Appendix

This appendix explains calculations performed to support estimation of the number of illegal drug users, the amount they spend on drugs and the amount of drugs they consume. Comments explain how and why this estimation procedure departed from the procedure used in earlier versions of What America's Users Spend on Illegal Drugs. It begins by itemizing steps taken to estimate consumption of cocaine andheroin. It then explains a different procedure used to estimate methamphetamine use, another procedures use to estimate marijuana use, and finally, still another approach used to estimate the consumption of other illegal drugs.

Documenting all assumptions and all calculation in an appendix is impractical. Except for supporting statistical analysis, spreadsheets document assumptions and calculations. Those spreadsheets are the source for details.

1.0   Cocaine and Heroin

With respect to cocaine and heroin, we used virtually the same procedure to estimate the number of users, how much they spent on drug use, and how much they used. We explain and illustrate that procedure.

1.1   How Many Chronic Drug Users?

We categorize drug users into two use groups: chronic and occasional. Chronic users consume at least one of the drugs on more than ten days per months. Occasional users use less frequently. We discuss estimates for chronic drug use here and return to estimates for less frequent users later. Our approach to estimating the number of chronic users requires several steps, which are explained in turn. National estimates are a composite of local-area estimates. Because estimation does not vary by local area or by drug type, we use cocaine consumption in New York City to illustrate the derivation of local-area estimates.

1.1.1   How many chronic users in selected counties?

For over a decade, the Drug Use Forecasting (DUF) program has questioned arrestees in twenty-three sites about recent drug use. (We exclude a twenty-fourth site, Kansas City, which participated for only a few years.) On a quarterly basis since 1989 interviewers selected a convenience sample of people booked into Manhattan's central jail facility. Interviewers questioned those arrestees about their drug use and requested a urine specimen, which was analyzed to learn whether or not the arrestee had used cocaine in the last two or three days. Our interest focused on the interview, and especially on the question about frequency of drug use (in days) during the last thirty days before being arrest. We classified anyone who reported more than ten days of powder or crack cocaine use as *chronic*.

Had DUF been a probability sample, we could have weighted these data to estimate the proportion of chronic drug users in the New York City arrestee population. Weighting is

required for several reasons, but the principal one is that drug use varies by offense category, while DUF provides disproportionate representation of offenses.[1] However, weights are unavailable for the DUF data, so we used a model-based approach to derive estimates. This required three steps.

Step one was to estimate a regression. In an ordered probit model, the dependent variable – self-reported level of drug use -- was coded 0 for none, 1 for 1 to 10 days, 2 for 11 to 20 days, and 3 for more than 20 days of cocaine use. Independent variables included nine charge categories: felonies (violent, property, drugs and other), misdemeanors (violent, property, drugs and other), and other.[2] These regressions provided estimates of the probability that an arrestee would be a chronic user conditional on the charged offense and year.[3]

The second step was to estimate the number of people who were arrested and booked for each of the nine charge categories for each of the eleven years. The Uniform Crime Report is the best data source, but for this purpose, the UCR has deficiencies. One problem is that some jurisdictions fail to report arrests for part or all of a designated year. We developed imputation routines to ameliorate this problem. A more serious problem is that a count of UCR arrests is not the same as a count of bookings into local jails. Arrests do not result in bookings when police release minor offenders on citation, so in this regard the UCR overstates the number of people booked into local jails. In contrast the UCR does not include bookings for warrants, revocations and some other reasons for being booked, so in that regard the UCR understates bookings. Using available booking data, we developed procedures for adjusting the UCR counts so they reflected bookings.[4] Finally, with respect to problems with the UCR data, we needed counts of the number of bookings by felony, misdemeanor and other categories. The UCR does not specify

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1 Offenders charged with the most serious crimes are the least likely to be released from jail prior to the DUF interview. Thus, the DUF sample has a disproportionate number of felony offenses compared with the population of arrestees. This problem is especially acute in places like Manhattan, where arrestees booked for the least serious crimes are released at precincts before being transferred to the central facility. Thus, misdemeanor offenders who appear at the central facility typically are those for whom there was an outstanding warrant at the time they were booked for that misdemeanor. Without weighting, those misdemeanants would be under-represented. Another problem is more difficult to solve. The Manhattan central facility received arrestees from the Manhattan Boroughs, but not from the other New York City boroughs. We are forced to assume that Manhattan represents the other New York boroughs. This same problem exists in other sites, such as Los Angeles. The new Arrestee Drug Abuse Monitoring survey, which has replaced the Drug Use Forecasting survey, overcomes this problem by including a probability sample of jails in its sampling design.
2 Besides the charged offense, the regressions included polynomial transformations of the time between arrest and booking, Fourier transformations of time, and dummy variables for years. The Fourier transformations captured cyclical patterns that happened on a weekly basis and on a yearly basis. The year dummy variables captured trends over the eleven years represented by the DUF data. This is the first year we used these regression results; estimates from previous years were based on offense-specific (six offenses) tabulations.
3 Estimates set all other variables to the means observed for the same year.
4 This was a global adjustment. We had booking data for several counties for 2000. We compared those booking data with UCR data from 1988. By inspection, we established rules for excluding some UCR reports (to account for arrests that did not result in bookings) and rules for inflating the UCR reports (to account for bookings that are not reported by the FBI). These global rules probably work better for some counties than for other counties. This approach improved on routines used for earlier reports, which simply assumed that half of the "other" arrest category would not result in bookings.

those categories, so we imputed the proportion of felonies and misdemeanors based on an analysis of actual booking data from several sites. Although approximate,[5] these modifications to the UCR data provided counts by offense type and year for New York City and other counties.

The third step was to multiply the proportion of chronic users conditional on the arrest category (estimated with the regression) by the number of arrests within that arrest category (estimated by adjusting the UCR data) for New York City.[6] This calculation was repeated for each year. Completing these three steps provides an estimate of the number of self-reported chronic drug users among New York City arrestees.[7] To deal with occasionally large year-to-year swings, we used three-year moving averages.

Because drug users frequently deny their drug use, we needed a means to inflate self-reports to account for underreporting. This required an estimate of the probability that a chronic user would tell the truth when asked about his drug use. To develop that estimate, we selected everyone in New York City who tested positive for cocaine, and we calculated the proportion that admitted to some illegal drug use (exclusive or marijuana) during the thirty days before being arrested. Calculations were done on a year-by-year basis. Truthful reporting rates differed from year-to-year and from site-to-site, but generally, about 65 percent of cocaine users were deemed truthful.[8] Call this the provisional rate of truthfulness.

As a measure of truthfulness, the provisional rate still seems to underestimate the rate at which chronic drug users tell the truth about their drug use during the last month. This inference is based on an analysis of truthful reporting about drug use during the three days before the interview. That is, examining the self-reports of everyone who tested positive for cocaine, we noted that self-admitted chronic users were more likely to be truthful about recent use than were other users. One reasonable inference is that the provisional measure of truthfulness, which mixes reporting by chronic and other users, understates truthful reporting by chronic users alone. Additional evidence that this measure understates truthfulness comes from Simeone, Rhodes, Hunt and Truitt (1997, hereafter SRHT) who reported (based on statistical analysis of hair bioassay) that three of four chronic users among arrestees in Cook County were truthful about their chronic drug use.

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5 We are uncomfortable with the accuracy of these estimates for individual sites. Nevertheless, accuracy of the chronic user estimates can tolerate measurement errors in individual sites provides the average measurement error across sites is small. The Arrestee Drug Abuse Monitoring survey, which has replaced DUF, will overcome this problem by collecting a census of booking information from every county that participates in the ADAM study. Those booking data will be available in most ADAM sites starting in the year 2000.

6 We repeated this estimation for each county represented by a DUF site. Typically the DUF site was a large city jail, and a sample drawn from that large city jail may not represent arrestees booked into other jails in that same county.

7 Two DUF sites – Los Angeles and Washington, D.C. – had estimated trends that were not credible. The problem appeared to be with the adjusted UCR data. For those two sites, we adjusted trends to be consistent with observed trends in Drug Abuse Warning Network emergency room mentions. We did this for all three drugs. For a few other sites, we sometimes replaced what appeared to be an errant estimate for a single year with the average for the two surrounding years. (Some of these occurred because data were missing for that single year.)

8 The probability of being truthful was closer to 75 percent for heroin and methamphetamine users.

We used the SRHT findings to adjust our estimates of truthfulness. Essentially, we figured that to achieve the 75 percent truthful reporting rate in Cook County, we would need to increase the above estimates of truthfulness by 1.167. (That is, if the above estimate was that X percent were truthful, we increased this to 1.167X.) We assumed this adjustment would hold for all sites and therefore adjusted the provisional rate, for each year and for every site, by 1.167. Then to account for underreporting, we divided the estimate of chronic drug users based on self-reports by the adjusted estimated proportion of arrestees who answered truthfully.[9]

Step four was a simple adjustment for the fact that the calculations to this point are for men. According to the FBI, men account for about 78 percent of all arrests, so we increased the estimates by 1/0.78 or by 1.28. In the past we separated estimates for men and women, but the DUF data are unavailable for women at several sites, and even when female data are available, we are skeptical of how well they represent female arrestees.

These four steps provided an estimate of the number of chronic cocaine users among arrestees in New York City. The next step was to divide this estimate by the rate at which chronic drug users get arrested. We are necessarily uncertain about this multiplier because researchers have seldom sought to estimate arrest rates that are suitable for our use, and furthermore, extant arrest rate estimates are for selected sites and specific periods.[10] Based primarily on available evidence from a 1995 addendum to the DUF survey, we assumed that chronic cocaine users generate an average of about 0.4 arrests per year, which implied that there are about 2.5 chronic cocaine users in the county for every chronic cocaine user in the arrestee population.[11]

In the sixth step, we sought to extend the estimates for New York City to the New York Metropolitan Statistical Area. To make this extension, we multiplied the estimated number of chronic cocaine users in New York City by the ratio of the number of arrests for drug law violations in the New York MSA to the number of arrests for drug law violations in New York City proper. For New York City, the adjustment was about 1.06; across all sites the average size

9 The previous consumption report employed a similar logic to estimate a global truthfulness rate. For this current version of the consumption report, we allow the truthfulness rate to vary by year and by site.
10 The Arrestee Drug Abuse Monitoring program will overcome this problem starting in 2000. The ADAM instrument includes a calendar that captures an arrestee's booking profile over the year before the interview. Furthermore, the National Institute of Justice is sponsoring a methodology study for using those booking profiles to develop chronic drug user estimates. Essentially, results from that study will provide arrest rates for application to pre-2000 DUF data and chronic user estimates themselves for the year 2000 forward. Estimates from that chronic user estimation methodology could replace all the steps described to this point in this appendix.
11 Previous versions of Wh*at America's Users Spend on Illegal Drugs* used a slightly smaller multiple. We increased the multiple this year because analysis of booking data from six sites in 1995 suggested that previous estimates were too low. We used the same rate for methamphetamine users. Consistent with past versions of this report, we assumed that chronic heroin users have a slightly larger arrest rate. We assigned them a multiple of 2.25. SRHT provided the only other estimate that used a methodology similar to the one that we used to estimate arrest rates from the six sites. SRHT provided a range from 0.27 to 0.38 arrests per year for chronic drug users in Cook County. Estimates used in our current study are consistent with the upper end of the SRHT range for arrest rates. We are conducting a rigorous analysis of arrest rates for the National Institute of Justice. While results are not yet available, provisional results reported at three national meetings suggest that multipliers between 2 and 3 are about right for most sites.

of this adjustment was 1.45.[12]

1.1.2   Chronic Drug Users Across the Nation

We repeated the process applied to New York City to each of the twenty-three DUF sites to provide estimates of the number of chronic drug users in each MSA represented by a DUF sites. Of course the DUF sites do not cover the entire country, so we needed a way to inflate the estimates from the DUF sites to account for the entire nation. Our approach was to assume proportionality between chronic drug users and DAWN emergency room mentions.[13] As a practical matter, this final adjustment increases the estimates by about 1.68 for cocaine; for heroin and methamphetamine, the estimates are about doubled. For cocaine, the adjustment increased over time, implying that cocaine had become a proportionately greater problem in non-DUF locations.[14] For heroin and methamphetamine, the adjustment was fairly constant over time.

This adjustment is problematic for several reasons. Although SAMHSA tabulates the DAWN data twice per year, there are few if any studies that seek to explain what DAWN actually represents. Because the majority of DAWN reports are for chronic users seeking substance abuse treatment, we have some justification for saying that DAWN reports are roughly proportional to the number of chronic drug users in a population. Comparing our estimates of chronic drug users in a MSA with DAWN estimates shows that this proportionality is inexact, however, because it varies across sites.

In fact, in Philadelphia the ratio between emergency room mentions for cocaine/heroin and our estimates of chronic cocaine and heroin user were too large (compared with other places) to be credible. We were forced to make an adjustment, discussed in the next subsection.

1.1.3   Adjustment

We made an adjustment to the calculations for Illinois. Data limitations undoubtedly affect our estimates in all sites. This problem may be especially serious in Cook County, because Illinois has had problems reporting UCR data during the last decade. We substituted estimates from SRHT for Cook County. The result in Cook County was to increase chronic estimates for cocaine by 50 percent and to decrease chronic estimates for heroin by about 60 percent.

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12 We used 1999 UCR data to estimate this multiplier and then applied the same multiplier to the earlier years.
13 Not all DUF sites are DAWN sites, and not all DAWN sites are DUF sites. For each year, we estimated the ratio between estimates of chronic drug use in the DUF MSA and emergency room mentions for cocaine in that same MSA. These estimates were weighted by the estimated number of chronic drug users in those MSAs. We used that estimated ratio to impute emergency room mentions for each of the DUF sites that lacked a DAWN counterpart. Finally we estimated the proportion of emergency room mentions across the nation that were represented by the twenty-three DUF sites and used the reciprocal of that estimate as the adjustment mentioned in the text.
14 DAWN comprises reports from sentinel sites as well as a national panel. Over time, the national panel has represented an increasing proportion of emergency room mentions for cocaine. This is consistent with the increasing DAWN adjustment used in this report.

As noted, the ratio between our estimates of chronic drug use and emergency room mentions in Philadelphia were not credible when compared with emergency room mentions. This problem existed for certain years in other places, as well. Our approach was to adjust estimates for Philadelphia so that the resulting ratio between chronic users and emergency room mentions equaled the ratio for New York, Philadelphia's neighbor. This adjustment greatly increased our original estimates for Philadelphia. We did not attempt to adjust for other places.

1.1.4 An Illustration

An illustration may be helpful. Across all cites, over all the years, steps 1 through 3 provided an average of 12,250 self-reported chronic cocaine users among all arrestees within a DUF county. After adjusting to account for women, the estimate increases to 15,705 chronic arrestees per DUF county. Adjusting that estimate to account for the entire MSA increases the number to 19,768 per county. After adjusting for the rate at which chronic users get arrested, we get 49,045 chronic drug users in each MSA. Then to account for counties that are outside the DUF sites, we use the ratio of ER mentions in the nation to ER mentions in DUF MSAs. This inflates the per site estimate to 95,415 chronic cocaine users. After accounting for underreporting, the estimate becomes 128,768 chronic cocaine users per DUF site per reporting year. Given the twenty-three DUF sites, this estimation process accounts for about 2,961,680 chronic cocaine users per year across the nation.

Consistent with past reports, we assumed that half of the chronic users who reported to the National Household Survey on Drug Abuse were not included in the DUF-based estimates. We added that missing half to form the DUF-NHSDA composite estimates. For this purpose, chronic drug use was defined as having used cocaine on a weekly basis.[15]

There is one final step. Because of the way that we estimated the arrest rate, our estimates should be inclusive of chronic users who are in prison.[16] We used data from the Bureau of Justice Statistics to estimate the number of chronic drug users among prisoners, and we subtracted that prisoner-based estimate from the DUF-NHSDA composite estimate. Results after that subtraction are reported in the main report.

Note that we estimated the number of chronic cocaine users separately from the number of chronic heroin users. In fact, the two groups overlap. Across all years and all cities, the DUF data have 344,000 chronic users of cocaine or heroin. The data have about 11,000 chronic users of heroin, but 43 percent (about 4,500) of them also use cocaine at the chronic level. Likewise,

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15 There was no 1989 NHSDA, so we averaged estimates from 1988 and 1990. The Substance Abuse Mental Health Services Administration made major changes to the NHSDA in 1999, so NHSDA estimates from 1999 are incomparable to earlier year estimates. SAMHSA collected a smaller 1999 sample using the extant methodology. That sample required some special adjustments, and after SAMHSA made those adjustments, they reported trends for last-month use. We used those trends to project the 1998 estimates into 1999.

16 The Bureau of Justice Statistics has sponsored prisoner surveys asking about drug use during 1991 and 1997. We estimated chronic use as the percentage of prisoners who said that were using cocaine at the time of their offense. Because the survey coved just these two years, we used linear interpolation to estimate the percentages for other years.

there are about 28,000 chronic users of cocaine, but 16 percent (the same 4,500) also use heroin at the chronic level.

1.2   How Many Occasional Drug Users

To estimate the number of occasional drug users, we started with NHSDA reports of the number of people who reported cocaine use in the last year and subtracted the number that reported using cocaine on a weekly basis. The National Household Survey on Drug Abuse was not administered in 1989, so our estimates are the average for 1988 and 1990. The Substance Abuse Mental Health Services Administration changed survey procedures in 1999, so 1999 data cannot be compared with earlier data to develop a trend. However, SAMHSA completed a smaller 1999 survey using the extant methodology, and after suitable adjustments (made by SAMHSA), those old-method data can support trend estimation. SAMHSA has reported adjusted trends for past-month use; we used those reported trends to project 1998 estimates of past-year and weekly use into 1999.

Year 2000 estimates are three-year linear projections for cocaine and heroin.

1.3   How Much Do They Spend

Having an estimate of the number of chronic cocaine users, we need an estimate of how much they spend on cocaine. Expenditure patterns are an under-researched aspect of drug consumption. The ADAM survey asks detailed questions about drug expenditure, but unfortunately, those data are not available for current purposes. Earlier versions of this report used a regression-based procedure to estimate yearly expenditure patterns. However, the DUF survey changed how it asked about expenditure so that pre-1995 estimates are not directly comparable to post-1995 estimates. Past reports made simple projections of the pre-1995 estimates, but given the accumulation of four more years of data, continuation of this practice seems problematic. We changed the methodology.

The new methodology requires three steps. First, from the DUF data we extracted data for all interviewees who used cocaine on more than ten days per month. Second, we tabulated those data for each of the twenty-three sites for each of the eleven years and computed the median expenditure on drugs. (The question is about expenditures on drugs per se, not about expenditures on a specific type of drug. We discarded data that reported over $2000 per week expenditures.) Third, we weighted those averaged median amounts across the twenty-three sites to yield eleven estimates for the "weighted median". The weights were the number of chronic drug users in each of those twenty-three sites. Fourth, using those weighted medians, we estimated the trend for 1989 through 1994 and the trend for 1996 through 1999. Fifth, we assumed that the expenditures were the same for 1994, 1995 and 1996. This assumption allowed us to join the trends despite the changes in DUF questioning. Finally, we assigned a typical expenditure to 1995, projected this typical expenditure based on the estimated trends, and adjusted by the consumer price index.

The remaining problem was to get an estimate of average expenditures on cocaine, heroin and

marijuana for 1995. For this purpose, we used data from a six-site study of drug buying practices, which was part of an addendum to the DUF instrument. That study was carefully done, but many of the answers about expenditures seemed incredibly large. Part of the problem is that some respondents seemed to be dealers who bought for resale. We did our best to eliminate dealers buying for resale from the study. (We retained dealers buying for personal consumption, however.) Another part of the problem is that respondents had trouble answering the questions, so while they might have been truthful, they provided inaccurate responses. To deal with this problem, we estimated expenditures based on the frequency of purchase and the amount paid for the last purchase, and we compared the estimated expenditure with the reported expenditure. When they departed by more than a factor of four, we deleted the case from the data. This deletion reduced the sample size from 1105 to 1000 for cocaine and from 705 to 649 for heroin. The resulting means were $237 for cocaine and $258 for heroin.

As estimates of typical expenditures, these are probably too high because they still include some purchases for resale. For example, we did our best to identify non-dealers and they only spent $148 on cocaine and $212 on heroin. Because of their income source, dealers surely spent more on drugs, so we could not base estimates on expenditures by non-dealers. Given that we had previously estimated weekly expenditures as $186 and $209 for cocaine and heroin, respectively, we "compromised" and set the average expenditure for cocaine at $200 per week and the average for heroin at $220 per week for 1995. We then projected these estimates forwards and backwards using the trends described earlier.

1.4   What Price Do They Pay?

Last year, we used what seemed like a convoluted procedure to infer price paid based on the then extant price-series report. This year's price-series report provides a more natural way of estimating prices paid at retail. It starts with the average amount of cocaine purchased as a function of the price paid. It then weights the amount purchased by the distribution of purchase prices paid by cocaine buyers across six DUF sites. (These data came from the 1995 DUF addendum referenced earlier.) Finally it inverts the grams per dollar estimate to provide a dollar per gram estimate. The resulting estimate is somewhat lower that prices estimates used in our last report.

Unfortunately, this procedure does not seem to work as well when estimating heroin prices. In fact, by the year 2000, the estimates approach $400 per pure milligram. This is well below last year's estimate of nearly $1000 per pure gram. Both cannot be correct and the former estimate implies that heroin users are able to purchase 2½ as much heroin per dollar expenditure as the latter estimate.

The approach used for this report was to use the methodology applied to cocaine purchases after segmenting the market into two parts: low quality heroin (15 percent pure or less) and high quality heroin (more than 15 percent pure). We estimated the proportion of DUF respondents who said they had used needles during the last six month by year. (This percentage falls from 87 percent to 62 percent from 1989 to 1999.) We weighted the two prices by the percentage of

arrestees who said they used needles. That is, we assumed that heroin at less than 15 percent purity was used for injection and that other heroin was snorted. After adjusting for the consumer price index, we reported the resulting estimates in the text.

We are uncomfortable with this solution. Most of the decisions reported in this appendix could shift estimates by roughly 10 percent either way. This assumption about heroin prices would shift estimates of the amount of cocaine consumed by a factor of two. We have to entertain the possibility that Americans consume more heroin than is accounted for in this model.

This estimation problem happens because we lack a good understanding of how the DEA and other law enforcement makes purchases in heroin markets. Plausibly there are very low-level dealers who purchase quality heroin as small dollar purchases ($100 or less), dilute that heroin, and resell it as heroin suitable for injection. Law enforcement may focus its purchasing attention on the quality-heroin buys, so that the STRIDE data under-represent the purchases of law quality heroin. We know of no data that help answer this question, although we are hopeful that ADAM will shed light on this issue. ADAM asked detailed question about market activity. Included are a series of questions that asked about the amount paid for a drug and what the respondent did with that drug – used it, sold it, gave it away, and so on. Until ADAM data are available and tabulated, we can do little but speculate.

1.5   How Much Do They Use

The final step is basically to divide the expenditure on cocaine by the price paid per pure gram of cocaine and then convert the resulting estimate into metric tons. There is one adjustment, however. Consistent with earlier version of this report, we increased cocaine consumption by 11 percent and we increase heroin consumption by 11 to 22 percent to account for income in kind. For both cocaine and heroin, the adjustment for income in kind has been 11 percent since 1995. For heroin, this adjustment for income-in-kind decreased linearly from its 22 percent peak in 1988.

2.0   Methamphetamine

We introduced an innovative but provisional procedures to estimate the number of chronic methamphetamine users. The methodology borrowed heavily on estimation procedures that we recently developed for the National Institute of Justice.[17] We refer the reader to that report for an explanation of methodology.

Data came from the Treatment Episode Data Set from the Substance Abuse Mental Health Services Administration, Office of Applied Studies. Those data report treatment admissions

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17 W. Rhodes and R. Kling. Technical Notes on Estimating the Prevalence of Hardcore Drug Use. Report submitted to the National Institute of Justice by Abt Associates Inc. January 2002.

from TEDS-eligible treatment program. To be TEDS-eligible, a program had to receive public funding. Not all TEDS-eligible programs report to the TEDS program, and we made adjustments to account for coverage, as suggested by SAMHSA/OAS documentation.

Estimates used TEDS data for 1998. We then applied the 1998 estimates to trends based on DUF data. Trends from DUF data were produced in the same way as we estimated trends for cocaine and heroin. A three-year linear projection for 2000 provided a nonsensical result for methamphetamine because of the sharp drop in use from 1997 to 1998. We set the year 2000 estimate at the same value as the year 1999 estimate.

Data about expenditures by chronic methamphetamine users was sparse, so we computed the simple average expenditure by chronic amphetamine users across all DUF sites on a yearly basis. We assumed a $200 expenditure for the 1995 anchor year but otherwise projected the expenditure the same way as for heroin and cocaine.

3.0   Marijuana

Marijuana calculations are unchanged from the earlier report. Our estimation procedures are described in the main text. We note here that SAMHSA is redesigning the marijuana module of the NHSDA to ask questions about expenditure and use patterns for marijuana. When available, answers to those questions will greatly improve estimates for marijuana consumption and expenditures.

4.0   Other Drugs

Calculations for other drugs are unchanged from earlier reports.

5.0   Other Adjustments

Typically we have reported three-year moving averages for most estimates provided in this report. That is, an estimate for period T is typically the simple average for periods T-1, T and T+1. For the first period, we used the simple average for period 1 and period 2. For the last period, we used the simple average for period T and T-1. Because of this averaging, trends say little about year-to-year changes in the reported measures.

We had no data for the year 2000. Estimates for year 2000 are almost always simple linear forecasts based on the previous three years. The exception was for amphetamines, for which a three-year forecast was unreasonable, so we set the 2000 estimate to the 1999 estimate. We used the same procedure to back-cast into 1998, which predated the usable DUF data.

6.0   Comments

We see this year's version of *What American's Users Spend on Illegal Drugs* as a bridge between

how estimates were computed in the past and how they should be computed in the future. Data are rapidly improving and future estimates will be able to take advantage of those data. As noted, the Arrestee Drug Abuse Monitoring system has replaced the Drug Use Forecasting system. DUF lacked a probability sampling basis, and it only collected data in one (or a few) urban jails. ADAM is a probability-based sample that collects data from a representative sample of jails in the county. Furthermore, ADAM's instrumentation is better designed to elicit valid and reliable responses about consumption and expenditure patterns. Finally, NIJ is sponsoring a methodology study of developing chronic users estimates for each county represented by the ADAM program. For 2000 forward, that chronic user estimation routine will replace the estimation routine used to date to estimate the number of chronic drug users in the ADAM counties.

The second especially noteworthy development on the data front is the NHSDA's new module for asking about marijuana use and expenditures. Past versions of *What America's Users Spend on Illegal Drugs* used questions from earlier NHSDA surveys to infer the amount of marijuana used conditional on the frequency of use. However accurate those inferences, we had no way to make inferences about sharing, which seems to be especially great for marijuana use. The new NHSDA will shed considerable light on that issue.

A third important development is a new method for estimating drug price series. We pioneered that method in the most recent version of the price series report and improved that methodology as reported here. In the future, ADAM will provides an improved means for weighting those price data, so we can expect improved prices series when ADAM data are fully available.

ADAM sill improve estimates in still another, more subtle way. ADAM will, for the first time, provides estimates of the number of people booked into local jails by offense charge. We will not need to estimate bookings based on UCR data.

Of course, we will still face the problem of estimating chronic drug use pre-2000 so we cannot totally replace the methodology described here. We can, however, greatly improve its component parts, and we changed the current methodology to anticipate those future improvements.