San Diego

ASSOCIATION OF
GOVERNMENTS

ASSESSMENT OF

MULTIPLE INDICATORS OF DRUG ABUSE

FOR PLANNING AND POLICYMAKING

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Susan Pennell
Christine Curtis
Jeff Tayman, Ph.D

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Criminal Justice Research Division
San Diego Association of Governments
401 B Street, Suite 800
San Diego, CA 92101
(619-595-5383)

ABSTRACT

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CHAPTER 1

INTRODUCTION

The consequences of widespread drug use and its association with criminal behavior are priority concerns for all levels of government as well as neighborhoods. The President's National Drug Control Strategy asks the question: "What's the best way to fight drugs and drug use?" The answer contained in the strategy document is clear and simple: "No single tactic pursued alone - or to the detriment of other possible initiatives - can work to contain or reduce drug use." (National Drug Control Strategy, January 1990). This statement suggests that strategies must be balanced and integrated to include education, prevention, enforcement, treatment, and interdiction efforts.

The President's National Drug Control Strategy, issued in January 1990, calls for "a larger and more flexible information base in order to help us refine and target our counterdrug efforts" (Ibid.).

To formulate drug policy, develop drug control strategies, and assess the effectiveness of these efforts, policymakers draw from a variety of information sources. Indicators of drug use and drug related crime measure the extent of use, consequences of abuse, and source and volume of illegal drugs.

Increasing understanding of the nature and extent of drug related crime and improving our abilities to control drug related criminality require solid information. Despite available information, there is minimal effort to integrate drug use and crime indicators so that the impact and effectiveness of drug control strategies can be assessed. The focus of this research is how the sources of drug information are used to inform policy and their potential for predicting drug use.

RESEARCH FOCUS

Through an inventory of drug use indicators in the criminal justice and the health systems, this study presents descriptive trends in drug use measures in San Diego County. A relatively new indicator of drug use among the offender population is provided through the Drug Use Forecasting (DUF) program. Through urinalysis testing of arrestees, the DUF program has shown San Diego to rank among the top three cities in the nation with respect to the proportion of arrestees positive for drug use (National Institute of Justice, 1990).

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This finding, along with San Diego's proximity to the busiest international border in the sixth largest city in the country, makes San Diego an appropriate setting in which to examine multiple indicators of drug abuse. Interviews with local policymakers and practitioners assessed the strengths and weaknesses of drug use indicators and their value for developing change strategies. The examination of multiple indicators in an integrated manner was demonstrated through the development of a statistical model to explore the potential for prediction of drug use.

RESEARCH OBJECTIVES

The objectives of this research were the following:

- Identify sources of drug abuse information in the justice and the health systems and examine trends over time.

- Identify gaps in databases, resources, and operations that impact coordinated strategy development.

- Determine the use and value of drug testing information about arrestees.

- Assess the use and value of drug use indicators for policymaking.

- Identify current strategies to address drug use and consequences of use.

- Develop a model to examine the relationship of justice and health indicators of drug use and the extent to which they can be integrated to provide more powerful analytical tools than individual indicators.

- Present recommendations for improving the quality and use of indicators of drug use for policymaking.

RESEARCH APPROACH

The following procedures were undertaken during the course of this research:

- A review of the literature regarding drug abuse trends, as well as interviews with experts in the field, identified key drug abuse indicators ultimately selected for the trend analysis.

- Computer data files were obtained from the Drug Enforcement Administration (DEA), the California Alcohol and Drug Program, and the Bureau of Criminal Statistics of the California Department of Justice. Other data sets were extracted from official published documents. The time period selected for the trend analysis was 1982 through 1987. Data sets were examined descriptively to identify changes in drug use indicators over six years. When possible, the data were presented by drug type and characteristics of users.

- Face-to-face interviews were conducted with informed administrators and practi-
tioners in the criminal justice and health systems. The selection of respondents was
not random, but representative with respect to key decision makers responsible for
drug control policy and operations. Interview issues focused on the use and value
of drug use indicators for describing the drug problem and developing change
strategies. Respondents also identified gaps in data sets and suggested other types
of data that are useful, but not obtained in a systematic manner. Additionally, the
interview data allowed a qualitative perspective on the dimensions of the drug
problem over time.

- Mailed surveys were distributed to members of San Diego City and County Drug
Task Forces, and elected officials serving as the Board of Directors for the San
Diego Association of Governments. Task force members included various
professionals representing law enforcement, drug treatment, and education. These
surveys garnered additional opinions about the nature and scope of the drug problem.

- In both the interviews and surveys, respondents were asked about the Drug Use
Forecasting (DUF) program and to assess its use and value as a drug use indicator.
Respondents were asked how they use DUF data and offered opinions regarding drug
testing of offenders in different points of the justice system.

- Review of the drug use indicators led to selection of key variables to be tested in a
statistical model for predicting drug use in the health system through criminal justice
indicators. Regression analysis and econometric techniques were used in model
development.

- Finally, based on the overall analysis, recommendations are presented concerning
the use and value of drug use indicators for understanding the drug problem and
developing drug control strategies.

SIGNIFICANCE OF RESEARCH

The importance of this research lies in the integration of multiple data sets that reflect drug
abuse. To develop appropriate control strategies, it is essential to understand the nature
and scope of the drug problem. This study differs from previous work not only in the
integration of multiple drug use indicators, but also with respect to the number of drugs
examined. Other studies have addressed drug use in general, or focused on a single drug,
such as heroin or cocaine. Finally, this research asked the policymakers and the
practitioners how they describe the drug problem and the value of data measures for
developing change strategies. This study identified current drug control strategies and
barriers to implementing successful strategies. The results of this effort should be useful
to researchers interested in the validity and reliability of drug use indicators and the value
of these measures for predicting drug use. Criminal justice and treatment administrators
may find this research beneficial to identify, examine, and act upon the information
available about drug abuse.

Finally, policymakers may recognize the value and the limitations of data measures used to describe drug abuse and the vital need to monitor all indicators to determine "what works" to prevent and reduce drug abuse.

THE DRUG/CRIME LINK

The need to intervene in the lives of drug abusing offenders has been well documented by the research. Extensive research suggests that drug abusers constitute a significant proportion of the offender population, are responsible for a considerable amount of crime, and their involvement in criminal activities is highly correlated with their drug use (Anglin and Speckart, 1988; Anglin, 1988; Ball, et al., 1981; Carver, 1986; Chaiken and Chaiken, 1990; Chaiken and Johnson, 1988; Gropper, 1986; Inciardi, 1986; Wish and Johnson, 1986).

Gropper, in summarizing the above studies, suggests that targeting the most intensive and frequent users could lead to significant reductions in drug related criminality (Gropper, 1985).

Regardless of whether the drug user commits crime to obtain money for drugs or has an addiction that coexists with criminality (Kaplan, 1983), the issue for policymakers is the same: reduce drug use and crime may also be reduced. As Wish and Johnson (1985) have stated, "untangling the causal nexus of drug use and crime is, perhaps, an impossible and unproductive enterprise." This research accepts Gropper's presumption that the link is fundamental to crime control efforts through prevention and control of drug abuse (Gropper, 1985).

SITE DESCRIPTION

San Diego County, with population of 2.5 million residents, is located in the extreme southwest corner of California. It is the second-largest county in the State and includes the sixth-largest city in the country: the City of San Diego, which represents nearly half of the countywide population. The County population is ethnically diverse. Recent estimates by the San Diego Association of Governments indicate that 68.5% of the residents are White, 17.2 % Hispanic, 5.4% Black, and 8.9% other ethnic groups (San Diego Association of Governments, 1990).

San Diego's geographic and population characteristics contribute to the high risk for drug related crime. Some of these include:

* Proximity to the busiest international border in the world

* Easy access by land, air, and sea

* Several military installations with over 100,000 active-duty personnel, of which at least half are under age 25

- Several years of severe jail crowding has limited the system's capacity to respond to drug using offenders. In 1988, San Diego was cited as having the most crowded jails in the nation (Mega Jail Survey, 1989)

- A long history of a disproportionate share of State funds for drug treatment has restricted the County's ability to provide adequate treatment resources. In 1989, the County successfully sued the State of California to rectify this situation in the future

- A large semi-transient population of students and adults attracted by year-around pleasant climate

- Several hundred square miles of rural, isolated terrain.

Each of these features, alone and in combination, has promoted the long-held image of San Diego as a "sleepy little border town with lots of sailors." Conversely, they have also led to the dubious distinction of "the crystal meth capital of the world," and reports of drug use among arrestees that parallel and sometimes exceed that of areas such as New York, Washington, D.C., and Los Angeles.

STRUCTURE OF REPORT

Chapter 2 presents a description of drug use in San Diego County over a six-year period, using a variety of indicators.

A qualitative assessment of the drug problem was obtained through surveys of elected officials and members of drug task forces. Results are discussed in Chapter 3.

The next chapter (4) presents the results of interviews with justice and health administrators and practitioners. These interviews serve to identify the types of data sources and measures that are used to develop strategies and policies to reduce and control drug use. Opinions regarding the Drug Use Forecasting (DUF) program are also presented.

Chapter 5 develops a conceptual model of justice and health drug use indicators, followed by a statistical, causal model based on path analysis. The statistical modeling examines the extent to which justice and health indicators are associated and explores the feasibility of the model for predicting drug use. The concluding chapter summarizes the findings and suggests ways to improve the use and value of drug use indicators for informing policy.

**CHAPTER 2
DESCRIBING THE DRUG PROBLEM**

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DESCRIBING THE DRUG PROBLEM

This chapter delineates a variety of sources of information compiled to describe and understand the magnitude of the drug problem. Trends in specific justice and health drug related indicators are presented for San Diego County. To the extent possible, data are presented by drug type and by characteristics of users. The time period is 1982 through 1987 (six years). Early interviews with experts in the field suggested that, prior to 1982, some data sets reflected different reporting procedures, thus validity and reliability of the data are questionable. Data are presented annually, but the statistical model uses monthly data.

SOURCES OF INFORMATION

The data sources presented do not reflect all data sets currently compiled, such as private hospital admissions for drug use and drug related traffic fatalities. Available data measures differ markedly with respect to geographic coverage, population, purpose, and method of data collection. This report examines relatively well-known data sets. Some are national, and many are collected at the local level. This research is targeted primarily toward local governments which must develop the most cost-effective means to control the drug/crime problem. To develop policy and allocate funds appropriately, decision makers need the best information available to understand the issue and measure "what works."

National Estimates of the Drug Problem

Household Survey. The National Survey on Drug Abuse is funded by the National Institute of Drug Abuse (NIDA) and designed to measure drug use in the general population. Conducted for more than 20 years, the results are based on personal interviews every two to three years with individuals randomly selected from household populations. The survey is viewed as a conservative estimate of drug use because it excludes homeless persons, people living in military installations, and institutions such as jails and hospitals. Also, since the survey is voluntary and self-administered, the results may be biased (General Accounting Office, 1988).

High School Senior Survey. Also sponsored by NIDA, this annual survey assesses the prevalence and trends of drug use among graduating seniors. Known limitations include the fact that school drop-outs and chronic absentees are not part of the survey.

Treatment Outcome Perspective Study (TOPS). This program compiles data on persons in substance abuse treatment with regard to individual characteristics and drug use history. Funded by NIDA and NIJ, TOPS data are collected in 10 cities.

Community Epidemiology Work Group (CEWG). This group, and its statewide counterpart (SEWG), collects trend and consequence information about drug use from treatment practitioners, educators, and the justice community. Reports are published by NIDA.

Health System

Drug Abuse Warning Network (DAWN). This is a large-scale drug abuse data collection system designed in 1972 as an early warning indicator of the nation's drug abuse problem. It represents about 750 emergency rooms reporting episodes involving non-medical use of a substance. Within each episode, a patient may state having ingested more than one drug. These are known as "mentions." Incomplete reporting, turnover of reporting facilities and personnel, and reporting delays of up to one year are some of the system's limitations (General Accounting Office, 1988). The DAWN data also include the number of deaths reported by the medical examiner in which drugs are revealed, but not necessarily a contributory factor in the death. Caveats concerning medical examiner data are related to variations among facilities with respect to procedures and methods used to identify drug abuse. Some examiners may include cases involving circumstantial evidence while others may report only cases confirmed by toxicologic analyses (NIDA, 1987).

Drug Treatment Admissions. The process for obtaining data on persons admitted to public drug treatment programs was initiated by the federal government in 1981 and voluntarily continued by many states. Sociodemographic data are compiled on clients as well as the types of drugs abused at time of admission. In California, the data are known as CAL-DADS (California Drug Abuse Data System). Data are frequently edited and updated so that data in this study may differ somewhat from data extracted at a different time. Treatment data are affected by availability of treatment slots at any given time and types of treatment modalities offered.

Justice System

Source and Volume of Illegal Drugs. The task of developing accurate figures on the illegal drug trade is formidable given its surreptitious nature. According to reports by the Bureau of Justice Statistics (BJS), "no national data series exist on domestic drug markets, distribution systems, the process of illegal drugs, and consumer preferences" (Collins and Zawitz, 1990). The National Narcotics Intelligence Consumers Committee (NNICC) is a federal interagency mechanism for coordinating drug intelligence and producing joint estimates of production and availability. The Drug Enforcement Agency (DEA), as a primary member of NNICC, submits reports of drug seizures by drug and weight. Drugs are also analyzed to determine price, purity, and place of origin. The DEA substance identification database is known as STRIDE (System to Retrieve Information from Drug Evidence). Price and purity information are not always available from drug "exhibits" in STRIDE. The STRIDE data are further limited because the system does not contain complete information about state and local agency enforcement activities.

In the NNICC reports, specific criteria and rules for calculations are lacking, according to the BJS report, so validity of the information is unknown (Ibid.).

Arrests. In the criminal justice system, additional data measures are available to assess the extent and nature of drug use in a specific population. Most frequently mentioned are the number of arrests for drug violations. These data can be examined with respect to increases and decreases over time, changes in level of offense (i.e., felony and misdemeanor), types of drugs (i.e., narcotics, dangerous drugs) and associated behavior (such as possession and/or sales).

Dispositions. Processing outcomes, or dispositions, of drug arrests are also available in many jurisdictions. Changes in conviction rates and sentencing patterns provide another indicator for describing drug use and the justice response over time.

These indicators not only provide another indicator of drug use, but allow an examination of the impact of drug cases on the system. The data system used by most states is Offender Based Transaction Statistics or OBTS. This system tracks a defendant from initial arrest to disposition. It is limited to the most serious felony charge and includes only individuals from whom fingerprints are taken at time of arrest. Also, not all state OBTS systems are of equal quality or coverage (Ibid.).

Reported Crimes. The Uniform Crime Reporting System compiles offense statistics reported by law enforcement agencies throughout the country. Data are provided for the eight FBI Index offenses considered most serious and likely to be reported. Drug offenses are reported separately in terms of arrests.

Drug Use Forecasting (DUF). A recently developed indicator of drug use among arrestees is the DUF program, jointly sponsored by the Bureau of Justice Assistance (BJA) and the National Institute of Justice (NIJ). By Spring of 1990, 23 cities nationwide were participating in quarterly interviews and urine sampling of approximately 250 adult males, 100 adult females, and 100 juveniles. The DUF data have allowed cities to track drug use trends among arrestees, link drug use to criminal activity, and determine treatment and prevention needs of drug abusing offenders.

This listing of nationwide drug indicators is not intended to be exhaustive. The April 1990 report on federal drug data prepared by BCS incorporates many more sources than those presented (Bureau of Criminal Statistics, 1990). The selection of data measures included in this report to discuss changes in trends in San Diego County is based on data available at the local level. Many jurisdictions currently compile and report these same indicators. An examination and critique of the use and value of the most prevalent indicators may prove beneficial to a larger group of policymakers.

In the remainder of the chapter, trends in indicators of drug use in San Diego County are discussed to provide the framework for understanding the drug problem and the statistical model that follows.

CRIMINAL JUSTICE INDICATORS

Crime Trends

The time period selected for the trend analysis was 1982 through 1987. Concerns about validity and reliability of some data sets compiled before 1982 guided the chosen timeframe.

Over the six-year period (1982-1987), the number of reported FBI Index crimes[1] in San Diego County increased by 33%, from 118,669 to 157,670. The greatest increase was in violent crimes which rose by 53% (Figure 1) due primarily to significant changes in reporting requirements for offenses involving assault. The number of property crimes rose from 108,027 in 1982 to 141,389 in 1987, a 31% increase. The rise in property crimes is associated with motor vehicle thefts increasing over 100%.

San Diego County's population (ages 18-64) increased 15% from 1982-1987. (This age grouping was used because the data sets in the study reflect primarily adults in this category.) When reported crimes are examined by controlling for population, the overall crime rate rose by 15%, with 93.3 index crimes per 1000 in the base year and 107.5 crimes in 1987 (Figure 3). From 1982, both violent and property rates showed parallel trends, dropping in 1983 and 1984, then rising steadily in the subsequent years. The violent rate rose by 32% over six years, with the sharpest increase from 1985 to 1986 (35%). In 1987, there were 11.1 violent crimes per 1000, up from 8.4 in the base year. The property crime rate rose by a lesser degree (13%) from 85.0 offenses per 1000 to 96.4.

Arrests

Arrests are one measure of illegal drug activity, although all individuals arrested are not ultimately charged. Also, the data are aggregated and include individuals arrested more than once during a year. With respect to arrest charges, reporting guidelines require that the number of persons arrested be counted, not the number of charges. Guidelines also state that the highest charge, based on the reporting hierarchy, be counted. Arrest statistics are impacted by accuracy of reporting procedures as well as manpower levels and emphases of law enforcement. Despite these limitations, arrest data reviewed over time can provide an overview of trends regarding drug law violations. The data can be examined with respect to increases and decreases, changes in level of offense (i.e., narcotics, dangerous drugs), associated behavior (i.e., possession and/or sales), and characteristics of offenders (i.e., gender, age, ethnicity). The focus of this analysis is the adult felony drug violator.

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[1]*Includes violent crimes: homicide, rape, robbery, aggravated assault; and property crimes: burglary, larceny, and motor vehicle theft. Although arson is an FBI Index crime, it was not included in this analysis.*

FIGURE 1
VIOLENT CRIMES
San Diego County
1982-1987

10,642

16,281

1982	1983	1984	1985	1986	1987
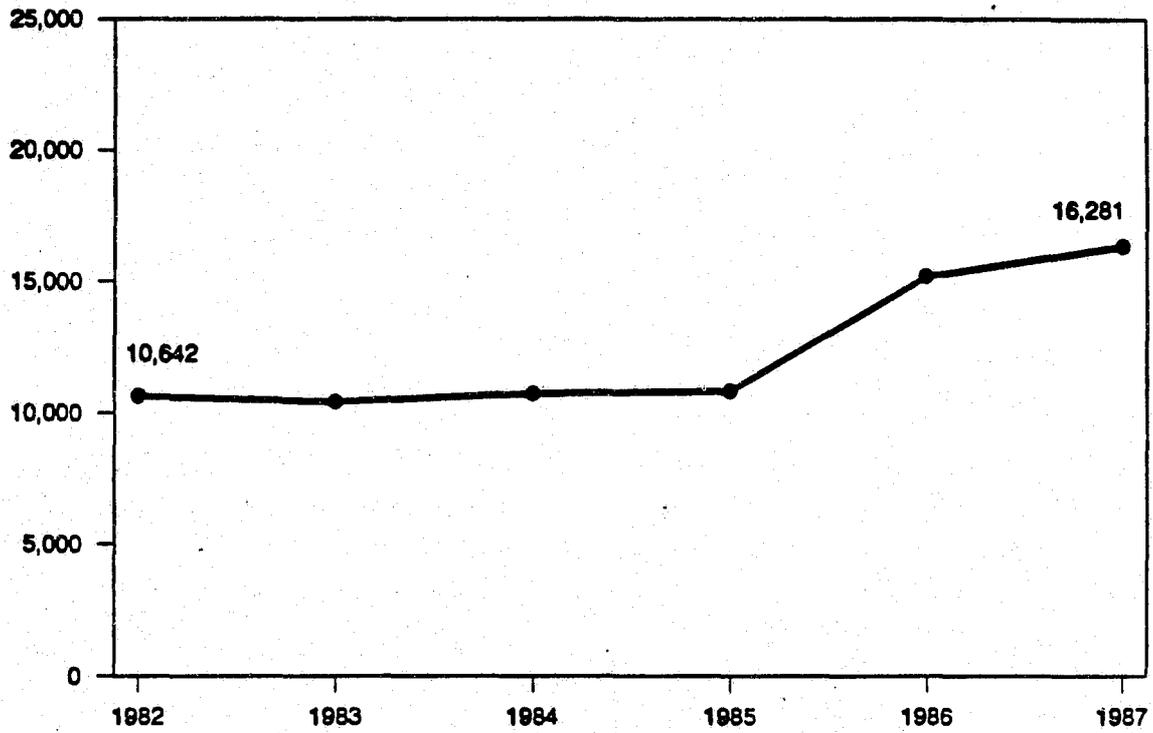
FIGURE 2
PROPERTY CRIMES
San Diego County
1982-1987

108,027

141,389

1982	1983	1984	1985	1986	1987

15
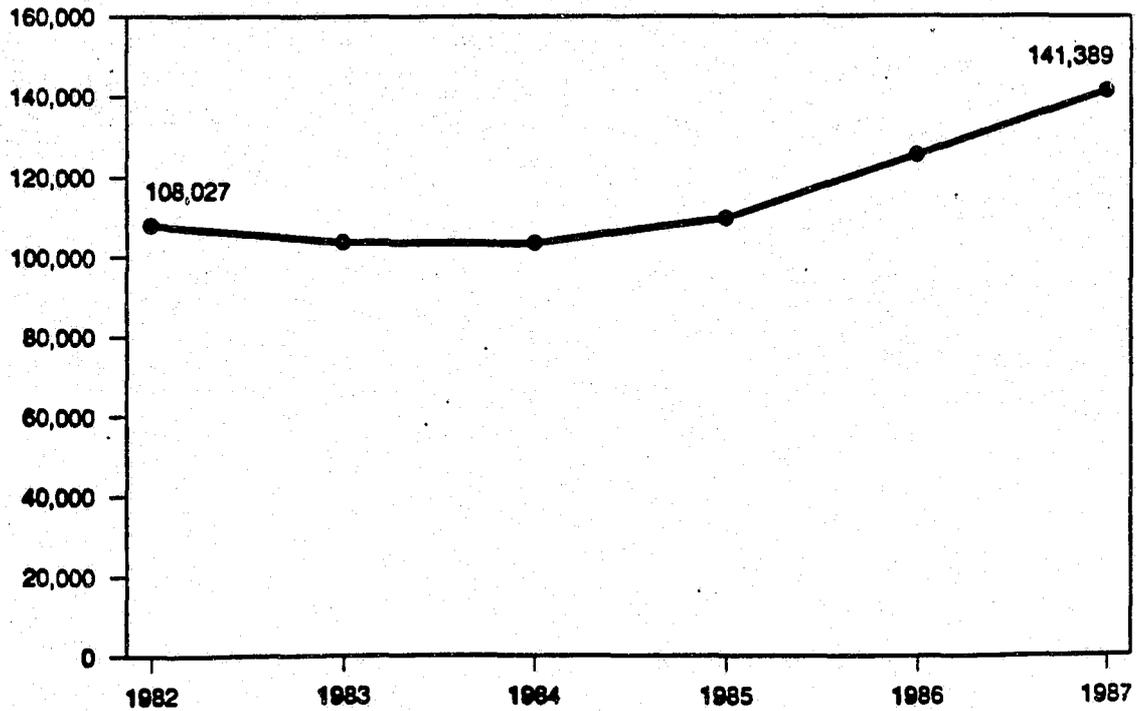
FIGURE 3
FBI INDEX CRIMES PER 1,000 POPULATION *
San Diego County
1982-1987
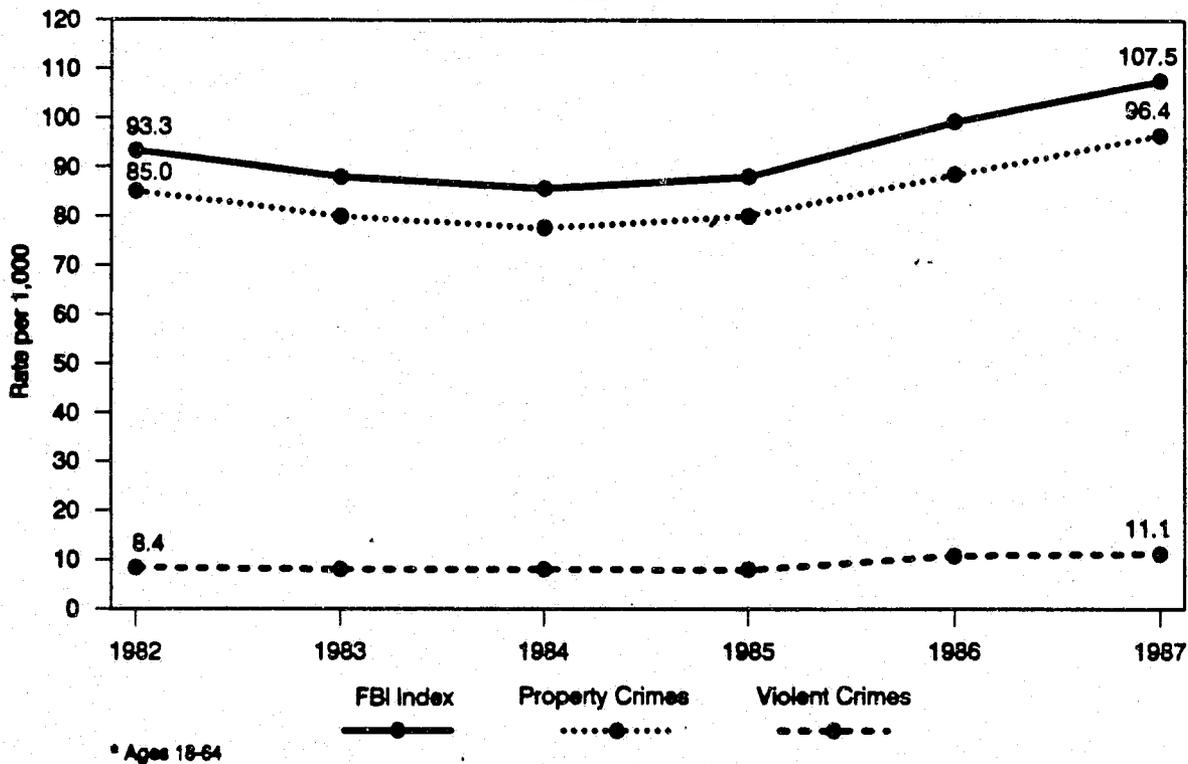
Total Drug Violations. From 1982 to 1987, adult felony arrests for drug offenses in San Diego County rose by 151%, from 4,267 to 10,706 (Figure 4). The greatest one-year increase (46%) was from 1985 to 1986. In the same six-year period, overall felony arrests increased by 64% (not shown). Drug arrests represented 22% of all felony arrests in 1982 and 33% six years subsequent.

San Diego County's population (ages 18-64) from 1982 to 1987 rose by 15%. With respect to drug arrests per 1,000 population, the rate in 1987 was 7.3 compared to 3.4 per 1,000 in 1982, a 115% increase (Figure 5).

FIGURE 4
ADULT FELONY DRUG ARRESTS
San Diego County
1982-1987
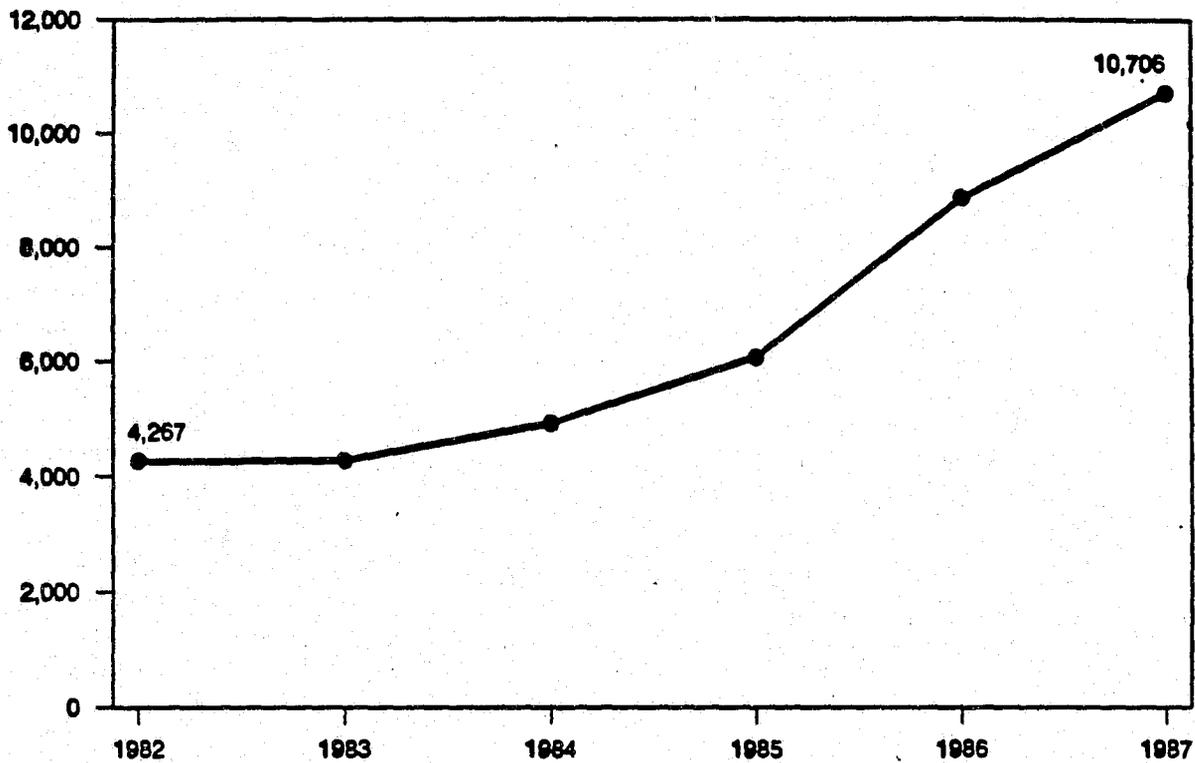
FIGURE 5
SAN DIEGO COUNTY ARRESTS FOR SELECTED OFFENSES
RATE PER 1,000 POPULATION *
1982-1987

Property Offenses

Violent Offenses

Drug Offenses

* Population: ages 18-64

17
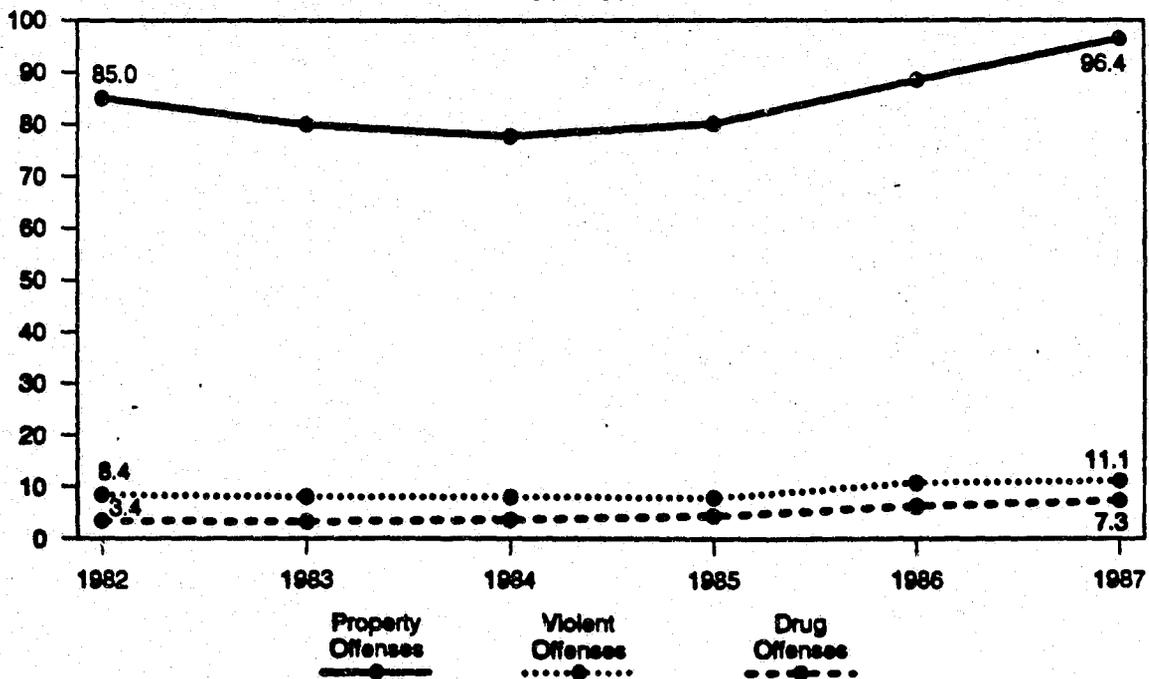
Drug Arrests by Category

The Bureau of Criminal Statistics (BCS) compiles data for drug arrests based on the following categories:

- Narcotics - includes heroin, cocaine, LSD, PCP, and other drugs listed in Schedules I and II of the California Health and Safety Code.

- Dangerous Drugs - stimulants (amphetamines), depressants, and drugs listed in Schedules III and IV of the California Health and Safety Code.

- Marijuana - any part of the plant Cannabis sativa L.

- Other - illegal activities and drugs not included above.

The trend data indicate sharp increases in both the narcotics (133%) and dangerous drugs (400%) categories over six years (Figure 6). Although the categories preclude drug specification, other sources such as interviews with experts, suggest that the increases are associated with increased use and availability of cocaine and methamphetamines. During the six-year period, the highest number of felony marijuana arrests was in the base year, 1982, with only slight variation in subsequent years. Over six years, marijuana arrests dropped by 20%, to 1,064 in 1987.

Except for 1986 and 1987, arrests for narcotics constituted the largest proportion of all categories of drug arrests, ranging from 38% of all drug arrests to 43% over the six years (Figure 7). In 1987, arrests in the dangerous drug category accounted for over half the drug arrests (52%), up from 26% in the base year. Again, this increase reflects the widespread use of methamphetamines. Seizures by the Drug Enforcement Administration (DEA) show similar patterns (page 33). In contrast, the proportion of felony drug arrests involving marijuana declined steadily, from 31% in 1982 to 10% in 1987. This change may be a result of law enforcement focus rather than a decline in use. Changes in legislative statutes regulating amounts of marijuana needed for a felony arrest occurred in the late 1970's.

FIGURE 6
ADULT FELONY DRUG ARRESTS BY CATEGORY
San Diego County
1982-1987
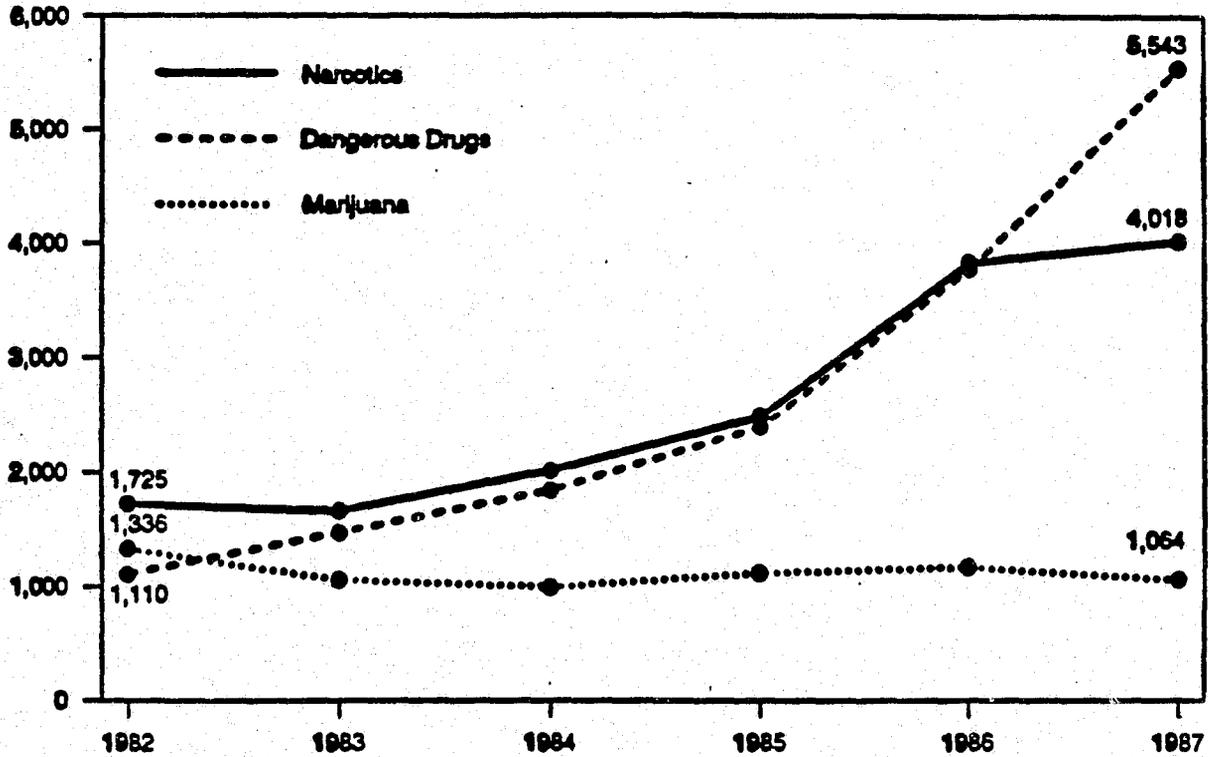
FIGURE 7
DISTRIBUTION OF FELONY DRUG ARRESTS BY CATEGORY*
San Diego County
1982-1987
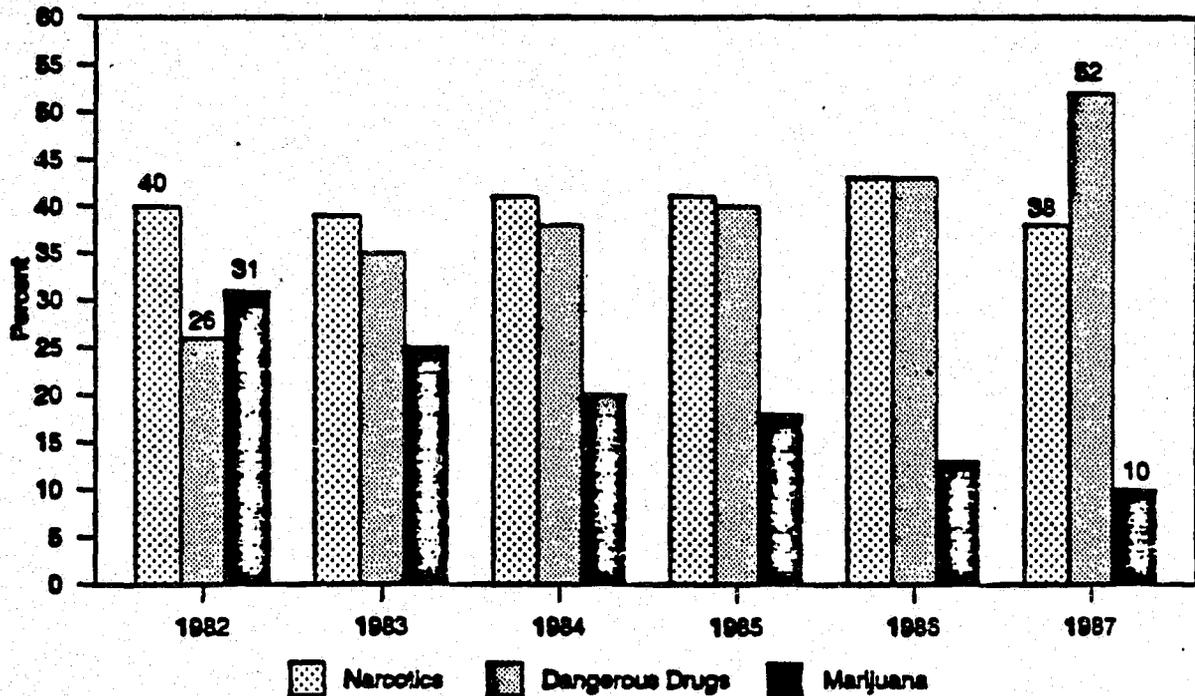
* Excludes "other" drug arrests

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Another way to examine the nature of drug arrests is the type of activity for which arrests are made, such as possession and sales of drugs. Possession can include the charge of being under the influence. For this reason, the category of possession represents more than half of all drug arrests, 63% in 1982 and 69% in 1987. Arrests for possession rose by 177% over the six-year period, with the greatest increase occurring between 1985 and 1986 (51%). According to observers, the sharp rise in possession arrests may be associated with increased law enforcement emphasis on low-level street users. From 1982 to 1987, arrests involving drug sales increased by 117%, from 1,536 to 3,328 (Figure 8).

When the arrests for possession and sales are examined by drug categories, some interesting findings emerge to further substantiate the increasing use of dangerous drugs. Arrests for possession involving narcotics accounted for half or more of possession arrests in the first three years studied, then dropped in the latter years to 39% in 1987. Possession of dangerous drugs constituted 58% of all possession arrests in 1987, an increase from 33% in the base year. With respect to arrests for marijuana possession, this group represented 3% of all possession arrests in 1987, down from 15% in 1982 (Table 1).

Arrests involving sales of drugs showed similar patterns with arrests by drug type. Sales of dangerous drugs represented 16% of all sales arrests in 1982 but 39% in 1987. Arrests for marijuana sales dropped from 61% of all sales arrests to 25%. Sales involving narcotics rose to 35% of all sales arrests in 1987, from 23% in 1982 (Table 1).

FIGURE 8
ARRESTS FOR DRUG POSSESSION AND SALES
San Diego County
1982-1987
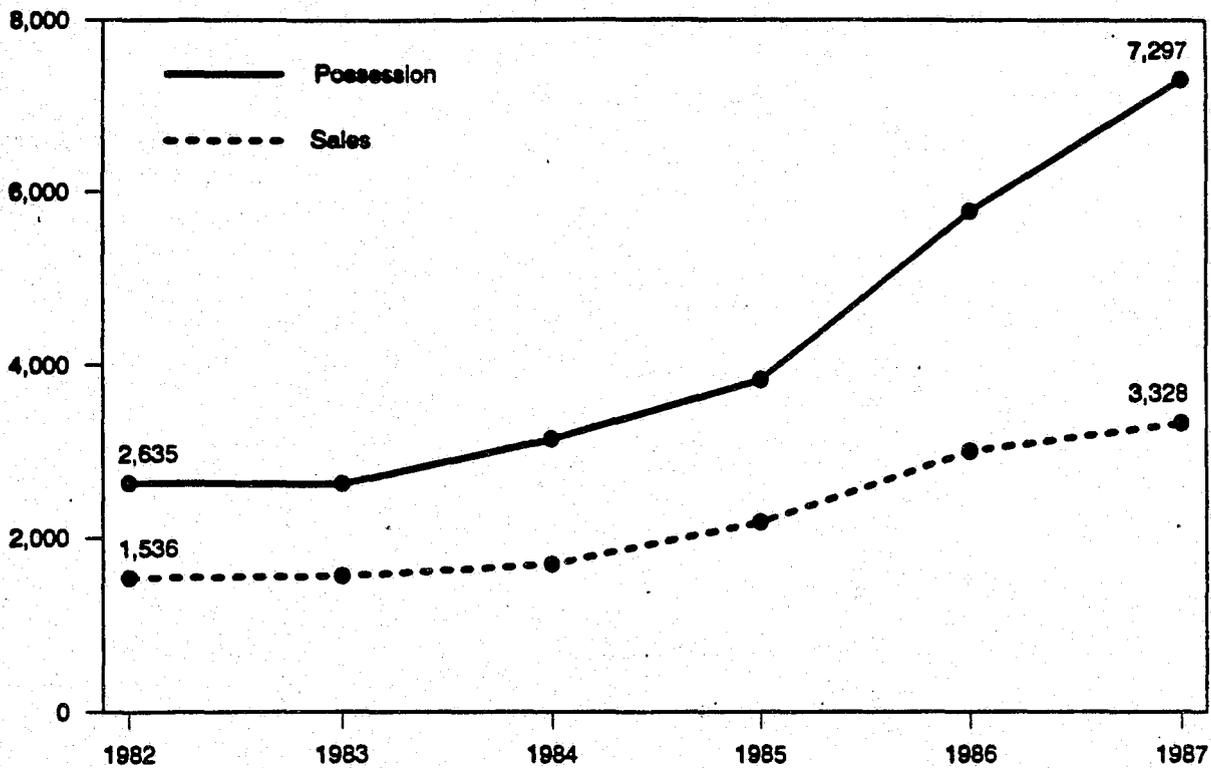
TABLE 1

DISTRIBUTION OF DRUG ARRESTS FOR POSSESSION AND SALES BY DRUG CATEGORY SAN DIEGO COUNTY - 1982-1987

Arrests for Possession	1982	1983	1984	1985	1986	1987
Narcotics	52%	52%	50%	49%	46%	39%
Dangerous Drugs	33%	40%	43%	46%	48%	58%
Marijuana	15%	8%	7%	6%	6%	3%
Total	2,635	2,634	3,149	3,829	5,776	7,297
Arrests for Drug Sales						
Narcotics	23%	19%	25%	30%	39%	35%
Dangerous Drugs	16%	27%	28%	30%	33%	39%
Marijuana	61%	54%	46%	40%	28%	25%
Total	1,536	1,563	1,697	2,181	3,001	3,328

Note: *Due to rounding, percentages may not equal 100%.*

From 1982 to 1987, these changes occurred with regard to <u>numbers</u> of persons arrested within drug categories (Table 2): Arrests for possession of narcotics rose by 108% while sales arrests jumped 230%. The number of persons arrested for dangerous drugs possession increased by 391% and sales involving dangerous drugs rose by 428%. As might be expected, arrests for marijuana possession dropped (-45%) and arrests for sales declined by 10% (Table 2). Examining the data in this manner suggests that, while arrests involving possession of narcotics and dangerous drugs represent the majority of arrests, arrests for sales of these drugs have increased at a sharper rate than arrests for possession.

TABLE 2

CHANGE IN NUMBER OF ARRESTS FOR
POSSESSION AND SALES BY DRUG CATEGORY
SAN DIEGO COUNTY - 1982 AND 1987

	<u>Possession</u>			<u>Sales</u>		
	<u>1982</u>	<u>1987</u>	Change	<u>1982</u>	<u>1987</u>	Change
Narcotics	1,368	2,839	108%	357	1,179	230%
Dangerous Drugs	862	4,234	391%	248	1,309	428%
Marijuana	405	224	-45%	931	840	-10%
Total	2,635	7,297	177%	1,536	3,328	116%

<u>Characteristics of the Arrest Population</u>. With respect to age, adults arrested for drug violations are similar to the total adult arrestee population. Individuals between the ages of 18 and 24 represent the highest proportion of drug arrests. Over six years, this group accounted for 38% to 49% of all arrests, yet has proportionately declined since 1983. Persons age 30 and over represented just over one-third of all arrests in 1987, a 3% increase from 1982 (Figure 9).

Over half of all drug arrestees are non-minority or white/Anglo (Figure 10). Consistent with general population trends, this arrestee group, proportionately, has declined slightly from 61% to 58% from 1982 to 1987. Black arrestees represented 25% of the drug arrests in 1982, dropping to 20% in 1987. Twelve percent (12%) of those arrested for drugs in 1982 were Hispanic. This group, proportionately, increased each year except 1986, reaching 20% in 1987. Interview results and other sources (Pennell, et al., 1988) suggest that undocumented aliens may have contributed to the increase in Hispanic arrestees.

All ethnic groups showed differences over time with respect to types of drugs for which arrests occurred (Table 3). In 1982, narcotics accounted for 41% of all drug arrests for which Whites were arrested. Six years later, 71% of the Whites were arrested for dangerous drugs. The reverse pattern held for Blacks in that 30% of Blacks in 1982 were arrested for narcotics. In 1987, that proportion rose to 70%, perhaps due to increased use of crack. Hispanics arrested for dangerous drugs represented less than a quarter of all Hispanic drug arrests in 1982, but this category increased to 33% in 1987. Over half of the Hispanic drug arrests (57%) in 1987 were in the narcotics category. These changes are not only a reflection of drug use patterns but indicative of drug market dynamics and law enforcement focus as well.

FIGURE 9
DRUG ARRESTS BY AGE GROUP
San Diego County
1982-1987

23
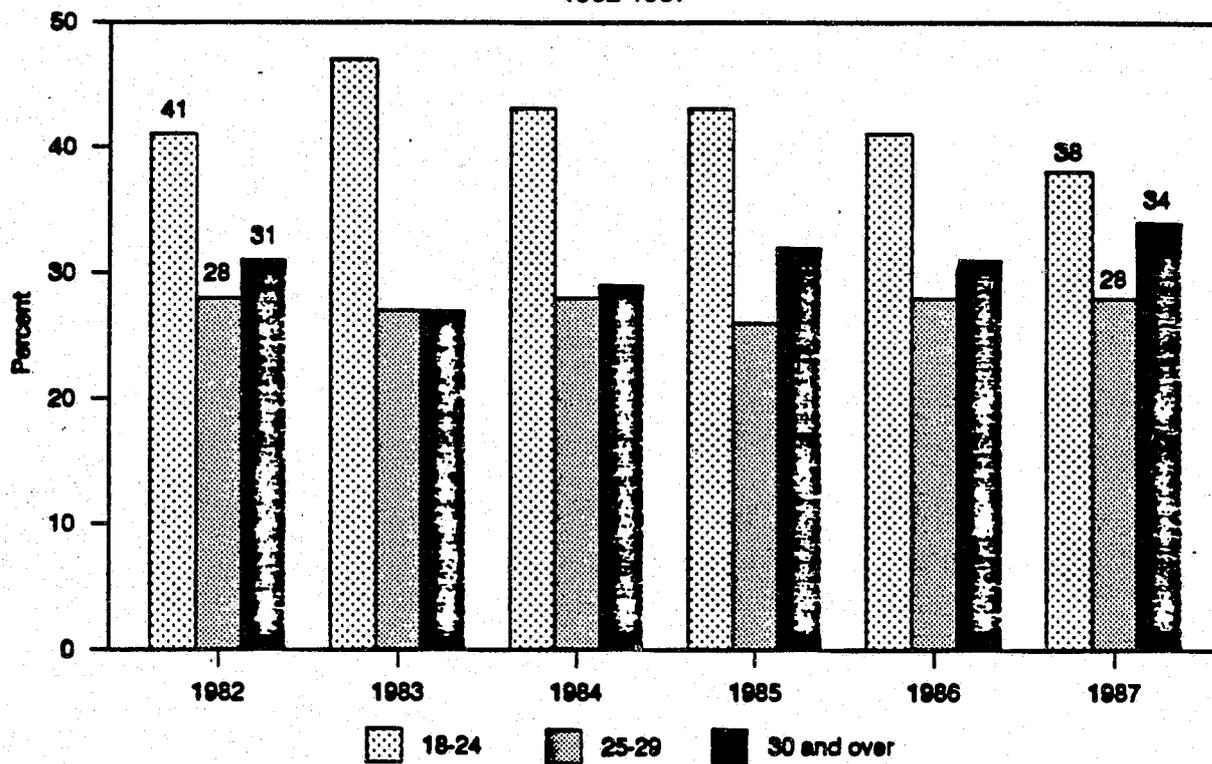
FIGURE 10
ETHNIC DISTRIBUTION OF DRUG ARRESTS
San Diego County
1982-1987
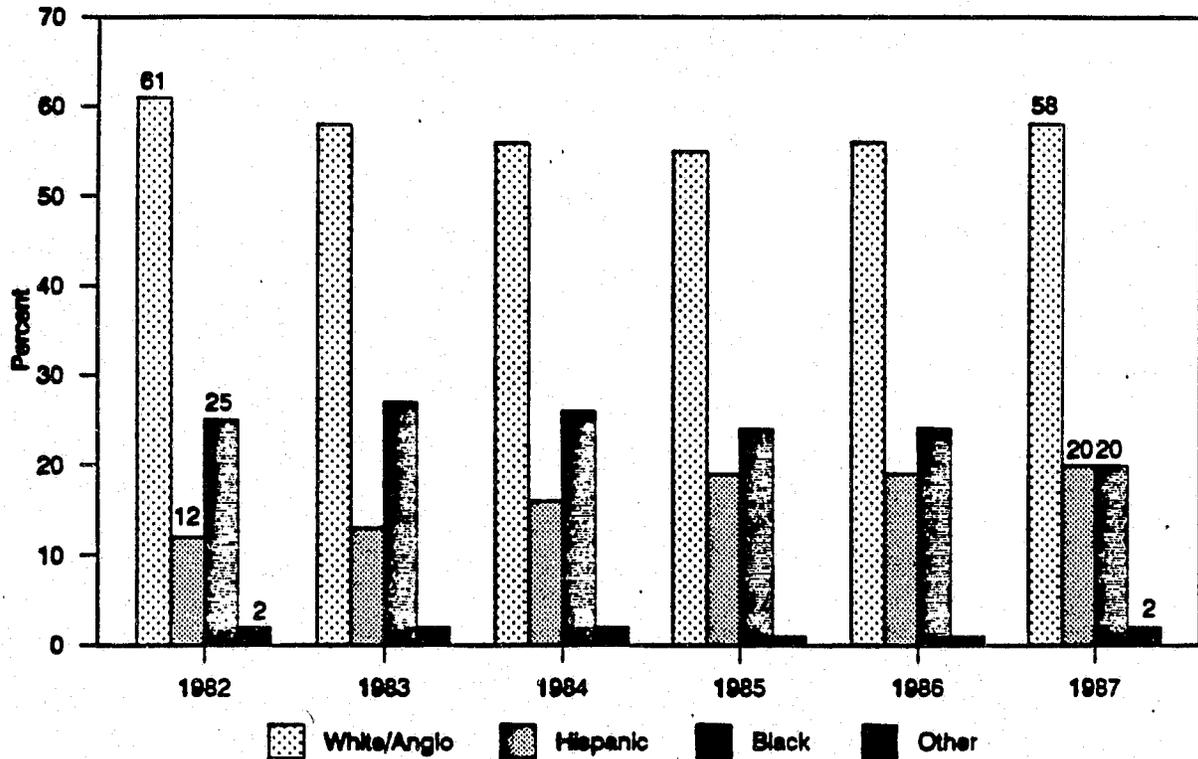
TABLE 3

DISTRIBUTION OF ADULT DRUG ARRESTS BY ETHNICITY*
AND DRUG CATEGORY
SAN DIEGO COUNTY - 1982 AND 1987

	White		Black		Hispanic	
	1982	1987	1982	1987	1982	1987
Narcotics	41%	20%	30%	70%	59%	57%
Dangerous Drugs	31%	71%	32%	15%	24%	33%
Marijuana	26%	9%	34%	13%	17%	10%
	2,613	6,185	1,059	2,174	530	2,148

Excludes other ethnic groups which account for a small proportion of the drug arrests.

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The vast majority of arrestees are male. The trend data support this statement with males accounting for over 80% or more of all felony arrests. Females, over the six-year period, represented from 13% to 15% of all felony arrests (not shown). However, with respect to drug arrests, their proportions are slightly higher. In 1987, 18% of adult felony drug arrests were females, up from 16% in 1982 (not shown). The data show that females, proportionately, are less likely than males to be arrested for marijuana. In 1987, nearly 60% of the females arrested had charges involving dangerous drugs (Table 4).

TABLE 4

ADULT DRUG ARRESTS AND GENDER
BY DRUG CATEGORY
SAN DIEGO COUNTY
1982 AND 1987

	1982		1987	
	Male	Female	Male	Female
Narcotics	39%	47%	38%	35%
Dangerous Drugs	25%	30%	50%	58%
Marijuana	33%	21%	11%	6%
Other	2%	3%	<1%	1%
Total	3,593	674	8,798	1908

In sum, the trends in drug arrests suggest the following:

• Arrests for drug violations have increased substantially and exceeded increases in other felony arrests, even when controlling for general population increases.

• Arrests for marijuana have declined, but arrests for narcotics, including cocaine and heroin, have increased. The most significant increase recurred in the dangerous drugs category, reflecting both demand and easy access to methamphetamines in San Diego.

• Arrests for possession of drugs account for more drug arrests than the category of drug sales. This may be a reflection of local law enforcement emphases.

- Most arrestees charged with drug violations tend to be male, white adults aged 18 to 24, although female and Hispanic proportions have increased since 1982. Both Blacks and Hispanics are overrepresented in the arrest statistics compared to their proportions in the general population.

- Arrest trends for specific drugs reflect changes in the drug market and law enforcement focus.

Disposition of Drug Arrest Charges

The Offender Based Transaction System (OBTS) developed by the California Bureau of Criminal Statistics (BCS) provides an overview of felony arrests processed by the justice system. The data represent arrests disposed of in a given year whether or not the arrests occurred in the same year.

In 1982, dispositions involving drug charges accounted for 21%, or one out of five, of all dispositions in San Diego County. By 1987, that percentage rose by 11%, to about one of three cases, or 32%, involving drug charges (Table 5). The number of total arrest cases disposed of over six years rose by 67% while drug dispositions increased by 149%, from 3,041 to 7,572 (Table 5). Nearly half of the drug dispositions in 1987 resulted in convictions (48%), up from 41% in 1982.

Consistent with arrest charges, dispositions involving dangerous drugs rose significantly over six years (372%), from 707 to 3,335. In the narcotics category, the number of dispositions in 1987 was 3,272, a 163% increase since 1982. Marijuana cases dropped by 21% over the same time period (Table 6).

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TABLE 5

DISPOSITIONS AND CONVICTIONS
TOTAL AND PROPORTION OF DRUG VIOLATIONS
SAN DIEGO COUNTY 1982-1987

	1982	1983	1984	1985	1986	1987	% Change/ Difference 1982-1987
Total Dispositions	14,355	14,552	15,696	17,343	20,635	23,926	67%
Percent Drug Dispositions	21%	23%	23%	25%	29%	32%	11%
Drug Dispositions	3,041	3,388	3,553	4,413	5,924	7,572	149%
% Convictions	41%	51%	45%	50%	48%	48%	7%

TABLE 6

GUILTY DISPOSITIONS BY
DRUG CATEGORY
SAN DIEGO COUNTY 1982-1987

	1982	1983	1984	1985	1986	1987	% Change/ Difference 1982-1987
Narcotics	1,244	1,311	1,570	1,941	2,671	3,272	163%
% Guilty	39%	46%	41%	46%	45%	47%	8%
Dangerous Drugs	707	993	1,100	1,630	2,263	3,335	372%
% Guilty	40%	54%	46%	53%	50%	49%	9%
Marijuana	1,099	1,013	817	791	918	865	-21%
% Guilty	43%	54%	49%	50%	54%	49%	6%

Diversions

California Penal Code Section 1000 provides for diversion to drug treatment in lieu of conviction for first-time drug violators. Over six years, drug diversions nearly doubled (98%) from 1,710 in 1982 to 3,380 in 1987. From 1985 to 1986, the increase was 48% (Table 7). Diversion cases reflect primarily misdemeanor arrests and cannot be compared to the felony arrests discussed in this report.

Official data are not available to determine if the number of diversions actually reflects first-time offenders, but interviews with justice personnel suggest that the use of diversion has been expanded to include other types of offenders. In 1987, legislation was introduced to tighten up the diversion law to restrict the option to only first-time offenders.

TABLE 7

ARRESTEES DIVERTED TO DRUG TREATMENT
SAN DIEGO COUNTY, 1982-1987

	1982	1983	1984	1985	1986	1987	% Change 1982-1987
Number of Drug Arrestees Diverted	1,710	2,218	1,993	1,913	2,839	3,380	98%

Sentences of Convicted Drug Violators

In 1982, fifty-four San Diego defendants convicted of drug laws were sentenced to a state institution (not shown). Six years later, in 1987, 328 offenders received this sentence (up 507%). The majority of drug defendants in all years were sentenced to local jail with probation, ranging from 72% (1985) to 76% (1987). The proportion of all those convicted sent to State prison has risen steadily each year, from 4% to 9% in 1987. Straight probation and other lesser penalties, such as fines, have declined, with 22% receiving this sentence in 1982 compared to 15% in 1987 (Figure 11). These changes are associated with legislative efforts reflecting stiffer penalties.

Over the study period, proportionately more drug convictions resulted in incarceration and sentences to State prison increased. Convictions in the latter years were proportionately more likely to be for dangerous drugs.

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In 1982, over three-quarters (78%) of convicted drug offenders were incarcerated, including local jail and State prison. Six years later, that figure rose to 85% (not shown). The proportion of incarcerated defendants convicted of dangerous drug violations nearly doubled over six years, from 22% to 43%. As might be expected, sentences of incarceration for marijuana dropped from 39% to 13% of all drug offenders incarcerated (Figure 13).

The majority of drug violators sentenced to prison were convicted of offenses involving narcotics (opiates and cocaine) (Figure 12). However, the proportion sent to prison for narcotics violations has dropped from 70% in 1982 to 55% in 1987. Conversely, 9% of those sentenced to prison in 1982 were violators of dangerous drugs. Each year, that proportion has grown, reaching 33% in 1987 so that nearly one-third of all drug offenders sentenced to prison were in the category of dangerous drugs.

While drug offenders are more likely to be arrested for possession rather than sales of drugs, the reverse is true with respect to offenders sentenced to incarceration. Eighty-six percent (86%) of those charged with sales were incarcerated in 1982, compared to 67% of those convicted for possession. Generally, more offenders in both categories were incarcerated each year, reaching 92% (sales) and 79% (possession) in 1987 (Figure 14).

With respect to State prison terms, those convicted of sales were twice as likely to go to prison than offenders convicted of possession (Figure 15). Prison sentences for sales proportionately increased considerably from 6% (of all convictions for sales) in 1982 to 14% in 1987. Prison sentences for possession varied little, ranging from 3% to 5%. The change in sentences for drug sales is likely associated with legislation increasing penalties for drug dealers.

FIGURE 11
SENTENCE OF CONVICTED DRUG VIOLATORS
San Diego County
1982-1987

Legend: Prison | Jail with Probation | Probation, Fine, Other
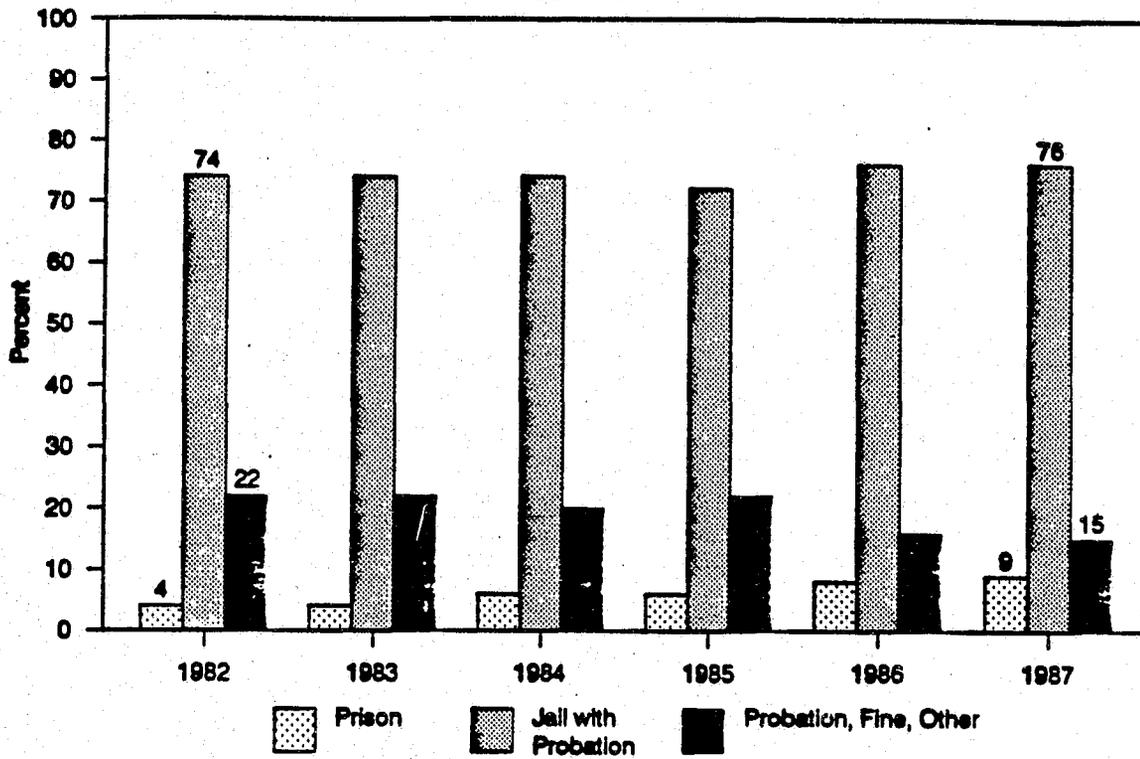
FIGURE 12
CONVICTED DRUG VIOLATORS SENTENCED TO PRISON
BY DRUG CATEGORY
San Diego County, 1982-1987

Legend: Narcotics | Dangerous Drugs | Marijuana

30
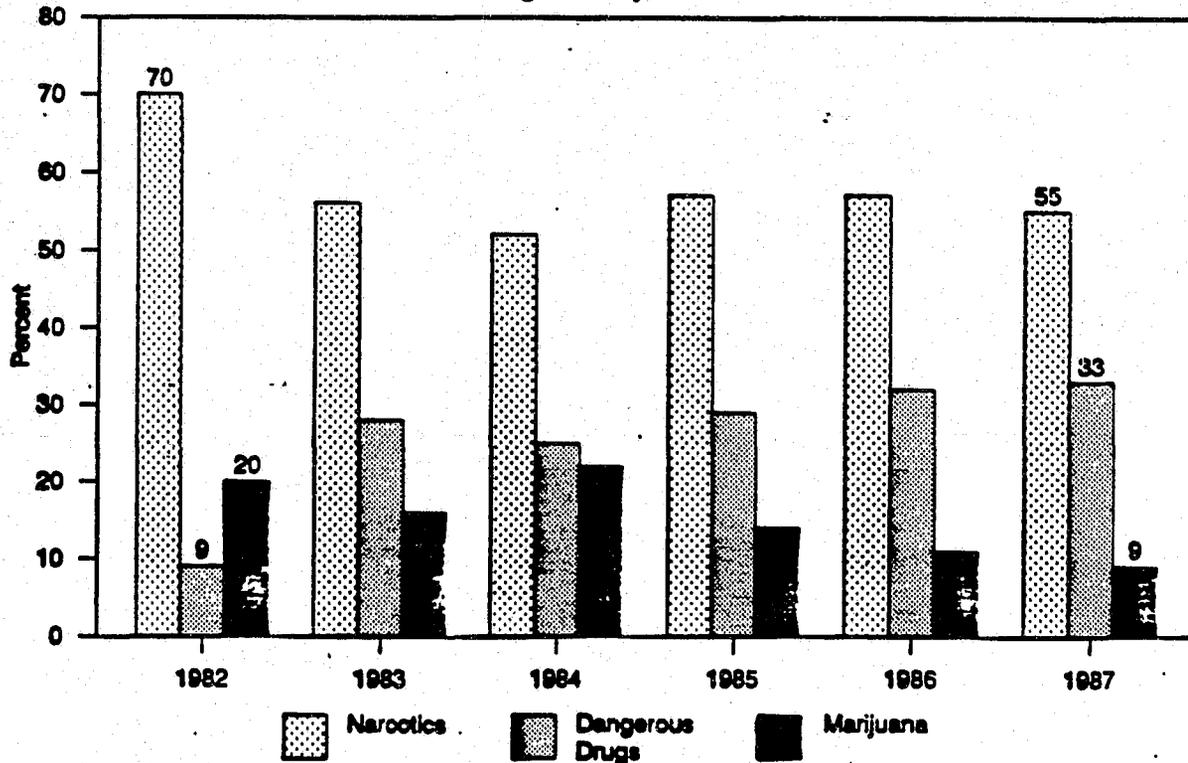
FIGURE 13
CONVICTED DRUG DEFENDANTS INCARCERATED *
BY DRUG CATEGORY
San Diego County, 1982-1987
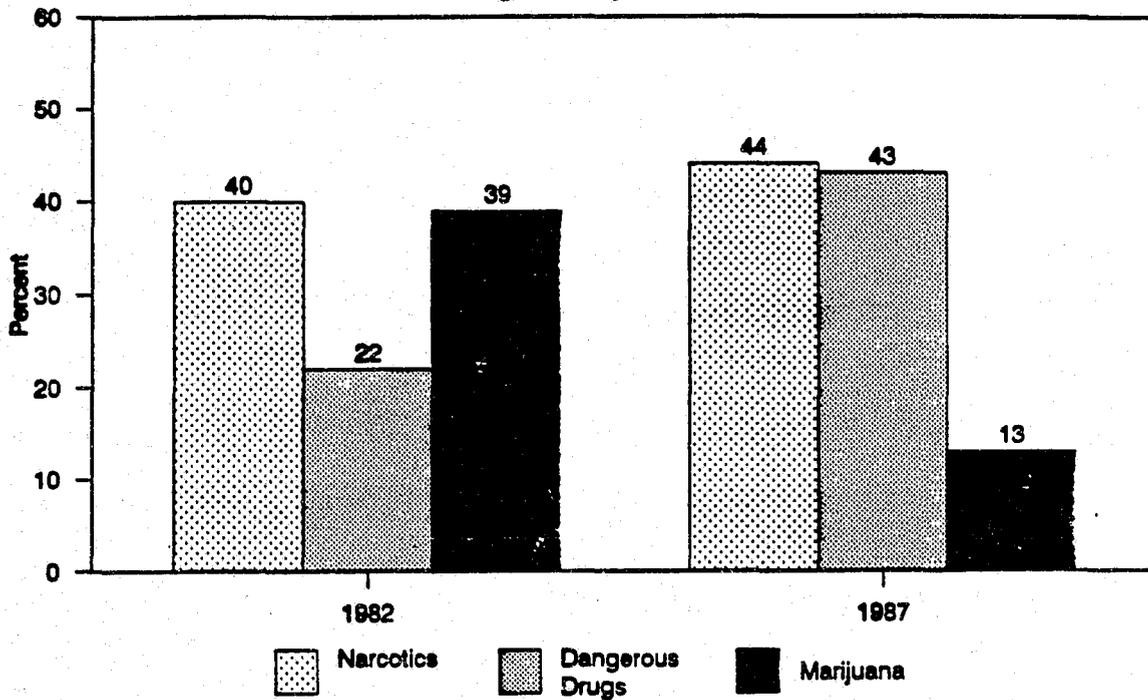
* Includes local jail and state prison

FIGURE 14
DEFENDANTS INCARCERATED
FOR DRUG POSSESSION AND SALES
San Diego County, 1982-1987

31
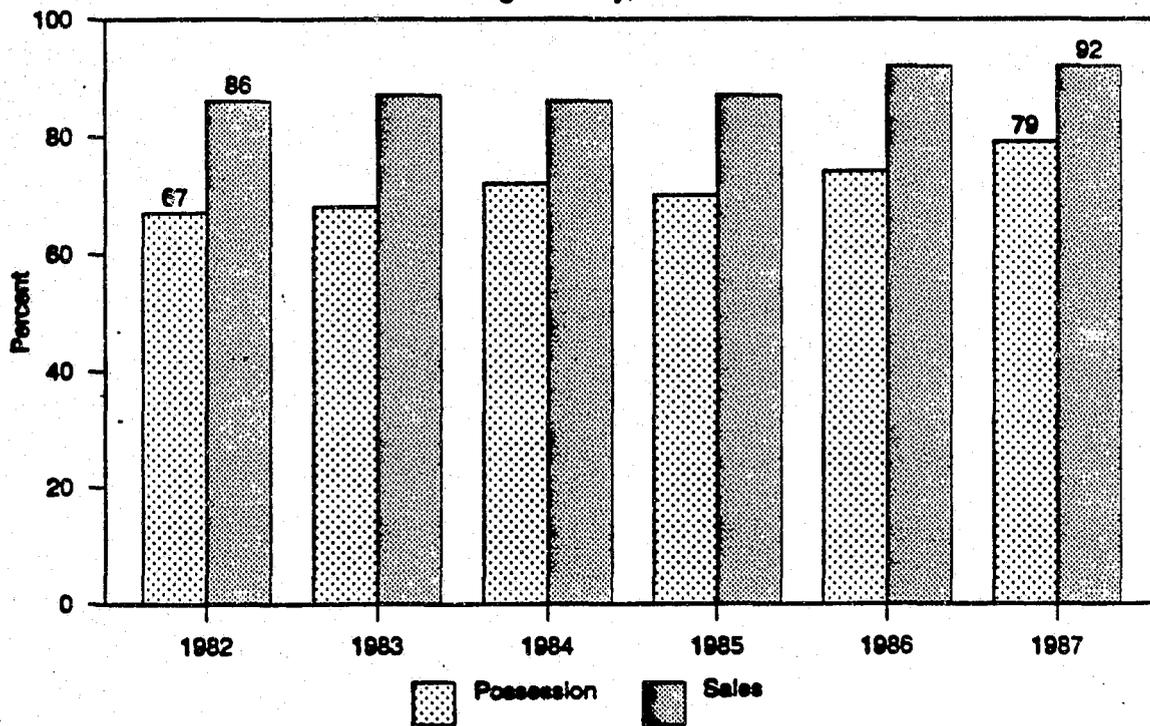
FIGURE 15
DEFENDANTS SENTENCED TO PRISON
FOR DRUG POSSESSION AND SALES
San Diego County, 1982-1987
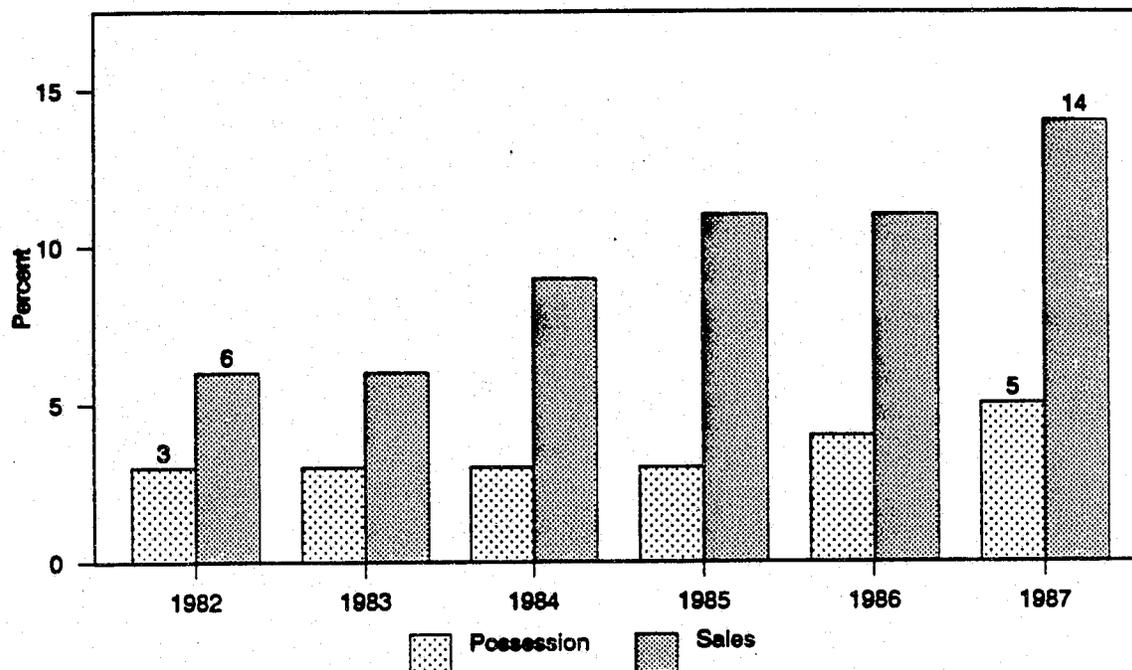
Summary

· The trend data suggest that over the six-year period, more drug offenders have been convicted and sentenced to harsher penalties. The proportion sentenced to prison, although generally less than 10%, has increased. The majority of defendants sent to prison were convicted for narcotics charges, although the proportion has dropped (from 70% in 1982 to 55% in 1987). In contrast, the proportion of prison terms involving dangerous drugs convictions has risen each year so that nearly one-third (33%) of all prison sentences in 1987 involved dangerous drugs, compared to 9% in 1982. Overall, with the exception of cases involving marijuana, more offenders in 1987 were incarcerated either in local jail or prison.

Those convicted for possession were less likely to serve time than defendants charged with sales, although incarceration for those in possession has increased. Those charged with possession were more likely to be sentenced to local time. In 1987, 92% of those convicted for sales were incarcerated, up from 86% in 1982. Comparative numbers for possession were 79% (1987) and 67% (1982).

DRUG SEIZURES

Amount Seized

Table 8 presents trend data on the amount of drugs seized by weight. The data were compiled from the Drug Enforcement Agency (DEA) STRIDE (System to Retrieve Information from Drug Evidence) computer tape. Seizures include those made by the Narcotics Task Force, a regional group of investigators that works in tandem with DEA, and DEA specific seizures. Drug seizures by local police agencies are not included in the database. The data presented are for San Diego County only, not the DEA region, which includes Imperial County.

The number and type of seizures reported are dependent on many factors, such as production, eradication efforts, dynamics of distribution networks, and extent and emphasis of enforcement activity. Like many indicators discussed thus far, the drug seizure data are limited. They do not account for drugs seized by local law enforcement agencies. However, the trends do parallel other indicators, showing steep rises in the availability of cocaine and amphetamines.

Seizures involving heroin have fluctuated widely, with 4,553 grams reported in 1987, peaking in 1984 with 19,384 grams seized. The second highest year for heroin seizures was in 1986 with 10,712 grams seized. Cocaine seizures have varied as well with 76,390 grams seized in the base year. In 1986, over a million grams were seized (1,564,724), dropping by more than half in 1987 to 619,907 grams seized. With the exception of one year, dangerous drugs (primarily amphetamines) seizures have increased considerably, with 3,402 grams reported in the base year. In 1987, there were 59,030 grams of dangerous drugs reported seized. Marijuana seizures, in terms of weight, have also varied widely, ranging from about 5 million grams to 45 million.

Tables 9 and 10 illustrate the effect of larger, single seizures. For example, heroin seizures in terms of grams increased from 1982 to 1983, but the actual number of seizures dropped (326 to 273) and the average number of grams per exhibit increased (18.1 to 29.2). With respect to cocaine, the number of seizures between 1982 and 1987 rose by only 2% (712 to 732), but the average amount increased over 700% (from 107.3 to 847.9). Over six years, the number of seizures for marijuana dropped from 1,046 to 570, but the average amount seized more than doubled.

TABLE 8

AMOUNT OF DRUG SEIZED*
SAN DIEGO COUNTY, 1982-1987

	1982	1983	1984	1985	1986	1987
Heroin/Opiates	5,891	7,967	19,384	9,349	10,712	4,553
Cocaine	76,390	84,657	30,293	108,522	1,564,724	619,907
Dangerous Drugs	3,402	7,997	5,960	18,358	48,475	59,030
Marijuana	7,435,247	25,399,346	13,274,143	45,068,086	4,801,191	8,278,180

* Based on grams

TABLE 9

NUMBER OF DEA SEIZURES, BY DRUG
SAN DIEGO COUNTY, 1982-1987

	1982	1983	1984	1985	1986	1987
Heroin	326	273	287	309	254	378
Cocaine	712	615	579	499	666	732
Dangerous Drugs	196	345	417	634	665	759
Marijuana	1,046	800	864	852	499	570

TABLE 10

AVERAGE AMOUNT (GRAMS) PER
DEA SEIZURE, BY DRUG
SAN DIEGO COUNTY, 1982-1987

	1982	1983	1984	1985	1986	1987
Heroin	18.1	29.2	67.5	30.3	42.2	12.0
Cocaine	107.3	137.7	52.3	217.5	2,349.4	847.9
Dangerous Drugs	17.4	23.2	14.3	29.0	72.9	77.8
Marijuana	7,108	31,749	15,364	52,897	9,622	14,523

Purity

When the supply of drugs is high, the street level purity is also likely to be high compared to times when drugs are scarce and dealers try to obtain profits by "cutting drugs" to increase the supply.

Purity figures are obtained from the number of "exhibits" for seizures for which tests for purity were undertaken. Given the fluctuation in number and volume of seizures, a range of purity was calculated rather than average purity over a year. Purity data for marijuana are not included because too few exhibits were available.

About half or more of the heroin seizures in four years were 20% or less pure (Table 11). In 1985 and 1986, purity was at its highest level. This increase may be associated with more use of black tar heroin, a more potent form of the drug. Street level purity, retroactively estimated by DEA agents, was 5-6%.

Cocaine seizures with a purity level above 60% represented the majority of seizures. In fact, in 1986 and 1987, more than 65% of the cases were in the purity range of 81-100% (Table 12). Estimates by DEA field personnel suggest that cocaine purity ranged anywhere from 30% to 95% pure from 1985 to 1987. Higher purity in the latter years may be due to the use of crack cocaine as well as overall availability of cocaine.

Purity of amphetamine seizures has fluctuated over six years (Table 13). Changes over time may be related to increased use of methamphetamine, laws prohibiting the sale of precursor chemicals, and different processing procedures. Estimates by DEA agents suggest that amphetamine purity ranged from 30-95% from 1985 to 1987.

TABLE 11

PURITY RANGE, HEROIN/OPIATES SEIZURES
SAN DIEGO COUNTY, 1982-1987

Purity - Heroin/Opiates

	1982	1983	1984	1985	1986	1987
20% or less	61%	60%	51%	34%	32%	49%
21 -40%	2%	15%	10%	8%	22%	20%
41 - 60%	16%	12%	21%	21%	25%	23%
61 - 80%	18%	10%	17%	34%	21%	8%
81 - 100%	2%	2%	<1%	3%	<1%	<1%
Total	246	217	216	246	199	338

TABLE 12

PURITY RANGE, COCAINE SEIZURES
SAN DIEGO COUNTY, 1982-1987

Purity - Cocaine

	1982	1983	1984	1985	1986	1987
20% or less	4%	2%	2%	2%	1%	5%
21 - 40%	10%	9%	7%	6%	2%	9%
41 - 60%	19%	17%	17%	15%	4%	10%
61 - 80%	29%	24%	27%	27%	21%	8%
81 - 100%	38%	48%	47%	50%	73%	68%
Total	479	463	436	382	560	638

TABLE 13

PURITY RANGE, AMPHETAMINE SEIZURES
SAN DIEGO COUNTY, 1982-1987

Purity - Amphetamine

	1982	1983	1984	1985	1986	1987
20% or less	5%	12%	11%	19%	9%	12%
21 - 40%	17%	20%	30%	20%	23%	12%
41 - 60%	15%	24%	23%	25%	21%	17%
61 - 80%	17%	22%	16%	14%	16%	19%
81 - 100%	46%	22%	19%	22%	31%	40%
Total	156	271	311	475	480	640

PRICE

The price of drugs varies by type of drug, area of the country, amount of drug, level of transaction (wholesale, retail, street), and available supply. Generally, the price will be lower when the supply is plentiful. If the drug is new, or a variant like crack or crystal methamphetamine, initially the cost may be high until the drug is widely available.

The STRIDE file of DEA includes both wholesale and retail sales so an average annual price is somewhat misleading. In this analysis, 30 grams or less were considered as street level value, based on interviews with narcotics officers.

Table 14 shows price and purity information compiled by the Western States Information Network for three years (1985-1987). With the exception of marijuana, all drugs showed declines in price from 1985 to 1987. This was true regardless of the weight so that wholesale and retail prices indicated similar decreases. For marijuana, the price per ounce and pound remained the same in all three years.

TABLE 14

WESTERN STATES INFORMATION NETWORK
PRICE AND PURITY OF DRUGS
1985-1987

	1985	1986	1987
Dangerous Drugs/ Methamphetamines			
Gram	$80-100	$80-100	$60-100
1/16 oz.	150-175	150-175	85-185
1/8 oz.	275-375	275-375	175-325
1 oz.	1,500-2,700	1,500-2,700	1,000-1,500
1 lb.	12,000-18,000	12,000-18,000	12,000-16,000

Purity 30-95%

Cocaine			
Gram	$100-120	$90-110	$80-100
1/16 oz.	210-280	200-250	100-200
1/8 oz.	450-500	450-500	200-400
1 oz.	2,100-2,600	1,500-2,700	1,200-1,800
1 lb.	32,000-36,000	18,000-20,000	16,000-18,000

Purity 30-95%

Heroin			
Gram	$110-135	$100-125	$90-110
1 oz.	2,500-3,000	2,000-2,500	1,800-2,300
1 lb.	33,000-38,000	20,000-25,000	18,000-23,000

Purity 5-6% street level (per DEA agent)

Marijuana			
1 oz.	$45-150	$45-150	$45-150
1 lb.	400-700	400-700	400-700

Purity - THC 10% (per DEA agent)

DRUG USE FORECASTING (DUF)

Introduction

The National Institute of Justice began drug testing in several cities in 1987 after studies revealed high drug use among offenders in New York City and Washington, D.C. The purposes of the drug testing through urinalysis are to detect drug epidemics earlier, and evaluate drug use trends in order to develop effective enforcement and treatment strategies to reduce drug use. The program is known as DUF or Drug Use Forecasting. Currently, there are 25 cities conducting drug testing under the DUF program (National Institute of Justice, 1990).

In San Diego, testing of adult male arrestees began in June 1987. A few months later, adult female arrestees and male juveniles became participants in the DUF program. Although the DUF data represent only the last year of the study period (1982-1987) and could not be included in the time series analysis, the trends are presented beyond 1987.

The DUF data represent the most direct indicator of recent drug use among a select segment of the population. Some databases, such as treatment admission data and national surveys, are dependent on the validity of information reported by the client. Studies cited by Eric Wish and others have suggested that persons will accurately report illicit drug use when they are reasonably certain that adverse consequences will not occur. However, the validity of self report information diminishes within the potentially threatening criminal justice system (Wish and Gropper, 1990). Therein lies the value of the DUF data. Although urinalysis cannot differentiate between the chronic abuser and the recreational user, it is a powerful barometer of trends in drug use. In recent years, the NIDA national surveys have shown a decline in drug use in the general population. However, since 1987, the DUF results have revealed significant drug use among arrestees and thus have become an important dimension for describing the drug abuse problem.

The work of Adele Harrell suggests that drug use among the offender population may be a forerunner of drug use in the larger community (Harrell, 1989). When a sufficient number of DUF testing quarters have occurred, its value as a forecasting tool can be further explored.

Each quarter, a sample of recently booked arrestees are asked to participate in a confidential interview about their drug use and to provide a voluntary urine sample. The DUF sample can be compared with total felony bookings during the testing periods. Based on age, ethnicity, and arrest charge, the DUF samples appear to be representative of the total felons arrested in San Diego.

<u>Trends in Drug Use</u>   (Figures 16-19)

<u>Adult Males</u>.   Since June of 1987, the proportion of adult males testing positive has generally increased through October of 1989. Over nine quarters, eight out of ten or more arrestees have been positive for drugs (Figure 16). While marijuana is the most prevalent drug found, adult males have shown significant increases in positive results for cocaine (26% positive in quarter 1 to 39% in quarter 10). In October 1988, over half (51%) were positive for cocaine, exceeding the proportion showing use of marijuana (38%). The percentage of arrestees testing positive for amphetamines has been over 30% for the past seven testing cycles. These amphetamine proportions far exceed all DUF sites in the country, according to NIJ comparative data.

<u>Adult Females</u>. In the first quarter (December 1987), 87% of the female arrestees tested positive for some drug (Figure 17). That proportion has fluctuated over subsequent cycles, but has not dropped below 70%. San Diego females, similar to arrestees in other DUF sites, generally have shown more serious drug use than their male counterparts. In each quarter, over 40% have tested positive for cocaine use. In February 1989, 45% were positive for amphetamines. Proportionate opiate use varied from 18% to 42% positive (Figure 19).

Analysis of 455 female DUF participants revealed the following:

- Nearly half (47%) were age 30 or older.

- The most frequent arrest charges were drug violations (36%), followed by property offenses (27%). A small percentage (7%) were booked on prostitution charges.

- The majority of arrestees (62%) had <u>not</u> completed high school.

- Over one-third (36%) expressed a need for drug treatment.

- About four out of ten of the women said they have injected illicit drugs. Heroin was the drug injected by most, followed by cocaine and amphetamines.

<u>Juveniles</u>. DUF testing of San Diego male juveniles revealed over half (57%) drug positive in the first testing cycle (Figure 18). Subsequent quarters, for the most part, showed declines in the proportions positive, dropping to 39% in December 1989. Juveniles are most likely to be positive for marijuana. Cocaine positives ranged from 2% to 14% over eight cycles, while variations for amphetamines were slightly higher (8% to 21%) (not shown).

<u>Summary</u>. The DUF data suggest that drug use is prevalent among the adult offender population and has increased from 1987 to 1989. Ideally, the DUF data should be examined in tandem with other indicators. For this study, only six months of information was available for DUF of the six-year period studied. The use of DUF data and its association to other indicators should be further explored as more DUF data become available.

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FIGURE 16
TRENDS IN DRUG USE, MALE ADULTS
San Diego County, 1987-1989
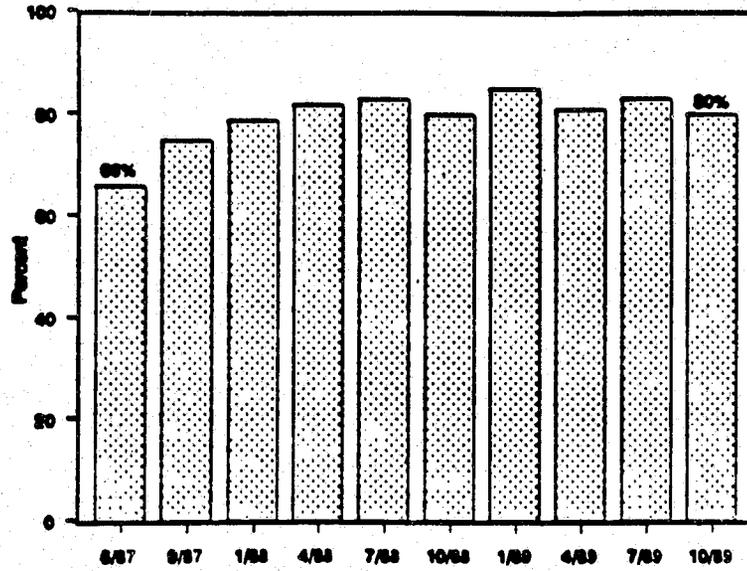
1. Participants each quarter range from 181 to 281.

FIGURE 17
TRENDS IN DRUG USE, FEMALE ADULTS
San Diego County, 1987-1989
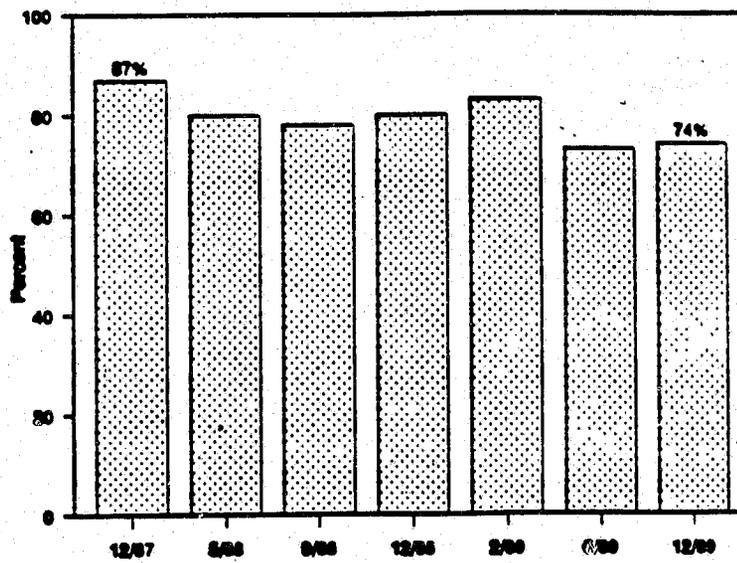
1. Participants each quarter range from 83 to 105.

40

FIGURE 18
TRENDS IN DRUG USE, MALE JUVENILES
San Diego County, 1988-1989
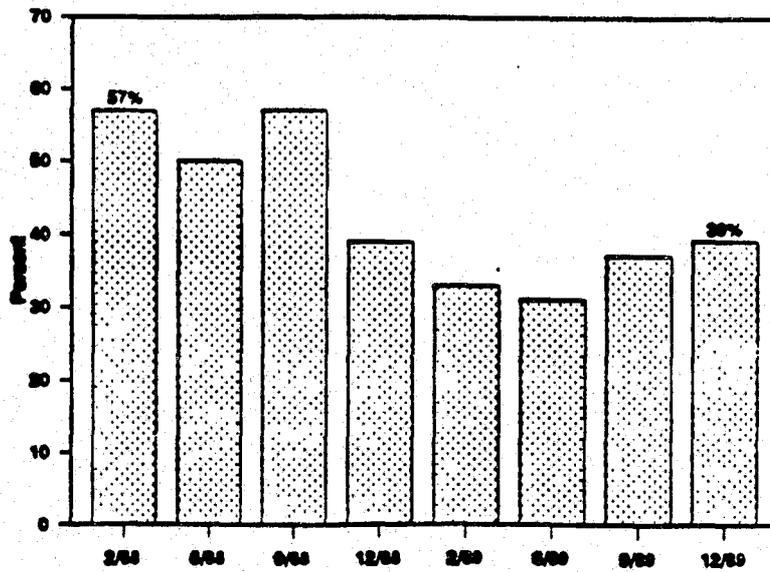
1. Participants each quarter range from 51 to 82.

FIGURE 19

TRENDS IN ADULT COCAINE USE, BY SEX
San Diego County, 1988-1989

TRENDS IN ADULT HEROIN USE, BY SEX
San Diego County, 1988-1989
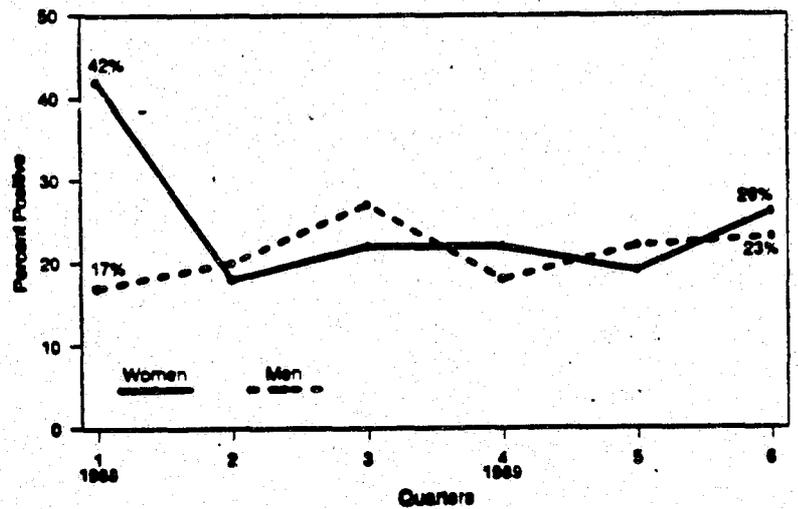
TRENDS IN ADULT AMPHETAMINE USE, BY SEX
San Diego County, 1988-1989
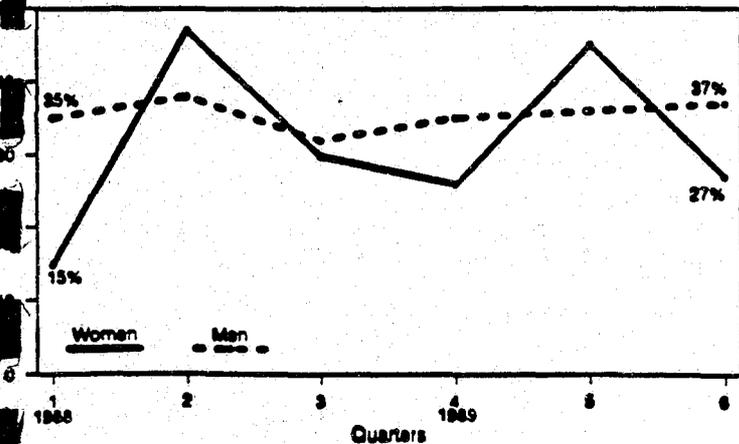
TRENDS IN ADULT MARIJUANA USE, BY SEX
San Diego County, 1988-1989

41
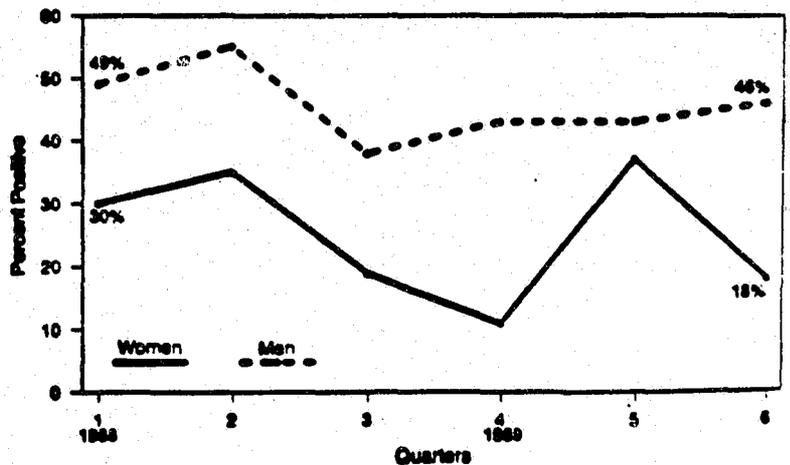
DRUG ABUSE WARNING NETWORK (DAWN)

The DAWN data include drug related deaths and hospital emergency room admissions involving drugs. The DAWN information is a count of drugs mentioned in each case. On the average, there are two or three drugs mentioned in each drug related episode in an emergency room admission. The following data exclude legal drugs, such as valium, and may differ from other reports of San Diego DAWN data.

Emergency Room (ER) Mentions

Excluding mentions for "other" drugs, heroin mentions dominate other drugs in all years except for 1987, when admissions involving amphetamines were the majority of drug mentions in emergency room admissions (Table 15). Although the treatment admission data discussed in the next section (CAL-DADS) show heroin treatment admissions increasing over six years, emergency room mentions for heroin dropped by 2% from 1982 to 1987. Heroin mentions reached 414 in 1986, then dropped to 233 in 1987. Cocaine mentions have risen by 192%, a greater increase than CAL-DADS admissions. Consistent with the CAL-DADS data, emergency room (ER) mentions for amphetamines showed the most significant increase over six years (464%). Mentions involving marijuana more than doubled over six years, although the number of mentions is small relative to other drug mentions (53 to 112).

Characteristics of Emergency Room Admissions

Nearly half of those seeking medical attention at a hospital emergency room were age 30 or over (Table 16), consistent with treatment admissions. The ER data remained at just less than half age 30 or more throughout the six years, whereas the proportion of CAL-DADS admissions age 30 or more rose to 62% in 1987.

About seven out of ten persons reporting to emergency rooms were White in all years studied (Table 16), slightly higher than those admitted to treatment. The proportion of Blacks admitted to emergency rooms has declined, ranging from 15% to 13% in 1987, but higher proportions than in CAL-DADS. Hispanics represented 16% of ER admissions in 1987, up from 11% in 1982. These proportions are far lower than CAL-DADS admissions in which Hispanics accounted for one-third or more of all admissions.

Females seeking emergency room treatment have dropped proportionately over six years, with corresponding increases in the proportion who were males.

TABLE 15

DRUG EMERGENCY ROOM MENTIONS[1]
SAN DIEGO COUNTY, 1982-1987

Mentions	1982	1983	1984	1985	1986	1987	Change 1982-1987
Heroin	238	154	199	326	414	233	-2%
Cocaine	93	83	134	152	258	272	192%
Amphetamines	99	92	142	191	331	558	464%
Marijuana	53	47	39	85	62	112	111%
Other[2]	818	546	544	513	432	388	-53%
Total[3]	1,196	851	952	1,113	1,333	1,366	14%

[1]Includes only controlled substances.
[2]Includes sedatives, hypnotics, PCP, and hallucinogens and other illicit drugs.
[3]Number of individuals.

Source: Drug Abuse Warning Network (DAWN)

TABLE 16

CHARACTERISTICS OF PERSONS ADMITTED
TO EMERGENCY ROOMS
SAN DIEGO COUNTY, 1982-1987

	1982	1983	1984	1985	1986	1987	Change 1982-1987
Age							
18-24	28%	27%	26%	27%	29%	29%	1%
25-29	26%	24%	26%	24%	24%	26%	0
30 and over	46%	49%	48%	49%	47%	44%	-2%
Ethnicity							
White	71%	72%	73%	68%	69%	70%	-1%
Black	15%	13%	9%	11%	14%	13%	-2%
Hispanic	11%	13%	16%	17%	15%	16%	5%
Other	2%	2%	1%	4%	2%	2%	0
Gender							
Male	47%	45%	45%	50%	52%	54%	7%
Female	53%	55%	55%	50%	48%	45%	-8%

Deaths With Drugs Reported

The number of deaths in which the medical examiner found evidence of drugs nearly doubled over six years (from 118 to 218). Drugs may not have been the cause of death in these cases. The data in Table 17 show the number of instances that specific drugs were noted. Mentions of heroin, cocaine, and amphetamines increased significantly over the time period. Only two instances involving marijuana were recorded in the six years.

TABLE 17

INSTANCES OF DRUGS FOUND IN DEATHS
MEDICAL EXAMINER
BY DRUG CATEGORY AND YEAR

	1982	1983	1984	1985	1986	1987	% Change 1982 and 1987
Heroin	44	53	82	89	112	115	161%
Cocaine	18	22	44	49	70	88	389%
Amphetamines	4	5	28	62	63	92	2200%
Marijuana	0	1	1	0	0	0	0%
Other	80	61	53	70	55	47	-41%
Total Episodes (Deaths)	118	111	155	171	222	218	85%

DRUG TREATMENT ADMISSIONS

Admissions to drug treatment programs in San Diego County numbered 6,611 in 1987. This figure includes individuals counted once in each month so that one individual may be included more than once on an annual basis. The arrest and ER data also include individuals more than one time. Over six years, admissions increased by 166%, from 2,482 in 1982 (Figure 20). The peak year was in 1985 with 6,818 admissions recorded, declining slightly in the following two years.

Admissions per 1000 rose by 125%, from 2.0 in 1982 to 4.5 in 1987 (Figure 21). Rates represent the adult population in the age group of 18 to 64.

FIGURE 20
DRUG TREATMENT ADMISSIONS
San Diego County
1982-1987
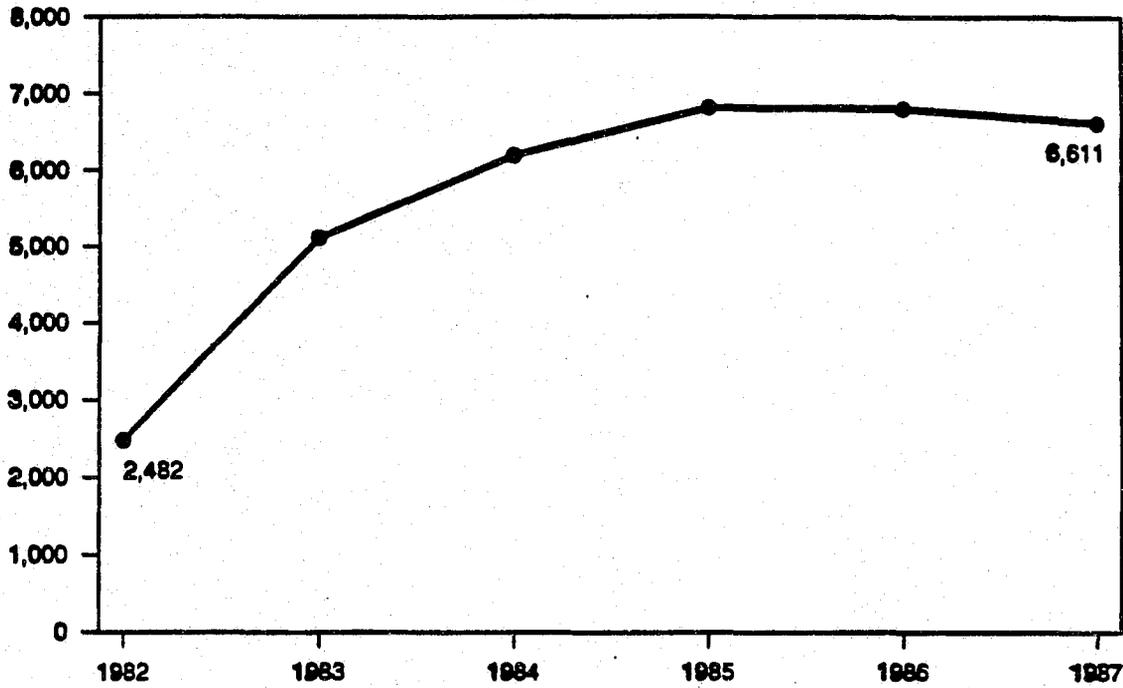
FIGURE 21
DRUG TREATMENT ADMISSIONS PER 1,000 POPULATION*
San Diego County
1982-1987

* Ages 18-64

45
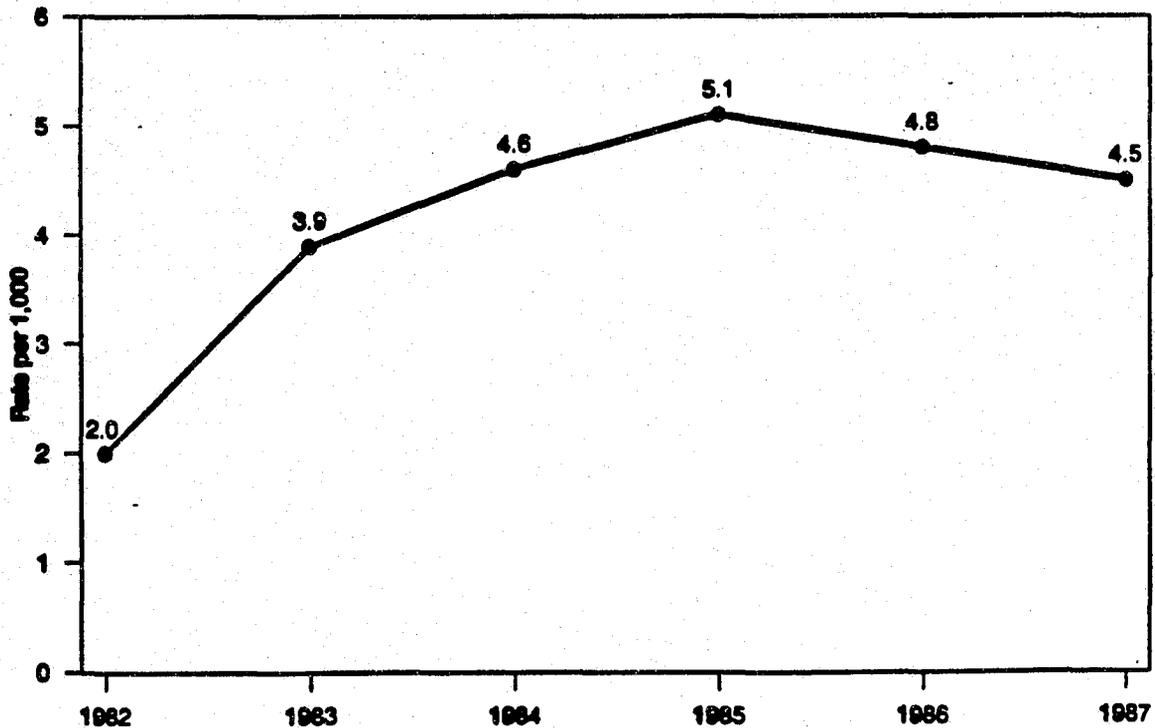
Primary Drug Problem at Admission

Drug program clients are asked at intake to identify the primary drug for which they are seeking treatment. In each of the years studied, over 80% of all clients cited heroin as the primary drug. In three years (1983-1985), the proportion was 90% or more (Figure 22). This high proportion of heroin admissions may be associated with types of treatment available and programs that have been historically equipped to treat clients with heroin addiction. More importantly, the CAL-DADs data file includes private methadone clinic clients. Heroin admissions rose by 158% over six years, peaking in 1985 and decreasing in the subsequent two years (Figure 23).

Although the proportion of cocaine admissions is 5% or less in all six years, the number of admissions for cocaine increased by 148%, from 121 in 1982 to 300 in 1987. Admissions dropped to 161 in 1985 (Figure 23).

Amphetamine admissions accounted for 4% of all admissions in the base year, rising to 12% in 1987. The number of admissions involving amphetamines rose to 759, an increase of 743% from 90 in 1982 (Figure 23).

Individuals identifying marijuana at admission have varied only slightly, numbering 113 in 1982, dropping to 103 in 1987. The lowest number of marijuana admissions occurred in 1985, with 79 reporting marijuana as a primary problem (Figure 23).

Secondary Drug Problem at Admission

The increase in the use of cocaine and amphetamines is apparent in admissions reflecting a second drug as a problem (Table 18). The proportion of admissions citing cocaine rose to 39%, from 19% in 1982, while heroin reported secondarily dropped by 23% (from 36 to 13 percentage points). The use of amphetamines as a secondary drug rose in a similar manner to admissions reflecting amphetamines as primary (5% to 9% of all secondary drugs).

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FIGURE 22
DISTRIBUTION OF TREATMENT ADMISSIONS
BY DRUG TYPE
San Diego County
1982-1987

47
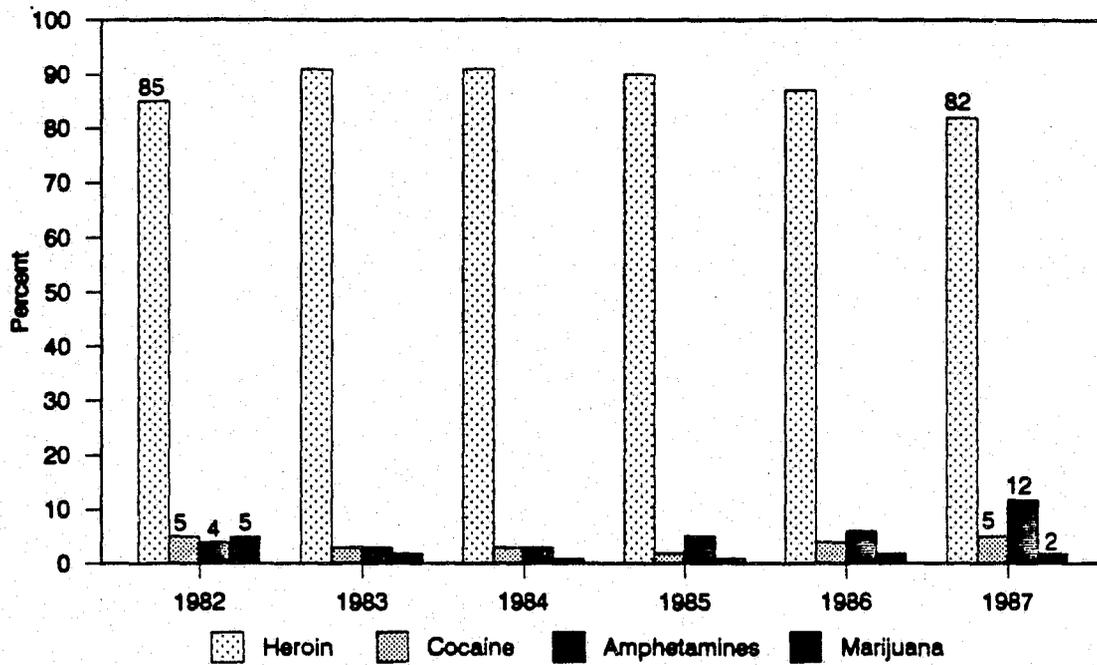
FIGURE 23
ADMISSIONS TO DRUG TREATMENT BY PRIMARY DRUG
San Diego County
1982-1987

HEROIN

COCAINE

AMPHETAMINES

MARIJUANA

48
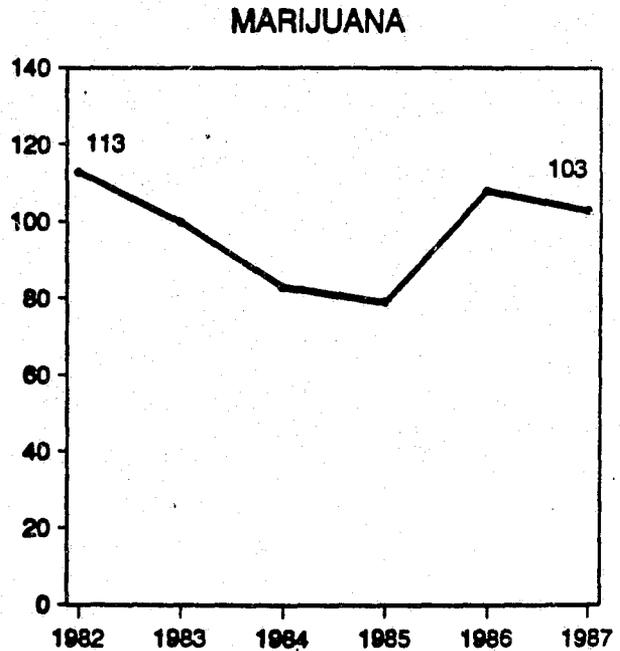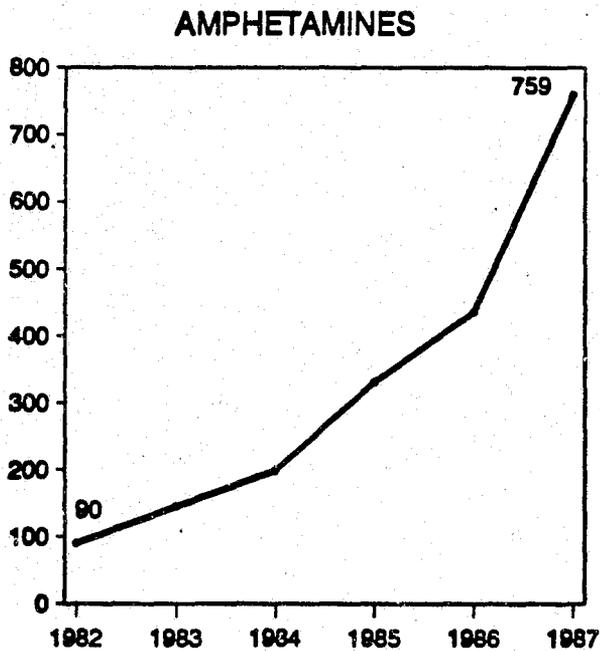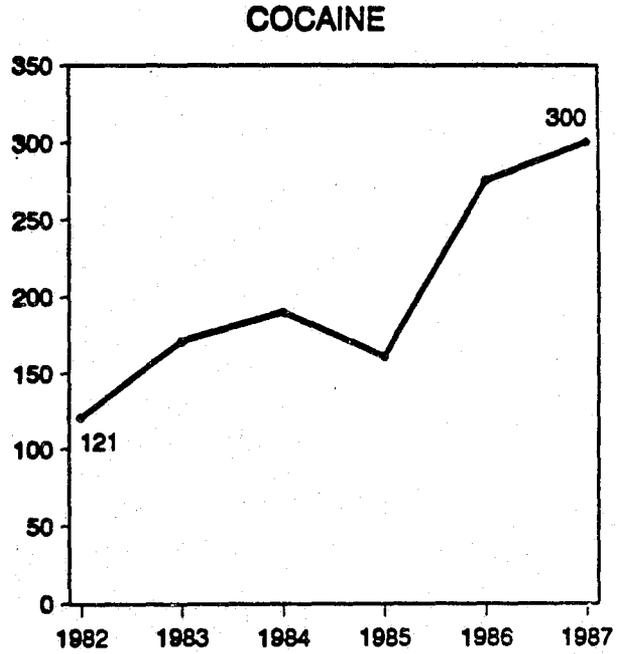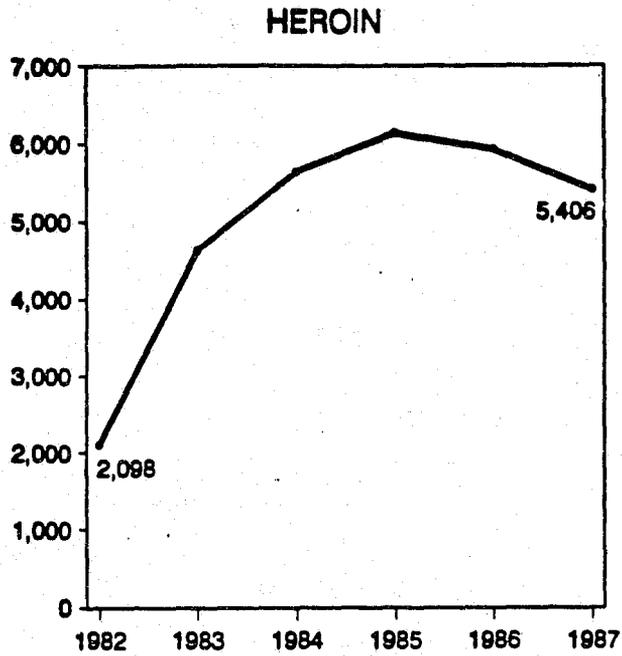
TABLE 18

SECONDARY DRUG REPORTED AT TREATMENT ADMISSION
SAN DIEGO COUNTY, 1982-1987

	1982	1983	1984	1985	1986	1987	Percentage Point Change 1982-1987
Heroin	36%	31%	23%	20%	17%	13%	-23%
Cocaine	19%	23%	29%	33%	37%	39%	20%
Amphetamines	5%	8%	9%	7%	7%	9%	4%
Marijuana	24%	24%	28%	28%	31%	32%	8%
Other	16%	14%	11%	12%	8%	7%	9%
Total	699	917	859	1,126	1,331	1,321	

Characteristics of Individuals Seeking Treatment

Age. Given that heroin addicts are generally older than other drug users, it is not surprising that the majority of those seeking treatment were age 30 or over. The proportion in this age group increased from 41% of all admissions in 1982 to 62% in 1987. Nearly a quarter of admissions in 1987 were ages 24 to 29, a drop from 1982 when 37% were in this age group (Figure 24).

Ethnicity. Nearly half or more of the treatment admissions in all six years were White, although from 1982 to 1987, their proportion dropped from 57% to 51%. Blacks represented 10% or less in each year, with 9% in 1987. In 1982, just over a third (34%) of the treatment admissions were Hispanic. Proportionately, this group rose in the subsequent two years, then dropped slightly, accounting for 38% in 1987 (Figure 25).

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FIGURE 24
DRUG TREATMENT ADMISSIONS
DISTRIBUTION BY AGE
San Diego County, 1982-1987
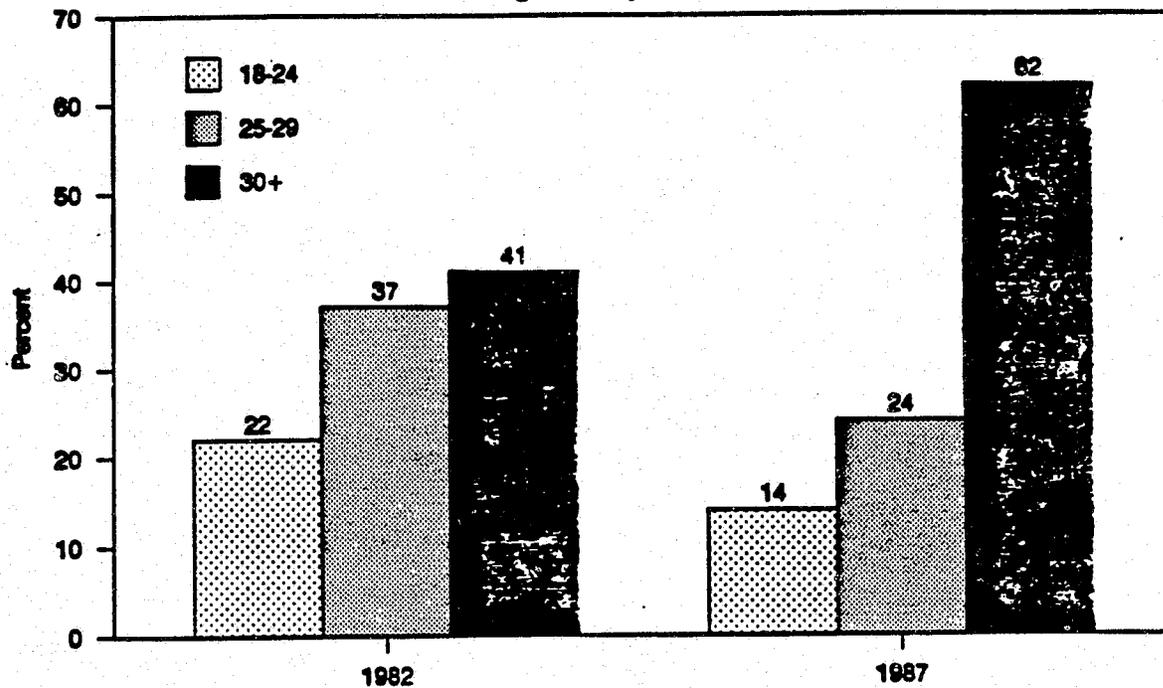
FIGURE 25
DRUG TREATMENT ADMISSIONS
DISTRIBUTION BY ETHNICITY *
San Diego County, 1982-1987
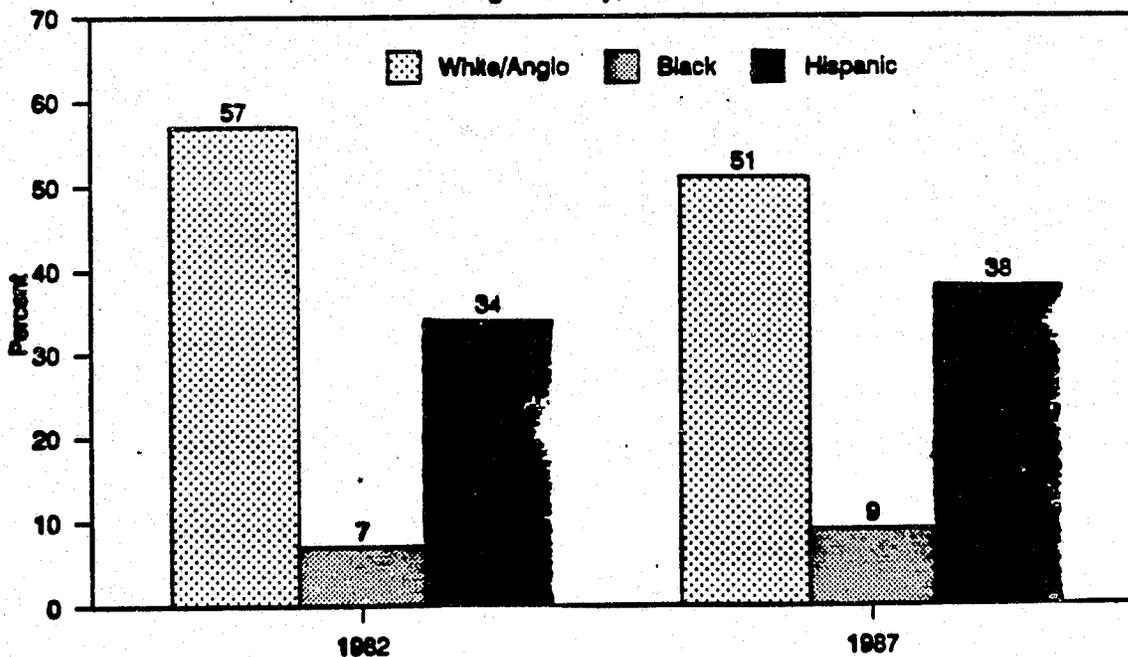
* 'Other' minorities not included

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Gender. The majority of treatment admissions were males, 60% or more in all years. When the data are examined with respect to types of drugs considered primary at admission, analysis shows that, over time, women surpassed the men with seriousness of drug use. For example, in 1982, 68% of the cocaine admissions were men and 32% were women. In 1987, men represented 51% of the cocaine admissions and women accounted for 49% (not shown). In both 1982 and 1987, the majority of admissions for amphetamines were women, 58% and 52%, respectively. Heroin admissions stayed the same in both time periods: 62% (men) and 38% (women). With respect to marijuana admissions, the majority were males in 1982 (66%), but their proportion dropped in 1987 to 63%.

COMPARISON OF DRUG USING POPULATIONS

One of the objectives of this research is to explore the differences and similarities between indicators of drug abuse in the justice data and indicators in the health system. Thus far, the analysis has shown increases in drug use in both data sets. Of interest as well is the population at risk in both systems. Since the health system indicators indicate a high proportion of heroin users, the characteristics of the population in the CAL-DADS system were examined excluding admissions for heroin. In addition, these two groups were compared to the DUF data for 1987, the year when the DUF program was initiated in San Diego. Table 19 presents the comparison.

When heroin admissions are excluded from the CAL-DADS data, the following findings emerge:

- Nearly three-fourths (73%) of the treatment admissions are White, 15% are Black, and 9% are Hispanic. In all admissions (with heroin included), 38% are Hispanic, 9% are Black, and Whites account for 51%. In the DUF data set, Blacks and Hispanics each represent 29% and Whites account for 41%. The ER data show primarily Whites (70%), ages 30 and over (44%) who are male (54%).

With respect to age, about 6 out of 10 of all CAL-DADS admissions are age 30 or more. Excluding heroin, this age group accounts for 31% of treatment admissions. The majority of admissions (excluding heroin (37%)) are in the 18-24 age group, which is similar to the DUF sample (39%), although 38% of the DUF participants are age 30 or more.

The influence of heroin admissions is apparent by gender as well, with 60% of all admissions being male. Without heroin, the sexes are evenly split in the CAL-DADS data. The DUF sample does not provide a valid representation since it includes only one quarter of women.

With respect to education, the three groups were more similar, with 30% to 39% reporting less than a high school education. Just over half of the DUF sample reported being employed, compared to about one-third of both groups of treatment admissions.

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The impact of the methadone clients on the data set is apparent with respect to frequency of drug use. Over 8 out of 10 admissions, including heroin, indicated using drugs more than once a day. When heroin is excluded from the admission data, 31% reported frequent daily use. Interview questions in the DUF interview are not comparable.

These differences in the CAL-DADS data set should be addressed when describing the nature and scope of the drug problem and when developing treatment programs. While heroin admissions dominate the data set, the remaining treatment population is very different and thus may have different treatment needs. It is important to point out that at the San Diego County level, the drug abuse services division staff exclude methadone clinics when extracting local data from the State CAL-DADS file. The authors were advised that the local file prior to 1985 was not considered valid due to editing and updating efforts. For this reason, the State data file was used.

TABLE 19

CHARACTERISTICS OF HEALTHCARE POPULATION
AND DRUG ABUSING OFFENDER POPULATION
SAN DIEGO COUNTY, 1987

	All Treatment Admissions	Treatment Admissions Excluding Heroin	Drug Use Forecasting (DUF) Sample	E.R. Admissions
	n = 6611	n = 1206	n = 417	n = 1366
Ethnicity				
White	51%	73%	41%	70%
Black	9%	15%	29%	13%
Hispanic	38%	9%	29%	16%
Other	2%	3%	1%	2%
Age				
18-24	14%	37%	39%	29%
25-29	24%	32%	23%	26%
30 and over	62%	31%	38%	44%
Sex				
Male	60%	50%	N/A*	54%
Female	40%	50%	N/A	45%
Education				
Less than High School	37%	30%	39%	N/A
High School Graduate	63%	70%	61%	N/A
Employed	33%	33%	51%	N/A
Not Employed	67%	67%	49%	N/A
Frequency of Drug Use				
No. Use, Prior Month	4%	15%	N/A	N/A
Once Per Week, or Less	4%	16%	N/A	N/A
Once Daily, Several Times Per Week	9%	37%	N/A	N/A
More Than Once Daily	83%	31%	N/A	N/A

DUF sample includes only one testing quarter for women.

SUMMARY

The overall crime rate from 1982 to 1987 rose by 15% in San Diego County and the population increased by the same percentage. Increases in violent offenses per 1,000 were nearly triple the rate of property crimes.

In the same time period, arrests for drug violations rose by 151%, representing one-third of all felony arrests in 1987. Drug arrests per 1,000 population increased by 115%.

With respect to drug type, arrests for marijuana declined over six years. Both the narcotics category (heroin and cocaine) and the dangerous drugs category showed significant increases over six years (133% and 400%, respectively). In 1987, arrests for dangerous drugs accounted for over half of all drug violations.

When arrests are examined by possession and sales activity, the trends parallel overall arrests with respect to drug type. Arrests for possession constitute over half of all drug arrests in each year. In the early years, most of the arrests for possession involved narcotics. However, by 1987, 58% of the possession arrests were for dangerous drugs.

Disposition of drug arrests followed similar patterns to arrests. By 1987, about one out of three felony cases involved drugs. Cases involving marijuana declined over six years, while dispositions including narcotics and dangerous drugs increased considerably. Legislation mandating more severe sentences for drug violators resulted in higher proportions of convictions and sentences of incarceration each year of the study period.

Drug seizures by DEA parallel the previous indicators with respect to steep increases in cocaine and amphetamines (dangerous drugs). Over time, the average number of grams seized (all drug types) increased considerably, suggesting not only greater availability but higher levels of drug trafficking.

Purity ranges have varied by drug type. In later years, both cocaine and heroin showed higher purity ranges, perhaps due to the introduction of crack and black tar heroin.

The Drug Use Forecasting (DUF) data represent a more direct indicator of drug use in the offender population. DUF urinalysis results represent only six months of the total study period so the data could not be incorporated into the trend analysis or the statistical model. However, the trend data from 1987 to 1989 show significant recent drug use for adult arrestees (75% to 87% positive). The use and value of the DUF data are discussed in the next chapter.

With respect to emergency room mentions, heroin dominated in most years until 1987 when amphetamines accounted for over 40% of all individuals seeking assistance. Cocaine mentions increased by 192%. The number of deaths in which drug use was apparent nearly doubled over the six years with amphetamines and cocaine use indicating the most significant increases.

With slight drops in the latter two years, drug treatment admissions rose by 166% from 1982 to 1987. The treatment data suggest that 80% or more of all clients cited heroin as their primary drug problem. Cocaine admissions increased by 148%, but represent 5% or less of all admissions in each year. Amphetamine use admitted at time of treatment rose by over 700%. Significant increases in cocaine and amphetamine admissions were apparent as secondary drug problems.

Characteristics of drug using populations differ with respect to gender, age, and ethnicity. When all treatment admissions are examined, over one-third are Hispanic, most are over age 30, and six out of ten are male. When heroin admissions are excluded, nearly three-quarters of the clients are White and only 9% are Hispanic. Less than one-third are over age 30, and males and females are equally split. The DUF data, representing arrestees, show 29% Black compared to 9% in the treatment population. Proportionately fewer Whites show up in the DUF data than in treatment admissions. Nearly 40% of the DUF arrestees are over age 30 compared to 62% in the total treatment population. Of interest is that 70% of the admissions to emergency rooms are White.

Differences between characteristics of the treatment population and ER admissions are not surprising given the nature of the data sets. Persons entering treatment may do so voluntarily and as a result of motivating factors that differ from persons seeking medical treatment in a crisis situation. Emergency room admissions are influenced by drug purity and dosage levels. Nevertheless, the trends in types of drugs used are similar between ER admissions and treatment admissions.

These differences suggest caution when comparing drug using populations. While it is valuable to look at each indicator over time, combining the data sets may mask differences among sub-populations. Variations are associated with types of drug use, which is not known through most of the indicators. The recreational or experimental drug users reflect patterns of use quite different from addicted users. And the frequency and intensity of drug use varies by type of drug as well as user.

When all indicators are examined by drug type, year to year, changes appear erratic. With heroin, seizures increased in three years and dropped in two years. Price and purity varied in the same direction but differed from year to year. For example, both price and purity declined from 1982 to 1983, rose in the two subsequent years, and dropped again. In the final year, price remained stable and purity dropped. Treatment admissions for heroin increased for three years, then dropped in the latter years. Emergency room mentions dropped in the beginning and latter years, but increased in the middle years. Arrests, which also include cocaine, showed increases in all years except one.

The cocaine indicators show somewhat different patterns. Seizures declined in two time periods but rose in the others. In three years, price and purity showed an inverse relationship but in the first and last time periods, price and purity both increased and decreased, respectively. Treatment admissions increased in each time period except from 1982 to 1983. Emergency room mentions involving cocaine rose each year after a decline in the first time period.

The trend data describing amphetamines show the most consistent and expected pattern among the indicators. As seizures increased, demonstrating availability, price dropped and purity increased. Arrests and treatment admissions increased in each time period. With a decline in the first time period, emergency room admissions rose each year.

As mentioned earlier, the indicators reflect variations of drug use, and changes in drug market dynamics that are impacted by many factors, of which few are discernible, much less measurable.

Generally, annual figures for each indicator showed increases. Yet the periods of decline for some indicators did not appear to vary in expected directions or correspond to changes in other indicators. The implications of the lack of correspondence among the indicators becomes more important in the statistical model development in Chapter 5.

The next section (Chapter 3) presents survey results of professionals in the justice and health fields and elected officials. Surveys addressed their perceptions of the drug issue, sources of information, and opinions regarding drug testing.

CHAPTER 3
OBSERVATIONS OF EXPERTS

CHAPTER 3
OBSERVATIONS OF EXPERTS

INTRODUCTION

This chapter supplements the trend analysis previously presented with qualitative descriptions of changes in the drug picture.

First, results of interviews with justice and health practitioners characterize drug users by types of drugs. Next, data are presented from a survey of drug task force members and elected officials. The chapter concludes with opinions about the Drug Use Forecasting (DUF) program.

CHARACTERISTICS OF USERS AND USE

This section begins with an overview of changes in types of drug use, users, production, and distribution as described by justice and health administrators. The data presented in the matrix on page 61 parallel the official trend data presented earlier. The results are based on personal interviews with 23 individuals representing municipal law enforcement, ·DEA, the Regional Narcotics Task Force, and treatment practitioners.

Heroin - Consistent with the NNICC Report (National Narcotics Intelligence Consumers Committee, 1988), local representatives indicated that increased production of heroin in Southeast Asia as well as black tar heroin in Mexico has resulted in increased availability and use. Observers pointed out, however, that heroin use has not increased as rapidly as other drugs. The prevalence of black tar may be associated with a decline in treatment admissions and emergency room mentions, according to the NNICC report. Although availability has not changed, dealers may be selling black tar in smaller quantities and users may be ingesting smaller amounts based on knowledge of its high purity. Local respondents characterize the heroin users as older than other drug users and more likely to have long arrest histories based on criminal activity to support drug addiction. Recent differences noted in users include more women using heroin and an increased tendency to mix heroin with other drugs. This latter observation is confirmed by the NNICC report which reports an upsurge, nationwide, of emergency room mentions involving heroin in combination with other drugs (NNICC, 1989). According to those interviewed, the wholesale price of heroin has dropped while the street price has remained unchanged over the past several years.

Cocaine - The use of cocaine powder is widespread among all segments of the population according to criminal justice and health observers. Over time, use among Blacks has

increased, consistent with the official indicators. This is associated with the advent of crack use as well as increased usage by heroin users who combine heroin and cocaine ("speedballs"). Despite substantial increases in DEA seizures, cocaine has been in abundant supply. Distributors and suppliers include organized syndicates and Los Angeles based Black gangs importing the drug from Columbia. Dealers and sellers involve all ethnic groups, primarily ages 18 to 30. Consistent with nationwide data reported by NNICC, both wholesale and retail prices of cocaine have dropped in San Diego. Observers believe the decline is associated with availability and competition with crack and methamphetamine.

Criminal activity associated with cocaine has escalated due to competition over turf and profits. Violence is more likely to occur with high level trafficking operations.

Amphetamines - Most of the illicit production of methamphetamine occurs in the Western and Southwestern United States, according to the NNICC report. Local observers report that 90% of the meth used in San Diego is also manufactured in San Diego. California legislation enacted in recent years has regulated the sale of ephedrine (a primary component of methamphetamine) in California so that producers must import essential chemicals from other states. Legislation has not, apparently, reduced either the supply or the demand for this stimulant. Observers support the trends cited in official statistics that indicate significant increases in methamphetamine use. Users are characterized as mostly white males and females, ages 15 to 45, with mixed socioeconomic status. Many users of other drugs switched to meth because of its high availability, low price, and intense effects. There is a link to criminal activity, according to respondents. Chronic users are likely to be dealers as well. Prolonged use can lead to mood swings and paranoia. Dealers maintain weapons to protect profit and product and accept stolen property as payment for methamphetamine.

Manufacturers and distributors are linked to motorcycle gangs and former marijuana dealers. The dealers and sellers are a "mixed bag" of "Mom and Pop" operations, bikers, and local entrepreneurs.

Marijuana - Despite large seizures and intensive eradication efforts, marijuana has been consistently available in San Diego perhaps due to the proximity to Mexico where much of the crop is grown. Producers and distributors are viewed as widely disparate, ranging from loosely knit organizations to tightly controlled, large networks.

Purity or potency has increased due to the introduction of sinsemilla, that results from an alteration of the natural growth process which increases the tetrahydrocannabinol (THC) content. Also, production has become more sophisticated due to the fact that growers have been driven indoors because of eradication measures and drought conditions. Greenhouse operations utilize advanced technology to produce high purity plants.

National statistics from the NNICC report and local trend indicators suggest a downward trend in marijuana usage and San Diego observers felt similarly. Users reflect the general population, both recreational and polydrug users. The matrix on the following page summarizes drug market dynamics by type of drug.

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FIGURE 26

MATRIX OF CHARACTERISTICS OF USER AND USE

	HEROIN	COCAINE	AMPHETAMINES	MARIJUANA
User/Usage	Older Black & Hispanic males, white males, prostitutes; more women using, long arrest histories of users, usage not increasing like other drugs; more likely in recent years to mix heroin with other drugs.	Widespread among population (cocaine powder); increased use over time and more so among Blacks; crack use primarily with Blacks; more use by heroin addicts (speedball: heroin & cocaine).	Mostly white males and females ages 15-45; mixed socioeconomic status, significantly increased in recent years; many users of other drugs switched to meth.	Has not changed significantly over the last 5 years, general population, wide age range, all racial groups, recreational and polydrug users/usage somewhat less.
Distributor	Hispanics; imported from Mexico and Asia; San Diego is transshipment point for other areas.	Large, organized syndicates import from Columbia, Mexico; Black gangs, Mexicans.	Motorcycle gangs, ex-marijuana users, pharmaceutical companies selling precursor chemicals used to produce amphetamine.	Varies, some local, Mexican, South American.
Dealer/Seller	User supplying habit.	All racial groups, young adults 18-30.	"Mom & Pop" operations, bikers, local entrepreneurs, dealers are users and vice-versa.	Varies, all ages, all racial groups; range of small, loosely knit organizations to tightly controlled larger networks.
Production	Increase in Southwest Asia, more black tar produced in Mexico.	Has increased significantly; market glut; crack processed in U.S.	Ninety percent produced in San Diego and/or Southern California; first meth lab seized in 1982; with ephedrine (primary component) regulated in California, producers must get in neighboring states, also exported from China; was pills ten years ago - now powder made with sophisticated cookers and methamphetamine; production tripled over 5 years.	Half imported from Mexico, half grown locally, growers more sophisticated through use of indoor warehouses not visible by air.
Price/Purity	Wholesale price down, street price unchanged - $100-$350 per gram; less quantity, but more pure; black tar: 30-60%; brown: 3-7%.	Declined over time due to availability and competition with crack and methamphetamine; $100 per gram/variation in purity: 33-80%, crack nearly pure.	Reduced in recent years; at retail level, cheaper than cocaine: $60-$80 per gram/at pound level - 70%; street level: 25-40%; generally pure but can vary due to manufacturer and recipe.	$45.00-$200.00 an ounce, depends on quality - fluctuates during intense eradication efforts - purity is greater due to technology of production.
Association To Criminal Activity	Strong link to property crimes and prostitution, dealers rent low-cost housing to illegal aliens who in exchange sell heroin on day-to-day basis.	Increased, due to competition over turf and profits; violence more likely associated with high level operations; steal property to support drug use.	Definite link - all types of crimes - chronic use leads to paranoia and mood swings; maintain weapons to protect product and profit; the majority of assets forfeited are result of meth lab seizures - dealers accept stolen property for payment.	Some income needed to buy drug; association with other persons involved in crime; chronic use effects well being and productivity; smuggling across border.

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Source: Interviews with practitioners.

SURVEY OF TASK FORCE MEMBERS AND ELECTED OFFICIALS

To obtain additional qualitative perspectives concerning the nature and scope of the drug problem, mailed surveys were distributed to the following individuals:

- Members of the City of San Diego's Mayor's Committees on Drug Abuse (60).

- Members of the San Diego County Drug Abuse Strike Force (40).

- Elected officials from the Board of Directors of the San Diego Association of Governments (SANDAG) (19).

Both the Mayor's Committee and the County Task Force are comprised of individuals representing schools, drug treatment services; the justice system (e.g., law enforcement, probation, prosecution, and judiciary) and private citizens. The City and County groups developed subcommittees to focus on specific areas as they relate to drug use, including health systems, justice, education, media, employment, and community issues. In 1988 and 1989, each group presented recommendations to their respective governing bodies.

Since responding to the drug problem has political implications, a group of elected officials was also asked to participate in the survey. The SANDAG Board represents a regional focus in that a council representative from each of the 19 incorporated cities and one member of the County Board of Supervisors comprises the Board of Directors.

Survey Distribution Procedures

Mailing lists were obtained for the membership of the two drug committees and the elected officials. One hundred and nineteen (119) surveys were mailed with self-addressed, stamped return envelopes. Distribution took place in February, 1989 with 50 or 42% returned. Respondents were not asked to sign their names or indicate their affiliation so degree of representation by agency is not known. The survey group is by no means random, but reflects individuals with a vested interest in the drug problem, either as practitioners or policymakers.

Results

Describing the Drug Problem. Respondents were asked how serious they believe the drug problem is in San Diego, compared to five years ago. The majority (80%) indicated that it was more serious while 16% (8) felt it was about the same. One said it was less serious and one did not know.

Factors associated with increased seriousness included (multiple responses) (n=40):

- Availability of drugs (98%).

- Increased gang involvement in drug distribution (80%).

- Limited resources to confront drug problem (75%) - Lack of jail space due to crowding was cited as an example by many.

- More potent drugs (i.e., crack cocaine)(70%).

- Societal attitudes toward drug use (53%). This was characterized by some as an acceptance of drug use in the culture and media accounts which present favorable images of high profile drug dealers and users.

- Limited sanctions on drug traffickers (45%). Respondents gave examples such as, the jail crowding problem precludes making the drug violator accountable for behavior and penalties are not stiff enough.

Nature and Scope of Drug Problem. Cocaine and amphetamines were named most frequently (30%) as the drugs of concern in San Diego. Other drugs mentioned as serious problems were as follows:

- marijuana (9 respondents).

- alcohol (6 respondents).

- heroin (3 respondents).

Just over a third (34%) of the respondents indicated that youth are the primary drug users although more than a quarter (28%) felt that drug use was a problem in all segments of the population, irrespective of age and ethnicity. Seven (7) individuals said that minorities were most affected by drugs and three (3) respondents said gang members were most likely to be involved in both drug distribution and use.

Survey participants identified many ramifications of drug abuse including societal costs, illegal profits from dealing drugs, associated violence, and relationship to AIDS with respect to needle sharing among intravenous drug users.

Information Available to Understand Drug Problem

Survey respondents were asked to identify primary sources of information that they use to understand the drug problem. Responses revealed that 78% (39) learn about the drug problem through the media, both written and electronic. Approximately the same proportion (76%) know about it through their job and/or their involvement with drug task forces/committees. Less than half (21) request information from the agencies that compile the data. Other sources mentioned (5 or less respondents) included SANDAG, general meetings, and personal contacts.

Participants identified specific types of information available, related to drug use (in descending order of frequency, with multiple responses possible):

- Drug seizure data (68%).

- Drug arrest data (66%).

- Drug treatment admission statistics (30%).

- Disposition information about drug violators (28%).

- Drug use forecasting data (DUF) (26%).

- Coroner information on drug related deaths (22%).

- Hospital emergency drug related admissions (20%).

Half the respondents (25) indicated other types of information that would be useful to understand the drug problem but are not available. These included annual surveys of drug use in the schools, number of newborns addicted to drugs, and more detailed statistics on specific areas of the County. Several expressed a need for information regarding the variety of efforts, regionwide, toward prevention and reduction of drug abuse. Some individuals noted that there is no centralized source that links pertinent data with activities or efforts.

Single Effort To Control Drug Abuse

Survey respondents were asked to give their opinion about the most important thing that could be done to control drug abuse. The most frequent response (42% or 21 people) related to education and prevention efforts to encourage attitudinal change. Other responses included:

- Increased penalties for both dealers and users (18%); examples included expulsion from school for juvenile drug use, expanding the zero-tolerance effort, and longer terms of incarceration for dealers.

- More resources for both education and enforcement efforts (16%).

- More cooperation among the various entities and efforts that address the drug problem (4 persons). Entities were characterized in three ways: (1) integration of levels of government, i.e., city and county; (2) integration of various approaches, such as prevention, enforcement, and treatment; (3) integration of different systems, including education, religious community, and the media.

DRUG TESTING

The next set of questions addressed opinions about drug testing of criminal offenders. Since June of 1987, San Diego has participated in the Drug Use Forecasting (DUF) program sponsored by the Bureau of Justice Assistance (BJA) and the National Institute of Justice (NIJ). The DUF program involves quarterly interviews with arrestees and obtaining voluntary urine samples from participants. The DUF data represent another, relatively recent, indicator of drug use among a specific population. Since DUF's

implementation in many metropolitan areas, some cities are participating in BJA sponsored pilot programs in which arrestees are drug tested on a regular basis and the results are used to assist in pretrial release decisions. Preliminary results are mixed regarding the utility of drug tests to augment the decision making process and identify drug using offenders (Wish, 1987; Goldkamp, 1988; Toborg, 1987; Carver, 1986; Dembo, 1986). Information was sought from San Diego representatives to determine their knowledge of the DUF program and their opinions regarding the utility of drug testing for other purposes. The 73 respondents included the members of the drug task forces and elected officials (50) and 23 administrators and practitioners in the justice and health fields. Results of all groups are presented below with notable differences cited.

Discussion of Survey Results (73 Respondents)

- Most of the survey respondents were familiar with the DUF program (78% of 73).

- The majority (95%) indicated that arrestees should be tested for drug use. The four persons who felt that arrestees should not be tested gave these reasons: there is no point in testing (2), the cost (1), and the constitutionality (1).

Reasons given for testing included:

- Obtain information on association of criminal activity and drug use (43 respondents, 59%).

- Obtain information on trends in types of drug use (31 respondents, 42%).

- Identify users in justice system (29, 40%).

- Identify users who need treatment (28 respondents, 38%).

- Other reasons included: using the data to measure effectiveness of programs (8), as a means to bring attention to health risk factors, i.e., AIDS and needle sharing (8), and use of results for setting funding priorities (2). Additional ways that current DUF information is used were also noted:

  - to identify problems

  - to support legislation

  - to encourage community support

  - to determine resources needed

  - to educate public

Use of Information

Respondents were asked to suggest levels at which persons should be tested, and decisions that could be made with drug test information.

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Out of 73 respondents, 57 indicated that all arrestees should be tested irrespective of type and level of arrest charge. Responding to multiple categories, 90% indicated that arrestees should be tested at time of jail booking; 59% felt testing should be a condition of probation/parole; 34% noted that persons on supervised pretrial release should be required to test for drug use; and thirteen (13) people suggested that defendants should be tested at time of sentencing.

Voluntary or Mandatory Drug Testing

Of the 70 respondents, 62 or 89% indicated that drug testing should be mandatory. Reasons justifying this response were primarily related to the perception that arrestees will not voluntarily submit, particularly if the results will be used for processing decisions. Several indicated that the testing itself acts as a deterrent.

Legal and Ethical Concerns

Over a third of the respondents (38%) expressed concerns about the ethics and legality of drug testing but most (62%) indicated no concerns. Members of the city and county task forces were more likely than justice personnel to have concerns. Those who offered explanations for their concerns cited the following issues:

- test reliability (9)

- due process concerns (8)

- right to privacy (5)

- discriminatory (3)

- test result should not be tied to conviction (3).

SUMMARY

Perceptions of justice and treatment professionals concerning drug market characteristics paralleled the official trend data. Over five years, price of primary drugs has dropped while purity has increased, according to those interviewed. The advent of black tar heroin and crack, as well as the introduction of sinsemilla to the marijuana production, have led to higher potency.

Observers perceive heroin users as older than most drug using populations and cocaine use widespread across age and ethnic groups, but increasing among Blacks and women.

Amphetamine use is primarily concentrated among Whites. Over the past several years, San Diego County has produced, distributed and used amphetamines contributing to a description by the media as the "meth capital" of the country. Initiated by biker groups, the amphetamine distribution is now being shared by "Mom and PoP" operations and previous marijuana traffickers.

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Surveys of individuals with knowledge about drug using populations and a sample of elected officials indicated that the drug problem in San Diego is more serious than five years ago. Increased availability and gang involvement were cited as primary reasons for more drug use. Cocaine and amphetamines were viewed as the drugs of most concern.

When asked the sources of information for learning about drug use, over three-quarters of the respondents cited the media and their professional contacts. Drug seizures and arrest data were noted by most as types of information available to describe the drug problem. Other data that would be useful included annual surveys of students and numbers reflecting drug exposed infants. Several respondents indicated that there is no centralized source for drug use indicators and no single mechanism to link prevention and control efforts with results or impacts.

The majority of respondents felt that reduction in drug use is most likely to occur with educational and prevention efforts that promote attitudinal change about use of drugs.

The survey also asked respondents about the use and value of the Drug Use Forecasting (DUF) information. Over three-quarters of those surveyed were familiar with DUF data and have used it to demonstrate the link between drug use and crime; to examine trends in drug use; to identify users who need treatment; to support legislation; to encourage community support; to determine resources needed; and to educate the public.

The majority of the respondents indicated that all arrestees at time of jail booking should be required to participate in drug testing. Fifty-nine percent (59%) felt that the information should be used as a condition of probation and parole. These final results suggest that respondents perceive drug testing as an additional tool to monitor offender behavior, thus going beyond the current objectives of the Drug Use Forecasting program.

CHAPTER 4
USE AND VALUE OF DRUG INDICATOR INFORMATION

In an effort to determine how drug abuse indicators are used to effect policy, face-to-face interviews were conducted with administrators and mid-level managers of law enforcement agencies, drug abuse services, and the Probation Department. A total of 23 persons were interviewed, representing 12 agencies (9 municipal police agencies, DEA, probation, and County Drug Services). In all agencies except one, the administrator and a designated mid-level manager were interviewed. For Drug Abuse Services, just the administrator participated. Issues addressed in interviews included objectives of agencies with respect to drug control; sources of information for planning and assessment, drug control strategies, and barriers to effective efforts. The focus of all issues was the sources and types of information used to make decisions and allocate resources.

The first section asked respondents to articulate the drug control objectives of their agencies or divisions. Objectives of both administrators and managers reflected the broad areas of enforcement, prevention, and treatment. Managers tended to operationalize objectives into strategies and tactics.

AGENCY OBJECTIVES

Administrators

- Document and describe drug problem

- Determine appropriate community response

- Maximize revenue for treatment programs

- Maximize public and private community efforts through coordination training and support

- Implement and administer County funded programs

- Control drug related crime

- Assertive enforcement (characterized by locating labs and trafficking locations)

- Close coordination with other agencies

- Assertive education efforts

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- Focus on visible trafficking with street team

- Community and school awareness

- Prevention

- Respond to community complaints

- Remove assets of drug dealers

- Demand reduction

Mid-Level Managers

- Enforce drug laws

- Target mid- and upper-level dealers

- Investigate and prosecute drug violators

- Selective proactive enforcement of gang/drug violence

- Patrol pressure on individuals under the influence of controlled substances

- Investigate all complaints involving narcotics and dangerous drugs

- Develop and maintain sources of information concerning all illicit drug activity

- Maintain close liaison with all other drug enforcement agencies and attend all pertinent community and agency meetings concerning drug prevention and enforcement

- Implement assertive enforcement programs to attack the supply side of drug activity to identify and apprehend those who manufacture and sell drugs

- Implement assertive enforcement programs to attack the demand side of drug activity to dissuade those tempted to use drugs and to apprehend those who are illicit users

- Provide training to members of the department so that officers and detectives can conduct quality investigations and ensure case closure by successful prosecution

- Provide education to all community members and agencies for drug use prevention; give support to those agencies providing intervention, treatment and rehabilitation

- Provide drug free environment for minimum security inmates

- Provide drug treatment and education for minimum security inmates

- Provide for public safety

- Suppression of street level sales

INFORMATION SOURCES

Respondents were asked to identify the types of data they use to describe and understand the drug problem; and to illustrate ways that information has been used to develop and/or redirect change strategies.

Arrest information was the only indicator cited by more than 80% of those interviewed (Table 20) (multiple responses were possible). Other official justice related sources noted by over half were court dispositions of drug arrests (52%) and urine test results (56%). Disposition information was known to respondents on a case-by-case basis or through an aggregated in-house compilation. Urine test results referred to persons suspected of being under the influence, test results of probationers, and the findings of the Drug Use Forecasting (DUF) program. In addition, more than half mentioned citizen complaints and drug seizures as sources used to describe the drug problem. Again, these data are generally compiled in-house or merely "known" from informal discussions. Seizure information and citizen complaints serve to direct law enforcement tactical operations as well. Health related drug abuse indicators were less likely to be cited, in part due to the composition of the respondents, who were primarily within the justice system. Several expressed an interest in these indicators, but said they were not routinely available to them.

TABLE 20

SOURCES OF INFORMATION USED
BY ADMINISTRATORS AND MID-LEVEL
MANAGERS - SAN DIEGO COUNTY, 1989

Information Source	n = 23
Justice Related	
Arrests for drug use or possession	96%
Arrests related to drug trafficking	83%
Court dispositions related to drug arrests (convictions, acquittals, dismissals, etc.)	52%
Drug related traffic accidents	13%
Drug price and/or purity	30%
Urine test results from criminal justice system (e.g., arrestees, parolees)	56%
Changes in property crimes	4%
Health Related	
Drug treatment program patient records (e.g., CAL-DADS)	17%
Drug related deaths	26%
Drug related emergency room incidents	17%
Hepatitis B incidents	4%
Other	
National household surveys	0
National school surveys	0
State school surveys	0
Street informants/street research	39%
Citizen complaints	57%
Drug seizures	56%
Price/purity index	17%
Discussions with school officials	17%
Morning meetings with staff	26%
Pharmaceutical buying and selling information (ARCOS)	4%

Note: Includes multiple responses.

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DATA USED TO MAKE CHANGES IN AGENCY APPROACH

Agency administrators cited three indicators more frequently: arrests, seizures, and Drug Use Forecasting (DUF) results. These were mentioned as data reviewed to monitor the agency efforts. Data are used primarily to analyze the issue, plan for resources, educate the community, and inform elected officials. Two administrators indicated that the totality of available information from all sources was considered rather than a single source of information. Police administrators also pointed out that two or three vocal citizen complaints could have a significant impact on change strategies and/or resource deployment.

Mid-level managers were more operationally focused in their remarks, although some had difficulty linking efforts to data sources. Many said that the best information is that from informants. They agreed that it is generally based on individual cases and not compiled in a database for use by others. As important as it may be, informant information is dynamic and is constantly assessed. Other ways that types of data are used include:

- Court dispositions - These data provide information on defendants sentenced to local facilities. The probation manager can anticipate types of programs defendants may need during incarceration.

- The DUF data are used as justification to gain State and Federal grants for intervention with drug violators and to substantiate the need for funds for increased urine surveillance of probationers.

- Citizen complaints direct tactics.

- In-house urine testing of persons arrested for being under the influence determines the validity of officer detection methods.

VALUE OF DATA INDICATORS

Respondents were asked if current data indicators could be more useful and to suggest types of data that are not available and/or accessible but would be useful.

With respect to current data, these areas were noted:

- Arrest information would be more useful by drug type. The California Health and Safety Code defines drug violations, in general, by behavior (sales, possession, manufacturing) amount of drug, and general categories such as narcotics and dangerous drugs. Arrests involving heroin and cocaine are combined in the narcotics category. Although specific code sections are commonly used to denote a particular drug, such as possession of methamphetamine, the information is not aggregated in this way. Also, obtaining accurate regional arrest information in a timely manner is desirable by several respondents. Currently, such data are available on an annual basis from the State, from four to six months after the end of a calendar year.

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- A need for a centralized resource for all drug related information was suggested by two administrators. A clearinghouse that would incorporate all the indicators in one report would be ideal, according to one respondent.

- Information on price and purity of drugs and seizure information is not easily accessible to all justice agencies, yet it would be valuable according to some respondents.

- The DAWN data and treatment admission data are not available in a timely manner. Also, one respondent felt that the validity of DAWN and CAL-DADS is questionable because of changes in reporting procedures over time and lack of standardization among reporting agencies.

DATA NEEDED, BUT NOT AVAILABLE

About half of those interviewed cited specific types of information that would be useful in responding to the drug problem, but are not available. Actually, some indicators are reported, but their accessibility is not widely known. These include:

- deaths associated with drugs

- emergency room admissions

- state and federal monies available for local programs.

Other types of information that are more difficult to retrieve or would complete the drug picture include the following, according to observers:

- Types of treatment that work with specific types of drug abusers - For example, it was noted that pregnant drug abusers have different program needs than older male heroin addicts. Cocaine addicted persons may require other types of treatment than those who are addicted to amphetamines. To allocate resources appropriately, more information is needed about "what works."

- A needs assessment of the community - Respondents observed that the extent of the drug problem is known primarily through individuals who come to the attention of public agencies. A needs assessment of the entire community that included a "census" of drug users and also compiled data from other sources such as private hospitals would provide a more accurate picture of the drug problem in the general community.

- Seizures by type and location - Current seizure information is available on an aggregate basis. Respondents expressed a need for numbers of seizures by geographical areas.

- Problems in the schools - Most school districts are reluctant to provide information regarding drug problems in schools, such as number of expulsions, suspensions, or referrals for drug use. Yet these indicators were considered important to measure youthful drug use according to those interviewed.

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- Ways to measure progress - Respondents expressed frustration about how to determine if drug control strategies are effective. A case in point is the indicator of drug arrests for which increases and decreases can be interpreted as both success and failure of law enforcement. Most respondents agreed that if the number of arrests remains constant, then police are being effective.

  A similar paradox holds for drug treatment admission data. Analysis showed that over half of all admissions in a given year involved individuals who had previously been in treatment. While this could be interpreted by some as treatment failure, the drug program administrator offered an alternative explanation: "This could mean we are doing a better job; we're more effective in 'hooking them' into treatment."

- Innovative techniques used around the country - Observers expressed a need for information about programs that show proven results. Respondents felt that such programs must exist, but information about them is difficult to obtain.

It was also noted that the arrests of the Narcotics Task Force are not included in regional statistics which, in the opinion of some, leads to an incomplete picture of the enforcement response to drugs.

INDICATORS USED TO SHOW EFFECTIVENESS

Earlier, interview participants were asked which data indicators they used to describe the drug problem. Some of the indicators mentioned were noted by mid-level managers as information used to measure effectiveness of agency operations. Comments of administrators were more qualitative in nature and included:

- Feedback from community
- Media reports
- Discussions with staff
- Subjective analysis
- Increased awareness in schools.

Administrators were quick to recognize that these data are not easily quantifiable, but, nevertheless, most useful for gaining a sense of how successful they are. A couple of administrators noted that outside evaluations are needed periodically but few agencies can afford them.

Along with the mid-level managers, some administrators pointed out reductions in property crimes as a measure of effectiveness. The health administrator cited as indicators of effectiveness, a decline in the number of people returning for drug treatment and in drug related deaths and emergency room mentions.

Other indicators mentioned by mid-level managers included:

- rate of probation revocations
- number of reclassifications of probationers
- urinalysis results of probationers
- rearrests for drug violations
- informant information regarding drug markets
- decline in violent crimes
- arrests with successful prosecutions
- number of users and dealer who leave area
- number of search warrants served.

Nearly half of the mid-managers noted arrests by patrol staying constant as a means for demonstrating success. An equal number indicated that the street price of drugs was a good barometer of how well they are doing. "If the price drops, then we are not having an impact" was a statement expressed by several respondents.

FACTORS CONTRIBUTING TO EFFECTIVENESS

Respondents were asked to identify factors associated with effectiveness of their agencies' approaches. Both administrators and managers cited funds, resources, and staff training as primary factors that enhance effectiveness. Additional factors mentioned by administrators included community support, media participation in drug/crime reduction efforts, informed public officials, and focused targeting of offenders and "hot spots."

Managers identified other factors on an operational level, including the value of intensive probation supervision, drug related probation conditions, enhanced drug testing of probationers, and good informants.

When the question was reworded to identify barriers or obstacles to effectiveness, many of the responses to the previous question were reversed, so that the same factors that enhance success also can hinder effectiveness, such as insufficient funds, resources, and inadequate staff training. Additional factors that negatively impact the agencies were the following:

- Difficulty in locating sites for drug treatment facilities.
- Apathetic citizenry.
- Lack of jail space to enforce "message" to drug violators.
- Inappropriate use of diversion for non first-time offenders.

- Length of time between arrest and disposition does not allow for swift and certain punishment.

- The drug business is so lucrative that persons who serve prison time continue dealing after their release.

- The countywide crime lab cannot provide timely results because it is understaffed.

- There are no adequate measures for determining if approaches are effective.

- There is no comprehensive, regional plan for narcotics control.

- Competition for funds among government agencies reduces effectiveness.

- There is poor coordination among the police agencies, the Probation Department, and the County Drug Services division.

- Other demands on city and county resources restrict effectiveness of drug control efforts.

MOST IMPORTANT WAY TO REDUCE DRUG ABUSE

The majority of all respondents indicated that early education and intervention were the most important means to impact drug abuse. This included early identification of dysfunctional families.

The second most frequently mentioned solution was an overall changing of societal attitudes about substance abuse. Current popular attitudes inappropriately portray an acceptance of chemical solutions to everyday problems. National policies need to be developed to address attitudes that perpetuate the abuse of drugs. Other singular responses suggested short-term law enforcement targeting, having more jail space, increasing treatment resources, attacking the supply side, a firm judiciary, and "real" consequences for drug violators.

STRATEGIES IMPLEMENTED TO ADDRESS DRUG PROBLEM

An objective of this study was to identify drug control programs and strategies implemented in the past five years. Interviews asked respondents to describe the program and indicate the target population. In the treatment arena, several new programs are pertinent:

Treatment and Education

Project PARA. This program targets individuals who test positive for the HIV virus, are gay or bi-sexual males, or are women. It provides up to four months of treatment using methadone and naltrexone for opiate users.

Methamphetamine/Cocaine Treatment/Recovery. This program provides specialized services to intravenous users of methamphetamine and cocaine. The focus is on individuals who have not previously sought treatment.

A Substance Abuse Program for Probationers (ASAPP). This is a joint program in which probation officers and drug abuse counselors provide intensive supervision and specialized drug treatment to high-risk probationers. It is unique in that the services are co-located and case management is a combined effort of the justice and health systems.

Options for Recovery. This is a comprehensive program designed for female substance abusers. The priority population is pregnant women and women who have recently delivered drug exposed infants. Services include residential and day treatment centers, and early intervention programs for incarcerated pregnant women.

Living Sober. This program is for substance abusers incarcerated in local honor camps.

Enforcement

In the enforcement area, the use of specialized teams was mentioned by half of the administrators. In large police agencies, there may be two or three special units that focus on drugs. Differences are associated with visibility (uniform or undercover) and target (street seller/user or mid-level dealer). Agencies with fewer personnel have supplemented their investigative/crime suppression units with additional staff to concentrate on drug use and trafficking. All police agencies participate in the Narcotics Task Force (NTF), a regional task force that works in tandem with DEA to target high level drug violators. Those interviewed feel that involvement in NTF is a positive benefit to the region as a whole as well as to individual cities. Other enforcement oriented strategies cited were the following:

- Increased use of buy-bust tactics, including undercover officers in several high schools.

- Aggressive identification of gang members who are drug involved. In the case of juveniles, one agency developed the "Knock and Talk" program, in which parents of gang members are contacted and juveniles' behavior discussed.

- A few agencies have developed on-going interaction with motel owners and managers in areas where drug trafficking is known. Motel proprietors are informed of the signs of active drug sales, e.g., no room service, no luggage, and many visitors, and asked to notify police of these occurrences.

- Consultants with expertise in gang/drug activity have been hired to assist in strategy development.

- Marijuana eradication by air has been more aggressive by two agencies.

- A couple of agencies have provided patrol officer training in the detection of persons under the influence of controlled substances.

- More than half of the respondents mentioned education efforts in the schools, such as the DARE (Drug Abuse Resistance and Education) program and others involving officers in prevention activities.

- Reverse sting operations have become more frequent.

- The asset seizure process has been given greater attention.

- A systematic procedure has been developed for obtaining information from parole and probation offices with respect to recently released individuals and conditions of parole and/or probation, such as search and seizure waivers.

- The use of civil abatement procedures for residences with high volume trafficking has been implemented to a greater extent.

SUMMARY

The interviews with justice and health administrators and managers served to identify objectives with regard to drug control and treatment efforts and to address the use and value of indicators of drug use for planning and policymaking.

Broad objectives related to the areas of enforcement, education, and prevention. Official data indicators used most by respondents included drug arrests, DUF results, and drug seizure information. Data are used to analyze the issue, to develop tactical strategies, to monitor efforts, and to inform the community and the decisionmakers.

While the treatment practitioners see value in the justice indicators, the converse is not true: that is, few of the justice representatives see utility in the health indicators either for understanding the drug issue or directing operational strategies. Mid-level managers and administrators alike noted that citizen complaints/community input and informant information were extremely valuable indicators of the problem as well as mechanisms for assessing enforcement efforts and directing change strategies. These types of information are known primarily in a subjective sense and are not compiled in a systematic, standardized manner. Citizen voices in the community are obviously linked to the political arena and can exert varying levels of influence on resource allocation, citing of treatment facilities, and targeting populations for specific drug control activities.

A number of other data indicators were mentioned as measures for assessing effectiveness of efforts, including probation revocations, decline in number of persons re-entering treatment, successful prosecutions, number of search warrants served, and the number of users and dealers leaving the area. Again, these measures are generally compiled "in-house" in an unstandardized manner or known only through subjective analysis.

Problems cited with current data measures included the fact that heroin and cocaine arrests are combined in the narcotics category. This method of reporting precludes refinement by specific drug type. Respondents expressed the need for regional arrest information in a more timely fashion. Several indicated that data on price and purity are useful measures

for assessing effectiveness. However, the data are not readily accessible according to respondents. Also of interest but not compiled would be information on seizures by type and location.

Interview respondents identified other kinds of information that would be of value to complete the drug picture and measure agencies' efforts. These included: treatment approaches that are successful with different types of drug users; specific problems occurring in the schools; evaluation resources to measure progress; and information about innovative drug control techniques that work.

The interview results suggest that indicators of drug abuse are used in different ways. The official statistics, or those more accessible to the public, are generally used to describe the drug problem. A few are also used to measure agency efforts. However, other indicators, such as informant information and in-house discussions, are more likely to be used to assess success or failure. And media reports and vocal citizens may have a greater impact on change strategies than the results of the official statistics. This situation underscores the importance of public policy with respect to drug control efforts.

Primary factors that contribute to effectiveness of approaches, according to respondents, are funding, staff resources, and staff training. Insufficient resources and inadequate training were cited also as barriers to effectiveness. Other obstacles were associated with criminal justice operations, procedures, and processes that restrict the system's capacity to deal swiftly and certainly with drug violators.

Similar to the knowledgeable experts on drug task forces, the justice and health representatives indicated that early education and intervention were the most viable solutions for impacting drug abuse.

Both enforcement and treatment representatives have increased resources for drug control and treatment efforts. New strategies developed have generally been directed toward specific target populations such as addicted pregnant women, students, street level users and dealers, drug using offenders, and gangs involved in drug trafficking. Applied strategies and tactics, for the most part, are not new or innovative, but reflect a more aggressive use of traditional efforts. For law enforcement, these include use of reverse sting operations, more attention to the asset seizure process, and use of civil abatement procedures.

In the next chapter, health and justice drug abuse indicators are placed in a conceptual framework and a statistical model is explored for the purpose of forecasting drug use trends.

CHAPTER 5
CAUSAL MODEL OF DRUG USE

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CAUSAL MODEL OF DRUG USE

CONCEPTUAL MODEL

In the previous sections, the nature and extent of drug use were described through trend analysis of a number of indicators of use. The indicators reflect those most likely to be compiled by local jurisdictions. In general, analysis showed increases over time in both justice and health systems' indicators. The trend analysis results were confirmed by interviews with informed professionals who agreed that drug use has increased in many segments of the population. Two points are clear thus far:

- No single indicator alone can describe the drug problem.

- Official data, such as arrests and treatment admissions, are most likely to be used to describe the drug problem; however, other indicators less likely to be routinely compiled play major roles in directing change strategies and assessing effectiveness. Examples include citizen complaints, informant data, and rereferrals to treatment.

An objective of this study was to identify ways to improve the measurement of incidence and prevalence of drug use. A corollary objective was to determine if integration of data sets provides a more powerful measurement tool. The logical next step was to combine the data sets in a statistical model that could predict or forecast future drug use. Of particular interest was whether or not criminal justice indicators could be used to predict drug use in the larger community, as defined by the health system. The value of such a model to policymakers lies in knowing which indicators, if impacted by new strategies, will most likely result in a decline in drug use. By quantifying, through a statistical model, how key variables are associated, the effects of change strategies can be empirically measured.

To set the framework for the statistical model, the next task was to interpret the indicators with these questions:

- How is drug use in the criminal justice population related to drug use in the larger community as defined by the health system?

- What other variables impact both justice and health care measures?

Changes in trends are associated with a myriad of factors that, at best, can only be speculated. Drug related legislation, characteristics of the population, availability of resources, such as treatment slots, changes in focus of law enforcement (high level dealers versus street sales) are just a few of the obvious factors that impact changes in the indicators of drug use.

Ultimately, it is likely that several variables, both direct and indirect, impact each other. It is difficult to statistically measure the behavior of all variables which simultaneously are causes and effects. Also, the earlier discussion showed that measures of drug use can be interpreted in different ways.

The model presented suggests the selection of key variables or indicators within a temporal sequence. The drug use indicators chosen for the model were those most likely to be available at the local level. Our definitions and assumptions about how the indicators relate to one another and contribute to different levels of use are based on expert opinions with empirical knowledge of drug market dynamics and drug use. A schematic model is presented in Figure 27.

FIGURE 27
SCHEMATIC REPRESENTATION OF CAUSAL MODEL OF DRUG USE
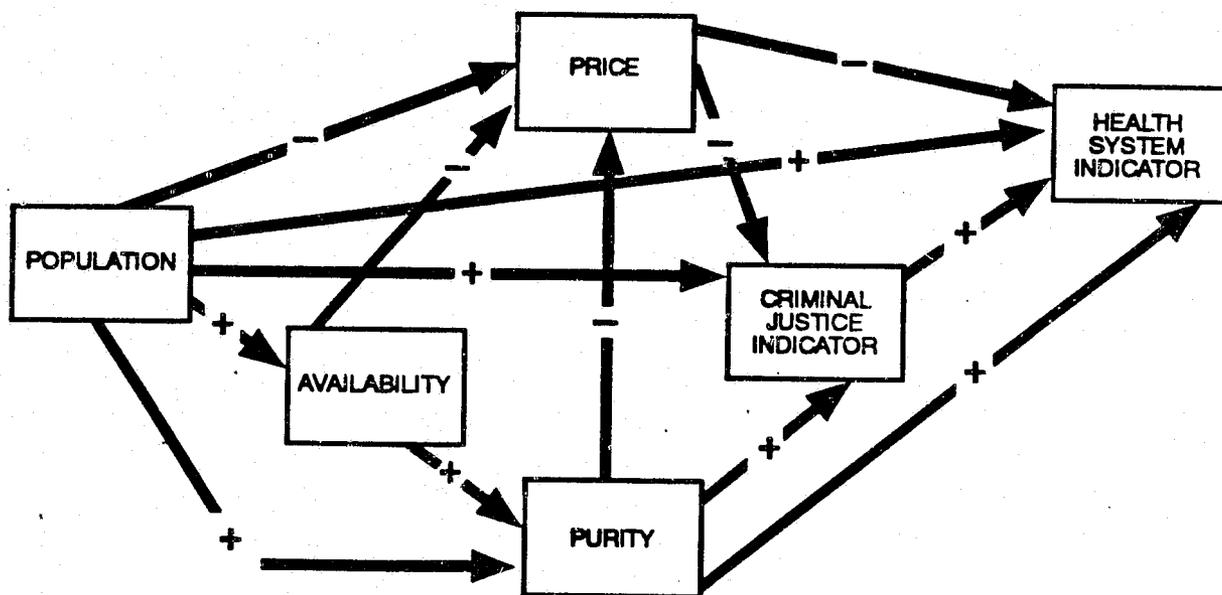
As a beginning framework, the model starts with the indicator of population which incorporates the factor of demand. Population or demand is hypothesized to be associated with all other indicators, both directly and indirectly. When demand for drugs is high, more drugs are likely to be available. Availability is a measure of supply and is impacted by demand. When the supply is plentiful, the drug market becomes glutted, prices are lower, and purity is likely to be high.

With high demand and ample supply, users have convenient access at reasonable prices. Users and dealers may become more visible, thus leading to more arrests. More use will result in more treatment admissions as new users emerge and regular users increase their usage. Higher purity may result in an increase in emergency admissions as new users misjudge the greater potency.

It is presumed that the scenario works similarly in the converse. Availability of drugs may be scarce and indirectly lower the demand. To maintain their profits, dealers will raise the price and cut the drugs with other substances to retain previous amounts. The result will be a loss of purity. A number of users will reduce their drug intake, thereby lowering the number of arrests, admissions to treatment and emergency room episodes. Kleiman's analysis of drug market dynamics suggests other factors that impact drug use indicators and result in different outcomes. These are discussed in the summary of the model development.

The justice and health indicators reflect the consequences of drug abuse and enforcement activity, resulting in a complicated chain of inference. The proposed model presumes that drug use in the criminal population precedes use in the general community as defined by the health system indicators. In recent years, it has been suggested that the Drug Use Forecasting (DUF) system may be able to forecast drug use in the larger community (Wish, 1989; Cook and Harrell, 1989). Conceptually, the health system may also impact the justice indicators. Persons who engage in criminal activity in order to support their drug use may reduce or terminate criminal behavior if treatment efforts are successful. However, it was not possible to statistically estimate the joint relationship between the justice indicators and the health care variables with the data compiled for this research.

Initially, one model, displayed in Figure 27, was to be developed to predict overall drug use. However, review of the data sets as well as discussions with experts revealed that this was not a feasible approach. Fluctuations over time within single drug type categories were so variable that aggregating the data to incorporate all drugs no longer made sense. Estimation models are presented for narcotics and dangerous drugs. Marijuana was not modeled separately because the number of marijuana seizures in the DEA data set was insufficient to include in a model.

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STATISTICAL ANALYSIS OF THE CAUSAL MODEL OF DRUG USE

Statistical estimation of the drug use model is based on 72 monthly observations beginning in January, 1982 and ending in December, 1987. The causal model was also evaluated on the 24 quarterly observations to see whether the greater variability inherent in the monthly data distorted the results. The quarterly data did not reveal any relationships or offer any significant increase in explanatory power compared to the monthly data. In some instances, the larger sample size shows subtle trends and relationships masked by the quarterly data. Monthly data also provide a sufficient number of observations for analyzing residual error patterns with the autocorrelation and partial autocorrelation functions.

Selecting the Variables for the Causal Model

Dependent Variables. The key dependent variables represent measures of drug use in the criminal justice and health care systems, the latter a proxy for drug use in the general population. Eleven indicators of drug use were available for testing in the causal model (see Table 20). Originally, two dependent variables were to be measured as composite indices developed from the components shown in the table, using a strategy similar to that employed by Demaree and Fletcher (1981). For reasons discussed below, this approach is not followed and separate models were estimated for different combinations of criminal justice and health care drug use indicators.

A surprising finding was that the two health care indicators (emergency room treatment and admissions) were only slightly correlated. The correlation coefficients were .3547 and .2684 for narcotics and dangerous drugs, respectively. Table 21 indicates that the criminal justice indicators were closely related, with dangerous drugs showing somewhat higher correlations among the nine indicators. These correlations provided statistical justification for developing a criminal justice drug use index but not a drug use index for health care. Therefore, separate models were analyzed for each health care indicator.

TABLE 21

INDICATORS OF DRUG USE IN THE CRIMINAL
JUSTICE AND HEALTH CARE SYSTEMS

Criminal Justice

Total Drug Arrests
    Arrests for Possession
    Arrests for Sales

Total Guilty Dispositions
    Guilty of Possession
    Guilty of Sales

Total Not Guilty Dispositions
    Not Guilty of Possession
    Not Guilty of Sales

Health Care

Emergency Room Mentions
Drug Treatment Admissions

TABLE 22

INTERCORRELATIONS AMONG THE NINE
CRIMINAL JUSTICE DRUG USE INDICATORS
(n = 72)*

	Average Correlation	Number of Correlations		
		.9000+	.8000-.8999	.7000-.7999
Dangerous Drugs	.8998	19	14	3
Narcotics	.8638	9	23	4

*36 Correlation coefficients relate the nine criminal justice indicators; all were statistically significant at α = .05.

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Since separate health care indicators were evaluated, instead of creating a criminal justice drug use index, two criminal justice indicators were individually modelled. Total arrests and persons found guilty of drug possession were chosen as criminal justice indicators. These two indicators offer a very generic indicator of drug use (total arrests), as well as a measure that identifies more precisely drug users in the criminal justice population. Total arrests are conceptually not as good an indicator of criminal justice drug use as guilty dispositions. However, persons wishing to replicate this drug use model might find arrest data more readily available than disposition data.

Four separate models of drug use in the criminal justice and health care systems were estimated for each drug use type. These models represent all combinations relating emergency room mentions and drug treatment admissions to total arrests and persons found guilty of possession. This strategy enabled a more in-depth look at the statistical implications of predicting and explaining multiple indicators of drug use than would be gained by the creation of a composite index of all indicators in the criminal justice system.

Independent Variables. The variables selected for inclusion in the models represent indicators that are familiar to most jurisdictions. Notwithstanding the fact that each data set has unique problems relative to reliability, validity and timeliness, combining information from many sources increases both the reliability and usefulness of the information (Haga and Reuter, 1989).

Along with the four indicators of drug use, the model contains four other variables which represent demand (population) and drug availability (seizures), price and purity. The general definitions and labels used in the tables, figures, and narrative are shown below:

POP   - Population ages 18 to 34

AVAIL   - Amount of drugs seized, in grams

PURE   - Purity of the drugs, in percents

PRICE   - Price per gram of the drugs

ARREST - Total arrests, includes both possession and sales

GUILT   - Persons found guilty of possession

TREAT   - Persons admitted to drug treatment programs, and

EROOM   - Emergency room mentions.

AVAIL, PURE and PRICE represent aggregations of all seizures that occurred during a particular month. Other researchers [e.g., Woodward, et. al. (1987)] have operationalized these measures in terms of "street buys" or "street market level". This involves removing seizures above a specified size and may also include screening of price and purity levels. We analyzed AVAIL, PURE and PRICE using a criterion, recommended by local law enforcement, of .3 grams or less to define "street market level". No screening of price and purity was used in our definition.

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For dangerous drugs, the number of "street market" seizures was too small for meaningful analysis. There was, however, a sufficient number of narcotics cases pertaining to street market seizures. The analysis of the narcotics trend data on AVAIL, PRICE and PURE and their correlations with the four criminal justice and health care indicators of drug use revealed mixed results. Compared to all seizures, the trend in "street market" PURE was more apparent while any trend in both PRICE and AVAIL was greatly diminished. The average of the correlation coefficients between PURE and the four drug use indicators was .2365 for all seizures versus .4086 for "street market" seizures. However, the corresponding figures for PRICE were -.4542 and .0398 ("street market") and for AVAIL were .2283 and .1049 ("street market"). Because of these mixed and inconsistent effects of the "street market" definition and for comparability of the dangerous drugs and narcotics models, PRICE, PURE and AVAIL were defined using all seizures.

Estimation of the Equations

Statistical Approach. The general analytical strategy employed was path analysis (Wright, 1934). Path analysis is suited for studying the direct and indirect effects among the variables in a causal model. It facilitates the simultaneous consideration of the various interrelationships specified in the model. Path coefficients (standardized regression coefficients) measure the relative importance of an independent variable in relation to a particular dependent variable, taking into account the other independent variables in the equation.

An important application of path analysis is the analysis of the direct and indirect effects of an independent variable on a dependent variable. POP, for example, was expected to have both a direct effect on drug use in the criminal justice system and indirect effects on this system through its relationships with PRICE, PURITY and AVAIL. Indirect effects are calculated according to Finney's (1972) algorithm. His approach is based on the fundamental theorem of path analysis (Duncan, 1966:5) and involves the multiplication of standardized path coefficients that specify the indirect effect. For example, the indirect effect of POP on ARREST through PRICE would equal the path coefficient relating POP and PRICE multiplied by the path coefficient relating PRICE and ARREST.

Econometric techniques were used to estimate the parameters of the time series equations specified in the causal model. Since the entire set of structural equations is recursive, ordinary least squares (OLS) was initially applied to each equation. Any equation containing autocorrelated residuals was re-estimated using the Cochran-Orcutt (C-O) procedure. The C-O is a widely used interactive technique most often applied when a first-order autoregressive process describes the disturbance term. A discussion of the C-O approach is found in Pokorny (1987:203-206) and in the original paper (Cochran and Orcutt, 1949).

A variety of analytical tools were used to evaluate the residual assumptions of either the OLS or C-O estimation algorithms. The Durbin-Watson test was used to detect the presence of autocorrelation[2]. Plots of the residuals over time as well as plots of the residuals against the predicted Y values and independent variables were used to examine the homoscedasticity of the residuals and possible misspecification of the model (Anscombe and Tukey, 1963). The assumption of normally distributed error terms was analyzed with normal probability plots (Draper and Smith, 1981: Chapter 3).

Final Equations. The aim was to develop the most parsimonious equation for the dependent variable that satisfied the assumptions underlying the particular estimation technique. A variable was included if its coefficient was statistically significant at $\alpha = .05$. In general, a variable meeting this criteria explains at least three percent of the variation in the dependent variable. Variable transformations are needed, in some equations, to either satisfy the residual assumptions or to more accurately describe the functional relationship between the independent and dependent variables.[3]

Table 23 shows the functional form, estimation algorithms and Durbin-Watson statistics for the final equations in the path models. The dangerous drugs and narcotics model equations are presented separately. There are two TREAT equations for dangerous drugs and only one for narcotics. This occurs because for dangerous drugs one of the criminal justice variables (GUILT) was related to TREAT. When ARREST was substituted for GUILT in the narcotics TREAT equation, its regression coefficient was not statistically significant. For similar reasons, there is only one EROOM equation for both dangerous drugs and narcotics. The only significant predictor of EROOM is population.

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[2]*The test developed by Durbin and Watson (1951) is only valid if the residual correlation follows a first order autoregressive process. The residuals for each equation are evaluated using the autocorrelation and partial autocorrelation functions (Nelson, 1973: Chapter 5). This analysis reveals that the AR(1) process represents a valid description of the error term in all equations containing serially correlated residuals.*

[3]*Research has shown lag relationships between criminal justice drug use (measured by DUF) and health care drug use (Cook and Harrell, 1989) and between purity and health care drug use (Woodward, et. al., 1987). Analysis of the cross-correlation function indicated that no lag effects are present between any of the variables in the causal models.*

TABLE 23

FUNCTIONAL FORM, ESTIMATION ALGORITHM AND DURBIN-WATSON VALUES FOR NARCOTICS AND DANGEROUS DRUGS PATH EQUATORS

Dependent Variable	Independent Variable(s)	Estimation Algorithm	Durbin-Watson Statistic**
DANGEROUS DRUGS			
LN (AVAIL)	POP	OLS	2.071
PURE	No Statistically Significant Variables	OLS	2.070
LN (PRICE)	POP, PURE	OLS	1.954
LN (ARREST)	POP, PRICE	OLS	1.827
SQRT (GUILT)	POP	C-O	2.094
TREAT	POP, PRICE, GUILT	C-O	2.225
TREAT	POP, PRICE	C-O	2.216
EROOM	POP, POP*	OLS	2.031
NARCOTICS			
LN (AVAIL)	POP	OLS	1.871
PURE	LN (AVAIL)	OLS	2.102
SQRT (PRICE)	POP	OLS	2.237
LN (ARREST)	POP, LN (AVAIL)	C-O	2.089
GUILT	POP	OLS	1.774
TREAT	PURE	C-O	2.095
EROOM	POP	C-O	1.936

OLS   Ordinary Least Squares Estimates
C-O   Cochran-Orcutt Estimates
LN   Natural Logarithm
SQRT Square Root

**Null hypotheses of no serial correlation accepted in each equation

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Variable transformations were needed for the AVAIL and EROOM equations for dangerous drugs and the AVAIL equation for narcotics to describe the non-linear functional relationship between POP and these variables. POP was exponentially related to AVAIL and parabolically related to EROOM. Other transformations were used to correct abnormalities in the residuals. As is indicated by the Durbin-Watson statistic, the hypothesis of no serial correlation was accepted in each equation.

Analysis of the Path Models

Before a detailed discussion of the path models and their coefficients, their utility as predictive tools was examined. Table 24 provides information on the explained variation of each equation. To distinguish between the three equations for TREAT, the table includes the independent variables in each TREAT equation that correspond to those shown in Table 23. Appendices A.1 and A.2 contain the complete regression output for the final dangerous drugs and narcotics path equations, respectively.

TABLE 24

COEFFICIENT OF DETERMINATION (r^2)* FOR
DANGEROUS DRUGS AND NARCOTICS
PATH EQUATIONS (n = 72)

Equation	Dangerous Drugs	Narcotics
AVAIL	.524	.089
PURE	.027**	.269
PRICE	.311	.275
ARREST	.954	.703
GUILT	.608	.812
TREAT with POP, PRICE	.315	N/A
TREAT with POP, PRICE, GUILT	.455	N/A
TREAT with PURE	N/A	.155
EROOM	.214	.079

* r^2 adjusted per the number of parameters in each equation
** Not statistically significant at $\alpha = .05$

Explanatory Power of the Path Models. A key issue centers around the ability to predict drug use at the local level. These data show that we were marginally successful in this effort. The criminal justice dependent variables showed a high amount of explained variation, clearly the largest of any of the equations. All of the r^2 values were above .6 and two were above .8. This result, as will be discussed later, was due to the close relationship of POP to both ARREST and GUILT.

Conversely, the ability to predict drug use in the health care system was poor. The r^2 in three of the five equations was very small, accounting for only between eight and twenty-one percent of the variation in drug use in the health care system. The TREAT equations for dangerous drugs had the highest r^2 values, but these were only moderate in strength. Drug treatment admissions were more predictable than emergency room mentions for both narcotics and dangerous drugs and dangerous drug use was more predictable than was narcotics use.

Turning to the other intervening variables in the model, AVAIL showed a much stronger relationship with its independent variable (POP) for dangerous drugs than for narcotics, with a moderately strong r^2 of .524 compared to .089 for narcotics. PURE showed no relationship with POP and AVAIL for dangerous drugs and was only weakly correlated with AVAIL and uncorrelated to POP for narcotics. PRICE of dangerous drugs was weakly related to POP and PURE and uncorrelated with AVAIL. Narcotics PRICE was unrelated to either PURE or AVAIL and weakly related to POP. These results show that the three DEA measures (AVAIL, PRICE and PURE) were only marginally related to each other. This point will be further illustrated when the path coefficients are examined.

Key Explanatory Variables in the Path Models. Figures 28 through 35 show the path models. The first four figures present the results for dangerous drugs and the final four depict the results for narcotics. These diagrams include all statistically significant path coefficients (standardized regression coefficients) as well as the coefficient that relates the residual term to the dependent variable. The error term coefficient is computed as the square root of $(1-r^2)$ (Duncan, 1975:64). Also included in the figures were hypothesized non-zero paths that were statistically insignificant. Figures 32 and 34 also show a hypothesized zero path that is statistically significant. Accompanying the figures are two tables. Table 25 contains the direct, indirect and total effects for the dangerous drugs path models, while Table 26 contains the same information for the narcotics path models.

The discussion begins with the first equation in the causal model (AVAIL) and proceeds to the remaining equations in their hypothesized order, ending with the EROOM equation. This analysis pays particular attention to the similarities and differences between the narcotics and dangerous drug equations.

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Drug Availability, Price and Purity Equations. POP was hypothesized to be positively related to AVAIL, and this occurs for narcotics and dangerous drugs. The relationship of POP to AVAIL was non-linear and exponential in form for both drug types. Both the path and residual coefficients indicate that POP was more strongly related to AVAIL for dangerous drugs than for narcotics.

PURE was hypothesized to be positively related to both POP and AVAIL. Neither variable was related to PURE in the dangerous drugs equation and only AVAIL had a direct effect on PURE in the narcotics equation. While POP did not directly influence PURE in the narcotics equation, it had a small indirect effect through its relationship with AVAIL, although the indirect effect of POP was much smaller than the direct effect of AVAIL.

POP, AVAIL and PURE were hypothesized to have an inverse relationship with PRICE. For dangerous drugs, AVAIL was unrelated to PRICE. POP was inversely associated with PRICE, while PURE showed a positive relationship to PRICE, opposite of what was expected. POP was a more important determinant of the PRICE of dangerous drugs than was PURE. Its direct effect on PRICE was almost double the direct effect of PURE. For narcotics, neither AVAIL nor PURE are related to PRICE. POP was the only variable associated with the PRICE of narcotics.

Criminal Justice Drug Use Equations. POP and PURE were hypothesized to have positive relationships and PRICE an inverse relationship with the criminal justice indicators. Looking at ARREST for dangerous drugs, both POP and PRICE showed significant relationships. PURE was not associated with ARREST for dangerous drugs. The positive association of PRICE on ARREST was opposite of the expected direction. In other words, when PRICE rose, so did ARREST. POP was the most important determinant of ARREST for dangerous drugs. Its total effect of .970 was substantially larger than both the combined direct effect of PRICE and the indirect effect of PURE through its relationship with PRICE.

Turning to ARREST for narcotics, neither PRICE nor PURE was related to ARREST for narcotics. POP exerted a strong positive relationship to ARREST in conjunction with AVAIL, whose relationship with ARREST was also positive. AVAIL was hypothesized not to have a direct effect on any criminal justice indicator. Like the dangerous drugs equation, POP was the most important determinant of ARREST for narcotics. Its total effect (.848) was more than six times the direct effect of AVAIL on ARREST (.133).

The equations for the other criminal justice indicator (GUILT) were also at odds with the hypothesized causal model. The final equation was the same for both dangerous drugs and narcotics. As expected, AVAIL was not related to GUILT, but neither were PURE and PRICE. POP was the only variable that showed a significant relationship to GUILT. The error coefficients show that POP was more strongly associated with GUILT of narcotics possession than with GUILT of dangerous drug possession.

Health System Drug Use Equations. It was hypothesized that POP, PURE and the criminal justice indicators have positive associations and PRICE an inverse relationship with drug use in the health care system. The key variables of interest are the criminal justice indicators. One aim of this study was to examine how well drug use in the criminal justice system relates to drug use in the health care system; and, hence, to drug use in the general population. As will be shown below, these data indicate a very negligible relationship between the two systems. One of the 8 relationships between the criminal justice and health care indicators was statistically significant, and it was only moderate in strength.

The first of the four equations included ARREST as the criminal justice indicator and TREAT as the health care system indicator. For dangerous drugs, POP and PRICE showed significant relationships to TREAT. PURE and ARREST were not directly related to TREAT for dangerous drugs. As was previously seen with the PRICE variable, its positive relationship to TREAT was not in accord with expectations; that is, admissions increased along with price increases. POP was the most important factor related to TREAT for dangerous drugs. Its total effect (.463) was greater than that of PRICE (.240). PURE, while having no direct effect on TREAT, had a small indirect effect through its relationship with PRICE (.072).

PURE was the only factor directly related to TREAT for narcotics. PRICE, ARREST and POP showed statistically insignificant coefficients in the narcotics TREAT equation. AVAIL and POP had indirect effects on TREAT, but these were much less important than the direct effect of PURE.

Turning now to the TREAT equation with GUILT as the criminal justice indicator, for narcotics, the equation was identical to the one described in the last paragraph. GUILT, like ARREST, was not associated with TREAT for narcotics.

A different equation resulted for dangerous drugs when GUILT was the criminal justice indicator. GUILT, unlike ARREST, showed a significant relationship to TREAT for dangerous drugs. Along with GUILT, PRICE and POP had significant positive relationships with TREAT for dangerous drugs. PRICE's positive relationship was contrary to expectations. POP had the greatest total effect on TREAT, followed by GUILT and PRICE. While GUILT had a slightly larger direct effect on TREAT (.386) than did POP (.365), POP showed a significant indirect effect through its relationships with PRICE (-.106) and GUILT (.304). The total effect of POP on TREAT for dangerous drugs (.563) was greater than the total effect of GUILT (.386) and PRICE (.204). PURE had a slight indirect effect on TREAT (.061) through its relationship with PRICE.

The situation was less complicated when examining EROOM as the health care system drug use indicator. For both drug categories, POP was the only variable significantly related to EROOM. None of the criminal justice or DEA indicators showed any relationship with EROOM. Although POP had a statistically significant relationship to EROOM, its influence on EROOM was minor. The error coefficients for dangerous drugs

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(.887) and narcotics (.956) indicated that most of the variation in EROOM was a function of factors not included in the causal model. A major difference between the dangerous drugs and narcotics equations was the functional form of the relationship between POP and EROOM. POP was linearly related to EROOM for narcotics and parabolically related to EROOM for dangerous drugs.

Why Not a Non-Recursive Causal Model?

As mentioned earlier, the original intent was to evaluate a causal model where drug use in the criminal justice system affected drug use in the health care system and visa versa. Estimation of this non-recursive association was not feasible because of, the pattern and strength of the relationships seen in these causal models.

In the non-recursive model, the criminal justice and health care system equations were just identified. This occurred because AVAIL was thought to have no direct effect on drug use, but only an indirect effect through PRICE and PURE. Further, PRICE and PURE were expected to have a significant influence on drug use. In order to be useful as an instrumental variable, AVAIL must "make a difference" in the drug use equation whose identifiability is in question, even though the difference occurs via indirect paths (Duncan, 1975:89). That is, AVAIL must be strongly related to drug use through its relationships to PRICE and PURE.

It is not enough to simply add an exogenous variable to satisfy the counting rule of identifiability. As Klein (1962:18) correctly warns, "Identification cannot be cheaply achieved in any particular investigation by simply adding some weak or marginal variables to one of the relationships in the system. One must add something substantial and significant which has been previously neglected." If the instrumental variable is only marginal to the causal system, then it is impossible to empirically measure the magnitude of the causal effects with any reasonable degree of precision (Berry, 1984:60).

The analysis just presented makes it clear why estimation of a non-recursive relationship between criminal justice drug use and health care drug use was not possible with these data. AVAIL was not related to either PRICE or PURE for dangerous drug use. It was unrelated to the PRICE of narcotics and is only marginally related to the PURE of narcotics. Furthermore, only four of the sixteen possible relationships between PRICE and PURE with ARREST, GUILT, TREAT and EROOM showed statistically significant associations. In those four instances, PRICE and PURE were only weakly related to drug use.

FIGURE 28
PATH MODEL FOR DANGEROUS DRUGS WITH TOTAL ARRESTS
AS CRIMINAL JUSTICE VARIABLE AND DRUG TREATMENT PROGRAM ADMISSIONS
AS HEALTH CARE VARIABLE (n=72)

• • • • • hypothesized non-zero path
not statistically significant at α=.05

99
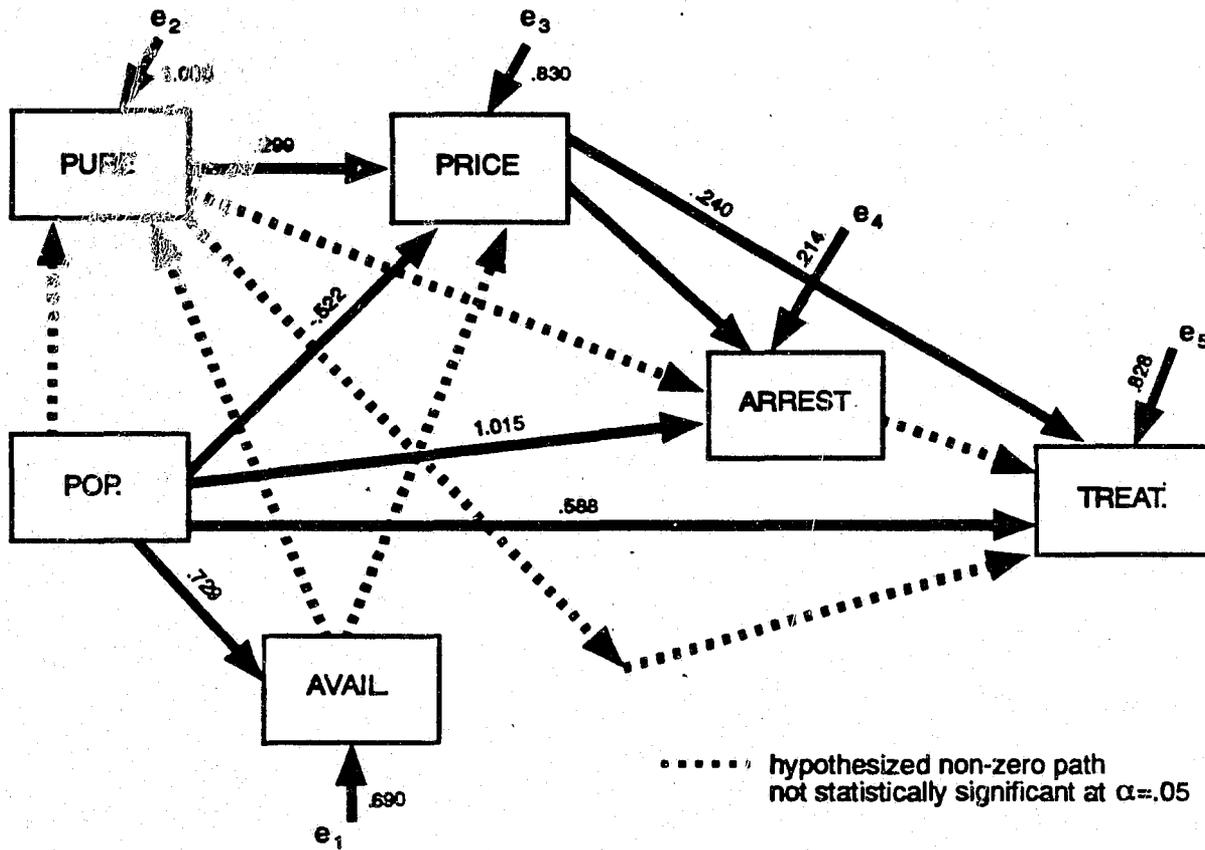
FIGURE 29
PATH MODEL FOR DANGEROUS DRUGS WITH GUILTY OF POSSESSION
AS CRIMINAL JUSTICE VARIABLE AND DRUG TREATMENT PROGRAM ADMISSIONS
AS HEALTH CARE VARIABLE (n=72)

•••••• hypothesized non-zero path
not statistically significant at $\alpha=.05$
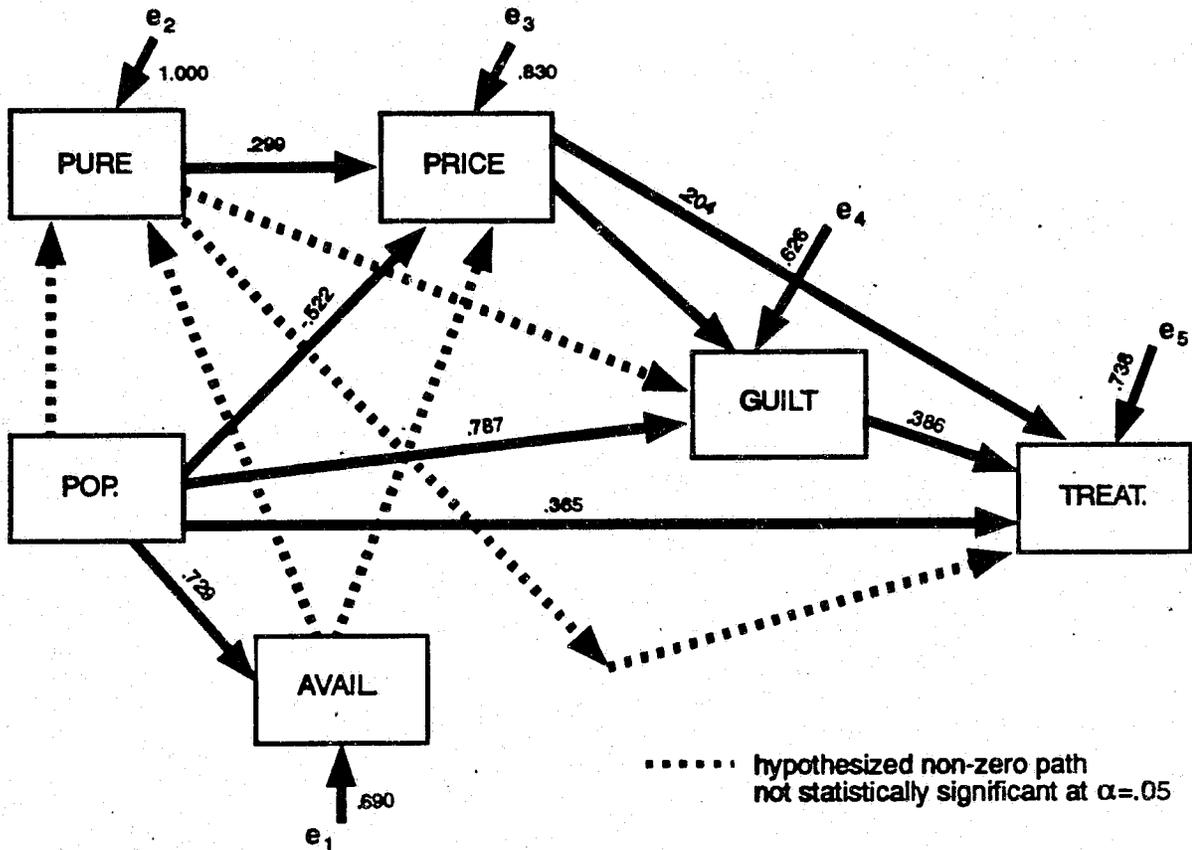
FIGURE 30
PATH MODEL FOR DANGEROUS DRUGS WITH
TOTAL ARRESTS AS CRIMINAL JUSTICE VARIABLE
AND EMERGENCY ROOM MENTIONS AS HEALTH CARE VARIABLE (n=72)

• • • • • • hypothesized non-zero path
not statistically significant at α=.05
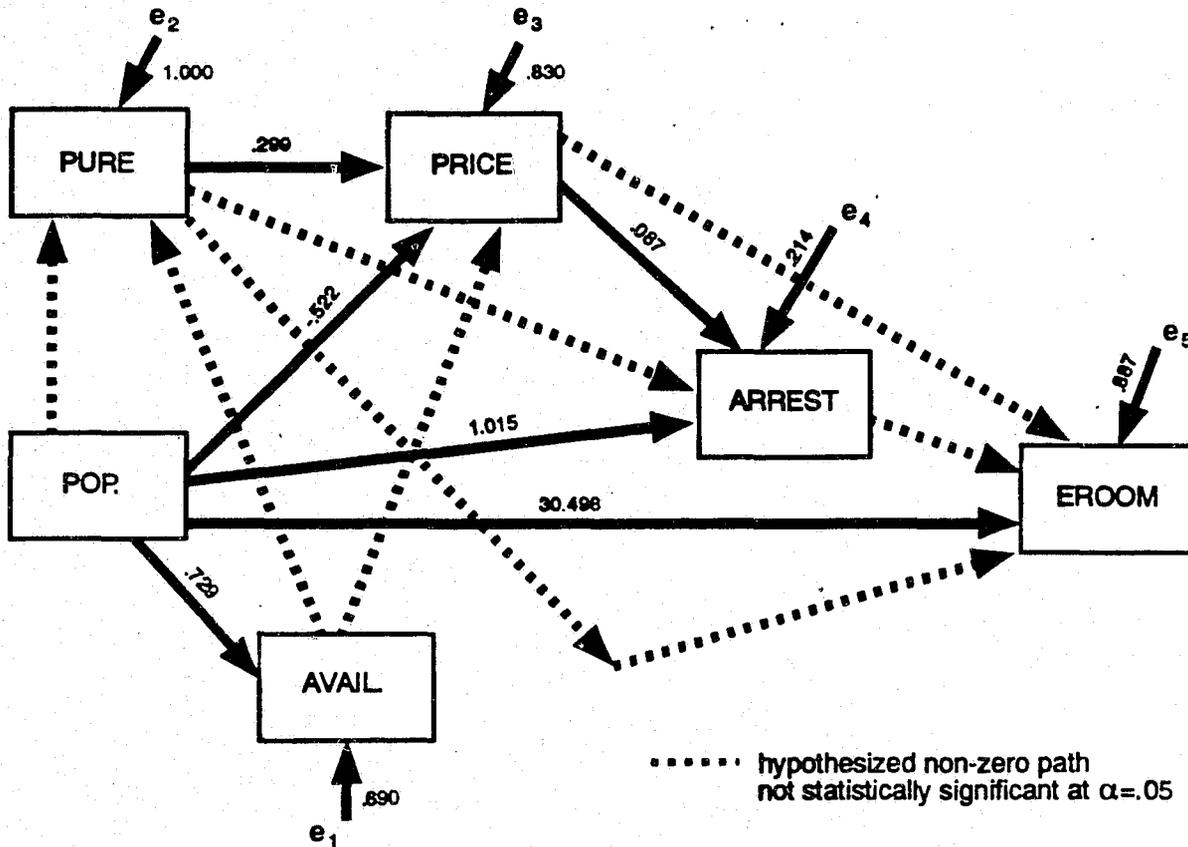
FIGURE 31
PATH MODEL FOR DANGEROUS DRUGS WITH GUILTY OF POSSESSION AS CRIMINAL JUSTICE VARIABLE AND EMERGENCY ROOM MENTIONS AS HEALTH CARE VARIABLE (n=72)

e_2 1.000

e_3 .830

PURE

PRICE .299

e_4 .626

e_5 .867

.622

GUILT

POP. .787

EROOM

30.498

.709

AVAIL.

.690

e_1

••••• hypothesized non-zero path not statistically significant at $\alpha=.05$

102
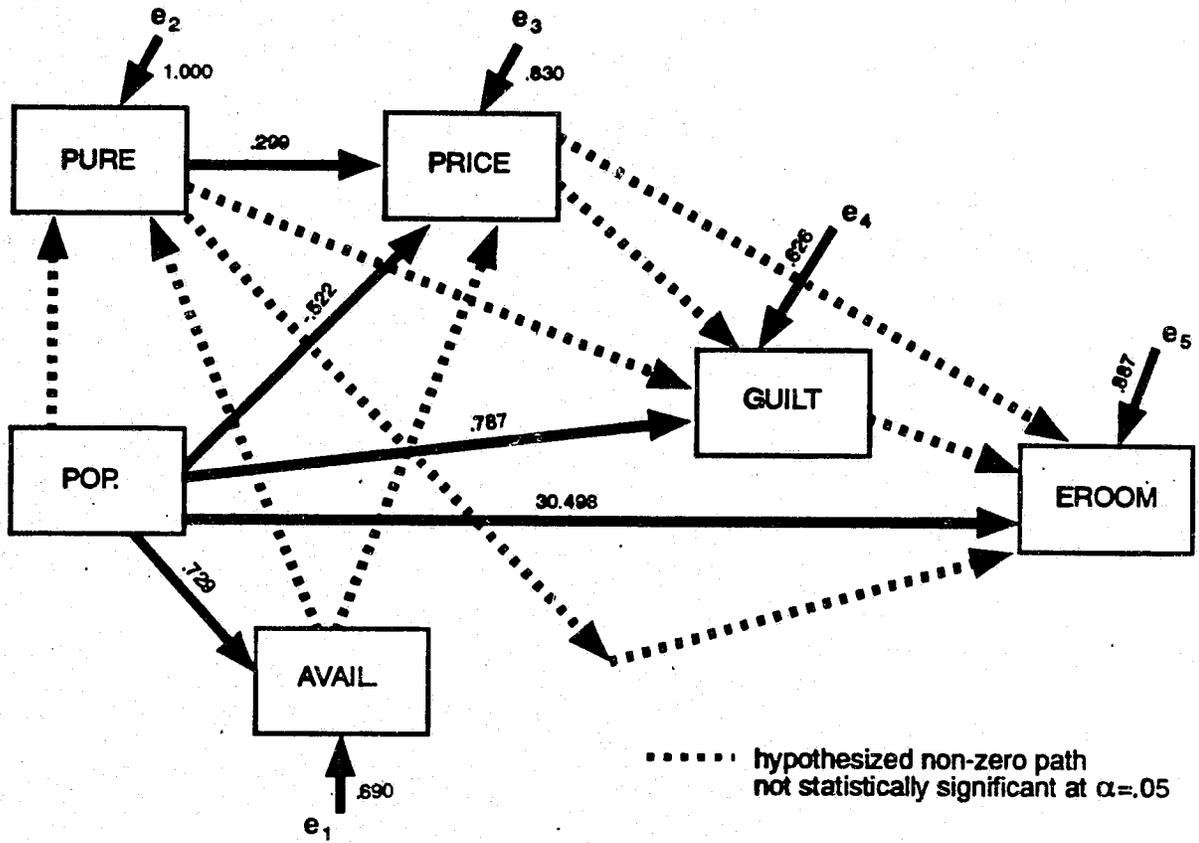
FIGURE 32
PATH MODEL FOR NARCOTICS WITH ARRESTS
AS CRIMINAL JUSTICE VARIABLE AND DRUG TREATMENT ADMISSIONS
AS HEALTH CARE VARIABLE (n=72)

■ ■ ■ ■ ■ ■ hypothesized non-zero path not statistically significant at α=.05
━━━━━ hypothesized zero path statistically significant at α=.05

103
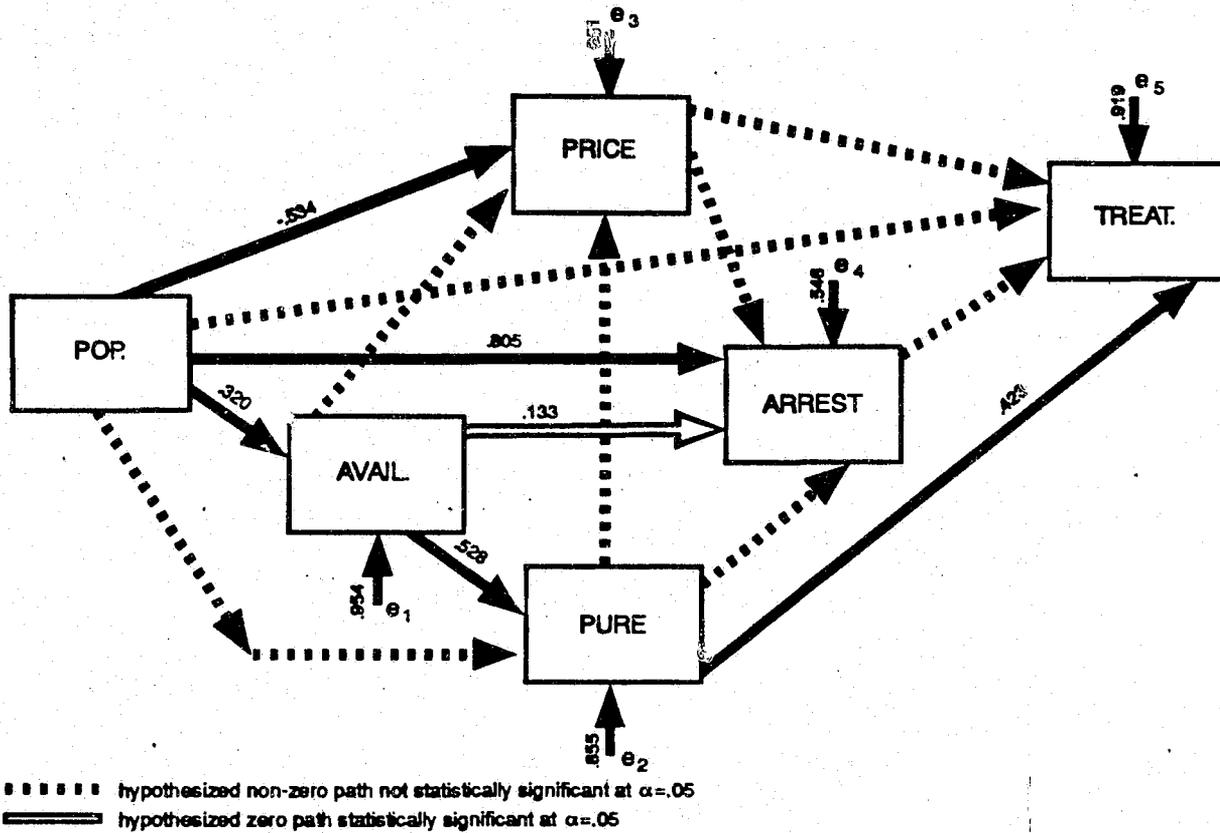
FIGURE 33
PATH MODEL FOR NARCOTICS WITH
GUILTY OF POSSESSION AS CRIMINAL JUSTICE VARIABLE
AND DRUG TREATMENT ADMISSIONS AS HEALTH CARE VARIABLE (n=72)

■ ■ ■ ■ ■ ■ hypothesized non-zero path not statistically significant at α=.05

FIGURE 34
PATH MODEL FOR NARCOTICS WITH ARRESTS
AS CRIMINAL JUSTICE VARIABLE AND EMERGENCY ROOM MENTIONS
AS HEALTH CARE VARIABLE   (n=72)

■ ■ ■ ■ ■ ■ hypothesized non-zero path not statistically significant at α=.05

━━━━━ hypothesized zero path statistically significant at α=.05
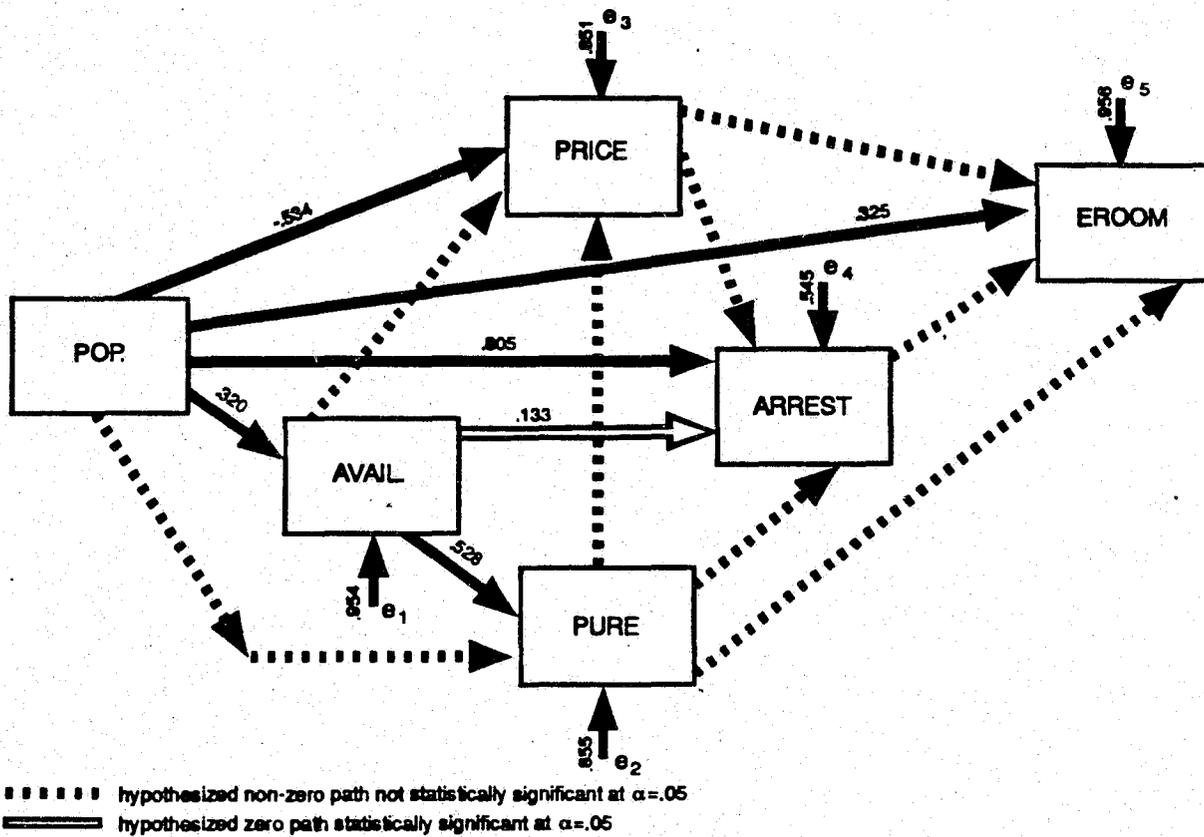
FIGURE 35
PATH MODEL FOR NARCOTICS WITH
GUILTY OF POSSESSION AS CRIMINAL JUSTICE VARIABLE
AND EMERGENCY ROOM MENTIONS AS HEALTH CARE VARIABLE (n=72)
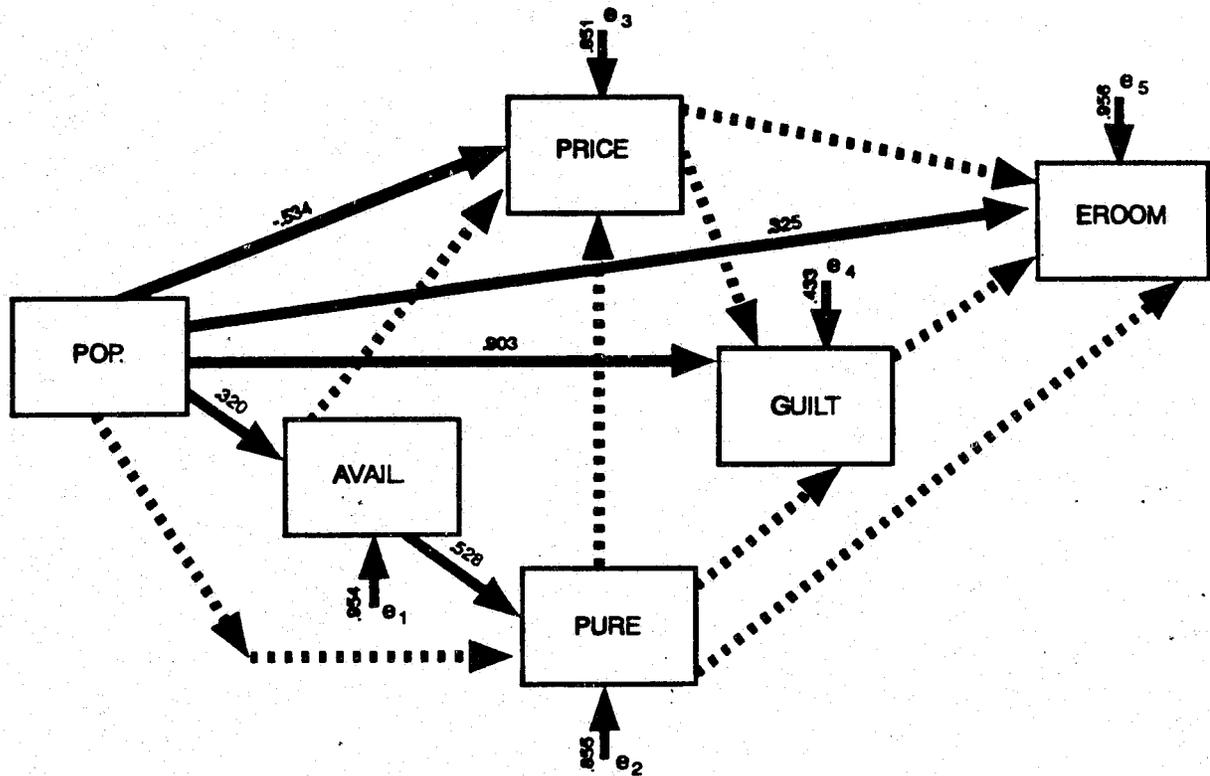
■ ■ ■ ■ ■ ■ hypothesized non-zero path not statistically significant at α=.05

TABLE 25

DIRECT AND INDIRECT EFFECTS
DANGEROUS DRUGS PATH EQUATIONS

	Direct Effect	Indirect Effect Via		Total Effect
AVAIL Equation				
POP	.729	-		.729
PURE Equation	None	None		None
PRICE Equation				
POP	-.522	-		-.522
PURE	.299	-		.299
ARREST Equation		PRICE		
POP	1.015	-.045		.970
PRICE	.087	-		.087
PURITY	-	.026		.026
GUILT Equation				
POP	.787	-		.787
TREAT Equation		PRICE		
POP	.589	-.125		.463
PRICE	.240	-		.240
PURE	-	.072		.072
TREAT Equation		PRICE	GUILT	
POP	.365	-.106	.304	.563
PRICE	.204	-	-	.204
PURE	-	.061	-	.061
GUILT	.386	-	-	.386
EROOM Equation				
POP	30.498	-		30.498

TABLE 26

DIRECT AND INDIRECT EFFECTS
NARCOTICS PATH EQUATIONS

	Direct Effect	Indirect Effect Via		Total Effect
AVAIL Equation				
POP	.320	-		.320
PURE Equation		AVAIL		
POP	-	.169		.169
AVAIL	.528	-		.528
PRICE Equation				
POP	-.534	-		-.534
ARREST Equation		AVAIL		
POP	.805	.043		.848
AVAIL	.133	-		.133
GUILT Equation				
POP	.903	-		.903
			AVAIL &	
TREAT Equation		PURE	PURE	
PURE	.423	-	-	.423
AVAIL	-	.223	-	.223
POP	-	-	.071	.071
EROOM Equation				
POP	.325	-		.325

SUMMARY

An objective of this research was to determine if integration of drug use indicators could provide a means to predict drug use trends. Specifically, the question addressed was this: *Can criminal justice indicators be used to predict drug use in the larger community, as defined by the health system?* Our approach was to select key variables, examine their association, and quantify the relationships through a statistical model. The results indicate marginal success in the development of a prediction model.

We began with a conceptual scheme that described how the independent variables (population, availability, price, purity) might be associated with the dependent variables (arrests, guilty dispositions, treatment admissions, emergency room mentions). Recognizing that the variables reflect indirect measures of drug use, we defined population as demand, and availability (supply) by seizures. We assumed that availability acted as an intervening variable between demand (population) and price and purity. We expected price and purity to have an inverse relationship and both to be inversely related to the justice and health indicators.

Through path analysis, the direct and indirect effects of independent variables on dependent variables were examined. To estimate the parameters of the time series equations, econometric techniques were employed.

The analysis of the models showed only marginal success in predicting drug use in the criminal justice system. This was due to the association among population, arrests, and guilty dispositions. However, the ability to predict drug use in the health system was poor because of weak correlations among the variables.

The three DEA measures of availability, price and purity, perceived as intervening variables, were only marginally related to each other. These measures were either uncorrelated with the justice variables or related in an unexpected direction. The population variable was the only one to show a significant relationship to guilty dispositions.

With respect to the health care indicators, population was the most important factor associated with treatment admissions for the dangerous drugs model, although guilty dispositions were significantly related to treatment. For the narcotics model, purity was the only variable directly related to treatment.

For both drug categories, population was the only variable significantly related to emergency room mentions.

These mixed and inconsistent results suggest that the association between criminal justice drug use indicators and health system indicators of drug use is negligible. Further, our analysis suggests that integrating justice indicators are not reliable indicators for predicting drug use in the larger community, as measured by the health system data.

Other research has shown different results. For example, in their study of heroin, Levin, et al. (1975), showed cause and effect linkages resulting in the feedback loops that are certainly clear on a conceptual basis. In their research, Levin, et al. (1975), state that "the rate at which the number of users grows is partly a function of drug availability and conversely, availability is determined largely by the number of users in the community. Changes in one factor eventually effect the other, and new feedback loops are created." Woodward, et al., in their study of longitudinal models of heroin use, found that "the inclusion of price added nothing unique to the model because of its high variability and its high negative relationship to purity" (Woodward, et al., 1985).

Proximity to the source of supply was the most important explanatory variable in predicting heroin use in an analysis of drug abuse correlates conducted by the Research Triangle Institute (RTI). This study of metropolitan areas and neighborhoods suggested that some indicators of heroin use can be predicted by combining a relatively small number of variables. The results suggested that there is a relationship between the supply of heroin and subsequent health indicators related to heroin use. However, several variables, such as race, sex, age, and composition of cities, found important in previous studies were not related to heroin use indicators in the RTI study (Greenberg and Roberson, 1978).

We can speculate as to the reasons why our models did not show expected results. First, our measures are indirect or relative measures of drug use. The variables reflect characteristics of drug markets and consequences for drug users rather than actual use. Patterns of use, such as frequency and intensity, are unknown through these measures. Time series aggregate modelling can mask relationships that occur on an individual basis. Limitations of, and variations within, the individual variables may have been a factor as well. These were noted throughout the report and are summarized in the concluding chapter. Our definitions of variables may have been incorrect. For example, Greenberg, et al., defined availability/supply in terms of price and purity. We chose to use drug seizures as a measure of availability which impacts both price and purity. Other studies have examined one drug type only. The variations among the indicators may be associated with drug type. The dangerous drug category was delineated for each variable, but cocaine and heroin were combined in the narcotics category because the arrest variable does not refine them by drug type.

Drug use is a complex problem with many causes. There is likely a multitude of factors in the social environment and in the characteristics of individuals that contribute to drug use. Some variables are more appropriately studied on an individual basis rather than at an aggregate level of analysis. Conversely, very large data sets may be more amenable to variations within measures.

Some of our assumptions about drug market dynamics may have been faulty. We assumed that price and purity were positively associated and both related to availability. Our analysis showed no statistical justification for combining them as others have done. We assumed an inverse relationship between price and purity. Based on discussions with narcotics officers, if the price was low, the drug(s) would be plentiful, and purity expected

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to be high. This was not the case in our analysis as price and purity moved in the same direction. We also assumed that, if purity is high, more people would use, and arrests and treatment admissions would increase. On an individual basis, the converse might occur. For example, some users of black tar heroin, cognizant of its potency, may restrict their use, thereby reducing the risk of arrest and entry into the health system.

The factor of price, influenced by demand (population), availability, and purity, was hypothesized to have an inverse association with both justice and health indicators. However, higher prices also may increase the "search" time (as defined by Kleiman) needed by users to find drugs, resulting in less consumption followed by a reduction in arrests and admissions to treatment. Kleiman argues that higher prices may lead some drug abusers to commit more crimes in order to buy drugs, thus increasing the risk of arrest. Law enforcement's impact on consumption is also associated with their focus: high level dealers versus street sellers/users. Changes in consumption may occur in spite of changes in price, due to police activities that increase the risk to both dealers and users. Illicit drug markets differ in their user populations, the harms they cause, and their vulnerability to police pressure (Kleiman, 1989).

It was noted earlier that the Drug Use Forecasting (DUF) data had an insufficient number of data points for inclusion in the model. Others may wish to develop alternative models using the DUF quarters. In San Diego, 80% or more of the arrestees have shown positive drug use results from 1988 to 1990. Therefore, the utility of adding DUF data to our model (given sufficient data points) would have been negligible.

Our modelling results may be associated with San Diego's proximity to the busiest international border in the world. It is believed to contribute to drug distribution and trafficking.

Others may wish to replicate our models to explore whether or not San Diego County is unique.

CHAPTER 6
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

CHAPTER 6
SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The consequences of widespread drug use and associated criminal behavior are critical concerns for all levels of government. Policymakers as well as communities are seeking ways to reduce the supply of, and demand for drugs in this country. Improving our abilities to control drug use requires solid information about the nature and scope of the drug using population and reliable data to assess the impacts of control policies.

This research, sponsored by the National Institute of Justice, explored the local use and value of drug use indicators in the justice and health systems for informing policy and developing change strategies.

This concluding section presents each research objective along with a brief summary of results and recommendations for improving the use and value of data measures.

Objective: Identify sources of drug abuse information in the justice system and the health system and examine trends over time.

DISCUSSION

The data measures examined in the trend analysis fall into two major categories shown below:

Criminal Justice	Health System
• reported crimes	• emergency room drug admissions
• drug arrests	• deaths related to drug use
• dispositions of drug arrests	• drug treatment admissions
• diversions	
• sentences of convicted drug violators	
• Drug Use Forecasting (DUF)	
• drug seizures	
- price	
- purity	
- volume	

Trends in drug use indicators were explored in a number of ways such as changes in absolute numbers, rates per 1000 population, by drug type when possible, and characteristics of users.

In general, all indicators showed significant increases over the six-year period studied (1982-1987). The following statements briefly summarize the trends for San Diego County:

- The crime rate rose by 15%, with considerable increases in violent offenses and motor vehicle theft.

- Adult arrests for felony drug violations escalated by 151%. By 1987, one out of three felony arrests involved drug violations.

- Both the narcotics category and the dangerous drug category showed increases over 100%. The arrest categories are not separated by specific drug type, but interview results suggested that widespread use of cocaine and amphetamines is associated with the sharp rise.

- Over half of all drug arrests in each year were for possession of drugs which includes being under the influence. Arrests for drug sales rose by 117% from 1982 to 1987.

- Characteristics of drug violators are similar to the total arrestee population. Over half are White/Anglo, nearly forty percent (40%) are in the 18-24 age group, and the majority are males. Over time, the proportion of Hispanics and females has increased.

- Dispositions involving drug charges accounted for about one out of five of all dispositions in 1982, rising to approximately one out of three in 1987.

- Over six years, more drug offenders have been convicted and sentenced to harsher penalties. Paralleling the arrest trends, dispositions involving dangerous drugs have risen considerably. Those convicted for drug sales were more likely to be incarcerated than defendants charged with possession.

- Seizures reported by DEA of cocaine and dangerous drugs showed the most consistent rising trend over time, although the average amount seized per drug suggested wide fluctuations from year to year. Purity levels also varied when examined by a range of purity. Most exhibits involving heroin were less than 20% pure in all years. Cocaine purity has increased, with more than two-thirds in 1987 in the 81-100% range, perhaps due to the use of crack. With respect to dangerous drugs, primarily amphetamines, purity ranges showed erratic trends. Data on price are impacted by weight and purity. The DEA STRIDE file includes wholesale and retail prices. An attempt to delineate street market price resulted in inconsistent results. Estimates of price through other sources show drops in prices for all drugs except marijuana, which has stayed constant.

- The Drug Use Forecasting (DUF) program, in which arrestees participate in interviews about their drug history and provide voluntary urine samples, represents a relatively recent drug use indicator of a select population. The DUF data are not included in the six-year trend analysis since the program did not begin until mid-1987. Nevertheless, the program is included in this discussion because the DUF findings represent the most direct indicator of drug use of all data sets considered. Since April 1988, quarterly urine testing of a sample of San Diego male arrestees has showed about eight out of ten positive for drug use. Cocaine and amphetamine drug positives have shown considerable increases for both male and female arrestees.

- The DAWN (Drug Abuse Warning Network) data set includes deaths in which drugs are noted and hospital emergency room admissions involving drugs. Deaths over six years nearly doubled, with amphetamines and cocaine involvement showing significant increases. Emergency room mentions showed similar trends, although mentions involving heroin dominated in all years except 1987.

- From 1982 to 1987, drug treatment admissions increased by 166%. Cocaine admissions rose by 148% but accounted for 5% or less of all admissions in each year. Most clients cited heroin as their primary drug problem, which is not surprising since private methadone clients are included in the data set. Amphetamine use as a primary drug problem rose by over 700%. Differences in characteristics of the drug using populations with respect to gender, age, and ethnicity suggest caution when comparing the groups. Variations reflect select populations, coming to the attention of public agencies for different reasons relative to drug use.

Although the indicators generally show increased drug use over six years, declines in some indicators in certain years are not easily explained by changes in other indicators. Interviews with health and justice representatives augmented the official trend data with perceptions of drug market dynamics and characteristics of users. There was agreement that the primary drugs examined are widely available to meet the continuing demand in San Diego. Observers indicated that heroin users in recent years are more likely to mix heroin with other drugs. Dealers and users of cocaine and amphetamines are likely to be in the 18-30 age group while heroin users tend to be older. Criminal activity is associated with use of the primary drugs, either in terms of disputes over sales or to gain income to support use.

Objective: Identify gaps in databases, resources and operations that impact strategy development.

Objective: Assess the use and value of drug use indicators for planning and policy-making.

A survey of elected officials and members of drug task forces supported the findings of official trend data and observations of health and justice professionals with respect to nature and scope of the drug problem. Availability of drugs, gang involvement in

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distribution, and limited resources to confront the drug problem were factors identified with increased seriousness of drug use. Respondents named cocaine and amphetamines as the drugs of primary concern in San Diego. To understand the drug problem, over three-quarters cited the media and/or their professional contacts as primary data sources. When asked specific types of information that are used, only two indicators were mentioned by more than half of the respondents: drug seizures and drug arrest data. Information that is not available, but of interest, includes surveys of drug use in schools, number of drug exposed infants, and more detailed statistics by area of the County.

Justice and health administrators and practitioners use a variety of data sources to identify and describe the drug issue and direct enforcement and treatment efforts. Arrest data were the only indicator cited by more than 80% of those interviewed. Other sources used by over half or more were dispositions of drug arrests and results of urine tests (either arrestees or probationers). In addition, more than half mentioned citizen complaints and drug seizures. Few observers cited health system data such as treatment admissions as a source. In fact, while the health system respondents perceived value in the justice indicators, the reverse was not true. Other data sources such as drug related traffic accidents, and household surveys (national), and school (state) surveys were not perceived as useful.

Justice agency administrators used three indicators most frequently: arrests, seizures, and DUF results. These data are used primarily to analyze the issue, plan for resources, educate the community, and inform elected officials. The use and value of citizen complaints cannot be underestimated, according to administrators. Although not compiled in a systematic routine manner, the impact of two or three local citizens can result in changes in strategies and/or resource deployment.

Mid-level managers cited the value of informants for "real-time" data on the drug market and users. Much of the information about price and purity is based on street knowledge. Informant information is generally based on individual cases and not compiled in a data base for use by others. Other indicators considered useful included probation revocations, number of persons re-entering treatment, successful prosecutions, and number of users and dealers leaving the area. These measures are generally only compiled "in-house" or known through subjective analysis. The matrix on page 119 describes the benefits and limitations of current sources for drug related data. Problems, generally, are associated with timeliness, lack of refinement (e.g., inclusion of cocaine and heroin in single arrest category), accessibility to data, and questions regarding validity. Respondents identified other types of data that would provide a more complete picture of the drug problem. These included:

- types of treatment associated with specific outcomes for abusers of certain drugs
- seizures by type and location
- ways to measure progress
- innovative techniques used around the country
- a community user survey.

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SAN DIEGO REGIONAL DRUG DATA SOURCES

Data Source	Collection Agency	Features	Limitations
• Reported Crime	FBI - Local law enforcement	• Most serious (FBI Index) • Most likely reported • Can track trends	• Does not include drug offenses • Underreported • Reporting procedures may vary
• Arrests	FBI - Local law enforcement	• Constancy best measure of police effectiveness • Can determine possession or sales • Can separate by arrestee socio-demographic characteristics • Helpful for trend analysis	• Does not separate by drug type • Aggregate level • Determined by law enforcement focus and practices • Not timely • Does not include DEA arrests or arrests by Regional Narcotics Task Force
• Offender Based Trans-action Statistics (Dispositions)	State Bureau of Criminal Statistics	• Tracks trends in system process-ing from arrest to disposition • Can assess legislature impact	• Not timely • Adults and felons only • Cannot separate by drug type • Not tied to arrests in same year

• Drug Seizures
  - Price
  - Purity
	DEA	• Can assess effects on distribution and use
		• Measure of drug market dyna-mics
			• Not routinely reported
			• May not include seizures by local law enforcement
			• Wide fluctuations at local level

• Drug Use Forecasting (DUF)	Federal/State/Local/ NIJ/SANDAG	• Can track trends in drug use • Provides information on patterns of drug use • Most direct indicator of drug use in select population	• May not represent all arrestees • Does not include misdemeanors • Drug use patterns based on self report

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• Treatment Admissions	State Alcohol and Drug Services Program (CAL-DADS)/County Drug Services	• Provides trend analysis • Provides socio-demographic information on clients • Can identify drugs of use	• State and local agencies revise/update file independently • Refers only to users who come to treatment • Numbers dependent on available treatment resources
• Drug Abuse Warning Network (DAWN) - Emergency Room Episodes	NIDA/Selected local hospitals	• An indicator of use in general populations • Can track trends • Less likely to be impacted by law enforcement practices	• Based on self report • Hospitals not known • Reporting procedures vary
- Drug Involved Deaths		• An indicator of use in general populations • Can track trends • Less likely to be impacted by law enforcement practices	• Reflects endpoint in drug use

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The National Drug Control Strategy encourages an integrative approach to drug control that includes education, prevention, enforcement, and treatment efforts. To understand the nature and scope of the drug problem, the database should be integrated as well. Official measures of drug abuse in San Diego County are compiled and used primarily by the sponsoring agency. For example, the police agencies collect arrest statistics, the drug services program compiles data on treatment admissions, and DEA develops data on seizures. There is no centralized source for obtaining all measures nor are they available at similar points in time. With the exception of two administrators, professionals in the justice and health fields do not utilize data from both systems. Most are interested in the information that pertains to their agencies. Justice administrators are less likely to see value in health indicators compared to justice indicators. However, more health administrators value the justice indicators. As one stated, "putting all the data together completes the picture of drug use." And herein lies the crux of use and value of drug use indicators. How the indicators are used is dependent on the purposes of the user. If an administrator or policymaker is describing the drug problem, he/she is not likely to incorporate indicators from different agencies. This is even less likely to occur when the purpose involves resource allocation or policy change. In these instances, each sponsoring agency is likely to use its own statistics to support, justify, or confirm the need for change. Often the data measures most likely to effect change are those least likely to be compiled in a standardized, routine manner; such as complaints from citizens and data gained through informants.

Our findings suggest that the utility of several data measures is limited by accessibility (or perceived to be unaccessible), timeliness, and the gaps in the data sets. There is no centralized source for obtaining both health and justice data related to drug use. Often, by the time the data are available (e.g., DAWN data, DEA seizures), the circumstances, patterns, and consequences of drug use have changed and the data are no longer viable for directing change strategies. Treatment admissions do not allow knowledge of the proportion of all drug users who are in treatment. Also, although the decision makers use the trend indicators to confirm increased drug use, it is difficult to discern how much the increase is associated with law enforcement focus and the availability of treatment resources. Differences among the data sets are troublesome when attempting to document overall drug use. The DUF data demonstrate extremely high drug use among the arrested population. But characteristics and drug use patterns of arrestees differ considerably from the treatment population.

Taken alone, each data set can provide useful trend information. Examining several drug use indicators, over time, can enhance the drug picture, but limitations and variations within and among data sets must be considered when integrating databases.

Aggregate data on multiple drug use indicators can offer dimensions of the drug problem within select populations. However, efforts to assess drug control strategies require more refined data sets and carefully controlled studies that link new strategies to results. For example, success of an enforcement effort must be measured, not only in terms of arrests, but the consequences of arrests such as prosecution. New treatment strategies must incorporate methods for follow-up on clients to assess the benefits of treatment in reducing drug use. Resources should be allocated to include measurement of "what worked."

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Objective: Identify current strategies to address drug use.

Both justice and treatment representatives cited several newly-implemented approaches to address the drug problem. These are associated with target populations such as drug using pregnant women, intravenous drug users, and offenders in the justice system identified as drug users. All police agencies have developed undercover narcotics units and are pursuing traditional techniques more aggressively, such as buy-bust tactics, use of the asset seizure process, and civil abatement procedures.

Effectiveness of efforts is hampered by insufficient resources and lack of trained staff according to those interviewed. Other impediments were mentioned: "there are no adequate measures for determining if approaches are effective" and "there is no comprehensive, regional plan for narcotics control."

Objective: Determine the use and value of drug testing information (DUF).

Interviews and surveys of 73 justice and health professionals indicate that the majority are familiar with the Drug Use Forecasting (DUF) program and have used DUF data to suggest the link between drug use and crime, to examine trends in drug use, identify the number of offenders who need treatment; to support legislation, and to educate the community. The majority of those surveyed felt that all arrestees should be tested for drug use and the results used to inform decisions about pretrial release and conditions of probation and parole. These perceptions suggest expanding the current objectives of the DUF program to use urine testing as a tool to monitor offender behavior.

Objective: Develop a statistical model that integrates justice and health indicators to examine the extent to which they provide more powerful analytical tools than individual indicators.

Analysis of indirect measures of drug use in the justice and health systems revealed that these indicators are only weakly associated. The capacity to measure drug use is impacted by the limitations within data sets in terms of what is being measured, how it is defined, data collection methods, drug market dynamics, and other factors that can only be speculated with respect to impact on individual variables. Other research studies have shown stronger associations among variables.

Different drug use correlates have been used in a variety of studies. Variables found to be significant in one framework have little or no association in another. Our conclusions may be a result of combining heroin and cocaine in the narcotics category for purposes of model development. Limitations within data sets precluded desired refinement of some variables. None of the data measures reflect patterns of drug use such as frequency and intensity. The infrequent drug user in the arrestee population does not resemble the experimental user who ingested "bad stuff" and became an emergency room statistic nor does he reflect the hard-core heroin addict who reports daily to the methadone clinic. Addiction careers differ within different populations and by type of drug. The typical

aggregate data measures examined here do not capture this information. Refinement and clarity of measures may lead to stronger associations between justice and health indicators. Cross-sectional analysis of different regions may offer alternative results for statistical modeling. San Diego County, with its proximity to the busiest international border in the world, may be unique with respect to trends in drug use.

RECOMMENDATION FOR LOCAL PLANNING AND POLICY

- Official measures of drug use such as arrests and treatment admissions should be refined to improve their timeliness, quality and use. For example, criminal code sections could be revised to separate drug types, although the Uniform Crime Reporting (UCR) Incident-Based Reporting may address some of these issues.

- In areas in which several measures are compiled on a standardized, routine basis, a centralized source should be established for analysis and dissemination of trend information. This would be accomplished in a variety of ways, contingent on size of jurisdiction, number and type of sponsoring agencies, as well as stakeholders in official positions. Many jurisdictions have task forces reflecting several disciplines that address the drug issue. These could be used as a central, regional source. Other existing groups with a regional perspective include coordinating councils, and councils of governments. Another alternative would be the formation of a central group with representation from different entities and responsible to local government. Community input is essential to maintain support and balance the drug picture.

- It is important to recognize that the drug issue is dynamic and a major change in one factor may impact other indicators. For example, an intense effort toward supply reduction may result in increased production of synthetic drugs. Examining all available indicators over time may identify major changes.

- Local agencies should consider standardizing and compiling other data measures that are deemed valuable for developing strategies and assessing effectiveness. Enforcement-related measures identified in this study include price and purity of drugs. Informant data could be utilized in a systematic manner to provide these measures on a more timely basis. The Drug Market Analysis (DMA) projects recently funded by the National Institute of Justice systemize both informant input and citizen complaints to identify "hot spots" and assist tactical planning. Other measures that should be collected include:

  - number of persons re-entering treatment programs

  - probation revocations of drug violators

  - drug seizures by location

  - case tracking from arrest to disposition.

- When new strategies are implemented, local funding sources should require that a percentage of the resources be devoted to impact evaluation. Although long-term rigorous studies are expensive, local colleges and universities can often be of assistance. Regional studies that would be of interest include a needs assessment of the drug problem and a user survey of the community patterned after the NIDA household survey.

- Although this research addressed adult drug users, youth involvement in drugs is a major concern. Trends in student drug use can be assessed through surveys as well.

- In sites in which Drug Use Forecasting (DUF) is operating, policymakers should consider expansion of urine testing to monitor and control offender behavior and inform pretrial release decisions. Survey results suggest wide acceptance of drug testing for these purposes.

As noted earlier, the national drug control strategy suggests a balanced approach of prevention, education, enforcement, and treatment. Drug control policies are shaped by assumptions and statistics about drug use and users. To direct resources appropriately, policymakers need an accurate picture of drug use. The data measures examined in this study are those most likely to be available in most jurisdictions. There are a myriad of data measures available. They differ markedly with respect to scope of coverage, purpose of compilation and method of data collection. The sources explored are primarily "official" statistics and collected by most large jurisdictions. Integrating several data sets provides a more comprehensive picture of drug use than a single indicator in isolation. Although our causal model of drug use was not successful, other modeling efforts may show different results by using other variables and populations.

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APPENDICES

APPENDIX A.1

PATH EQUATION STATISTICS FOR DANGEROUS DRUGS
(n = 72)

						Estimation Algorithm

I. Dependent Variable = LN(AVAIL) R^{-2} = .524   D.W. = 2.071   OLS

Independent Variables	b	SE	Beta	PROB
POP	.0000619	.0000069	.729	.0000

Constant = -37.8771

II. Dependent Variable = PURE R^{-2} = .027   D.W. = 2.070   OLS

Independent Variables	b	SE	Beta	PROB
POP	-.0000361	.000129	-.039	.7807
AVAIL	.001573	.000874	.253	.0763

Constant = 85.5707

III. Dependent Variable = LN(PRICE) R^{-2} = .311   D.W. = 1.954   OLS

Independent Variables	b	SE	Beta	PROB
POP	-.0000140	.0000027	-.522	.0000
PURE	.0087605	.0029035	.299	.0036

Constant = 13.6068

IV. Dependent Variable = LN(ARREST) R^{-2} = .954   D.W. = 1.827   OLS

Independent Variables	b	SE	Beta	PROB
POP	.0000278	.00000079	1.015	.0000
PRICE	.0010698	.0003516	.087	.0033

Constant = 14.5158

V. Dependent Variable = SQRT(GUILT) R^{-2} = .608   D.W. = 2.094   C-O

Independent Variables	b	SE	Beta	PROB
POP	.000078	.0000075	.787	.0000

Constant = -50.0063

Estimation
Algorithm

VI.   Dependent Variable = TREAT R^{-2} = .455   D.W. = 2.225   C-O

Independent Variables	b	SE	Beta	PROB
POP	.00049	.00020	.365	.0175
PRICE	.05806	.02603	.204	.0291
GUILT	.39419	.15015	.386	.0107

Constant = -319.9592

VII.   Dependent Variable = TREAT R^{-2} = .315   D.W. = 2.216   C-O

Independent Variables	b	SE	Beta	PROB
POP	.00088	.00015	.588	.0000
PRICE	.06111	.02574	.240	.0205

Constant = -587.4574

VIII. Dependent Variable = EROOM R^{-2} = .214   D.W. = 2.031   OLS

Independent Variables	b	SE	Beta	PROB
POP	-.024147	.00646	-30.200	.0004
POP^2	.00000002	.000000004	30.498	.0003

Constant = 8662.7006

LN   = Natural Logarithm
SQRT = Square Root
OLS   = Ordinary Least Squares Estimates
C-O   = Cochran-Orcutt Estimates

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PATH EQUATION STATISTICS FOR NARCOTICS
(n = 72)

Estimation Algorithm

I. Dependent Variable = LN(AVAIL) R^{-2} = .089 D.W. = 1.871 — OLS

Independent Variables	b	SE	Beta	PROB
POP	.0000225	.0000080	.320	.0062

Constant = 7.4050

II. Dependent Variable = PURE R^{-2} = .269 D.W. = 2.102 — OLS

Independent Variables	b	SE	Beta	PROB
LN(AVAIL)	3.54784	0.68161	.528	.0000

Constant = 50.3241

III. Dependent Variable = SQRT(PRICE) R^{-2} = .275 D.W. = 2.237 — OLS

Independent Variables	b	SE	Beta	PROB
POP	-.0000769	.0000146	-.534	.0000

Constant = 64.8139

IV. Dependent Variable = LN(ARREST) R^{-2} = .703 D.W. = 2.089 — C-O

Independent Variables	b	SE	Beta	PROB
POP	.0000161	.0000013	.805	.0000
LN(AVAIL)	.023436	.0117170	.133	.0500

Constant = -6.3978

V. Dependent Variable = (GUILT) R^{-2} = .812 D.W. = 1.1774 — OLS

Independent Variables	b	SE	Beta	PROB
POP	.0008081	.000046	.903	.0000

Constant = -535.5953

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Estimation
<u>Algorithm</u>

VI.	Dependent Variable = TREAT	R^{-2} = .155	D.W. = 2.095			C-O
	Independent Variables	<u>b</u>	<u>SE</u>	<u>Beta</u>	<u>PROB</u>
	PURE	2.3918	0.6214	.423	.0003
	Constant = 277.4083				
VII.	Dependent Variable = EROOM	R^{-2} = .079	D.W. = 1.936			C-O
	Independent Variables	<u>b</u>	<u>SE</u>	<u>Beta</u>	<u>PROB</u>
	POP	.0000097	.0000034	.325	.0061
	Constant = 3.3297				

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LN   = Natural Logarithm
SQRT = Square Root
OLS   = Ordinary Least Squares Estimates
C-O   = Cochran-Orcutt Estimates