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CANNABIS USE IN THE UNITED STATES: IMPLICATIONS FOR POLICY

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1 Executive summary

What has been the impact of cannabis policy in the United States? Has the United States implemented and demonstrated a rational cannabis policy? What are the dynamics and driving force behind cannabis policy in the United States and how can the success or failure of such policy be evaluated? And most importantly, are the goals of cannabis policy realistic and obtainable?

The major tenet of U.S. drug policy is that the use of illicit drugs is harmful; that they pose injury to the individual who uses them, to individuals with whom the drug user comes in contact, and to society at large. These costs, both personal and societal, take many forms including treatment and other health care costs, productivity in the workplace, crime, emotional and physical suffering of family members and friends, as well as the costs of enforcement, the judiciary, and the penal system. Controlling these costs and other related costs and harms is the major goal of U.S. policy.

However, it is critical to remember that the United States has no cannabis policy per se. Cannabis is a part of the national drug policy, usually treated in exactly the same way as other illicit substances, including the opiates and cocaine. What follows is a discussion of cannabis with respect to various aspects of drug policy.[1]

Prevalence

The available evidence suggests that cannabis was not used by a significant number of people in the United States prior to the 1960s. Before that time, such use was reported as minimal and seemed to be highly centralized within the ghetto and among minorities and assorted "marginal" groups, such as jazz musicians. In the 1960s, however, cannabis use began to come to the fore, perhaps as a token of rebellion among youth. The number of Americans who had tried marijuana at least once increased from probably no more than several hundred thousand to an estimated 8 million by the end of the 1960s. It is commonly hypothesized that marijuana use first burgeoned among college students before spreading to younger groups. A 1971 survey found over half of the nation's college students had at least tried marijuana. The first national survey on marijuana use of a sample of the U.S. population was conducted by the National Commission on Marihuana in 1971. The survey found 14% of youth aged 12-17 and 15% of adults aged 18 and older had tried marijuana. Use was

clearly age related with 27% of 16-17 year olds, 40% of 18-21 year olds, 38% of 22-25 year olds, but only 6% of those aged 50 and older and of the 12-13 year olds having ever used the drug. However, 41% of the adults and 45% of the youth reported they no longer used marijuana, and 9% of the adults and 15% of the youth reported they used less than once a month. Two percent of the adults and 4% of the youth who ever used marijuana were using it several times a day.

The United States is fortunate to have several national surveys that address both the nature and the extent of cannabis use. These surveys are thought to be both valid and reliable indicators. Further, they have been ongoing for about two decades. Throughout the 1970s, the Monitoring the Future and Household surveys were also showing increasing rates of cannabis use, particularly among the young. These rates peaked in 1979 when the Monitoring the Future survey of students in their last year of high school (average age of 17-18 years) found 60.4% reporting they had ever used marijuana, 50.8% had used it in the past year and 36.5% had used it in the past month. The 1980s showed a high but nevertheless declining rate of marijuana use among youth regardless of whether "ever used," "past 12 months," or "last 30 days," was used as an indicator. For "ever used" marijuana, the reported 1980 rate was 60.3%, the 1983 rate was 57.0%, the 1986 rate 50.9%. Use of marijuana in the "past 12 months" was reported by 48.8% of the graduating class of 1980, 42.3% of the class of 1983, and 38.8% of the class of 1986. Marijuana use in the "last 30 days" was reported by 33.7% of the class of 1980, 27.0% of the class of 1983 and 23.4% of the class of 1986. By the late 1980s, there was a feeling that the United States at last was "turning the corner" on drug use. The lifetime prevalence of marijuana use in 1988 was down to 47.2%, approximately the same figure (47.3%) as in 1975, the first year of the Monitoring the Future survey. Annual prevalence in 1988, was down to 33.1%, far less than the 40.0% figure recorded by the survey in 1975. Thirty day prevalence, in 1988, was 18.0%, a full third less than the 1975 figure of 27.1%. This downward trend in use patterns continued through 1992. The survey data, however, for 1993 and 1994 indicate a reversal of trend. Marijuana use is on the upsurge among youth. In fact, 1994 Monitoring the Future data indicate the increase great enough to push prevalence rates back to about 1988 use levels. This two-year turnaround is noteworthy and data for 1995 will be critical in determining whether or not this trend continues. This increase in marijuana use is not replicated in the Household survey, but data are only available through 1993. The only significant increase in drug prevalence rates between 1992 and 1993 was for "past year" marijuana use, and only among young adults aged 18-25. Not insignificantly, the 1992 Household survey estimated that some 69 million Americans have, at some time in their life, tried marijuana. This is approximately 33% or about one out of every three Americans. A vast number of these, however, have only used marijuana once or twice, and this must be borne in mind when examining this statistic.

Legislation

Given these trends, the question arises as to how they relate to public policy. The answer, briefly, is that they don't. There does not appear to be any relationship or correlation between policy and prevalence. Public policy is probably best mirrored in the legislation being applied to drug control. When marijuana prevalence rates began to rise during the 1960s, any possession of marijuana was a felony offense under all state and federal laws. The year 1970 saw passage of the Comprehensive Drug Abuse and Control Act of 1970 (Controlled Substances Act of 1970), an act which at one and the same time put marijuana in the same schedule of drugs as heroin and LSD while also lowering the maximum penalty for possession of one ounce or less. Between 1969 and 1972, 42 states reduced penalties for marijuana possession and, in the period 1973 through 1978, 11 states decriminalized possession of small amounts of marijuana for personal use. It is believed that the lowering of penalties in the late 1960s through mid-1970s was largely in response to parental concerns about children being arrested for marijuana, and the impact of their arrest record on subsequent career attainment.

Nevertheless, beginning in late 1969 and continuing to date, the United States has made a concentrated and concerted effort to stem the tide of illegal drugs, including marijuana, through a program of strict law enforcement. Several enacted statutes including the Racketeer-Influenced and Corrupt Organizations (RICO) and the Continuing Criminal Enterprise (CCE) laws of 1970 served primarily as a "get tough" on drugs platform and allowed for forfeiture of property and assets associated with criminal (read illicit drug) operations. Air and sea blockades of producing countries and transhipment points have served as reminders of this country's efforts to interdict drugs and make smuggling unprofitable and dangerous. Operation Intercept in 1969 and a succession of interdiction efforts in the decades that followed, no matter what their relative degree of success, serve notice that the United States is serious in pursuing supply reduction through law enforcement activities.

There also can be no question that during the late 1970s, the Carter Administration seriously considered the propriety of decriminalizing marijuana and indicated it was not interested in prosecuting individuals having small amounts of marijuana in their personal possession. In spite of the Administration stance and in spite of lobby efforts by pro-marijuana decriminalization groups such as the National Organization for the Reform of Marijuana Laws (NORML), the issue could not be brought to a head. Marijuana criminalization, decriminalization or legalization was a non-issue. There was not enough of a public opinion consensus and concern raised to precipitate legislative action.

In the decade of the 1980s and, to date, there has been a continuance of a "get tough" policy with respect to drugs, and marijuana has been a part of that policy. Several so-called "get tough" crime measures were passed in Congress. Under the auspices of the Reagan and Bush Administrations, interdiction became a very high priority. The century old Posse Comitatus Act was amended in 1982 to allow the U.S. military to engage in supply reduction activities such as training, intelligence gathering, detection, and use of equipment. This interdiction effort was in fact reasonably successful in reducing the amount of marijuana smuggled into this country. It was far more profitable and less risky to smuggle cocaine. The success of this interdiction effort led to what some saw as a shortage of marijuana, though surveys were still showing marijuana as being easy to obtain. If, in fact, there was a void in the supply of marijuana, it was quickly filled by increased domestic cultivation of marijuana.

The military too adopted "get tough" measures. Earlier it had placed priority on drug abuse prevention and treatment. In the 1980s the military changed its stance and adopted a zero tolerance policy. Urine screens were introduced into the military establishment as a mechanism of ferreting out (and discharging) drug users and this soon spread as well to civilian workplaces. It should also be pointed out that several states, Maine, Oregon and Ohio, who decriminalized marijuana in the 1970s tightened their marijuana restrictions in the 1980s and no states have further decriminalized marijuana since 1978. Further, Alaska, in 1990, voted to recriminalize marijuana possession.

Nowhere can the "get tough," conservative mood of drug policy be better gauged than in the new U.S. Congress seated in January of 1995. For the first time in 40 years the Republicans have control of both the House of Representatives and the Senate. Some 102 new members have joined this Congress, many of them gaining office on a "get tough on crime" platform. The House of Representatives has already passed "The Taking Back of Our Streets Act" (HR 3), which includes provisions for mandatory sentencing, over $10 billion to states to build new prisons, and more law enforcement personnel. On January 4, 1995, the Senate introduced their "get tough" bill, the "Violent Crime Control and Law Enforcement Improvement Act of 1995" (S-3). It specifically targets, with mandatory minimum sentences, acts including selling drugs to minors, and selling drugs near schools (now all designated Drug-Free Zones in the U.S.). While marijuana is not specifically mentioned in either the House or Senate proposals, there is no doubt that the specifics of whatever crime bill is finally enacted will be brought to bear upon marijuana.

Marijuana production and seizures

Since cannabis is illegal, there are no valid sources of information on supply. The Bureau of International Narcotics Matters' estimate foreign marijuana production, but the numbers vary considerably from year and year, and changes in estimation methodology make it difficult to interpret trend data. We do not know what fraction of marijuana grown in producer nations like Mexico, Columbia or Jamaica is exported to the U.S. or other countries.

The following table provides Drug Enforcement Administration (DEA) estimates of domestic marijuana production for 1988 to 1992 in metric tons.

Table 1. DEA Estimates of Domestic Marijuana Production for 1988 to 1992 in Metric Tons.

	1988	1989	1990	1991	1992
Total Production	4,350 - 4,850	5,000 - 6,000	5,000 - 6,000	3,615 - 4,615	2,595 - 3,095

However, other experts estimate domestic marijuana production using survey data on consumption at about 1000 metric tons, about 20% of which fails to reach the market (Chalsma and Boyum, 1994). The total estimate of marijuana consumption in 1992 was about 1600 metric tons, including both domestic and imported marijuana. Clearly, DEA estimates of marijuana production are not consistent with consumption-based estimates.

Cannabis can be seized by several different agencies including the DEA, Customs, the Coast Guard, and the Postal Service, but the estimates they publish cannot be combined since more than one agency may have been involved in the seizure. Nevertheless, the trend data from 1985 through 1992 indicate a large decline in overall seizures. For example, Customs seized approximately 1500 metric tons of marijuana in 1985, compared to 300 metric tons in 1992.

The DEA estimates a pound of marijuana as having a value somewhere between $400 and $3,000. According to a user survey conducted by Chalsma and Boyum (1994), the average price of marijuana was $55 for a quarter ounce. This amounts to about $8 dollars per gram of marijuana, which is very similar to the price charged for marijuana in Dutch coffeeshops.

One final point is that law enforcement resources and priorities heavily influence the trends in seizures. Likewise, they influence the trends in arrests.

Marijuana arrests

Federal, State and local law enforcement agencies share responsibility for enforcing the nation's drug laws though the majority of drug arrests are made by State and local authorities. However, the DEA and the Federal Bureau of Investigation (FBI) also make arrests at the Federal level. For drug violations involving smuggling the U.S. Coast Guard and U.S. Customs Service are also party to carrying out drug laws. Due to variations in the ways the separate states collect information, data are not combined to yield national totals, however the FBI *estimates* the number of arrests for drug violations by State and local police.

Between 1980 and 1993, the number of arrests for drug offenses by State and local police doubled from 580,901 to 1,126,300 (Uniform Crime Reports, 1994). Whereas the 1980 total was dominated by arrests for marijuana (70%) and possession offenses (82%), by 1992, opium/cocaine related arrests (50%) exceeded the number for marijuana related arrests (33.8%). Marijuana distribution arrests accounted for about equivalent shares of drug-related arrests in both 1980 (27%) and 1993 (29.7%) (cf., Maguire and Pastore., 1994; Uniform Crime Reports, 1994). Following a big jump between 1971 and 1973, arrests for marijuana remained relatively stable until 1985. Marijuana arrests dropped in 1986 and again in 1990, but then rose dramatically in 1992 and 1993.

Table 2. Recent Trends in Drug Arrests.

Year	Number of Persons Arrested for Drug Offenses	Number Arrested for Marijuana	Number Arrested for Marijuana Possession	Total Marijana Arrests
1990	1,089,500	66,460	260,390	326,850
		6.1%	23.9%	30.0%*
1991	1,010,000	61,610	226,240	287,850
		6.1%	22.4%	28.5%*
1992	1,066,400	70,382	271,932	341,314
		6.6%	25.5%	32.1%*
1993	1,126,300	69,831	310,859	380,690
		6.2%	27.6%	33.8%*

* Percent of marijuana arrests as a function of total drug arrests

Looking at the recent trends in drug arrests, Table 2 shows there were approximately 1.1 million arrests for drug offenses in 1990. Of this number, 66,500 (6.1%) were for sale/manufacture of marijuana and 260,400 (23.9%) were for possession for a total of 326,900 cases (30%). In 1993, there were 380,690 arrests for marijuana. This was 33.8% of all drug arrests. Approximately 6.2% of the marijuana arrests were for sale/manufacture (69,831), and 27.6% were for possession (310,859). (Communication from Wayne J. Roques, DEA; Maguire and Pastore, 1994; Uniform Crime Reports, 1994).

Overall, drug arrests began their rapid escalation after 1983. The trend had been toward an increase in the numbers arrested for sales and distribution over the period, but 1992 signalled a bit of a reversal in the trend. The increase in drug arrests since 1983 is almost entirely attributable to the increase in arrests for opium and cocaine, and not marijuana. After reaching their high point in 1982 at 455,900, arrests for marijuana stabilized through about 1985. Marijuana related arrests decreased by nearly a quarter between 1985 and 1986, when they started to rise again. They fell again by about a third in 1990, and are again on the rise.

Criminal cases filed in U.S. district courts

Records have been compiled on the number of federal defendants charged with drug law violations in U.S. District Courts for several decades. The federal court system handles cases typically against higher level drug dealers and their agents. Between 1945 and 1968, the numbers were relatively stable. The number of drug offenders gradually increased from 1968 through 1974, when they stabilized and started to decrease. That decrease ended in 1980. Over the period 1980-1992, there was a 346% increase in the number of federal defendants sentenced to prison in U.S. District Courts, compared to a 71% increase for non-drug offenses (BJS, 1992b). A study commissioned by Attorney General Janet Reno in 1993 concluded that more than one-fifth of the federal prison population consists of "low-level" drug offenders, defined as persons convicted of drug crimes who have no prior prison time, no current or prior violence in their records, and no involvement in sophisticated criminal activity (CJN Drug Letter, 1994).

In 1991, 46,337 offenses were filed in U.S. District Courts. In 1992, this figure rose 2.4% to 47,472. Drug law violations constituted 11,954 offenses (about 26% of the total) and increased 7.4% to 12,833 in 1992 (about 27% of the total). Marijuana offenses numbered 3,488 in 1991 (about 29% of all drug law violations and 7.5% of all violations) and in 1992 increased 16.8% to 4,073 violations (about 32% of all drug law violations and 8.6% of all violations) (Maguire and Pastore, 1994).

Some 77% of the defendants charged in U.S. District Court in 1985 with a marijuana violation were convicted. This percentage has risen steadily over the intervening years, reaching 85% in 1991 and 86% in 1992 (Maguire and Pastore, 1994). Of those marijuana defendants convicted in U.S. District Courts in 1985, 67% received prison time. As with convictions, the percentage of those convicted and receiving a prison sentence has risen steadily over the intervening years, reaching 79% in 1991 and 81% in 1992 (Maguire and Pastore, 1994). The average length of prison sentence among those convicted of a marijuana violation in U.S. District Court has, however, not increased in the period 1985

through 1992, this in spite of the enactment of mandatory minimum statutes. In 1985, the average length of sentence was 46 months; in 1992 the figure was exactly the same, 46 months. The intervening time period saw average length of sentences range between 47 and 51 months (Maguire and Pastore, 1994). It would seem that though cases, convictions and prison sentences are increasing for marijuana violations, somewhat surprisingly, the length of prison term is not increasing.

We also reviewed what happened to defendants in U.S. District Courts for the year 1992 with respect to disposition of case. In that year there were 5,657 marijuana defendants before the court. Of that number 917 were not convicted with 814 of these being dismissed by the court. Of the remaining 103 defendants, 15 were acquitted by the court and 88 were acquitted by jury. Turning to the 4,740 defendants convicted by the court, the vast majority, 4,283 entered a plea of guilty. Two defendants pled nolo contendere, 34 were convicted by the court and 421 were convicted by jury (Maguire and Pastore, 1994).

Among Federal inmates for the year 1991 it is possible to obtain a measure of the amount of drugs involved for the current offense. For those involved in marijuana trafficking (4,420 inmates), the median number of grams involved was 136,080 (in excess of 272 pounds) and the mean number of grams was 3,353,580 grams (over 6,700 pounds). For those inmates convicted of marijuana possession (1,506 inmates), the median number of grams involved in the offense was 45,360 (over 90 pounds) and the mean number of grams was 2,100,560 (over 4200 pounds). Unfortunately these data are not available for State inmates (BJS, 1994).

Those inmates in Federal prisons in 1991 were far more likely than those in State prisons to be incarcerated for a drug offense(s). Some 57.9% of all Federal inmates were serving time for a drug offense. For State inmates this figure drops to 21.3% (Bureau of Justice Statistics, 1994). Somewhat surprisingly, the Federal prisoners were also far less likely than the State prisoners to have used drugs including marijuana. In 1991, 52.8% of the Federal prisoners said they had ever used marijuana. At the State level this figure is 73.8%. With respect to ever having used marijuana on a regular basis, 32.2% of the Federal and 51.9% of the State inmates replied in the affirmative. When asked about the use of marijuana in the month before the offense, 19.2% of the Federal and 32.2% of the State prisoners replied positively. In terms of using marijuana at the time of the offense, 5.9% of the Federal and 11.4% of the State inmates said this was the case. Of all drugs (alcohol was not included), marijuana was the substance most common to both groups of prisoners, followed by cocaine and then heroin (BJS, 1994).

Costs of enforcement

Including federal, state and local law expenditures, the United States in 1990 spent some $74,249 billion on law enforcement. This includes federal, state, local, county and municipal expenditures. The major category of costs were police protection at $31.805 billion (42.8%) and corrections at $24.961 billion (33.6%). Figured on a per capita cost, in 1990 it is estimated that all components of the justice system cost each resident of the United States $299 (BJS, 1992, p. 5).

The Bureau of Justice Statistics estimates that, in 1990, it cost $14,456 per year to maintain a federal inmate and $15,604 per year to maintain a state inmate. Included in these costs were salary and expenses, food, and supplies, and land rental or purchase costs. Costs of construction, and maintenance are not included. At the Federal level, the Bureau of Prisons (BOP) estimate their fiscal year 1995 drug expenditures as amounting to $1.694 billion dollars. This is approximately 64% of the total BOP budget of $2.232 billion, and includes costs for salaries, buildings and facilities, and new construction. For Fiscal Year 1996, the drug-related portion of new prison construction is about $158.0 million. Currently the BOP has 95,300 inmates under their care. Divided by the total BOP budget yields a cost of approximately $23,500 per prisoner. In 1991, 57.9% of all Federal prisoners were there on drug charges. In that same year (1991) some 28,650 drug offenders were sentenced as Federal inmates. Of this number, 6,015 (21% were marijuana related). Thus while specific costs with respect to marijuana cannot be offered, the cited data suffice to say that the cost of imprisoning marijuana law violators is considerable.

Estimating the costs for enforcement is a more difficult charge. Nationally, 3.3% of all government spending in 1990 was for criminal and criminal justice activities, up from 2.9% in 1985. This represents a 24% increase in the period 1985-1990 in constant 1990 dollars. To put this in context, 20.5% of the nation's expenditures in 1990 were for social insurance payments, 15.5% were for national defense and international relations, 14% were for education and libraries, 6.3% were for public welfare, and 4.2% were for hospitals and health. In 1990, 1.4% of all spending was for police protection, 1.1% was for corrections, and 0.7% was for judicial and legal services such as courts (0.4%), prosecution and legal service (0.2%) and public defense (0.1%).

Between 1971 and 1990, justice system expenditures in the United States increased 606%. The greatest increases were for corrections. The expenditure for this activity increased 313.3% in the period 1979-1990 and increased 91.5% in the period 1985-1990. The bottom line is that much of the increase in the nations' prison, jail, probation and parole populations, as well as the increases in criminal justice spending can be attributed to increased emphasis on punishing drug

offenders and the increasing severity of sanctions (Graham and Zedlewski, 1990). Unfortunately, it is not possible to reliably extract the amount attributable to enforcement of the marijuana laws, especially distinguishing between possession and sales/distribution offenses.

However, data from California may be informative in this regard. California conducted a careful study of the economic impact of its marijuana decriminalization policy in the mid-1970s. In the early 1970s, with statewide arrests approaching 100,000 annually (over 90% of which were for simple possession), enforcement costs averaged well over $100 million per year (Moscone Committee, as referenced in Brownell, 1988). According to the study, decriminalization resulted in a 74% reduction in what the state had been spending yearly to enforce its marijuana laws (California Health and Welfare Agency, 1977; National Academy of Sciences, 1982). Aldrich and Mikuriya (1988) estimate that the State of California has saved nearly half a billion dollars (about $46 million per year) in arrest costs alone since 1976. Subsequent estimates put the savings since 1988 at another half billion dollars (ABC News, April 6, 1995). In general, states that decriminalized marijuana possession in the 1970s reported savings in police and judicial resources (Slaughter, 1988).

One final note about costs for enforcement is that new laws are increasing the amount of assets seized in connection with marijuana offenses. Such laws make it possible for the government to take profits and property of illicit drug operations and permits participating law enforcement organizations to share a percentage of such forfeited assets. Such seizures represent a significant amount of money. In 1987, the DEA seized $116.4 million in marijuana related cases. This was approximately 23% of all assets seized by the DEA. Forfeiture for marijuana cases in 1988 amounted to $157.3 million, again 23% of seized assets. For the year 1989, marijuana asset forfeitures dropped to $146 million, 15% of total seized assets. In 1990, asset forfeiture for marijuana related cases increased dramatically to $225.2 million, 20% of all forfeited assets. For 1991, $208.2 million in marijuana related assets were forfeited, 22 percent of all forfeited assets (DEA, *Domestic Marijuana Eradication: A Success Story*, no date). The point to be made is that the government is using the forfeiture laws as a major weapon in its effort to stem the supply of marijuana.

Public opinion

It is important to realize that facts and data per se have little to do with drug policy or cannabis policy. It appears that public opinion, often as expressed by the mass media, drives drug policy. As frustrating as this might be to social scientists and academics, the introduction of data and facts, no matter how valid and reliable, has little to do with winning or losing the forum of public opinion. Several points can be made in this regard.

1. The mass media is a powerful shaper of public opinion. It was used in the 1930s by Harry Anslinger to make marijuana public enemy number one and, in 1937, to gain passage of the Marihuana Tax Act. Today, it is more powerful than ever. Every story with an emotional appeal is covered by the media. The connection between drugs and crime is constantly emphasized. Seizures, interdictions, shootouts - all aspects of supply reduction -are deemed newsworthy. Unfortunately, the demand reduction aspects of drug policy do not sell many papers or offer much gain in network ratings. For example, the results of the Monitoring the Future and Household surveys which showed declining rates of drug usage throughout the 1980s and much of the 1990s get news coverage on perhaps one day in major newspapers and national news broadcasts. However, these same newspapers and broadcasts report almost daily incidents of drug-related crime. The result is that the public perceives drug use is on the increase, particularly during the height of the "drug war," when prevalence rates were falling steadily.

With respect to marijuana or any of the illicit drugs, it is the PERCEPTION of the drug, the PERCEIVED harm, its ALLEGED connection to other illicit substances and its REPORTED role in crime, violence and illicit activities that shape public policy. This is not to say there is no truth or facts in the development of public opinion. It is to say that the perceived harm and consequences, not necessarily the actual harm and consequences will influence the public and thus shape policy. Unfortunately, the U.S. has a woefully undereducated and misinformed public helping to set drug policy.

2. Within public opinion, another driver of marijuana policy in the United States has been the general health movement. Public opinion now holds that regular exercise, careful nutrition, and weight control are the ways to good physical and mental health. Whether this movement turns out to be a fad and fades and/or disappears remains to be seen. What can be said is that the general health movement is very popular. This movement would essentially hold that marijuana is unhealthy, harmful and "bad". Thus the use of marijuana is not compatible with the physical health movement so in vogue with the public. Of course, the fact that over a third of the U.S. adult population is overweight and this percentage is rising doesn't mesh well with the healthy ideal in U.S. society either.

Data from Monitoring the Future survey are very instructive in this regard. In 1991, 40.4% of 13-14 year old students, 30.1% of 15-16 year old students and 27.1% of 17-18 year old students reported "great risk" in trying marijuana once or twice. When "once or twice" is changed to "smoke marijuana occasionally" the 13-14 year old students percentage rose to 57.9, the 15-16 year old students percentage rose to 48.6, and the 17-18 year old students percentage rose to 40.6. The percentage saying "great risk" rose even higher when the issue is "smoke

marijuana regularly"; 83.8% of the 13-14 year old students, 82.1% of the 15-16 year old students and 78.6% of the 17-18 year old students so responding. In the period 1991 through 1994 there has been a steady erosion in the percentage of junior high and high school students perceiving "great risk" in the use of marijuana, regardless of what category of use is considered.

These data raise two points. Perceived harm and risk in Monitoring the Future survey seem to lead prevalence rates by at least a year. When perceived harm and risk go up, prevalence rates the following year tend to decrease; when perceived harm and risk go down, prevalence rates the following year go up. The Monitoring the Future survey has documented that shifts in attitudes about the perceived risks associated with the use of marijuana preceded the downward trend in marijuana use (Bachman et al., 1988). Increases in the perceived risks associated with cocaine use, as well as increasing disapproval of cocaine use, also preceded the decrease in prevalence rates (Bachman, Johnston and O'Malley, 1990). Thus, it is totally possible to have predicted the rise in marijuana prevalence in 1993 and 1994 from the 1992 and 1993 data on perceived harm and risk. Availability of the drugs did not decrease, nor was there any trending observed in lifestyle factors (i.e., religious commitment, truancy) that commonly covary with involvement in illicit drug use (Bachman, Johnston and O'Malley, 1990). The researchers attribute the upward trending in perceived risks and disapproval to increasing health consciousness in general. They conclude that a large proportion of youth pay attention to new information about drugs, especially risks and consequences; and that such information, presented in a factual and credible fashion, plays a vital role in reducing the demand for drugs (Bachman, Johnston and O'Malley, 1990).

The second point to be made (from 1994 Monitoring the Future data) is that some 74.3% of 13-14 year old students, 71.3% of 15-16 year old students and 65.0% of 17-18 year old students still perceive harm in using marijuana on a regular basis and a significant minority (48.6% of the 13-14 year old students, 38.9% of the 15-16 year old students and 30.1% of the 17-18 year old students) see harm and risk in smoking marijuana occasionally. Also, 17-18 year old students generally express their disapproval of individuals who use marijuana. In 1994, some 57.6% expressed disapproval of people even trying marijuana once or twice, 68.9% disapproved of smoking marijuana occasionally and 82.3% disapproved of smoking marijuana regularly. The 1993 Household Survey found that a third of the U.S. population associated great risk with smoking marijuana once or twice, 45% associated great risk with occasional marijuana use, while 77% associated great risk with regular marijuana use. There is thus significant opinion that marijuana is harmful and can pose "great risk." By way of comparison, over 70% of the population associate great risk with trying cocaine or heroin once or twice.

3. As cited earlier, with the passage of amendments to Posse Comitatus and emphasis on interdiction efforts, some perceived a possible shortage of marijuana, but it appears that domestic cultivation of marijuana filled any voids. In so far as 17-18 year old high school students are concerned, there is not now nor has there ever been a shortage of marijuana. No matter what the particular law enforcement effort or latest legal statute, 17-18 year old students have been remarkably constant in their belief that marijuana is either "fairly easy" or "very easy" to get. In 1975, 87.8% of 17-18 year old students thought marijuana "fairly easy" or "very easy" to get. This peaked at 90.1% in 1979. It reached a low point of 82.7% in 1992 and was 85.5% in 1994. Thus, no matter what efforts were being made on the supply side to stem the tide of marijuana availability, 17-18 year old students for a full 20 years have perceived the drug as "fairly easy" or "very easy" to obtain. This perceived availability by the young over the years is very disturbing to those who fear marijuana as a corrupting influence on the youth of our nation and might well be cause enough for supply reduction efforts to (still more) increase.

4. Parents and parent groups are drivers of public opinion with respect to drug abuse and the use of marijuana. Because marijuana is often viewed as a "gateway" drug to other illicit drugs and illicit behaviors and because marijuana is a drug of the young, parent movements have become vocal and strong supporters of anti-drug and anti-marijuana positions. Groups such as Partnership for a Drug Free America, PRIDE, and other parents groups are well organized, well financed, and dedicated to the principle that all drug use is bad. Through promotions on television and radio, through the schools, through lobbying the Congress and through role models (athletes, politicians), these groups wage a continuing anti-drug war. Another group recently formed to combat drug abuse, American Cities Against Drugs, held a national conference May 14-16, 1995, with major support from the U.S. Government's Center for Substance Abuse Prevention and the private, philanthropic organization, the Robert Wood Johnson Foundation. There currently is no pro-marijuana group that has the resources and spokespeople to oppose this anti-drug sentiment.

5. Another critical aspect of public opinion that has implications for any movement towards decriminalization of marijuana is the sentiment against cigarette smoking. The movement towards a smoke free environment can be seen in direct actions such as no smoking on all domestic air flights (and one major airline has banned smoking on international flights as well), no smoking in any Federal building, and increasing taxation of cigarettes. The State of Maryland and New York City have recently enacted, with massive public support, a smoking ban which prohibits smoking in ALL public buildings and places including restaurants, stadiums, and state universities. The only exception to this law are bars and restaurants where alcohol is served. Since marijuana is by and large smoked in this country and since carcinogens have been

identified in marijuana, the anti-smoking sentiment has naturally enough encompassed the use of marijuana.

Future direction of marijuana policy

Given the conservative mood of the people of the United States, the "get tough on crime" posture of the U.S. Congress and the power and disposition of public opinion, it is most unlikely that any change in U.S. policy towards marijuana is imminent. Any movement towards a toleration or decriminalization policy would likely emanate from outside the country. It would probably take some type of harm reduction movement internationally to persuade the U.S. to rethink its current policy.

Such movements have, however, occurred. The success of other nations with needle exchange programs - the reduction in HIV infection, and hepatitis - led the United States to at least be willing to evaluate needle exchange programs. The first needle exchange program began in the Netherlands in 1984, and in Europe, many needle exchange programs were organized early in the AIDS epidemic (McCoy and Inciardi, 1995). Evaluations of these programs show promising reductions in HIV infection. As a result, several needle exchange programs were initiated in this country under local auspices and with the implicit understanding that enforcement authorities would not intervene in such programs. Federal law prevented (and still prevents) the federal funding of needle exchange programs. From a research perspective, however, the exchange programs can be evaluated using Federal monies with a view to ascertaining their degree of success or failure. To date, needle exchange programs in the U.S. have been deemed effective and it is conceivable that a shift in Federal policy could occur in the not too distant future, a shift that would allow the Federal funding of needle exchange programs. Realistically, it is not likely that marijuana tolerance will enjoy the same degree of success. The issues of the young using marijuana, the potential health consequences, the movement towards fitness and health, the conservative mood of the nation - all argue that marijuana tolerance is not likely to occur in the foreseeable future.

The impact of cannabis policy in the United States

What has been the impact of cannabis policy in the United States? There is no clearcut answer, and one needs to take a variety of information into account to try and address this issue. The bottom line is that any relationship between policy and prevalence is unclear. A number of factors are relevant in an individual's choice to use any particular drug, and individuals may not be able to understand the complexity of these influences nor clearly articulate why they use a certain drug.

Perhaps one crucial issue to address is whether the U.S. policy of suppression of cannabis use by increasing sanctions and penalties has served to reduce use. The arrest rates for marijuana law violations were fairly stable between 1973 and 1985. Over the same period, prevalence increased steadily through the 1970s, starting a deep downward trend in the late 1970s. The decrease started before the so called "drug war" began and cannot be clearly linked to changes in enforcement policies.

Additional information on the relationship between drug use and social policy may be gleaned from changes in marijuana use in the 11 states in which it was decriminalized between 1973 and 1978 [Oregon, Colorado, Alaska, Ohio, California, Maine, Minnesota, Mississippi, North Carolina, New York and Nebraska (Slaughter, 1988)]. Although sales remained a criminal offense, decriminalization reduced the sanctions associated with marijuana possession (an ounce or less) to a $100 civil fine (Inciardi, 1981). Studies were conducted in Oregon (Drug Abuse Council, 1977), California (California Health and Welfare Agency, 1977), and Maine (State of Maine, 1979) within a few years of decriminalization. Unfortunately, baseline information was not available in these states, and the studies basically provide only crude impact measures. The studies were also conducted at a time when marijuana use was increasing among the general population of the U.S. Nevertheless, the studies detected little increase in use following decriminalization. The most frequently cited reasons for non-use by respondents was "not interested," cited by about 80% of non-users. Only 4% of adults indicated fear of arrest and prosecution or unavailability as factors preventing use (Maloff, 1981).

In an analysis of four administrations of the Household Survey (1972, National Commission on Marihuana and Drug Abuse; 1974, 1976, 1977, National Institute on Drug Abuse), Saveland and Bray (1981) concluded that the increases in marijuana use were most rapid in those states maintaining severe penalties against possession of marijuana. Changing penalties appeared to have no noticeable impact on the prevalence of marijuana use (Saveland and Bray, 1981).

A supplement to the Monitoring the Future study looked at the rates of marijuana use among 17-18 year old high school students and young adults in their early 20s between 1975 and 1980, in ten of the eleven states that decriminalized marijuana. (Alaska is not included in the study.) The investigators concluded that decriminalization had virtually no effect either on marijuana use or on related attitudes and beliefs about marijuana use (Johnston et al., 1981). More recent research on adolescent marijuana use in Alaska, which had the most liberal marijuana laws in the US until they were repealed in 1991, concluded that while adolescents showed higher rates of lifetime and annual use of marijuana than their peers in the coterminous United States, they had lower rates of daily use (Trebach, 1987; Slaughter, 1988).

Granted, these examples of changes in drug policy—i.e., marijuana decriminalization and the increasing propensity of arrest, prosecution, and sanctions in the criminal justice system—may not be radical enough departures from general social policy to really gauge the effects of drug use under conditions of differing social policies. However, in general, the evidence at hand is that within the U.S., variations in criminal sanctions have not impacted significantly on rates of marijuana use.

So...what does? The only real evidence is that previously mentioned from the Monitoring the Future Survey in which changes in the perceived risks of marijuana preceded changes in prevalence rates. Therefore, raising consciousness about the health risks associated with marijuana use should lead to decreases in marijuana use. If we can find ways to increase concerns about health risks that are salient to the most "at risk" populations—particularly youth—we can hopefully reduce the overall prevalence of cannabis use. One interesting point about youthful drug use is that although tobacco use continues to decrease among the adult population in the U.S., it has largely been stable among youth aged 18 and younger since the early 1980s. The health messages about the harms of cigarette smoking are not salient to young people, or perhaps they are not as vigorous as the targeted marketing strategies used by the tobacco industry. This information could be instructive in devising strategies to reach youth about the harms associated with marijuana use.

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2 Pharmacology and health

Pharmacology

The isomer most experts believe responsible for the effects of marijuana[2] is Delta-9 Tetrahydrocannabinol (THC). This isomer is a viscous, noncrystalline, water-insoluble, but highly fat soluble compound. Reported behavioral effects of marijuana must be interpreted with caution due to differences in dose, route of administration, social and cultural setting, and the experience and psychological set of the user. Critically, as is true with tobacco, the amount of active substance reaching the blood stream is dependent, in very large measure, upon the smoking technique being employed and the amount of substance destroyed or decomposed by the high temperature associated with the smoking.

According to current research, it is estimated that a marijuana cigarette when smoked with maximum efficiency will deliver no more than 50 percent of the Delta-9 THC within it. Put another way, when smoked in the cited fashion, only 50 percent of the Delta-9 THC will be absorbed into the lungs. The pharmacological effects of marijuana begin almost immediately after smoking begins, often within minutes, and blood plasma levels of Delta-9 THC peak approximately 20 minutes after ingestion (Schuckit, 1995, p. 90). With oral administration (by mouth as opposed to smoking), onset of effects is delayed, usually occurring thirty to sixty minutes later. Peak effects are also delayed, often occurring in the second or third hour after administration. These effects have been shown to correlate well with plasma concentrations. When taken orally, the effects of marijuana may linger up to 5 hours.

Marijuana is rapidly metabolized. The Delta-9 THC is converted into an inactive metabolite which is excreted in urine and feces. Peak plasma levels at first drop quickly (half-time of minutes), followed by a much slower phase (half-time of days). This slower phase is the body gradually metabolizing and eliminating the Delta-9 THC from the body. Traces of the substance exist for several days in human plasma and (from animal studies) also in the fat and brain after a single administration. Methodologies now exist that can detect the urinary metabolites of marijuana several days after the smoking of only a single marijuana cigarette. Marijuana metabolites were detected in urine in one study of heavy marijuana users 27 days after cessation of marijuana use.

There is thus little question that the technology exists to detect marijuana use days after such use has ceased. The ability to attribute importance to blood or

urine concentrations of THC or its metabolites and associate this with impaired functioning is a more difficult task. Setting a blood or urine concentration level in the same fashion that blood alcohol levels (BALs) are set and associating this level with impairment is difficult, the major problem being the variability among subjects. This difficulty is further exacerbated by the fact that marijuana is very often used in combination with other substances, most frequently alcohol. Thus the issue and role of drug combinations has to be considered. Even with the cited detection technology, a positive test result stands to mean only that the subject was exposed to marijuana at some point in the recent past.

Health issues

One of the major concerns surrounding marijuana use are its effects on health. The scientific evidence is weak however, and findings from various studies sometime contradict others. A large portion of the research that has been performed, often for ethical reasons, has used animal rather than human models and there is no warranty that such models transfer automatically to humans. Nevertheless, the findings from marijuana research on animal models do pose questions of health concern.

Importantly, the authors are impressed by the literature on health effects that differentiates between "chronic use," "regular use," "occasional use" and "low dose" and "high dose." We believe it critical to be clear on these distinctions. The significant dimensions of the model, in our estimation, is "What kinds of individuals (demographics) smoke what doses of marijuana in what quantity under what circumstances for what purposes with what results (behavioral, health and psychological effects)?" This said, however, there are some generalities which can and should be stated about the physical effects of marijuana and its potential health consequences.

Smoking

To begin with, smoking is almost the exclusive route by which marijuana is used (administered) in the United States. This is of concern because of potential bronchopulmonary effects. This question persists and grows because, when smoked, marijuana is deeply inhaled, and the smoke is kept in the lungs longer than tobacco smoke. It should also be noted that many of the toxic elements found in tobacco are found in marijuana. Marijuana smoke also has more irritants than tobacco smoke. The research is also clear in showing that there are more cancer-causing agents in marijuana smoke than in cigarette smoke. A recent study of marijuana smokers enrolled in a Health Maintenance Organization in California reached the conclusion that smoking marijuana on a daily

basis gives evidence of being associated with respiratory conditions even among those who smoke marijuana but not tobacco (Journal of the American Medical Association, 1991, p. 2796). Smoking anything is probably bad for the lungs (Polen et al. 1993, pp. 596-601; Voelker, 1994, p. 1647). The health consequences of such damage may well be significant and are worthy of closer scrutiny. Recent research supports the possibility of serious potential damage to pulmonary function particularly among marijuana users classified as "chronic." It has been estimated that, because of the method of smoking, one marijuana cigarette (joint) is as harmful to the lungs as four tobacco cigarettes (Kleiman, 1992). It can thus, at a minimum, be said that the smoking of marijuana is not good for the lungs and may well pose significant health hazards to them (Tashkin and Cohen, 1988).

Motor performance

There is almost universal agreement that a prominent danger of marijuana is its effect on motor performance. Preclinical, clinical and even actual driving tests under the influence of marijuana support an impairment of motor performance. Reaction time, judgment, and the use of peripheral vision are negatively influenced in the two to three hour period following acute intoxication. Some negative effects may be clinically relevant for 24 hours after the acute intoxication (Harris and Martin, 1991, p. 136). In the "real" world these risks and dangers are often compounded by the fact that marijuana is very commonly smoked in association with the use of alcohol thus dramatically increasing the potential "harm" that could arise from the episode. With this in mind, a brief look at marijuana and its relationship to driving may be instructive.

Driving

In 1993 there were 53,343 drivers involved in fatal crashes in the United States. Of this number only 18.9% were tested for drugs excluding alcohol (Schuckit, 1995, pp. 90-91). Typically, fatal crashes are reviewed to determine whether or not alcohol is involved, not whether marijuana is involved. The National Highway Traffic Safety Administration (NHTSA) studied 1,882 fatally injured drivers from 13 sampling sites located in three entire states and selected counties of four additional states (NHTSA, 1993). Alcohol was found in 52% of the fatalities but another drug without alcohol was determined in only 6.3% of the fatalities. Marijuana was implicated in 6.7% of all fatalities. It was implicated alone in 1.1% of the cases, in combination with alcohol in 5.1% of the cases and with some other substance in 0.5% of the cases. While the figures for marijuana are quite small, nonetheless, the most frequently used illicit drug in these fatal crashes was marijuana. Further, the data indicate the greater number of drugs

a driver takes, the greater the risk thus pointing to the hazard potential of marijuana when used in combination with other substances.

The NHTSA has conducted research to determine the extent to which marijuana impairs driver performance (NHTSA, 1993). Three studies were conducted. In the first study, marijuana was found to significantly impair a driver's ability to keep a constant lateral position within a traffic lane. The higher the marijuana dose, the greater the degree of impairment. Comparisons with alcohol studies showed the marijuana impairment on performance to be that produced by BALs between .03 and .07. (The legal BAL limit for intoxication in most states is .10.) Marijuana was not found to influence the ability to maintain constant speed.

In study two, conducted under primary highway conditions in the presence of other traffic, driving performance measures included changes in lateral position in a traffic lane, average speed, and an estimate of headway maintenance ability for a car following task. Ability to maintain a steady lateral position within a driving lane was (as in study 1) impaired with the exception of low doses where no significant impairment was noted. Marijuana had minimal effect on speed maintenance and car following ability, with the exception of low dose which produced more cautious behavior (as measured by an increase in the distance being maintained between vehicles).

Study 3 was a 40 minute drive through urban traffic only under low dose conditions. A standard rating scale was used to give an overall driving performance assessment. No effect was found between the low dose marijuana condition and driving performance in urban traffic (however, low dose alcohol did impair performance as related to vehicle handling and traffic maneuvers).

Although the three studies imply that marijuana use produces impaired driving abilities that are less in some situations than in others, no implication should be made that marijuana is safe with respect to driving. No crash data were included and many of the driving situations were somewhat artificial. It should also be noted that (some) subjects may have felt the effects of the marijuana and compensated by increasing their level of attention and concentration.

A 1988 NHTSA report to the Congress noted that virtually all classes of psychoactive drugs (with the exception of amphetamines) have been found in laboratory studies and on-the-road research to impair driving ability (NHTSA, 1994, pp. 1-2). After alcohol, marijuana is the drug most frequently associated with driving impairment. In Ontario, Canada a 1985 study of 1169 fatally injured drivers tested for the presence of marijuana and/or alcohol (NHTSA, 1988). Marijuana was found alone in 1.7% of the cases and marijuana in combination with alcohol was found in 9% of the cases. Alcohol alone was present in 57% of the cases.

Another study relates to driving skills though it deals with marijuana effects on pilot performance (Journal of the American Medical Association, 1991, p. 2796). Separately, nine active pilots each smoked a 20 mg. THC cigarette and a placebo cigarette. By use of a flight simulator, each pilot "flew" before smoking and at five intervals from 15 minutes to 48 hours after smoking. Marijuana was found to impair performance up to 24 hours after smoking (at which time 7 of the 9 pilots showed some degree of impairment). The complexities of human-motor performance do not lend themselves to marijuana smoking.

Cancer

While no totally definitive scientific evidence exists that marijuana causes cancer, there is considerable data that gives cause for concern. Further, several research studies have shown a definite association between smoking marijuana and the development of cancer. One study investigated 110 private patients with lung cancer with 13 of the patients being under age 45 (Sridhar et al., 1994). Of the total sample 19 (17%) had smoked marijuana at some point in their life. Noteworthy is that all 13 patients under the age of 45 had smoked marijuana and 12 reported current tobacco smoking. No tobacco only patients under age 45 were noted. Dr. Paul J. Donald of the University of California Davis found that nine of eleven young people treated for advanced head and neck cancers had a background of smoking marijuana and five of these had never used tobacco in any form (Donald, no date). While the cited evidence is not conclusive and is only associational in nature, it does beg further consideration and examination of the health consequences of marijuana smoking.

Tolerance and dependence

Recent research on tolerance and dependence with respect to marijuana is quite sparse. From earlier efforts, however, it would appear that tolerance to marijuana is not an issue, particularly (as is true in the vast majority of cases), if doses are small and use nonchronic. Supporting this position is the relatively few reports of medical problems from cessation of use. In the general population, 0.7% reported needing, or feeling dependent on marijuana in the past year (data from the 1992 National Household Survey on Drug Abuse). Among those who report using marijuana in the past 30 days, 15% said they felt dependent or that they "needed" marijuana. However, fully 27.2% of past month marijuana users reported using marijuana daily (SAMHSA, 1993).

Effects on fetal development

All systematic work in this area has obviously been conducted within the confines of animal studies and those data do not necessarily apply to humans. Nevertheless, the results including some studies involving human observation do support a position confirming the potential harmfulness of marijuana upon the fetus if used during pregnancy (Zuckerman, 1988). Other animal research has found "pronounced effects of THC on reproductive hormones and on ovulation and spermatogenesis" (Schuckit, 1995, p. 91). While not universally confirmed in clinical research upon chronic human marijuana smokers, the data suggest caution is dictated with respect to marijuana use and fetal development (Zuckerman, 1988). Obviously, more research is needed in this area.

Additional concerns

One question often raised is the effect marijuana may have (or not have) upon the human immune system. Research to date is at the animal level. Most of the work that shows immunosuppression has been done by in vitro studies and have been compromised by the high amounts of cannabinoids used (Hollister, 1988, p.7). No evidence exists at this time to conclusively support the hypothesis that "consumption of cannabinoids predisposed humans to immune dysfuntion. However, and in particular with respect to AIDS and those infected with HIV, the question remains of critical importance and the best advice of leading experts (see medicalization section) is to avoid the use of marijuana.

Research shows that marijuana usually produces an increase in heart rate (not an insignificant issue to those who may have preexisting heart conditions or disease). Of equal or greater concern is the research finding that marijuana produces a significant increase in carbon monoxide content "with resulting production of an altered form of the red pigment in red blood cells necessary for transporting oxygen to the rest of the body, including the heart" (Schuckit, 1995, p. 91). However, no conclusive evidence exists that would implicate marijuana to cardiac problems.

Although marijuana use has not been found to be causally predictive of criminal involvement or violent behavior, one study found that of 268 individuals imprisoned in New York State prisons for homicide, marijuana had played a major part in their lives. Some 86% had used the drug at some point in their lives and approximately 33% said they had used it on the day they committed homicide. Of this 33%, about 70% said they were experiencing some drug effect at the time of the homicide. Eighteen respondents (7% of the total sample) said the homicide was related to their marijuana use (Spunt et al., 1994). While no

claim is made that marijuana caused the homicides, the association between the two is sufficient to warrant further investigation.

Another concern is that the use of marijuana by adolescents might prove harmful particularly with respect to motivation and emotional and psychosocial development. The difficulty and ethics of doing controlled research studies upon this important age group make such work most difficult and nearly impossible. Marijuana is known (often at small dose levels), however, to impair memory function, distort perception, impede judgment, and reduce motor skills. Such effects are most often likely to manifest their negative consequences upon the young. Research in clinical settings has also noted loss of motivation, difficulty in concentration, apathy and decline in school performance as being associated with the smoking of marijuana.

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3 The nature and extent of marijuana use in the United States

Introduction

The foundation of effective drug policy is research-based information that is current and is both valid and reliable. In any society in which drug use is viewed as an illegal activity and in which sanctions and penalties are associated with use, one of the best ways to understand the nature and extent of such use and understand the attitudes, beliefs, ideals and other correlates associated with its use is by carrying out confidential and anonymous national surveys. Such research studies have been ongoing in the United States for several decades. The purpose of this section is to draw upon such surveys to provide information on the patterns and trends of marijuana use in the United States. Data will not be reported from all national studies, but the findings from major surveys are discussed in some detail.

Historical perspective

The earliest survey data on marijuana use in the U.S. was obtained through a Gallup Poll in the spring of 1967. The nationally-based telephone poll of college students found a 5% lifetime prevalence of marijuana use. Two years later, this proportion jumped to 22%. A Gallup Poll of the adult population in the summer of 1969 found a 4% lifetime prevalence, with 12% of those in the 21-29 year old age group, 3% in the 30-49 year old group and only 1% of those aged 50 and over reporting ever trying marijuana. In the fall of 1970, another Gallup Poll of college students found 43% reported trying marijuana, with 39% reporting use in the past year and 28% reporting use in the past 30 days. By 1971, over half (51%) of the nation's college students reported lifetime use, and annual and thirty day prevalence rates stood at 41% and 30% respectively. These Gallup telephone polls document the explosion in marijuana use among college students during the late 1960s, with a leveling occurring in the early 1970s, such that by 1971, over half of the nation's college students had at least tried marijuana. It is commonly hypothesized that marijuana use first burgeoned among college students, and then spread to younger ages. A national survey of males in their final year of high school (aged 17-18 years) in 1969 found a 22% lifetime prevalence of use.

In 1970-1971, the New York Narcotic Addiction Control Commission conducted a major general population survey of New York State (Chambers and Inciardi, 1971). The research study used state-of-the-art techniques and, to that time, gave one of the best assessments (albeit limited to New York State) of the nature and extent of drug use. The study found that 12.3% of the New York State population had ever used marijuana. They further found that regular users (defined as at least 6 times per month) made up 3.5% (487,000 individuals) of the State's population. Of these regular users, over 70% were under the age of 25 and nearly half defined themselves as students at the high school or college levels.

The National Commission on Marihuana and Drug Abuse

The first national survey of drug use in the general population of the United States was conducted in 1971 under the auspices of the National Commission on Marihuana and Drug Abuse (the Shafer Commission). The study focused primarily on marijuana, since marijuana was the only illicit drug thought to be used by a significant number of people. Results from the survey showed 14% of youth aged 12-17, and 15% of adults aged 18 and older had tried marijuana. Use was clearly tied to age with 27% of 16-17 year olds, 40% of 18-21 year olds, 38% of 22-25 year olds, but only 6% of those aged 50 and older and of the 12-13 year olds having ever used the drug. Importantly, 41% of the adults and 45% of the youth reported they no longer used marijuana, and 9% of the adults and 15% of the youth reported they used less than once a month. Two percent of the adults and 4% of the youth who ever used marijuana reported using it several times a day.

A comprehensive national study of illicit drug use in 1972 by the Commission validated its belief that marijuana was the primary drug of use. Less than 5% of the United States population reported any experience with an illicit drug other than marijuana (hallucinogens, heroin, cocaine, stimulants, sedatives, tranquilizers, or inhalants). By age group, the 18-25 year olds reported the most drug experience, their use being about two to seven times higher than either older or younger groups. A startling 5% of junior high (generally 12-15 year olds), 11% of high school (generally 16-18 year olds), and 8% of college students (generally 18-22 year olds) reported daily cannabis use. Contrary to the media portrayal and popular opinion about the vast extent of marijuana and LSD use occurring among young people, the Commission concluded that "the most widely used mood-altering drug in America is alcohol." About half (53%) of the adults 18 years of age and older, and a quarter (24%) of youth (12-17 years old) had consumed alcoholic beverages in the week prior to the survey.

Data from these national surveys and other indicator data suggest there was virtually no marijuana use in the United States prior to the mid-1960's. "Fewer

than one million Americans had tried cannabis by 1965; by 1972, twenty-four million people had smoked marijuana at least once, eight million people were using it regularly, and at least half a million people were consuming it daily" (Slaughter, p. 420). Cannabis use is almost exclusively marijuana use rather than hashish use in the United States. Marijuana use burgeoned first, but a revolution in the technology and handling of other drugs was also blossoming. "Recently compounded psychotropic agents were enthusiastically introduced and effectively promoted, with the consequence of exposing the national consciousness to an impressive catalogue of chemical temptations..." (Inciardi, 1981, p. 155). Concurrent with increases in marijuana use were increases in the use of most other classes of psychoactive drugs. Although the drug epidemic was initiated by youth and young adults and has continued to disproportionately affect youth, no age group has escaped its consequences.

From the data, it would appear that concern over the problem of youthful cannabis use as expressed in the early 1970s was justified. The Commission's national surveys served to place the problem of youthful drug use in perspective. These findings help underscore the value of survey data in gaining insight into hidden behaviors such as drug use. Only through the use of well designed and well executed surveys can a society come to gain a clear picture of drug use patterns as it exists within that society. The Commission's work was crucial to gaining a reliable and valid perception of drug use in the United States in the early 1970's.

The National Household Survey on Drug Abuse

The National Household Survey on Drug Abuse grew out of the Marihuana Commission's national surveys and has been ongoing on an intermittent basis since 1974. It provides estimates of drug use among the household-based population, which constitutes 98% or more of the United States population. The Household Survey is a representative sample of the population in households aged 12 and older. Because the survey is conducted in homes rather than in schools, high school dropouts are included, but institutionalized persons (i.e., in hospitals and jails/prisons) and persons with no fixed address are omitted. (Some group quarters such as dormitories and homeless shelters were included beginning in 1991.) Due to the known variance in drug use prevalence by age, Household Survey results are generally presented for four discrete age groups: youth aged 12 to 17, young adults aged 18 to 25, middle adults aged 26 to 34, and older adults aged 35 and older. Data for 1993 are the latest available. Figure 1 shows the past year prevalence rates for various licit and illicit drugs in 1993 by age group.

It is important to note that the Household Survey is not a longitudinal survey. However, there has been sufficient continuity in design and methodological

procedures to allow computation of trend estimates from the repeated cross-sectional surveys. The trends in past year drug use among young adults are shown in Figure 2. Young adults, as previously mentioned, have the highest rates of drug use of any of the age groups. Among young adults, alcohol, cannabis, cocaine, and the summary measure of any illicit drug use all peaked around 1979.

Figure 1
Prevalence of Licit and Illicit Drug Use among the U.S. Population, 1993

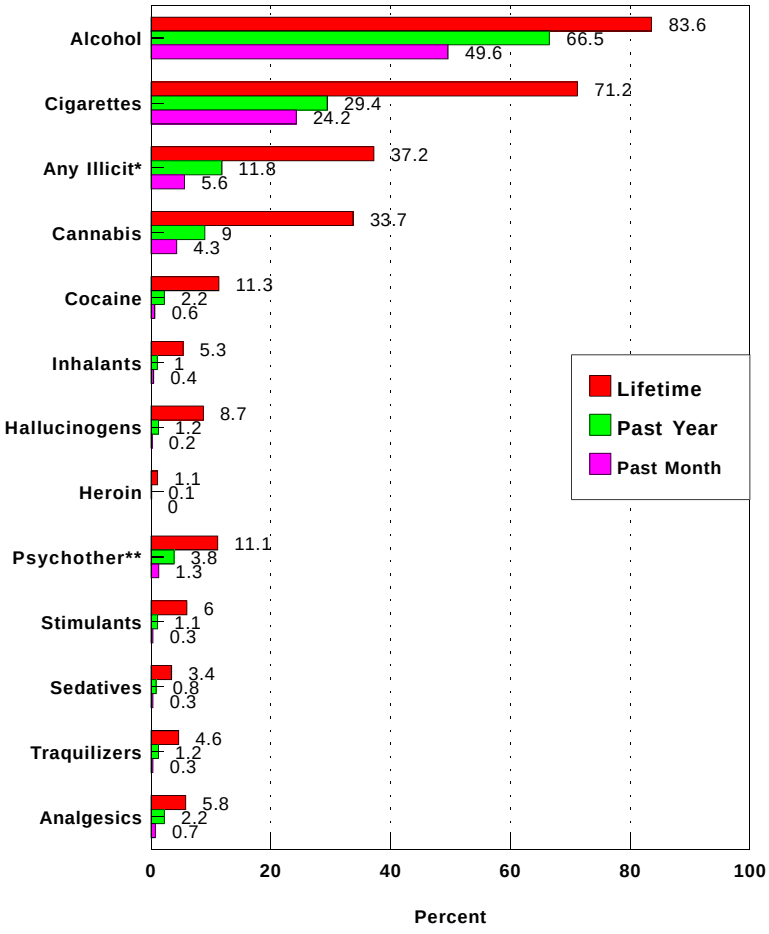
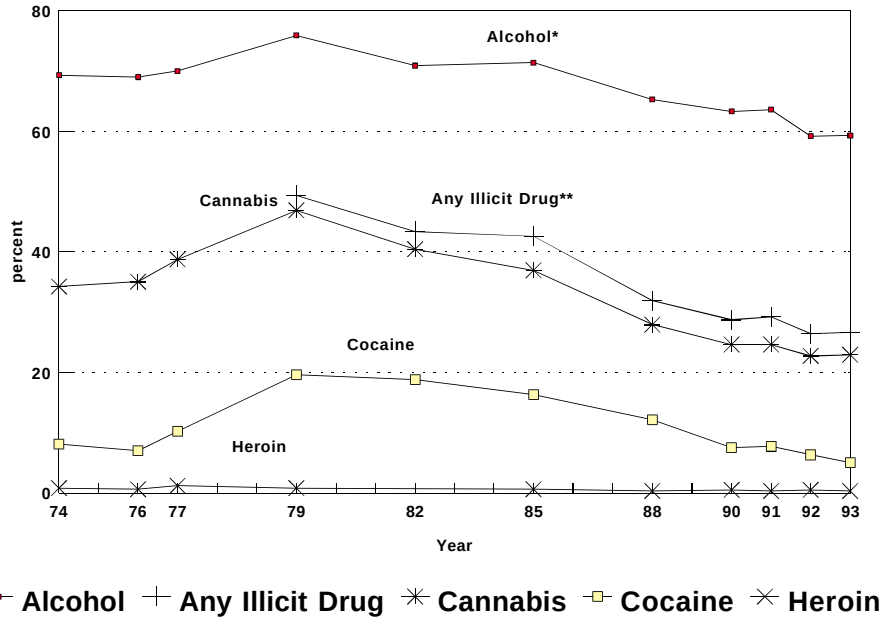


Figure 2
Past Year Drug Use among Young Adults (18-25 Years), 1974-1993



*Past month alcohol use
**Composite measure of any illicit drug only available since 1979

Source: Natl Household Survey on Drug Abuse

The 1993 Household Survey found 13.6% of youth, 26.6% of young adults, 17.4% of middle adults, and 6.3% of older adults reporting some illicit drug use in the past year. Alcohol had been used by 35.2% of youth, 79.0% of young adults, 81% of middle adults, and 64.6% of older adults. For 1993, marijuana/hashish is by far the most prevalent drug used by illicit drug users, as about 75-80% of current illicit drug users are marijuana/hashish users. An estimated 33.7% of the population (69,923,000) reported ever trying marijuana/hashish with 9% reporting use in the past year (18.6 million), and 4.3% reporting use in the past month (9.0 million). The prevalence of weekly marijuana/hashish use (over the past year) was 2.4% (about 5.1 million weekly users). It is worth noting that alcohol use far exceeded marijuana use at all prevalence points. After marijuana, the next most frequently reported class of drugs was non-medical use of psychotherapeutic drugs (including stimulants, sedatives, tranquilizers, and analgesics). This class had a 11% lifetime prevalence rate, a 3.8% annual prevalence rate, and a 1.3% past month prevalence rate. Use of a psychotherapeutic drug is reported more frequently than cocaine use. Young adults (those aged

18-25) are the most likely to use both licit and illicit drugs, followed by middle adults (26-34 years). Youth (ages 12-17) report the next highest rates followed by older adults (35 and older). This latter group, however, reports greater use of alcohol and tobacco than youth.

Both the Household and the Monitoring the Future national surveys show the same general trends in drug use. There was a peaking in overall rates of illicit drug use in the late 1970s, with gradual decreases through the early 1990s when rates stabilized. The surveys show a peaking of cannabis use in 1979 with the non-medical use of psychotherapeutics peaking in the early 1980s. The Household Survey shows that cigarette use has continually decreased among adults (18 years and older) since about 1979, but cigarette smoking has been relatively unchanged among youth (12-17 years old) since about 1979. Cocaine use peaked a few years later, in the early to mid-1980s. The later peak is due to use among older adults peaking several years later than it did among younger age groups.

Since 1993 there has been a stabilization to a reversal in the declining trends in marijuana use among youth. Marijuana use increased for the first time in the Monitoring the Future survey in 1993 and then again in 1994. The Household Survey has only released 1993 data. Marijuana use remained largely unchanged among all the groups with one exception. Youth aged 12-17 showed a significant increase in past year marijuana use, and although there were small increases in lifetime and past month rates, these did not reach statistical significance.

As stated earlier, data from both the Household and Monitoring the Future Surveys show marijuana to be, by far, the most prevalent drug used by illicit drug users. The Household Survey estimates that some 69 million Americans have tried marijuana. Following are specific data with respect to the demographics of use.

Age Group Differences: The highest lifetime prevalence is found among middle adults (59.2%), followed by young adults (47.4%), older adults (26.6%), and youth (11.7%). The ordering changes with respect to past year use which is highest among young adults (22.9%), followed by middle adults (13.8%), youth (10.1%), and then older adults (4.0%). The same ordering as found for past year marijuana use is repeated with past month rates with the highest prevalence among young adults (11.1%), followed by middle adults (6.7%), youth (4.9%), and older adults (1.9%). The same pattern by age grouping is found among weekly cannabis users.

Racial/Ethnic Differences: Whites (35.6%) report greater lifetime experience with cannabis than blacks (30.7%) or Hispanics (28.1%). However, blacks (10.4%) and Hispanics (9.6%) report greater past year prevalence rates than whites (8.8%). Past month prevalence rates are 4.2% white, 5.6% black, and 4.7% among Hispanics. Hispanic youth tend to report greater experience with

marijuana than their same aged white and black peers, but white young adults report more past year and past month use than their Hispanic or black peers.

Gender Differences: Males consistently report higher prevalence rates than females across the lifetime (40.7% vs. 30.8%), past year (11.3% vs. 6.4%), and past month (5.9% vs. 2.7%) prevalence periods. These differences are apparent across the various age groups as well, although the gender differences among youth aged 12-17 are less pronounced.

Regional Variation: The West has consistently shown higher cannabis prevalence rates than the other regions of the country.

Population Density Variation: Although the nonmetropolitan areas have shown the lowest cannabis prevalence rates, the trend has been toward convergence such that currently, past year prevalence rates vary little by population density (e.g., large metro 9.3%, compared to 9.4% in small metro and 7.5% in nonmetro areas of the country). In the 1993 survey, more Hispanics in nonmetro areas report cannabis use than those residing in small or large metropolitan areas. Among blacks, those living in large metropolitan areas report greater cannabis use.

Frequency of Marijuana Use: Data from the 1992 Household Survey show that over a quarter of those who have used marijuana in their lifetimes, have used it 1-2 times. Similarly, about a quarter have used it 3-10 times. Another quarter of those who report any lifetime marijuana use report using it on a 100 or more occasions. Of those who have used marijuana in the past month, between 15% and 20% report use on 20 or more days.

Other Drug Use: Data from the 1992 Household Survey show that 90% of those who have used marijuana in the past month have also drank alcohol. About 63% have smoked cigarettes. About 25% of those who have used marijuana in the past month also report use of other illicit drugs, with about 12% reporting nonmedical use specifically of a psychotherapeutic drug. This pattern is found across the four age groups.

Dependence: Among past year marijuana users in 1992, about one in seven reported at least one problem attributed to marijuana use. Nearly a third reported at least one sign of dependence. The most frequently reported component of dependence among past year marijuana users was that they had tried to cut down (26.9%). An estimated 8.1% said they felt dependent on marijuana, and 6.9% said they needed larger amounts to get the same effect. Among those reporting past month use, 50.7% said they tried to cut down, 24.2% said they felt dependent, and 24.0% said they needed larger amounts to get the same effect.

Onset: The average age of onset of marijuana use in 1993 was 18.8 years. Among youth, the average age of initiation is 13.8 years, which is later than cigarettes (11.7), alcohol (13.0), inhalants (12.3), nonmedical use of a psychotherapeutic (13.0), and heroin (13.2).

Perceived Availability: A question in the Household Survey asks "how difficult do you think it would be for you to get each of the following types of drugs, if you wanted some?" Marijuana was reported as "fairly easy" to "very easy" to obtain by 57.7% of the total population in 1993. This is significantly lower than the 62.1% of the population reporting marijuana as easy to obtain in 1991. Marijuana is reported as easier to obtain than any of the other illicit drugs. For example, 39% reported cocaine or crack were fairly or very easy to obtain, and 25.5% said the same about heroin. The percent reporting that marijuana was easy to get was highest among 18-25 year old (76.4%) and 26-34 year olds (69.5%). Just about half of both younger and older age groups reported marijuana was easy to obtain. Males reported greater ease in obtaining marijuana than females (62% vs. 54%), however for younger age groups, rates were similar for men and women. An estimated 64% of blacks, 58% of whites and 54% of Hispanics reported that marijuana was easy to get.

Risk of Harm: An estimated 44.6% of the population believed there was "great harm" associated with smoking marijuana occasionally. Although this percentage increased from 41% in 1985 to 50% in 1988, it has been below 50% since then. The percentage associating great risk in 1993 was lowest among young adults (32.7%) and middle adults (29.3%)—who report the highest prevalence rates. The downward shift in perceived risk since 1988 is due to changes among older adults. Among those aged 39-53, the percent reporting great risk decreased from 51% in 1988 to 42% in 1992.

Consumption Estimate: The Office of National Drug Control Policy (ONDCP) undertook an estimate of total marijuana consumption in the United States based on data from three sources: the Household and Monitoring the Future Surveys, and the Drug Use Forecasting (DUF) Study. While the estimate is not without weakness, it does combine three distinct population bases (households, the young and those arrested) into a single figure. The table demonstrates a recurring trend that marijuana use, no matter how measured, appears to have been down in the period 1988-1992.

	1988	**1990**	**1991**	**1992**
Households	1871	1528	1326	1220
College Students	77	59		
Criminally Active	375	363	358	279
total (in Gross Metric Tons)	2322	1950	1694	1599
Retail Cost (in Billions)	$16.6	$15.5	$13.5	$13.1

The Monitoring the Future Survey

The Monitoring the Future (MTF) Survey is an annual survey of drug use among high school students in their last year of high school (generally aged 17-18). The survey has been conducted since 1975 by the Institute for Social Research at the University of Michigan. In recognition of the need for national data to track changes in drug use and related attitudes and behaviors of American youth, a group often on the cutting edge of societal change, it has been supported by a series of research grants from the National Institute on Drug Abuse (NIDA). Sample sizes have ranged between 15,000 and 19,000. In 1994, approximately 16,000 students made up the sample of students in their last year of high school. This sample was located in 139 public and private high schools throughout the United States and is representative of students in their final year of high school in the coterminous United States. The seniors filled out self-administered questionnaires given to them in their classrooms by University of Michigan personnel.

The survey was expanded in 1991 to include representative samples of eighth (generally 13-14 year olds) and tenth-graders (generally 15-16 year olds). For 1994, 18,000 students comprised the eighth grade sample in 150 schools and 16,000 students in 130 schools comprised the tenth grade sample. In total, about 50,000 students in about 420 public and private schools are now part of the annual survey. The primary data reported from MTF are drug use prevalence, perceptions regarding the availability of drugs, and attitudes and beliefs about the risks and level of disapproval of drug use.

Data from MTF are reasonably consistent in showing a general decline in marijuana use during the period 1979-1992. This is so regardless of what prevalence measure is chosen; regardless of whether past month use (usually referred to as current use), past year use or lifetime use is considered. However, several recent findings from MTF give reason for concern with respect to marijuana use. After declining steadily since the peak prevalence years of the late 1970's, past month, past year use, and lifetime use of marijuana by 17-18 year old high school students increased in both 1993 and 1994. Past month prevalence rates increased from 11.9% in 1992 to 15.5% in 1993 to 19.0% in 1994, an increase of nearly 60% in two years. Marijuana use in the year prior to survey went from 21.9% in 1992 to 26.0% in 1993 to 30.7% in 1994, an increase of over 40% in a two year period. When lifetime prevalence is considered, the rate of marijuana use went from 32.6% in 1992 to 35.3% in 1993 to 38.2% in 1994, a 17% increase in the two year period. The cited prevalence figures for the use of marijuana by 17-18 year old high school students in no way approaches the peak prevalence year of 1979 or the rates (lifetime) in excess of 40% noted in the period 1975 through 1985; nevertheless the reported prevalence for 1994 does approach or exceed the 1988 rates; a definite signal that prevalence is on the increase.

The picture for younger youth, 13-14 and 15-16 year old students, also shows recent increases in use. Considering past month use, 13-14 year olds showed a rate of 3.7% in 1992, 5.1% in 1993 and 7.8% in 1994, over a 100% increase in the two year period. For 15-16 year old students the figures are 8.1% in 1992, 10.9% in 1993 and 15.8% in 1994, a 95% increase in the same two year period. Considering annual use does little to change this picture. In 1992, 7.2% of 13-14 year old students had used marijuana in the year prior to survey. This figure increases to 9.2% in 1993 and 13.0% in 1994, an 80% increase in the two year period. For 15-16 year old students, the 1992-1994 percentages are 15.2%, 19.2% and 25.2% respectively, an increase of 66% in the cited period. Lifetime prevalence (ever used) of marijuana use for 13-14 year old students in the period 1992-1994 shows percentages of 11.2%, 12.6% and 16.7%, just under a 50% increase for the referenced time frame. For 15-16 year old students, the 1992-1994 time frame shows percentages of 21.4%, 24.4% and 30.4%, an increase of 42% for the two year period.

While some of the cited increases from year-to-year, it is important to view the data in the aggregate. **Every group of students showed an increase in every year by every category of use.** When 1992 is used as baseline, the percentages of increase are substantial. Further, for the 17-18 year old students, the rates in general can be said to be approaching or surpassing the 1988 figures.

As another indicator of marijuana trend we looked at the students' perceptions of harmfulness (1) if marijuana is tried once or twice, (2) if marijuana is smoked on an occasional basis and (3) if marijuana is smoked regularly. Each measure will be briefly discussed by individual grade.

Among 17-18 year old students in 1992, 24.5% perceived great risk of harm in trying marijuana once or twice. For 1993 this percentage decreases to 21.9% and decreases still further to 19.5% in 1994. There was thus a drop of 5 percentage points (20% overall) in the two year period. Considering the occasional smoking of marijuana, 39.6% of the 17-18 year old students in 1992 perceived great harm. In 1993 the percentage dropped to 35.6% and then dropped to 30.1% in 1994. This represents a drop of 9.5 percentage points (24%) in the two year period. When the regular smoking of marijuana is reviewed in terms of perceived harm, 76.5% of 17-18 year old students saw it as posing great harm in 1992. This percentage dropped to 72.5% in 1993 and fell to 65.0% in 1994. Overall, this is a decline in perceived harmfulness of 11.5%, a 15% decline in the referenced period. Long term trends show the percentage of 17-18 year old students attributing great risk of harm to marijuana use peaked in 1991, and has been gradually falling.

Looking at 13-14 year old students yields much the same results regardless of what measure of use is considered. In 1992, 39.1% of 13-14 year old students felt trying marijuana once or twice was harmful. For 1993 this drops to 36.2% and

drops still further for 1994 to 31.6%; a decline of 7.5% (19%) for the two year time frame. When the occasional smoking of marijuana is considered, the 1992 base of perceived harmfulness is 56.3%. This declines in 1993 to 53.8% and to 48.6% in 1994. There is thus a drop of 7.7% in the two year period amounting to a loss of nearly 14% when the loss is seen in terms of the 1992 base. In 1992, 82.0% of the 13-14 year old students saw harm in the regular smoking of marijuana. For 1993 there is a drop to 79.6% with 1994 exhibiting a further drop to 74.3%; overall a drop of 7.7 percentage points with the decline being 9% of the 1992 figure.

Data from the sample of 15-16 year old students are very much in keeping with those trends already noted for 13-14 and 17-18 year old students. Some 31.9% of the 15-16 year old students in 1992 perceived great harm in trying marijuana once or twice. In 1993 this percentage was 29.7% and in 1994 it was 24.4%, altogether a drop of 7.2% over the two year period but a dropoff of over 22% from the 1992 base. When marijuana is smoked occasionally, great harm is perceived by 48.9% of the 1992 15-16 year old students. These figures go down to 46.1% in 1993 and 38.9% in 1994. Thus there was a decline of 10 percentage points in the two year period and a loss of 20% when the 10 points are viewed as a percentage of the 1992 base. For the final measure, smoking marijuana regularly, some 81.1% of the 1992 15-16 year old students perceived harm. In 1993 this percentage was 78.5% and in 1994 it was 71.3%. The two year loss was thus 9.8% or 12% when viewed as a percentage of 1992 base.

The data were also reviewed with respect to social disapproval of people who (1) try marijuana once or twice (2) smoke marijuana occasionally and (3) smoke marijuana regularly. Again, 8th (13-14 years old on average), 10th (15-16 years old on average), and 12th grade (17-18 years on average) students were the subgroups looked at. The findings are as follows:

The long term trends among 17-18 year old students show "disapproval of people who smoke marijuana occasionally" or "regularly," peaking in 1990, although disapproval of people trying "marijuana once or twice" did not peak until 1992. In 1992, 69.9% of the 12th graders said they disapproved of people who try marijuana once or twice. For 1993, this figure declines to 63.3% and goes down to 57.6% in 1994. There is thus a loss of 12.3% in the two year period and a decline of nearly 18% when the loss is used as numerator against the 1992 base of 69.9%. Among 17-18 year old students in 1992, 79.7% said they disapproved of people who smoke marijuana occasionally. In 1993 the percentage was 75.5% and in 1994 it was 68.9%. This loss of 10.8 percentage points is over a 13% drop when the 1992 figure is used as base. Disapproval of those who smoke marijuana regularly was 90.1% in 1992 but decreased to 87.6% in 1993 and went down to 82.3% in 1994. The two year loss is thus 7.8% and the decline with 1992 as denominator is nearly 9%.

Turning to the 13-14 year old students with respect to disapproval ratings, the same trends are easily noted. In 1992, 82.1% of 13-14 year old students disapproved of people who try marijuana once or twice. For 1993, the percentage declines to 79.2% and goes down, in 1994, to 72.9%. Overall, this is a loss of 9.2% and a drop of 11% as a portion of the 1992 base. When occasional smoking of marijuana is reviewed, the rates of disapproval are 88.1% in 1992, 85.7% in 1993 and 80.9% in 1994; a loss of 7.2% in two years and a drop of just over 8% when the loss is employed as a portion of the 1992 base. In 1992, 90.8% of the 13-14 year old students disapproved of those who smoke marijuana regularly. This drops to 88.9% in 1993 and 85.3% in 1994. A loss of 5.5% is noted over the two year period with a drop from the 1992 base of 6%.

The 15-16 year old students continue the trends already cited. In 1992 some 74.8% disapproved of people who try marijuana once or twice. This percentage dropped to 70.3% in 1993 and then to 62.4% in 1994. There was thus a decrease of 12.4% in the two year period. When this loss is viewed as a proportion of the 1992 base, the percentage loss is over 16%. In terms of disapproval of smoking marijuana occasionally, the 15-16 year old students went from a disapproval rating of 83.6% in 1992 to 79.4% in 1993 to 72.3% in 1994. The last category, smoking marijuana regularly, brought a disapproval rating of 90.0% in 1992, 87.4% in 1993 and 82.2% in 1994; a decrease of 7.8% in the two year period and a drop of nearly 9% when the loss is seen as a proportion of the 1992 base.

The MTF survey has documented that shifts in attitudes about the perceived risks associated with the use of marijuana preceded the downward trend in marijuana use (Bachman et al., 1988). Perceived harm and risk in MTF survey seem to lead prevalence rates by at least a year. When perceived harm and risk go up, prevalence rates the following year tend to decrease; when perceived harm and risk go down, prevalence rates the following year go up.

As a final measure of change since 1992, we examined perceived availability of marijuana. Looking first at the youngest in the MTF, the 13-14 year old students, 42.3% felt, in 1992, that marijuana was "fairly easy" or "very easy" to get. In 1993 this had gone up slightly to 43.8% but in 1994 it rose dramatically to 49.9% (about one out of two 13-14 year olds responding that marijuana is "fairly easy" or "very easy" to obtain). Between 1992 and 1994 the rise is 7.6% and an increase of about 18% over the 1992 base. For the 15-16 year old students, 65.2% in 1992 believed marijuana "fairly easy" or "very easy" to get. For 1993 this figure was 68.4% with a large increase to 75.0% noted in 1994. The rise for the two year period is a remarkable 9.8% and the increase over the 1992 base is 15%. Of the 17-18 year olds students in 1992, 82.7% perceived marijuana to be "fairly easy" to "very easy" to get. The 1993 and 1994 figures are 83.0% and 85.5%. Thus there is an increase of only 2.8% in the two year period and a 3.4% increase over the 1992 base. Nevertheless, when 85.5% of 17-18 year old students believe an illegal

substance is fairly to very easy to obtain there, at a minimum, should be pause for thought.

MTF trend data suggest that the recent increase in the use of certain drug measures is not restricted to particular groups or geographic areas. Detailed data are not yet available for 1994, thus we must resort to looking at data from 1992 to 1993. The increase of past year use of marijuana by seniors was true in the northeastern, north central, and southern states; only students in the western states did not show this increase. From 1992 to 1993, the increase in seniors past year use of marijuana/hashish occurred at schools in large metropolitan areas, other metropolitan areas, and outside metropolitan areas. Data on past year use according to race/ethnicity showed increases from 1992 to 1993 for black and white seniors but no comparable increase for Hispanic seniors. The 1992 to 1993 increase in seniors past marijuana use was observed in each social class.

The picture painted by data from MTF shows dramatic internal consistency in pointing to a rise in marijuana use by the youth of the United States. No matter which measure of prevalence is used - lifetime, annual or current - and no matter which grade is considered -the 8th, 10th or 12th - the data are consistent. Validation is provided these rates by a drop in the perceived harm of marijuana by youth, by a drop in their disapproval of three marijuana smoking behaviors (trying marijuana, occasional use, and regular use) and by an increase in the perceived availability of marijuana, particularly within the 8th and 10th grades. This turnaround since 1992 is not yet of the magnitude of prevalence noted in 1979 and surrounding years, but it is worth noting that these data indicate we have returned to 1988 levels of prevalence.

A two year reversal in trend does not necessarily mean we have turned the corner on the decade-long decrease in students' drug use and are now headed for another drug era. Confirmatory data from other sources and another year's data from MTF and the Household Surveys are critical to clarifying the picture.

The Drug Abuse Warning Network (Dawn)

The Household Survey and MTF are both national surveys that obtain prevalence data on drug use from the general, so-called normal, national and nonclinical populations. There are, however, also surveys which are national in scope which deal with selected populations -- often populations who could be said to suffer some consequences from their drug use. One such survey is the Drug Abuse Warning Network (DAWN). It is the oldest national epidemiological drug survey, having tracked the number of drug-related emergency room episodes and drug-related deaths since the early 1970s. Both the sample of emergency rooms and the sample of medical examiners were originally designed to be

national in coverage, but both experienced attrition in sample members and difficulties in maintaining the nationally representation sample over the years. However, the emergency room sample was redesigned in 1989 to again be nationally representative. DAWN and the Household Surveys were transferred to the Substance Abuse and Mental Health Services Administration (SAMHSA) at their creation in 1992. The current emergency room sample is composed of 600 reporting units and is designed to provide self-representing estimates of drug related emergency room episodes nationally, and for 27 major metropolitan areas in the coterminous United States.

Data are gathered by DAWN staff reviewing hospital emergency room (ER) medical records for drug mentions. The patient—and/or those accompanying them—frequently self-report whether the use of any drug(s) precipitated their visit. Medical tests may also be used to determine a drug related ER incident. Each drug mention is recorded separately, as well as in combination with other drugs (except alcohol, which is always reported in combination with other drugs). Each drug mention contributes to the overall trends for the individual drugs, even though many episodes involve multiple drug mentions.

In discussing marijuana as a factor in emergency room episodes it is critical to bear in mind that marijuana is often mentioned in combination with other drugs, particularly alcohol and cocaine (SAMHSA, 1993b). The marijuana use itself may not contribute to the emergency room episode, but rather the drug(s) it is used with in combination. Alternatively, the combination of marijuana with other drug(s) may produce a synergistic effect leading to increased health consequences. For 1993, DAWN estimated 29,166 emergency room mentions of marijuana. Of these, half also involved alcohol, and 40% also involved cocaine. Twenty percent of the marijuana episodes mentioned marijuana alone.

Data from DAWN emergency room episodes are available through 1993. Marijuana trends are available for the 6 year period 1988 through 1993 from the national sample (SAMHSA, 1994). In 1988 there were 19,963 emergency room mentions involving marijuana. In 1989 there was a slight increase to 20,703. This number went down in both 1990 and 1991 but rose dramatically in 1992 to 23,998 mentions, and then again in 1993 to 29,166 mentions. The 1993 figure represents a 21% increase over the 1992 total and a 46% increase over the 1988 number. The most common reason for the contact with the emergency room was "unexpected reaction." In 1992 and 1993, about 31% of the contacts gave this reason. Importantly, however, some 24% of the contacts in 1992 and 19% in 1993 gave "seeking detoxification" as their reason for contact. Also of importance is the fact that over 37% of the mentions in both 1992 and 1993 gave "dependence" as a drug use motive but only 25% in those same years gave "recreational use" as a motive. These differences and percentages are relatively stable across the examined six year time span.

Considered according to demographic characteristics, the number of marijuana-related episodes involving males increased from 13,852 in 1988 to 20,368 in 1993, a 47% increase in the five year period. Episodes involving females went from 6,031 in 1988 to 8,525 in 1993, a 41% increase in the same time frame. By race, episodes involving whites increased from 9,717 in 1988 to 13,759 in 1993, an increase of 42%. Blacks showed an increase in episodes from 6,527 in 1988 to 10,167 in 1993, an increase of 56%. Hispanics had 1,513 episodes in 1988 and this increased to 2,631 in 1993, a 74% increase but a decrease of 6% from the 1992 episode figure. Between 1988 and 1993, emergency room episodes involving 18-25 year olds constituted the majority of episodes (8,150 or 41% in 1988 and 9,655 or 33% in 1993), the rise in episodes over 1988 constituting an 18% rise in the five year period for this age group. In the 26 through 34 year old group, episodes rose from 6,442 in 1988 to 9,342 in 1993, a 45% increase in the five year period. Episodes among the 35 and older were 2,350 (22% of all episodes) in 1988 and increased dramatically to 5,689 (19.5% of all episodes but a 142% increase since 1988.

Medical examiner data on drug-related deaths are collected from medical examiner offices in 27 major metropolitan areas. In the medical examiner component of the DAWN study, toxicology reports are available in virtually all cases to determine drug related deaths. As with the ER component of the study, each drug mention is recorded separately, as well as in combination with other drugs (except alcohol, which is always reported in combination with other drugs). Each drug mention contributes to the overall trends for the individual drugs, even though many episodes involve multiple drug mentions. Since 1985, the data show an increase in cocaine related deaths from 717 to 3910 in 1993 (a 450% increase), and for heroin/morphine related deaths from 1433 to 3805 (a 165% increase). There is more stability in the number of marijuana-related deaths, ranging from a low of 105 to a high of 209 between 1985 and 1992. However, 457 deaths in which marijuana was found in the body were recorded in 1993. Therefore, these medical examiner data loosely parallel the emergency room data for cocaine and heroin/morphine, but diverge for marijuana.

National Drug Abuse Treatment Utilization Survey

Good quality, systematic data on treatment admissions are not compiled in the U.S. The best source of such information, the National Drug and Alcoholism Treatment Unit Survey (NDATUS), is a voluntary reporting system. Major changes in the reporting criteria system in the early 1980s created problems for the system, so trends are not reliable. Nevertheless, since they are the best data available, they are reported herein, but caution is urged in interpreting the data. The facilities that report include both in-patient and out-patient programs, as well as detoxification programs.

The following table shows the trends in client treatment admissions to State-supported facilities for the top three primary drugs of abuse in the period 1987 through 1992--heroin, cocaine, and marijuana/hashish. Like the DAWN study, clients may report more than one drug of abuse; thus, particularly in the case of marijuana, it is important to bear in mind that alcohol or some other drug is almost always associated with it. Admissions for heroin, cocaine, and marijuana/hashish, have all risen since 1987. Cocaine treatment admissions, in particular, have risen dramatically from 81,356 admissions in 1987 to 289,644 in 1992, a 256% increase in just six years. The increase in treatment cases in which marijuana is mentioned as a primary drug of abuse is also noteworthy. In 1987, 57,473 individuals were admitted to treatment who reported marijuana as one of their top three primary drugs of abuse. This rose to 94,685 in 1992, an increase of nearly 65% in the six year period. (In 1992, a total of 97,964 marijuana admissions were reported by all States, Guam, Puerto Rico and the District of Columbia. In 13 States, marijuana was the primary drug of abuse related to treatment admissions. The data in the cited table are based on data from 43 States, the District of Columbia, and Puerto Rico.)

Fiscal Year	Heroin	Cocaine	Marijuana / Hashish
1987	94,299	81,356	57,473
1988	115,308	137,343	76,948
1989	122,612	206,480	95,253
1990	153,852	235,202	106,885
1991	142,372	229,703	96,421
1992	128,044	289,644	94,685

The Office of National Drug Control Policy (ONDCP) compiled data on treatment based upon a sample of treatment providers from NDATUS. Fifteen programs from each of the four NDATUS regions made up the data base and each region was represented about equally in terms of percentage of programs (the range being 22-30%). In November, 1994 this survey found that marijuana was the primary drug of abuse for 12-22% of program clientele across the country. In three of the four regions, the percentage of clients entering treatment for marijuana exceeded the percentage for heroin. Only in Region I, essentially the northeast United States, was this not the case. It is, however, critical to note that in almost every case of treatment admission for marijuana, some other substance (or substances) is involved. In the vast majority of marijuana presentations, alcohol is involved (69% to 92% depending on region) with cocaine being a distant second (ONDCP, 1994, p. 11). Thus the issue of comorbidity is paramount when speaking of marijuana in the treatment context.

In the State of Maryland where each client entering a treatment facility may report up to three substances of abuse as problems at the time of admission, there

was a decline in juveniles presenting for marijuana abuse from 1990 through 1992, but there was an increase in 1993 and 1994 (Center for Substance Abuse Research, 1995). For the year 1990, 64% of juvenile clients cited marijuana as a problem. This decreased to 53% in 1991 and 47% in 1992 but increased to 55% in 1993 and 70% in 1994. Marijuana was second only to alcohol in each of the cited years with alcohol cited as a problem in 81% of the cases in 1994. These data support the thesis that marijuana use cannot be discounted in the treatment context but that the issue of comorbidity, as already stated, must be a prime consideration in devising treatment and prevention strategies.

Drug Use Forecasting (DUF)

Another survey, national in scope, but dealing with a selected criminal justice population is the Drug Use Forecasting (DUF) sponsored by the National Institute of Justice (NIJ). DUF surveys drug use among arrestees that have been formally booked and charged in central booking facilities in major cities throughout the United States. This study differs from most other drug studies in its use of urinalysis to measure recent drug use. Urinalysis can generally detect drug use in the past two to three days. The study also uses self-report methods to obtain information on lifetime, past year, and past month drug and alcohol use. The DUF study has been conducted in 23 major cities in the USA since 1988. New samples of arrestees are interviewed quarterly in each of the participating cities. Since the pilot study demonstrated a higher rate of drug use among offenders arrested on drug charges, the DUF project tries to keep the number of participants in this category to no more than a quarter of the city samples. Due to their comparatively smaller numbers, all females, regardless of charge, are asked to participate in the study. The DUF study is essentially a convenience sample of arrestees, and primarily includes those charged with serious felony offenses. The DUF study is not generalizable to the broader population of arrestees in each city, or nationally.

All in all, the DUF study has demonstrated a very high rate of drug use among felony arrestees in major U.S. cities, but there is not a readily discernable pattern. Slightly higher prevalence rates are consistently found in a few cities like Manhattan, Chicago, and San Diego, and lower rates in Portland and Omaha. Cocaine has been the most frequently detected drug by a large margin. There was little change in the numbers testing positive for at least one illicit drug among the combined city samples of males and females from 1988 to 1992, although there are fluctuations in basic prevalence measures (Center for Substance Abuse Research, 1993). Cocaine use has increased in some cities and decreased in others, but the general pattern is one of stability. Opiate use has been stable to decreasing since 1988 (NIJ, 1993). Following a slow, but steady decline between 1988 and 1991, marijuana use began to rise (NIJ, 1994). Mari-

juana use is highest among young adults and juveniles (Chalsma and Boyum, 1994).

Using a weighted average based on the number of reported crimes in each city, Chalsma and Boyum (1994) combined the data across the 23 sites for the years 1988 through 1992. The percentage of males testing positive for cannabis dropped from about 33% in 1988 to 20% in 1991. Rates started to increase and in 1992, about 25% of males tested positive for cannabis. A similar trend is found among females, although the percentage who test positive is only about two-thirds of that of males. For example, about 19% of females tested positive for cannabis in 1988, and 12% in 1992. Data from 1993 show marijuana use continuing to rise among adult male arrestees. The percentage of male arrestees testing positive for marijuana equalled or surpassed that for cocaine in seven DUF sites (CESAR, 1995).

Marijuana arrests

Federal, State and local law enforcement agencies share responsibility for enforcing the nation's drug laws though the majority of drug arrests are made by State and local authorities. However, the Drug Enforcement Administration (DEA) and the Federal Bureau of Investigation (FBI) also make arrests at the Federal level. For drug violations involving smuggling, the U.S. Coast Guard and U.S. Customs Service are also responsible for carrying out drug laws. Due to variations in the ways the separate states collect information, data is not combined to yield national totals, however the FBI *estimates* the number of arrests for drug violations by State and local police.

There were less than 30,000 arrests for drug offenses in 1960 (Califano, 1995, p. 40). The same year, 169 federal marijuana violations were recorded (Solomon, 1966). In 1965, one source puts the number of annual arrests for all marijuana offenses, both possession and trafficking, by all law enforcement officials in the United States at about 20,000. By 1970 this figure had increased dramatically to 190,000 and then rose at an even faster rate to 421,000 in 1973. This figure increased to 446,000 in 1974 and stayed above 400,000 into the mid 1980s (Slaughter, 1988, pp. 421 and 424).

Between 1980 and 1993, the number of arrests for drug offenses by State and local police doubled from 580,901 to 1,126,300 (Uniform Crime Reports, 1994). Whereas the 1980 total was dominated by arrests for marijuana (70%) and possession offenses (82%), by 1992, the distribution of heroin/cocaine related arrests (53%) exceeded the number for marijuana (32.1%), although distribution arrests accounted for about equivalent shares in 1980 (27%) and 1992 (27.2%) (cf., Maguire and Pastore, 1994). Overall, drug arrests began their rapid escalation in

ernest after 1983. Figure 3 shows that following a big jump between 1971 and 1973, arrests for marijuana remained relatively stable until 1985, dropped in 1986, but then, with the exception of a downturn in 1990, have shown a gradual rise. State and Local level arrests generally constitute so-called "low level" cases. Smaller quantitites of marijuana are involved, not the larger amounts generally involving Federal offenses. Of 893,630 estimated felony convictions in State courts in 1992, only 16,376, 1.8% involved marijuana (BJS, 1995, p.2). The trend had been toward an increase in the numbers arrested for sales and distribution over the period, but 1992 signalled a bit of a reversal in the trend.

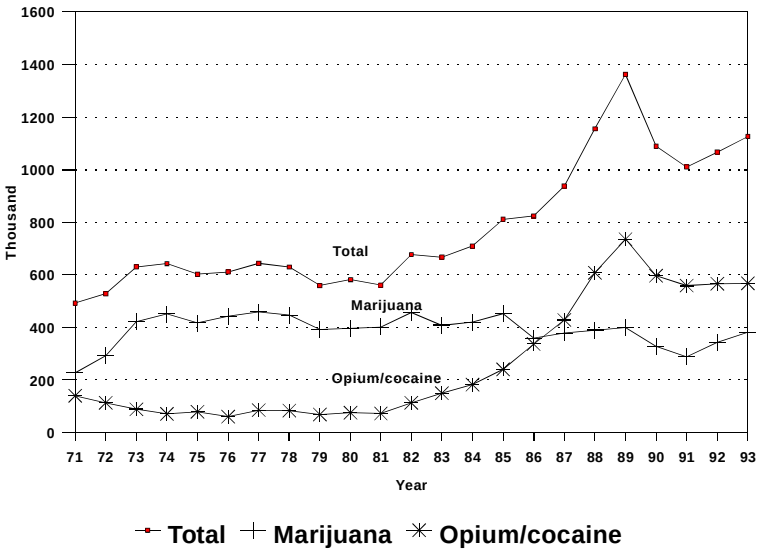
Looking at the recent trends in drug arrests, the following table shows there were approximately 1.1 million arrests for drug offenses in 1990. Of this number, 66,500 (6.1%) were for sale/manufacture of marijuana and 260,400 (23.9%) were for possession for a total of 326,900 cases (30%). For 1991, there were approximately 1.0 million arrests for drug offenses. Of this number 6l,610 (6.1%) were for sale/manufacture of marijuana and 226,240 (22.4%) were for possession for a total of 287,850 (28.5%). In 1992 there were 342,314 arrests for drug law violations involving marijuana. This was 32.1% of all arrests for all drug law violations (1.1 million persons). Of the marijuana arrests, 70,382 (6.6%) were for sale/manufacture and 271,932 (25.5%) were for possession. In 1993, there were 380,690 arrests for marijuana. This was 33.8% of all drug arrests. Approximately 6.2% of the marijuana arrests were for sale/manufacture (69,831), and 27.6% were for possession (310,859). (Communication from Wayne J. Roques, DEA; Maguire and Pastore, 1994; Uniform Crime Reports, 1994).

Year	Number of Persons Arrested for Drug Offenses	Number Arrested for Marijuana Sales/Distribution	Number Arrested for Marijuana Possession	Total Marijana Arrests
1990	1,089,500	66,460	260,390	326,850
		6.1%	23.9%	30.0%*
1991	1,010,000	61,610	226,240	287,850
		6.1%	22.4%	28.5%*
1992	1,066,400	70,382	271,932	341,314
		6.6%	25.5%	32.1%*
1993	1,126,300	69,831	310,859	380,690
		6.2%	27.6%	33.8%*

* Percent of marijuana arrests as a function of total drug arrests

Overall, drug arrests began their rapid escalation after 1983. The trend had been toward an increase in the numbers arrested for sales and distribution over the period, but 1992 signalled a bit of a reversal in the trend. The increase in drug arrests since 1983 is almost entirely attributable to the increase in arrests for opium and cocaine, and not marijuana. After reaching their high point in 1982 at 455,900, arrests for marijuana stabilized through about 1985. Marijuana

Estimated Arrests by State and Local Police for Drug Offenses, 1971-1993



Source: Uniform Crime Reports

related arrests decreased by nearly a quarter between 1985 and 1986, when they started to rise again. They fell again by about a third in 1990, and are again on the rise.

Criminal cases filed in U.S. district courts

Records have been compiled on the number of federal defendants charged with drug law violations in U.S. District Courts for several decades. The federal court system handles cases typically against higher level drug dealers and their agents. Between 1945 and 1968, the numbers were relatively stable. The number of drug offenders gradually increased from 1968 through 1974, when they stabilized and started to decrease. That decrease ended in 1980. The following table shows that over the period 1980-1992, there was a 346% increase in the number of federal defendants sentenced to prison in U.S. District Courts for drug offenses, compared to a 71% increase for non-drug offenses (BJS, 1992). A study commissioned by Attorney General Janet Reno in 1993 concluded that more than one-fifth of the federal prison population consists of "low-level" drug offenders, defined as persons convicted of drug crimes who have no prior prison time, no current or prior violence in their records, and no involvement in sophisticated criminal activity (CJN Drug Letter, 1994).

In 1991, 46,337 criminal cases were filed in U.S. District Courts. In 1992, this figure rose 2.4% to 47,472. Drug law violations constituted 11,954 cases (about 26% of the total) and increased 7.4% to 12,833 in 1992 (about 27% of the total). Marijuana cases numbered 3,488 in 1991 (about 29% of all drug law violation cases and 7.5% of all cases) and in 1992 increased 16.8% to 4,073 cases (about 32% of all drug law violations cases and 8.6% of all cases) (Maguire and Pastore, 1994, p. 499).

Some 77% of the defendants charged in U.S. District Court in 1985 with a marijuana violation were convicted. The percentage convicted has risen steadily over the intervening years, reaching 85% in 1991 and 86% in 1992 (Maguire and Pastore, 1994, p. 512). Of those marijuana defendants convicted in U.S. District Courts in 1985, 67% received prison time. As with convictions, the percentage of those receiving a prison sentence has risen steadily over the intervening years, reaching 79% in 1991 and 81% in 1992 (Maguire and Pastore, 1994, p. 512). Somewhat surprisingly, the average length of prison sentence among those convicted of a marijuana violation in U.S. District Courts remained relatively unchanged in the period 1985 through 1992, in spite of mandatory minimum statutes. In 1985, the average length of sentence was 46 months; in 1992 the figure was exactly the same, 46 months. The intervening time period saw average length of sentences range between 47 and 51 months (Maguire and Pastore, 1994, p. 513). It would seem that though the numbers charged, convicted, and receiving prison sentences are increasing for marijuana violations, the length of prison term is not increasing.

We also reviewed what happened to defendants in U.S. District Courts for the year 1992 with respect to disposition of case. In that year there were 5,657 marijuana defendants before the court. Of that number 917 (16%) were not convicted with 814 of these being dismissed by the court. Of the remaining 103 defendants, 15 were acquitted by the court and 88 were acquitted by jury. Turning to the 4,740 defendants convicted by the judge, the vast majority, 4,283 entered a plea of guilty. Two defendants pled nolo contendere, 34 were convicted by the court and 421 were convicted by jury (Maguire and Pastore, 1994, p. 523).

Drug use patterns among prison inmates

Inmates in Federal prisons in 1991 were far more likely than those in State prisons to be incarcerated for a drug offense(s). Some 57.9% of all Federal inmates were serving time for a drug offense. For State inmates this figure drops to 21.3% (Bureau of Justice Statistics, 1994b). Yet, Federal prisoners were far less likely than State prisoners to report using drugs, including marijuana. In 1991, 52.8% of the Federal prisoners said they had ever used marijuana. At the State

Defendants	1980	1985	1986	1987	1988	1989	1990	1991	1992	Change 80-92*
Non-Drug Offenses	32,053	38,259	39,406	38,182	37,488	38,211	39,472	38,990	39,586	24%
Drug Offenses	7,119	12,984	14,746	16,443	16,710	19,750	20,035	21,203	22,277	213%
Total	39,172	51,243	54,152	54,625	54,198	57,672	60,499	60,193	61,863	58%
Defendants Sentenced to Prison										
Non-Drug Offenses	10,091	12,831	13,786	13,383	12,851	14,071	15,676	15,543	17,221	71%
Drug Offenses	3,675	7,774	9,272	10,196	10,599	13,306	14,092	15,012	16,401	346%
Total	13,766	20,605	23,058	23,579	23,450	27,377	28,659	30,555	33,622	144%
Average Sentence Length in Months										
All Offenses	44.3	50.7	52.7	55.2	55.1	54.5	57.2	61.9	62.2	41%
Drug Offenses	47.1	58.2	62.2	67.8	71.3	74.9	80.9	84.7	82.2	75%

* Preliminary data for 1992

Source: Bureau of Justice Statistics, 1992.

level this figure is 73.8%. With respect to ever having used marijuana on a regular basis, 32.2% of the Federal and 51.9% of the State inmates replied in the affirmative. When asked about the use of marijuana in the month before the offense, 19.2% of the Federal and 32.2% of the State prisoners replied positively. In terms of using marijuana at the time of the offense, 5.9% of the Federal and 11.4% of the State inmates said they had been under the influence of marijuana at the time they committed the offense leading to their incarceration. Of all drugs (alcohol was not included), marijuana was the substance most common to both groups of prisoners, followed by cocaine and then heroin (BJS, 1994b).

Among Federal inmates for the year 1991, it is possible to obtain a measure of the amount of drugs involved for the current offense. For those involved in marijuana trafficking (4,420 inmates), the median number of grams involved was 136,080 (in excess of 272 pounds) and the mean number of grams was 3,353,580 grams (over 6,700 pounds). For those inmates convicted of marijuana possession (1,506 inmates), the median number of grams involved in the offense was 45,360 (over 90 pounds) and the mean number of grams was 2,100,560 (over 4200 pounds). (The Drug Enforcement Administration estimates a pound of marijuana as having a value somewhere between $400 and $3,000 (BJS, 1994b).) Unfortunately these data are not available for State inmates.

Growth of corrections

In general, the nation's resolve to "get tough" on drugs has impacted on all levels of the criminal justice system. One of the most dramatic and costly effects has been the enormous increase in jail and prison populations over the past few

years (Belenko, 1990). In 1990 State and Federal correctional facilities housed 715,649 inmates (Maguire and Pastore, 1994, p. 609). This figure rose to 825,559 in 1991 and increased to 883,656 in 1992 (Maguire and Pastore, 1994, p. 602). The nation's prison population reached 948,881 in 1993. In 1994 the nation's prison population soared to over one million and this is expected to double soon after the year 2000. The United States imprisons 519 of its citizens per 100,000 population, which is one of the highest incarceration rates of any of the industrialized countries (Califano, 1995, p. 40).

Between 1978 and 1992, the Nation's jail population increased by approximately 250%. Drug offenses accounted for 23% of charges against local jail inmates in 1989, compared to about 9% in 1983 (BJS, 1990). As of 1992, local jails in the United States held an estimated 444,584 persons--with about quarter there on drug charges. The most recent estimate of the number of juveniles in custody was 93,945 in 1989, representing a 31% increase in custody rates since 1979. One of every nine juvenile detentions in 1988 was for drug charges, but 33% of drug offense cases resulted in detention for juveniles--higher than the incarceration rates for any other offense type (Office of Juvenile Justice and Delinquency Prevention, 1991). The number of adults on probation or parole has been spiralling for well over a decade, more than doubling in the decade of the 1980s. State and federal agencies reported that 2,843,445 offenders were on probation and 671,470 were on parole in 1993.

The bottom line is that much of the increase in the nations' prison, jail, probation and parole populations can be attributed to increased emphasis on punishing drug offenders and the increasing severity of sanctions (Graham and Zedlewski, 1990). Unfortunately, it is not possible to reliably extract the amount attributable to enforcement of the marijuana laws, especially distinguishing between possession and sales/distribution offenses.

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4 Marijuana supply, sales, and seizures

Potency

According to the DEA, marijuana is not the same drug it was two decades ago. It has fallen heir to the technological revolution. In 1970, the average THC content of a marijuana plant was about 1.5%. Today this would be considered "ditchweed" or inferior marijuana. Because of advanced technology including plant hormones and steroids, fertilizers, indoor hydroponic operations, and scientific horticulture practices, the potency of the cannabis plant has increased dramatically.

A sizable portion, but by no means all, domestic cultivation of cannabis involves sinsemilla. This is a Spanish word meaning "without seeds". In marijuana terminology it "refers to the unfertilized flowering top of the female plant that contains the highest THC content" (DEA, no date, p. 2). It is this flowering or "budding" that is cultivated by the sophisticated marijuana grower in an effort to extract the highest possible THC content from the plant. The growers have been extremely successful in this effort. A non-sinsemilla (pollinated) marijuana plant contains about 34% of leaf and bud components, the so-called usable materials. For a sinsemilla plant this figure increases to 58%. "The average plant yield for mature, domestically grown sinsemilla is approximately 1.25 pounds per plant. The average plant yield for mature, domestically grown commercial grade marijuana is approximately three-quarters of one pound per plant" (Hsu, 1995).

According to the DEA, in 1989, the THC potency of sinsemilla was 6.95%. This rose to 10.15% in 1990 and climbed to 11.72% in 1991 before dropping to 8.34% in 1992. The potency (THC level) of marijuana plants, commercial grade but non-sinsemilla was 3.46% in 1989. For the next three years, 1990 through 1992, these percentages were 3.63, 3.13 and 3.68 respectively (DEA, 1993, p. 62). These figures serve to demonstrate the dramatic upsurge in marijuana potency over the last decade, particularly when it is borne in mind that the THC potency of the late 1970s and early 1980s averaged less than 2%. Not only does increased grower sophistication, but also the declining market share of imported marijuana—which tends of be lower quality—contribute to these trends in general THC content (DEA, 1993, p. 63).

A word of caution regarding the interpretation of potency is also in order. The primary data on marijuana potency in the United States comes from the National

Institute on Drug Abuse's Marijuana Potency Monitoring Program located at the University of Mississippi. Measurements of potency are based on samples of marijuana obtained from DEA and state and local enforcement agencies. One caution is that the methodologies used in the 1970s to extract, measure and determine marijuana potency are "primitive" in terms of methodologies and equipment currently available. Thus the issue of "comparability" is most germane. Storage techniques prior to being sent to NIDA are also of concern. Any change or improvement in storage techniques might yield less degrading of samples than was true in the 1970s. Finally the issue of sampling rigor must be raised. The figures are based on a nonrandom sample of law enforcement seizures and reflects that average potency, not necessarily the potency of marijuana being smoked by Americans (see Hsu, 1995). While the cautions should in no way be thought of as reason for decreasing concern for the potency of marijuana, they should serve to plead the case for a more rigorous methodology involving the collection, sampling, storage and testing of marijuana (BJS, 1992, p. 54).

Price

Prices of marijuana show wide variation by country of origin. Using wholesale prices per pound and mid-1991 prices, the price of marijuana of Mexican origin varied between $350 and $1600. For Colombian marijuana, this figure was $800 to $1,000 and for marijuana from Thailand, the price ranged from $2,000 to $3,000 per pound. Jamaican marijuana brought $1,500 to $2,000 per pound for commercial grade and $2,000-$3,000 for sinsemilla (BJS, 1992, p. 54). It is estimated that United States consumers of marijuana spent $9 billion in 1990 (BJS, 1992, p. 36).

The price of marijuana has been increasing on both a per pound and per ounce basis. During the early 1980s, a pound of commercial grade marijuana sold in the United States for between $350 and $600. Sinsemilla brought a higher price per pound, in the range of $1,000 to $2,000. In 1989 the price of a pound of commercial grade marijuana was between $350 and $2,000. An ounce of the same quality cost between $30 and $250. For sinsemilla, a pound cost between $700 and $3,000 and an ounce sold for between $100 and $300. A pound of commercial grade marijuana, in 1990, sold for between $250 and $3,000 and an ounce sold for between $25 and $300. For sinsemilla, the price ranges were $400 to $4100 for a pound and $80 to $350 for an ounce. The year 1991 saw commercial grade marijuana being sold for between $400 and $3,000 per pound and for between $40 and $550 per ounce. A pound of sinsemilla brought a price range of between $500 and $6,000 and an ounce brought a range of between $100 and $450. In the year 1992, a pound of commercial grade marijuana sold for between $300 and $3,000. An ounce of commercial grade brought between $40 and $450.

The sinsemilla, in 1992, brought between $650 and $9,600 per pound and between $125 and $650 per ounce (BJS, 1992, p. 62). Figures on marijuana prices collected by the Community Epidemiology Work Group in June 1994 show essentially the same price structure (NIDA, 1994, p. 48). The range for a pound of sinsemilla in June, 1994 was between $650 and $9,000. For commercial grade marijuana, the range per pound was between $350 and $3,000.

According to a user survey conducted by Chalsma and Boyum (1994) for the ONDCP, the average price of marijuana in the United States was $55 for a quarter ounce. This amounts to about 8 dollars per gram which is very similar to the price charged for marijuana in Dutch coffeeshops.

To state the obvious, the cited prices demonstrate dramatic upsurge and offer tremendous potential for profit to the cultivator/trafficker of marijuana. Using indoor, high grade sinsemilla as an example, the DEA calculates the typical domestic marijuana grower to have approximately 250 plants per growing cycle. Using an estimate (which DEA purports as conservative) of one pound per plant and an average price of $3,000 per pound, the revenue generated would be of the magnitude of $750,000 per quarter (DEA, no date, p. 36).

Availability

The world production of marijuana is, indeed, "Big Business." In 1991 the Bureau of International Narcotics Matters at the U.S. Department of State estimated that 23,650 metric tons of marijuana were produced throughout the world (BJS, 1992, p. 36). Of course, not all of this production was consumed in the United States. Nevertheless, in economic terms, availability to a large extent translates into whether or not the supply of marijuana is sufficient to meet the demand and it would appear that world production is sufficient for the demand. As further evidence, the MTF Survey cited in the epidemiologic section of this report found that well over 80% of 17-18 year olds believed it was either "fairly easy" or "very easy" to obtain. Information from the DEA indicates that producers are doing everything in their power to meet the demand. Many growers, perhaps due to vigorous enforcement and aerial spraying of herbicide(s), moved their operation indoors. Sophisticated hydroponic operations do not require soil. The marijuana can, instead, be rooted in porous material such as lava rock or rockwool. Using state of the art delivery systems for water, fertilizers, carbon dioxide, and light, the indoor marijuana is superior to the outdoor product. Further, the indoor marijuana plant can come to maturity and be harvested within a four-month cycle; thus the potential for three harvests a year. In 1980, the DEA estimates that domestically grown marijuana was just 10% of the total. By 1992, perhaps due to successful intercept operations to stem the tide of marijuana imports and/or due to the ingenuity of marijuana growers

to meet this shortfall, the 10% figure had grown to 25% with yield of approximately 4,500 to 5,300 metric tons (DEA, 1992, p. 1). Unsubstantiated but believable estimates of current domestic production indicate that more than 50% of the marijuana consumed in the United States is domestically cultivated. From these data then, it would appear that consumers of marijuana in the United States currently have little trouble obtaining it.

The table below provides Drug Enforcement Administration (DEA) estimates of domestic marijuana production for 1988 to 1992.

Table 7. DEA estimates of domestic marijuana production for 1988 to 1992 in metric tons.

	1988	1989	1990	1991	1992
	4,350 - 4,850	5,000 - 6,000	5,000 - 6,000	3,615 - 4,615	2,595 - 3,095

However, Chalsma and Boyum (1994) estimate domestic marijuana production for the ONDCP using survey data on consumption at about 1000 metric tons, about 20% of which fails to reach the market. They estimated total marijuana consumption in 1992 at about 1600 metric tons, with half grown domestically and half imported. Clearly, DEA estimates of marijuana production are not consistent with the consumption-based estimates of Chalsma and Boyum. Further, the DEA estimates only about 25% of the marijuana consumed in the U.S. is grown domestically. Since we're discussing production of an illegal drug, we can't be sure which, if either, estimate is closer to the truth.

Because of its high potency, there is a ready market for export of U.S. grown marijuana, an issue that the government, as yet, appears to have given little attention. To meet the shortfall in domestic demand, a significant amount of marijuana is still imported into the United States. Colombia used to be the primary exporting country. However, due to the success of interdiction efforts and the huge profit and lower bulk of cocaine, Colombia no longer leads in exports. At this time, Mexico is chief among the countries making marijuana available in the United States. In 1990 it is estimated that Mexico cultivated 19,715 metric tons of marijuana (of a worldwide total of 25,600 metric tons). For 1991, worldwide cultivation of marijuana was dramatically reduced to 13,465 metric tons with Mexico accounting for 7,775 metric tons. The year 1992 saw worldwide cultivation of 13,058 metric tons of marijuana with Mexico producing 7,795 metric tons. In 1993, worldwide marijuana cultivation was 14,407 metric tons with Mexico's share being 6,280 metric tons (U.S. Dept. of State, 1994, p.5). The Mexican growers are using new technology to produce a grade of marijuana that can successfully compete with that domestically grown (DEA,1992, p. 1). Other countries smuggling marijuana into the United States include Colombia, Jamaica and Thailand (BJS, 1992, pp. 50-51).

Street supplies of marijuana are, in general, plentiful. An assessment of indicator data in major metropolitan areas throughout the United States in 1994 found evidence of widespread marijuana availability. Only in Detroit and Washington, D.C. were there indications (such as increasing prices) that demand was outstripping supply. The use of "blunts" (marijuana inserted or rolled into a hollowed out cigar) was also reported in many metropolitan areas (NIDA, 1994, pp. 46-47).

Seizures / eradication

Having addressed the issues of increased potency, easy availability and rising prices, it is important to look at the other side of this equation - the effectiveness of law enforcement authorities in reducing the supply of marijuana. One such measure would be the number of arrests associated with the eradication of marijuana sites. Here we are not speaking primarily of dealers and users but are rather addressing arrests associated with the domestic growing of marijuana. From the period 1987 through 1990, efforts to eradicate marijuana were largely focused on outdoor cultivation of marijuana. In 1987 such efforts resulted in 6,502 arrests. This figure decreased in 1988 to 6,062 and further decreased to 5,76l in 1989 and 5,729 in 1990. In 1991, efforts turned from "whack and stack" to placing emphasis on carefully planned, quality investigations and a realization that many marijuana growers had been driven indoors. The results, in 1991, were a 63% increase in arrests to 9,364. For 1992, arrests rose still higher to 12,369 (a 32% increase over 1991 and double the 1990 arrest figure) (DEA, 1992, p. 29). Of the 12,369 arrests in 1992, ten states accounted for 7,548 arrests or 61% of the total. Indiana and California with 1813 and 1551 arrests each led the states in this category (DEA, 1992, p. 13).

Eradication of marijuana crops is another measure of the effectiveness of supply reduction efforts. With respect to domestic production in 1992, it is estimated that 48.6 thousand outdoor plots were eradicated. This breaks out to 7.5 million cultivated outdoor plants. This figure, however, may include tended ditchweed, a low potency marijuana that grows wild and is usually mixed for sale with better grade marijuana. For the same year (1992), approximately 264.2 thousand ditchweed plants were eradicated. In addition, approximately 2.4 million outdoor sinsemilla plants were eradicated. Indoor growth of marijuana and sinsemilla, due to its high potency, was of special concern to enforcement authorities. The year 1992 saw 3,849 "indoor grows" eradicated. This amounted to 349.3 thousand plants (most of which can be assumed to be sinsemilla). Thus, in total some 272.0 million plants were eradicated (DEA, 1992, p.27).

Available figures for 1993 show somewhat unusual numbers. Some 64.1 thousand outdoor plots, approximately a 32% increase over 1992, were eradicated.

This amounted to 4.0 million plants (may include ditchweed) but was still a dramatic downturn from the 7.5 million 1992 figure cited earlier. It would appear that the plots eradicated in 1993 were significantly smaller in size than those eradicated in 1992. In terms of indoor operations, in 1993, about 3,347 "indoor grows" were eradicated amounting to 290.0 thousand plants, a major downturn from the cited 1992 totals (Maguire and Pastore, 1994, p. 464).

Another estimate of drug seizures can be made by citing data from the Federal-wide Drug Seizure System (FDSS). These data represent the combined efforts of the DEA, the FBI, the U.S. Customs Service (within the jurisdiction of the United States) and maritime seizures by the U.S. Coast Guard. For Fiscal Year 1990, FDSS data show 500,310 pounds of marijuana/hashish as having been seized. For Fiscal Year 1991, this figure is 677,281 pounds. Fiscal Year 1992 saw this figure increase to 787,391 pounds. Preliminary estimates for Fiscal Year 1993 are 778,194 pounds (BJS, 1994, p. 5).

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5 History of drug legislation

History

The history of the United States policy towards marijuana is probably best seen in the perspective of United States policy towards drugs in general and then, more specifically, marijuana. It is also necessary to view policy in a two-dimensional frame, the first being supply reduction, the reduction and control of the supply of drugs through legislation, law enforcement, interdiction, sentencing, and incarceration, and the second being demand reduction, the reduction of the demand for drugs. "Demand reduction" is operationalized through education, prevention and treatment. The history of supply and demand reduction policies in the U.S. will be reviewed separately.

Supply reduction in the United States

Arguably, there are several different points at which the history of supply reduction in the United States could begin. At the Federal level, the banning of importation of opium by Chinese nationals occurred in 1887 and in 1905 opium smoking was restricted in the Philippines (BJS, 1992, p. 80). Mid-1906 saw Congressional passage of the Pure Food and Drug Act. The act banned the interstate transportation of adulterated or mislabeled food and drugs. Importantly, the legislation did not prohibit or outlaw the use of cocaine and opiate drugs. It did, however, set standards of quality and truth in labeling and did lead to the demise of much of the patent medicine industry since the ingredients of such medicines now were required to be indicated (Inciardi, 1992, p. 15).
Efforts at drug control were not, however, limited to the Federal establishment. A municipal ordinance was passed in San Francisco in 1875 which prohibited the smoking of opium in opium dens (BJS, 1992, p. 78). In the 1890s several states enacted legislation aimed at limiting the supply of morphine and cocaine within their jurisdictions. Such laws generally required a physician's prescription prior to obtaining these drugs, thus limiting their legal use to medical purposes. Since morphine and cocaine could freely be obtained from states without such laws, the laws were not generally effective in controlling the distribution of morphine and cocaine (BJS, 1992, p. 76).

One of the most influential legislative acts ever passed concerning drugs occurred in 1914 when the Congress approved the Harrison Act (after its main

sponsor, Representative Francis Burton Harrison of New York). This act (with a multitude of regulations, court decisions, Supreme Court decisions and amendments) was to become the standard and the basis of narcotic regulation in the United States for the next 50 years. It was based upon the constitutional authority of the Federal Government "to raise revenue and to tax and regulate the distribution and sale of narcotics" (BJS, 1992, p. 76). The Harrison Act ultimately served to make illegal the nonmedical use of morphine and cocaine. It "required all people who imported, manufactured, produced, compounded, sold, dispensed, or otherwise distributed cocaine and opiate drugs to register with the Treasury Department, pay special taxes, and keep records of all transactions" (Inciardi, 1992, p. 15). Although technically defined as a revenue act and enacted (perhaps) for the purpose of providing some Federal control over drugs, the Harrison Act served to criminalize the estimated 200,000 users of narcotics in the United States. Many so-called honest citizens suddenly found themselves on the wrong side of the law and labeled addicts. Decisions by the Supreme Court supported the legality of the taxing aspects of the Harrison Act and, importantly banned maintenance supplies for addicts. This latter decision essentially deprived the medical profession of the privilege of writing a narcotic prescription for an addict patient for the purpose of maintenance. A later court decision held that a narcotic prescription for an addict was illegal even when the intent was part of a "cure" program. This was reversed in 1925 but, by that time, physicians were loathe to prescribe narcotics to addicts and an illegal drug distribution chain had become well-established (Inciardi, 1992, p. 16).

By 1920, an illicit drug economy had emerged in the United States that profited principally from cocaine and heroin distribution. In 1922 the Federal response was the Jones-Miller Act. This act provided fines of up to $5,000 and prison sentences for up to 10 years for any individual found guilty of being party to the unlawful importation of narcotics. In fact, the legislation had little influence upon the illicit drug marketplace except to increase the price of heroin and cocaine (Inciardi, 1992, p. 18).

Until 1920, when Alcohol Prohibition was legislated, there were sparse accounts of marijuana in the press and those that did exist showed marijuana to be smoked for recreational purposes. After prohibition was enacted, marijuana markets began to appear in a few cities, most notably New Orleans and New York (Brecher, 1986, p. 14). Harry Anslinger, Federal Narcotics Commissioner, began a war against marijuana in 1933. He used the popular press to prey upon the fears of the American public, including racial fear and division. He believed that marijuana was a "killer weed." He supplied information to magazines, periodicals, newspapers, and other media outlets alleging marijuana was responsible for cases of insane violence with only the flimsiest of evidence to support this allegation (Inciardi, 1992, p. 23). By 1937, in large part due to Anslinger's unrelenting campaign against marijuana, 46 of the (then) 48 states passed anti-marijuana legislation.

With Anslinger and the Federal Bureau of Narcotics vocally advocating for its passage, the Congress passed the Marijuana Tax Act and it was signed into law on August 2, 1937 (Inciardi, 1992, p. 24). Modeled after the Harrison Act, it essentially placed marijuana into the same category as the cocaine and opium products. It became illegal to import marijuana into the United States (McWilliams, 1991). As predicted by the American Medical Association and others who fought the passage of the bill, it did not serve to curb marijuana use (Brecher, 1986, p. 14).

By the early 1940s narcotic addiction had all but disappeared in the United States. This was not the result of some miraculous medical breakthrough nor was it the result of legislative initiatives. It was the fact that World War II was serving to "cut off the supplies of opium from Asia and interrupt the trafficking routes from Europe" (Inciardi, 1992, p. 24).

Several other legislative efforts in the supply reduction area are worthy of mention. The Opium Poppy Act of 1942 was enacted in an effort to regulate poppy production. As had the Harrison Act and Marijuana Tax Act, it used licensing and taxation as the basis of the regulation. The Narcotics Act of March 8, 1946, sought to regulate synthetic equivalents of opium and cocaine. Two legislative pieces, the Boggs Bill of 1951 and the Narcotic Drug Act of 1956 served to establish more severe penalties for violations of drug laws. The year 1960 saw passage of the Manufacturing Act. Its purpose was to tighten controls and restrictions over legally manufactured narcotic drugs. By virtue of the Manufacturing Act a system of licensing manufacturers and setting quotas for classes of drugs, both natural and synthetic, was set in place. The United States became one of fifty-four nations who became party to the Single Convention on Narcotic Drugs in 1961. (This assumed the status of a U.S. Treaty obligation in 1967.) The primary purpose of the Single Convention was to modernize and coordinate international narcotic control. Provisions were made within the Single Convention for the control of cannabis thus, in some of its features, the Convention singled out cannabis in much the same fashion it singled out opium and coca bushes (the source of cocaine). The Drug Abuse Control Amendments of 1965 revisited the Manufacturing Act of 1960 and tightened controls and increased penalties as found under that act. It was aimed specifically at barbiturates, amphetamines and hallucinogens (U.S. News and World Report, 1970, pp. 85-89).

In October, 1970, President Richard M. Nixon signed the Comprehensive Drug Abuse and Prevention and Control Act of 1970 into law. This popularly became known as the Controlled Substances Act of 1970. "It consolidates over fifty federal narcotic, marijuana and dangerous drug laws into one law designed to control the legitimate drug industry and to curtail importation and distribution of illicit drugs throughout the United States" (U.S. News and World Report,

1970, p. 90). Notably, the act compressed the Harrison Act and its five decades of amendments, modifications and interpretations into one law. The act, importantly, also showed a basic "change in judicial interpretation of the Constitution's commerce clause," as it relied upon commerce powers for its support thus doing away with having to show "police function as a revenue measure" (BJS, 1992, p. 86). One aspect of the Controlled Substances Act defines a schedule for drugs. Schedule I lists those substances which have no accepted medical utility but have substantial potential for abuse. Found on this schedule are heroin, marijuana, and various other hallucinogens. Schedule II lists substances having a high abuse liability but also having some accepted medical purpose. Found on Schedule II are morphine and cocaine. It is worth noting that, under the scheduling provisions of the act, marijuana is seen as needing to be grouped with heroin while cocaine with its significant abuse liability and very limited medical use still falls into Schedule II. The Act did, with respect to criminal penalty, select out "marijuana from other drugs and lowered the maximum penalty for possession of an ounce of marijuana to one year in jail and a $5,000 fine, with the option of probation or a conditional discharge at the judge's discretion" (Slaughter, 1988, p. 421).

In the 1970s two more laws passed the Congress that were to be used (at least in part) to stem the tide of drug abuse. One was the Racketeer-Influenced and Corrupt Organizations law (RICO) and the other was the Continuing Criminal Enterprise (CCE) statute. Both had as their aim the forfeiture of ill-gotten gain, the removal of the rights of drug traffickers to any personal assets or property - including real estate, cash, automobiles, and jewelry, -obtained by or used in a criminal enterprise or undertaking.

Under the Posse Comitatus Act of 1876, military involvement in law enforcement was banned. This act was amended in 1982 to permit state and local law enforcement to use the military for training, intelligence and investigation of law violations involving drugs. Military equipment (for example, planes) could be used by civilian agencies in enforcing drug laws.
The 1980s saw the passage of four major antidrug bills. All were primarily within the supply reduction arena. First was the Comprehensive Crime Control Act of 1984 which broadened criminal and civil asset forfeiture laws and increased Federal criminal sanctions for drug offenses. The next bill passed was the 1986 Anti-Drug Abuse Act. While providing money for prevention and treatment, it also "restored mandatory prison sentences for large-scale distribution of marijuana, imposed new sanctions on money laundering," and other demand reduction components (BJS, 1992, p. 86). A third piece of legislation was the 1988 Anti-Drug Abuse Amendment Act which primarily increased the sanctions for crimes related to drug trafficking and set in place new Federal offenses. It should be noted that these three legislative pieces were dramatic with respect to an enforcement model and marijuana. They "raised federal penalties for marijuana

possession, cultivation, and trafficking. Sentences were to be determined by the quantity of the drug involved; "conspiracies" and "attempts" were to be punished as severely as completed acts; and possession of a hundred marijuana plants (would) now carry the same sentence as possession of a hundred grams of heroin" (Schlosser, 1994, p. 52). The fourth bill, the Crime Control Act of 1990 was almost totally aimed at supply reduction and law enforcement, doubling the appropriations for drug law enforcement grants to states and localities, and strengthening forfeiture and seizure statutes (BJS, 1992, p. 86).

In the preceding discussion of supply reduction policy as reflected by the legal system, no attempt has been made to be all inclusive. A major centerpiece of legislation not directly related to drugs but certainly of interest was the era of Prohibition in the United States (Under the Volsted Act of 1920, alcohol was prohibited in the United States and temperance was the official policy of the nation. Repeal did not occur until 1933). Certainly the lesson to be learned from a purely supply related vantage point could be applied to any anti-drug effort, that a drug cannot unilaterally be legislated out of existence, but the decade of alcohol prohibition is beyond the scope of this effort. Suffice it to say that, from an historical perspective, one anti-drug effort followed another, many claiming success with only a modicum of evidence for support. In outlining the main entrants over the past Century, we are struck by the fact that the legislation, in many cases, does not appear to learn from the past - that a supply reduction philosophy is not sufficient to stem the tide.

With respect to social policy and marijuana, it does not appear that marijuana was considered a problem until the 1930s. Prior to that time, marijuana enjoyed an anonymity that minimized it being worthy of social policy or action. Even in the 1920s use of marijuana was limited to big city slums, minority groups (blacks in the South and Mexicans, many illegal aliens, in the Southwest, and jazz musicians); it had not as yet moved "uptown," but was beginning to be defined as a social problem. Largely due to the mood of the times (Prohibition, the Harrison Narcotic Act, the depression), and the war on marijuana as led by Harry Anslinger, the Marijuana Tax Act was passed in 1937 and became the first Federal piece of supply reduction legislation that was specific to marijuana. In 1961, the Single Convention on Narcotic Drugs mentions the control of cannabis as one of its primary objectives. The Controlled Substances Act of 1970, as earlier stated also puts marijuana in the same schedule of illicit substances as heroin. The Comprehensive Crime Control Act of 1984 and the Anti-Drug Abuse Acts of 1986 and 1988 cited earlier also had major impact upon marijuana. The history of Federal policy towards marijuana as reflected by the legislative process is clear. Legislation has made precious little distinction between narcotics, cocaine and marijuana. For practical purposes, Federal law does not recognize any distinction between marijuana and other illicit substances. Having outlined the supply side of Federal policy, the discussion now necessarily shifts to the

demand side and the degree to which Federal legislation has recognized prevention and treatment of substance abuse as worthwhile goals.

Demand reduction

Federal legislation in the demand reduction area (prevention and treatment) is sparse when compared to that of supply reduction. In fact, interpretation of the Harrison Narcotic Act was anti-treatment as it deprived the medical profession of the right to provide maintenance and/or "cure" doses of narcotics to the addict population. A court reversal of this posture in 1925 was a case of "too little, too late." Perhaps the first piece of Federal legislation that could, by any stretch of the imagination, be considered oriented to demand reduction was the 1929 passage of the Porter Narcotic Farm Act. This act provided for the U.S. Public Health Service to establish Federal hospitals specifically for the treatment of imprisoned addicts. The first of two facilities was built in Lexington, Kentucky in 1935 and the second facility opened in Fort Worth, Texas in 1938. These facilities were in fact prisons modified to provide medical and psychiatric services.

In 1962 the Supreme Court (Robinson v. California) ruled that addiction to narcotics, in and of itself, was an illness and not a criminal offense. This led to an increase in Federal treatment efforts (U.S. House of Representatives, 1978a, p. 9). The Community Mental Health Centers Act of 1963, passed by the 90th Congress, was the first to provide Federal assistance to non-Federal entities for treatment. "The 1968 amendments to this Act established specialized addict treatment grants" (BJS, 1992, p. 81). The significance of the Act was major in that it brought "narcotic addiction" into the realm of mental illness thus enabling Federal support for local drug treatment efforts.

In 1966, the Congress passed the Narcotic Addict Rehabilitation Act (NARA). The legislation called for addicts charged with federal crimes to be civilly committed rather than face prosecution and it allowed the court to mandate a treatment program in lieu of prison. It also permitted the establishment of a treatment program for addicts not charged with crimes (though this received criticism as a form of preventive deterrence (detention)) (U.S. News and World Report, 1970, p. 88). In all cases, before civil commitment could occur, the addict had to be judged by the court as likely to be rehabilitated.

Federal efforts in demand reduction activities probably did not begin as a major or focal activity until the passage of Public Law 92-255, the Drug Abuse Office and Treatment Act of 1972. This law mandated the Special Action Office for Drug Abuse Prevention (SAODAP) whose task was to provide "overall planning and policy and establish objectives for all Federal demand reduction

programs" (U.S. House of Representatives, 1978a, p. 2). The National Institute on Drug Abuse (NIDA) was created and was to be the center piece for a major Federal effort in demand reduction. In spite of this serious effort at centralization, Federal efforts within the demand reduction arena remained highly fragmented prompting the second report of the National Commission on Marihuana and Drug Abuse to note that drug abuse "prevention" was "promoted by all levels of Government, but rarely planned by any of them" (U.S. House of Representatives, 1978a, p. 2). Federal legislation in the demand reduction area from that time until the present has taken on the task of trying to centralize and provide leadership to drug abuse demand reduction activities. Legislation established the Alcohol, Drug Abuse and Mental Health Administration (ADAMHA) in 1974, and other legislation established various strategy councils, several successors to SAODAP, and most recently the successor to ADAMHA, the Substance Abuse and Mental Health Services Administration (SAMHSA). With the creation of SAMHSA in 1992, drug abuse demand reduction services were transferred to SAMHSA and research activities remained with NIDA. NIDA along with the National Institute on Alcoholism and Alcohol Abuse and the National Institute of Mental Health became Institutes of the National Institutes of Health. It is probably safe to say that, to date, little positive centralization of demand reduction action has occurred within the Federal Bureaucracy.

With respect to demand reduction activities specifically geared to marijuana, probably the closest effort came in the creation of the National Commission on Marihuana and Drug Abuse in 1970 by Congress (under President Nixon) for a two year term. The Commission's role was to examine the nature and extent of drug abuse demand reduction activities and issue annual reports on findings, conclusions, and suggest needed future activities. Both anti and pro marijuana reform groups testified before the Commission. In its 1972 report, *Marihuana: A Signal of Misunderstanding*, the Commission recommended that decriminalization of marijuana be considered. The Nixon Administration rejected this proposal out of hand. While marijuana was certainly implied and included in many demand reduction activities of the Federal effort, it has never been explicitly legislated.

The history of narcotic and cannabis legislation is not necessarily, however, the same as the social or public policy it purports to reflect. The actual policy may be more restrictive or less restrictive than the enacted legislation and it may be instructive to look at actual Federal policy for the past several presidencies. It is probably fair to say that during the Nixon and Ford years, public policy towards all drugs including marijuana was highly restrictive. While there was certainly acknowledgement of demand reduction, the major emphasis was clearly on supply reduction and enforcement.

With the Carter years (1977-1980) came a very clear distinction between narcotics and marijuana. Testifying before the Select Committee on Narcotics Abuse and Control in July 1978 two high ranking Carter officials made several statements of note: (1) It was admitted the Federal Government did not have a specific treatment program for marijuana and in fact, the Administrator of the Federal Alcohol, Drug Abuse and Mental Health Agency said, "There is no treatment required for the use of marijuana as such" (U.S. House of Representatives, 1978, p. 9); (2) The Associate Director of the Domestic Policy Staff, the White House while stating the Administration's position to discourage marijuana use went on to say, "...we have talked about the propriety of decriminalizing the possession of small amounts of marijuana for personal use, under Federal statute only. This would, in effect, merely codify what is already occurring, since Federal law enforcement efforts should not be directed at people who possess small amounts of any drug, particularly marijuana" (U.S. House of Representatives, 1978b, p. 8); (3) The Federal position under the Carter Administration was that this move towards decriminalization was a state-by-state choice and should not be mandated by the Federal establishment. This tolerance was not a totally new point of view as the period 1973-1978 saw eleven states decriminalize possession of small amounts of marijuana for personal use (one state, Alaska, has since recriminalized its statutes).

The Reagan-Bush years (1981-1992) in the presidency heralded an increasing emphasis on law enforcement, seizures and interdictions. While, at least in theory, high level policy groups at the White House level were coordinating supply reduction and demand reduction strategies, the emphasis of the strategies were markedly supply oriented. Some major happenings and events during these years were: (1) Between 1978 and 1992 some 35 states endorsed the medicinal use of marijuana, a position supported by the American Medical Association. In 1988, the National Organization for the Reform of Marijuana Laws (NORML) won a 16-year law suit to force the Federal Government to make marijuana accessible as medicine. This, however, was rejected by the Drug Enforcement Administration (DEA) on the basis that other medications exist which can function as well or better than marijuana within the medical model and that insufficient controlled scientific data were available to support its being rescheduled. (2) The emphasis on slowing drug trafficking through seizures and interdictions had (say some experts) some unforeseen consequences. One was the switching by drug traffickers from marijuana to cocaine as it was more easily concealed and brought significantly higher prices. Another was the stimulation of American ingenuity to domestically grow a high quality of marijuana. During the 1970s, almost all marijuana (particularly of good grade) was trafficked into this country. Recall that it is estimated that currently about half of the marijuana consumed in the United States is locally grown and a portion of this is now being grown indoors under highly controlled conditions. (3) During the 1970s the military establishment (Title V of the Military Selective Service Act) emphasized identification and treatment of alcohol and drug dependent military personnel.

The keynotes of this period were rehabilitation, treatment and prevention. In August 1980, a Department of Defense (DOD) directive turned the pendulum away from treatment and towards detection and enforcement. A urinalysis program was instituted in late 1981. The current military policy honed during the Reagan-Bush years is one of "Zero Tolerance". "For the military, any use of drugs constitutes abuse and will result in instant discharge for all but the lowest level personnel" (BJS, 1992, p. 85).

Within the current (Clinton) Administration the Office of National Drug Control Policy (ONDCP) has 25 percent less staff than in the previous administration. Further, under President Clinton, "drug abuse" on both the supply and demand sides has been rather low profile. Illicit drug use is not being given the prominence and visibility of the Reagan-Bush era. Also notable is that at the beginning of the Clinton Administration term the Select Committee on Narcotics Abuse and Control (House of Representatives) was not reconstituted by the Congress. While not able to introduce legislation (Select committees recommend but may not introduce legislation), the committee was valuable in providing Congressional oversight of both supply and demand Federal agencies. It must be noted, however, that provisions of mandatory sentencing, forfeiture, and seizure, as set forth in the Reagan-Bush years are still in place and actively enforced. Under Federal mandatory minimum drug sentences (for first offenders) having 100 marijuana plants or 100 kilos of marijuana (each plant is assumed to be worth a kilo of marijuana) yields 5 years without parole. Possession of 1000 plants or 1000 kilos yields 10 years without parole. The Court has no discretion in its sentencing of those charged under Federal statute and found guilty.

State policy

There is wide variation in both the nature and extent of anti-marijuana laws found in each of the 50 states. All, of course, are subject to the Federal legislation just discussed, but, if charged at the state or local level, tremendous variation exists not only between states but, in many cases, also by counties and jurisdictions within states. Several states have decriminalized possession of small amounts of marijuana for personal use. In general, however, most states have either not changed their marijuana laws and sanctions or have, in fact (particularly during the 1980s), taken an even stronger pro-enforcement stance. As an example, possession of less than an ounce of marijuana in the state of New York will probably bring a $100 fine. That same amount of marijuana found in Nevada (the home of legalized gambling in the United States) constitutes a felony. Even as a first offense, selling a pound of marijuana in Montana could draw a life sentence. In New Mexico, dealing 10,000 pounds of marijuana (as a first offense) could result in a three year prison term. Thus the nature and extent of state marijuana laws is wide and varied (Schlosser, 1994, p. 54). The Appendix shows the penalties for marijuana possession by state.

During the 1970s some 11 states instituted a policy of decriminalization for the possession of small amounts of marijuana for personal use. It is instructive to note that research indicates there was no increase in marijuana use in those states decriminalizing marijuana and these states essentially maintained the same rate of use as in those states not instituting a decriminalization policy. It should also be pointed out that several states, Maine, Oregon and Ohio, who decriminalized marijuana in the 1970s tightened their marijuana restrictions in the 1980s and no states have further decriminalized marijuana since 1978. Further, Alaska, in 1990, voted to recriminalize marijuana possession.

In summarizing this section on the history of marijuana policy in the United States, some facts stand out above all others. First, the history has been one of legal sanctions and control; not treatment, prevention and education. The United States has made every effort to keep marijuana from being imported into its borders and the result has been domestic cultivation of new, even more potent strands of marijuana. Every conceivable law enforcement authority including the military has been called upon for assistance and yet marijuana use continues unabated.

The one period of so-called tolerance towards marijuana in this country was in the 1970s when some states began to consider and pass decriminalization statutes. When, however, the Congress failed to pass Federal decriminalization statutes in the same time frame, the thrust of the movement towards decriminalization was lost. The movement had not been focused or made clear enough to the people of the United States as a whole. As a result, the opportunity for concerted action was lost, the efforts of lobby groups such as NORML not withstanding. However, as Dr. Inciardi points out in *The War on Drugs II,* "Perhaps most important of all, marijuana has always been viewed as a drug favored by youth" (Inciardi, 1992, p. 44). The implication being the people of this country are very much concerned about the effect(s) marijuana might have upon its young. Given the policies of the Reagan-Bush years and the current Clinton Administration, it is not likely that Federal statutes will be proposed which seek to decriminalize marijuana.

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6 Marijuana policy and prevalence

What if any is the relationship between the marijuana policy of the United States and the prevalence of marijuana use within its borders? As stated elsewhere in this paper the United States does not, per se, have a marijuana policy. It does, however, have a drug policy and it is under this rubric that marijuana policy must be examined.

Marijuana and other drug arrests are one mechanism by which policy may be examined. Arrests for marijuana were stable during most of the 1970s while marijuana use was increasing in the general population. Arrests were also stable in the 1980s, while use was decreasing. Arrests for cocaine/opiates were relatively stable in the 1970s while cocaine use was increasing and opiate use stable. Arrests increased steadily over the 1980s, while cocaine prevalence was stable to increasing in the first part of the decade, and dropping significantly in the latter half.

There does not appear to be a consistent pattern between arrest rates and prevalence rates in the general population, although the commingling of opiates and cocaine arrests make interpretation of the data for these drugs difficult. The police apparently intensified efforts aimed at opiates/cocaine beginning about 1982, but cocaine use appears to have already stabilized. Following precipitous increases, marijuana use began decreasing in the late 1970s, during a period of relative stability in arrest rates. The general deterrence effects of the law (i.e., arrest practices), are not apparent based on the intercorrelations of the measures presented here. Of course, the interrelationship between the measures of arrests and drug use may be spurious at best. Further, there may be a lag between policy changes such as arrest practices and new laws that would not be reflected in prevalence rates among the general population for some period of time. However, it is instructive to note that there appears to be little relationship between drug use prevalence and arrest rates. The same is true for seizures, production and other supply reduction measures. Most likely, the increases in law enforcement activities related to drugs account for the increased arrests and seizures.

Several studies have demonstrated the low risk of arrest among drug abusing criminals. A study of male addicts in Baltimore city over an eleven year period by Nurco and colleagues, found that less than 1% percent of the crimes committed resulted in arrest (Ball, Shaffer and Nurco, 1982). Similarly, a study of narcotic users in Miami between 1978 and 1981 by Inciardi found less than 1%

of criminal offenses resulted in arrest (Inciardi, 1986). These results were subsequently replicated in another study by Inciardi and Pottieger (1991) of Miami youth conducted in the late 1980s, which found that less than 1% of their crimes in the prior year resulted in arrest. Still, about 87% of the youth had been arrested in the prior year, generally for drug, vice or petty property offenses.

Given the cited findings of Nurco and Inciardi and Pottieger, it seems reasonable to assume that an individual's risk of being arrested for possession of marijuana is quite small. The consequences of being arrested for possession of small amounts of marijuana are, however, far from uniform. It is almost totally dependent upon what state, county and locale is involved in the arrest. Most of those arrested, particularly in urban areas, will be issued a summons to appear in court, be allowed almost immediately to post bail or be released on their own recognizance. Again, in most instances, the case will be "diverted" before trial or a "guilty" plea to a misdemeanor will be accepted. Punishment most often takes the form of a fine, unsupervised probation, and "drug" education or other classes. Criminal records may be "expunged" or "sealed" (Kleiman, 1992, p. 267).

However, for others, particularly in rural areas and in some southern jurisdictions, an arrest for simple possession of marijuana can mean a criminal conviction and, possibly, incarceration. While 10 states currently have some form of decriminalization on the books, many states, for a first offense of simple possession, still mete out fines in excess of $500 and/or 9 months or longer in jail. (See Appendix 1.)

California is an example of a state that has recently de-emphasized drug arrests. The number of persons charged with drug offenses dropped 18.4% for the first six months of 1991 as compared to the same 1990 period. The downward trend mirrors a change in police priorities in a time of limited budgets. In Los Angeles drug arrests fell 23% between 1990 and 1991, the result of budget cuts resulting in the loss of 400 officers and the necessary adjustment in priorities, i.e. reducing the priority given minor drug crimes. Essentially the same story is true in San Francisco (*The Economist*, 1992, p. 21.) Thus, in at least some communities, drug arrests may be driven by the economics of the community, their budget, and their tax base. Those communities faced with reducing law enforcement costs may well reduce their number of arrests for minor drug infractions, no matter what the number of these infractions actually are.

One study using data collected for the National Commission on Marihuana and Drug Abuse found some differentials with respect to the probability of being arrested for marijuana use (Johnson, Petersen and Wells, 1977). The study found that men consistently have a higher probability of arrest than women (risk of arrest was determined by the ratio of the arrest rate to the estimated user rate).

In addition, arrest probabilities are higher for blue-collar workers than for students and white-collar workers. The probability of arrest is greater for students than for white-collar workers.

The study showed that in that period, approximately two-thirds of the marijuana arrestees were spontaneously taken into custody, without the occurrence of any prior investigative activity. Such arrests were usually made by general patrol officers in the course of their usual policing activities. The primary variable in such cases was whether or not the police carried out a search after the initial police-citizen contact. Males, more often than females, were arrested by general patrol officers, often in their vehicles, often alone. Frequently, those arrested had prior records. Female arrests tended to be the result of investigative effort and occurred indoors in a nonpublic area. Those arrestees listed as students were less often the result of investigative efforts than blue or white-collar arrestees and often were the result of a routine traffic stop.

Another relatively recent study found marijuana arrests to be racist in terms of relative arrest rates (Mandel, 1988). Comparing California misdemeanor arrests for marijuana in the period 1980-81 to 1985-86, the author found a decline of 18% for whites, an increase of 13% for Latinos and a decline of just 9% for blacks. The felony arrests for marijuana in the same period are even more telling. Whites showed a decline of 37% in the cited period while Latinos showed an increase of 172% and blacks showed an increase of 23%. The dramatic differences between ethnic groups cannot all be accounted for by one group or the other entering into or leaving the marijuana trade or the underclasses entering the illicit drug trade. It would appear that differential enforcement was present at the time of the research and that such enforcement did indeed have a racial overtone.

While there are definite trends with respect to arrest data, there are no uniformities of arrest policies between jurisdictions. The probability of being arrested for marijuana possession is much more a matter of demographics than it is of policy. About all that can said is that demographics and geographic area drive arrests for marijuana offenses.

This position is supported by research findings. These data show the minimum function played by legal factors (arrest and incarceration) as compared with extralegal variables in the decision to use or not use marijuana. Concern with formal sanctions or consequences have, at best, only a minimal participation in accounting for differences in rates of marijuana use. It is argued that the natural course of the drug market place including education about the negative effects of particular drugs may be far more significant in determining use than formal intervention (Committee on Drugs and the Law, June 1994, p. 547).

In trying to explain this divergence between policy (as measured by arrests) and use it is important to remember that use of marijuana appears to be on the increase only among the young. However, there does not appear to be any relationship between the cited arrest data and use of marijuana among youth. Marijuana use peaked among youth in 1979 with the 1980s showing a high but declining rate of use. Recent data (1993 and 1994) from MTF show a reversal of this decline with marijuana rates once more on the rise. Data from the 1993 Household Survey indicate marijuana use up only among those aged 12-17. This rise is occurring even though the Federal drug policy is one of "no tolerance" and drug testing is becoming a standard operating procedure for industry and the military.

It may be that the youth of the United States feel themselves invulnerable to the threats of a "no tolerance" policy. Getting arrested is thus something that happens to someone else. While this may not be the ideal stance to assume with respect to an illegal substance, there are data to support the rarity of arrest (cf. Inciardi and Pottieger, 1991). Another possibility is that the young are perceiving marijuana to be less harmful than they did in the 1980s. Data from MTF tends to support this position.

Still a third possibility is that the youth are making a political statement (not unlike their parents of the 1960s). They may see the Clinton Presidency as being weaker on drugs than the Reagan and Bush Administrations. The President admits to marijuana use (inhaling or not) and has significantly reduced the staffing of the Office of National Drug Control Policy. In this same light they may see a Republican Congress, definitely conservative in mood, not in keeping with youthful idealism and hope. Whatever the reason for the dichotomies between youthful rates of use and arrest statistics, it does appear that the hard line on drugs taken by law enforcement agencies, the military and private industry is not sufficient to stem the tide of use among the youth of America.

Additional information on the relationship between drug use and social policy may be gleaned from changes in marijuana use in the 11 states in which it was decriminalized between 1973 and 1978 [Oregon, Colorado, Alaska, Ohio, California, Maine, Minnesota, Mississippi, North Carolina, New York and Nebraska (Slaughter, 1988)]. Although sales remained a criminal offense, decriminalization reduced the sanctions associated with marijuana possession (an ounce or less) to a $100 civil fine (Inciardi, 1981). Studies were conducted in Oregon (Drug Abuse Council, 1977), California (California Health and Welfare Agency, 1977), and Maine (State of Maine, 1979) within a few years of decriminalization. Unfortunately, baseline information was not available in these states, and the studies basically provide only crude impact measures. The studies were also conducted at a time when marijuana use was increasing among the general population of the U.S. Nevertheless, the studies detected little increase in use

following decriminalization. The most frequently cited reasons for non-use by respondents was "not interested," cited by about 80% of non-users. Only 4% of adults indicated fear of arrest and prosecution or unavailability as factors preventing use (Maloff, 1981).

In an analysis of four administrations of the Household Survey (1972, National Commission on Marihuana and Drug Abuse; 1974, 1976, 1977, National Institute on Drug Abuse), Saveland and Bray (1981) concluded that the increases in marijuana use were most rapid in those states maintaining severe penalties against possession of marijuana. Changing penalties appeared to have no noticeable impact on the prevalence of marijuana use (Saveland and Bray, 1981).

A supplement to the Monitoring the Future study looked at the rates of marijuana use among 17-18 year old high school students and young adults in their early 20s between 1975 and 1980, in ten of the eleven states that decriminalized marijuana. (Alaska is not included in the study.) The investigators concluded that decriminalization had virtually no effect either on marijuana use or on related attitudes and beliefs about marijuana use (Johnston et al., 1981). More recent research on adolescent marijuana use in Alaska, which had the most liberal marijuana laws in the US until they were repealed in 1991, concluded that while adolescents showed higher rates of lifetime and annual use of marijuana than their peers in the coterminous United States, they had lower rates of daily use (Trebach, 1987; Slaughter, 1988).

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7 Enforcement and prison costs

According to the Bureau of Justice Statistics, in 1990 the United States spent $74.249 billion on justice system expenditures (Maguire and Pastore, 1994). This includes federal, state, local, county and municipal expenditures. (Unfortunately, 1990 is the latest year for which data are available.) The major category of costs were police protection at $31.805 billion (42.8%) and corrections at $24.961 billion (33.6%). Between 1971 and 1990, the justice system expenditures have increased 606.0%. For the period 1979-1990, the figure is 185.3% and for the period 1985-1990, the figure is 62.8%. In the time frame since 1979, the percentage increase has been greatest for corrections. The expenditure for this activity increased 313.3% in the period 1979-1990 and increased 91.5% in the period 1985-1990. For the year 1990, three cents (3.3%) of each government dollar was for justice activities; 1.4% for police protection, 1.1% for corrections and 0.7% for judicial and legal services. However, the Federal Government spent less than 1% (1 cent) of each dollar for justice while the State Governments were spending 6% (6 cents) of each dollar and local governments were spending nearly 7% (7 cents) of each dollar for justice activities (BJS, 1992a, p. 1). This differential is probably due to the fact that criminal and civil justice activities are primarily the responsibility of State and local governments. Jointly, the State and local governments expended 87% of all justice monies while the Federal government's share was 13% (BJS, 1992a, p. 1). Taken as a whole, Federal, State, and local governments spent, in 1990, $299 per capita on criminal and civil justice. The figure for only State and local governments is $261 per capita (BJS, 1992a, p. 1).

A major research effort was initiated that sought to ascertain the direct and indirect costs of drug use for the years 1985 and 1988 (Rice et al., 1992, pp. 10-32). This effort showed, for the year 1985, that the total economic cost of drug use was $44.1 billion. Direct crime costs were calculated at $13.2 billion. This figure includes costs associated with public police protection, private legal defense and property destruction. While no direct crime costs are given for 1988, the total drug use costs were calculated at $58.3 billion and it seems reasonable to assume that direct costs were up at least proportionate to the overall increase.

Considering the Federal budget with respect to drug use activities, the total amount requested for the Fiscal Year 1996 is $14.6 billion. Of this $14.6 billion, $9.3 billion (64%) is for supply reduction (law enforcement) and $5.3 billion (36%) is for demand reduction (treatment, prevention and education). For Fiscal Year 1994, a total of $12.2 billion was allocated for illegal drug activities with $7.8

billion being supply reduction (64%) and $4.4 billion (36%) being demand reduction. The estimated 1995 figures are a total of $13.4 billion with $8.3 billion being supply reduction (62%) and $4.9 billion (38%) being demand reduction (The White House, 1995). Using the three cited years as trend data would confirm that supply side drug activities receive far more Federal funding than do demand side activities.

State and local governments reflect this economic division even more keenly. In 1990 State and local governments spent approximately $14.1 billion on drug control activities. Of this amount, $11.5 billion (81.8%) was for justice activities and just $2.5 billion (less than 18%) went for health and education activities related to drug control. For 1991, approximately a 13% increase in spending is noted with $15.9 billion spent by State and local governments on drug control activities. The cited division remains—$12.6 billion (79.2%) was spent on justice activities and $3.3 billion (20.8%) on health and education activities. It should, however, be noted that the $3.3 billion spent in 1991 on health and education is a 32% increase over the 1990 figure (ONDCP, 1993, p. 3).

About 1.4 cents of every dollar spent in 1990 by State and local governments went for drug control. In 1991 this figure was 1.5 cents. Drug control activities within the justice realm constituted 1.2 cents of every dollar in 1990 and remained constant at 1.2 cents in 1991. For health and education activities within the drug control realm these figures were .2 cents (.002%) in 1990 and .3 cents (.003%) in 1991 (ONDCP, 1992, p. 3).

Three states exceeded $1 billion each in the dollars spent on drug control in 1991. These were the States of California, New York and Florida. Together, they totaled 44% of all State and local spending for drug control. The following table presents the top five and top bottom States on a per capita basis in terms of amount spent in 1991 on drug control activities. Reducing cost to a per capita basis has the effect of neutralizing the population density within any one state and is probably a better measure than total dollars spent. Nationally, the per capita spending figure was $63.08 in 1991 and $56.59 in 1990 (ONDCP, 1992, p. 11).

The costs per day per jail inmate in 1988 were about $218 (BJS, 1990b). In terms of prison inmate costs in 1990, the Bureau of Justice Statistics estimates the cost at $15,604 for a state inmate and $14,456 for a Federal inmate (BJS, 1992a, p. 4). These expenditures include salaries and expenses of personnel, food, supplies, and land rental, but do not include capital expenditures such as building prisons, improvements, etc. The foundation, Families Against Mandatory Minimums (FAMM), cites the Bureau of Prisons in 1994 as estimating the total cost of incarcerating a federal prisoner at $20,804 per annum (FAMM, 1994). In 1991, State and local governments spent $6.8 billion on correctional services for

Table 8. Top Five and Top Bottom States of Amount Spent in 1991 on Drug Control.

State	Per Capita Spending	1991 Rank
Alaska	$154.44	1
New York	$149.00	2
Connecticut	$130.45	3
California	$102.30	4
Florida	$85.04	5
Mississippi	$21.99	46
West Virginia	$20.87	47
North Dakota	$19.64	48
Arkansas	$19.36	49
South Dakota	$13.73	50

inmates having a drug offense. In terms of total drug control spending this amounted to 43% of the total figure (ONDCP, 1992, p. 4).

Data from the Bureau of Prisons (Federal prisoners only) is instructive in putting the issue in perspective (The White House, 1995, pp. 101-104). In 1994 the Bureau of Prisons (BOP) had a total agency budget of $2,232.1 million. Of this figure, 63% ($1,410.7 million) was expended on the drug-related inmate population. The estimated 1995 budget is $2,638.2 million with 64% ($1,694.0 million) projected as expended on the drug-related inmate population. For 1996, the requested budget is $2,977.6 million with 65% ($1,942.4 million) being the drug share. The "drug share" includes salaries and expenses based on the "number of inmates projected to be convicted of drug-related offenses during the year;" and for buildings and facilities as the "projected drug-related inmate population at the time current-year initiatives are scheduled to become operational" (The White House, 1995, p. 101). It is further estimated that in 1995, some 30.5% of the sentenced inmate population is drug dependent. In 1991 there were 28,650 drug offenders sentenced as Federal inmates. Of this number, 21% (6,015) were marijuana related. At the Federal level, it can thus be seen that imprisoning drug offenders is a very high ticket item with respect to budget and that at least a significant minority of these costs are associated with offenses involving marijuana. With respect to State and local spending in 1991, it is estimated that approximately 25% of the corrections budget was drug related (ONDCP, 1993, p. 4).

In terms of police effort, the burden of enforcing drug laws is significant (BJS, 1992b, p. 6). Almost 19,000 State and local law enforcement officers were engaged full time in this endeavor in 1990. This breaks down to over 16,000 local police and sheriffs' officers and over 2,000 State police officers having full time responsibility for drug enforcement. These officers were members of about 9,300

local police departments and 2,500 sheriffs' departments having primary responsibility for enforcement of drug laws. In total these departments in 1990 employed 466,000 full time (thus, not counting State police, about 3.4% of the departments' full time person power was devoted to drug law enforcement. For State police, this percentage is 4.7%. At the State and local level in 1991, approximately 12% of total police spending went for some aspect of drug control activity (ONDCP, 1993, p. 4).

Unfortunately, it is not possible to validly extract the amount attributable to enforcement of the marijuana laws, taking into consideration the costs of policing, arrests, the judiciary and incarceration, especially distinguishing between possession and sales/distribution offenses. However, data from California may be informative in this regard. California conducted a careful study of the economic impact of its marijuana decriminalization policy in the mid-1970s. In the early 1970s, with statewide arrests approaching 100,000 annually (over 90% of which were for simple possession), enforcement costs averaged well over $100 million per year (Moscone Committee, as referenced in Brownell, 1988). According to the study, decriminalization resulted in a 74% reduction in what the state had been spending yearly to enforce its marijuana laws (California Health and Welfare Agency, 1977; National Academy of Science, 1982). Aldrich and Mikuriya (1988) estimate the State of California has saved nearly half a billion dollars (about $46 million per year) in arrest costs alone since 1976. Subsequent estimates put the savings since 1988 at another half billion dollars (ABC News, April 6, 1995). In general, states that decriminalized marijuana possession in the 1970s reported savings in police and judicial resources (Slaughter, 1988).

One final note about costs for enforcement is that new laws are increasing the value of assets seized in connection with marijuana offenses. Such laws make it possible for the government to take profits and property of illicit drug operations and permits participating law enforcement organizations to share a percentage of such forfeited assets. Such seizures represent a significant amount of money. In 1987, the DEA seized $116.4 million in marijuana related cases. This was approximately 23% of all assets seized by the DEA. Forfeiture for marijuana cases in 1988 amounted to $157.3 million, again 23% of seized assets. For the year 1989, marijuana asset forfeitures dropped to $146 million, 15% of total seized assets. In 1990, asset forfeiture for marijuana related cases increased dramatically to $225.2 million, 20% of all forfeited assets. For 1991, $208.2 million in marijuana related assets were forfeited, 22 percent of all forfeited assets (DEA, no date).

Figures for all marijuana related cases for 1992 and later are not available. However, some data are available on seizures directly related to the Drug Enforcement Administration's Domestic Cannabis Eradication/Suppression Program. For the year 1992, such forfeitures amounted to $69.2 million, an all

time high and a 31% increase over the $52.8 million figure of 1991. In 1993, the forfeiture figure was $52.0 million, a return to about 1991 levels (DEA, 1992, p. 464). The point to be made is that the government is using the forfeiture laws as a major weapon in its effort to stem the supply of marijuana.

In summary, the enforcement of the marijuana statutes exerts a tremendous economic and social cost upon society. The cited material focuses more on drug costs than marijuana specific costs but when it is remembered that marijuana arrests constitute a major portion of all of the cited costs, the issue cannot be denied.

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8 Workplace

Employee absenteeism, accidents and theft in the workplace are three of the most serious problems facing employers. Drug abuse and alcoholism are thought to be major contributors to these problems. The 1991 Household Survey reported that, for the year 1991, some 68% of illicit drug users were gainfully employed. In 1986 the President issued an Executive Order that all Federal Agencies shall be drug-free. The Drug-Free Workplace Act was passed by the Congress in 1988. It mandates that Federal grantees and Federal contractors (with a value of $25,000 or more) shall, following proscribed guidelines, seek to establish a drug-free workplace. Of note is the fact that the Act does not require drug testing of employees. However, under specific circumstances, drug testing may be required by Federal, State or local regulations. The Center for Substance Abuse Prevention (CSAP) of the Substance Abuse and Mental Health Services Administration (SAMHSA) estimates that more than $100 billion in workplace losses can be attributed to accidents, lost productivity and related problems of alcohol and substance abuse.

Concerned with the economic costs of substance use, many employers, following the lead of the military and the Federal establishment, have instituted drug testing. The majority of workplace drug testing is pre-employment drug testing, conducted prior to hiring. There are several drug screens available. The urine screen allows detection of drugs but can only determine that a subject has used a given substance in the recent past. It is not accurate enough to determine impairment or whether the subject was under the influence of a given substance at the time of the test. Thus recreational or very occasional drug users could be detected, even though they don't use "on the job." Urine screens are not used for detecting alcohol. Although valid for alcohol, since alcohol is quickly excreted from the body, the urine screens are not positive for very long after ingestion. Blood tests are considered (and are indeed) far more invasive than urine screens. Importantly, however, blood tests measure the amount of alcohol (and other tested drugs) present at the time of the test and, using established standards, can be used in formal proceedings to give evidence as to whether or not the subject was "under the influence." Currently, blood tests are primarily reserved for alcohol related issues. Saliva and hair tests may soon enter the work place as less intrusive ways of detecting substance use. The validity and reliability of these methods has not as yet been established to a degree sufficient to allow their regular use in the workplace. For alcohol (but not other drugs) detection, the use of a breath-alcohol procedure is becoming standard practice. It can determine blood alcohol level, providing an assessment of current impairment.

Also of note is a decision by the Food and Drug Administration (FDA) to allow the marketing of a sweat patch as a method in drug testing. The patch is worn for one to two weeks and absorbs sweat that is tested for the presence of illegal drugs. Approved initially only for use in the criminal justice field (i.e. the testing of parolees or people on probation), it is nevertheless likely the manufacturers of the patch will push for its use in drug treatment facilities and for workplace testing.

The urine screen is the most common drug detection method employed by industry as on a cost/benefit basis they are thought to be inexpensive, valid and reliable. Urine screen costs range from $10 to $35 for an initial screen, and $25 to $75 for a confirmatory retest. The price variation is largely a function of the number of drugs being tested for plus the volume of tests conducted. Pre-employment drug screening is now a fact of life in many facets of the economic world. A majority of the Fortune 500 companies employ drug urine screens in one form or another. Most commonly, drug testing occurs prior to employment, when reasonable cause exists (signs of use or unsafe or unsatisfactory work performance), randomly, after accidents and after treatment for substance use.

Drug screens potentially hold significant negative consequences for marijuana users who are subjected to screening. Because marijuana is stored in the "fatty" tissues for significant lengths of time after ingestion, marijuana users are at high risk of detection with respect to urine screens. In 1990 it was estimated that nearly 90% of positive urine (EMIT) screens were for marijuana (Blum, 1990). This has changed dramatically over the past 5 to 6 years. Today, positive screens for marijuana constitute about 50% of all positive workplace drug tests with the remainder being 45% cocaine and 5% "other" (Walsh, 1995). One study done in the time frame October 1990 through March 1992 analyzed results from almost 2 million urine screens (Normand et al., 1994). Positive results were found in nearly 70,000 of the tests, close to 4%. About 35,000 of the positives, 50% of all positives and 2% of all tests, were positive for marijuana. Cocaine was a distant second with 1% of all tests showing positive. Data from the Household Survey indicate that among full-time employed males, the use of marijuana, heavy alcohol, cocaine and/or any illicit drug varied inversely with income level. This finding was particularly true for young males in the 18-25 year age group (Normand et al., 1994). Recently (1995) a well-known college football player who tested positive for marijuana on several occasions is estimated, upon turning professional, to have lost several million dollars because some teams were unwilling to draft him and "take the chance." Originally projected to be among the first 5 players drafted, he was drafted twelfth; the loss of ranking costing millions not only in salary but also in possible endorsements and personal appearances.

A hallmark study of pre-employment drug screening found it makes good economic sense to drug test potential employees. Under totally "blind" conditions it was found that those who tested positive for marijuana were involved in more accidents, reported more injuries, and missed more work. This study of 4797 applicants who were subsequently employed by the U.S. Postal service, were followed for just over a year. About 7.8% of the applicants tested positive for cannabis. Twenty-six percent of the marijuana users were involved in industrial accidents compared to 19.2% of those who tested negative for all drugs. Eighteen percent of marijuana users suffered injuries compared to 11.7% of those with a negative drug test, and the average absence rate for marijuana users was 7.1 compared to 4.0 for non marijuana users (Zwerling et al., 1990). The study has been criticized for failing to control for the effects of alcohol use on the association between preemployment drug screening results and employment outcomes. It is highly likely that the employment outcomes were confounded by alcohol use.

Data from the SmithKline Beecham Drug Testing Laboratory show that 18% of workplace drug tests were positive in 1987. This percentage has more or less steadily declined to 7.8% in 1994. This is a 57% decline in the percentage of workers showing positive tests in the time span 1987-1994 (CSAP, 1995). In 1993, 3.4% of the drug tests were positive for marijuana.

As the result of drug testing on the job, workers face treatment programs, reprimand, dismissal, and lack of promotion opportunities, should they test positive for marijuana or any other substance. In several areas of popular domain, professional sports being one example, several "name" players have had their careers cut short by positive testing. With marijuana being fat soluble and staying in the body for significant periods of time and with screening techniques becoming ever more sensitive, the risk of testing positive in the workplace is perhaps just as real (or more real) than the risk of being arrested for marijuana possession. The urine test cannot distinguish between drug use in the workplace and drug use in the workforce. Since a urine test cannot distinguish time of use, workers are penalized for drug use, regardless of the location and timing of use.

Testing for illegal substances is the rule in law enforcement agencies throughout the nation. In 1990, a majority of State police agencies and local police agencies serving populations of 25,000 or more had mandatory testing for illegal substances for all applicants seeking sworn positions within their departments. Moreover, about 3% of local sworn law officers worked for departments having mandatory drug testing for regular field officers and 17% worked for departments having a random selection drug testing program for sworn officers. In about two-thirds of local police and sheriffs' departments and in about three-quarters of State police departments, nonprobationary officers could be

terminated after one positive test. Almost all departments had a policy demanding dismissal for two positive tests (BJS, 1992, p. 6).

Drug testing has become an industry unto themselves. In 1984 it is estimated that over 4 million workers were subjected to urine screens (Slaughter, 1988, p. 464). The current estimate is about 60 million workplace drug tests are performed annually (Walsh, 1995). The Department of Transportation (DOT) has been doing drug testing on railroad and airline industry personnel for about the past 7 years. They alone conduct on the order of 200,000-300,000 drug tests per year. Of the 60 million workplace drug tests that are conducted annually, only 50% (30 million) are carried out by laboratories certified by NIDA. The remaining 30 million are conducted by non-certified laboratories or involve the use of various drug detection kits. This thriving industry is estimated to be of the magnitude of $75 billion per year. It has been growing steadily as evidenced by the fact that in 1987, 22% of U.S. companies did at least some employee testing. By 1992, this percentage had increased to 63% (Staimer, 1995).

The conclusion from the available research is that marijuana users have higher absteeism rates, injuries, accidents, and job turnover. With special reference to marijuana, however, it must be noted that length of time since use becomes a critical variable that would seem to be overlooked by current testing methods. Because of its detectability for relatively long periods of time, it would appear that the recreational and occasional user of marijuana is at high risk with respect to being detected, yet the workplace makes no allowance for this. There also can be little question that drug testing of the workforce can be a positive tool in reducing the cost of substance use to industry. It must be remembered, however, that it is a highly profitable industry that has been growing rapidly in recent years.

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9 The medicalization of marijuana

By 1992, some 35 states (or parts thereof) had enacted legislation that would, in one form or another, legitimatize the use of marijuana for very specific medical purposes. Three other states have introduced legislation related to the medicalization of marijuana (NewsBriefs, 1995). California proposes that patients be allowed to possess and cultivate marijuana providing they have a doctor's recommendation. In addition, pro-marijuana groups in California hope to have a ballot initiative in November 1996 on the medicalization of marijuana. Legislation has been introduced in Missouri which would allow patients to use marijuana under the supervision of a physician. A bill has been introduced in Oregon permitting the therapeutic use of marijuana. Several pro-marijuana groups have supported and continue to support the medicalization of marijuana. Among such groups are the Drug Policy Foundation, the National Organization for the Reform of Marijuana Laws (NORML) and the Alliance for Cannabis Therapeutics (ACT). In addition and from time-to-time, individuals, many of them respectable, and groups, many with familiar and recognizable names as members, set forth the proposition that marijuana has legitimate medical value and should thus be rescheduled under the Controlled Substances Act from Schedule I to Schedule II. Such a transfer would move marijuana from a schedule in which a drug has no accepted medical utility to a schedule which would allow any licensed medical practitioner to prescribe it.

Two respectable proponents of marijuana who strongly advocate its medicalization and move to Schedule II are Drs. Lester Grinspoon and James B. Balakar. In their book, *Marijuana, the Forbidden Medicine*, they argue strongly for marijuana's use in several medical conditions (Grinspoon and Balakar, 1993). They also (probably unfortunately) state their belief and their case that it is safe to drive under the influence of marijuana. Equally respectable reviewers of the volume take a dramatically opposite view saying it is unfortunate that the book will be used as "medical evidence" to further the argument that marijuana should be legalized. They conclude the volume has "no medical use and a high potential for abuse" (Voth and Brookoff, 1994, p. 348).

The thesis that marijuana has legitimate medical value has been repeatedly denied at the Federal Government Level, specifically by the Drug Enforcement Administration (DEA). On March 18, 1992, the Administrator of DEA, Robert C. Bonner, (as had his predecessor) denied the petition of the Drug Policy Foundation and NORML (with the support of the Alliance for Cannabis Therapeutics (ACT) to reschedule marijuana to Schedule II (Federal Register, 1992). The

current decision not to reschedule marijuana is based on its failure to meet a five-part criterion for ascertaining whether or not a given substance qualifies as being in "currently accepted medical use." These criterion (taken from the United States Court of Appeals, argued October 1, 1993 and decided February 18, 1994) are:

1. The drug's chemistry must be known and reproducible;
2. There must be adequate safety studies;
3. There must be adequate and well-controlled studies proving efficacy;
4. The drug must be accepted by qualified experts; and
5. The scientific evidence must be widely available.

Marijuana has been claimed to have medical benefits in the treatment of multiple sclerosis, cancer, AIDS (and HIV), and glaucoma, but many leading medical experts are quick to point out that dronabinol (Marinol, Roxane Laboratories, Inc.), a synthetic form of delta-9-THC, is available by prescription in those cases where THC might be of benefit. It has been approved by the Food and Drug Administration (FDA) for the treatment of nausea and vomiting associated with cancer therapies in patients who have failed to respond to other antinausea drugs. Further, at the beginning of 1993, dronabinol was approved under a Supplemental New Drug Application for anorexia found to be associated with weight loss and loss of appetite in AIDS patients ((Drug Topics, 1993). Thus many experts argue that marijuana cigarettes are not necessary to the medical arsenal. Other medical experts in the field of the cited conditions and illnesses are unanimous in their opinion that smoked marijuana offers no medical benefit to their patients and may cause harm. It is noteworthy that "marijuana has been rejected as medicine by the American Medical Association, the National Multiple Sclerosis Society, the American Glaucoma Society, the American Academy of Ophthalmology and the American Cancer Society. Not one American health association accepts marijuana as medicine" (Federal Register, 1992). This last statement seems totally at odds with the earlier statement that some 35 states have at least taken the medicalization of marijuana as a serious possibility.

Further, the National Institutes of Health (NIH), perhaps the premier Federally supported research facility in the world, reported no scientific basis supporting claims that smoked marijuana has value in treating glaucoma or multiple sclerosis. NIH reports new drugs available that exceed THC's therapeutic value in "calming cancer patients' chemotherapy-induced nausea." For patients suffering the HIV wasting syndrome, NIH reports the availability of dronabinol and notes the potential risk of immunocompromised patients "smoking a carcinogen-containing substance" (Journal of the American Medical Association, 1994, p. 1647). These scientists, after an examination of both preclinical and human data, are of the position that no evidence exists to support the claim that

smoked marijuana is superior to currently available medications "for glaucoma, weight loss associated with AIDS, nausea and vomiting associated with cancer chemotherapy, muscle spasticity associated with multiple sclerosis or intractable pain" (Lee, 1994).

Currently the only legal way to obtain marijuana for medical purposes in the United States is through what is called a Compassionate Investigational New Drug (IND) authority. The more common IND approval is issued (usually to a pharmaceutical company) to evaluate the safety and efficacy of a new drug. In the case of a compassionate IND, authority is given an individual to take an unapproved substance on the grounds of it being humane and compassionate in the sense that usual medications do not appear to work. To date, approximately 40 compassionate INDs have been approved for cannabis but only 13 patients have actually received the substance. (Two have since died of AIDS.) Further, the Federal Government (in 1992 under the Bush Administration) reached a decision not to issue cannabis to anyone in the future. This decision underwent review by the US Public Health Service and was upheld (Grinspoon and Balakar, 1993). Thus, though technically a compassionate IND for cannabis may be sought, the reality is that no new INDs involving cannabis will be approved until and unless an alteration of policy occurs.

One of the major criticisms leveled at marijuana with respect to its efficacy within the medical model is the lack of scientific evidence and clinical trials. The evidence put forth by the advocates has been anecdotal in nature and has not been subjected to the rigors of the scientific method within clinical trials. In fairness, however, the difficulty of doing clinical trials in the United States must be mentioned. A clinical protocol involving a Schedule I substance must be herded through a series of obstacles and pitfalls that often seem more a regulatory nightmare than science. Such is the case with marijuana (Journal of the American Medical Association, 1994, p. 1645-1648). The only marijuana cigarette legally produced in the United States is made by the National Institute on Drug Abuse with marijuana grown under contract in Mississippi and manufactured into cigarettes at the Research Triangle Institute in North Carolina. While clinical protocols involving these cigarettes are not forbidden, they are, in fact, quite rare. The use of foreign cannabis in a clinical trial was proposed by the chair of San Francisco's Community Consortium (to be used in an HIV population) has been stalled because of the Consortium's inability to obtain an import license for the marijuana (Alliance for Cannabis Therapeutics, 1995).

While the issues of anecdotal versus clinical evidence continue to draw spokespeople from both sides of the issue, there is virtual unanimity within the scientific community that the smoking of marijuana causes harm. Even strong proponents of the medicalization of marijuana acknowledge that smoking marijuana may have negative health consequences. The basic view is that

human lungs and associated tissue were never intended to inhale smoke - either marijuana or tobacco smoke. The health section of this paper cites evidence for this conclusion—that smoking marijuana (or cigarettes) can be hazardous to one's health.

Proponents of adding marijuana to the medical arsenal of drugs with legitimate medical applications make claims for its efficacy in the treatment of several diseases and conditions including cancer, glaucoma, multiple sclerosis and AIDS. However, in the eyes of the Federal establishment and a highly respectable part of the scientific community, proponents are unable to set forth anything but anecdotal evidence as to the effectiveness of smoked marijuana. Experts within the various cited diseases and conditions are virtually unanimous in their distrust and/or outright rejection of marijuana's medical efficacy. In many cases, other drugs are available which appear to be more efficacious in treatment than marijuana. Given the current state of medical and scientific knowledge and the difficulties in gaining approval for clinical trial protocols, it is highly unlikely that marijuana will emerge as a drug meeting Food and Drug Administration (FDA) standards for medical application and efficacy. At best, the proponents of marijuana's efficacy might make a case for a rare compassionate Investigational New Drug (IND) application approval involving the use of marijuana; but, given past history (only 13 individuals have actually been given marijuana cigarettes as a result of a compassionate IND), and current policy, this too remains highly unlikely. At the present time marijuana would not seem to have a future within the medical care system of the United States.

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10 Public opinion

It is important to realize that facts and data per se have little to do with drug policy or cannabis policy. It appears that the simple truth is that public opinion, often as expressed by the mass media, drives drug policy. As frustrating as this might be to social scientists and academics, the introduction of data and facts, no matter how valid and reliable, have little to do with winning or losing the forum of public opinion. A survey of Area Opinion Leaders conducted in 1991 by NIDA in the Washington, DC area, attempted to determine how policy makers make drug policy (see NIDA, 1993). The study obtained the opinion of approximately 162 individuals who influenced policy decisions and directly or indirectly, addressed the illicit drug problem. Initial respondents were selected, and snowball sampling with some random selection was employed to select the sample of the study.

The opinion leaders were asked to name and assess the accuracy of their sources of information on illicit drugs. Most opinion leaders mentioned more than one source of information, with the most common being direct contact with drugs users or drug programs (86%), followed by the media (82%), and research on drug use (78%). A variety of other sources were mentioned to a lesser extent. When asked to assess the accuracy of information from the 3 sources, 53% of opinion leaders perceived their direct contacts with drug users or drug programs as very accurate, compared to research which was seen as very accurate by 30%. The media was seen as the least accurate source of information with only 6% saying it was very accurate, although 72% said the media was a somewhat accurate source of information.

Of the opinion leaders who reported having used research, about a third (36%) said it was very helpful, and 57% said it was somewhat helpful. The most frequent criticisms were that research failed to ask the right questions to achieve useful results (50%), and that research too often focuses on inappropriate populations (i.e., the general population who are not typically drug users) (49%). An estimated 41% said research is typically biased in its approach, 39% said it presents contradictory results, and 39% said it rarely yields useful recommendations.

The opinion leaders expressed a need for greater practical utility and applicability of research results. Nearly two in five opinion leaders criticized research for failing to make recommendations. They also expressed concern that hidden or hard-to-reach populations who are the most likely to use drugs, are the least

often studied. Obviously, there is a need for greater collaboration between the research and policy making communities in the U.S. Researchers need to think about the policy relevance of their research studies. Policy makers need to make their needs for particular types of information known to the research community and funding agencies. Improving communication would go a long ways towards improving the policy relevance of research, and providing more effective drug policy based on proven research results.

Several points can be made in this regard.

1. The mass media is a powerful shaper of public opinion. It was used in the 1930s by Harry Anslinger to make marijuana public enemy number one and, in 1937, to gain passage of the Marijuana Tax Act. Today, it is more powerful than ever. Every story with an emotional appeal makes the news. The connection between drugs and crime is constantly emphasized. Seizures, interdictions, shootouts - all aspects of supply reduction -are deemed newsworthy. Sadly, the demand reduction aspects of drug policy do not sell many papers or offer much gain in network ratings. For example, the results of the MTF and Household surveys which showed declining rates of drug usage throughout the 1980s and much of the 1990s gets news coverage on perhaps one day in major newspapers and national news broadcasts. However, these same newspapers and broadcasts report almost daily incidents of drug-related crime. The result is the public perceives that drug use is on the increase, particularly during the height of the "drug war," when prevalence rates were falling steadily.

With respect to marijuana or any of the illicit drugs, it is the PERCEPTION of the drug, the PERCEIVED harm, its ALLEGED connection to other illicit substances and its REPORTED role in crime, violence and illicit activities that will shape public policy. This is not to say there is no truth or facts in the development of public opinion. It is to say that the perceived harm and consequences, not necessarily the actual harm and consequences will shape opinion and therefore policy. Unfortunately, the U.S. has a woefully undereducated and misinformed public helping to set drug policy.

2. Within public opinion, another driver of marijuana policy in the United States has been the general health movement. Public opinion now holds that regular exercise, careful nutrition, and weight control are the ways to good physical and mental health. This movement would essentially hold that marijuana is unhealthy, harmful and "bad." Thus the use of marijuana is not compatible with the physical health movement so in vogue with the public. Of course, the fact that over a third of the U.S. adult population is overweight and this percentage is rising doesn't mesh well with the healthy ideal in U.S. society either.

Data from MTF survey shows health concerns are correlated with drug use. In 1991, 40.4% of 13-14 year old students, 30.1% of 15-16 year old students and

27.1% of 17-18 year old students reported "great risk of harm" in trying marijuana once or twice. When "once or twice" is changed to "smoke marijuana occasionally" the 13-14 year old students percentage rose to 57.9, the 15-16 year old students percentage rose to 48.6, and the 17-18 year old students percentage rose to 40.6. The percentage saying "great risk" rose even higher when the issue is "smoke marijuana regularly;" 83.8% of the 13-14 year old students, 82.1% of the 15-16 year old students and 78.6% of the 17-18 year old students so responding. In the period 1991 through 1994 there has been a steady erosion in the percentage of junior high and high school students perceiving "great risk" in the use of marijuana, regardless of what category of use is considered. Further, 17-18 year old students continue to express their disapproval of people (who are 18 or older) even trying marijuana. In 1994, some 57.6% disapproved of trying marijuana once or twice, 68.9% disapproved of smoking marijuana occasionally and 82.3% disapproved of smoking marijuana regularly.

These data raise two points. Perceived harm and risk in MTF survey seem to lead prevalence rates by at least a year. When perceived harm and risk go up, prevalence rates the following year tend to decrease; when perceived harm and risk go down, prevalence rates the following year go up. The MTF survey has documented that shifts in attitudes about the perceived risks associated with the use of marijuana preceded the downward trend in marijuana use (Bachman et al., 1988). Increases in the perceived risks associated with cocaine use, as well as increasing disapproval of cocaine use, also preceded the decrease in prevalence rates (Bachman, Johnston and O'Malley, 1990). It is thus totally possible to have predicted the rise in marijuana prevalence among school students in 1993 and 1994 from the 1992 and 1993 data on perceived harm and risk. Availability of the drugs did not decrease, nor was there any trending observed in lifestyle factors (i.e., religious commitment, truancy) that commonly covary with involvement in illicit drug use (Bachman, Johnston and O'Malley, 1990). The researchers attribute the upward trending in perceived risks and disapproval to increasing health consciousness in general. They conclude that a large proportion of youth pay attention to new information about drugs, especially risks and consequences; and that such information, presented in a factual and credible fashion, plays a vital role in reducing the demand for drugs (Bachman, Johnston and O'Malley, 1990).

The second point to be made (from 1994 MTF data) is that some 74.3% of 13-14 year old students, 71.3% of 15-16 year old students and 65.0% of 17-18 year old students still perceive harm in using marijuana on a regular basis and a significant minority (48.6% of the 13-14 year old students, 38.9% of the 15-16 year old students and 30.1% of the 17-18 year old students) see harm and risk in smoking marijuana occasionally. Also, as already cited, 17-18 year old students generally express their disapproval of individuals who use marijuana. The 1993 Household Survey found that a third of the population associated great risk

with smoking marijuana once or twice, 45% associated great risk with occasional marijuana use, while 77% associated great risk with regular marijuana use. There is thus significant opinion that marijuana is harmful and can pose "great risk." By way of comparison, over 70% of the population associate great risk with even trying cocaine or heroin once or twice.

3. As cited earlier, with the passage of amendments to Posse Comitatus and emphasis on interdiction efforts, some perceived a possible shortage of marijuana and domestic cultivation of marijuana began in ernest. However, in so far as high school 17-18 year old students are concerned, there is not now nor has there ever been a shortage of marijuana. No matter what the particular law enforcement effort or latest legal statute, 17-18 year old students have been remarkably constant in their belief that marijuana is either "fairly easy" or "very easy" to get. In 1975, 87.8% of 17-18 year old students thought marijuana "fairly easy" or "very easy" to get. This peaked at 90.1% in 1979. It reached a low point of 82.7% in 1992 and was 85.5% in 1994. Thus, no matter what efforts were being made on the supply side to stem the tide of marijuana availability, 17-18 year old students for a full 20 years have perceived the drug as "fairly easy" or "very easy" to obtain. This perceived availability by the young over the years is very disturbing to those who fear marijuana as a corrupting influence on the youth of our nation and might well be cause enough for supply reduction efforts to (still more) increase.

4. Parents and parent groups are also drivers of public opinion with respect to drug abuse and the use of marijuana. Because marijuana is often viewed as a "gateway" drug to other illicit drugs and illicit behaviors and because marijuana is a drug of the young, parent movements have become vocal and strong supporters of anti-drug and anti-marijuana positions. Groups such as the Partnership for a Drug Free America, PRIDE, and other parents groups are well organized, well financed, and dedicated to the principle that all drug use is bad. Through promotions on television and radio, through the schools, through lobbying the Congress and through role models (athletes and politicians), these groups wage a continuing anti-drug war. Another group recently formed to combat drug abuse, American Cities Against Drugs, held a national conference May 14-16, 1995, with major support from the U.S. Government's Center for Substance Abuse Prevention and the private, philanthropic organization, the Robert Wood Johnson Foundation. There currently is no pro-marijuana group, NORML included, that has the resources and spokespeople to oppose this anti-drug sentiment.

5. Another public opinion driver that bodes ill for any movement towards decriminalization of marijuana is the anti-smoking movement. The movement towards a smoke free environment can be seen in direct actions such as no smoking on all domestic air flights (and one major airline has banned smoking

on international flights as well), no smoking in any Federal building and increasing taxation of cigarettes. The State of Maryland and New York City have recently enacted, with massive public support, a smoking ban which prohibits smoking in ALL public buildings and places including restaurants, stadiums, and state universities. The only exception to this law are bars and restaurants where alcohol is served. Since marijuana is by and large smoked in this country and since carcinogens have been identified in marijuana, the anti-smoking sentiment naturally encompasses the use of marijuana.

While it is difficult to measure the social costs associated with marijuana, it seems reasonable to infer that there are some. Marijuana use is implicated in crime, emergency room visits and deaths, treatment episodes, and workplace accidents and injuries. Although "common wisdom" in the U.S. holds that it is the least harmful of the current illicit drugs, from a legal standpoint, it is treated much the same as the narcotic drugs. Public opinion does not support any real changes in marijuana policy in the U.S. The final equation (and be reminded it is public opinion that sets the equation) is that the costs outweigh the benefits.

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11 The immediate future of marijuana policy in the United States

There are many citizens of the United States who would argue that the current policy on drugs has failed, that a policy that postulates drug prohibition is no longer viable in this day and age and that the billions spent on drug control, particularly supply reduction and law enforcement are proof of this failure. This argument is made in very convincing fashion by the Committee on Drugs and the Law of the New York Bar Association (1994). Citing social, human and economic costs of the current "no tolerance" policy and its failure to reduce drugs in the street, the call is made for a new policy, one that ends prohibition and acknowledges that drug abuse will always exist.

Supporters of an end to drug prohibition may (mistakenly) be heartened by the stance of the Clinton Administration. As stated earlier, the current Administration is taking a somewhat low profile with respect to illicit drugs. It does not appear to be a "front burner" issue. The Office of National Drug Control Policy still exists but with significantly fewer staff than was true under the Bush Administration. This, however, does not mean the time is ripe for introduction of marijuana decriminalization laws. Indeed, given the mood and disposition of the Congress and the power of public opinion, quite the opposite is true.

The Republicans have the numerical advantage in both houses of the Congress, the House of Representatives and the Senate, for the first time in 40 years. A significant number of the new members and many continuing members were elected on conservative platforms that stressed a get tough on crime position, and the promise of new tougher crime measures. As such a new tough crime bill has passed the House and a similarly tough measure is now being considered by the Senate. While not specifically singling out marijuana, the bills impact greatly upon marijuana.

Within the House of Representatives the crime bill (HR 3) is titled "The Taking Back of Our Streets Act" (FAMM, 1994-1995, p. 1). It sets a host of new mandatory minimum sentences by bringing under Federal Statute every crime committed with a gun (the gun need not be a part of the criminal act - merely present - as for example legally owned weapons in a house where marijuana is present); restricting habeas corpus as a viable remedy for illegal incarceration; and other restrictive measures. One most significant part of the House passed bill is the budgeting of $10.5 billion to the states for prison construction if they

bring into effect truth-in-sentencing practices whereby offenders must serve 85% of their time before being eligible for parole. This is of particular interest since in all likelihood it would serve to increase the length of time marijuana offenders must serve in prison. A major effect of the bill should it be enacted would be to tempt states to engage in the construction of new high-security prisons and then fill them (New York Times, 1995).

The Senate's crime bill (S-3) is called the "Violent Crime Control and Law Enforcement Improvement Act of 1995." Among the 11 sections of the bill are "new mandatory minimum sentences for selling drugs to minors or employing minors to sell drugs, selling drugs in a Drug-Free Zone, and using guns in a federal felony offense" (FAMM, 1994-1995, p. 2). Also found in the Senate bill is a repeal of the so-called safety-valve provisions with replacement by a new, highly restrictive safety-valve segment that puts significant onus upon the defendant in order to qualify for sentence reduction. Further, the Senate bill directs the U.S. Sentencing Commission to meet mandatory minimum sentences with respect to drug sentences. Should this directive become law, the Congress will, in effect, be dictating to the (supposedly) independent Sentencing Commission.

Several states are also either sticking with their "get tough" philosophy or actually increasing their drug sanctions. In Virginia, Governor George Allen advocates a 10 year mandatory imprisonment for anyone convicted of transporting illicit drugs across the state line. A move in Michigan to ease life-without-parole sentences for some classifications of non-violent drug crimes failed to pass the state legislature. Illinois, which has mandatory minimums on some drug crimes indicates no disposition to ease the minimums. Due to overcrowding in its prison system, the state of Florida has had to release some inmates convicted of violent crimes in order to make room for those convicted of drug-related crimes.

The only exception to this trend is New York. Faced with the reality that 60% of its inmates have been sentenced for non-violent acts and 44% of new felons coming to prison each year are convicted of drug crimes, Governor George Pataki has gained the support of the New York legislature in reducing mandatory sentences for so-called small-time drug offenders so that emphasis may be placed on longer sentences for those convicted of violent crimes (Chapman, 1995).

Future direction of marijuana policy

In summary, the trends for the near future still speak to stern, unyielding law enforcement with mandatory sentencing being the rule and (often) individual courts having little discretion in their handling of an individual case. The

proposed federal legislation together with the mood of "get tough" on crime and drugs are indicators that those convicted of marijuana charges may not be treated gently by the system. Given the conservative mood of the people of the United States, the "do the crime, do the time," posture of the U.S. Congress and the current power and disposition of public opinion, it is most unlikely that any change in U.S. policy towards marijuana is imminent. Any movement towards a toleration or decriminalization policy would likely emanate from outside the country. It would probably take some type of harm reduction movement internationally with definite markers of success to persuade the U.S. to rethink its current policy.

Such movements have, however, occurred. The success of other nations with needle exchange programs - the markers being the reduction in HIV infection and hepatitis - has led the United States to at least be willing to evaluate needle exchange programs. As a result, several needle exchange programs were initiated in this country under local auspices and with the implicit understanding that enforcement authorities would not intervene in such programs. Federal law prevented (and still prevents) the federal funding of needle exchange programs. From a research perspective, however, the exchange programs can be evaluated using Federal monies with a view to ascertaining their degree of success or failure. To date, the success of needle exchange programs has been remarkable and it is conceivable that a shift in Federal policy could occur in the not too distant future, a shift that would allow the Federal funding of needle exchange programs. Realistically, it is not likely that marijuana tolerance will enjoy the same degree of success. The issues of the young using marijuana, the potential health consequences, the movement towards fitness and health, the conservative mood of the nation - all argue that marijuana tolerance is not likely to occur in the foreseeable future.

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Notes

1, 2 In the U.S., the vast majority of cannabis use is marijuana and not hashish. The terms marijuana and cannabis are used interchangeably in this report.