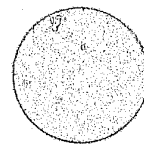


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VIOLENT OFFENDING BY DRUG USERS

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Violent Offending by Drug Users

INTRODUCTION

Alarming increases in violence associated with drug trafficking in many U.S. cities have reopened questions about the relationship between drug use and violent offending. In the decades since the end of World War II, it had been widely believed--and the empirical research seemed to confirm--that drug-using offenders were much less violent than their nonusing counterparts. After the almost hysterical warnings about the mind-warping qualities of drugs during the pre-war period¹, study after study revealed that drug-using offenders engaged predominantly in property crimes, with substantially less violent offending than was found among non-using offenders.²

These results were based primarily on analyses that compared the relative crime type distributions found among users and

¹. Perhaps, the best known example of this pre-war, anti-drugs propaganda is the film Reefer Madness. See Lindesmith (1940) for an overview of the popular media characterization of drug users during this period.

². Whether relying on official arrest records or on self-reported offending, many researchers have reported a strong positive relationship between drug use and property crimes (Finestone, 1957; Inciardi and Chambers, 1972; Jacoby et al, 1973; Elliott et al, 1976; Johnston et al, 1976; O'Donnell et al, 1976; McGlothlin et al, 1978; Inciardi, 1979). Other researchers have reported that drug-users are less violent than nonusers (Greenberg and Adler, 1974; Barton, 1976; NIDA, 1976; McBride, 1976; Kozel and Dupont, 1977).

Surprisingly, much of this research is available only in government documents, and has not been made available in the research literature. See McBride (1981) for an excellent overview of this research, and Clayton (1981) for an interesting account of the politics of publication for at least one major report on drugs.

nonusers (e.g., the percentage of property crimes found among total crimes reported for each offender subgroup). As relative measures, any increase in the fraction of property crimes in the total, was offset by corresponding decreases in the fractions of other offenses. In the case of drug users, very large numbers of property offenses were observed--presumably associated with efforts to help finance illicit drug use. This substantial over-representation of property offenses for drug users swamped the representation of violent offenses found in the total for these offenders.

McGlothlin (1979: 361), noting the relative quality of previous measures, cautioned against misinterpreting the available data:

"Addicts exhibit an especially high recidivism rate, and the possibility that they commit many more property crimes, and some more violent crimes, than nonaddict criminals is not inconsistent with the above results [emphasis added]."

In other words, it is possible for drug users to be characterized by higher levels of both violent and property crimes than are nonusers, but the much larger increases in property crimes would overshadow smaller increases in violent crimes when relative crime

type distribution measures are used³.

The misleading character of conclusions drawn from previous results has been illustrated in a study of drugs and crime using data for persons arrested during 1974-75 in the District of Columbia (Wish et al, 1981; Wish, 1982; and Forst and Wish, 1983). Consistent with previous results, the relative crime type distribution of arrests indicated that assault charges (including aggravated, simple, or sexual assault) were less common (11.4%) for arrestees testing positive for drugs at the time of their arrests than for drug-negative arrestees (24.7%). Furthermore, when arrestees for different crime types were compared, those arrested for property crimes were more likely to test positive for drugs: 20 to 30% of arrestees for various property crimes were drug positive, versus 10 to 20 % of arrestees for assorted violent crimes.

A major contribution of the analysis of D.C. arrestees was estimation of arrest rates per 100 arrestees in the sample. This shifted the analysis from a focus on the relative distribution of arrests (or of offenses) to a measure of offending levels by the persons studied. As with earlier event-based measures, the person-

³. In the simple hypothetical example below, the total numbers of arrests of both types are higher for drug users, but the much larger increase for property crimes is given greater weight in the relative percentage crime type distribution for drug users.

Drug Use Status	#Property Arrests	#Violent Arrests	Percent Property	Percent Violent
Users	600	150	80	20
Nonusers	150	75	67	33

based rates for property offenses were much higher for drug-positive arrestees. For example, there were 112 larceny arrests per 100 drug-positive arrestees compared to only 42 such arrests per 100 drug-negative arrestees; for burglary, the corresponding rates were 66 and 36 per 100 arrestees, respectively.

The principal difference was in the rates for violent offenses where, based on the rates of arrests per 100 arrestees illustrated below, "drug users were arrested at about the same rate as nonusers" (Wish et al, 1981: A-6). For homicide, there is virtually no difference between drug users and nonusers, and for weapons offenses, drug users have higher rates. Later on the same page, the authors conclude that, "Violent crimes represent a smaller proportion of the total number of arrests for [drug positive] arrestees only because they have so many arrests for property offenses."

Arrests per 100 Arrestees
(Washington, D.C. Arrestees)

Offense Type	Drug Positive Arrestees	Drug Negative Arrestees
Assault	35.6	38.2
Sexual Assault	5.6	6.1
Homicide	4.5	4.6
Weapons	19.7	12.6

Other researchers have suggested that patterns of violent offending among drug users have been changing, becoming increasingly more violent over time (Zahn and Bencivengo, 1974; Stephens and Ellis, 1975). In a comparison of drug users in the same city during two recent time periods (1973-78 and 1983-84), Nurco et al (1986: 115) note an increase in violence--using person-based offending measures--for black addicts (but not for white addicts) between the two periods.

Results of this sort have been instrumental in reshaping views about levels of violent offending by drug users. In a recent summary of results, Nurco et al. (1985) conclude that, "[c]ontrary to reported findings in the 1960's and 1970's, recent research suggests that arrested narcotic drug users are just as violent as other arrestees, if not more so." By moving from event-based measures to person-based measures, the levels of violent offending can be isolated from the far more prevalent offending in property or drug offenses by drug users in the sample.

The developments in recent research are extended here to further refine the measures of offending in order to better distinguish different aspects of violent offending by drug users and nonusers. Offending by drug users and nonusers--as determined by the outcomes of urinalysis at the time of arrest--is characterized in terms of several distinct aspects of individual offending, particularly:

- participation in violence estimated from the fraction of arrestees with any arrests for violent offenses,

- frequency reflecting the annual rate of violent criminal activity by these active offenders, and
- termination rates of ending involvement in violent activities.

The disaggregated measures of offending focus on distinct aspects of violent offending between users and nonusers. For example, the pharmacological effects of many illicit drugs in depressing central nervous system response might lead to lower participation rates in violence (i.e., fewer violent offenders) among drug users than nonusers. However, use of hallucinogenic drugs (e.g., PCP and LSD) or amphetamines⁴, or participation in drug trafficking among participants might lead to a higher frequency of violence⁵ (i.e., to higher rates of violence per violent offender) by these violent drug users⁶. Thus, disaggregation of offending permits a richer characterization of the role of violence in different aspects of offending by users and

⁴. A number of clinical studies of individuals using amphetamines, who have also manifested violent behavior, have attributed the violence to the state of paranoid delusion and social isolation that often accompanies regular use of amphetamines (see McBride, 1981 for a review of much of this research).

⁵. McBride (1981: 112-114) recounts the results in a number of recent studies linking violent deaths or homicides to drug dealing.

⁶. McBride (1981) hints at the possibility of such opposite effects--lower participation rates for drug users combined with higher frequencies of violence among drug-using participants--when he speaks about the relatively rare utilization levels for drugs like LSD, PCP, and amphetamines. The relatively few users would be associated with low participation in violence among drug users generally, but the pharmacological effects of these particular drugs would be associated with high levels of violence among those using hallucinogens or amphetamines.

nonusers. This strategy contrasts with the more common approach of using aggregate measures of offending that often rely on total arrests for drug users and nonusers.

DATA

Longitudinal arrest data for a sample of arrestees are used to characterize the violent offending patterns of drug users and nonusers for a sample of arrestees selected from all adults (18 or older) arrested in one year. Previous and subsequent arrests for the same person are linked together to form an individual arrest history. Each arrest includes information on the date of arrest, the drug test result, the charges filed, time served in pretrial detention, disposition date, disposition type, and sentence length imposed. Certain background information for each arrestee are also be provided, especially date of birth, race, sex, and self reported drug use.

The data come from the computerized case files for all adult arrestees maintained by the Pretrial Services Agency (PSA) of Washington, D.C.. The sample of arrestees was drawn from adults arrested on any charge in the District of Columbia (DC) during the one-year period from July 1, 1985 to June 30, 1986. This sampling target provides data on offending over an extended time period, including prior record information on adult arrests dating back to a first arrest in 1943 for one offender along with a five year follow-up through the end of data collection in August of 1990.

The data include a random sample of 1,365 arrestees drawn from

about 18,000 adults arrested in the 1985-86 sampling period. The sample was stratified to increase representation of demographic groups other than black males, who represented 73% of the total population of adult arrestees in Washington D.C. during the sampling period. Table 1 presents the sampling weights and final sample size. In addition to oversampling whites and females, arrestees with urine tests and those with at least two prior arrests were also oversampled to increase the yield of offenders who will have urine test results that can be used to characterize their drug use.

Tables X and Y in the Appendix compare attributes of sample members to those estimated for the full population. Selected highlights appear in Table 2. As a direct result of the stratified sampling design, the sample and population differ mainly in their demographic makeup. The full arrestee population--of offenders with at least two post-EMIT arrests--consists predominantly of black males: 94% blacks and 84% males. The sample, by contrast, is 60% black and close to half males.

Reflecting the increased representation of females and whites, the sample and population arrestees differ mainly in the representation of charged offense types. Sample arrestees display somewhat lower involvement in violent and predatory offenses, and in drug offenses.⁷ While not reported in the table, there are

⁷ The violent offenses include homicide, manslaughter, rape, aggravated, and simple assault. Predatory offenses include robbery and burglary, two crimes that jointly involve elements of property loss together with potential or actual threats to personal safety during encounters with offenders.

corresponding increases in public order offenses, principally prostitution, in the sample. Also reflecting the differences in offense types, a smaller fraction of sample arrestees are charged with felonies.

With respect to drug use, the sample also includes a larger representation of users of depressant drugs and dual drug users who combine stimulant and depressant use. These drug use patterns are especially characteristic of female arrestees in the District of Columbia. Arrests of females, black or white, are twice as likely to involve positive urine tests for methadone (at 4%), or opiates (25%) as are arrests of males. Female arrests are also more likely to result in drug positive tests for cocaine (about 36% of female arrests). This is ten percentage points above the corresponding fraction observed for black males.

DISTINGUISHING AMONG DRUG USERS

Two main types of causal relationships between drugs and violence will be explored, pharmacological effects and structural effects arising from the nature of illicit drug markets. On pharmacological grounds, users of depressant drugs (i.e., opiates and methadone) will be distinguished from users of stimulant drugs (i.e., cocaine, PCP, and amphetamines). Because of differences in their psychiatric impacts--especially the incidence of depression, paranoia, and psychoses associated with use of stimulants--it is anticipated that users of stimulant drugs will be characterized by higher levels of personal violence than users of depressant drugs.

Aside from these pharmacological effects, the illicit and unregulated nature of drug markets is also expected to contribute to violent offending. In the absence of well established norms governing illicit drug sales, and the absence of a neutral legitimate authority to resolve disputes between buyers and sellers, participants may resort to violence as a means of resolving disputes and maintaining control within these illicit markets. Unfortunately, the present data do not permit distinguishing between use and possession charges on the one hand, and manufacture and sales charges on the other, and so the present analysis focuses primarily on variations in violence among users of different drug types, and between users and non-users.

Based on these considerations, four main types of offenders are distinguished to examine the relationship between drugs and levels of violent offending. Arrestees who test positive only for opiates or methadone will be labeled as depressant drug users (D-); those who test positive only for cocaine, PCP, or amphetamines will be labeled as stimulant drug users (D+). An additional category of dual users will include people who test positive for both stimulants and depressants on the same arrest. All offenders who fail to test positive for any of the tested drugs will be labeled nonusers (D₀).⁸

⁸ Naturally, the sample of "nonusers" will include some individuals who use illicit drugs that are not included in the urine screen (e.g, marijuana). This is a limitation imposed by the character of the urine screening protocol that is used. We do not feel that this is a serious limitation, however, because the present protocol focuses on the more serious illicit drugs.

By distinguishing among drug types, we hope to clarify the role of drug use in different aspects of violent offending. For example, overall participation in violence may be lower among drug users generally, due perhaps to a lower prevalence of use of stimulant drugs, but may be higher among stimulant drug users. Alternatively, participation in violent offending may be lower among drug users, but those drug users who are violent may engage in violence with high frequency.

IDENTIFYING DRUG USERS

The primary criteria for identifying drug users are urinalysis results from tests conducted soon after arrest.⁹ An important design consideration is how best to use test results to operationalize drug use. Under one criterion, for example, a single drug positive result on any test in an individual's arrest history might be regarded as sufficient to classify that offender as a drug user. Alternatively, the criterion for drug use might require more than one drug positive test during a history.

The latter, more stringent requirement is particularly appropriate when there is concern about false positives who are incorrectly labeled as drug users based on a single test. This is

⁹ Urinalysis tests are typically conducted within hours of an arrest while defendants await preliminary arraignment in the central lockup facilities. They have been a routine part of the regular pretrial release screening process in Washington, D.C. since March of 1984. Although arrestees who are not processed through the central lockup are also supposed to be tested, these offenders are less likely to be tested than are arrestees held at the central lockup until their arraignment.

not a serious concern with the EMIT assay test, which is calibrated to have a very high test "specificity" (i.e., the fraction of true negatives who test negative) and a somewhat lower test "sensitivity" (i.e., the fraction of true positives who test positive).¹⁰ High specificity will limit the number of false positives, while failing to detect some drug users (false negatives) because of the lower sensitivity of the test.

A strategy that employs results on multiple urine tests can increase the overall accuracy with which drug users are identified. This strategy takes advantage of the small numbers of false positives--even in multiple tests--derived from the high specificity of the test. At the same time, some false negatives--arising from the lower sensitivity of any single test--are converted to true positives using a multiple-test criterion. The gains in the number of true positives from multiple tests can increase both overall accuracy and overall sensitivity in detecting

¹⁰ Assuming complete accuracy for gas chromatography/mass spectrometry (GC/MS) confirming tests, the data in Table 1 of Fenton, et al (1980) are consistent with specificity levels in excess of 98% for EMIT assays for methadone, opiates, barbituates, and propoxyphene, and sensitivity levels of about 80% for the same drugs in 137 postmortem urine samples.

actual drug users.¹¹

When multiple tests are used as the basis for identifying drug users, adequate controls for the number of tests in individual histories are essential. Without such controls, individuals with more arrests will be more likely to test positive on some of those arrests, and thus will be more likely to be found among offenders who are identified as drug users. This selection bias toward more arrests for drug users also increases the likelihood of observing violence among the drug user sample--the more arrests there are in a history, the more likely that some of those arrests will be for violent offenses. To control for biases arising from differences in the number of arrests, the analyses are limited--for drug users and non-users alike--to offenders with similar numbers of arrests.

When determining how many arrests to require for identifying drug users, the reduction in false negative errors from increasing the number of arrests must be balanced against reductions in

¹¹ Even relying on multiple arrests, the EMIT urine test results will involve a certain amount of error. Some drug users will avoid detection (false negatives) because of low detection rates for the drug they use (e.g., the test will most reliably detect use of cocaine only within the past 48 hours), or because of the low frequency with which they use the drug (e.g., regular use of cocaine once a week is more likely to be missed on a single urine test). Some small number of arrestees will erroneously test positive (false positives) because of errors in the testing technology or its application.

Because of these errors in the attribution of drug use based on the urine test alone, the results of the research will most accurately reflect the relationship between urine test results and offending rates. Exploring the extent of such a relationship is not without value, however, since any operational use of drug use information will most likely have to rely on similar test results.

overall sample size as the minimum number of arrests increases. Figure 1 illustrates this tradeoff within the current sample of arrestees based on their number of arrests following the start of regular EMIT testing in March 1984. A minimum requirement of just two arrests substantially reduces the sample by 43.5%. There is nevertheless, about a 10 percentage point increase in the proportion of the sample who are tested as a result of a second arrest. The gains in tested arrestees from further increases in the minimum number arrests are negligible, as both the tested and drug positive fractions appear to reach a saturation level at about 65% of a sample being tested and 75% of those tested being found positive for either depressant or stimulant drugs.

Based on these considerations, arrestees must have a minimum of two post_EMIT arrests to be included in the present analysis. This reduces the analysis sample from the original 1,365 down to 773 arrestees. Of these arrestees, 503 were tested at least once on their first or second arrests following the start of EMIT testing, and 360 were found to be drug positive.

Using the start of EMIT testing as the anchor for selecting the sample has an added advantage of broadening the range of ages that are represented within the analysis sample. An alternative strategy might have been to limit the analysis to offenders who had at least two prior arrests by the time of the sampled arrest in 1985-86, and to examine these prior arrests for drug test results. Offenders satisfying such a "two priors" requirement would tend to be older at the time of the sampled arrest, since younger offenders

in 1985-86 would be much less likely to have accumulated the required two prior adult arrests. By anchoring the the drug test requirements at the start of EMIT testing, qualifying offenders might accumulate the required two post-EMIT arrests any time before or after the 1985-86 sampling period, and so will include a broader range of younger ages, including some arrestees whose first adult arrest occurs in the sampling period.

DRUG TEST EXPERIENCES

Even though urine testing is routinely carried out among arrestees processed through the central lockup in Washington, D.C., almost half of all arrestees in the analysis sample (and a similar fraction of the base population) did not complete a urine test on their arrest during the sampling period. This relatively high prevalence of untested arrests increases the salience of relying on multiple arrests.

A substantial portion of tested offenders are drug users (Figure 2). At 63% testing positive, stimulant drugs-- especially cocaine in either its crystal or powder varieties--are the predominant drugs of choice. Indeed, 75% (26.2/34.8) of depressant drug users also use stimulants. As mentioned above, this dual drug use pattern is especially characteristic of female arrestees.

To the extent that administration of the drug screen is not random, but could be related to factors associated with drug use or criminal activity, this raises some concern that selection bias could affect the estimated relationship between drug use and

offending within the sample of tested arrestees. If, for example, those non-users who are tested for drugs are tested precisely because they potentially pose a greater risk of continued offending while on pretrial release, this could diminish differences in offending levels observed between the users and non-users who are tested, and perhaps understate the relationship found among arrestees more generally.

While affecting the accuracy of estimates of the magnitude of effects, such selection bias is not likely to invalidate statistically significant effects that are found in the data. Instead, the likely direction of bias toward underestimates would increase confidence in the significance of any differences that are observed in the tested samples. The bias toward an underestimate, however, does increase the risk of missing an actual effect that may exist in the larger population.

Statistical techniques are available to control for selection bias, but these rely on adequately representing both the selection and offending processes, and in particular on being able to identify at least some key variables that affect selection for testing but not offending. When selection for testing and offending are so closely related, as they are in the current analysis, controlling for selection biases hinges crucially on finding an adequate set of factors that are exogenous to offending. One such class of variables that has been used with some success in other analyses are system capacity constraints. Such constraints can reasonably be assumed to affect how many drug screens are

undertaken, while only affecting individual offending indirectly through resulting increases or decreases in monitoring of defendants. Obtaining data on capacity constraints, especially over the reasonably long time period represented in this data, proved infeasible.

While it is not possible to employ the most rigorous statistical controls, it is possible to alleviate concern about selection bias by doing some diagnostic analysis in an effort to assess the likelihood and potential magnitudes of whatever biases may exist. This approach begins by examining the means of certain potentially biasing characteristics in the two populations. If the means do not reflect the anticipated bias, then one can have greater confidence that selection bias effects are not seriously distorting the results.

Data comparing the means of the tested and untested samples on a number of attributes are presented in Table 3. The two subsamples are found to be very similar in most respects, except for criminal status (i.e., on probation or parole when arrested for a new offense) and the nature of the current charge (charged with a felony). Even here, the differences are discernable, but not extremely large. Thus, the two populations look quite similar in this respect.

The tested and untested samples also differ in certain procedural respects that are directly linked to the way pretrial release cases are handled. Drug testing is directly linked to the processing of cases through the central lockup or not, and is

reflected in the higher percentage of tested cases who were in the jail when they were administered the pretrial interview. Also, having the test results, often leads to various conditions that are imposed as part of pretrial release. These might include participation in drug treatment, abstinence from drug use, and monitoring drug use through continued testing while the defendant is released.

A further examination of the nature of selection bias estimated which factors among the variables available in the data appeared to contribute to the decision to administer the drug test. Using a probit regression model with testing or not as the dependent variable, a variety of candidate determinants that might affect that decision were explored. The results of that analysis are presented in Table 4. From that table, the primary factors affecting testing are seen to be nature of the current charge (charged with a felony), criminal status (on probation or parole), and the demographic variables of age and race. These demographic variables could be reflecting information about the crime type of the current charge--particularly violent and predatory crimes, which disproportionately involve blacks, and drug offenses, which disproportionately involve younger arrestees.

Another factor that one would anticipate affecting the testing decision is the number of prior arrests. This candidate variable is examined in Table 5, which displays the risk of incurring a first urine test as a function of the number of prior arrests. The table demonstrates that there is no clear relationship between the

risk of a test and the number of prior arrests.

VIOLENCE BY DRUG USERS

Participation in Violence

A straightforward examination of participation in violence is through the proportion of who have at least one arrest for a violent charge among users and non-users. These results are displayed in Table 6 which reports these proportions for different measures of drug use: those who test positive for 1) any drug, 2) a depressant drug, 3) a stimulant drug, or 4) both types of drugs.

It is clear from the table that drug users are less likely to be involved in violent offenses, regardless of the drug measure, although those involved in depressant drugs (or in both types) display the greatest difference. Because these users are disproportionately female, however, it is not clear from these data whether the effect is a pharmacological one or merely a gender effect. This, therefore requires some multivariate analysis to separate the drug effect from the gender effect.

The full multivariate analysis is presented in Appendix Table Z. Of the many included variables, only two were found to be significant: gender and drug type. The probabilities of violence associated with these two variables for the depressant and stimulant drug types are shown in Table 7. In all cases, males and non-users display a higher risk of violence, and the risk of violence is uniformly lower for the depressant drugs compared to

the stimulants.

It is clear from Table 7 that the strongest effect on violence is attributable to gender, but that fact has been well established in the criminological literature. Controlling for gender, within drug type, there is still an important difference attributable to drug use. The ratio of violence probabilities range from 1.4 to 1.9, with the non-users consistently higher. Thus, while the male gender accounts for approximately doubling the propensity to violence, about two thirds as large an effect is shown by non-user arrestees. Furthermore, the difference between users and non-users is larger for females than for males and the gender ratio is largest for users.

While these results on participation in violence were to be expected for the depressant drugs, it is important to recognize that the same effects--although somewhat smaller--are also observed for the stimulant drugs as well.

Frequency of Violent Offending Among Participants

The frequency of violent offending has been estimated for each "violent offender" (i.e., those who have at least one violent arrest) by estimating the ratio of the number of violent arrests to the time an offender is active and at risk for offending. This estimate excludes time served (when the offender is not "at risk" for offending) and time after the final arrest in the record (when being "active" is in doubt).

The cumulative distribution of these individual estimates is

displayed in Figure 3 by showing the quintile values of frequency for the drug users and the non-users. It is seen that the two populations are very close, although the users display a slightly higher frequency than the non-users. This difference is magnified in the highest quintile.

Figures 4 and 5 show similar information for the predatory crimes and for property crimes. In both of these cases, the two groups are even closer than for the violent crimes. In all three cases, the drug users in the highest quintile of offending frequency (i.e., those whose rates are higher than 80 percent of all the active offenders examined) show the most extreme increase over the non-users.

The frequency of violent offending shown in Figure 4 is elevated over the entire distribution, whereas the elevation occurs only at the high end for the other two crime types. This distinction between users and non-users in frequency is a marked contrast to the participation effect observed. In participation, drug use was associated with lower involvement in violent offenses, whereas drug use increases the frequency of violence by those who commit violent offenses.

Of course, the graphical analysis shown in Figure 4 does not control for other factors that may distinguish users from non-users. For that purpose, a multivariate analysis is required. The full results of that Ordinary Least Squares analysis are shown in Table 8, where the dependent variable is violent offending frequency for those who have at least one arrest for a violent

offense. The independent variables are all binary: race, sex, ever-married status, and drug use.

The results shown in Table 8 indicate a uniformly positive effect of drug use on offending frequency, and that effect is statistically significant for both the stimulant and depressant drugs as well as for dual and multiple drug users. The effect is weaker for the stimulant drug user than for the depressant user--a difference that requires further investigation.

The effects of the other variables are consistent with prior research (males and never-married people have a higher offending frequency). The race variable displays no effect on frequency of violent offending.

Termination Analysis

The analysis of termination is carried out by examining the length of the "end-gap" in each individual offender's career prior to the end of the observation period. The end-gap is defined as the fraction of the total time at risk following the start of EMIT testing in March, 1984 and through the end of observation in August, 1990 that is represented by the time following the final arrest in the criminal history. This end-gap is therefore a indicator of the likelihood of termination following that final arrest, with a large end-gap suggesting that termination was indeed likely before the end of the observation period, and a short end-gap suggesting that it is more likely that the offender continued to remain active throughout the observation period.

The results of the end-gap analysis are shown in Table 9, which displays the average end-gap fraction for drug users and non-users. The end-gap for non-users is always larger than for drug users, indicating a somewhat greater termination rate for the non-users.

Again, this simple analysis is too aggregate, and a multivariate analysis is needed to isolate the effects of the factors other than drug use that may be contributing to differences in end-gap. The full results of that multivariate analysis are displayed in Appendix Table ZA. Table 10 presents the values of end-gap expected from the regression results for several subgroups.

A number of factors emerge as related to end-gaps, which are shorter--indicating a lower likelihood of termination from offending--for black offenders, for younger offenders, and for those who have a record of violent offenses. The effect of drug use in lowering end-gaps, and thereby decreasing the likelihood of termination, is sustained in the multivariate analysis.

As is evident by its larger coefficient, the role of drug use in lowering end-gaps (sustaining active offending careers) is somewhat stronger for depressant drugs than for stimulant drugs. To some extent, this may reflect the longer persistence in nuisance offenses among depressant users, notably prostitution and property offenses among female offenders, although gender is not a significant factor in any of the analyses in Table ZA.

SUMMARY

In this paper, we have examined the influence of drug use on three key aspects of offenders' criminal careers in violence: participation, frequency of offending, and termination rate. It should be emphasized that the measurement of a "drug-use effect" involves a comparison of drug-using offenders among arrestees compared to arrestees who do not test positive for drugs. This analysis relies on urinalysis as a positive indication of drug use, in contrast to earlier studies which rely on self-reports for that indication.

We have seen that the drug-use effect is different on the different aspects of offending. Drug use inhibits participation to a sizeable degree compared to non-drug using arrestees, but it does have an elevating effect on the frequency of violent offenses for those offenders who do commit violent offenses. It also appears to have an effect in discouraging termination.

We have also seen some important effects attributable to the type of drug used, with the depressant drugs (compared to the stimulant drugs) having a larger effect in: inhibiting participation, elevating offending frequency, and discouraging termination. While depressant drug users have a lower likelihood of embarking on offending careers in violence, those who are violent, display more sustained careers in these offenses.

These results highlight a clear connection between drug use and offending, and they focus attention on the need to clarify the causal links between drug use and violence, and how those causal connections differ for different drug types and different aspects

of violent offending.

The distinctive role of drug use in different aspects of offending is also important for the ways in which drug use information enters into criminal justice (CJS) decisions. The negative relationship of drug use with participation in violent offending, but a positive association of drug use with frequency of violent offending by those who do participate in violence, as well as inhibiting termination from offending, makes drug use particularly valuable for CJS decisions directed at identified violent offenders.

In particular, their drug use should be considered an aggravating factor in public-safety consideration in release and sentencing decisions for identified drug-using violent offenders. Invoking drug use as an aggravating factor runs counter to the usual legal argument that treats drug use as a mitigating factor because it contributes to the offender's "diminished capacity", and hence to a presumed lower blameworthiness. It appears from this research, however, that this drug-use information would be valuable in identifying the more dangerous among violent offenders.

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Table 1. Sampling Probabilities (p) and Final Sample Size (n) of Arrestees by Demographic Subgroup

Demographic Group	Tested p	Not Tested p	Total n
BLACK MALES:			
< 2 Priors	.025	.025	
≥ 2 Priors	.025	.025	
Subtotal			332
WHITE MALES:			
< 2 Priors	.300	.150	
≥ 2 Priors	1.000	.670	
Subtotal			416
BLACK FEMALES:			
< 2 Priors	.100	.100	
≥ 2 Priors	.200	.200	
Subsample			366
WHITE FEMALES:			
< 2 Priors	.300	.300	
≥ 2 Priors	.600	.600	
Subsample			251
Total Sample			1,365

TABLE 2. Attributes of Arrestee Sample and Corresponding Population of Arrestees

	Total Sample	Weighted Population
Sample Size	773	11,550
BACKGROUND ATTRIBUTES		
AT 1985-86 ARREST:		
Percent Black	60.0	93.6
Percent Male	51.9	83.9
Age at Arrest	28.9	28.4
% Never Married	68.4	70.6
% Married Now	13.2	14.6
% Live with Family	64.3	72.1
% Unemployed	40.4	32.2
% Parole/Probation	26.5	23.7
STATUS 1985-86 ARREST:		
% in Jail at Pretrial Interview	82.9	81.3
% Charged Felony	33.7	46.4
% Pretrial Release	92.9	91.4
% Conditional Release	63.7	57.2
% Case Disposed Early	11.9	15.7
% Private Attorney	26.8	26.1
URINANALYSIS:		
% Tested	65.1	69.5
% Positive for:		
Stimulants	63.0	69.4
Depressants	34.8	26.0
Any of Above	71.6	75.1
Both of Above	26.2	20.2
Avg # Drug Types	0.77	0.83
ARREST ACTIVITY SINCE STARTED EMIT TESTING:		
% Any Arrests	100.0	100.0
% Violent Arrests	18.2	24.6
% Predatory Arrests	11.9	17.4
% Drug Arrests	57.6	67.2
% Property Arrests	32.7	34.8

Table 2 continues on next page

TABLE 2. Attributes of Arrestee Sample and Corresponding Population of Arrestees (Continued)

	Total Sample	Weighted Population
Avg Total Arrests	4.76	4.53
Avg Violent Arrests	0.34	0.48
Avg Predatory Arrests	0.23	0.33
Avg Drug Arrests	1.55	1.94
Avg Property Arrests	0.77	0.75
Months Since EMIT Start	76.7	76.7
Months Since 1st Arrest	43.2	45.5
Months Free	38.8	40.1

* The sample is stratified by offender race and sex, and by the number of prior arrests and urine testing experience at the time of arrest in 1985-86.

TABLE 3. Attributes of Arrestees Who Have At Least Two Arrests following the Start of Routine EMIT Screens in March, 1984 by Drug Test Status

	Total Population	No Test	Tested
Sample Size	773	270	503
BACKGROUND ATTRIBUTES			
AT 1985-86 ARREST:			
Percent Black	93.6	91.3	94.5
Percent Male	83.9	80.2	85.5
Age at Arrest	28.4	29.0	28.2
% Never Married	70.6	70.4	70.7
% Married Now	14.6	17.4	13.4
% Live with Family	72.1	70.0	72.9
% Unemployed	32.2	30.7	32.8
% Parole/Probation	23.7	27.1	22.3
STATUS 1985-86 ARREST:			
% in Jail at Pretrial Interview	81.3	65.9	87.7
% Charged Felony	46.4	38.3	49.7
% Pretrial Release	91.4	87.3	93.1
% Conditional Release	57.2	38.7	64.9
% Case Disposed Early	15.7	18.3	14.5
% Private Attorney	26.1	21.4	28.2
URINANALYSIS:			
% Tested	69.5	0.0	100.0
% Positive for:			
Stimulants	69.4	0.0	69.4
Depressants	26.0	0.0	26.0
Any of Above	75.1	0.0	75.1
Both of Above	20.2	0.0	20.2
Avg # Drug Types	0.83	0.00	1.19
ARREST ACTIVITY SINCE STARTED EMIT TESTING:			
% Any Arrests	100.0	100.0	100.0
% Violent Arrests	24.6	24.1	24.9
% Predatory Arrests	17.4	16.5	17.9
% Drug Arrests	67.2	60.3	70.2
% Property Arrests	34.8	43.7	30.9

Table 3 continues on next page

TABLE 3. Attributes of Arrestees Who Have At Least Two Arrests following the Start of Routine EMIT Screens in March, 1984 by Drug Test Status (Continued)

	Total Population	No Test	Tested
Avg Total Arrests	4.53	4.89	4.37
Avg Violent Arrests	0.48	0.49	0.48
Avg Predatory Arrests	0.33	0.32	0.34
Avg Drug Arrests	1.94	1.61	2.08
Avg Property Arrests	0.75	1.16	0.58
Months Since EMIT Start	76.7	76.7	76.7
Months Since 1st Arrest	45.5	45.0	45.7
Months Free	40.1	41.0	39.8

* The sample is stratified by offender race and sex, and by the number of prior arrests and urine testing experience at the arrest in the in the 1985-86 sampling period.

TABLE 4 Factors Affecting Whether Arrestee Completes Urine Analysis^a

Independent Variables	Coefficients
Intercept	.10793 ^{NS}
Black	.23592 [*]
Male	-.09371 ^{NS}
Age In Sampling Period	-.01663 ^{***}
Never Married	-.00414 ^{NS}
Private Attorney at Arraignment	.10677 ^{NS}
Felony Charges	.34759 ^{***}
Parole/Probation Status at Arrest	.26573 ^{**}
(Total n)	(1328)
Log Likelihood	-.867.4061
Restricted Log Likelihood (0 Slopes)	-.897.2726
χ^2	59.733 ^{***}
Correct % Among Predicted Tested (Predicted n)	58.9% (433)
Total Correct Predictions	54.1%

Note: The significance levels' of coefficients are:

* .05
 ** .01
 *** .001

^a A probit model is estimated on the dependent variable tested or not using LIMDEP software.

TABLE 5 Risk of First Urine Test on Successive Arrests (Percent Tested Among Previously Untested)

Arrest Number	Arestees with Exactly N Arrests for N=			
	1 (n=593)	2 (n=222)	3 (n=145)	4 (n=115)
1	.457	.383	.497	.452
2	—	.445	.452	.476
3	—	—	.425	.424
4	—	—	—	.421

TABLE 6. Participation in Violence by Demographic Subgroups:
Percent of Arrestee Population in Each Group by Drug Use

*

Drug Use Status	Demographic Groups:				Total Pop'n
	Black Females	Black Males	White Females	White Males	
Depressants:					
Users	24.3	69.0	3.2	3.5	100.0
Non-Users	8.5	86.1	2.7	2.6	100.0
Stimulants:					
Users	12.5	83.2	2.5	1.8	100.0
Non-Users	12.6	78.5	3.7	5.2	100.0
Both Types:					
Users	24.5	68.9	3.4	3.2	100.0
Non-Users	9.7	84.9	2.7	2.7	100.0
Any Type:					
Users	13.4	82.1	2.5	2.0	100.0
Non-Users	9.8	80.8	4.0	5.4	100.0
Total Arrestee Population:	12.5	81.8	2.9	2.8	100.0

* The distribution across demographic groups is estimated among arrestees who have at least two arrests following the start of routine EMIT drug screens in March, 1984.

TABLE 7. Probabaility of At Least One Arrest Involving Violent Charges Use Status and Gender ^a

	Depressant Drugs		Ratio Non-User User	Stimulant Drugs		Ratio Non-User User
	User	Non-User		User	Non-User	
Male	0.180	0.295	1.64	0.240	0.336	1.40
Female	0.089	0.166	1.87	0.101	0.173	1.71
Ratio Male/Female	2.02	1.78	0.248 ^b	2.38	1.94	0.248 ^b
Percent of Tested Pop'n by Drug Use Status	25.4	74.6		69.6	30.4	

^a The estimates of probabilities are calculated using Probit coefficients in a model that includes drug use and gender.

^b The overall estimated probability of at least one violent arrest in the total population of tested arrestees is .248. This compares very favorably with an observed proportion of .249 arrestees with violent charges among 503 tested arrestees who have at least two opst-EMIT arrests.

TABLE 8 Factors Associated with Frequency of Violent Offending^a

Independent Variables	Any Type	Depressant	Stimulant	Both Types	Number of Drug Types
Intercept	-.04604 ^{NS}	.01474 ^{NS}	-.04628 ^{NS}	-.04319 ^{NS}	-.08413 ^{NS}
Black	-.05268 ^{NS}	-.03562 ^{NS}	-.05644 ^{NS}	-.03855 ^{NS}	-.07452 ^{NS}
Male	.17046 ^{NS}	.23108 ^{NS}	.15099 ^{NS}	.21792 ^{NS}	.17699 ^{NS}
Age of Arrest in 1985-86	.01004 [*]	.00785 [*]	.01027 [*]	.00723 ^{NS}	.01042 [*]
Drug Use ^b	.12857 ^{NS}	.23537 [*]	.15364 [*]	.36460 ^{**}	.13056 ^{**}
Private Attorney at Arraignment	-.12747 ^{NS}	-.12983 ^{NS}	-.12694 ^{NS}	-.12888 ^{NS}	-.10199 ^{NS}
Never Married	.27439 ^{**}	.24776 [*]	.28026 ^{**}	.24687 ^{**}	.27557 ^{**}
(n obs)	(78)	(78)	(78)	(78)	(78)
Adj R ²	.1195	.1435	.1346	.1954	.1802

Note: The significance levels of coefficients are:

* .05
 ** .01
 *** .001

^a OLS Estimates: Dependent variable is arrests per year free and active for arrestees who have at least one arrest for a violent offense following the start of regular use of EMIT drug screen in March, 1984.

^b Drug use is alternatively measured by a positive urine test for the different drug types noted in each column.

TABLE 9 Average Time Free Following Final Observed Arrests
 Percent of Total Time Free During Entire Observation
 Period by Drug Use Status^a

<u>Drug Type</u>	<u>Drug Users</u>	<u>Non-Users</u>	<u>Ratio NonUser/User</u>
Depressant	.383	.414	1.08
Stimulant	.386	.452	1.17
Both Types	.364	.416	1.14
Any Type	.390	.454	1.16

^a The values reported in this table apply to arrestees who are arrested at least twice following the start of routine EMIT drug screens in March, 1984 and who completed at least one drug test on either of these first two arrests. Time served is excluded from both the total time observed and the time following the final arrest.

TABLE 10 Factors Affecting Variation in Expected Length of Interval Following the Final Arrest in History ^a

Depressant Use				Stimulant Use					
Blacks	No	Yes	Ratio Non-User User	Blacks	No	Yes	Ratio Non-User User		
Ever Violent	No	0.433	0.348	1.24	Ever Violent	No	0.434	0.376	1.15
	Yes	0.350	0.264	1.33		Yes	0.358	0.300	1.19
	Ratio	1.24	1.32			Ratio	1.21	1.25	
Whites				Whites					
Ever Violent	No	0.547	0.461	1.19	Ever Violent	No	0.538	0.480	1.12
	Yes	0.463	0.378	1.22		Yes	0.463	0.405	1.14
	Ratio	1.18	1.22			Ratio	1.16	1.19	

^a The length of the interval following the final arrest is expressed as a fraction of the length of the full observation period. Time served is excluded from the total observation time and from the final post-arrest interval. Larger values of the end-gap proportion suggest a higher likelihood that the offender terminated offending all together during the observation period; smaller values, on the other hand, indicate a higher likelihood that the offender remained criminally active throughout the observation period.

Figure 1 Tradeoff Between Increased number of drug positives and decreased sample size

DRUGUSE.WQ1 graph TRADEOFF

.....
Figure 2 Percent Drug Users Among Tested Arrestees by Drug Type

DRUGUSE.WQ1 graph EMIT2

.....
Figure 3 Quintiles of Violent Frequency of Actives by drug use

.....
Figure 4 Quintiles of Predatory Frequency of Actives by drug use

.....
Figure 5 Quintiles of Property Frequency of Actives by Drug Use

APPENDIX TABLES

Table X. Random Sample of Arrestees in 1985-86 Who Have At Least Two Arrests Since Start of EMIT Testing in March 1984 *

	Total Sample	No Test	Tested	Non-Users	Users
Sample Size	773	270	503	143	360
BACKGROUND ATTRIBUTES AT 1985-86 ARREST:					
Percent Black	60.0	57.8	61.2	46.2	67.2
Percent Male	51.9	46.7	54.7	62.2	51.7
Age at Arrest	28.9	29.3	28.6	28.5	28.6
% Never Married	68.4	69.8	67.7	74.5	65.0
% Married Now	13.2	13.1	13.3	8.8	15.0
% Live with Family	64.3	63.0	65.0	52.2	69.1
% Unemployed	40.4	42.7	39.2	46.3	36.6
% Parole/Probation	26.5	31.1	24.1	19.6	25.8
STATUS 1985-86 ARREST:					
% in Jail at Pretrial Interview	82.9	69.8	89.6	88.3	90.2
% Charged Felony	33.7	28.6	36.4	34.3	37.3
% Pretrial Release	92.9	91.6	93.6	91.9	94.2
% Conditional Release	63.7	50.4	70.5	67.6	71.7
% Case Disposed Early	11.9	12.0	11.8	9.6	12.7
% Private Attorney	26.8	21.5	29.6	33.6	28.1
URINANALYSIS:					
% Tested	65.1	0.0	100.0	100.0	100.0
% Positive for:					
Stimulants	63.0	0.0	63.0	0.0	88.1
Depressants	34.8	0.0	34.8	0.0	48.6
Any of Above	71.6	0.0	71.6	0.0	100.0
Both of Above	26.2	0.0	26.2	0.0	36.7
Avg # Drug Types	0.77	0.00	1.19	0.00	1.66

Table X continues on next page.

Table X. Random Sample of Arrestees in 1985-86 Who Have At Least Two Arrests Since Start of EMIT Testing in March 1984 ^a (Continued)

	Total Sample	No Test	Tested	Non-Users	Users
ARREST ACTIVITY SINCE STARTED EMIT TESTING:					
% Any Arrests	100.0	100.0	100.0	100.0	100.0
% Violent Arrests	18.2	18.9	17.9	24.5	15.3
% Predatory Arrests	11.9	11.1	12.3	14.0	11.7
% Drug Arrests	57.6	55.9	58.4	29.4	70.0
% Property Arrests	32.7	37.0	30.4	32.9	29.4
Avg Total Arrests	4.76	5.32	4.46	3.93	4.67
Avg Violent Arrests	0.34	0.38	0.32	0.38	0.30
Avg Predatory Arrests	0.23	0.20	0.24	0.28	0.23
Avg Drug Arrests	1.55	1.41	1.63	0.73	1.99
Avg Property Arrests	0.77	0.99	0.65	0.57	0.68
Months Since EMIT Start	76.7	76.7	76.7	76.7	76.7
Months Since 1st Arrest	43.2	43.7	43.0	38.4	44.9
Months Free	38.8	39.4	38.5	35.4	39.7

^a The sample is stratified by offender race and sex, and by the number of prior arrests and urine testing experience at the time of arrest in 1985-86.

Table Y. Weighted Population of Arrestees in 1985-86 Who Have At Least Two Arrests Since Start of EMIT Testing in March 1984 ^a

	Total Population	No Test	Tested	Non-Users	Users
Sample Size	773	270	503	143	360
BACKGROUND ATTRIBUTES					
AT 1985-86 ARREST:					
Percent Black	93.6	91.3	94.5	91.2	95.7
Percent Male	83.9	80.2	85.5	87.2	84.9
Age at Arrest	28.4	29.0	28.2	27.8	28.3
% Never Married	70.6	70.4	70.7	74.9	69.3
% Married Now	14.6	17.4	13.4	11.6	14.1
% Live with Family	72.1	70.0	72.9	67.9	74.4
% Unemployed	32.2	30.7	32.8	36.7	31.6
% Parole/Probation	23.7	27.1	22.3	19.0	23.3
STATUS 1985-86 ARREST:					
% in Jail at Pretrial Interview	81.3	65.9	87.7	87.9	87.6
% Charged Felony	46.4	38.3	49.7	53.2	48.6
% Pretrial Release	91.4	87.3	93.1	91.3	93.7
% Conditional Release	57.2	38.7	64.9	60.3	66.4
% Case Disposed Early	15.7	18.3	14.5	16.0	14.1
% Private Attorney	26.1	21.4	28.2	34.2	26.3
URINANALYSIS:					
% Tested	69.5	0.0	100.0	100.0	100.0
% Positive for:					
Stimulants	69.4	0.0	69.4	0.0	92.3
Depressants	26.0	0.0	26.0	0.0	34.6
Any of Above	75.1	0.0	75.1	0.0	100.0
Both of Above	20.2	0.0	20.2	0.0	26.9
Avg # Drug Types	0.83	0.00	1.19	0.00	1.58

Table continues on next page.

Table Y. Weighted Population of Arrestees in 1985-86 Who Have At Least Two Arrests Since Start of EMIT Testing in March 1984 ^a (Continued)

	Total Population	No Test	Tested	Non-Users	Users
ARREST ACTIVITY SINCE STARTED EMIT TESTING:					
% Any Arrests	100.0	100.0	100.0	100.0	100.0
% Violent Arrests	24.6	24.1	24.9	33.1	22.2
% Predatory Arrests	17.4	16.5	17.9	23.2	16.1
% Drug Arrests	67.2	60.3	70.2	47.4	77.8
% Property Arrests	34.8	43.7	30.9	29.5	31.3
Avg Total Arrests	4.53	4.89	4.37	4.07	4.47
Avg Violent Arrests	0.48	0.49	0.48	0.56	0.45
Avg Predatory Arrests	0.33	0.32	0.34	0.50	0.28
Avg Drug Arrests	1.94	1.61	2.08	1.44	2.30
Avg Property Arrests	0.75	1.16	0.58	0.47	0.61
Months Since EMIT Start	76.7	76.7	76.7	76.7	76.7
Months Since 1st Arrest	45.5	45.0	45.7	42.2	46.5
Months Free	40.1	41.0	39.8	39.3	39.9

^a The sample is stratified by offender race and sex, and by the number of prior arrests and urine testing experience at the time of arrest in 1985-86.

TABLE Z. Factors Associated With Participation in Violent Offenses ^a

Variable	Depressants	Stimulants	Both Types	Any Type	Number of Drug Types
Intercept	-1.2308 **	-1.3483 ***	-1.2776 ***	-1.2757 ***	-1.2255 **
Black	0.4379 NS	0.4700 NS	0.4436 NS	0.4822 NS	0.5049 NS
Male	0.3581 +	0.4750 *	0.3917 +	0.4548 *	0.4261 *
Never Married	-0.1589 NS	-0.0907 NS	-0.1664 NS	-0.0909 NS	-0.1309 NS
Private Attorney at Arraignment	0.1128 NS	0.1063 NS	0.1065 NS	0.1038 NS	0.0991 NS
Drug Use ^b	-0.4580 **	-0.2389 +	-0.4675 **	-0.3135 *	-0.2167 **
Log Likelihood	-259.693	-262.304	-260.208	-261.422	-259.383

NOTE: the significance levels of the estimated coefficients are as follows:

+ .10
* .05
** .01
*** .001

^a Probit coefficients are estimated for a zero-one dependent variable reflecting whether an offender is ever arrested for a violent offense following introduction of routine EMIT drug screens in March, 1984. The analysis is based on arrestees who have at least two post-EMIT arrests that are used to establish drug use status.

^b Drug use is measured for the different drug types identified in each column.

TABLE ZA Factors Associated With the Amount of Time Following the Last Arrest in Observation Period^a

Independent Variable	Any Type	Depressant	Stimulant	Both Types	Number of Drug Types
Intercept	.46868 ^{***}	.42799 ^{***}	.47223 ^{***}	.43244 ^{***}	.48241 ^{***}
Black	-.10565 [*]	-.11377 [*]	-.10432 [*]	-.11149 [*]	-.09718 [*]
Male	-.02949 ^{NS}	-.04806 ^{NS}	-.02562 ^{NS}	-.04612 ^{NS}	-.03880 ^{NS}
Age at Arrest in 1985-86	.00388 [*]	.00545 ^{**}	.00362 [*]	.00536 ^{**}	.00442 ^{**}
Drug Use ^b	-.05611 [*]	-.08525 ^{**}	-.05812 [*]	-.10789 ^{***}	-.05216 ^{***}
Ever Violent	-.07643 ^{**}	-.08319 ^{**}	-.07557 ^{**}	-.08493 ^{**}	-.08883 ^{***}
Private Attorney at Arraignment	.01296 ^{NS}	.01414 ^{NS}	.01137 ^{NS}	.01046 ^{NS}	.00895 ^{NS}
Never Married	-.00111 ^{NS}	-.00118 ^{NS}	-.00372 ^{NS}	-.00698 ^{NS}	-.00916 ^{NS}
(n Obs)	(422)	(422)	(422)	(422)	(422)
Adj R ²	.043	.052	.045	.060	.067

Note: The significance levels of coefficients are: * .05; ** .01; *** .001.

^a The length of the last arrest-free interval is expressed as a percent of the total time at risk for an offender. Time served is excluded from both the total observation period and the last interval. The larger the end gap fraction the more likely an offender terminated offending. Offenders with smaller end-gap fractions, by contrast, are more likely to have remained criminally active throughout the observation period.

^b Drug use is alternatively measured for the different drug types noted in each column.

Figure 1

Tradeoff Between Gains in Tested Arrestees and Loss in Sample Size

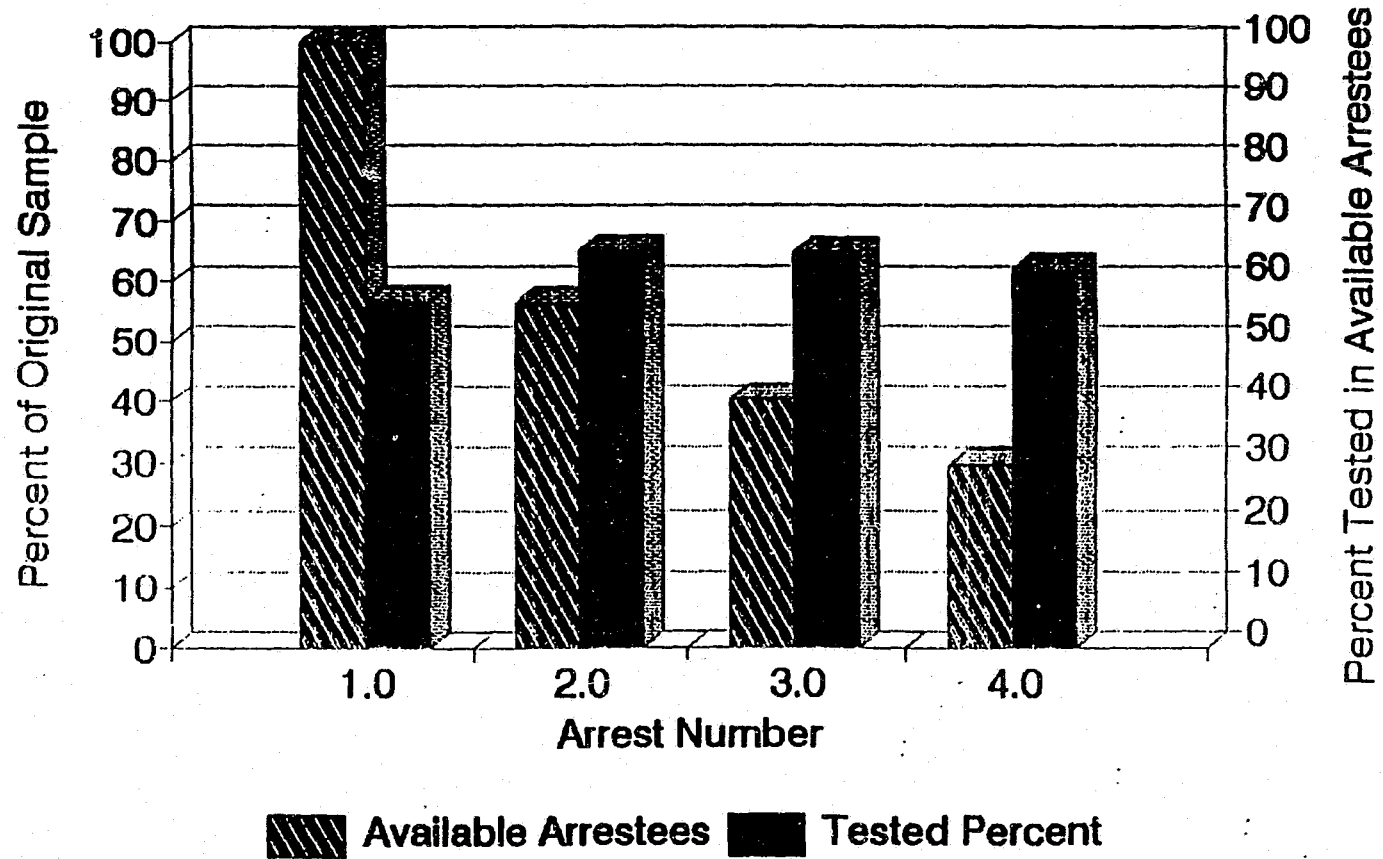


Figure 2

Percent Drug Users Among Tested Arrestees by Drug Type

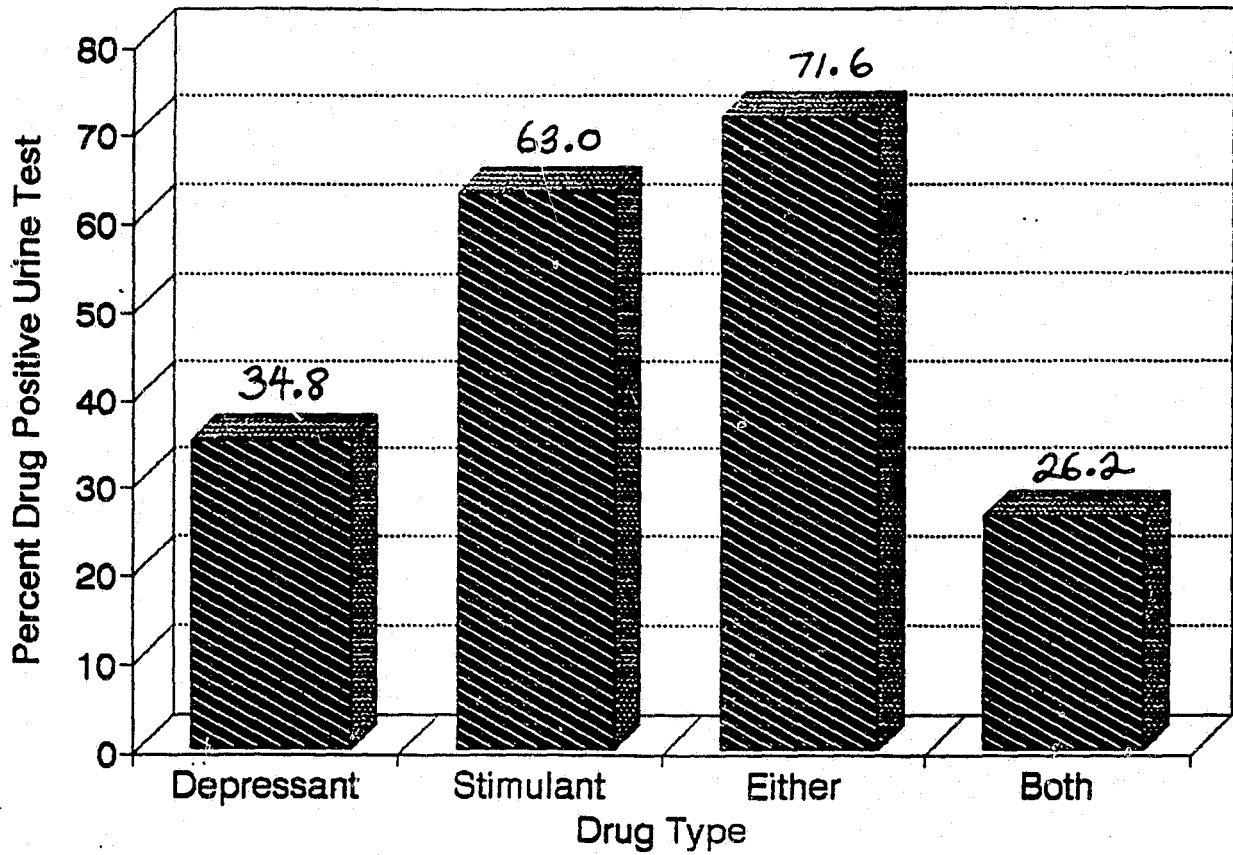


Figure 3 Percentiles of Violent Arrest Rates by Drug Use Status

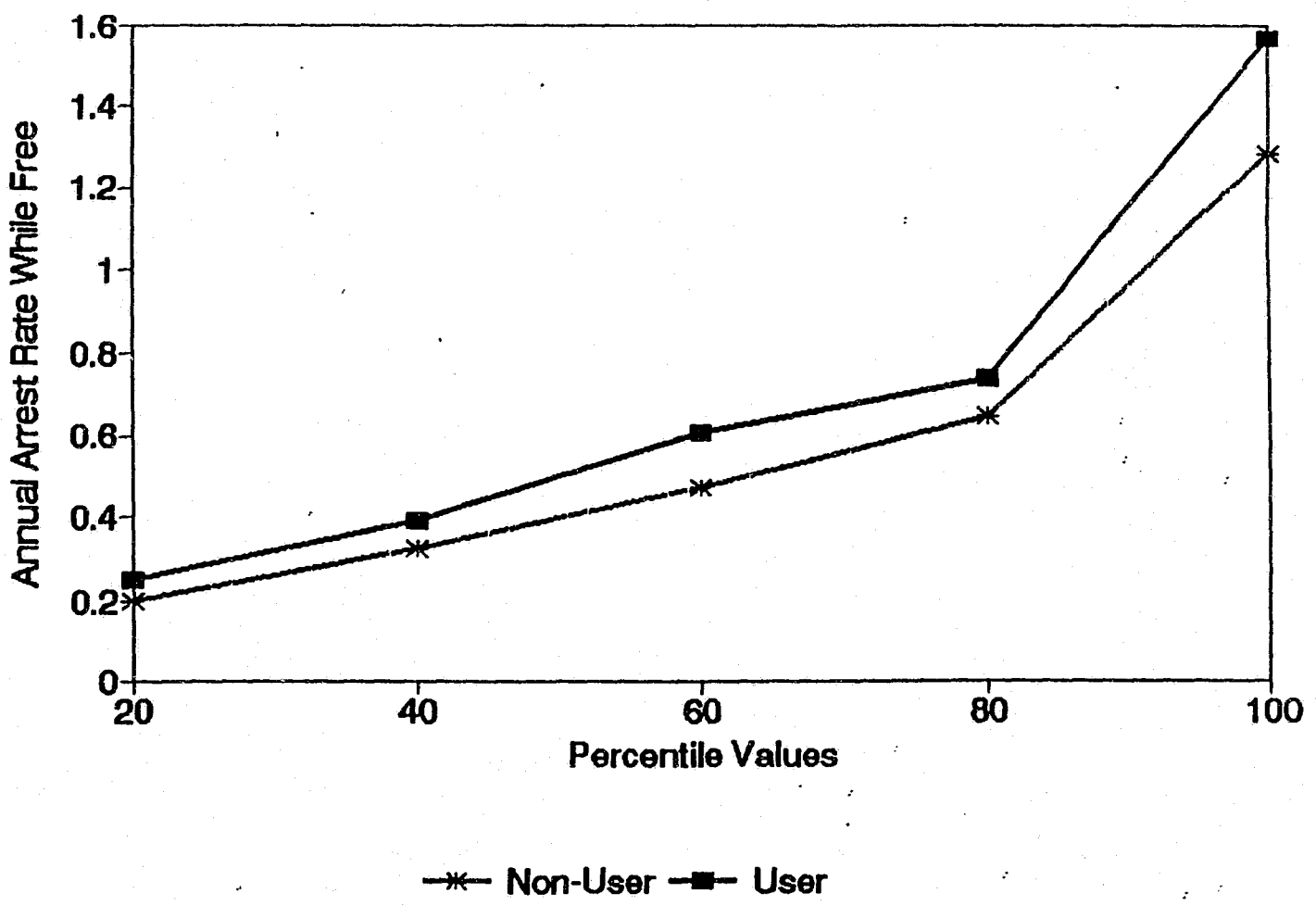


Figure 4 Percentiles of Predatory Arrest Rates
by Drug Use Status

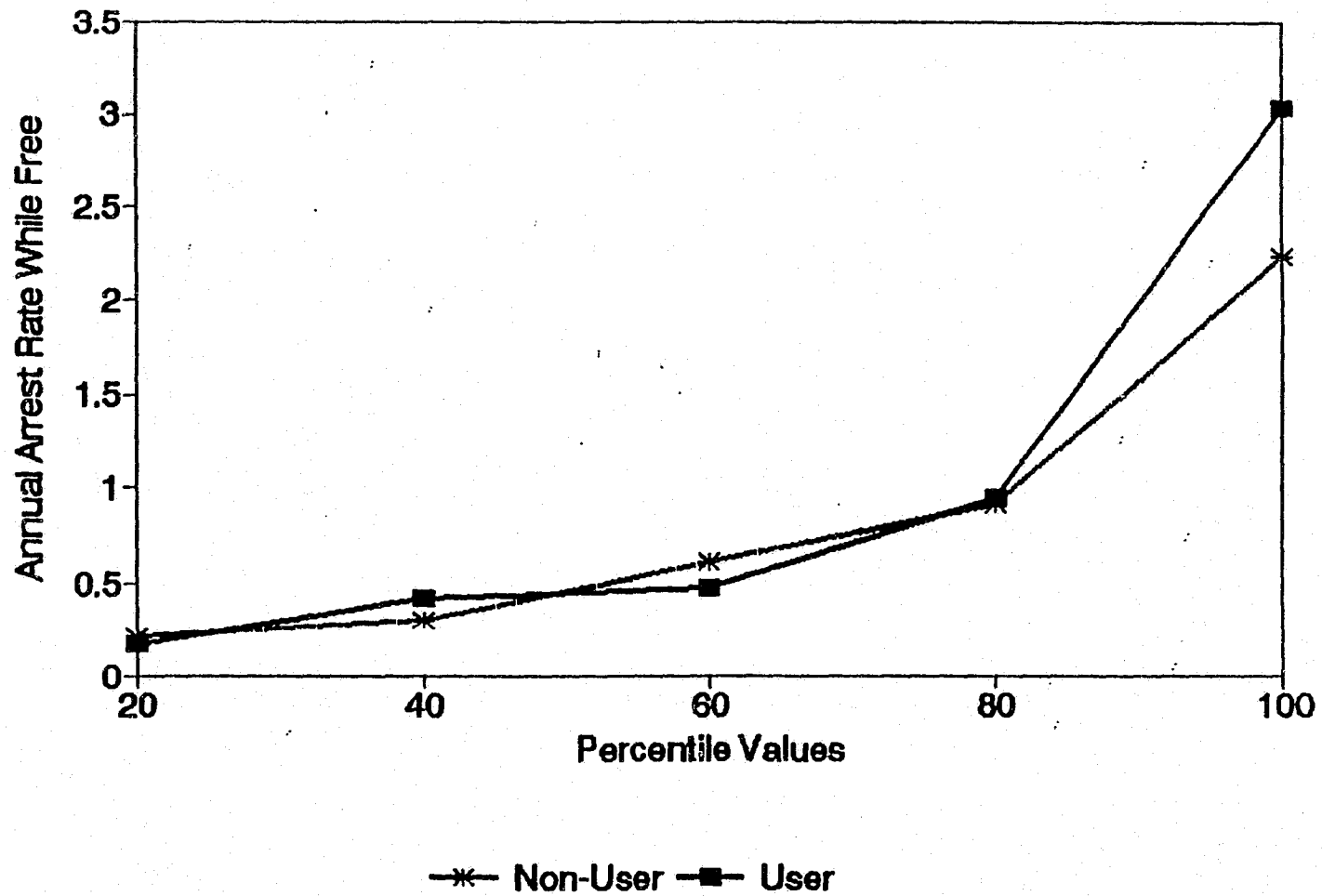


Figure 5 Percentiles of Property Arrest Rates
by Drug Use Status

