We could not determine whether seven programs addressed specific risk factors. In nine other program descriptions that had references to specific risk factors, we also found indications that additional risk factors were possibly being addressed. In part, this is because the catalog descriptions are not always highly detailed. For example, according to the description for the Community Youth Activity Block Grant, states must provide services aimed at youth at highest risk for drug use, but "youth at highest risk" is not further defined or described. From other language in the program description, we could identify delinquency and previous substance use as risk factors addressed by this program. This reference to "high-risk youth" led us to also include the program in our category "other factors are indicated but could not be specifically identified."

Federal Programs Assist a Wide Variety of Prevention Approaches

We found, based on our review of program descriptions, that 14 of the 1 federal substance abuse prevention programs support the use of 11 specific approaches aimed at preventing individuals from using or abus alcohol or drugs. Fig. V.1 shows the approaches supported by each of tl programs.

Figure V.1: Federal Assistance Programs Support a Variety of Prevention Approaches

Program name	Information dissemination/ media campaign	Outreach	Individual counseling/ mentoring	Education	Parenting/life skills training	Alternative activities	Health-related services	Peer intervention/group counseling or care	Social skills/resistance training	Family intervention/ counseling	User accountability/ sanctions	Total number of approaches supported	Other approaches are indicated but could not be specifically identified	No approaches specified/ could not be determined
Drug-Free Schools and Communities-Emergency Grants		●	●	●		●	●	●		●		7	●	
Drug Abuse Prevention Program for Runaway and Homeless Youth	●	●	●	●				●		●		6	●	
Drug Alliance			●	●		●		●		●		5	●	
Comprehensive Residential Drug Prevention and Treatment Projects for Substance-Using Women and Their Children			●		●		●			●		4	●	
Demonstration Grants on Model Projects for Pregnant and Postpartum Women and Their Infants				●			●			●		3	●	
Community Youth Activity Block Grants				●		●	●					3	●	
Drug Abuse Prevention and Education Relating to Youth Gangs	●					●				●		3	●	
Drug-Free Schools and Communities-National Programs		●		●						●		3	●	
Drug-Free Schools and Communities-State Grants				●					●			2	●	
Communications Programs Aimed Toward the Prevention of Alcohol and Other Drug Problems	●											1		
Conference Grant (substance abuse)	●											1		
Community Youth Activity Demonstration Grants				●								1	●	
Drug-Free Schools and Communities-Regional Centers	●											1		
Public Education on Drug Abuse Information	●											1		
Drug-Free Schools and Communities-School Personnel Training														
Demonstration Grants for the Prevention of Alcohol and Other Drug Abuse Among High-Risk Youth														●
Counselor Training														
Training Programs for Educators-Alcohol Abuse														
Community Partnership Study Demonstration Grant														●
Total	6	3	4	8	1	4	4	3	1	7	0		10	2

We could not identify any specific approaches in two of the programs. T other program descriptions for which we did identify specific approach also indicated that additional approaches could be provided within the objectives of the programs. This is also because the catalog description are not always highly detailed. For example, the Drug-Free Schools and Communities—State Grants allow states to support the development ar implementation of broadly based programs for alcohol and drug abuse education and prevention. Although the program description refers to several specific approaches that may be supported, it also indicates tha states may support a variety of unspecified approaches. In another case the description for the Demonstration Grants for High-Risk Youth Programs does not specify the use of any approaches. However, we subsequently learned that several of the approaches we identified may used by program grantees.

Major Contributors to This Report

Human Resources Division, Washington, D.C.

George Poindexter, Assistant Director, (202) 512-7213
Gail Johnson, Project Manager
Linda Baker, Senior Evaluator
C. Robert DeRoy, Senior Computer Specialist
Kevin Dooley, Senior Evaluator (computer science)
Steven Machlin, Statistician
Joel Marus, Evaluator
Darlene Cartledge, Secretary

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