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The Epidemiology of Cocaine Use and Abuse

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Cocaine Use in Arrestees: Refining Measures of National Trends by Sampling the Criminal Population

Eric D. Wish and Joyce O'Neil

Estimates of the prevalence of drug use in the United States most frequently come from surveys of household or senior high school students. While these surveys yield valid estimates of drug use trends in persons who live in relatively stable households or who have stayed in school, they omit some of the most deviant drug abusers in the population. Persons who are hospitalized, detained by the criminal justice system, have dropped out of school, or are unlikely to be available at home are missed. While these surveys typically contain a caution that the samples have the above limitations, their estimates are often used to describe drug use in the entire population. It is questionable, however, whether a trend in drug use among high school students or household members is applicable to the deviant population detained by the criminal justice system.

A more comprehensive picture of the Nation's drug use trends could be obtained if surveys of these more deviant segments of the population were used to augment the estimates from the national surveys. Fortunately, a new monitoring system, the Drug Use Forecasting (DUF) system, is providing the first quarterly information about trends in the offender population.

In this chapter, we use information from the DUF system to describe the prevalence of recent cocaine use in persons who have been arrested and detained by the criminal justice system. In comparing DUF statistics with those in other chapters in this volume, it will become obvious that the prevalence of recent cocaine use in arrestees dwarfs the estimates of drug use derived from surveys of the general population.

THE DUF PROGRAM

In 1987, the National Institute of Justice (NIJ) established the DUF pro-

gram, a data system for tracking drug use trends in arrestees in 25 of the largest cities in the United States. Every 3 months, a new sample of approximately 250 male arrestees in the booking facility in each participating city is asked to agree to a voluntary, anonymous interview about their drug abuse and treatment history. Each arrestee is also asked to provide a voluntary, anonymous urine specimen for analysis. Arrestees are usually interviewed while being processed in the city's central booking facility, within 24 hours of arrest.

Urine specimens are tested by EMIT® tests for 10 drugs: opiates, cocaine, PCP, marijuana, amphetamines (all amphetamine positives by EMIT are confirmed by gas chromatography), methadone, propoxyphene, barbiturates, methaqualone, and benzodiazepines. (The latter five drugs are rarely found in the DUF samples.) The urine tests are likely to detect use of heroin, amphetamines, or cocaine that occurred within the prior 24-72 hours. PCP and marijuana may be detected as long as 3 or 4 weeks after use.

DUF interviewers intentionally oversample persons charged with nondrug felony offenses. Prior research has demonstrated that persons charged with the sale or possession of drugs are most likely to test positive for drugs at arrest (Wish and Johnson 1986; Wish 1988). The DUF statistics would therefore be of little value if the samples mainly contained persons charged with drug offenses. To ensure obtaining an adequate number of persons charged with nondrug offenses, each site is instructed to limit the percentage of male arrestees charged with drug offenses to 25 percent. Although the seriousness of the arrest charge tends to be unrelated to whether a person tests positive for a drug, DUF interviewers also attempt to oversample persons charged with felony offenses.

The oversampling is achieved by asking the interviewers at each site to select arrestees in the following order: persons charged with a (1) nondrug felony, (2) nondrug misdemeanor, (3) drug felony, and (4) drug misdemeanor. The processing of arrestees in central booking facilities is often chaotic, and the sites vary in their ability to follow these priorities. The DUF estimates of drug use are robust, however, and do not change significantly even when the sample composition varies considerably along these dimensions. DUF statistics therefore describe arrestees charged with serious nondrug offenses and may underestimate the true level of recent drug use in the total arrestee population.

DUF interviewers typically station themselves in each city's booking facility for 10-15 consecutive evenings. The largest number of arrestees are

processed during this period. Over 90 percent of the male arrestees who are approached agree to be interviewed, and approximately 80 percent of the interviewees provide a voluntary urine specimen.

In late 1987, five DUF sites began to collect information from female arrestees. Because the number of females arrested in a city is typically far below that of males, DUF staff interviewed all available female arrestees, regardless of charge. The goal was to interview and obtain urine specimens from 100 female arrestees in each site. (The response rates for female offenders were similar to those obtained for males.)

LIMITATIONS

Our findings about drug use patterns and injection are based upon voluntary self-reports. Although every effort is made to convince the arrestees of the anonymity of the findings and that the information cannot be used against them, the jail environment is inherently threatening and there is considerable underreporting of recent illicit behaviors. (Many more persons test positive for drugs than admit to recent drug use in the interview.) Because we know that some arrestees do conceal their illegal behaviors, our findings about injection and drug use should be viewed as minimal estimates of these behaviors in the arrestee population. On the other hand, we have found considerable internal consistency in the interview information. When persons do report illicit behaviors, the information appears valid (Wish 1988). For example, arrestees in Manhattan who tested positive for drugs and who self-reported dependence on drugs had worse criminal records, more prior arrests for drug offenses, and more severe drug abuse histories than persons who tested positive but denied dependence.

Although DUF interviewers ask each arrestee about the use of alcohol, we do not test the specimens for alcohol. This decision was made primarily because alcohol is a legal drug and urine tests can only detect heavy recent use. In our research with arrestees in Manhattan in 1984, we found that alcohol was the only drug that more persons reported using than tested positive by urinalysis (Wish et al. 1986*a*).

FINDINGS

DUF pilot studies highlighted cocaine use in arrestees in 1984. Early estimates of cocaine use in arrestees came from research that later became the basis of the DUF system. During a 6-month period in 1984, we interviewed and obtained voluntary urine specimens from 4,847 males arrested and processed in Manhattan Central Booking. The sam-

ple consisted primarily of persons charged with nondrug felony offenses. The study found that 42 percent of the arrestees tested positive for cocaine. (The EMIT® tests could detect cocaine used 24-72 hours prior to providing the specimen.) At all age levels, cocaine was more likely to be detected than opiates, methadone, or PCP (Wish et al. 1986*b*). These results provided some of the first indications of a high level of cocaine use in offenders, even before the use of "crack" cocaine became common. Previous statistics about widescale cocaine use had come primarily from the sample of persons calling the 800 Cocaine Hotline. The findings from the study of arrestees in Manhattan were subsequently included in Congressional testimony indicating that cocaine had become a street drug (President's Commission on Organized Crime 1984).

Test results documented offenders' increasing use of cocaine in the 1980s. We returned to Manhattan Central Booking in the fall of 1986 to pilot some of the procedures to be used in the DUF program. Voluntary and anonymous interviews and urine specimens were obtained from samples of 200 male arrestees in September, October, and November. Again, persons charged with drug offenses were undersampled while felony arrestees were oversampled. The urine test results from the 1984 sample of arrestees and the samples in 1986 appear in table 1.

Between 1984 and the fall of 1986, the prevalence of recent cocaine use almost doubled. This change in cocaine use was even more dramatic in the face of the stability of the findings for opiates and methadone. The decline in PCP over the same period (and subsequent results) suggested that newspaper reports of the popularity of combined use of PCP and crack may have been exaggerated.

The rising trend toward cocaine use in offenders was shown even more

TABLE 1. *Comparison of urine test results for arrestees in Manhattan in 1984 and 1986 (in percents)*

	1984 (n=4,847)	Sept.+Oct. 1986 (n=414)	Nov. 1986 (n=201)
Tested positive for:			
Cocaine	42%	83%	68%
Opiates	21	22	20
Methadone	8	8	10
PCP	12	4	3

SOURCE: Wish 1987.

clearly in the urine test results from the Washington, DC, pretrial testing program. (Washington, DC, is the only jurisdiction with a fully operational program that routinely tests all arrestees for recent drug use by urinalysis.) As figure 1 shows, 15 percent of males and females arrested in Washington in March 1984 tested positive for cocaine, compared with more than 60 percent of the arrestees in June 1988. These trends from New York City and Washington, DC, prompted the NIJ to establish the national DUF program in the largest cities across the country.

In the next section, we use information from the DUF program and the DC pretrial testing program to describe current levels of cocaine use in arrestees across the country.

More than one-quarter of all arrestees used cocaine within 2-3 days prior to arrest. Table 2 shows the percentage of male and female arrestees who tested positive for cocaine in eight cities in the DUF program during the first quarter of 1988. The percentage positive for cocaine in male arrestees ranged from 29 percent in Phoenix to 73 percent in Manhattan. Excluded from table 2 are cities where only males were tested. The cocaine results for male arrestees in these cities were: San

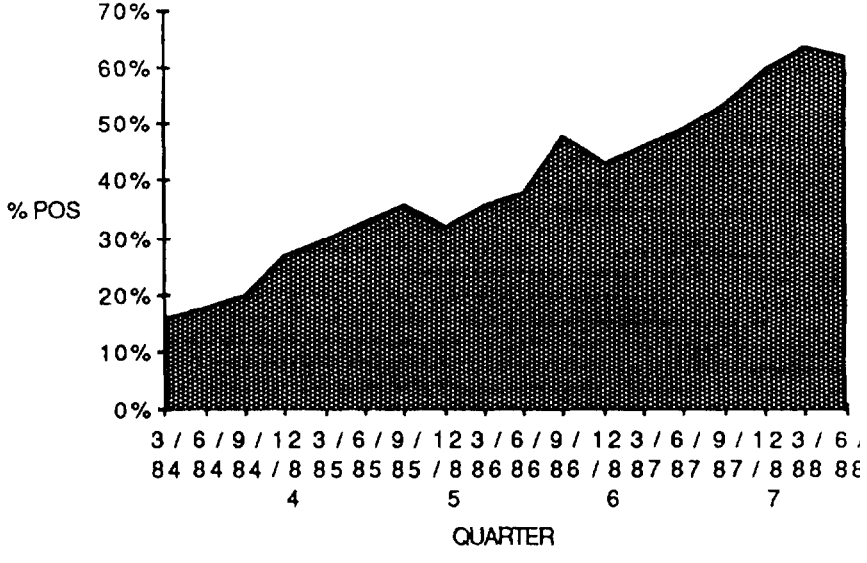

FIGURE 1. *Percentage of male and female arrestees in Washington, DC, who tested positive for cocaine, quarterly between 1984 and 1988*

SOURCE: Adult Drug Testing Program, DC Pretrial Services Agency.

TABLE 2. *Percentage of male and female arrestees positive for cocaine (results from January-March 1988)*

	Males	Females
Los Angeles	58%	66%
Portland	38	47
Phoenix	29	39
New Orleans	32	37
Chicago	55	70
Detroit	53	77
District of Columbia	59	73
New York	73	78

Diego—41 percent, Houston—44 percent, and Fort Lauderdale—52 percent. In all eight cities, females were more likely than males to test positive for cocaine. In five of these cities, more persons tested positive for cocaine than for marijuana.

Cocaine use is also growing in juvenile detainees. Data from the Washington, DC, Pretrial Service Agency, shown in figure 2, indicate an

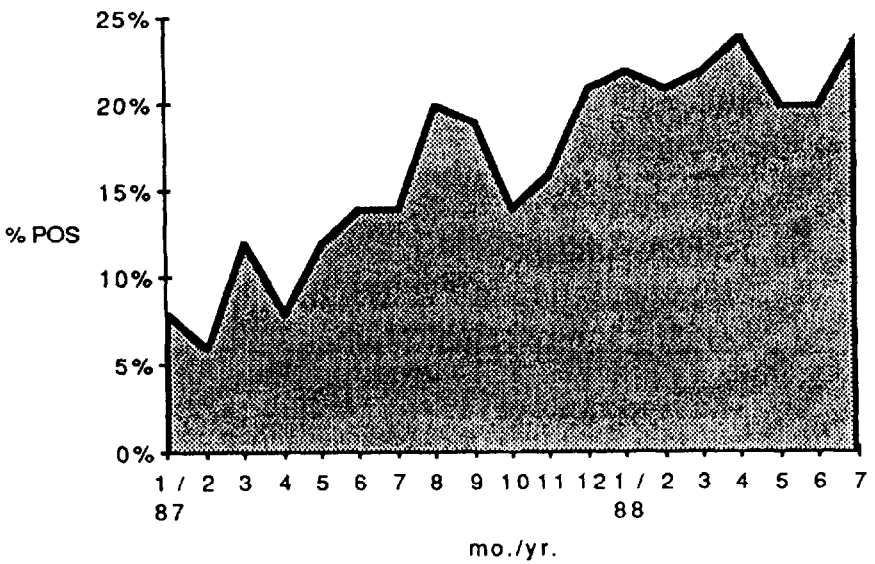

FIGURE 2. *Percentage of juvenile detainees in Washington, DC, who tested positive for cocaine during 1987 and 1988*

SOURCE: Juvenile Drug Testing Program, DC Pretrial Services Agency.

increase in cocaine among adolescent arrestees (aged 9-18). In January 1987, 8 percent of the adolescent detainees tested positive for cocaine. By July 1988, more than 21 percent tested positive for cocaine. (In January 1989, 19 percent tested positive.) Cocaine has replaced PCP as the most frequently detected drug in the juvenile arrestee population in Washington, DC.

Crack use and preferred route of administration. The urine test cannot differentiate the use of rock cocaine, crack, from use of other forms of the drug. Furthermore, the early DUF interviews did not obtain unambiguous information about crack use. However, when an arrestee reported having ever used cocaine, the interviewer did ask questions regarding the person's preferred route of administration. Table 3 shows the considerable geographical and gender differences. Male users in Detroit reported a preference for snorting (25 percent) and smoking or freebasing cocaine (64 percent). Few arrestees in Detroit reported injection as a preferred method (11 percent). In six cities, however, one-quarter or more of the cocaine users reported that injection was their preferred method. In all cities, female cocaine users were as or more likely to prefer injecting cocaine than were males. These findings are consistent with others showing that female arrestees are more likely to inject drugs (Wish et al. 1990). The large numbers who reported that they preferred to snort cocaine powder or inject the drug suggest that the high levels of cocaine use detected may not be attributable solely to the use of crack. It appears that these persons preferred a variety of forms of cocaine.

Table 4 lists the percentages of male and female arrestees who reported ever injecting drugs and their median age of first injection. With the exception of arrestees in New Orleans, Detroit, and Houston, approximately one-quarter or more of the males reported ever injecting any type of illicit drug. Female arrestees were more likely to report injecting drugs. (Remember that these self-reports probably constitute underestimates of injection in this population.) The median age at first injection varied between 17 and 22 years.

All persons who admitted injecting drugs were asked if they had ever injected heroin, cocaine, or amphetamines. While the majority of injectors had injected heroin, more than half had also injected cocaine. In Houston and Portland, more males reported injecting cocaine than heroin or amphetamines. Eighty-four percent of the female injectors in New Orleans had injected cocaine, while only 24 percent had ever injected heroin. Injection of amphetamines was limited to cities on the west coast. The high percentage who had injected heroin and cocaine indicates that injectors often had had experience with multiple drugs. One-quarter or

TABLE 3. *Self-reported preferred route of cocaine use in cocaine-using male and female arrestees (Persons arrested between January and March 1988 who reported ever using cocaine)*

	Los Angeles	San Diego	Portland	Phoenix	Houston	New Orleans	Detroit	New York
Males (N)	(239)	(157)	(176)	(149)	(73)	(61)	(106)	(177)
Snort	41	50	37	49	52	42	25	38
Smoke/base	40	21	28	18	11	28	64	37
Inject cocaine	11	12	26	25	34	20	8	4
Inject cocaine+heroin	8 (19)	17 (29)	9 (35)	8 (33)	3 (37)	10 (30)	3 (11)	21 (25)
	100%	100%	100%	100%	100%	100%	100%	100%
Females (N)	(172)		(75)	(65)		(34)	(40)	(69)
Snort	25		19	42		32	25	29
Smoke/base	49	NA	39	18	NA	9	60	46
Inject cocaine	13		19	28		53	8	9
Inject cocaine+heroin	13 (26)		23 (42)	12 (40)		6 (59)	7 (15)	16 (25)
	100%		100%	100%		100%	100%	100%

TABLE 4. *Self-reported drug injection in arrestees (persons arrested between January and March 1988)*

	Los Angeles	San Diego	Portland	Phoenix	Houston	New Orleans	Detroit	New York
Males (N)	(409)	(304)	(285)	(259)	(279)	(196)	(213)	(312)
Ever injected	24%	34%	35%	29%	14%	12%	18%	23%
Age first injected (median)	18	18	18	17	18	22	19	17
Percent of injectors who ever injected:								
Heroin	80%	79%	67%	76%	51%	75%	82%	75%
Cocaine	73%	72%	79%	84%	95%	75%	58%	71%
Amphetamines	38%	45%	64%	50%	21%	17%	5%	6%
Females (N)	(240)		(107)	(107)		(96)	(60)	(110)
Ever injected	37%		48%	41%		28%	32%	25%
Age first injected (median)	19		19	17		21	18	18
Percent of injectors who ever injected:								
Heroin	88%		80%	71%		24%	90%	93%
Cocaine	79%		75%	96%		84%	63%	95%
Amphetamines	32%		55%	30%		10%	16%	9%

more of the male and female injectors in each city reported ever having injected both heroin and cocaine (not necessarily simultaneously).

Table 5 shows the percentage of males who tested positive for cocaine, according to their top charge at arrest. (Results for female offenders are not presented because of the low numbers of females in each charge category.) As expected, persons charged with sale and possession of drugs were likely to test positive for cocaine. But persons charged with robbery, burglary, and larceny were also likely to be positive for cocaine. With some exceptions, persons charged with assault and sex offenses were least likely to test positive for cocaine. These findings are consistent with prior research showing that persons charged with violent offenses against persons are less likely to test positive for heroin or cocaine (Wish and Johnson 1986).

We aggregated the data for males and females across sites to look at the relationship of cocaine test results to age at arrest (figure 3). Male and female arrestees aged 15-20 were about equally likely to test positive for cocaine. The prevalence of cocaine use was consistently higher in females than males past the age of 20. Peak use of cocaine occurred in the late twenties for males and the early thirties for females. Why fewer of the arrestees older than 35 tested positive is unknown, but

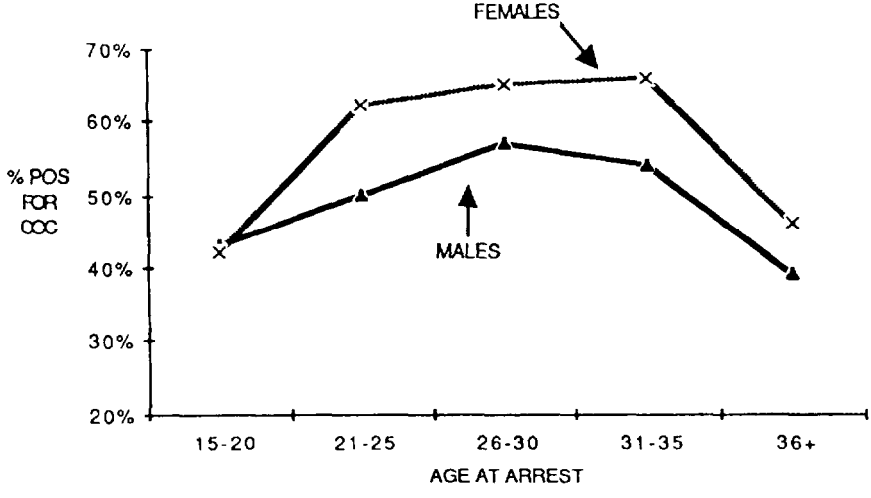

FIGURE 3. *Percentage of male and female arrestees who tested positive for cocaine, by age (N=2,292 males and 736 females)*

TABLE 5. *Percentage of male arrestees who tested positive for cocaine, by top arrest charge and city (combined information from two or more most recent quarters of data available)*

	Top charae at arrest							
	Drug sale or possession	Weapons	Robbery	Larceny	Burglary	Stolen property	Assault	Sex offense
Los Angeles	71%	33%*	67%	57%	68%	60%	42%	30%
San Diego	45	27	41	44	46	31	26	7*
Portland	55	36*	67	39	36	15	26	44*
Phoenix	44	25*	40	23	26	23	16	14
Houston	55	23	50	53	46	38	38	16
New Orleans	70	43	42	46	39	40	33	18
Chicago	63	57	41	54	49	53	33	46*
Detroit	59	52	56	67	58	56	25	46
New York	81	63	78	76	58	65*	61	33*

* Based on fewer than 20 persons.

possible explanations include maturing out of drug use, switching to alcohol use, and higher mortality rates for dysfunctional drug abusers.

We explored the relationship of ethnicity to cocaine test results. Table 6 shows that black male and female arrestees were most likely to test positive for cocaine, followed by Hispanics and whites. However, black arrestees were least likely to prefer injecting cocaine. A more detailed discussion of ethnic differences in drug injection appears in Wish, O'Neil, and Baldau (1990).

TABLE 6. *Cocaine use and injection, by sex and ethnicity*

	Black	White	Hispanic
Females			
Positive for cocaine	70% (354)	48% (252)	54% (102)
Percent of users who prefer to inject cocaine	23% (251)	40% (169)	45% (66)
Males			
Positive for cocaine	60% (1,075)	27% (680)	52% (497)
Percent of users who prefer to inject cocaine	18% (504)	36% (443)	33% (235)

DISCUSSION

The prevalence of the use of cocaine in the prior 2-3 days was more than 10 times greater among arrestees than that found in surveys of the general population, which typically measure use in the entire past month. Cocaine use was found in arrestees in all major cities included in the DUF system and at all age levels. Charge at arrest did not differentiate cocaine use; the drug was used by all types of offenders. Female arrestees reported higher levels of injection than male arrestees and in some cities were even more likely to test positive for cocaine. Cocaine (as well as other illicit drugs) was clearly a commonly abused drug among youths and adults who were detained by the criminal justice system in large urban areas.

This population administered cocaine by all routes, including smoking crack or freebase. Many persons preferred to snort cocaine powder, and

a significant minority preferred to inject the drug. The levels of cocaine detected in these persons were therefore probably the result of a greater availability and reduced cost of all forms of cocaine.

In some cities, more intravenous drug-using arrestees had injected cocaine than heroin. Cocaine-using offenders constitute a group at high risk for AIDS (DesJarlais et al. 1987) and should be the target of treatment and prevention outreach efforts.

Finally, the dramatic levels of drug use found in arrestees show the pitfalls of relying solely on surveys of the general population to assess the Nation's drug problem and to design policy. A more comprehensive picture of drug trends in the entire country requires a consideration of the prevalence of drug use among the criminal and other hidden populations in addition to estimates obtained from samples from high school seniors and the household population.

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