

Chapter 2: Estimate of Heroin Availability in the United States

The Heroin Availability Working Group (WG) has concluded that US heroin consumption in 2001 was between 13 and 18 metric tons of pure heroin, based on two heroin demand studies: the Abt Associates estimate of 13 metric tons and the intelligence-based Global Heroin Threat Assessment estimate of 18 metric tons. The WG used these consumption-based estimates because we concluded that it is not possible to create a credible supply-based estimate of the amount of heroin available for US consumption without substantial additional data collection. While the WG was able to create supply-based estimates which *appeared* reasonable, the estimates were based on data sources which contradicted each other—raising questions about the estimates’ reliability. Accordingly, the WG recommends the following five actions:

- **Use more easily measurable statistics than the amount of heroin available for consumption as indicators of counternarcotics success.** For example, data from the Drug Abuse Warning Network (DAWN), the National Household Survey on Drug Abuse, the Monitoring the Future (MTF) survey, the Arrestee Drug Abuse Monitoring (ADAM) program, the Parent’s Resource Institute for Drug Education (PRIDE) survey, and DEA data on price and purity could be used, in combination, to judge performance effectiveness. Wherever possible, the WG believes it would be appropriate to expand the coverage of the sample data collected by these programs.
- **Create or improve estimates of the number of chronic and casual heroin users in each state or section of the country. This effort should include categorizing heroin users by method of administration (i.e., injecting, smoking, and snorting), dosage size, frequency of use, and type of heroin consumed (i.e., black tar or white powder).** Such improvements would be neither easy nor cheap, but would be essential to constructing valid consumption estimates, if such estimates are deemed useful for purposes beyond their use as performance measures. The WG believes such estimates would be useful because the USG lacks much basic information, including the numbers of users in the eastern and western US, the quantities used by powder vs. black tar users, the numbers who snort vs. inject, etc. A program for achieving these improvements should be carried out by an organization like the Substance Abuse Mental Health Services Administration (SAMSHA), rather than law enforcement or intelligence organizations. Such a program probably would require a minimum of two years and a budget on the order of SAMSHA’s National Household Survey on Drug Abuse (NHSDA).
- **Agencies responsible for publishing statistics on heroin production, interdiction, and domestic availability should examine their methodologies to determine if improvements or changes are needed to resolve any inconsistencies and make the data more useful to policymakers.** At present, there is a glaring inconsistency in comparing the leading producers of US-bound heroin based on production statistics with the leading heroin source countries based on seizure and availability statistics. This inconsistency precludes creation, at this time, of any credible supply-based estimate of US heroin consumption.
- **Undertake an effort to measure the heroin laboratory processing efficiencies in important producing countries.** Opium yield studies provide a crucial first step in estimating a country’s heroin production based on its opium poppy cultivation, but it is also necessary to estimate the processing efficiencies of the country’s heroin labs to estimate heroin production as accurately as possible.

- **The working group recommends that enhanced staffing and resources be provided to the DEA Special Testing and Research Laboratory to pursue proven scientific methodologies—such as isotopic-ratio analysis—that will provide the means to confirm the geographical origin of heroin with an extremely high confidence rate.**

Implementation of these five recommendations would not only make it possible to derive supply-based estimates of heroin consumption, but also would improve the accuracy and coverage of the data.

Overview of the Heroin Availability Study

The Heroin Availability Working Group (WG) has concluded that heroin available for US consumption in 2001 was between 13 and 18 metric tons of pure heroin. This conclusion is based on the two best heroin consumption studies currently available: the Abt Associates⁶ estimate of 13 metric tons and the Global Heroin Threat Assessment estimate of 18 metric tons.⁷

The direction given to the WG was to create an estimate of the amount of heroin available for US consumption based on information about the worldwide supply of heroin. However, we were forced to conclude that it is not currently possible with the available data. While the WG was able to create overall heroin supply estimates that *appeared* reasonable in the aggregate, the estimates were based on data sources which contradicted each other for particular source countries. Given the conflict between the various heroin supply estimates, the WG has examined the two most important consumption estimates—those created by Abt Associates and by the interagency committee for the Global Heroin Threat Assessment—and concluded that we could not improve upon those estimates.

A supply-based estimate of US heroin consumption by definition must use as a starting point estimates for Colombian and Mexican heroin production because those countries supply the bulk of our heroin. The only reliable production estimates are the imagery-based crop surveys conducted by CIA's Crime and Narcotics Center (CNC). The WG's approach was to first assume that all Mexican and Colombian heroin production was destined for the US.⁸ The next step was to use an estimated ratio of Latin American-to-Asian heroin in the US to scale that up to an overall estimate of heroin in the US. Depending on whether the ratio used is based on the DEA Heroin Signature Program or US Customs seizure data, the estimate this procedure yields is 13 – 15 metric tons.

The 13 – 15 metric ton range calculated with the supply-based estimate is not inconsistent with the Abt Associates consumption estimate for 2000 (13.3 MT), but there are irreconcilable problems with the data. Specifically, the ratio of Mexican-to-Colombian heroin is severely inconsistent between the two main components necessary for estimating availability:

(1) CNC production estimates indicate that Mexico produced much more heroin than Colombia in most recent years;

(2) DEA Heroin Signature Program & US Customs seizure data show the opposite.

⁶ Abt Associates, Inc., *What America's Users Spend on Illegal Drugs*, US GPO, December 2001.

⁷ *Global Heroin Threat to the United States*, CNC, July 2000.

⁸ This assumption is not 100% true but the errors caused by using it are small compared to the other uncertainties in the data.

The WG is not able to resolve the inconsistency at this time, concluding that a reliable heroin availability estimate based on this supply approach is impossible to create with the data available. Absent other data on heroin production or movements, any other supply-based approach would also contain the same inconsistencies.

The WG evaluated the consumption-based estimates by Abt Associates and the interagency estimates from the Global Heroin Threat Assessment and concluded that we could not improve upon that work in just a few months. Both of these are the result of serious, long-term efforts, which struggled to create complicated estimates with inadequate data and extensive assumptions. We determined that our estimate would have to be a range. Using the most recent estimates from these two sources, US heroin consumption in 2001 is estimated at 13 to 18 metric tons.

Nonetheless, estimates of total US heroin consumption are probably an ineffective tool for measuring year-to-year changes in counterdrug performance effectiveness. The WG believes, for example, that it is unlikely that a consumption estimate for 2002 will change significantly from 2001's estimate. The best numbers available are the Global Heroin Threat Assessment estimate (for 1999) and the Abt Associates estimate (for 2000). The statistics that form the basis for these estimates are not likely to change significantly from year to year.

The Heroin Availability WG has five recommendations for future responses to the difficulties of measuring US heroin consumption; these will be detailed in the next section of this report.

The remaining sections of this report will describe various heroin-related statistics produced by the US government and describe the inconsistencies between them. The following statistics provide some indication of the proportions of heroin in the US from the different source areas (Mexico, Colombia, SW Asia, and SE Asia):

- (1) Opium Poppy Cultivation and Heroin Production Estimates (CNC);
- (2) Treasury Enforcement Communications System Drug Seizure Data (USCS); and
- (3) Heroin Signature Program (DEA).

Also relevant to the proportions of heroin from different source areas is the proportion of users east and west of the Mississippi. Those in the eastern US are generally considered to use higher purity powder heroin (primarily Colombian); those in the west are considered to use mainly Mexican black tar heroin. The proportions of users for each type provide an indication of how much is used from each source area. Specifically, an inconsistency exists if most of the heroin is thought to be in the West, but most of the users are thought to be in the East. Considerable evidence suggests that the greatest numbers of heroin users are located in the densely populated urban centers of the northeastern United States, a drug market dominated by South American heroin. At this time, however, there are no official regional estimates of heroin users. The report will describe a statistic that combines the DAWN emergency room admissions with the Domestic Monitor Program (DMP) results. This combined DAWN-DMP statistic serves as a proxy for estimating the proportion and heroin preference of heroin users in the eastern and western US.

After describing the statistics and inconsistencies relevant to a supply-based estimate of heroin available for consumption, the final section of this report will describe the two consumption estimate models that form the basis for the WG's estimate.

Recommendations

The Heroin Availability WG has five recommendations for future responses to the difficulties of assessing the US heroin situation.

- 1) **Consider using more easily measurable statistics than availability and consumption as indicators of counter-narcotics success.** Availability and consumption are among the most difficult counter-narcotics statistics to estimate accurately. If the object of these drug availability studies is to provide a measure of performance effectiveness, then statistics other than availability or consumption may be more reliable and more useful. There is no direct way to estimate a nation's narcotics consumption; it can only be estimated by first estimating many of the following statistics: chronic and casual user population sizes, dosages, purities, the amount of money spent on drugs, the percentage of drugs obtained by non-cash transactions, etc. Each of these estimates has its own sources of error and this error is compounded when the estimates are put together to create a consumption estimate.

If knowing US drug availability is important for its own sake, then it would make sense to invest additional resources in creating a program to estimate it. If the main purpose is to use it as a measure of counter-narcotics effectiveness, however, the WG recommends using several data sources which cover a wide range of narcotics issues. These indicators include:

- DAWN (SAMHSA);
- NHSDA (SAMHSA);
- MTF (National Institute on Drug Abuse [NIDA]);
- ADAM Program (National Institute of Justice);
- PRIDE Survey;
- DEA data on heroin price and purity.

- 2) **If a nationwide consumption estimate has intrinsic value beyond its use in measuring effectiveness, a program should be created to annually estimate at least the number of chronic and casual users in each section of the country.** The Working Group believes a nationwide consumption estimate has considerable value in its own right and strongly recommends its creation.

There is much basic information that the US government does not have on our heroin user population. These information gaps include:

- The number of users in the eastern US (primarily powder) vs. the number in the western US (primarily black tar);
- The quantities used by powder and black tar users (we don't even know if the quantities are the same or different);
- The number of users by method of use (injection, smoking, or snorting).

A program to measure these will be neither easy nor cheap, but it is essential to constructing valid consumption estimates. This will require a program with innovative approaches to measuring the number of users; cobbling together pre-existing statistics is not sufficient to solve this difficult problem. Moreover, estimating the numbers of chronic and casual users would be the minimum solution. Ideally,

the program would estimate the numbers of more precisely-defined categories of users; i.e., categorizing heroin users by method (injection, smoking, or snorting) and by frequency of use or dosage.

Creating such a program would have to be done by an organization like the SAMHSA; this is not in the purview of law enforcement or intelligence organizations. To be done properly, this effort would require a minimum of two years before estimates could be published and an annual budget on the order of that for SAMSHA's NHSDA.

- 3) **The agencies responsible for publishing statistics on heroin should examine their programs to determine if those statistics need improvements or changes to make them more useful to policymakers.** Specifically, the agencies publishing statistics that appear to be contradicted by other agencies' figures should make an attempt to explain and resolve the inconsistencies discussed in this report.
- 4) **Undertake an effort to measure the heroin laboratory processing efficiencies in important producing countries.** Opium yield studies provide a crucial first step in estimating a country's heroin production based on its opium poppy cultivation, but it is also necessary to estimate the processing efficiencies of the country's heroin labs to estimate heroin production as accurately as possible.
- 5) **The working group recommends that enhanced staffing and resources be provided to the DEA Special Testing and Research Laboratory to pursue proven scientific methodologies—such as isotopic-ratio analysis—that will provide the means to confirm the geographical origin of heroin with an extremely high confidence rate.** Isotopic ratio analysis is based on the fact that unique ratios of carbon and nitrogen isotopes exist in coca and opium poppy plants for different local regions. These differences are retained in the finished cocaine or heroin and, therefore, can provide a “chemical fingerprint” to geo-source cocaine or heroin seized anywhere in the world. (Current signature programs are designed to identify manufacturing processes, taking advantage of source area differences in infrastructure and processing expertise. Consequently, a Colombian “cook” processing Mexican opium in Mexico might not produce heroin with clearly Mexican signature.)

CNC Production Estimates as an Indicator of Source Areas

Heroin is smuggled to the United States from all four of the major source areas: Mexico, Colombia, Southeast Asia (SEA), and Southwest Asia (SWA). Each of these source areas has dominated the US heroin market at various points over the last three decades. Currently, heroin from Colombia and Mexico dominates the US market. Although the US receives some heroin from SEA and SWA, most of the heroin from their regions goes to other world markets.

Integral to reporting on heroin sources of supply are cultivation and heroin production estimates created by CIA's CNC. CNC's imagery-based sample surveys of the opium poppy crops provide the foundation for the US Government's heroin production estimates. In the case of Colombia, CNC's estimate of the number of hectares under cultivation is used with DEA's estimate of the amount of heroin produced from a hectare of Colombian poppy. In the Mexican case, CNC is currently conducting an Opium Yield Survey to measure for the first time the amount of opium gum that can be harvested from a hectare of Mexican poppy. The ongoing bi-national Opium Yield Survey has improved the reliability of Mexico's heroin production estimate.

In all of the CNC crop surveys, growing areas are defined using all-source intelligence. A random sample of each area is taken using classified satellite imagery. The area of the narcotics crop is identified and measured in the sample; this sample area is then scaled up to the entire growing area. The cultivation estimates in hectares are then converted to metric tons of pure heroin using the conversion factors. These estimates are potential production estimates; that is, the estimated production if all of the poppy crop were converted to heroin.

The CNC estimates for potential heroin production (metric tons of 100% pure heroin) for the last three years are:

Table 2 - 1 Potential Heroin Production in Latin America

	1999		2000		2001	
	MT	Percent	MT	Percent	MT	Percent
Mexico	6	65%	3	48%	7	62%
Colombia	3.3	35%	3.2	52%	4.3	38%
Total Latin America	9.3	100%	6.2	100%	11.3	100%

*Cloud cover precluded an estimate in 2000; the 3.2 MT is a weighted average of previous years' production.

Other poppy cultivation in South America: Small fields of opium poppy cultivation have been seen in other South American countries, most notably in Venezuela along its northern border with Colombia and in Peru within its northern mountainous regions. Effective and sustained eradication in Venezuela has kept cultivation under 50 hectares. Although opium poppy cultivation has increased recently in Peru, the Peruvian government eradicated almost 100 hectares in 2001 and has tasked its Interior Ministry with identifying and eradicating future cultivation. Although Peruvian authorities seized a morphine processing laboratory in Peru in June 2000, there is no indication of heroin production in Peru to date. DEA reporting to date indicates that heroin violators who control both the cultivation and processing of heroin in South America are almost exclusively Colombian nationals. Heroin related activity in South America, but outside of Colombia, is limited to small opium poppy cultivation, opium latex collection and transportation of heroin.

Asian Heroin

Although Latin America is the primary source for heroin entering the United States, Southeast and Southwest Asia remain the world's largest source of opium and heroin production. Despite the fact that the Asian opium crop was down 77 percent in 2001 (the lowest levels since estimates began in the mid-1980's), total opium production totaled 1,165 metric tons with the potential to manufacture some 98 metric tons of heroin. The Taliban's poppy ban removed Afghanistan from its status as the world leader in opium production, a position it had held since 1998. Opium production from Afghanistan dropped from over 3500 metric tons in 2000 to about 74 metric tons in 2001. The recent regime change in Afghanistan, however, will likely lead to a rebound in opium production in 2002. In Southeast Asia, Burma remains the largest producer of opium, producing an estimated 865 metric tons in 2001, down 220 metric tons from the previous year's crop of 1085 metric tons. Production in neighboring Laos reached an estimated 200 metric tons in 2001.

Opium production figures for Asia underscore the continued importance of this region as a global source of opium and heroin production. Although Latin America now produces the majority of the heroin destined for the United States, Asian production could satisfy US demand for heroin should the Latin American supply suffer a significant disruption. The market for US heroin has gone through many

cycles, with Southwest Asian heroin dominating the market in the 1960's and early '70's, then Southeast Asian heroin in the '80's and mid-1990's. While Latin American heroin currently dominates the US market, the majority of the world's opium and heroin production remains in Asia. Should a disruption through either enforcement or weather occur in Latin production, the Asian market would be able to fill much of the US demand as it did in the past.

DEA Heroin Signature Program as an Indicator of Source Areas

DEA's Heroin Signature Program (HSP) provides the best available and only scientifically-based estimate of the source areas of heroin encountered in the U.S. drug market. Initiated in 1977, heroin signature analysis is based on an exhaustive chemical profile of authentic samples acquired from each of the four major heroin source areas: Mexico, South America (Colombia), Southeast Asia (principally Burma) and Southwest Asia - Middle East (principally Afghanistan).

The DEA Intelligence Division's HSP looks at the wholesale side of the domestic heroin trafficking situation. Included in the program are samples drawn from seizures at ports-of-entry – these provide insight into the routes and methods used to smuggle heroin into the country. Randomly selected seizures and purchases throughout the United States also are sampled. They provide a glimpse into wholesale distribution patterns within the country.

To understand how the HSP works, it is essential to understand that heroin source area identification is principally a heroin manufacturing process identification. Producers in the major heroin source regions use processing techniques that differ significantly because of differences in infrastructure and expertise. The program is continually validated by associating source country authentic samples and intelligence reporting with the results of chemical analysis.

Heroin signature analysis is conducted at DEA's Special Testing and Research Laboratory (STRL). The DEA Intelligence Division uses the data derived from heroin signature analysis done at STRL on domestic heroin samples, to populate two trafficking indicator programs – the HSP and Domestic Monitor Program (DMP) – developed to detect trends in heroin source area. These programs differ in their sampling methods and the insights into the heroin market that they provide. (The DMP is discussed in more detail later.) In both programs samples are subjected to in-depth chemical analysis to determine, among other things, the geographic source area of the heroin. A description of HSP and DMP data analyzed for this study follows.

Each year, through the HSP, an in-depth chemical analysis is performed on an average of 600 to 900 samples taken from heroin seizures and purchases made in the United States. As a result of the chemical analysis, DEA chemists are able to associate the heroin samples with a heroin production process, or signature, which is indicative of a particular geographic source area. The resulting proportions for each source area are measured in terms of the net weight of heroin seized and analyzed in the program. HSP 2000 results indicate that 59 percent of the sampled heroin was from South American (SA) sources of supply, while 17 percent was from Mexico, and 8 percent and 16 percent were from Southeast Asia and Southwest Asia, respectively⁹.

⁹ It is important to note that, because HSP results are based on seizure data, fluctuations from year to year in the proportion from each source area may reflect shifting drug law enforcement priorities and significant seizures, as well as changing smuggling patterns. In addition, large seizures of heroin from one source area may boost that source area's representation in the HSP. Therefore, the HSP results may or may not be representative of the actual amount of heroin available in the United States from each source area.

Table 2 - 2 HSP - Heroin Source Area Identification (in percent)

	1999	2000
South America	60%	59%
Mexico	24%	17%
Latin America	84%	76%
Southeast Asia	10%	8%
Southwest Asia	6%	16%
Asia	16%	24%

Note: 2001 HSP data are not yet available.

HSP samples and independent investigative intelligence indicate that the majority of the heroin in the United States is powder, primarily from South America, and a lesser amount is Mexican-source heroin. Since 1994, data from DEA's HSP has identified South America, primarily Colombia, as the major source area for high-purity powder heroin destined for the principal eastern U.S. drug market. In large measure, Colombian heroin has displaced white heroin from SEA and SWA sources.

USCS Seizures as an Indicator of Source Areas

The Working Group used US Customs Service heroin seizure data to estimate the proportions of Latin American heroin versus Asian heroin seized.¹⁰ To accomplish this, we aggregated USCS seizures into four categories based on the origin of the conveyance: Mexican, Colombian, Southeast Asian, and Southwest Asian. Placing the seizures into these four categories by origin is far from perfect since some Colombian heroin may pass through Mexico, for example, but it should provide a rough idea of the proportions of heroin from each region of the world.¹¹

The seizures are aggregated by weight into these categories based on the geographic origin of the passenger or conveyance:

Table 2- 3 – Categorization of Conveyance Origins

Category	Geographic Origin of Conveyance*
Mexico	Mexico only
Colombia	All other (non-Mexican) Latin America and the Caribbean
Southeast Asia	SE Asia, Bangladesh, East Asia, Australia and Oceania
Southwest Asia	SW Asia, South Asia, Middle East, FSU, Europe and Africa

¹⁰ The WG's interpretation of USCS data is not necessarily the same interpretation that US Customs would use. For example, our interpretation of the USCS data assumes that all heroin seized coming out of Mexico was produced in Mexico and that all heroin seized from Caribbean conveyances was produced in Colombia. Clearly, this is not 100 percent true and the USCS would not make any such claim. For our analytic purposes, however, these assumptions are close enough to reality to give us a rough measure (which does not rely on chemical testing) of the sources of heroin entering the US.

¹¹ As with the HSP, seizures may or may not be representative of all heroin in the United States since the proportion seized from each source area may reflect shifting law enforcement priorities as well as changing trafficking patterns.

*Seizures of unknown origin and from Canada are excluded.

This analysis of USCS seizure data gives us the following percentages for each source area:

Table 2-4 – Percentage of Geographic Origins of Conynances where Heroin was Seized by USCS

	1999	2000	2001
South America	56%	59%	75%
Mexico	22%	16%	14%
Latin America	78%	75%	89%
Southeast Asia	1%	3%	3%
Southwest Asia	21%	22%	8%
Asia	22%	25%	11%

DAWN and DMP Data Combined as a Measure of Heroin User Location

As discussed in the Overview, one of the inconsistencies hampering the supply-based estimate of heroin available for US consumption is that one set of statistics could be interpreted as implying that most of the heroin is destined for the western US while another set indicates that most of the users are in the eastern US. Specifically, in 2001, USG sources estimated that only 4.3 of the 11.3 metric tons of Latin America-source heroin was produced in Colombia. A question naturally arises as to the ability of Colombian heroin (38 percent of Latin American production) to adequately supply the major white powder market east of the Mississippi River.

The purpose of this section is to describe analyses that combine DAWN and DMP data to create approximate measures of:

- 1) the split of heroin users between the eastern and western US; and
- 2) the proportion of users who use heroin from each of the four major source areas.

This section will start with descriptions of the individual DMP and DAWN programs and conclude with a description of the statistic created by combining information from them.

Domestic Monitor Program – Data Description

The DMP is a heroin purchase program designed to provide trend data on the purity, price, and origin of retail-level heroin available in the open-air drug markets in 23 major metropolitan areas of the United States. Each quarter, DEA provides funding for the undercover purchase of retail-level heroin in the same 23 metropolitan areas. Each heroin purchase subsequently undergoes chemical analysis to determine the purity and, if possible, the geographic source area of the heroin. Particular attention is paid to the DMP results for New York City because it is the nation’s largest heroin market, and also because much of the heroin available in other east coast cities is obtained in New York.

The DMP was initiated in DEA's New York Field Division in 1979, and now includes one city in every DEA field division. Baltimore was included as a DMP participant in early 1995, Orlando in late 1996, and El Paso in mid-1999.

Since its inception, the DMP has proven to be a valuable indicator for detecting trends in retail-level heroin trafficking in each of the 23 cities where the program exists. For example, in the early to mid-1980s, the DMP documented the increasing availability of Southeast Asian heroin at the retail level in a number of U.S. cities. More recently, data from the DMP have revealed significant increases in the amount of South American heroin available at the retail level, particularly in the metropolitan areas of the northeastern United States.

Intelligence gained from the DMP indicates that there are two distinct retail heroin markets in the United States. On the East Coast -- particularly in the Northeast where the largest U.S. heroin user population is located -- South American heroin dominates the market. Colombian traffickers clearly targeted this lucrative market for white powder heroin (once dominated by heroin from Southwest Asia and through the mid-1990s from Southeast Asia) by offering high purity heroin at low prices. West of the Mississippi, the market continues to be dominated by Mexican black tar heroin and, to a lesser extent, brown heroin.

NOTE: The DMP is not a probability sample and was never designed to provide a nationwide estimate of the source areas for heroin; the program exists to provide a good profile over time of each of the 23 local heroin markets. The number of heroin purchases made by each of the DEA field divisions is predefined by the guidelines of the DMP program in order to assure sufficient numbers of samples for trend analysis. All DMP program sites are required to make 10 retail purchases per quarter regardless of the local user population; only New York makes 20 purchases per quarter. Because the number of samples is preset, the simple number of samples alone describes the local situation only. (In New York, for example, South American heroin is predominant, while Mexican heroin dominates the Phoenix heroin market.) Moreover, because a greater number of DEA field divisions are located west of the Mississippi, a simple total of the number of DMP samples from each source area will result in an over-representation of western heroin.

An examination of the proportion of heroin purchases identified by source areas, however, does provide insight into the source of heroin sold locally in the various metropolitan centers. These heroin source area proportions will be applied to the number of heroin users who sought emergency medical treatment (as contained in DAWN ER data) in order to construct a model apportioning the number of users who ingested South American heroin, for example, compared to the number using Mexican heroin.

DAWN – Data Description

The DAWN is a large-scale data collection system implemented in 1972 and designed to be an indicator of the severity, scope, and nature of the nation's substance abuse problem. Emergency department trends from DAWN provide data on the incidence of drug abuse related episodes from participating hospital emergency rooms (ER) for the coterminous United States and for 21 metropolitan areas. Moreover DAWN Medical Examiner (ME) data report drug-induced and drug-related deaths across the United States. DAWN ME data do not represent the nation as a whole, rather, they reflect the number of drug abuse deaths identified and reported by participating examiners and coroners in selected metropolitan areas. Nonetheless, these data can be used to monitor changes over time. DAWN is managed by SAMHSA.

DAWN and DMP Data Combined as a Measure of Heroin User Location

The WG analyzed DAWN heroin-related ER and ME data to describe where U.S. heroin users are located and assumed that the data roughly represent the number of heroin users in selected metropolitan areas. The number of DAWN heroin-related ER mentions will be used to represent the user population in the DAWN ER/DMP heroin user profile model described below.

DAWN ER and DMP Heroin User Concept Model

Background: The WG, seeking additional insight regarding U.S. heroin users, looked beyond the usual applications of the two national data sets described above.¹² The combined DAWN ER/DMP heroin user concept model developed for this heroin availability report classifies the number of heroin users in selected cities who required emergency room treatment according to the proportion of local street purchases identified by heroin source area. The DAWN ER/DMP heroin user model will provide insight into several aspects of the U.S. heroin market:

- the proportion of the user population that can be assumed to use Mexican heroin;
- the proportion of the user population that may be assumed to use powder heroin; and
- the consistency of those proportions with our understanding of the current situation.

Methodology: The DAWN ER/DMP heroin user concept model provides insight into the relative magnitude and location of U.S. heroin users, as well as the proportion of those addicts who use Mexican heroin (primarily the black tar form of heroin) compared to non-Mexican (SA/SEA/SWA) powder heroin. The model quantifies the number of heroin users in a particular geographic location using data from SAMHSA's DAWN and the source of their heroin using data derived from DEA's DMP. The DAWN and DMP are two of the primary indicator programs that assess U.S. heroin abuse and trafficking trends; each of the data sets collects long term heroin-related trends in major metropolitan centers.

NOTE: The distribution of heroin users in the DMP and DAWN reporting cities may or may not be the same as the distribution in the United States as a whole. Nevertheless, the WG believes this provides a rough approximation of the proportion of Mexican heroin users versus all other heroin users as well as a general approximation of the proportions of users in various geographic locations.

The heroin user concept model only includes metropolitan centers that participate in both the DMP and DAWN systems. The model uses the number of heroin-related emergency room mentions for metropolitan centers that participate in DAWN to get a snapshot of where heroin users are located and uses DMP to estimate the source of heroin they use.¹³

Example: The following is an explanation of the methodology used in Attachments 1 and 2 to aggregate users admitted to ER's by the source area of their city's heroin. In Atlanta, for example, a total of 21 DMP purchases were made in 1999, of which 18 were identified by heroin source area, and 3 were not. Of the 18 classified samples, 50 percent were identified as Southeast Asian; 5 percent were Southwest Asian; 39 percent were South American, and 5 percent were Mexican source heroin. These heroin source

¹² After conducting this research, the Working Group later discovered that Abt Associates had performed similar calculations for the same purpose.

¹³ Time constraints allowed only a comparison of 1999 and 2000 DMP and DAWN data; please refer to Attachments 1 and 2 -- DAWN ER / DMP Heroin User Concept Model -- for detailed data.

area percentages were then multiplied by the number of heroin-related emergency room visits to divide up Atlanta heroin users who visited ER's by the probable source of their heroin. DAWN reported a total of 415 ER heroin-related mentions in 1999. Using the DMP source area percentages, ER mentions in Atlanta are apportioned as follows:

Total DAWN heroin-related mentions in Atlanta:	415
Southeast Asian Heroin = 50%:	208
Southwest Asian Heroin = 5%:	23
South American Heroin = 39%:	161
Mexican Heroin = 5%	23

The ER mentions thus aggregated by probable heroin source area were then sub-totaled and divided by total metropolitan ER mentions to yield the percentage of heroin mentions identified as to source area. In 1999, for example, 12,440, or 22 percent of the 56,169 total ER mentions, were apportioned to Mexican heroin users.

The following chart summarizes the heroin source area percentages derived from the combined DAWN ER and DMP Heroin User Concept Model.

Table 2 - 5 Heroin Source Area Identification (in percent)

	1999	2000
South America	69%	72%
Mexico	22%	20%
Latin America	91%	92%
Southeast Asia	7%	1%
Southwest Asia	2%	7%
Asia	9%	8%

CNC Production Estimates – Comparison with Other Data

The CNC production estimates for Colombia and Mexico in 2001 are 4.3 and 7 metric tons of pure heroin, respectively. These figures, which indicate that nearly two-thirds of Latin American heroin is from Mexico, are in conflict with other statistics which the WG has examined, including the HSP and the WG's analysis of USCS seizures. The HSP, for example, sources 17% of US heroin to Mexico and 59% to South America (primarily Colombia) in 2000. The WG's analysis of USCS seizures in the same year sources 16% to Mexico and 59% to Colombia. This inconsistency is predicated on the assumption that virtually all Latin American heroin goes to the US market.

The magnitude of the inconsistency between the CNC production estimates for Mexican and Colombian heroin and the statistics from the HSP and the USCS seizures would require unreasonable assumptions to reconcile (e.g., CNC's satellite imagery has missed 50 percent of the growing area in Colombia, or the preliminary results of the Opium Yield Survey in Mexico are overstated by a factor of at least two). The likelihood of such assumptions being valid seems remote, and under reasonable ranges of error in the estimating process the inconsistency remains. Thus, there must be other factors responsible for the inconsistency in these data sets. What these factors are is a matter of considerable speculation. It is important to note that, because HSP and USCS figures are based on seizure data, fluctuations from year

to year in the proportion from each source area may reflect shifting drug law enforcement priorities, relative seizure rates, as well as changing smuggling patterns. In addition, large seizures of heroin from one source area may boost that source area's representation in seizure data.

The inconsistency between the production figures and the HSP data came to light only within the last few months. The recently-released production numbers are the first such estimates produced after the completion of Operation Breakthrough in Colombia and the Opium Yield Survey in Mexico. (Because of the difficulties of conducting scientific surveys in these dangerous growing areas, past production estimates have used studies that were dated or from other parts of the world.) The previous production estimates were not sufficiently different from the HSP data to reveal any inconsistencies.

In Colombia, Operation Breakthrough revealed that only two opium poppy crops are grown annually in all but one growing region rather than the three crops previously assumed. Moreover, Operation Breakthrough's opiate laboratory efficiency study has greatly increased the accuracy of the conversion factor that converts Colombian opium poppy estimates into Colombian heroin estimates.

In Mexico, by contrast, a number of variables remain unknown, including the forms of opium used to process various types of Mexican heroin, the amounts of opium required to produce one kilogram of heroin, and the overall efficiency of the conversion process. The Opium Yield Survey numbers for Mexico improved greatly in 2001 as a result of a scientific Mexico/US bi-national survey; the updated preliminary figures raise previously published production data between 33 and 50 percent.

Undertaking a study of Mexican opiate laboratory efficiency is a recommendation of this Working Group. It is possible that a laboratory efficiency study of Mexican heroin production may account for some of the inconsistency between the Mexican and Colombian heroin production estimates. Mexican heroin processors are generally thought to use a processing technique that is less sophisticated than the Colombians, and it is, therefore, possible that the actual processing ratio for Mexico could be different than the presumed ten to one conversion ratio. However, the actual ratio cannot be determined unless an opium laboratory efficiency study is undertaken for Mexico.

Background on Operation Breakthrough

The DEA Operation Breakthrough heroin program for Colombia determined that farmers in all but one of Colombia's opium poppy growing areas cultivate two crops per year. Previous US Government estimates—based on the best but limited information available—assumed Colombian farmers cultivated three opium poppy crops per year. Likewise, Operation Breakthrough estimated that Colombian opiate processors are about 67 percent efficient in the overall process of converting opium latex into heroin. In other words, the typical Colombian heroin processor requires 24 kilograms of opium latex to produce one kilogram of 100 percent pure heroin.

With approximately 6,540 hectares of opium poppy under cultivation in 2001, Colombia potentially produced 104 metric tons of opium latex. At a 24:1 opium latex to heroin conversion ratio, Colombia potentially produced 4.3 metric tons of 100 percent pure heroin in 2001. Wholesale-level Colombian heroin seized by the U.S. Customs Service in 2001 had an average purity of 84.5%. Accordingly, 4.3 metric tons of 100 percent pure heroin would translate into some 5.1 metric tons of "export quality" heroin.

Comparison of USCS and HSP Data

The following chart shows that USCS and HSP percentages are very similar for Colombian and Mexican heroin. HSP figures are available for 1999 and 2000 and USCS figures for 1999, 2000, and 2001. The USCS and HSP figures both indicate that Colombian heroin represents the majority of heroin supplied by Latin America. These figures are not consistent with the CNC production estimates for Colombia and Mexico, which indicate that there is much more Mexican heroin produced than Colombian heroin.

Table 2 - 6 Heroin Source Area Identification (in percent)

	1999		2000		2001
	USCS	HSP	USCS	HSP	USCS
South America	56%	60%	59%	59%	75%
Mexico	22%	24%	16%	17%	14%
<i>Latin America</i>	78%	84%	75%	76%	89%
Southeast Asia	1%	10%	3%	8%	3%
Southwest Asia	21%	6%	22%	16%	8%
<i>Asia</i>	22%	16%	25%	24%	11%

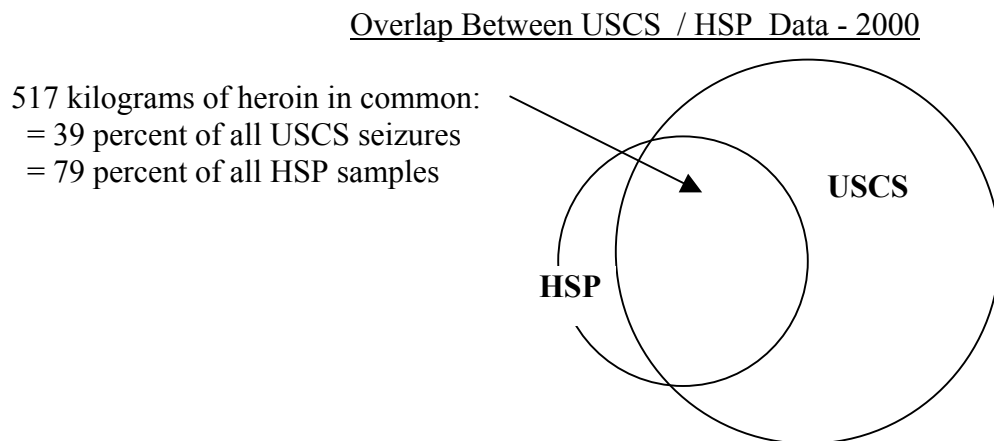
The breakout of USCS and HSP percents for Asian heroin between SWA and SEA are not as close, but this discrepancy can be explained to a certain extent by the smuggling patterns related to those seizures. For a number of years, West Africans have trafficked in both SWA and SEA heroin. Moreover, Bangkok-based Nigerian traffickers often purchase heroin in Pakistan and return to Thailand where their couriers depart from Bangkok to foreign drug markets. For these reasons, the point of origin of the seized shipment, which the Working Group used to identify the source of the heroin seized by USCS, can be misleading.

NOTE: It is important to note that USCS and HSP are independent to a large degree, but not entirely. Although the Working Group’s use of the USCS data does not rely on a chemical analysis of the heroin to source it, a portion of the heroin seized by the USCS is included in the heroin analyzed in the HSP. For example, in 2000, 517 kilograms of the USCS seizures were analyzed in the HSP—this amount represented 39 percent of all USCS heroin seizures and 79 percent of all the heroin analyzed in the Heroin Signature Program. (USCS seizures accounted for 67% of HSP samples by net weight in 1999.)

DAWN Data Combined with DMP – Comparison with Other Data

By combining heroin source area data derived from seizures (USCS, HSP and DMP) with data pertaining to the health consequences of heroin use (DAWN), the Working Group hoped to further illustrate the consistencies and inconsistencies between data sources. Strategic indicators (HSP and DMP) and investigative intelligence have long indicated the existence of two relatively distinct heroin markets in the United States: higher-purity powder heroin in the East and Mexican heroin, primarily black tar, in the West. Moreover, considerable evidence on the health consequences of drug use (DAWN ER and ME reporting) suggests that the greatest number of heroin users is located in the densely populated urban centers of the northeastern United States, where the heroin market is dominated by South American heroin.

Figure 2-1 - Overlap Between USCS/HSP Data - 2000



The following chart summarizes HSP, USCS and DAWN ER/DMP percentages. It breaks out the data by individual source area, i.e., Southeast Asia, Southwest Asia, South America (Colombia), and Mexico.

Table 2 - 7 Heroin Source Area by Region (in percent): 1999-2001

	1999			2000			2001
	USCS	HSP	DAWN ER/DMP	USCS	HSP	DAWN ER/DMP	USCS
South America	56	60	69	59	59	72	75
Mexico	22	24	22	16	17	20	14
Latin America	78	84	91	75	76	92	89
Southeast Asia	1	10	7	3	8	1	3
Southwest Asia	21	6	2	22	16	7	8
Asia	22	16	9	25	24	8	11

NOTE: The next chart further summarizes the data by the type of heroin (white powder vs. Mexican, primarily black tar). The emphasis on non-Mexican (white powder) vs. Mexican-source heroin not only reflects the significant differences between the eastern and the western U.S. heroin markets, but also clearly delineates the conflict between the several data sources examined elsewhere in this report regarding Latin America-source heroin. Despite considerable differences between estimates for the individual, non-Mexican heroin source area percentages (i.e., SEA, SWA, and SA), there is remarkable consonance in the summary data percentages based on the type of heroin.

Table 2 - 8 Heroin Source Area by Type (in percent): 1999-2000

Data Source	Non-Mexican/Powder vs. Mexican/Primarily Black Tar			
	Non-Mexican (SEA/SWA/SA) White Powder		Mexican Primarily Black Tar	
	1999	2000	1999	2000
USCS	78	84	22	16
HSP	76	83	24	17
DAWN ER/DMP	78	80	22	20

DAWN ME / ER Comparison

The Working Group also analyzed DAWN Medical Examiner reporting on heroin-related deaths for 1999 and 2000. The comparison of heroin-related ME and ER data by U.S. geographic region (i.e., East versus West) is detailed in Attachments 3 and 4. In general, the greatest number and percent of both deaths and emergency mentions¹⁴ for heroin occurred in the eastern United States. In 2000, for example, 65 percent of heroin-related deaths and 80 percent of emergency room mentions were reported in eastern metropolitan areas.

Table 2-9 - DAWN ME/ER Regional Comparison

Location	1999		2000	
	Deaths	ER Mentions	Deaths	ER Mentions
United States - Total	4,820	56,169	4,832	62,511
Eastern U.S. – Number	2,782	43,916	3,120	49,988
Eastern U.S. – Percent	58%	78%	65%	80%
Western U.S. – Number	2,038	12,253	1,712	12,523
Western U.S. – Percent	42%	22%	35%	20%

Of particular note was the significant proportion of heroin-related deaths and emergency room mentions reported in 1999 by DAWN cities in the West. The increases in these deaths and ER mentions parallel increases through the late 1990's in the purity of Mexican source heroin that dominates the drug market in the western United States. In Dallas, for example, 80 heroin-related deaths were reported in 1999, compared to 94 in 2000. The purity of Mexican heroin in this city rose from 7 percent in 1997 to 15.19 percent in 1999. Street-level heroin purity in Dallas declined to 14.81 percent in 2000.

As part of this analysis of DAWN ME and ER data, the predominant heroin source area was noted (in parentheses) for cities that also participate in the DEA DMP. The source area was derived from the percentage of retail heroin samples analyzed through the DMP that were classified as to source of origin. The DMP data demonstrate that South American heroin was the predominant type of heroin in urban centers east of the Mississippi River, while Mexican heroin dominated western heroin markets.

¹⁴ The emergency room mention numbers used in this table and cited attachment are limited to those cities included in the DAWN ER/DMP heroin user concept model.

Consumption Estimates

Abt Associates Estimates of Heroin Consumption. Since 1991, ONDCP has published a biennial report on expenditures by Americans on illegal drugs. The current version of What America's Users Spend on Illegal Drugs 1988-2000, December 2001, completed by Abt Associates, Inc., provides comparable estimates of heroin consumption by Americans for the years 1988 through 1999, and projects estimates for 2000. The Working Group believes that the Abt Associates' study, which discusses the assumptions and in most cases outlines the procedures used, is the best effort to date to determine the amount of heroin consumed by Americans in the last decade. It is certainly the better-documented estimate of the two that the WG is using.

Abt Associates admits that because of the quality of available data, there is considerable imprecision in estimates of the number of chronic and occasional users of drugs, the retail sales value of their drug purchases, and the amount of drugs they consume. That said, they also believe that the data are sufficiently reliable to conclude that the trade in heroin has increased over the last ten years. Much of the increase is attributable to an increase of availability and a reduction in price.

The best estimates reported as a result of the study are the following:

- In 1999, about 900,000 Americans were chronic heroin users and about 250,000 were occasional heroin users.
- The number of chronic heroin users had decreased, perhaps due to the AIDS epidemic and increased incarceration, but that decrease had largely abated by the latter part of the decade, perhaps because new users were attracted by the availability of high quality low cost heroin.
- In 2000, Americans spent about \$10B on heroin.
- During the latter part of the 1990's, Americans used close to 14 metric tons of heroin, which represents an increase over the amount used during the middle of the decade.

In order to determine the number of chronic drug users, Abt Associates used the Drug Use Forecasting (DUF) program. DUF is now the ADAM program, but the data used in the Abt study predate ADAM. DUF questions a sample of arrestees in 24 central city jails and lockups about their drug use. DUF also asks arrestees to voluntarily produce specimens for urinalysis. This confirms whether the interviewees have used any of up to 10 types of drugs during the two to three days before the interview. Urinalysis adds credence to estimates of drug use when self-reports are unreliable.

The occasional user was measured by using the NHSDA, the nation's most comprehensive survey of drug use. The NHSDA measures drug use among the American household population age 12 and older, as well as among people living in group quarters and in the homeless shelters. The NHSDA is not appropriate to measure chronic users because it misses those chronic drug users who, although not homeless, are too unstable to be considered as part of a household.

The results of their calculations is outlined in the following table:

Table 2 - 10 Estimated Number of Occasional and Chronic Users of Heroin (thousands), 1994-2000

	1994	1995	1996	1997	1998	1999	2000
Heroin Occasional	281	428	455	597	253	253	253
Heroin Chronic	932	923	910	904	901	898	898

The next step for the Abt study was to estimate how much Americans spend on heroin. The DUF data provided an estimate of how much chronic users spend on drug purchases per week. This requires an estimate of the prevailing retail prices for illicit substances. 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 tons units. The following chart compares the amount of heroin used by Americans from 1994 to 2000.

Table 2 - 11 Total Amount of Heroin Consumed, 1994-2000 (in metric tons)

	1994	1995	1996	1997	1998	1999	2000
Heroin	10.8	12.0	12.8	11.8	14.5	14.3	13.3

A copy of the complete Abt study, [What American's Users Spend on Illegal Drugs 1988-2000](http://whitehouse.gov/publications/drugfact/american_users_spend/), December 2001, can be found on the ONDCP web site. [http://whitehouse drug policy.gov/publications/drugfact/american_users_spend/](http://whitehouse.gov/publications/drugfact/american_users_spend/)

NDIC Estimate of Heroin Consumption

The National Drug Intelligence Center (NDIC) created an estimate of US heroin consumption for the Global Heroin Threat Assessment. NDIC used data from ethnographic, epidemiological, and law enforcement sources to formulate a consumption-based equation that yielded an estimate of 18.84 metric tons for domestic heroin consumption. The equation includes assumptions regarding the number of hardcore heroin users, daily usage frequencies, monthly usage frequencies, and dosage. NDIC's calculation was based on an estimate of 980,000 hardcore heroin users, a figure derived from a 1999 study sponsored by ONDCP. Usage frequency was determined to be twice daily and was based on information derived from interviews with treatment personnel. Monthly usage frequency was based on data from the Treatment Episodes Data Set (TEDS) which indicated that of the individuals in treatment for heroin abuse, 83 percent used daily, 4 percent used between three and six times per week, 1.8 percent used between one and two times per week, 2.2 percent used between one and three times per month, and 9 percent did not use in the month prior to treatment. The dosage amount was derived from a detailed analysis of data regarding heroin weights and purity levels as determined by the Domestic Monitor Program. The equation also took into account the premises that hardcore addicts consume approximately 75 percent of the heroin in the United States and occasional users consume the remaining 25 percent.

These are the details of NDIC’s analysis:

For the Heroin Study, NDIC developed an approach to estimate a range for domestic consumption of heroin. Their estimate was calculated by assuming the following two figures:

- 1) the number of hardcore users, N, based on the recent ONDCP study which showed 980,000 hardcore heroin users for 1998, and
- 2) dosage amount, D, based on an estimate from the DEA Domestic Monitor Program (23 mg).

A range of daily usage frequencies, F, were considered (based on reporting from treatment personnel), ranging from 2 to 4 times a day.

Hardcore usage frequency was based on 1996 national treatment admissions data¹⁵ that determined the following:

Distribution of hardcore users (U)	weekly frequency	days/week	days of use/year (A)
83.0%	daily	7	365
4.0%	3-6 times	4.5	216
1.8%	1-2 times	1.5	72
2.2%	<1 time	.5	24
9.0%	no use	0	0

The above figures were combined according to $(N \times U \times D \times F \times A) / 10^9$ to calculate the metric tons of heroin consumed by hardcore users who used heroin twice daily.

Distribution of hardcore users	Days of Use/ Year	Daily Dosage Frequency 2
83.0%	365	13.675
4.0%	216	0.389
1.8%	72	0.058
2.2%	24	0.024
9.0%	0	0.0
	hardcore mt sum (C)	14.13

Then assuming that hardcore heroin users consume 75% of all domestic consumption, the amount consumed by occasional users (O) can be calculated as $C/3=O$. Therefore, the total amount consumed by users who use twice daily can be estimated as follows:

User Type	2
Hardcore (H)	14.13
Occasional (O)	4.71
Total sum	18.84

The rough estimate reported in the Global Heroin Assessment¹⁶ is:
 $980,000 \text{ users} \times 83\% \text{ daily} \times 23\text{mg/dose} \times 2 \text{ doses/day} \times 365 \text{ days/yr} \times 1/75\% = 18 \text{ MT}$.

¹⁵ Treatment Episode Data Set (TEDS) 1996

¹⁶ Global Heroin Threat to the United States, CNC, July 2000

Table 2 – 14 DAWN ER/DMP Heroin User Concept Model: 1999

*A Comparison of DAWN ER Heroin Mentions and DMP Retail Heroin Purchases
(User Numbers based on DMP Source Area Percentages)*

City	Total s ¹⁷	Data Source	Heroin Source Area					
			SEA	SWA	SA	MX	ID'D ¹⁸	UC ¹⁹
Atlanta	21	DMP ²⁰	9=.5	1=.05	7=.39	1=.05	18=.86	3=.14
	415	DAWN ²¹	208	23	161	23	356	59
Baltimore	39	DMP	2=.06	0	33=.94	0	35=.90	4=.10
	6999	DAWN	420	0	6579	0	6299	700
Boston	26	DMP	0	0	25=1.	0	25=.96	1=.04
	2861	DAWN	0	0	2861	0	2751	110
Chicago	29	DMP	6=.28	1=.05	14=.67	0	21=.72	8=.28
	9629	DAWN	2696	481	6452	0	6933	2696
Dallas	35	DMP	1=.03	0	0	29=.97	30=.86	5=.14
	428	DAWN	14	0	0	414	367	61
Denver	27	DMP	0	0	0	22=1.	22=.81	5=.19
	629	DAWN	0	0	0	629	513	116
Detroit	30	DMP	3=.10	4=.15	20=.74	0	27=.90	3=.10
	2653	DAWN	295	393	1965	0	2388	265
Los Angeles	26	DMP	0	0	0	19=1.	19=.73	7=.27
	2923	DAWN	0	0	0	2923	2136	787
Miami	29	DMP	0	0	18=.78	5=.22	23=.79	8=.21
	917	DAWN	0	0	718	199	727	190
Newark	34	DMP	1=.03	0	19=.97	0	30=.88	4=.12
	4733	DAWN	158	0	4575	0	4176	557
New Orleans	18	DMP	0	0	14=1.	0	14=.78	4=.22
	649	DAWN	0	0	649	0	506	143
New York	51	DMP	0	0	49=1.	0	49=.96	2=.04
	9202	DAWN	0	0	9202	0	8841	361
Philadelphia	39	DMP	0	1=.03	33=.97	0	34=.87	5=.13
	4087	DAWN	0	123	3964	0	3556	531
Phoenix	40	DMP	0	0	1=.03	38=.97	39=.98	1=.02
	839	DAWN	0	0	22	817	818	21
San Diego	31	DMP	0	0	0	30=1.	30=.98	1=.02
	1063	DAWN	0	0	0	1063	1042	21
San Francisco	37	DMP	0	0	0	36=1.	36=.97	1=.03
	3050	DAWN	0	0	0	3050	2968	82
Seattle	36	DMP	0	0	0	33=1.	33=.92	3=.08
	2470	DAWN	0	0	0	2470	2264	206

¹⁷ Totals: Total number of DMP heroin purchases (1st Row) / Total ER heroin mentions (2nd Row).

¹⁸ ID'D: Number and percent of DMP samples classified by source area / Percentage of DAWN ER heroin mentions.

¹⁹ UC: Number and percent of DMP Unclassified Samples / Percentage of DAWN ER heroin mentions.

²⁰ DMP Data: Number of Heroin Purchases / Percent of Classified DMP samples

²¹ DAWN Data: Total Heroin ER mentions x DMP Source Area percentage.

City	Totals	Data Source	SEA	SWA	SA	MX	ID'D	UC
St. Louis	36	DMP	0	0	0	33= 1.	33= .92	3= .08
	851	DAWN	0	0	0	851	780	71
Washington DC	27	DMP	4= .20	2= .08	20= .77	0	26= .96	1= .04
	1771	DAWN	272	136	1362	0	1705	66
TOTAL	611 ²²	DMP	26	9	263	246	544	67
	56169 ²³	DAWN	4098	1131	38500	12440	49140	7029
PERCENT		DAWN ER / DMP	7%	2%	69%	22%	87%	13%

²² DMP figure represents Total DMP samples (703) minus non-DAWN cities (92). DMP cities without a corresponding DAWN data included El Paso (6 / 6 MX heroin), Houston (39 / 35 MX), Orlando (18 / 17 SA), and San Juan (29 / 25 SA). Source: DEA Domestic Monitor Program, February 2002.

²³ DAWN figure for ER heroin mentions derived from *DAWN Preliminary Estimates January-June 2001 with Revised Estimates 1994-2000*, Table 3.8, p. T-97.

Table 2 – 15 DAWN ER/DMP Heroin User Concept Model: 2000

*A Comparison of DAWN ER Heroin Mentions and DMP Retail Heroin Purchases
(User Numbers based on DMP Source Area Percentages)*

City	Totals ²⁴	Data Source	Heroin Source Area					
			SEA	SWA	SA	MX	ID'D ²⁵	UC ²⁶
Atlanta	29	DMP ²⁷	1= .04	5= .19	20= .77	0= 0	26= .90	3= .10
	485	DAWN ²⁸	19	92	374	0	437	48
Baltimore	32	DMP	1= .03	1= .03	27= .94	0	29= .91	3= .09
	5,405	DAWN	162	162	5,081	0	4,919	486
Boston	30	DMP	0	0	29= 1.	0	29= .97	1= .03
	3,867	DAWN	0	0	3,867	0	3,751	116
Chicago	34	DMP	1= .04	5= .17	22= .79	0	28= .82	6= .18
	12,454	DAWN	498	2,117	9,839	0	10,212	2,242
Dallas	25	DMP	0	0	0	23= 1.	23= .92	2= .08
	478	DAWN	0	0	0	478	440	38
Denver	37	DMP	0	0	0	36= 1.	36= .97	1= .03
	666	DAWN	0	0	0	666	646	20
Detroit	34	DMP	1= .04	5= .18	22= .78	0	28= .82	6= .18
	3,328	DAWN	133	599	2,596	0	2,729	599
Los Angeles	34	DMP	0	0	1= .03	33= .97	34= 1.	0
	3,177	DAWN	0	0	95	3,082	3,177	0
Miami	30	DMP	0	1= .04	24= .96	0	25= .83	5= .17
	1,452	DAWN	0	58	1,394	0	1,205	247
Newark	39	DMP	0	1= .03	34= .97	0	35= .90	4= .10
	4,399	DAWN	0	132	4,267	0	3,959	440
New Orleans	33	DMP	0	0	23= .96	1= .04	24= .73	9= .27
	982	DAWN	0	0	943	39	717	265
New York	46	DMP	0	3= .07	39= .93	0	42= .91	4= .09
	11,009	DAWN	0	771	10,238	0	10,018	991
Philadelphia	40	DMP	0	0	39= 1.	0	39= .98	1= .02
	4,661	DAWN	0	0	4,661	0	4,568	93
Phoenix	27	DMP	0	0	0	26= 1.	26= .96	1= .04
	841	DAWN	0	0	0	841	807	34
San Diego	41	DMP	0	0	0	41= 1.	41= 1.	0
	1,031	DAWN	0	0	0	1,031	1,031	0
San Francisco	35	DMP	0	0	0	34= 1.	34= .97	1= .03
	2,756	DAWN	0	0	0	2,756	2,673	83
Seattle	29	DMP	0	0	0	28= 1.	28= .97	1= .03
	2,490	DAWN	0	0	0	2,490	2,415	75
St. Louis	29	DMP	0	0	0	28 = 1.	28 = .97	1= .03
	1,084	DAWN	0	0	0	1,084	1,051	33

²⁴ Totals: Total number of DMP heroin purchases (1st Row) / Total ER heroin mentions (2nd Row).

²⁵ ID'D: Number and percent of DMP samples classified by source area / Percentage of DAWN ER heroin mentions.

²⁶ UC: Number and percent of DMP Unclassified Samples / Percentage of DAWN ER heroin mentions.

²⁷ DMP Data: Number of Heroin Purchases / Percent of Classified DMP samples

²⁸ DAWN Data: Total Heroin ER mentions x DMP Source Area percentage.

City	Totals	Data Source	SEA	SWA	SA	MX	ID'D	UC
Washington DC	27	DMP	1=.04	5=.22	16=.70	1=.04	23=.85	4=.15
	1,946	DAWN	78	428	1,362	78	1,654	292
TOTAL	631 ²⁹	DMP						
	62,511 ³⁰	DAWN	890	4,359	44,717	12,545	56,498	6,013
PERCENT		DAWN ER / DMP	1%	7%	72%	20%	90%	10%

²⁹ DMP figure represents Total DMP Samples (749) minus non-DAWN cities (118). DMP cities without corresponding DAWN data included El Paso (11 / 9 MX heroin), Houston (34 / 34 MX), Orlando (33 / 21 SA), and San Juan (38 / 38 SA). Source: DEA Domestic Monitor Program, February 2002.

³⁰ DAWN figure for ER heroin mentions derived from *DAWN Preliminary Estimates January-June 2001 with Revised Estimates 1994-2000*, Table 3.8, p. T-97.

Table 2 - 16 Drug Abuse Warning Network (DAWN)

*A Comparison of Heroin-related Data by Region
 Medical Examiner/Deaths (ME) / Emergency Room Mentions (ER)
 (With DMP Primary Heroin Source Area Data)*

EASTERN U.S. (region east of the Mississippi River)			WESTERN U.S. (region west of the Mississippi River)		
City (Primary Heroin)	ME	ER	City (Primary Heroin)	ME	ER
Atlanta (SEA/SA)	45	415	Casper, WY	1	--
Baltimore (SA)	451	6,999	Dallas (MX)	80	428
Birmingham, AL	7	--	Denver (MX)	102	629
Boston (SA)	194	2,861	Fargo, ND	--	--
Buffalo	37	--	Kansas City, MO/KS	21	--
Chicago (SA)	457	9,629	Las Vegas	97	--
Cleveland	37	--	Los Angeles (MX)	644	2923
Detroit (SA)	235	2,653	Milwaukee	1	--
Indianapolis	--	--	Minneapolis	33	--
Jackson, MS	1	--	Oklahoma City, OK	25	--
Louisville, KY	12	--	Omaha, NE	2	--
Miami (SA)	40	917	Phoenix (MX)	183	839
Nashua, NH	7	--	Portland, OR	142	--
New Orleans (SA)	83	649	St. Louis (MX)	62	851
New York (SA)	434	9,202	Salt Lake City	92	--
Newark (SA)	147	4,733	San Antonio	77	--
Norfolk, VA	23	--	San Diego (MX)	143	1063
Philadelphia (SA)	454	4,087	San Francisco (MX)	193	3050
Washington, DC (SA)	103	1,771	Seattle (MX)	140	2470
Wilmington, DE	15	--	Sioux Falls, SD	--	--
Subtotal (ME):	2,782		Subtotal (ME):	2,038	
Percent Deaths: East	58%		Percent Deaths: West	42%	
Subtotal ER		43,916	Subtotal ER:		12,253
Percent ER: East		78%	Percent ER: West		22%
Total heroin-related deaths reported by Medical Examiners:				4,820	
Total heroin-related mentions by DAWN Emergency Rooms:				56,169	

Please Note: The predominant heroin source area is given in brackets for cities that participate in the DEA Domestic Monitor Program [DMP]. The source area was derived from the percentage of retail heroin samples analyzed through the DMP that were classified as to source of origin. The DMP data demonstrate that South American heroin was the predominant type of heroin in urban centers east of the Mississippi River, while Mexican heroin dominated western heroin markets.

Table 2 - 17 2000 Drug Abuse Warning Network (DAWN)

*A Comparison of Heroin-related Data by Region
 Medical Examiner/Deaths (ME) / Emergency Room Mentions (ER)
 (With DMP Source Area Data)*

EASTERN U.S. (region east of the Mississippi River)			WESTERN U.S. (region west of the Mississippi River)		
City (Primary Heroin)	ME	ER	City (Primary Heroin)	ME	ER
Atlanta (SA)	30	485	Dallas (MX)	94	478
Baltimore (SA)	397	5,405	Denver (MX)	66	666
Birmingham, AL	3	--	Kansas City MO/KS	20	--
Boston (SA)	183	3,867	Las Vegas	93	--
Buffalo	30	--	Los Angeles (MX)	473	3,177
Chicago (SA)	499	12,454	Milwaukee	4	--
Cleveland	48	--	Minneapolis/St. Paul	17	--
Detroit (SA)	296	3,328	Oklahoma City	19	--
Long Island, NY	105	--	Omaha	2	--
Louisville	10	--	Phoenix (MX)	181	841
Miami (SA)	86	1,452	Portland, OR	107	--
New Orleans (SA)	57	982	St. Louis (MX)	55	1,084
New York (SA)	607	11,009	Salt Lake City	80	--
Newark (SA)	179	4,399	San Antonio	90	--
Norfolk, VA	24	--	San Diego (MX)	145	1,031
Philadelphia (SA)	461	4,661	San Francisco (MX)	148	2,756
Washington, DC (SA)	84	1,946	Seattle (MX)	118	2,490
Wilmington, DE	21	--			
Subtotal (ME):	3,120		Subtotal (ME):	1,712	
Percent Deaths: East	65%		Percent Deaths: West	35%	
Subtotal ER		49,988	Subtotal ER:		12,523
Percent ER: East		80%	Percent ER: West		20%
Total heroin-related deaths reported by Medical Examiners:			4,832		
Total heroin-related mentions by DAWN Emergency Rooms:			62,511		

Please Note: The predominant heroin source area is given in brackets for cities that participate in the DEA Domestic Monitor Program [DMP]. The source area was derived from the percentage of retail heroin samples analyzed through the DMP that were classified as to source of origin. The DMP data demonstrate that South American heroin was the predominant type of heroin in urban centers east of the Mississippi River, while Mexican heroin dominated western heroin markets.

Table 2 - 18 Heroin Availability Working Group Seizure Rate Estimates

This table compares U.S. Customs Service (USCS) heroin seizure figures—as compiled by the WG—and CNC potential heroin production estimates. Putting these figures side-by-side helps explain further the inconsistency between two of the main components necessary for a supply-based estimate of heroin availability in the United States. For example, it seems unlikely that a single agency USCS would simultaneously seize 1 - 5 percent of the Mexican opium crop and up to 30 - 41 percent of the Colombian crop even if law enforcement priorities were focused in the direction of Colombia. Part of this inconsistency lies in how the data is used: the WG’s compilation of the USCS data provides only a rough estimate of the source of the seizures and the CNC estimates are of potential production rather than actual production. Nevertheless, this table does highlight the need for those agencies responsible for publishing statistics on heroin to examine their methodologies closely to make the data more useful for policy makers.

Colombian Heroin

CY 2001:

CY 2001 USCS: 1,513 kilograms (gross weight)

CY 2001 CNC: 5,080 kilograms (export-quality heroin) → Seizure rate: 30 percent

CY 2000 CNC: 3,680 kilograms (export-quality heroin) → Seizure rate: 41 percent

CY 2000:

CY 2000 USCS: 678 kilograms (gross weight)

CY 2000 CNC: 3,680 kilograms (export-quality heroin) → Seizure rate: 18 percent

CY 1999 CNC: 3,900 kilograms (export-quality heroin) → Seizure rate: 17 percent

CY 1999:

CY 1999 USCS: 405 kilograms (gross weight)

CY 1999 CNC: 3,900 kilograms (export-quality heroin) → Seizure rate: 10 percent

CY 1998 CNC: 2,300 kilograms (export-quality heroin) → Seizure rate: 18 percent

Mexican Heroin

CY 2001:

CY 2001 USCS: 275 kilograms (gross weight)

CY 2001 CNC: 14,000 kilograms (export-quality heroin) → Seizure rate: 2 percent

CY 2000 CNC: 6,000 kilograms (export-quality heroin) → Seizure rate: 5 percent

CY 2000:

CY 2000 USCS: 181 kilograms (gross weight)

CY 2000 CNC: 6,000 kilograms (export-quality heroin) → Seizure rate: 3 percent

CY 1999 CNC: 12,000 kilograms (export-quality heroin) → Seizure rate: 1.5 percent

CY 1999:

CY 1999 USCS: 159 kilograms (gross weight)

CY 1999 CNC: 12,000 kilograms (export-quality heroin) → Seizure rate: 1 percent

CY 1998 CNC: 18,000 kilograms (export-quality heroin) → Seizure rate: 0.9 percent

Table 2 - 19 Working Group's Compilation of U.S. Customs Service Seizure Statistics

These tables list the exact figures discussed in the text on page 13, in which the WG compiled USCS seizures by source of conveyance to approximate the proportions of heroin entering the US from each source area.

	Heroin 1999 (Kg)	# USCS Seizures	Heroin 2000 (Kg)	# USCS Seizures	Heroin 2001 (Kg)	# USCS Seizures
Colombia	405.39	326	677.97	505	1513	586
Mexico	159.01	110	181.45	76	275.01	70
Southeast Asia	10.527	21	30.982	17	66.441	19
Southwest Asia	149.12	234	254.81	120	159.18	105
Canada	3.25	23	0.0409	7	5.7091	12
Other/Unknown	90.891	151	195.45	187	147.21	152
Total	818.2	865	1340.7	912	2166.5	944

Seizure Percentages by Source (Excl. Canada & Other/Unknown)

	1999	2000	2001
Colombia	56%	59%	75%
Mexico	22%	16%	14%
Southeast Asia	1%	3%	3%
Southwest Asia	21%	22%	8%