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1999 ANNUAL REPORT on Drug Use Among Adult and Juvenile Arrestees

ADAM
Arrestee Drug Abuse Monitoring Program

A Program of the National Institute of Justice

Research Report

U.S. Department of Justice
Office of Justice Programs
810 Seventh Street, NW
Washington, D.C. 20531

Janet Reno
Attorney General

Daniel Marcus
Acting Associate Attorney General

Mary Lou Leary
Acting Assistant Attorney General

Julie E. Samuels
Acting Director, National Institute of Justice

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From the Director of NIJ

It is with great pleasure that I present NIJ's *Annual Report on Drug Use Among Adult and Juvenile Arrestees*. In response to the Nation's drug problem, the Arrestee Drug Abuse Monitoring (ADAM) program continues to expand and increase knowledge about a high-risk population of drug users that no other national program captures. The ADAM program provides communities with a powerful tool for developing effective drug-control strategies and planning policy responses appropriate for the arrestee population.

Over the past several years, the ADAM program has transformed into a research platform for local and national policy analysis. ADAM has started to provide a broader examination of our Nation's drug problem with explicit links to other major national drug-monitoring systems; an improved ability to estimate drug prevalence, dependency, and abuse; a new capacity to assess and monitor drug markets; and a new representative sampling strategy.

In the past year, a number of program goals were achieved. ADAM staff finalized the newly designed interview instrument. Starting in the first quarter of 2000, the new instrument was implemented in all the ADAM sites. In 1999, the program also began implementing probability-based sampling at all sites and will continue to fine tune sampling plans in 2000. Additionally, the development of a standard drug testing method to distinguish crack from powder cocaine use was established. Four additional countries began collecting International ADAM data, and NIJ began discussions with other interested partners. Also, ADAM staff continued working with our Federal partners on a number of research projects. The Centers for Disease Control and Prevention and NIJ fielded a pilot study this past year on a new addendum that assesses HIV testing, risk, and prevention behaviors of arrestees as they relate to HIV and other sexually transmitted diseases. NIJ is also working with the Center for Substance Abuse Treatment (CSAT) on integrating ADAM into their State Needs Assessment.

The future prospectives for ADAM are very exciting. For example, the President has requested an increase in fiscal year 2001 to expand the program to 50 sites. Other improvements may be possible, including the addition of affiliated sites; outreach data collection in rural, suburban, or tribal areas at each site; the redesign of the juvenile ADAM instrument; expansion of juvenile data collection at approximately 60 ADAM sites; and the implementation of probability-based sampling for female arrestees. The ADAM program will continue to support researcher and practitioner partnerships at the local level through the use of Local Coordinating Councils. The ADAM program will study the relationship of drugs and crime to related social problems with projects on alcohol, domestic violence, drug markets, firearms, gambling, gangs, and sexually transmitted diseases. Also, the ADAM program is exploring the use of new technologies such as crime mapping and statistical modeling techniques for estimating national rates of drug use.

A promising—and challenging—future lies ahead for the ADAM program. I am very confident that all of the many contributors to ADAM will help to fulfill the unique potential of this program.

Julie E. Samuels
Acting Director

Statement of Acknowledgment

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Table of Contents

SUMMARY OF 1999 PROGRAM FINDINGS

This report provides an overview of 1999 ADAM program findings and detailed site-by-site tables on drug use among booked arrestees.[1] Monitoring the size of a drug-using population in a particular year yields important information about the current structure of a drug problem. Thus, age-specific and gender-specific prevalence for different drugs are considered. Monitoring changes across years provides another dimension for understanding drug problems, including increased understanding of future courses of drug epidemics. Thus, this report also considers prevalence over time for specific user-cohorts.

In 1999, the ADAM program collected data from more than 30,000 adult male arrestees in 34 sites[2] and from more than 10,000 adult female arrestees in 32 sites.[3] Additionally, data were collected from more than 2,500 juvenile male detainees in 9 sites, and more than 400 juvenile female detainees in 6 sites. The level of recent drug use among 1999 ADAM arrestees is substantial. Every site reports that at least 50 percent of adult male arrestees tested positive for at least one drug. These consistently high percentages of overall use mask differences in trends[4] for specific drugs and in specific segments of the arrestee population.

The following summary presents major findings from the 1999 ADAM data, including both urinalysis and self-report data from program participants.

Drug Use Among Adult Arrestees

USE OF AT LEAST ONE DRUG AND MULTIPLE DRUGS

In 27 of the 34 sites, more than 60 percent of the adult male arrestees tested positive for the presence of at least one of the NIDA-5[5] drugs, ranging from 50 percent in San Antonio to 77 percent in Atlanta. For female adult arrestees,[6] the median rate for use of any drug was 67 percent in 1999 compared to 64 percent in 1998.[7] In 22 of the 32 sites, more than 60 percent of the adult female arrestees tested positive for at least one drug, ranging from 22 percent in Laredo to 81 percent in New York City. The median rate for use of any drug among male adult arrestees for both 1998 and 1999 was 64 percent. For most sites, there was little change in the use of any of the NIDA-5 drugs between 1998 and 1999. However, notable percentage point decreases for adult male arrestees between 1998 and 1999 were seen in Ft. Lauderdale (–10), Philadelphia (–8), and Portland (–6), and for adult females in Birmingham (–20), Laredo (–11), and Seattle (–11). The largest percentage point increases for the use of any drug among adult male arrestees between 1998 and 1999 were in Atlanta (+12), Anchorage (+11), and San Jose (+9). For females, the largest percentage point increases for testing positive for the use of any drug between 1998 and 1999 were in San Jose (+21) and Minneapolis (+13).

Among adult males, marijuana was the drug most frequently detected in 24 of the 34 reporting sites, and cocaine was the drug most likely to be detected in the other 10 sites. Among adult females arrestees, cocaine was the drug most frequently detected in 25 of 32 sites. In the remaining sites, marijuana was the most frequently detected drug (4 sites) followed by methamphetamine (3 sites).

Multiple drug use is evident among arrestees in some of the ADAM sites. In 6 sites, more than a quarter of the

[1]The term "arrestee" will be used throughout this report. However, because no identifying data are collected in the interview setting, the data represent numbers of arrests rather than an unduplicated count of persons arrested.

[2]See page 6 for additional information about ADAM sites.

[3]Washington, D.C., and Miami did not collect data from female arrestees.

[4]Because the 1999 data were not collected under probability sampling procedures, standard errors cannot be calculated for site estimates, and confidence intervals cannot yet be estimated to determine the statistical significance of changes. As a result, data should be interpreted cautiously. For example, a + or - change of 5 percent could reasonably be within expected variation and not represent any change.

[5]"NIDA-5" refers to the following five drugs: cocaine, marijuana, methamphetamine, opiates, and PCP. See a full discussion regarding the changes in how ADAM measures positive for "any drug" on page 11.

[6]Changes in drug use rates for adult female arrestees should be viewed with caution. Due to the small number of adult female arrestees in most sites, it is very difficult to assess the importance of changes from 1998 to 1999.

[7]For purposes of calculating a median rate for 1998, the estimate in 1999 includes eight adult female cases from Atlanta, which were not reported in the 1998 ADAM annual report.

male adult arrestees tested positive for 2 or more drugs. In 10 sites, more than a quarter of the female adult arrestees tested positive for 2 or more drugs. In Albuquerque and Chicago, close to 30 percent of the males and close to 40 percent of the females tested positive for more than one drug. Among certain types of drug users, there is a greater likelihood of detecting multiple drug use. For example, in the entire adult ADAM sample, more than three-fourths of the arrestees who tested positive for opiates also tested positive for some other drug.

The median rate of multiple drug use for the female adult sample in 1999 was 22 percent compared to 19 percent in 1998. The largest percentage point increases for multiple drug use for female adult arrestees occurred in San Jose (+15), Albuquerque (+12), Chicago (+10), and Des Moines (+10). The median rate of multiple drug use for the male adult arrestees was 22 percent for both 1998 and 1999. The largest percentage point increases for multiple drug use for adult male arrestees were found in Atlanta (+9) and Washington, D.C. (+8), and the largest decreases were found in Philadelphia (–9), San Antonio (–5), and San Diego (–5).

COCAINE

Despite few increases, and even some apparent declines, in the use of cocaine among adult arrestees in the past few years, cocaine is still found in more than one-third of the drug-test results of adult arrestees in 20 sites. Adult female cocaine-positive rates ranged from 19 percent in San Antonio to 65 percent in New York City, and adult male cocaine-positive rates ranged from 14 percent in San Jose to 51 percent in Atlanta.

The proportion of female arrestees testing positive for cocaine was greater than the proportion of males in many sites. Only one site (Atlanta) had more than half of male adult arrestees test positive for cocaine, but 7 sites had more than half of female adult arrestees test positive for cocaine. Among female adult arrestees who tested positive for cocaine, the median value was 38 percent compared to 34 percent for male adult arrestees.

As in previous years, there was substantial variation in the proportion testing positive for cocaine. In 3 sites, more than 60 percent of adult female arrestees tested positive for cocaine (Atlanta, Chicago, and New York City); in 6 sites (Des Moines, Houston, Laredo, San Antonio, San Diego, and San Jose), less than a quarter of adult female arrestees tested positive for cocaine. Considerable variation among sites was also found among adult male arrestees. In 10 sites, more than 40 percent of adult male arrestees tested positive for cocaine, and in 5 sites, less than 20 percent tested positive for cocaine.

The percentage of male and female adult arrestees who tested positive for cocaine was unchanged in a majority of the sites. Notable percentage point decreases for cocaine positives among adult female arrestees between 1998 and 1999 were seen in Birmingham (–23), Anchorage (–14), Houston (–14), and Laredo (–12), and for adult male arrestees in Ft. Lauderdale (–9), Los Angeles (–7), and Portland (–6). The largest percentage point increases for adult male arrestees between 1998 and 1999 were in Anchorage (+6), Las Vegas (+6), and San Jose (+6). For adult females, the largest percentage point increases in cocaine positives were in Las Vegas (+14), Dallas (+11), and San Jose (+10).

OPIATES

Opiate positives among adult arrestees remained relatively low compared to the prevalence of cocaine and marijuana in the overall sample. Only 12 sites had adult opiate-positive rates of 10 percent or higher. Adult female opiate-positive rates ranged from zero in Omaha to 32 percent in Chicago; adult male opiate-positive rates ranged from less than one percent in Omaha to 20 percent in Chicago. The proportion of female adult arrestees testing positive for opiates was greater than that for male adult arrestees in many sites. The median for female adult arrestees testing positive for opiates was 8 percent compared to 6 percent for adult male arrestees. In only 3 sites (Chicago, New York City, and Washington, D.C.), more than 15 percent of male adult arrestees tested positive for opiates; in 6 sites (Albuquerque, Chicago, Detroit, New York City, Portland, and Seattle), more than 15 percent of female adult arrestees tested positive for opiates.

In most sites, the percentages of persons who tested positive for opiates did not change between 1998 and 1999. For female adult arrestees, the median rate for testing positive for opiates was 7 percent in 1998 compared to 8 percent in 1999. Despite the absence of change in the percentage of opiate positives for the entire sample of

adult female arrestees between 1998 and 1999, there were some notable percentage point decreases in Birmingham (–14), Portland (–6), and Detroit (–5), and notable increases in Albuquerque (+15), San Jose (+8), and Cleveland (+6).

For male adult arrestees, the median rate for testing positive for opiates was 6 percent in 1998 and 1999. Philadelphia (–4) and Seattle (–4) were the only sites that had decreases of more than 4 percentage points for opiate positives among adult male arrestees. Washington, D.C. (+6), Albuquerque (+5), and Atlanta (+3) were the only sites with increases of 3 percentage points or greater for adult male arrestees.

METHAMPHETAMINE

Methamphetamine use among ADAM arrestees is a phenomenon that appears to be concentrated mainly in the Western part of the United States. Adult female methamphetamine-positive rates ranged from zero in nine sites to 36 percent in San Diego; adult male methamphetamine-positive rates ranged from zero in 5 sites to 28 percent in Sacramento. For 1999, 15 sites had adult male-methamphetamine rates below 1 percent and 13 sites had adult female-methamphetamine rates below 1 percent. The large number of sites that had virtually no presence of methamphetamine should not obscure the small but substantial number of sites that showed a high proportion of methamphetamine use. For example, in 1999, prevalence rates for methamphetamine use exceeded 10 percent both for adult female arrestees in 12 sites and for adult male arrestees in 9 sites.

In most sites, the proportion of female adult arrestees testing positive in 1999 for methamphetamine was somewhat greater than that for male adult arrestees. Sites with more than 20 percent of female adult arrestees testing positive for methamphetamine include: San Diego (36 percent), Salt Lake City (34 percent), Sacramento (32 percent), San Jose (32 percent), Spokane (27 percent), Portland (25 percent), and Des Moines (22 percent). Sites with more than 20 percent of male adult arrestees testing positive for methamphetamine include: Sacramento (28 percent), San Diego (26 percent), Salt Lake City (25 percent), San Jose (24 percent), Portland (20 percent), and Spokane (20 percent).

In a majority of sites, the methamphetamine-positive rate was nearly the same in 1998 and 1999. For adult female arrestees, only Phoenix (–8) and Las Vegas (–6) had more than a 3 percentage point decrease. The largest percentage point increases for adult male arrestees were in San Jose (+5), Des Moines (+4), Salt Lake City (+4), Spokane (+4), and, for adult females, in San Jose (+10), Tucson (+7), and Albuquerque (+6).

MARIJUANA

Marijuana remains a very popular drug for adult arrestees, particularly among young males. In 8 of the 34 sites, more than 70 percent of the 15- to 20-year-old male arrestees tested positive for marijuana. In Atlanta, more than three-quarters of the 15- to 20-year-old male arrestees tested positive for marijuana compared to about one-third of the male arrestees between the ages of 31 to 35 and less than one-fourth of the 36 or older cohort. The overall median rate of marijuana positives for 15- to 20-year-old male arrestees was 63 percent compared to the overall adult male arrestee median rate of 39 percent and the overall adult female arrestee median rate of 26 percent.

The proportion of male adult arrestees testing positive for marijuana was greater than the rate for female adult arrestees in all sites. Adult male marijuana-positive rates ranged from 28 percent in Las Vegas to 51 percent in Omaha. Adult female marijuana-positive rates ranged from 9 percent in Laredo to 39 percent in Oklahoma City. The median for male adult arrestees testing positive for marijuana was nearly 40 percent compared to just over 25 percent for adult female arrestees. Only Laredo (33 percent), Los Angeles (32 percent), and Las Vegas (28 percent) had less than one-third of adult male arrestees test positive for marijuana, but 25 sites had less than one-third of adult female arrestees test positive for marijuana. Also, 16 sites had 40 percent or more of adult male arrestees testing positive for marijuana. In all sites, no more than 40 percent of adult female arrestees tested positive for marijuana.

The 1999 levels for adult marijuana-positive rates for females were approximately the same or higher than reported in 1998, with the exceptions of Seattle (–10), Salt Lake City (–7), and Laredo (–4). For the total sample of female adult arrestees the median rate for testing positive for marijuana was 26 percent in 1999 compared to 23 percent in 1998. The largest percentage point

increases in marijuana positives for adult females were in Des Moines (+18) and San Jose (+13).

In 1998 and 1999, the median male adult arrestee-positive rate for marijuana was 39 percent. However, notable increases of at least 10 percentage points for marijuana positives among adult males were seen in Atlanta (+18) and San Jose (+10). Decreases of more than 5 percentage points for adult male arrestees occurred in Laredo (–7), San Antonio (–6), and Oklahoma City (–5).

Drug Use Among Juveniles Detainees[8]

In 1999, ADAM collected data on juvenile detainees in 9 of its 35 sites. In 3 sites (Birmingham, Cleveland, and Los Angeles), data were collected only from juvenile male detainees. In the remaining 6 sites, data were collected from both juvenile male and female detainees (Denver, Phoenix, Portland, San Antonio, San Diego, and Tucson). While the numbers for juvenile female participants were quite small, we report these data for the first time due to increased interest in our juvenile participants.

Drug use patterns for juvenile detainees were similar across all 9 sites. Marijuana was the most commonly used drug for both juvenile male and female[9] detainees, with cocaine use a distant second. Methamphetamine was the third most commonly used drug and surpassed cocaine for both juvenile male and female detainees in 2 of the 9 sites.[10] In 5 of the 9 sites, there were no PCP positive tests for male detainees, and no female detainees tested positive for PCP in any site. Finally, no substantial opiate use was detected for either male or female detainees at any of the 9 sites.[11]

Across all sites, male detainees were more likely to test positive for the use of any drug[12] than were female detainees, with differences ranging from 5 to 31 percent. At every site, more than 40 percent of juvenile males and 20 percent of juvenile females tested positive for marijuana. Overall, the median value for those who tested positive for marijuana was 53 percent for males compared to 38 percent of females. Cocaine use for males ranged from a high of 16 percent in Phoenix to a low of 3 percent in Portland. The range for females was similar, with a high of 17 percent in Tucson to a low of 0.0 percent in San Diego. Marijuana use was more than 6 times higher than cocaine use for both juvenile males and females. Methamphetamine use among juvenile arrestees followed a pattern similar to that of adult arrestees: methamphetamine was more commonly used by females and was most often detected at sites in the West/Southwest. For example, in San Diego 18 percent of females and 16 percent of males tested positive for methamphetamine. In contrast, in Birmingham and Cleveland, none of the males tested positive. (Data were not collected from females at either site.) In fact, the juvenile females' methamphetamine rate surpassed the males' by an average of 3 percent, with differences ranging from zero to 5 percent for sites in which both male and female juvenile data were collected.

Generally, those juveniles who currently attended school were less likely to test positive for at least one drug than those juveniles who were not in school. This also held true when drug-positive results were compared for each drug individually.[13] For instance, in Phoenix 80 percent of juvenile males not in school tested positive for any drug while only 57 percent who were in school tested positive, and 70 percent of females not in school tested positive for any drug while only 36 percent of females in school tested positive.

[8]Youths, typically under the age of 18, who have been detained at a juvenile detention center or facility.

[9]Although juvenile female participants are summarized in this report, the sample sizes at most sites were generally prohibitively small. Data are reported in sites for which more than ten cases were completed (i.e., interview and urine sample) for any given quarter in 1999.

[10]Portland and San Diego.

[11]Under 3 percent.

[12]See *ADAM's Drug Testing Overview* (page 11) section for a description of the "any drug" variable.

[13]For sites in which the number of youth who tested positive was large enough to detect.

PROGRAM OVERVIEW

NIJ's ADAM program collects quarterly drug use data from booked arrestees in 35 sites nationwide. The program is a powerful tool for obtaining empirical evidence of patterns of drug abuse. ADAM findings give participating sites an effective vehicle for understanding the changing nature of their drug problems and a context for developing enforcement, treatment, and prevention strategies that are attuned to local drug problems.

ADAM presents a unique and valuable perspective on drug use in three important ways. First, ADAM is the only national research program studying drug use that employs both interviews and drug testing, providing analysts with a ready means of assessing validity of self-report data. By relying on the combination of self-report data and urinalyses of participants at the time of arrest, ADAM data are less susceptible either to exaggeration or denial of drug use than many other surveys.

Second, the ADAM program focuses on arrestees, a group that is more likely than other populations to be drug-involved. Thus, ADAM presents a different picture of drug use from that of studies that focus on household or other populations. In this way, ADAM provides information for criminal justice policy purposes and is a major research resource for those analyzing the association of drug use and criminal activity.

Third, and perhaps most important, the ADAM program is the only national drug research program built upon data collection at the local level. Over the years, ADAM data have revealed that there is no single national drug problem; rather, there are different local drug problems that vary from city to city. Communities often lack tools to monitor these problems in a consistent, comprehensive manner and have difficulty formulating appropriate policy responses. Through ADAM, communities struggling with emerging and long-standing substance abuse problems are provided with a research tool to measure and understand the local drug problem and to evaluate programs and/or interventions that target the criminally active population.

In addition, ADAM provides a network of local drug use data that forms a foundation for understanding drug use across the country.

PROGRAM BACKGROUND

The forerunner to ADAM, the Drug Use Forecasting (DUF) program, was implemented in 1987 to capture information concerning drug use among urban arrestees. For more than a decade, the DUF program provided baseline statistics for detecting trends in drug use—a valuable barometer that had important implications for public safety.

Between 1987 and 1996, more than 250,000 booked arrestees were interviewed and drug tested as part of DUF's quarterly data collection. As is often the case with large-scale programs, important changes were made during this 10-year period. Ten sites were selected for the initial DUF data collection in 1987. An additional 14 sites were added as the program evolved. The composition of the DUF sample of arrestees also expanded over time. Originally, DUF data collection was restricted to adult arrestees. Driven by concerns about juvenile drug use and associated violence, 12 sites were selected to begin collecting data from juveniles in 1991. Over the past six years, up to 13 sites have participated in the quarterly data collection of juvenile drug use.

In addition to the expansion in the number of DUF data collection sites and the population targeted, the original DUF instrument underwent three revisions. These revisions included slight changes in wording of existing questions, the exclusion of some questions, and the inclusion of new ones. Despite modifications, DUF data remained a panel of rich, consistent data for examining trends in arrestee drug use over those ten years, largely due to the consistent inclusion of urine sampling and basic self report of prior 30-day drug use.

In 1996, NIJ undertook an ambitious agenda to increase the generalizability of data collected in its DUF program.

A concerted effort was made to redesign and expand the program, and in late 1997, NIJ unveiled the Arrestee Drug Abuse Monitoring (ADAM) program, DUF's successor.

ADAM is both an expansion and enhancement of the DUF program. The ADAM program provides quarterly estimates of drug use among persons arrested for any crime and brought to booking facilities in selected counties across the Nation. Its purpose is to track drug use among booked arrestees over time in geographically dispersed cities. To date, 35 communities participate in the ADAM program: Albuquerque, Anchorage, Atlanta, Birmingham, Chicago, Cleveland, Dallas, Denver, Des Moines, Detroit, Ft. Lauderdale, Honolulu, Houston, Indianapolis, Laredo, Las Vegas, Los Angeles, Miami, Minneapolis, New Orleans, New York City, Oklahoma City, Omaha, Philadelphia, Phoenix, Portland, Sacramento, Salt Lake City, San Antonio, San Diego, San Jose, Seattle, Spokane, Tucson, and Washington, D.C.[14]

Although the ADAM program was modeled on DUF, there are important differences. In 1998, the ADAM program expanded the number of sites from 23 to 35. Equally important were changes in basic methodology that enhanced the ultimate utility and generalizability of the data.

As a first step, ADAM enhanced each site's collection to include the entire county. For example, in Los Angeles under DUF, data collection occurred at one facility. ADAM has expanded that sample to include a representative sample of facilities from among Los Angeles's County's 118 facilities. Local officials can now make assertions about the entire county's arrestee population based on its ADAM data collection efforts.

Unlike the DUF samples, ADAM arrestees are now selected for an interview and testing based on a probability-based sampling plan specifically tailored to each site. In addition, substantial resources for training and quality control are now available to ensure that comparable data collection methods are used in each site. Local Coordinating Councils (LCCs) are also being established at each ADAM site to facilitate local use of the ADAM data. Finally, a new instrument fielded in the first quarter of 2000 will expand ADAM's utility in other important policy areas such as treatment needs assessment and analyses of drug markets.

As a result of these programmatic changes, NIJ's ADAM program now serves as a more comprehensive nationwide source of information on drug use. The program is able to identify levels of drug use among arrestees; track changes in patterns of drug use; identify specific drugs that are abused in each jurisdiction; alert officials to trends in drug use and the availability of new drugs; provide data to help understand the drug-crime connection; evaluate law enforcement and jail-based programs and their effects; and serve as a research platform for a wide variety of drug-related initiatives. In short, the ADAM program provides reliable and valid information to develop evidence-based policies to assist both local and national policymakers.

[14]St. Louis is temporarily on hiatus from the ADAM program. Honolulu replaced St. Louis as the 35th site in the first quarter of 2000.

PROGRAM METHODOLOGY

Scope of Work

The ADAM network operates in 25 States and the District of Columbia. It is expected that over the next 3 years the ADAM system will expand to a total of 75 sites. Beginning in 2001, pending budget approval, ADAM will expand to a total of 50 sites with the remaining 25 sites to be added after 2002. When fully funded, the ADAM network will include 75 of the largest U.S. cities (i.e., populations of 200,000 or more, or the largest city in States without a population center of more than 200,000 in population). By collecting drug use data in sites nationwide, the program will cover more than 40 States and represent counties holding more than 20 percent of the U.S. population.

Catchment Area

Although most ADAM sites are known by the name of the largest city in the area, the catchment area of most sites encompasses substantially larger geographic areas than the urban center. The standard catchment area is the county. The organization of booking facilities (jails) varies considerably across the country. Some counties have a single facility where arrestees from both city and county agencies are brought. Others have numerous smaller jails throughout the county. However, the jurisdictional reach of law enforcement agencies bringing arrestees to common booking facilities generally does not extend beyond county lines. Thus, by defining a site by the county within which the major metropolitan center resides (but does not necessarily encompass), the primary unit of analysis for ADAM coincides with a standard unit of government.

In most cases, an ADAM site comprises a single county. Some States, such as Alaska, do not have counties or comparable units of government. In these cases, the catchment area is defined by the city or municipal boundaries. For a few sites, the catchment area covers more than one county. For example, the New York City site includes the five boroughs of the city. Similarly, the city of Atlanta crosses the DeKalb and Fulton County boundaries, thus comprising two counties. For a more detailed list of sites and catchment areas, see the individual site pages beginning on page 20.

Counties are used as catchment areas whenever possible for several reasons. First, counties typically provide greater demographic diversity than the city, that is, it provides urban, suburban, and sometimes rural representation. Second, counties are easier geopolitical boundaries to track, particularly with respect to the processing of arrestees. The population in city jails tends to change not only because of annexations and population growth, but also because cities may start and stop jail service contracts with smaller surrounding municipalities depending on jail capacity and other factors. County boundaries tend to be more fixed, with fairly limited movement of arrestees across county borders, making counties an easier unit of analysis to monitor over time. Finally, many jurisdictions have structures under which the largest city will operate a jail of its own and the county sheriff will operate a jail for all of the smaller cities and towns in the county. In these cases, it is a relatively simple task to expand data collection to the county level.

Sampling Strategy

The overriding data collection objective under ADAM is to obtain a probability sample that allows each site to estimate both the proportion of arrestees in the county testing positive for drugs and to determine the number of arrestees who would test positive for drugs had all been interviewed. For the first time, ADAM will provide probability-based samples, providing better support for special research projects at each site. When sampling is fully implemented, sites not only can be assured that data collected each quarter represents their arrestee population, but also can place confidence intervals around the numbers they are reporting, making trend analysis more reliable and more easily interpreted than in the past.

In the third and fourth quarters of 1999, ADAM sites began implementing new sampling procedures that departed significantly from those originally established for the program. Historically, sites collected a convenience sample each quarter of approximately 225 interviews and urine specimens from adult male arrestees, and 100 interviews and specimens from adult female arrestees.

Collection was traditionally conducted at one (the largest) facility in each city, and interviews were conducted with volunteers who had been arrested no more than 48 hours prior to the time of data collection. Sites attempted to gain access to facilities during periods of high arrest activity, though these periods varied considerably across sites. The representativeness of the time period of data collection and of the resultant sample was unknown, and standard errors for the samples could not be calculated.

The introduction of probability samples in the ADAM program heralds greater scientific rigor in drug use estimates, but has also resulted in a greater expenditure of effort for most sites, particularly in the initial stages of implementation. In 2000, site staff continue the process of adapting to their site-specific sampling plans, which require interviews at additional facilities, data collection from new sources, and implementation of procedures tailored for their site.

Next year's annual report will reflect data that have been collected using the new design. In the year 2000, ADAM program data will provide statistically reliable estimates of rates of the proportion of arrestees in an area who have used drugs within a specified time period. These data can then be used to determine the number of arrestees using drugs each year in each target area.

ADAM's Probability-Based Sampling Plan

The total number of persons arrested within a county in a two-week period regardless of charge, is the sampling frame for ADAM data collection. To obtain the county sample in each ADAM site, a two-stage probability-based sampling design is employed. Within each site, a sample of facilities is drawn from all those that book arrestees; within the booking facilities, a sample is drawn from all arrestees. To allocate resources available to the program efficiently, a sampling simulation exercise was used to choose the optimal sampling design, assign case numbers across sites, and distribute interviewer resources within each site. The overall goal of this design is to minimize the standard error of estimates for each site while keeping in mind the real world constraints within which the program operates. The precision of estimates varies somewhat from site-to-site due to complex design effects in some, but the goal is to provide estimates with no more than .05 standard error for all sites.

The method for selecting booking facilities within a county varies by site depending on the number of facilities in a county and the number of arrestees booked into each facility. For sites with a single facility, all cases are drawn from that facility. Sites with a small number of facilities (2–5) are stratified by size, and cases are assigned proportionately. For those counties with many facilities, facilities are clustered, and facilities within each cluster are sampled proportionate to size.

Sampling at the Arrestee Level

The sampling method within every facility operates under the same set of assumptions. It attempts to select cases systematically to sample arrestees during the period of the day with the highest arrestee volume (arrestee *flow)* as well as randomly select arrestees over the remainder of each 24-hour period to sample those booked when interviewers are not on site (arrestee *stock*). Arrestees missed due to early release are represented through statistical imputation. Sites are given a target number of interviews each quarter based on an assumption of the number of interviews completed by one interviewer working a regular shift each day of the week for a 1- or 2-week period.

In each facility, ADAM staff sample from the *stock* of arrestees who were booked since the last interview period; they also sample from the *flow* of arrestees who were booked during the interviewing shift. For example, if the daily shift begins at 4:00 p.m. and runs to 12:00 midnight, the *stock* arrestees are persons booked from 12:00 midnight to 3:59 p.m.; the *flow* arrestees are those booked from 4:00 p.m. to 11:59 p.m. Arrestees are sampled proportionally from the *stock* and *flow* to represent the distribution of all arrests throughout the day at each facility. Finally, there are those arrestees who were booked before the interviewers' work shift but released before the interview team arrived. The probability of selection and assignment of case weights are calculated from an examination of data on all arrestees who were booked at each facility during the period interviewers were on site.

Data Collection Process

Voluntary and confidential interviews are administered to adult arrestees and juvenile detainees who have been in a booking facility for less than 48 hours. Interviewing shifts typically occur over a 4- to 8-hour period every day for a 1- to 2-week period. Data collection takes place four times a year (once each calendar quarter) in each site on a staggered schedule, with collection periods for any single population (male, female, or juvenile) generally lasting 1–2 consecutive weeks. Data collections for the different populations do not necessarily run concurrently. In most sites, more than 80 percent of the individuals approached agree to be interviewed.

Data collection is done quarterly for several reasons. Perhaps most important is that quarterly data collection generates new information more frequently than many other national data collection programs. Each site receives a quarterly report/bulletin from the national contractor on site findings within 30 to 45 days from the conclusion of data collection. Quarterly collection and the timely release of findings allow policymakers and analysts to view trends as they develop, potentially permitting earlier intervention into problems. Additionally, quarterly collection also helps adjust data for seasonal changes in arrest and crime patterns that occur in some sites.

Another byproduct of quarterly data collection is that the process assists the program in maintaining access to jail facilities. Quarterly collection is frequent enough that jail facility staff become familiar with data collection staff but not so frequent that the data collection process becomes intrusive. In addition, because continuous data collection is not practical due to the intrusion it would represent, quarterly data collection ensures that interviewers get frequent opportunities to hone and maintain their interviewing skills.

ADAM Staff

NIJ funds and oversees through a national contractor all operations of the ADAM program. This provides the program with a centralized system of oversight that includes fiscal management, rigorously standardized data collection procedures, minimum requirements for interviewers, and an ongoing accountability from all data collection sites.

Data collection in each site is managed by a local team that includes a site director and site coordinator. A pool of interviewers administers the interviews and collects specimens. At all ADAM sites, staff is trained using standardized training materials that comply with NIJ protocol. These materials cover training on interview techniques and on administration of the ADAM interview instrument. All interviewers must successfully complete this 3-day training course before they are permitted to interview arrestees. Training is conducted just before data collection so that new skills can be applied immediately to field conditions and so that interviewers can be regularly observed by trainers. In addition, all interviewers are required to participate in enhancement training every quarter.

ADAM Protocol

SITES MUST HAVE:

- Ability to provide access to all facilities such that every booked arrestee in the county has at least some probability of being interviewed and urine tested.
- Census and flow information for each facility in the county so that NIJ and the national contractor can establish a valid sampling plan.
- Access to booking data so that an informational cover sheet can be completed prior to the interviews.
- Interview rooms or settings where ADAM staff can complete the voluntary and confidential interviews.
- Access to a lavoratory or toilet so that urine samples can be collected.
- A pool of interviewers who are not law enforcement officials (including part-time and reserve officials), lockup personnel, pretrial services staff, or staff of other organizations involved in sanctioning, monitoring compliance with conditions of pretrial release, or engaging in other such charge-related activities.
- Respect for, and ability to maintain, confidential and anonymous information from arrestees who consent to participate in the research study.
- Security during the data collection period, if needed.

The primary purpose of ADAM's core data collection protocols is to improve the comparability of the data. Core elements include basic design, data collection methods, and a core set of questions.

Interview Content

The interview is at the core of the ADAM program. Information that cannot be obtained from records and urinalyses comes from this portion of the ADAM protocol—that is, arrestee self-reported information. Since the inception of the program in 1987, data collection covers the following topics: (1) types of drugs used by arrestees, (2) dependency on drugs, (3) perceived need for alcohol/drug treatment, and (4) the relationship between drug use and certain types of offenses. Other demographic and related data are also collected. In all, there are more than 300 variables in the 1999 ADAM data set derived from the interview.

Raw ADAM Data Files

NIJ recognizes the need to preserve and make available machine-coded data collected with public funds. These data represent both a research product and a resource to be used by future research endeavors. In keeping with this philosophy, the Institute has made available ADAM data sets. All archived ADAM data files are stored at the Inter-University Consortium for Political and Social Research (ICPSR), located at the University of Michigan. For those interested in obtaining ADAM raw data files for analysis, please contact ICPSR by calling (800) 999–0960 or (734) 998–9825 or through the Internet at http://www.icpsr.umich.edu/NACJD.

Beginning in 2000, the ADAM interview protocol will change significantly from the interview protocol used through 1999 and described above. The ADAM 2000 annual report will reflect self-reported information collected with a newly designed instrument that both preserves the key drug use measure of the old instrument (and thus their comparability) but considerably extends the utility of the interview data through new features. These features will include: (1) a greater focus on five primary drugs and their patterns of use over the prior year; (2) a validated drug use dependency and abuse screener; (3) self-report participation in inpatient, outpatient, and psychiatric treatment over the prior year; (4) information on prior arrest history; and (5) a section on drug acquisition and recent use patterns that will provide greater insight into the dynamics of not only drug markets but also on drug using and sharing. Other features of the improved interview instrument will include *crosswalks*[15] to other national drug data sets such as the National Household Survey on Drug Abuse, the Treatment Episodes Data Set, the System to Retrieve Information from Drug Evidence, and the Uniform Crime Report.

Addenda

Data collection periodically includes administering supplemental questionnaires (called addenda). Addenda are generally conceived and developed locally, and can be used to assist with planning on a wide range of topics concerning arrestees. These specialized questionnaires offer valuable insights into arrestees' attitudes about specific topics that policymakers want to address. Examples of addenda administered at ADAM sites in 1999 include the production, acquisition, and use of specific drugs (e.g., methamphetamine); the accessibility and availability of firearms; the prevalence of domestic violence; and HIV-testing patterns, access-to-care issues, and risk reduction practices.

Interview Process

The interview takes approximately 25 minutes to administer and is delivered under terms of strict confidentiality pursuant to Federal regulations. The interview process cannot be linked to the person's name and cannot be used for or against the person during booking or adjudication. While names or other personal identifiers are not collected, a common ID number is attached to both the interview form and the specimen container so that these data can be linked.

Bioassays

Urine specimens are self-administered and removed daily from the facilities. Collection of the specimens enables study of the relationship between self-reported indicators of drug use and indicators of drug use based on urinalyses. At the conclusion of the interview, arrestees are asked to provide a urine sample. Of the 80 percent who agree to the interview, more than 80 percent agree to give a sample. Arrestees who finish a completed interview (i.e., interview and urine sample) receive an incentive (e.g., candy bars, gift certificates, soda).

[15]Questions that were specifically designed to facilitate comparability of responses across national data sets.

ADAM DRUG TESTING OVERVIEW

Drug testing by urinalysis is one unique and important component of the ADAM program. ADAM uses an immunoassay, EMIT (Enzyme Multiplied Immunoassay Testing) system, to screen for the presence of drugs in urine. EMIT tests have been shown to be one of the most consistently accurate drug testing methods, with greater than 95 percent accuracy and specificity for most drugs.

A positive result from EMIT assay indicates that the tested-for drug is present in the urine sample at a level above or equal to a specified cutoff point. A negative result means that there is either no drug present in the urine sample or the level is below that of the cutoff. Because the program's mission is to track the epidemiological trends of drug use over time, it is not necessary or cost-effective to confirm the presence of drugs. The confirmation is only performed when detection of a particular subclass is necessary. For instance, all amphetamine positives are confirmed by gas chromatography/mass spectrometry (GC/MS) to determine whether methamphetamine was used.

A central laboratory screens all urine specimens from each ADAM site by EMIT kit for a panel of up to 10 drugs. In all 35 ADAM sites, the "NIDA-5" drugs[16] are tested (see Table 1). In addition, ADAM also tests drugs listed in Table 2. Beginning in 2001, site selection of additional drugs for testing, like alcohol, will be possible. Site selection will vary depending on the particular site and research purpose so that communities can monitor for drugs particularly important in their area.

This year's annual report defines "any drug" and "multiple drugs" differently from past years. In the 1998 ADAM annual report,[17] the rates of "any drug" referred to "drug positives for any of the 10 drugs" and the rates of "multiple drugs" referred to "drug positives for more than one drug in the 10-drug panel." Beginning in 1999, rates of "any drug" pertain to "drug positives in any of the NIDA-5 drugs" and "multiple drugs" pertains to "testing positive for more than one drug in the 5-core drug panel."

This new procedure will allow readers to compare the results of the individual NIDA-5 drugs with the rates of any drug and multiple drugs from among the NIDA-5. As the five core drugs are the most prevalent drugs across all sites, this change results in only very small differences in percent positive. For example, the 1999 data collected at the San Diego site for "any drug" and "multiple drugs" for male arrestees was 66 percent and 24 percent respectively, based upon the 10-drug panel. Using the 1999 definition of the NIDA-5 drugs, these rates become 64 percent and 22 percent, respectively.

For most sites, the effects of this change in definition were very small, in the 1 to 2 percent range. For adult male arrestees, there were only two sites that reported a 3 percentage point difference or higher using the NIDA-5 definition as opposed to the 10-drug panel (Albuquerque and Denver at 3 percent). For adult male arrestees in all the sites, the average difference between using the NIDA-5 definition, as opposed to the 10-drug panel, was 1 percent, ranging from zero difference (Washington, D.C.) to 3 percent (Albuquerque and Denver). For adult female arrestees, there were only 3 sites that reported a 3 percentage point difference or higher with the NIDA-5 definition compared to the 10-drug panel (Dallas, Philadelphia, and San Antonio at 4 percent). For adult female arrestees in all the sites, the average difference between using the NIDA-5 definition, as opposed to the 10-drug panel, was 2 percent, ranging from 0.0 percent difference (Detroit) to 4 percent (Dallas).

[16] "NIDA-5" refers to the following five drugs: cocaine, marijuana, methamphetamine, opiates, and PCP.

[17] National Institute of Justice. (1999). "ADAM: 1998 Annual Report on Drug Use Among Adult and Juvenile Arrestees." Washington, D.C.: National Institute of Justice. (NCJ 175656)

Table 1.
The NIDA-5 drugs with their corresponding cutoff levels and detection periods.

DRUG	CUTOFF	DETECTION PERIODS
Cocaine	300 ng/ml	2-3 days
Marijuana	50 ng/ml	Infrequent user: 7 days Chronic user: up to 30 days
Methamphetamine	300 ng/ml	2-4 days
Opiates	300 ng/ml	2-3 days
PCP	25 ng/ml	3-8 days

Table 2.
The drugs in the ADAM option testing panel with corresponding cutoff levels and detection periods:

DRUG	CUTOFF	DETECTION PERIODS
Amphetamines	1000 ng/ml	2-4 days
Barbiturates	300 ng/ml	3 days
Benzodiazepines	300 ng/ml	Up to 2 weeks
Methadone	300 ng/ml	2-4 days
Methaqualone	300 ng/ml	Up to 10 days
Propoxyphene	300 ng/ml	3-7 days

An immunoassay is a test that uses antibodies to detect the presence of drugs and other substances in urine. Each immunoassay is designed to detect one particular drug or drug class. In some cases, the EMIT assay detects the drug itself, while in other cases the assay detects the metabolites of the drug. Metabolites are compounds that result from the breakdown of a drug by the body. This is an important distinction. For example, there is no specific EMIT heroin assay. Instead, EMIT detects metabolites common to heroin and other opiates, including codeine. In other words, EMIT is general to the opiate group, not specific to heroin. For cases in which a screen is indicative of a class of drugs, but not a specific drug, a confirmation test can be done.

Listed below (in alphabetical order) are the specific drugs or metabolites that the EMIT process detects.

Amphetamines

A positive EMIT screen result indicates the presence of one or more drugs in the amphetamine group. Drugs that will result in an amphetamine-positive screen include:

d - Amphetamine.
d - Methamphetamine.
Methylenedioxyamphetamine (MDA).
Methylenedioxymethamphetamine (MDMA).

Any screen that is positive for amphetamines is subjected to GC/MS confirmation for methamphetamine. This is necessary because several legal over-the-counter cold medications can trigger a positive EMIT screen result for amphetamines. When methamphetamine is tested, both amphetamine and methamphetamine will appear in the urine. Without confirmation, the test cannot determine whether amphetamine or methamphetamine was used. In the United States, most amphetamine use represents legal or illegal use of manufactured products containing amphetamines (e.g., some over-the-counter drugs used in diet aids and drugs used to treat ADD). In contrast, most methamphetamine use represents consumption of an illegal substance trafficked on the black market.

The fraction of a dose of amphetamine excreted unchanged varies with the pH of the urine, with a range of 2 percent (alkaline pH) to 68 percent (acidic pH).

Typically, 20-30 percent is excreted as unchanged amphetamine and 25 percent as benzoic acid and its conjugate (hippuric acid). Methamphetamine is excreted primarily unchanged (44 percent) with a small fraction as amphetamine (6 percent).

Barbiturates

A barbiturate screen detects related drugs in the barbiturate drug group. A positive screen indicates the presence of any metabolites of the drug group. The EMIT screen process is most efficient at detecting secobarbital in the urine. However, the assay will detect other commonly encountered barbiturates, depending on the concentration of drug present, including butalbital, pentobarbital, alphenal, amobarbital, aprobarbital, barbital, cyclopentobarbital, 5-ethyl-5-(4-hydroxyphenyl) barbituric acid, butabarbital, phenobarbital, talbutal, and thiopental.

Benzodiazepines

Most benzodiazepines are metabolized extensively in the liver and excreted in the urine as metabolites. The EMIT assay is best at detecting oxazepam, a common metabolite of benzodiazepines. However, the assay can show positive for many other benzodiazepines and/or metabolites, such as the following compounds: alprazolam, bromazepam, chlordiazepoxide, clobazam, clonazepam, clorazepate, clotiazepam, demoxepam, N-desalkylflurazepam, N-desmethyldiazepam, diazepam, flunitrazepam (Rohypnol), flurazepam, halazepam (Halcion), a-hydroxyalprazolam, I-N-hydroxyethylflurazepam, a-hydroxytriazolam, ketazolam, lorazepam, medazepam, midazolam, nitrazepam, norchlordiazepoxide, prazepam, temazepam, tetrazepam, and triazolam.

Cocaine

Cocaine is metabolized extensively by liver and plasma esterases, and only I percent of the dose is excreted in the urine unchanged. The primary metabolite of cocaine, benzoylecgonine, is easily identified in a urine specimen. Therefore, the EMIT assay was specifically designed to detect benzoylecgonine, the major metabolite of cocaine.

Marijuana

Delta-9-tetrahydrocannabinol (THC) is the primary psychoactive ingredient in marijuana. THC is one of approximately 30 compounds known as cannabinoids. Practically no unchanged THC is excreted in the urine. The primary metabolite of THC is 11-nor-D^9-THC-9-carboxylic acid. The presence of these metabolites is an indicator of marijuana use. Major metabolites detected by EMIT assay include:

11-nor-D^9-THC-9-carboxylic acid.
8-b-11-hydroxy-D^9-THC.
8-b-hydroxy- D^9-THC.
11-hydroxy- D^8-THC.
11-hydroxy-D^9-THC.

Methadone

The EMIT assay is specific to methadone. Unchanged methadone is detectable directly in the urine.

Methaqualone

Methaqualone is metabolized extensively. Less than I percent of the dose is excreted as unchanged drug in the urine, while 25 percent is hydroxylated metabolites. The assay is designed to detect the following compounds:

Methaqualone.
Macloqualone.
3'-hydroxy-methaqualone.
4'-hydroxy-methaqualone.
2'-hydroxymethyl-methaqualone.

Opiates

Opiates are a broad class of drugs that include heroin, morphine, codeine, and semisynthetic derivatives of morphine. Heroin is rapidly broken down first to 6-monoacetylmorphine, which is metabolized into morphine in the body. Both heroin and 6-monoacetylmorphine disappear rapidly from the blood. Codeine is metabolized to morphine.

Because heroin and codeine break down to morphine and the unique metabolite of heroin, 6-monoacetylmorphine, disappears rapidly from the body, the EMIT opiate assay was designed to detect morphine and morphine's metabolites. A positive screen on the EMIT assay indicates only that heroin might have been used; use of other opiate drugs cannot be ruled out with the screen alone. The EMIT assay can detect the following common compounds that belong to the class of opiates:

Morphine.
Morphine-3-glucuronide.
Codeine.
Dihydrocodeine.
Hydrocodone.
Hydromorphone.
Levallorphan.

A person who has used morphine (after surgery, for example) or codeine (in a prescription pain medication, for example) might reasonably be expected to screen positive for opiates. Morphine is metabolized extensively, with 2–12 percent excreted as unchanged morphine in the urine. Large amounts (60–80 percent) of the conjugated metabolites (glucuronides) are excreted in the urine. The quantitatively most important metabolite for opiates is morphine-3-glucuronide, excreted in the urine up to 67–70 percent of the given dose. The pattern of urinary excretion of morphine from heroin is similar to that of pharmaceutical morphine: 7 percent unchanged morphine and 50–60 percent conjugated morphine (glucuronides). Codeine is metabolized extensively, primarily to conjugated 6-codeine-glucuronide, while 10–15 percent of the dose forms morphine and norcodeine.

Phencyclidine (PCP)

The EMIT assay for PCP is designed to detect the following metabolites of PCP:

Phencyclidine.
N, N-diethyl-1-phenylcyclohexylamine (PCDE).
1-(4-hydroxypiperidino) phenylcyclohexane.
1-(1-phenylcyclohexyl) morpholine (PCM).
1-(1-phenylcyclohexyl) pyrrolidine (PCPy).
4-phenyl-4lpiperidinocyclohexanol.
1-(1-(2-thienyl)-cyclohexyl) morpholine (TCM).
1-(1-(2-thienyl)-cyclohexyl) piperidine (TCP).
1-(1-(2-thienyl)-cyclohexyl) pyrrolidine (TCPy).

The body produces all of these metabolites as a result of consuming PCP. Only about 10 percent of a PCP dose is excreted unchanged in the urine. About 40 percent of the material in a PCP urine specimen has not been identified.

Propoxyphene

Propoxyphene is classified as a narcotic analgesic used for pain relief that includes the trade name drug Darvon. The EMIT process detects the following compounds that are indicative of propoxyphene use:

Propoxyphene and Norpropoxyphene.

DATA USAGE REPORT

The following is a shortened list of publications, reports, research projects, presentations, program evaluations, newsletters, newspaper articles, and other data analysis conducted using data collected by the ADAM program from 1995 to 1999. A more comprehensive directory demonstrating ADAM data usage in local communities as well as State and Federal government will be published under separate cover by NIJ in the year 2000.

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Assessing Methamphetamine Use Across Rural and Urban Areas—the University of Nebraska at Omaha. Funded by the COPS Office, U.S. Attorney for the State of Nebraska, and the National Institute of Justice.

Distinguishing Crack from Powder Cocaine Use—the National Institute of Justice and PharmChem Laboratories, Inc.

Drug Screening: A Comparison of Urinalysis Results from Two Independent Laboratories—the National Institute of Justice.

Examining the Nature and Correlates of Domestic Violence Among Female Arrestees in San Diego— the San Diego Association of Governments (SANDAG).

Illicit Drugs: Price Elasticity of Demand and Supply—Abt Associates Inc. Funded by the Executive Office of the President, Office of National Drug Control Policy, and the National Institute of Justice.

Improving Criminal Justice System Policy by Projecting ADAM Drug Use Ratios onto Local, State, and National Arrest Data—the University of California, Los Angeles.

Monitoring and Modeling Impacts of Policing Initiatives on Drug Users and Criminals Among Arrestees in New York City—the National Development and Research Institutes, Inc.

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