Discussion and Results

Cocaine and Heroin

Between 1990 and 1999, American users spent $35 billion to $70 billion yearly on cocaine and $10 billion to $23 billion yearly on heroin. To arrive at these estimates, we multiplied the number of users by their typical expenditures, and then converted the resulting estimates to 2000-dollar equivalents.

The Number of Cocaine and Heroin Users

The National Household Survey on Drug Abuse (NHSDA), the Nation's most comprehensive survey of drug use, measures drug use among the American household population age 12 and older, as well as among people living in group quarters and the homeless.[5] The NHSDA misses a part of the population that may be a key to determining the extent of drug use: those chronic drug users who, although not homeless, are too unstable to be considered as part of a household, or who, if part of the household, are unlikely to truthfully answer surveys.[6]

This less-stable population of chronic drug users is, however, well-represented in data collected by the Drug Use Forecasting (DUF) program. (DUF is now the Arrestee Drug Abuse Monitoring (ADAM) program, but the data used here predate ADAM.) DUF questions a sample of arrestees in 24 central city jails and lockups about their drug use.[7] DUF also asks arrestees to voluntarily produce specimens for urinalysis. This helps to confirm whether the interviewees have used any of up to 10 types of drugs during the two to three days before the interview. Although urinalysis is subject to error and tells us nothing about the frequency of drug use, it adds credence to estimates of drug use when self-reports are unreliable.

The *chronic user* is identified in the NHSDA as one who used cocaine at least one or two days a week every week during the year before the survey, or one who used heroin on more than 10 days during the month before the survey.[8] In this analysis, chronic users in the DUF data are defined as those who admitted using cocaine or heroin on more than 10 days during the month before being arrested.[9] *Occasional users* are identified in the NHSDA as those whose drug use was less frequent than the chronic drug use criteria described above. Occasional use cannot be estimated from DUF.[10]

An Appendix explains how we used data from the NHSDA and DUF, as well as other sources, to estimate the number of drug users in the United States. The rest of this section provides an overview and reports estimates. According to some researchers, chronic drug users seem to account for about three-quarters[11] of all cocaine used in the United States, so understanding chronic consumption patterns is crucial to estimating expenditures on cocaine. The concentration of heroin consumption is probably similar. Thus, reliable estimates of chronic drug use are especially important. The calculations start by estimating the number of chronic users who are arrested during the year. That number is then divided by the average number of arrests that chronic users generate during that year. For example, if chronic users account for 2 million arrests per year, and if chronic users are arrested an average of 0.5 times per year, then there must be 2 million divided by 0.5, or 4 million, chronic users in the nation. We then subtract estimates of chronic users in jails and prisons, because they are unlikely to use heroin or cocaine heavily while incarcerated. The trick, of course, is to obtain reasonable estimates of both the number of chronic users who are arrested during each year and the average number of arrests that they generate during the year (see Appendix).

Once estimates of the number of chronic users are available, the next step is to estimate how much they spend on cocaine and heroin. The best way to learn this information is to ask the users, and studies sponsored by ONDCP, the Substance Abuse and Mental Health Services Administration (SAMHSA), and the National Institute of Justice provided data (See Appendix). An estimate of the retail sales value of illicit drugs consumed by heavy users follows from multiplying estimates of typical expenditures by estimates of the number of chronic users.

Estimates of expenditures by chronic users are then converted to units measured in kilograms of heroin and cocaine, so that amount consumed can be compared with the amount of drugs trafficked into the country. This requires an estimate of the prevailing retail prices for illicit substances. Here, too, ONDCP and other agencies have sponsored research leading to estimates of what substance abusers pay for drugs on the streets (see Appendix). Dividing the estimate of retail sales value by the prevailing price paid by users gives an estimate of the total amount of drugs purchased, and this amount can be converted readily into metric ton units.[12]

This explains the derivation of estimates of drugs used by chronic users, but while chronic users probably account for about three-quarters of the cocaine and heroin used in this country, they do not account for all illicit drug consumption. One view is that the National Household Survey on Drug Abuse understates the number of chronic drug users and the amount that they spend, but that the NHSDA provides a reasonably accurate estimate of the amount of more casual drug use. This report complements expenditures by chronic users on

cocaine and heroin based on DUF data with expenditures on these substances by more casual users who report to the NHSDA.

Table 3 provides estimates of the number of chronic and occasional cocaine and heroin users derived from the NHSDA and the DUF data. (Users of other drugs will be discussed later. Chronic heroin users based on the NHSDA do not appear in this table, because virtually no chronic heroin users answer the NHSDA.) Because the NHSDA was not administered in 1989, the 1989 NHSDA estimates used in this report are the average of 1988 and 1990 data; also, SAMHSA changed the survey in 1994 and in 1999, and trend statistics were adjusted by the Substance Abuse Mental Health Services Administration (SAMHSA) to take those changes into account. Estimates for 2000 are linear projections based on trends observed in the three preceding years.

Excluding persons in custody, between 1990 and 1999, about 2.7 million to 3.6 million Americans were chronic users of cocaine and approximately 3.0 million to 4.6 million were occasional users. Another 0.9 to 1.1 million Americans were chronic users of heroin, and 140,000 to 600,000 were occasional users. Considering the overlap between chronic cocaine users and chronic heroin users, the estimates suggest that there were about 3.2 million chronic users of heroin or cocaine in 1999.[13] Although imprecise, these estimates are consistent with reported estimates derived by others using different methodologies and data, as discussed below.

Later, we explain a preliminary methodology applied to the Treatment Episode Data Set (TEDS) to develop estimates of chronic methamphetamine users. Applying that methodology to cocaine users in treatment, we estimate there were about 2.0 to 2.5 million "chronic cocaine users" in 1998. (The range results from different assumptions about the inclusiveness of TEDS data.)[14] Here the definition of chronic means that a clinician would have identified cocaine as either the primary or the secondary substance of abuse had these chronic users actually presented for treatment. Despite differences in definitions, the TEDS-based 2.5 million estimate is remarkably close to the consumption-based 2.8 million estimate for 1998. Although this similarity increases our confidence in the consumption-based estimates, the TEDS-based estimation technique is preliminary, and in fact, TEDS-based estimates for heroin (1.3 to 1.6 million) are larger than our consumption-based estimates of 901,000 for 1998. Better understanding of the TEDS data, and increased refinement of the TEDS-based estimation methodology, might resolve these differences – or perhaps even demonstrate that the consumption-based estimates (especially for heroin) are in error. For now we can take some solace that the consumption-based estimates are or the same magnitude as the TEDS-based estimates.

Other policy analysts have reported their own estimates, and these can be compared with our estimates. For example, Rhodes, Langenbahn, Kling and Scheiman[15] provided one national estimate of 508,000 chronic heroin users, and a second national estimate of 582,000 chronic heroin users. The authors explain why both estimates probably understate the true number. We are aware of only one other national estimate of heroin addicts, by Hamill and Cooley,[16] who concluded there were 640,000 to 1.1 million heroin addicts in 1987. The higher estimate is consistent with our 1988 estimate of over one million chronic heroin users.

Table 3 - Estimated Number of Chronic an Occasional Users of Cocaine and Heroin (Thousands), 1988-2000

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
NHSDA [1]													
Cocaine Chronic	1,100	980	850	806	829	615	734	582	608	682	595	595	537
Cocaine Occasional	6,000	5,300	4,600	4,478	3,503	3,332	2,930	3,082	3,425	3,487	3,216	3,216	3,035
Heroin Occasional	170	150	140	359	304	230	281	428	455	597	253	253	253
DUF [2]													
Cocaine Chronic	3,434	3,334	3,133	2,976	2,854	2,773	2,665	2,575	2,524	2,506	2,502	2,457	2,436
Heroin Chronic	1,341	1,266	1,119	1,015	955	945	932	923	910	904	901	898	898
Composite													
Cocaine Occasional	6,000	5,300	4,600	4,478	3,503	3,332	2,930	3,082	3,425	3,487	3,216	3,216	3,035
Heroin Occasional	170	150	140	359	304	230	281	428	455	597	253	253	253
Cocaine Chronic [2]	3,984	3,824	3,558	3,379	3,269	3,081	3,032	2,866	2,828	2,847	2,800	2,755	2,707
Heroin Chronic	1,341	1,266	1,119	1,015	955	945	932	923	910	904	901	898	898

Columns may not add due to rounding. Estimates for 2000 are projections
Sources: NHSDA 1988, 1990 through 1999; DUF 1988 through 1999; Uniform Crime Reports (UCR) 1988 through 1999.

[1] The NHSDA was not administered in 1989. Estimates are the averages for 1988 and 1990.

[2] Due to sample overlap, the estimated number of composite chronic cocaine users is derived from the sum of DUF chronic cocaine users and one half of NHSDA chronic cocaine users.

Simeone, Rhodes, Hunt and Truitt (SRHT)[17] estimated that there were about 300,000 chronic cocaine/heroin users in Cook County in 1995. Assuming a constant proportionality between the number of chronic users in a population and the number of emergency room admissions attributed to them, an extension of the SRHT estimates suggest there are about 3.75 to 4.25 million chronic users in the nation. Although such an

assumption of proportionality rests on shaky grounds, it nevertheless leads to estimates of a magnitude remarkably close to the 3.2 million estimate resulting from the consumption-based calculations.[18]

One other estimate sharply disagrees with those presented here. SAMHSA estimated that about 3.6 million Americans have a severe need for substance abuse treatment exclusive of treatment for alcohol abuse.[19] SAMHSA derived this estimate by identifying someone as needing treatment if he or she met one of four criteria and then inflating the estimates to account for undercounting in the NHSDA.[20] Because the inflation factor is only 20 to 30 percent, it seems likely that SAMHSA's estimates of the number of cocaine and heroin users who need treatment would be smaller than the estimates given here for weekly heroin and cocaine users. SAMHSA does not report the need for treatment by type of drug, but we applied the SAMHSA algorithm to the NHSDA data as best we could and inflated the resulting estimate by 25 percent.[21] The result was that 920,000 cocaine users needed treatment, as did 130,000 heroin users and 59,000 people who used both heroin and cocaine. Thus, SAMHSA estimated that almost 1.2 million people need treatment for cocaine abuse, and almost 190,000 need treatment for heroin addiction.

Not all weekly users of cocaine need treatment, so an estimate of 2.8 million chronic users (1996) may conceivably be consistent with SAMHSA's estimate of 1.2 million who need treatment. Similarly, chronic heroin use may not indicate a need for treatment, so an estimate of 190 thousand heroin addicts could conceivably be consistent with our estimate of 0.9 million chronic heroin users (1996). Although conceivable, these differences are so large that they tax credulity, and SAMHSA's estimate is inconsistent with our estimates of chronic use based on the TEDS data. There are three problems. The first is that, from the result of our calculations, a 20 to 30 percent inflation factor is insufficient to approximate the number of chronic users *not* represented by the NHSDA. A second problem is that the SAMHSA estimates suggest that at a maximum, about 25 percent of all people who need treatment for substance abuse are current users of heroin or cocaine. In fact, all 17 CEWG (Community Epidemiology Work Group) sites[22] report more than 25 percent of their treatment admissions are for cocaine or heroin, and 11 of 17 reported that more than half their admissions are for cocaine or heroin. Although not all people who need treatment actually receive treatment, we would expect a closer correspondence between persons who need treatment for cocaine and heroin, and persons who receive treatment for those substances. Third, according to the Treatment Episode Data Sets (TEDS), roughly 200,000 heroin users and another 250,000 cocaine users received treatment per year between 1993 and 1997.[23] SAMHSA's estimates are inconsistent with TEDS. Even after attempts to inflate estimates based on the NHSDA, the estimates seem to understate the number of chronic heroin and cocaine users, and consequently, the SAMHSA estimates cannot be reconciled with our estimates.

Trends in Drug Use

If the prevalence estimates have some justification, what can be said about trends? Because the estimates presented in Table 3 are based on a consistent methodology from 1988 through 1999, they can be compared meaningfully over time. We do not know the standard errors for these estimates, however, so we lack a probability basis for judging whether or not changes are statistically significant. Our estimates seem to show a gradual decrease in the number of chronic cocaine users throughout the period. Estimates of occasional use from the NHSDA show a consistent downward trend that agrees with the trend for chronic user.

The previous version of this report showed a decrease and then an increase in chronic heroin use. However, according to Table 3, the number of chronic heroin users has remained fairly constant since the mid-1990s. Not shown here, supporting calculations indicate a decrease and then an increase in heroin use for some places (New York and Philadelphia, for example) that historically have had high prevalence of chronic heroin use, but this is not universal. There are other places (mostly in the Southwest) that had a higher prevalence of heroin use at the end of the 1990s than at the beginning of the 1990s, and there exist still other places (Los Angeles, especially) where chronic heroin use seems to have declined sharply throughout the period. Note that the 1995 through 1997 NHSDA seemed to show an increase in occasional use, but those years appear to be inexplicable aberrations. Current estimates of occasional heroin use are at about the same levels as before the 1995-1997 peak.

Because trends in drug use are often disputed, it may be helpful to discuss whether or not other evidence is consistent with our findings. Chronic drug users are frequently in trouble with the law, so a temporal change in incarceration practices will necessarily have a large effect on them. Based on estimates explained in the Appendix, the increase in prison populations between 1988 and 1999 would have incapacitated 135,000 additional chronic cocaine users and 43,000 additional chronic heroin users. These are sizable yet conservative numbers, because they do not take into account inmates and detainees under the supervision of local correctional authorities.

The AIDS epidemic provides another reason for expecting a decrease in heavy drug use, especially by heroin users, but also for others who inject drugs. According to the Centers for Disease Control[24] 217,000 injection drug users had been diagnosed with AIDS as of 1998, and 87,000 had died of the disease. Having AIDS certainly does not preclude substance abuse, but advanced AIDS must make it all but impossible to support heavy use of heroin. Adding together chronic heroin users who are incarcerated and chronic heroin users who

have died equals about 127,000 fewer chronic heroin users at the end of the decade than at the beginning of the decade. The figure may be closer to 200,000 when we consider heroin users with advanced AIDS.

If no other factors affected chronic drug use, we would expect a decline in chronic cocaine users and, especially, chronic heroin users, from 1988 to 1999. Offsetting these trends toward less use, however, is an apparent recent increase in heroin use by people who do not inject. This increase might be a consequence of increased availability of higher purity heroin. Trends reported by SAMHSA in the 1998 Treatment Episode Data Set (Table 5.3) are consistent with trends based on our consumption estimates. Between 1993 and 1998, the proportion of admissions for heroin inhalation increased from 23 percent to 28 percent. Moreover, those admitted for heroin inhalation tend to be younger than those admitted for heroin injection; they are more likely to be experiencing a first treatment episode; and among heroin abusers experiencing a first treatment episode, those who inhale have typically used for a shorter time. Recent tabulations based on the National Household Survey on Drug Abuse and the Monitoring the Future Survey have suggested renewed drug use by youths.[25] Nevertheless, this increase is a relatively recent phenomenon, and it followed a decrease in earlier years. It is difficult to believe that these youth could have progressed to heavy use as of 1999, and certainly they could not account for much of the increase in treatment episodes for heroin where fewer than 5 percent of patients are less than twenty years old.[26] The DUF data provide additional evidence of increased use of heroin by inhalation. In the early 1990s across all DUF sites, roughly 87 percent of chronic heroin users said they used a needle during the last year; as of the late 1990s the percentage was 62 percent.

Another check on these trends comes from a comparison with reports from the Community Epidemiology Work Group (CEWG). Although the CEWG reports provide a somewhat inconsistent picture from one report to the next, the five reports between June 1999 and June 2001 suggest that cocaine use has been decreasing during the latter part of the decade. Thus, the trend in cocaine use reported by the CEWG is consistent with the trend reported in this version of What America's Users Spend on Illegal Drugs. The five CEWG reports suggest that heroin use has been increasing or remaining fairly stable across the Nation. Our estimates suggest that heroin use has remained fairly stable. The discrepancy, to the extent that it exists, may arise because the CEWG has identified increased use among young users who have not yet advanced to chronic use.

Finally, according to the Substance Abuse and Mental Health Services Administration, emergency room mentions for cocaine use have increased from about 110,000 in 1989 to about 169,000 in 1999. Emergency room mentions for heroin grew from about 42,000 in 1990 to 84,000 in 1999. A naïve observer might infer that heroin use doubled between 1989 and 1999, but this is almost certainly wrong. Little is known about the

dynamics of emergency room use by chronic cocaine and heroin users, but some speculation might be helpful. According to the 1997 DAWN (Drug Abuse Warning Network) report, dependence is the dominant drug use motive for heroin and cocaine users seeking emergency room assistance: 86 percent for heroin mentions and 68 percent for cocaine mentions. Chronic effects, withdrawal or seeking detoxification are the typical reasons for going to the emergency room: 62 percent for heroin mentions and 50 percent for cocaine mentions.[27] Addicts are more likely to seek treatment as they age, and treatment episodes seem to become more frequent over time.[28] For this reason alone, we would expect to see emergency room mentions increase even if the number of chronic heroin and cocaine users did not change. Furthermore, we suspect that chronic heroin and cocaine users will develop an increasing number of chronic health conditions as they age and as their addictions advance. This, too, can account for an increase in emergency room mentions. Our own calculation suggest that annual ER mentions have grown from about 4 per hundred chronic users in the late 1980s to about 7 per hundred chronic cocaine users in the late 1990s; for chronic heroin use, annual ER mentions have grown from about 4 per hundred to about 9 per hundred. While DAWN is valuable for detecting short-term changes in specific jurisdictions, such as a spike in overdose deaths, it would seem to have little or no value as a tool for monitoring long-term trends in the prevalence of substance abuse.

Average Amount Spent on Cocaine and Heroin

DUF interviewers from 1989 and later asked respondents how much they spent on drugs during a week. The question did not separate cocaine from heroin spending or exclude other drugs, so we must infer how much was spent on cocaine and how much was spent on heroin. Also, some respondents gave answers that were implausibly large, so based on the methodology explained in the Appendix, we adjusted estimates to moderate the effect of extreme values. Because of a change in questionnaire design, DUF does not provide comparable estimates after 1995. The Appendix explains how we dealt with these problems. Table 4 provides estimates of the average expenditure on cocaine and heroin. All estimates were converted to 2000 dollar equivalents based on the consumer price index.[29]

In 1999, chronic cocaine users spent $206 per week on cocaine, and chronic heroin users spent $201 per week on heroin (Table 4). These DUF estimates lack precision, but they are reasonable considering other data about expenditures on illicit drugs.[30]

Table 4 - Weekly Average Cocaine and Heroin Expenditures Reported by Arrestee Chronic Users, 1989-2000

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cocaine	$440	$377	$318	$266	$247	$236	$232	$226	$220	$188	$197	$206	$212
Heroin	$365	$361	$379	$363	$327	$266	$255	$249	$242	$208	$222	$201	$201

Sources: DUF 1989 through 1999

Of course, occasional users spend less per week than do chronic users. Based on NHSDA data, occasional cocaine users spent $19 per week in 1988, $23 in 1989, $27 in 1990, $30 in 1991, $34 in 1992, and $35 in 1993. More recent estimates are unavailable. We assumed that the $35 figure applied to all years and adjusted for the consumer price index. No such estimates are available from the NHSDA for occasional heroin users. For the NHSDA, we assumed a weekly expenditure of $50 per week. Again, we adjusted for the CPI.

Total Expenditures on Cocaine and Heroin

Between 1990 and 1999 American users spent $35 billion to $70 billion yearly on cocaine and $10 billion to $23 billion yearly on heroin (Table 5). We derived these estimates by multiplying the number of chronic and occasional users in Table 3 by the average expenditures in Table 4 (and the figures cited earlier for occasional users) and adding the results.

Table 5 - Total Expenditures on Cocaine and Heroin, 1988-2000 ($ in billions, 2000 dollar equivalents)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cocaine													
Chronic Use	$91.1	$75.0	$58.9	$46.8	$42.0	$37.8	$36.6	$33.7	$32.4	$27.9	$28.7	$29.5	$29.8
Occasional	$15.9	$13.4	$11.1	$10.3	$7.8	$7.2	$6.2	$6.3	$6.9	$6.8	$6.2	$6.0	$5.5
Total	$107.0	$88.4	$69.9	$57.1	$49.9	$45.0	$42.8	$40.0	$39.2	$34.7	$34.9	$35.6	$35.3
Heroin													
Chronic Use	$25.4	$23.8	$22.0	$19.2	$16.2	$13.1	$12.4	$11.9	$11.5	$9.8	$10.4	$9.4	$9.4
Occasional	$0.6	$0.5	$0.5	$1.2	$1.0	$0.7	$0.8	$1.3	$1.3	$1.7	$0.7	$0.7	$0.7
Total	$26.1	$24.3	$22.5	$20.3	$17.2	$13.8	$13.2	$13.2	$12.8	$11.4	$11.1	$10.1	$10.0

Estimates for 2000 are projections
Sources: See Tables 3 and 4.

Other analysts have made clever use of available data to derive their own estimates of retail expenditures on cocaine and heroin. Even after adjusting for the limitations of these other studies, our estimates are higher than theirs, perhaps suggesting that – if anything – we might adjust our estimates downward.[31] But a large

downward adjustment seems unwarranted because domestic consumption based estimates would be much smaller than supply-based estimates.

How Varying the Assumptions Affects the Estimates

In most regards, this version of *What America's Users Spend on Illicit Drugs* provides estimates of drug use and expenditures that are consistent with (but not identical to) estimates from the previous version. Nevertheless, there are important differences, which alert us to how varying assumptions and using different data alter the estimates. Therefore, comparing current estimates with previous estimates has some utility.

The new version has larger estimates for chronic drug use, especially for heroin, during 1988 and 1989. The major problem is that DUF was not administered in 1988 except at select sites, and our recent analysis of DUF data suggests that data quality was poor during DUF's 1989 start-up year. Under-reporting of drug use appeared to be especially high during that first year, and our attempt to adjust for that under-reporting caused the estimates to increase. (The 1988 estimate is a projection based on a three-year trend, so it is sensitive to the 1989 estimate.) Given problems with DUF in 1988 and 1989, coupled with the fact that the NHSDA was a relatively small sample in 1988 and not administered in 1989, we caution skepticism regarding the estimates for these early years. We are also cautious about 1990 estimates, because they are based on three-year moving averages, and therefore affected by problems with the 1988 and 1989 estimates.

Still, even if we disregard the years 1988 through 1990, the current estimates differ from the previous ones. (The appendix provides details; we summarize here.) We based current estimates on a refined analysis of trends in the DUF data and new estimates of truthful reporting that varied from year-to-year and from site-to-site. We also modified the algorithm for estimating the number of chronic drug users in places that lack DUF programs and, based on an analysis of new data, changed assumptions about the rate at which chronic users get arrested. Obviously the estimates are sensitive to those changes. One result is that we no longer estimate a significant mid-1990s dip in the number of chronic heroin users. That is encouraging because that mid-1990s dip was always difficult to explain.[32] With respect to chronic cocaine use, the previous estimates were about 20 percent higher than the current estimates from the middle to the end of the last decade. The recent estimates are closer to the TEDS-based estimates, which we might accept as suggesting that the new estimation procedure is better than the previous one. We note that in the last report, the 1999 estimate was a projection based on estimates for 1996 through 1998. In this report, the new 1999 estimate is based on the pre-1999 computing methodology, not a trend. Finally, the last estimate for 2000 and the current estimate for 2000 are

both projections, albeit from different bases. These changes account for the fact that current estimates for 1999 and 2000 differ from estimates of the same years from the previous version of this report.

We analyzed new data about expenditures by chronic drug users, and we employed a new computing algorithm to make estimates of weekly expenditures for 1988 through 2000. Details appear in an appendix. Estimates of weekly expenditures by chronic users on heroin changed very little from the previous version of *What America's Users Spend on Illicit Drugs*. The biggest changes are from the middle 1990s; the new heroin expenditures are almost 10 percent higher than previously. Our current estimates for cocaine expenditures are about 10 percent higher for the middle and later part of the decade. They are slightly lower for the middle part of the decade. We also made some modest changes, as described in the text, to our estimates of the weekly expenditures by occasional cocaine user. These assumptions caused expenditures to increase slightly during the early part of the period, but occasional users account for only a small proportion of cocaine use, so the changes have little impact on the "bottom line" of total expenditures.

Of course, the bottom line has changed somewhat from the earlier estimates. Compared with previous estimates, we now say there are somewhat fewer chronic cocaine users, but we also say they are spending somewhat more per week. (Some increase in expenditures results from using a more recent consumer price index, but inflation has been modest, so here we ignore inflation as an explanation.) These two changes are partly offsetting, and except for 1997 and 1998, the earlier estimate comports with the current estimates. For 1997 and 1998, the current estimates are 10 to 20 percent lower.

The bottom line changes for heroin. Because the new estimates fail to show the precipitous decrease in chronic heroin use during the early and middle part of the 1990s, we now say that heroin users spent up to 50 percent more than we had estimated previously for that period. This is especially true for 1991 through 1993. We have revised expenditure estimates downward for 1999 and 2000.

That these estimates change from one version of this report to another is frustrating both for the report's authors and for its readers. A consistent methodology would impose consistency but at a price. As better estimation techniques and improved data emerge, estimates of the number of drug users and their expenditures get better, so the price paid for consistency is inferior estimates. As mathematical modelers and statisticians, we now face a future where data are becoming suitable for supporting probability-based estimates of chronic drug use. The ADAM program provides, for the first time, detailed information about expenditure on illicit drugs. The next version of *What America's Users Spend on Illicit Drugs* surely portends major advances in

estimation technology at the price of yet one more round of revisions to estimates of chronic drug users and how much they contribute to a retail market for heroin and cocaine.

Accounting for Income in Kind

Our expenditure estimates reflect money that actually changed hands at the retail level. But drugs are often obtained as *income in kind*, sometimes as payment for serving a role in the distribution chain and sometimes as payment for sex. For reasons explained elsewhere,[33] we assume that chronic users of heroin received 22 percent of their drugs as in-kind payment in 1988, but that this percentage fell linearly to 11 percent as of 1995 because of changes in the way that heroin was distributed.[34] We assumed that users of cocaine received 11 percent of their cocaine as income in kind throughout the period.

If we convert in-kind payments into dollar equivalents at street prices, then the 1999 dollar expenditure on cocaine would increase by about $4 billion, and the 1999 dollar expenditure on heroin would increase by about $1.5 billion. These totals are not reflected in Table 5, but we do take them into account later when we estimate the bulk amounts of cocaine and heroin used in America.

How Much Cocaine and Heroin is Consumed?

To estimate how much cocaine and heroin Americans consume, we used data from the System to Retrieve Drug Evidence (STRIDE) to estimate the street prices paid for cocaine and heroin. These data come from laboratory analyses of purchases by Drug Enforcement Administration agents, other Federal agents, and some State and local agents. The price varies with the size of the purchase lot. Cocaine is much less expensive when bought as a large lot than when purchased as a smaller lot. This is also true of heroin. Therefore, to estimate the average street price of illicit drugs, it is necessary to know how much a typical buyer purchases each time he makes a purchase. The larger the quantity of drugs purchased, the lower the per unit price. There is scant evidence on this topic. A companion report explains price derivations; the Appendix details how we modified the basic methodology for present purposes.

The price of cocaine fell sharply throughout the early 1980s (not reflected in the table) and continued to decline, but at a more modest rate) into the late 1990s (Table 6). Most of the decline after 1990 is caused by an increase in the consumer price index; these prices are smoothed, so the table masks year-to-year price

variations. Cocaine prices seem to have increased entering the new millennium. The price of heroin also fell throughout most of the period and that apparent price decrease was much steeper than its cocaine counterpart.

Table 7 shows estimates of the amount of cocaine and heroin that was consumed based on the expenditures reported in Table 5 (adjusted to account for drugs earned as income in kind) and the retail prices reported in Table 6. According to the data for the 1990 to 1999 period, cocaine users consumed somewhere between 270 and 450 metric tons of pure cocaine each year. The level of consumption has stayed close to 300 metric tons throughout the 1990s. It seems to have fallen below the 300 metric ton mark toward the end of the decade, but we note that the year 2000 estimate is a linear projection. Heroin users consumed roughly 14 metric tons at the beginning and end of the decade.

We note an apparent upward trend in the amount of heroin consumption beginning in 1995. If this trend is real, it might have resulted from an infusion of high-quality, low-cost Colombian heroin that competed with and eventually supplanted heroin from Southeast and Southwest Asia. However, for reasons explained in the Appendix, we are uncertain about estimates for the street price of heroin. We are especially concerned that the street prices may have been lower than shown in Table 6 especially for late in the 1990s. If that is so, then our estimates for heroin consumption would be too low, as those estimates comes from dividing expenditures by price.

Because estimates are not totally accurate, trends are uncertain. The amount of cocaine consumed in the United States appears to have decreased slightly over the last eight years. Total expenditures on cocaine have fallen over time, but this is attributable almost exclusively to using the consumer price index to inflate past expenditures.[35]

Trends in heroin use may be different. The amount of heroin used may have decreased from 1988 and 1989 into the middle 1990s. Thereafter, heroin consumption may have increased, and that increase may have continued into the end of the decade. As already noted, there seem to be fewer heroin addicts who inject in the middle 1990s than there were at the end of the 1980s. The HIV virus and AIDS have taken a toll, and many users have been incarcerated. Still, prices have fallen so much that remaining users have been able to purchase much more than they did in the past, and these lower prices may have attracted new users – many of whom snort the drug – into the market.[36]

Other studies provide comparable estimates. Using a much different estimation methodology, Rand researchers estimated that about 451 metric tons of cocaine entered the United States in 1989.[37] This compares with our estimates of 447 metric tons in 1990. The Rand researchers estimate that 7.8 metric tons of heroin entered the States in 1991;[38] our estimate is 12.5 metric tons.

We have made major changes to methods used to estimate retail-level prices for cocaine, and as a result, our new price series is lower than our previous price series. The largest differences occur during the earlier part of the time-series. As noted before, current expenditure estimates for cocaine are lower than previous estimates, but lower cocaine prices partly offset what otherwise would be a decrease in total cocaine use. We now estimate much higher cocaine use for 1988 through 1990, but for reasons already explained, we heavily discount the accuracy of estimates for 1988 and 1989 and distrust estimates for 1990.

We also made major changes to the method of estimating heroin prices but are skeptical that even these new estimates truly reflect retail-level market prices. The principal problem is that the retail market seems to be bifurcated between consumers who pay relatively low unit prices for high quality heroin suitable for inhalation and consumers who pay comparatively high unit prices for low quality heroin suitable only for injection. The larger the proportion of the market devoted to high quality heroin, the lower the average price; likewise, the larger the proportion devoted to low quality heroin, the higher the average price. We cannot tell the mix between high quality and low quality purchases; hence, we remain uncertain about how much users typically pay for their heroin. Table 6 reflects a working estimate.

Table 6 - Retail Prices Per Pure Gram for Cocaine and Heroin, 1988-2000 (dollars, 2000 dollar equivalents)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cocaine	$180	$170	$174	$178	$160	$151	$147	$139	$144	$140	$145	$146	$152
Heroin	$2,184	$1,758	$1,968	$1,914	$1,697	$1,403	$1,374	$1,222	$1,109	$1,080	$851	$783	$839

Estimates for 2000 are projections
Source: STRIDE 1981 through 2000

Table 7 - Total Amount of Cocaine and Heroin Consumed, 1988-2000 (in metric tons)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cocaine	660	576	447	355	346	331	323	321	301	275	267	271	259
Heroin	14.6	16.6	13.6	12.5	11.7	11.2	10.8	12.0	12.8	11.8	14.5	14.3	13.3

Estimates for 2000 are projections
Sources: See Tables 3 through 6.

Methamphetamine

We applied the same computing algorithms used to derive estimates for cocaine and heroin to the problem of getting estimates for methamphetamine. When applied to methamphetamine, the approach does not work as well, for reasons that are discussed in this section. According to our calculations, there are probably between 200,000 and 300,000 chronic users of amphetamines. (As before, a chronic user is someone who uses a drug on more than ten days per month.) The estimate is technically about amphetamines, because that is the question posed in the DUF interview. Hereafter, however, amphetamine users are assumed to be methamphetamine users. This assumption is justified by the observation that in 1997, more than 96 percent of those who tested positive for amphetamines were confirmed by a second test to be positive for methamphetamine.

This estimate is problematic for two reasons. The first is that methamphetamine use is rare among arrestees in many cities, so the estimates are really based on the experiences of a few cities, and those experiences are then prorated across the nation. The fact that so few cities account for the estimates may impart additional uncertainty to the calculation. The second reason for skepticism is that the estimates vary markedly from year to year.

Therefore, we experimented with and ultimately adopted an entirely different method for estimating the number of chronic methamphetamine users. Applying an adaptation of an estimator developed for the National Institute of Justice,[39] we used the TEDS data to estimate the rate at which chronic methamphetamine users entered substance abuse treatment during 1998, the most recent year for which we have TEDS data. The logic is that if a chronic user enters treatment once every five years, then there must be five chronic users in the population for every chronic user who enters treatment. As a simple illustration, suppose that the typical chronic methamphetamine user generates 0.2 treatment admissions per year, or about one every five years. Suppose that we observe 200,000 treatment admissions during a given year. Then there must be 200,000/0.2 = 1 million chronic users of methamphetamine.

To get these estimates, we started with the total number of adults who entered treatment during 1998 and for whom methamphetamine was diagnosed as the primary or secondary drug of abuse. Because of this selection rule, in this context a chronic drug user is one who would be diagnosed as needing treatment for methamphetamine if he or she were examined by a clinician. We divided the data into Metropolitan statistical

areas, computed the number who entered treatment in each MSA, estimated the rate at which chronic users entered treatment in each MSA, and divided the former by the latter to estimate the number of chronic drug users in each MSA. The national estimate would be the sum of the estimates across the MSAs except for some problems.

The first problem is that some of those who were diagnosed as needing treatment for methamphetamine said they did not use methamphetamine in the last month. We did not see how such users could contribute to consumption estimates, so we excluded them from the calculations. The second problem arises when one substance abuse provider referred clients to another provider. If these referrals were for a continuum of care, they would amount to double counting, so we excluded such cases from the analysis. A third problem is that TEDS under-represents treatment admissions. According to TEDS documentation, in 1998 TEDS included about 83 percent of all TEDS-eligible admissions and about 67 percent of all treatment admissions. (A "TEDS eligible admission" is an admission to a program that receives public funding.) To adjust for under-counting, we might inflate the estimates by 1/0.67 or by 1/0.83 depending on whether methamphetamine users often pay for their own treatment (justifying the 1/0.67 adjustment) or rarely pay for their own treatment (and hence justifying the 1/0.83) adjustment. We actually used both adjustments and then averaged. A fourth problem is that the TEDS public release data combines treatment for methamphetamine with treatment for other stimulants. We assumed that methamphetamine accounted for about 79 percent of treatment admissions where stimulants were identified as the primary substance of abuse, so we adjust our estimates by multiplying them by 0.79.[40]

Following this logic, we estimate that about 670,000 Americans use methamphetamine at a level sufficient that a clinician would deem them to need treatment. This estimate is considerably larger than the alternative DUF-based estimate of 200,000 to 300,000. We can take comfort that this new estimation procedure produced a reasonable (if somewhat low) estimate for chronic cocaine and a reasonable (if somewhat high) estimate for chronic heroin use; hopefully it provides a reasonable estimate for methamphetamine. Last year we estimated almost 360,000 chronic methamphetamine users, so this new estimate represents a substantial increase over last year's estimates.

Although we believe that 670,000 is a reasonable estimate of the number of chronic users of methamphetamine, we are uncomfortable about our understanding of the TEDS data, and we have very limited experience with the estimator used here. (Although it is derivative of an estimator developed for the National Institute of Justice, the extensions are non-trivial. We have been unable to thoroughly test sensitivity to

alternative assumptions.) Furthermore, a single point-estimate for 1998 does not provide any information about earlier and later years. To get that information we can overlay the 670,000 estimate on trend estimates based on the DUF data. As noted above, estimates upon which the trend is based were derived the same way as we developed the chronic estimates for heroin and for cocaine.[41] Table 8 reports the results from these calculations after subtracting for chronic users incarcerated in prisons and smoothing over three-year periods.

Estimates of weekly expenditure on methamphetamine are uncertain because the data are sparse. In the absence of hard data, we assumed that chronic users of methamphetamine spent about $200 per week in 1995. Our reasoning was that expenditures by chronic methamphetamine users are probably comparable to expenditures by chronic cocaine and heroin users, and chronic heroin and cocaine users spend about $200 per week. The Appendix explains why we selected 1995 as the base and how we used DUF data to estimate expenditures for other years.

The estimate of total revenue comes from multiplying the number of chronic users by their weekly expenditure, and then multiplying by 52 to determine a yearly expenditure. The result was multiplied by 4/3 (the reciprocal of 0.75) to account for occasional users. We estimate that in 1999 methamphetamine users spent somewhat less than $6 billion per year on methamphetamine use. The next step was to estimate the price of methamphetamine. The Appendix explains the price derivation. Data are again sparse, so trends reported in Table 8 are uncertain. The final step is to divide total revenue by the price per pure gram. If casual users account for roughly 25 percent of consumption, the 1999 estimate is roughly 18 metric tons. As noted, seeking precision would be quixotic; these estimates are best treated as matters of scale with a wide (but unknowable) confidence interval. Trends are especially uncertain but the apparent increase in use and expenditures over the last decade agrees with reports by others.

There is scant evidence to support any secondary check on these calculations. According to the TEDS data, 15 to 18 percent of treatment admissions between 1993 and 1998 identified cocaine as the primary drug of abuse. Methamphetamine was the primary drug for between 1.3 percent (1993) and 3.6 percent (1998) of admissions. If we take the 1998 numbers to imply that there were 4.1 chronic cocaine users for every 1 chronic methamphetamine user, and if we accept the earlier estimates of the number of chronic cocaine users, then there would be about 680,000 chronic methamphetamine users during 1998. That agrees closely with the estimate reported in Table 8, but this assumption of proportionality is tenuous. If we take the 1993 numbers to imply that there were roughly 13.5 chronic cocaine users for every chronic methamphetamine user, and if we again use the earlier estimates of chronic cocaine users, we would say there are about 230,000 chronic

methamphetamine users in 1993, fewer than what we report in the table. Perhaps there is some comfort here that the scale is about right, but precision is elusive.

Assuming the scale is about right, what can be said about the trend? The TEDS data show an increase in admissions with methamphetamine named as the primary drug of abuse. Just 1.0 percent of admissions in 1992 and 1.3 percent of admissions in 1993 were for methamphetamine. This compares with 3.5 percent in 1997 and 3.6 percent in 1998. We see those trends reflected in Table 8.

As another check on trends, reports from the Community Epidemiology Work Group provide a somewhat inconsistent picture from one report to the next. During the last three years, the CEWG has reported that methamphetamine use has decrease and then increased. Our trend statistics show the opposite. However, our choice to smooth the estimates masks the fact that our estimates vary markedly from year-to-year. We doubt that we have captured the short-term trend during the late 1990s. On the other hand, we have no reasons to doubt the long-term trend during the decade, which is consistent with treatment admission data and other sources.

Table 8 - Calculation of Total Methamphetamine Consumption, 1989-2000

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number of Chronic Users	274	269	259	270	302	381	474	584	664	707	669	617	595
Median weekly expenditure	$327	$311	$319	$196	$229	$194	$232	$226	$220	$189	$173	$136	$132
Price per pure	273	307	358	369	352	271	223	169	187	262	294	316	276
Total expenditures (billions)	$6.2	$5.8	$5.7	$3.7	$4.8	$5.1	$7.6	$9.2	$10.1	$9.3	$8.0	$5.8	$5.4
Metric tons	22.7	19.0	16.1	10.0	13.6	18.9	34.1	54.2	54.3	35.3	27.2	18.3	19.7

Estimates for 2000 are projections
Sources: NHSDA 1988, 1990 - 1999; STRIDE 1981 - 2000; DUF 1989-1999; Uniform Crime Reports 1988-1999; TEDS 1998

Marijuana

In this section, we estimate the dollar value of marijuana consumption by multiplying the following factors: number of users in the past month, by the average number of joints used in the past month, by the average weight per joint, by the cost per ounce. Calculations are summarized in Table 9.

Number of Marijuana Users

More Americans use marijuana than either cocaine or heroin. During 1999, for example, about 11.9 million Americans used marijuana or hashish at least once in the month before the NHSDA. This number is somewhat greater than it was in 1988 (11.0 million). The trend was for decreasing use into the early 1990s and then increasing use into the late 1990s.

Reports from the Community Epidemiology Work Group provide confirmation for the trends presented here. The five reports between June 1999 and June 2001 suggest that marijuana use had been increasing until the end of the decade, at which point use stabilized and may have started to decrease. Our trend estimates, which are based entirely on the NHSDA, also suggest that marijuana use increased through much of the 1990s. Marijuana use may have stabilized toward the end of the decade, but the NHSDA does not show that marijuana use has begun to decrease.

Average Number of Joints Used Each Month

We calculated an individual's total number of joints used each month by multiplying the number of days of marijuana use in the past month by the number of joints used per occasion. For those without valid answers for these questions, we imputed the total monthly use.[42] In 1995 the NHSDA stopped asking respondents about the number of joints and amount of marijuana used in the last month. Because marijuana users reported using an estimated 18.7 joints per month in 1994, we assumed the same was true for the years after 1994.

Average Amount of Marijuana Used

The average amount of marijuana used in the past month was calculated from several questions in the survey.[43] This number has changed little over time – about 0.014 ounces per joint. However, the average number and weight of joints used by those who smoke marijuana cannot tell the entire story about trends in marijuana use because marijuana's THC content has changed over time. Delta-9 tetrahydrocannabinol (THC) is marijuana's primary psychoactive chemical. According to a continuing study to monitor THC content conducted at the University of Mississippi,[44] during the 1990s the average THC content of commercial grade marijuana increased from about 4 percent to about 5.5 percent. The THC content of sinsemilla increased from about 8

percent to about 12 percent. Thus, the increase in drug use might be considered to be considerably greater than reflected in the Table 9.

Price

Price is the final factor in calculating the total value of marijuana consumption.[45] Marijuana prices were roughly $375 per ounce in the late 1980s. These prices are for a one-third ounce purchase, which appears to be a typical purchase size by frequent users. They jumped to closer to $500 per ounce during the early 1990s. Throughout the rest of the decade, prices were considerably lower. The price trends appear to be roughly consistent with trends in THC content. That is, as the price of marijuana has fallen, its quality has improved.

Table 9 - Calculation of Total Marijuana Consumption, 1988-2000

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number of Users (millions)	11.6	10.9	10.2	10.4	9.7	9.6	10.1	9.8	10.1	11.1	11.0	11.9	12.1
Joints used per month	16.9	17.3	17.6	16.6	17.2	17.8	18.7	18.7	18.7	18.7	18.7	18.7	18.7
Weight of a joint (ounces)	0.0134	0.0135	0.0137	0.0135	0.0134	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136	0.0136
Price per ounce, 1/3 ounce purchase	$385	$361	$508	$499	$545	$432	$397	$340	$309	$311	$322	$292	$284
Total expenditure for the year ($ in billion dollar equivalents)	$12.1	$11.0	$15.0	$14.0	$14.6	$12.0	$12.2	$10.2	$9.5	$10.5	$10.8	$10.6	$10.5
Metric Tons	894	866	837	793	761	791	874	848	874	960	952	1028	1047

Estimates for 2000 are projections
Sources: NHSDA 1988, 1990 through 1999; STRIDE 1981 through 2000.

Total Consumption Estimates

The factors required to calculate total marijuana consumption are shown in Table 9. In 1999, we estimate that average users consumed 18.7 joints per month. The average amount of marijuana used per joint equaled 0.0136 ounces.[46] At a retail price of $292 an ounce, these users spent an average of $74 each month ($891 a year) on marijuana. This number, multiplied by the 11.9 million monthly users, yields a consumption estimate of $10.6 billion for the year. That translates into more than 1,000 metric tons for the year.

These estimates may be low. Users are likely to under report socially disapproved behaviors, even when those behaviors are legal.[47] They would seem to have even more incentive to under report illegal behaviors.[48] Given under reporting rates for tobacco and alcohol use, it might be reasonable to inflate marijuana estimates by about one-third. On the other hand these estimates could be too high. Joints are frequently shared, and it seems plausible that these calculations double count some consumption. At any rate, our estimates of total spending are in line with estimates by others.[49]

There is one disconcerting comparison, however. According to the DEA, nearly 830 metric tons of marijuana were seized during 1998, nearly 1,100 metric tons were seized in 1999, and more than 1,200 metric tons were seized in 2000. There may be a measurement problem. That is, the tonnage from seizures may include non-salable bulk, and thus, seizures may overstate the consumption-equivalent of marijuana seized at the border. Even taking that explanation into account, it seems unlikely that marijuana growers would continue to export into the United States when the probability of detection and seizure of product was as high as is implied by the combination of the consumption and seizure estimate.

Other Drugs

Most of the money spent on illicit drugs in America is spent on cocaine, heroin, marijuana, and methamphetamine. However, expenditures on other illicit substances (inhalants and hallucinogens) and on licit substances consumed illegally (other stimulants, sedatives, tranquilizers, and analgesics) is considerable. Much of this drug use appears to be reported to the NHSDA.[50] We do note, however, that the NHSDA undoubtedly misses some users, and those who are reached probably have an incentive to misrepresent their consumption.

Table 10 shows the number of respondents who, according to the NHSDA, used these other drugs between 1988 and 1999. To complete the table, estimates for 2000 were set to the 1999 estimate. Those respondents who admitted use during the year were asked how frequently they used the drug.[51] We then used these data to compute an average number of days a year that the respondents used a drug.[52] Since the survey lacks information about the number of doses taken on days that the drug was used, we assumed that each day of use resulted in a single dose. This is most certainly an underestimate.

It is difficult to determine prices per dose. Both the Drug Enforcement Administration's (DEA) Illegal Drug Price/Purity Report and the National Institute on Drug Abuse's Community Epidemiology Working Group (CEWG) provided wide ranges.[53] For current purposes, we assumed that each dose costs $5, a price that was consistent with those reported by the DEA and the CEWG. These street prices may be too high, however, because many of the legal drugs were likely to have been purchased at prescription prices and diverted to illegal use.

To estimate the yearly expenditures on these drugs, we multiplied three factors: the number of users, by the average number of doses per year, by the price per dose. Our best estimate is that Americans spent between $2 billion and $3 billion on other drugs each year during the last decade (Table 10).

These estimates are imprecise for the reasons noted above. However, even if we halve or double the estimates to reflect uncertainty, drugs other than cocaine, heroin, marijuana and methamphetamine must be a relatively small part of the total expenditure that Americans make on illicit substances and on legal substances consumed illegally.

Conclusion about Consumption

According to estimates based on the prevalence-based procedure, Americans spent about $67 billion on heroin, cocaine, methamphetamine, marijuana, and other illegal drugs in 1999: $36 billion on cocaine, $10 billion on heroin, $11 billion on marijuana, $6 billion on methamphetamine, and $2.6 billion on other illegal drugs (Table 11). Table 11 appears to show a substantial decrease in expenditures on illicit drugs between 1990 and 2000. Most of this change is attributable to inflation as reflected in the consumer price index. This decrease may not be apparent to chronic users, because illicit drug consumption is a predominant part of their market basket (illicit drugs are not part of the market basket used to compute the CPI), while the nominal price of

heroin and cocaine have fallen or remained about the same since 1988, and the price of marijuana has fallen since 1992. On the other hand, these decreased expenditures may have very real consequences for dealers, who probably have market baskets that are much more like that of typical American consumers.

Table 10 - Other Drugs: Total Yearly Users (thousands) and Expenditures ($ in billions, 2000 dollar equivalents), 1988-1999

Drug Used	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number of Users													
Inhalants	2,441	2,327	2,212	2,379	1,889	1,940	2,213	2,308	2,427	2,329	2,009	2,009	2,009
Hallucinogens	3,200	2,775	2,350	2,562	2,530	2,479	2,725	3,416	3,602	4,063	3,565	3,565	3,565
Stimulants	2,698	3,009	2,319	2,010	1,478	1,774	1,419	1,656	1,896	1,687	1,489	1,489	1,489
Sedatives	1,376	1,184	991	946	702	702	736	666	678	638	522	522	522
Tranquilizers	4,124	3,250	2,376	3,143	2,380	2,380	2,405	2,210	2,430	2,122	522	522	522
Analgesics	5,342	5,164	4,986	5,063	4,560	4,560	4,247	4,102	4,510	4,210	4,070	4,070	4,070
Expenditures	**$3.3**	**$2.8**	**$2.2**	**$2.3**	**$1.5**	**$1.5**	**$2.6**	**$2.7**	**$2.7**	**$2.5**	**$2.3**	**$2.3**	**$2.3**

Estimates for 2000 are projections

Source: NHSDA 1988, 1990 through 1999

Table 11 - Total Expenditures on Illicit Drugs, 1989-2000 ($ in billions, 2000 dollar equivalents)

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Cocaine	107.0	88.4	69.9	57.1	49.9	45.0	42.8	40.0	39.2	34.7	34.9	35.6	35.3
Heroin	26.1	24.3	22.5	20.3	17.2	13.8	13.2	13.2	12.8	11.4	11.1	10.1	10.0
Methamp	5.9	5.8	5.7	3.7	4.8	5.1	7.6	9.2	10.1	9.3	8.0	5.8	5.4
Marijuana	12.1	11.0	15.0	14.0	14.6	12.0	12.2	10.2	9.5	10.5	10.8	10.6	10.5
Other Drugs	3.3	2.8	2.2	2.3	1.5	1.5	2.6	2.7	2.7	2.5	2.3	2.6	2.4
Total	154.3	132.3	115.4	97.3	88.0	77.5	78.4	75.2	74.3	68.4	67.2	64.6	63.7

Columns may not add due to rounding error. Estimates for 2000 are projections
Sources: Tables 3 through 9