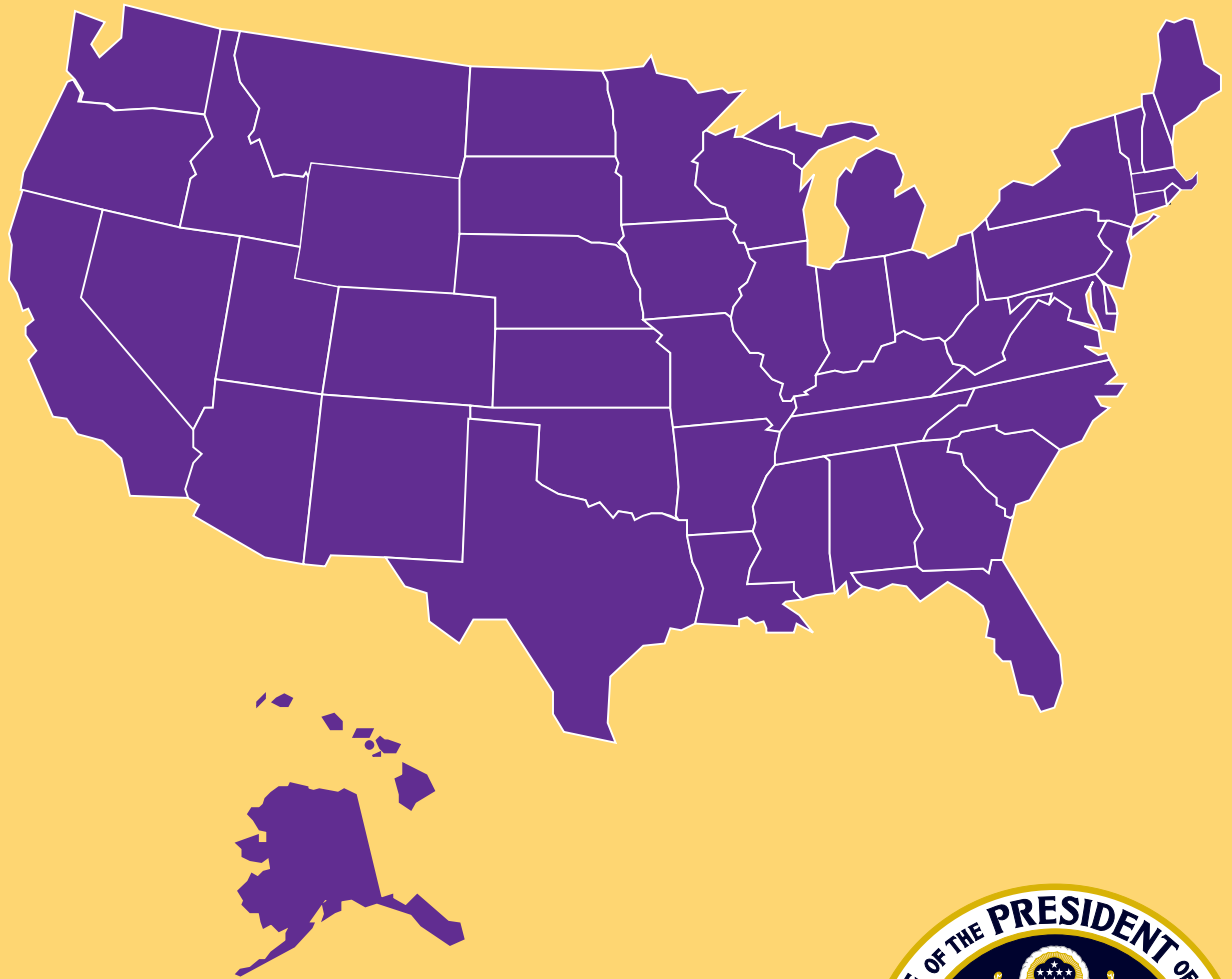


The Economic Costs of Drug Abuse in the United States

1992–2002



Executive Office of the President
Office of National Drug Control Policy



THE ECONOMIC COSTS OF DRUG ABUSE IN THE UNITED STATES

1992-2002

Executive Office of the President
Office of National Drug Control Policy
Washington, D.C. 20503

December 2004

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EXECUTIVE SUMMARY

A. Overview

The economic cost of drug abuse in 2002 was estimated at \$180.9 billion. This value represents both the use of resources to address health and crime consequences as well as the loss of potential productivity from disability, death and withdrawal from the legitimate workforce. This estimate has incorporated extensive new data, although several major components have been trended forward.

Several trends stand out from this analysis. First, the costs of drug abuse have increased an average of 5.3 percent per year from 1992 through 2002. This rate is very slightly above the 5.1 percent annual growth in the gross domestic product for the entire economy. The most rapid increases in drug abuse costs have been in criminal justice efforts, particularly increased rates of incarceration for drug offenses and drug-related offenses and increased spending on law enforcement and adjudication. There appear to have been more moderate increases in costs associated with health consequences and treatment and prevention initiatives.

This report was developed for The Office of National Drug Control Policy (ONDCP) which asked The Lewin Group to develop more current estimates of the societal cost of drug abuse. In the context of this report, we use the phrase “drug abuse” to refer to consequences of using illicit drugs, as well as societal costs pertaining to the enforcement of drug laws. This study does not address costs related to abuse of or dependence on legal substances that may be termed drugs including alcohol and tobacco.

The most recent comprehensive estimates of drug abuse-related costs in the United States are for 1995 (Harwood et al., 1998). Subsequently, a study was undertaken to develop updated estimates through the year 2000 (Office of National Drug Control Policy, or ONDCP, 2001). The objective of the present study has been to develop more current cost estimates based upon the fundamental approach and data of that prior study. In doing so, this study has compiled current data and estimates for many cost components, and projected other cost components forward based on indices or data series that are believed to reflect expected changes in both the real rate of problems (e.g., incidence, prevalence) as well as costs (inflation). This report indicates how each of the cost components have been updated. It should be noted that this study has not re-examined the literature on the causal relationship of drug abuse and the respective consequences. The same attribution factors developed or used in Harwood et al. (1998) and in ONDCP (2001) have been used in this effort to update the estimates.

The limitations of such an “update” study should be recognized when applying its findings. This study is limited in terms of both the reliability of the estimates presented and the scope of the estimates. First, the methods used in this study yield seemingly very precise values, however they should be treated as approximations, because many of the values were derived by trending estimates from previous years or by simple manipulations of data drawn from secondary sources. A substantial period of time has passed since the calculation of these components was fully revisited and primary data was gathered to re-estimate these costs. The most recent fully re-estimated value for each of the component costs presented here is for 1992.

A second limitation of this study is the scope. As noted, this study follows guidelines developed by the U.S. Public Health Service for cost of illness studies. There are other approaches that could have been used to develop estimates of the cost of drug abuse. Some approaches incorporate different facets of the economic impacts of drug abuse such as the intangible or “quality of life” impacts of drug abuse. In applying the estimates from this or other cost of illness studies, analysts must consider which approach is most appropriate for the particular issue they are assessing. Similarly, the results of this study were not designed to assess the absolute or relative effectiveness of specific policies to control drug abuse or the alternatives of drug prohibition versus legalization. The purpose of this study has been to identify and quantify particular negative consequences of the abuse of illicit drugs. These data are likely to inform the evaluation of particular policies. However, this study has not undertaken specific policy evaluations.

The results of this study are summarized in the following sections. First, we present the overall estimates and trends in the cost of drug abuse for 1992 through 2002. In subsequent sections we examine how the costs in each of the three major cost components (health costs, productivity losses and non-health direct expenditures) changed between 1992 and 2002. All of the three major cost components contain costs related to crime, thus, in the fifth section we extract the crime-related costs from each of the other major cost components and summarize them. In the final section we provide a brief discussion of the study’s results.

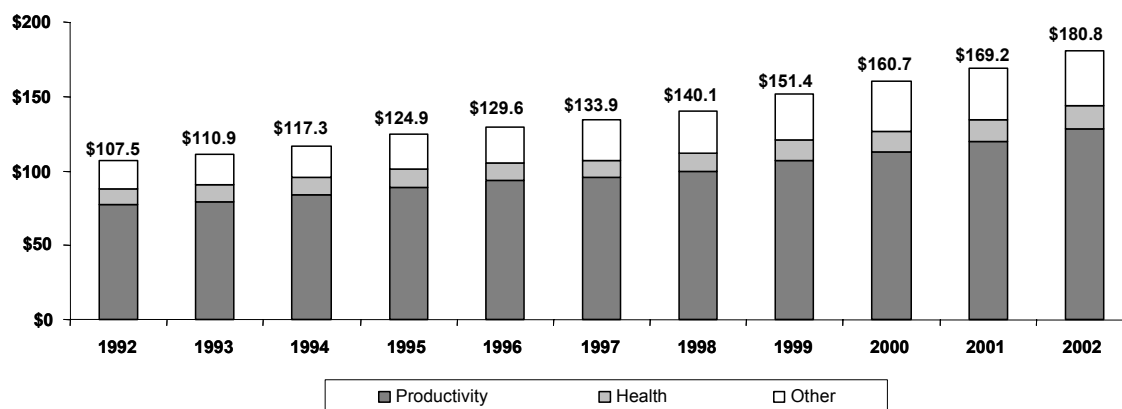
B. Overall Costs

Total costs were \$180.9 billion in 2002, increasing 5.34 percent annually since 1992. Figure 1 displays the estimates for 1992 through 2002 overall and for the three major components into which the report divides the costs. These three components are health care costs, productivity losses, and other costs. Costs in 1992 were \$107.6 billion.¹ The rate of increase in costs was in excess of the combined increase of 3.5 percent for the adult population and consumer price index for all services for this period, however it was only marginally greater than the 5.16 percent annual growth in gross domestic product over this time.

The largest proportion of costs is from lost potential productivity, followed by non-health “other” costs and health-related costs. Figure 2 displays the proportion of the societal costs that were represented by each of the three major components in 2002. The share of the costs represented by each of these components remained fairly constant between 1992 and 2002. The share of costs represented by health care and productivity losses declined from 9.9 to 8.7 percent and 72 to 71 percent, respectively, while the share from “other” effects increased from 18 to 20 percent.

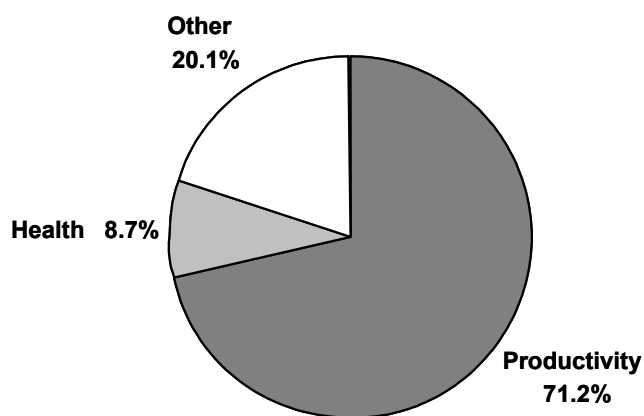
¹ We have re-estimated the 1992 cost of drug abuse originally developed by Harwood et al (1998) based on more recent data. The revised estimate is \$102.2 billion. This estimate is 4.6 percent higher than the previous Harwood et al. (1998) estimate of \$97.7 billion.

Figure 1
Overall Cost of Drug Abuse, 1992-1998
(in billions of dollars)



The estimates for 1992 through 2000 were generally developed based on detailed observed data on the component costs or of the projection factors. This was possible to a lesser extent for the 2001 and 2002 estimates, since progressively less observed data was available upon which to base the estimates for these years. Therefore, these estimates (and the several components that are projections of the 1992 values) should be used with caution until they can be re-estimated more accurately based on observed data.

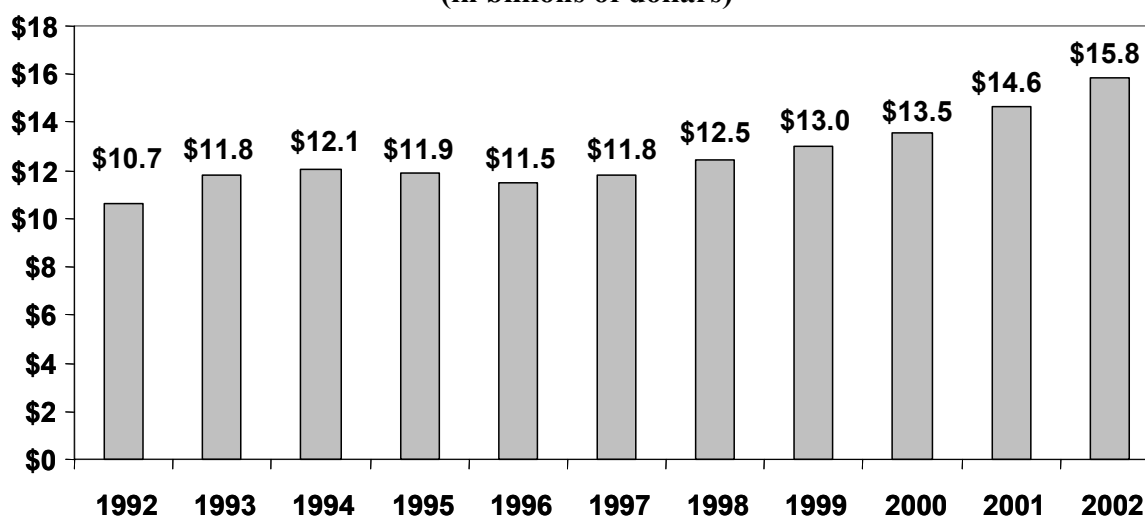
Figure 2
Distribution of Cost of Drug Abuse, 2002
By Major Cost Components



C. Health Care Costs

Health-related costs are projected to total \$16 billion in 2002. Figure 3 displays the health care related cost of drug abuse for each year between 1992 and 2002.² Substance abuse-related health care costs are projected to have risen 4.1 percent annually between 1992 and 2002. This rate of increase is less than the combined rate of increase of population growth and medical inflation as measured by the consumer price index for medical services (CPI-M). During this period the population grew at one percent annually and the CPI-M grew at 4.1 percent annually for a combined annual increase of 5.1 percent. Furthermore, data from the Centers for Medicare and Medicaid Services show that total health care spending grew by 6.5 percent per year between 1992 and 2002. Thus, substance abuse-related health care spending lagged somewhat behind what might have been expected.

Figure 3
Health Care Costs, 1992-2002
(in billions of dollars)



Note: 1998 through 2002 values are primarily projections

The rate of growth in this component was moderated by declines in spending for HIV/AIDS care. In 1992 the second largest component of the health care costs related to drug abuse was spending to care for HIV/AIDS patients. Because of new treatments, the cost of caring for HIV/AIDS patients is estimated to have declined from \$3.5 to \$2.5 billion between 1992 and 1997 but is projected to have increased since that time due to increases in the number of HIV/AIDS patients. Table 1 lists the components of the health care related costs of drug abuse. Meanwhile, spending for community-based specialty treatment is estimated to have risen from

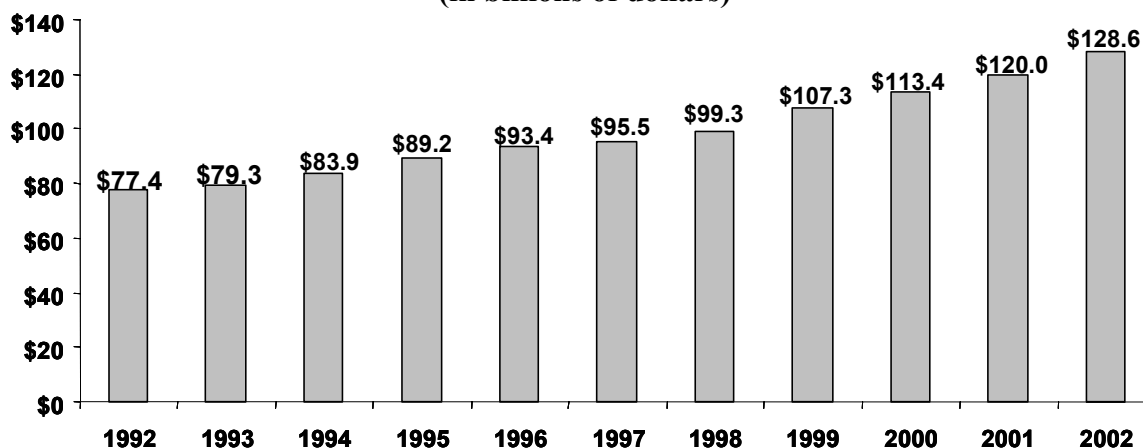
² We have re-estimated the 1992 cost of drug abuse originally estimated in Harwood et al. (1998) based on more recent data. The revised estimate for health care related costs is \$10.7 billion. The 1992 estimate is 9 percent higher than the previous Harwood et al. (1998) estimate. The largest source of this increase is a revised estimate of spending on drug abuse for community-based specialty treatment. The original estimate for this component was \$2.8 billion. The revised estimate is \$3.8 billion. The revised estimate is based on a study by Mark et al. (1999) that was more comprehensive than the original study.

\$3.8 to \$6.0 billion between 1992 and 2002, a 4.75 percent annual growth rate, which is less than the combined increase in population growth and medical inflation.

D. Productivity Losses

By far the largest component of cost is from loss of productivity, at \$128.6 billion. In contrast to the other costs of drug abuse (which involve direct expenditures for goods and services), this value reflects a loss of potential resources. Productivity losses represent work in the labor market and in household production that was never performed, but could reasonably be expected to have been performed absent the impact of drug abuse. Figure 4 displays the productivity related cost of drug abuse for each year between 1992 and 2002. The estimated productivity loss in 1992 was \$69.4 billion. By 2002, we estimate that this cost had risen to \$128.6 billion, a 5.2 percent annual increase. This rate of increase is somewhat higher than the combined increase in the population (about one percent annually) and in wage rates (about 3.1 percent annually) of 4.1 percent during this period, although it is virtually identical to the 5.1 percent annual increase of total economic activity (termed gross domestic product) in the United States.

Figure 4
Productivity Losses, 1992-2002
(in billions of dollars)



The greatest share of productivity loss is from criminal activities, including losses because 660,000 offenders were incarcerated and others pursued crime careers to pay for their drug use. Together, there was a loss of about 1 million person years of effort that could have and arguably would have been available to the legitimate economy if these individuals had not been involved with drug-related crime. There were an estimate 23,500 drug-related³ deaths from all causes (e.g., overdose, poisoning, homicide, HIV and hepatitis B/C) in 2000, the most recent year with available data. Trend comparisons with earlier years are problematic because the US (and world) mortality diagnostic system changed in 1998. The mortality losses represent the present

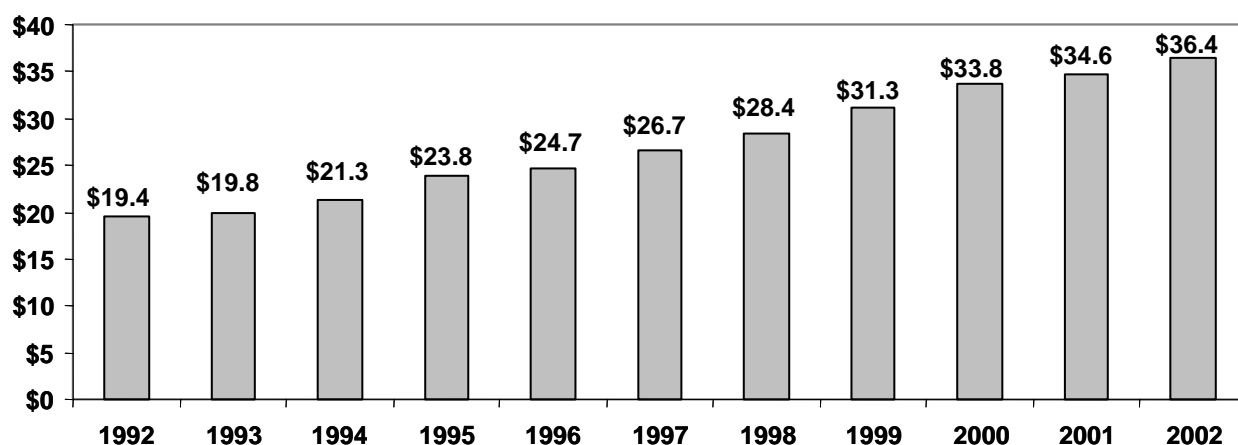
³ These include both causes of death where drug use is the overt cause of death, e.g., drug overdose, as well as illnesses such as HIV infection or hepatitis C where needle sharing while abusing drugs was the underlying cause of the illness. These are detailed in Section IV.B.1 and in Appendix C.

discounted value of lost lifetime market and household productivity. At a 3 percent discount rate, this value averaged about \$1 million per death.

E. Cost of Other Effects

The final major component of costs came to \$36.4 billion in 2002. These primarily concern costs associated with the criminal justice system and crime victim costs, but also include a modest level of expenses for administration of the social welfare system. Figure 5 displays the trend in costs of these other impacts of drug abuse for each year between 1992 and 2002.⁴ Between 1992 and 2002, the costs for the other effects of drug abuse rose at a 6.5 percent annual rate. This rate is clearly higher than the combined 3.5 percent annual increase which is the sum of the growth in population (one percent annually) and general inflation (2.5 percent annually) and even exceeds the 5.1 percent annual growth in the total economy over this period.

Figure 5
Cost of Other Effects, 1992-2002
(in billions of dollars)



The largest detailed component of these costs is for state and federal corrections at \$14.2 billion, which is primarily for the operation of prisons. Another \$9.8 billion was spent on state and local police protection, followed by \$6.2 billion for federal supply reduction initiatives. Significant amounts of our nation's criminal justice resources are estimated to go towards drug abuse. In 2002, the most recent year with publicly available data, there were almost 330,000 persons incarcerated for drug specific offenses and an estimated 135,000 for income-generating or other crimes attributable to drug abuse. There were about 1.5 million arrests on drug specific charges and another half million for offenses attributable to drug abuse. In total, about 34 percent of the prison and jail population and about 15.5 percent of arrests were attributable to drug abuse. Crimes attributable to drug abuse include "drug specific" offenses such as sales, manufacturing and possession of illicit drugs and also a quarter to a third of income generating crimes (e.g.,

⁴ We re-estimated the 1992 cost of drug abuse as re-estimated in Harwood et al. (1998) based on more recent data, using the original methodology. The 1992 estimates was 6 percent higher.

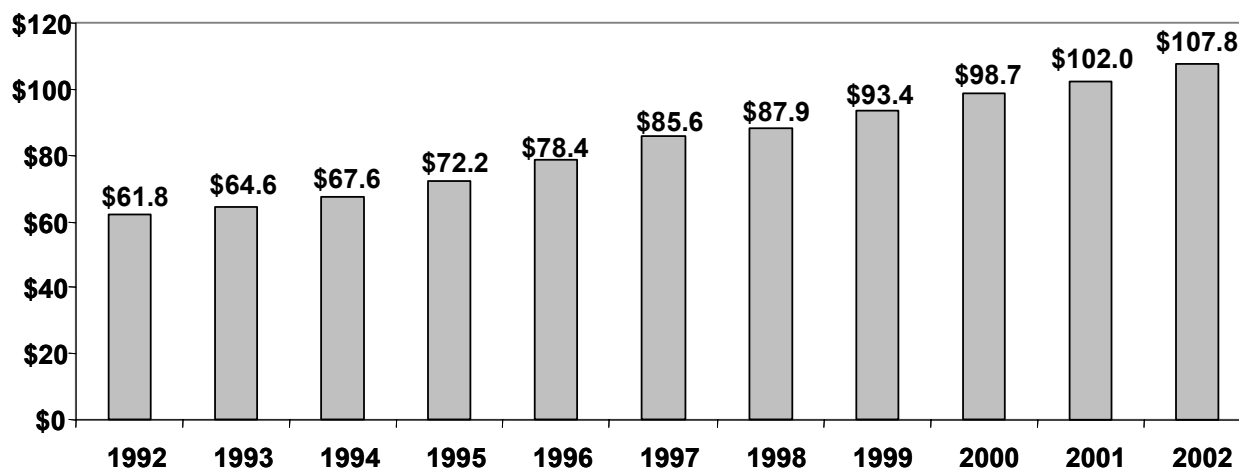
larceny, burglary) that were committed by drug dependent individuals in order to finance expensive drug addictions.

F. Crime Related Costs

Selected components of health care, productivity loss, and other costs are crime-related costs. When these costs are aggregated a more complete picture is gained of the role of drug-related crime in the total economic impact. It is estimated that \$107.8 billion, or almost 60 percent of total costs are related to crime. Figure 6 displays the crime costs related to drug abuse.⁵ Overall crime related costs rose 5.7 percent annually between 1992 and 2002. The major drivers of this increase were increases in police and corrections expenditures and productivity losses from incarceration. This rate of increase is greater than the summed increase of population growth and general inflation (3.5 percent) and growth in the general economy (5.1 percent).

As suggested above, the large majority of these costs are for drug specific offenses—sales, manufacturing, possession—and the smaller fraction are for drug-related crimes undertaken to finance expensive drug habits. Over 11 percent of arrests in the US are for drug offenses. In addition, appreciable fractions of income generating crimes are attributed to drug abuse: on the order of a quarter of burglaries, personal larcenies and robberies. Many studies have found that in excess of half of all arrestees and prisoners charged or convicted for such offenses are users of illicit drugs. However, income generating crimes committed by non-addicted users can not be blamed on their “need” to finance their expensive addiction. Therefore the cost of income generating crimes committed by non-addicted users are not included as costs of drug abuse.

Figure 6
Crime Related Costs, 1992-2002
(in billions of dollars)



⁵ The estimate of \$61.8 billion is 8 percent higher than the Harwood et al. (1998) 1992 crime cost estimate. The main source of this revision was increases in estimated criminal justice system and other public costs of crime based on more current data.

G. Discussion

The economic cost of drug abuse in the United States was estimated at \$180.9 billion in 2002. This estimate is fundamentally an update of the detailed cost study for 1992 (Harwood et al., 1998) that estimated costs of \$97.7 billion and the prior update that estimated costs of \$143.4 billion in 1998 (ONDCP, 2001). The new estimate has used the most current data available and has made projections of particular components as necessary to produce estimates for 2002.

The overall cost of drug abuse rose 5.3 percent annually between 1992 and 2002, increasing from \$107.5 to \$180.9 billion. The most rapid growth in drug costs came from increases in criminal justice system activities, including productivity losses associated with growth in the population imprisoned due to drug abuse. Expenditures on health services and the costs of premature mortality grew at relatively slow rates, at least in part due to the development of more effective therapies for HIV.

This study and prior estimates indicate that drug abuse is one of the most costly health problems in the United States. The estimates have followed guidelines developed by the U.S. Public Health Service for cost of illness studies. These guidelines have been applied in earlier studies of drug abuse in the U.S. (e.g., for 1992, 1985, 1980, and 1977), and to cost of illness studies for virtually all of the major health problems. Accordingly, these estimates can be compared meaningfully to estimates for e.g., cancer, stroke, heart disease, diabetes, alcohol abuse and mental illness. The National Institute of Health collects and reports on cost estimates for the major health problems in the nation. Based on estimates from the 1990s employing generally comparable methodologies, drug abuse (\$124.9 billion in 1995) is comparable to heart disease (\$183.1 billion in 1999), cancer (\$96.1 billion in 1990), diabetes (\$98.2 billion in 1997), alzheimer's disease (\$100 billion in 1997), stroke (\$43.3 billion in 1998;), smoking (\$138 billion in 1995), obesity (\$99.2 billion in 1995), alcohol abuse (\$184.6 billion in 1998) and mental illness (\$160.8 billion in 1992). Even if we only compare the health-related costs of drug abuse--\$51 billion in 1995—it still must be considered one of the more costly health problems in the nation.

Finally, these estimates could be considered conservative in that they make no allowances for the impact of drug abuse on the quality of life of the family, neighbors and victims of drug abusers or on the drug abuser her/himself. Economic valuation studies increasingly incorporate such quality of life impacts and costs, and the resulting cost estimates are typically several times greater than the productivity losses. However, relatively few studies of the economic costs of health problems have yet incorporated quality of life factors, although studies of the cost effectiveness of health interventions are based on quality of life analyses.

I. INTRODUCTION

A. Purpose of this Report

This report presents current and trend estimates of the economic costs of drug abuse in the United States. It was produced for The Office of National Drug Control Policy (ONDCP), which asked The Lewin Group to develop estimates up through calendar year 2002. The most recent previous estimates were for 2000 (ONDCP, 2001). This report is based on and extends the estimates for 2000, incorporating much of the earlier methodology, analysis, and data.

This report also provides estimates for 1992 through 2002 that use consistent methodology and data to the maximum extent possible. These estimates allow general trends in the overall and component costs of drug abuse to be assessed. While some of the cost components have been re-estimated, others have been trended or projected forward based on epidemiological and cost factors. For the majority of components, the most recent data available is from 2001. Also, this study has primarily used the epidemiological factors between drug abuse and particular consequences developed in Harwood et al. (1998).

The methodology has followed guidelines developed by the U.S. Public Health Service for cost of illness studies. These guidelines have been applied in earlier studies of drug abuse in the U.S. (e.g., for 1992, 1985, 1980, and 1977), and to cost of illness studies for virtually all of the major medical problems. Accordingly, these estimates can be compared meaningfully to estimates for e.g., cancer, stroke, heart disease, diabetes, alcohol abuse and mental illness. The National Institute of Health compiles and publishes these estimates in a report to Congress and on the Internet (<http://osp.od.nih.gov/ecostudies/COIreportweb.htm>).

While the “human capital” methodology employed in this analysis is the most frequently applied approach in health cost of illness studies, there are other approaches that could be used to develop estimates of the cost of drug abuse, such as “willingness to pay” (Miller et al., 1998) or the “demographic” approach (Collins and Lapsey, 2002). These alternative methods examine different facets of the economic impacts of drug abuse, and yield estimates that are not methodologically comparable to studies of other health problems in the United States. Analysts must consider which approach is most appropriate for the particular issue they are assessing. For example, the costs of pain, suffering, anxiety, and other intangible impacts of drug abuse are not included in this study. Similarly, this study does not attempt to tabulate the amount spent by drug users on illegal drugs although a portion of what users spend is indirectly included in the estimated cost of crime careers.⁶

Finally, this report provides a detailed description of the data sources, methods and assumptions used to calculate the estimates and projections of the societal costs of drug abuse in the United States for 1992 through 2002. The present estimates have either obtained current data (as recent as 2001) or have used data to adjust for expected changes in incidence or prevalence, population,

⁶ For information on what drug users spend on illegal drugs, consult the 2002 ONDCP report [What American Users Spend on Illegal Drugs 1998-2000](#).

and prices up to 2002. We believe that these estimates are indicative of the direction and magnitude of changes in drug abuse costs between 1992 and 2002. In the near future it will be necessary to carefully re-examine the evolving scientific literature on several issues that were beyond the scope of this study including the relationship between drug abuse and health, morbidity, mortality and crime.

B. Scope of this Report

This study estimates the economic value of many consequences associated with drug abuse. Types of consequences include health problems and health care utilization, effects on productivity, and other costs including crime and social welfare. In this report, we use the phrase “drug abuse” to refer to consequences of illicit use of drugs, as well as societal costs pertaining to the enforcement of drug laws. Illicit drugs include e.g., marijuana, cocaine, heroin, amphetamines, methamphetamines and illicit (non-prescribed) use of legal psychoactive medications and substances such as analgesics, sedatives and solvents. This study does not address costs related to abuse of or dependence on legal substances that may be termed drugs such as alcohol, tobacco, or prescription medications. While the abuse of these substances also has significant societal costs these costs are not addressed in this study.

This study did not collect primary data, but rather conducted analyses of secondary data sources. Furthermore, this study did not fully re-estimate the value of each cost component. When a cost component could be fully re-estimated based on simple tabulations of data from a published source, the value of the component was re-estimated. However, when the information necessary to fully re-estimate a component value was not readily available from a published source, we identified trend factors based on published statistics whose values are expected to parallel changes in the value of the components and applied these trend factors to the original estimates. The specific data items as well as sources for the data are identified in this document.

The basic approach taken to calculate the updates presented in this report was to divide the 1992 estimates from Harwood et al. (1998) into 32 components. Then, we assessed whether the value of each component could be re-estimated through straightforward tabulation of published data. When this was the case, we gathered the necessary data (which can be found in this document) and re-estimated the component. We were able to re-estimate values for 22 of the 32 components, and these are identified in the report. For the remaining 10 components, either the data necessary to develop new estimates was not available, or it would have required too much time and too many resources to re-estimate the component within the time to do this study. Therefore, trend factors based on published statistics whose values are expected to parallel changes in the value of the components were estimated and applied to the original estimates to calculate the updated estimates.

This study subdivides the estimates of the costs of drug abuse into health care, productivity losses, and other effects (including crime costs). There are other ways of disaggregating the cost estimates that may be of interest to policy makers that were not attempted in this study. These include the following:

- The societal cost of particular illegal drugs (e.g., heroin, cocaine, or marijuana);

- The effect of different modes of drug consumption (e.g., injection, smoking or oral); and
- The implications of different potencies or levels of use of the drugs under consideration.

The results of this study were not designed to address specific policies to control drug abuse or the alternatives of drug prohibition versus legalization. The purpose of this study is to identify and quantify particular negative consequences of the abuse of illicit drugs. These data may inform or more likely motivate the evaluation of particular policies. However, this study has not undertaken specific policy evaluations.

C. Overview of This Report

Following the guidance for cost-of-illness studies adopted by the Public Health Service (Hodgson and Meiners 1979, 1982), this report is organized to differentiate health costs from non-health costs and the value of goods and services from the value of lost productive potential. The remaining chapters are organized as follows:

- Chapter II reviews the previous literature and provides an overview of the analytic methods that are used in this study.
- Chapter III describes in detail the data and estimation methods used to derive each of our cost of illness component estimates. This chapter is divided into several major sections, one for each major cost component. The major cost components are: health care costs, productivity losses, and the cost of other effects. The final section discusses the reliability of the estimates.
- Chapter IV summarizes and presents the costs estimates from 1992 through 2002 in current year dollars, presenting them in the major cost categories: health, productivity, “other” impacts, crime-related, direct and indirect.
- Chapter V presents further analyses. This includes comparisons of the economic cost of drug abuse with cost data on other health problems in the United States as well as several cost estimates for other nations. Also, the trends in costs from 1992 through 2002 are presented. Final thoughts are provided about the estimates.

II. METHODOLOGY

A. Prior Literature

The updated cost estimates developed for this study are based on and extend the estimates developed in *The Economic Costs of Drug Abuse in the United States 1992-1998* (ONDCP, 2001). The estimates employ the same general "cost of illness" methodology that has been employed in studies of drug abuse over the past 20 years, the most recent of which (Harwood et al., 1998) served as the basis for the most recent report by ONDCP (2001). The general framework of this approach was presented in the U.S. Public Health Service guidelines developed under Dorothy Rice (Hodgson and Meiners, 1982). The guidelines differentiate between health system expenditures, the costs of morbidity and premature mortality, which are losses of potential productivity and other costs including criminal justice system, and losses from motor vehicle crashes, fires and other accidents. For illnesses such as cancer, stroke, heart disease, diabetes, costs are concentrated in the health system (hospitals, doctors offices, public health clinics) or result from lost work due to morbidity or premature mortality. The economic principle of "opportunity cost" is used to attach values to measurements of hospital days, visits to doctors and clinics, and lost days of work or household productivity.

The cost of illness methodology applies directly to drug abuse, although with several important extensions that are generally not relevant for other health problems and diseases. Drug abuse, like smoking and alcohol abuse, causes further health problems, and the costs of these illnesses need to be estimated and attributed to drug abuse. Some of these additional costs of drug abuse include HIV, hepatitis, tuberculosis and injury/trauma. Another major characteristic of drug abuse with important economic implications is crime. This has impacts including health costs and lost work/mortality of crime victims, costs for the criminal justice system, and costs from drug abusers dropping out of the legal economy. Drug abusers may work in the "drug economy" or live off of income generating crime, and as a result some are incarcerated, which also removes them from the legal economy. The major previous cost of illness studies for drug abuse have included all of these costs.

This study does not re-estimate all the costs associated with each component included in the previous studies, but rather develops updated estimates for some components by applying trend factors based on published data series that are expected to be correlated with the actual change in the component. Three previous studies of the societal cost of substance abuse have developed similar updated estimates of the cost of drug abuse without completely re-estimating the component costs. The first of these studies is Rice et al. (1990) which developed 1985 baseline estimates of the costs of alcohol, drug, and mental disorders and in the same document included updates to 1988. The second study is Harwood et al. (1998) which developed updated estimates of 1995 costs for alcohol and drug abuse based on 1992 baseline estimates. Finally, the third study is Harwood (2000) which calculated updated estimates of the cost of alcohol abuse in 1998 using 1992 baseline data. Finally, ONDCP (2001) developed updated cost estimates for drug abuse for 1993 through 1998. All of these studies used the same basic approach. That approach entails dividing the estimates into component costs that are likely to have been affected similarly by both real and price changes. Then, we identify measures of the real and price changes specific to each cost component and apply trend factors based on these measures to the relevant component.

As discussed in more detail in the next section, this study takes the same basic approach as these previous authors to update the value of some components. For other components, current data was available, which permitted this study to re-estimate the value of the component.

B. Methods

As noted above, we initially divided the original 1992 estimate into 32 components. Health care costs are divided into eighteen components. These components are listed in Figure II-1.

**Figure II-1
Components of the Health Care Cost Estimate**

Cost Components
Community-Based Specialty Treatment
Federally-Provided Specialty Treatment
Department of Defense Indian Health Services Bureau of Prisons Department of Veterans Affairs
Health Infrastructure and Support
Federal Prevention State and Local Prevention Training Prevention Research Treatment Research
Medical Consequences
Hospital and Ambulatory Care Costs Drug-Exposed Infants Tuberculosis HIV/AIDS Hepatitis B and C Crime Victim Health Care Costs Health Insurance Administration

Productivity losses are divided into six components, listed in Figure II-2.

**Figure II-2
Components of the Productivity Loss Estimate**

Cost Components
Premature Death Drug Abuse-Related Illness Institutionalization/Hospitalization Productivity Loss of Victims of Crime Incarceration Crime Careers

Finally, the cost of other effects is divided into eight components and these components are listed in Figure II-3.

Figure II-3
Components of the Cost of Other Effects Estimate

Cost Components
Criminal Justice System and Other Public Costs
State and Local Police Protection
State and Local Legal Adjudication
State and Federal Corrections
Local Corrections
Federal Spending to Reduce Supply
Private Costs
Private Legal Defense
Property Damage for Victims of Crime
Social Welfare

For each of the components listed above one of two approaches was taken to update the estimate. If the component could be re-estimated through tabulations of published data then the value of the component was re-estimated for each year from 1992 through the most recent available year of published data. For subsequent years, the component value was trended forward based on the historical trend of the component value. This approach was used for 22 of the 32 components. For the remaining components, tabulations of published data was not sufficient to re-estimate the component's value. Therefore, for these components, we developed trend factors based on published statistics that are expected to parallel changes in the value of the component and applied these trend factors to the original estimate.

The reliability of the resulting estimates depends on which of these methodologies was used to calculate the updates as well as the reliability of the underlying data for the calculations. The components whose values were re-estimated can be viewed as more reliable than those whose values were trended. We provide a detailed discussion of the reliability of the estimates in *Section III.D.2*. In the next section, we provide an overview of the re-estimation and trending methods. In *Section III*, each component is presented along with the specific data sources and methods used to update that component.

1. Re-estimation

In many cases tabulations of published data are used to re-estimate the value of the cost component for this update. There are four groups of components for which the updates are re-estimated. These are:

1. Components measuring federal government spending by function (e.g., specialty treatment, prevention, research, and supply reduction);

2. Components measuring crime related costs (i.e., costs to victims, crime related productivity losses, criminal justice system costs);
3. Costs for premature death; and
4. Components for which other authors have published re-estimates (i.e., HIV/AIDS spending, specialty treatment costs).

The first group of components are re-estimated based on estimates of federal government spending that are published annually by ONDCP in the *National Drug Control Strategy: Budget Summary* that presents estimates of spending by federal agencies by function (e.g., treatment, supply reduction). These figures are used to re-estimate several cost components with minor adjustments to account for issues such as overlap with costs included in other component estimates.

The second group of components is re-estimated based on data published by the Bureau of Justice Statistics in the *Sourcebook of Criminal Justice Statistics* which includes statistics on arrests, victimizations, persons under incarceration, and criminal justice system costs. Using these data, the cost components that are related to crime are divided into numerous subcomponents and data for each of these components are refreshed. Then, the same methods that were employed by Harwood et al. (1998) to calculate the 1992 estimate are replicated to re-estimate the value for 1993 through the most recent year of data available.

The third group of components, costs related to premature death, is re-estimated based on counts of deaths published annually by the Center for Disease Control (CDC). Again, the same methods employed by Harwood et al. (1998) to calculate the 1992 estimate were employed to re-estimate the value for 1993 through 1998.

Finally, the fourth group of components consists of components whose values have been re-estimated by other authors. The cost of specialty treatment for drug abuse was estimated by Mark et al. (1999a and 1999b) for 1992 through 1997. These values were adopted with minor adjustments for overlap with the costs included in other components. Hellinger and Fleishman (2000) also estimated the cost of HIV/AIDS care for 1996. This value was disaggregated into the non-drug abuse and drug abuse-related costs and the drug abuse-related costs were adopted for this study.

Section III provides detail on the data sources and methods used to re-estimate each of these components.

2. Application of Trend Factors

As noted above, our second approach to calculating the updates is to use the detailed estimate of the economic cost of drug abuse developed for 1992 as the baseline estimate and then apply trend factors for changes in the economic costs between 1992 and each subsequent year through 2002. This section provides an overview of this method and then demonstrates the method in a sample calculation.

a) Overview

Changes in the actual cost of drug abuse and dependence between the year for which detailed estimates were developed and more recent years for which estimates are desired may be decomposed into two categories: changes in the frequency and intensity of the underlying behavioral outcomes and changes in the monetary valuation of these outcomes. For this study, we measure changes in these components using indicators of the following types:

- Incidence/prevalence of selected drug-specific consequences;
- Population;
- Consumer price index for health care services;
- Worker compensation (wage rates); and
- Consumer price index, all items.

The first two factors might be thought of as “real” changes in the impacts related to drug abuse and dependence. The latter three indicators can be thought of as measures of inflationary change.

The simplest approach to updating or adjusting cost estimates would be to adjust the original total cost estimate for population change (about 1 percent annually) and the general change in prices (consumer prices increased by an average of about 2.5 percent annually between 1992 and 2002 based on the consumer price index). This approach is directly applied, the data are available and easily explained and understood. However, there are disadvantages to such a limited approach. There may be factors that lead various cost components to change at different rates across time, relating to both real changes in behavioral outcomes and changes in sub-component prices.

Therefore, for this study, we disaggregate the original cost estimates into 32 components and numerous subcomponents—many of which comprises multiple components that are similar to each other in the nature of the economic impact that has been measured. We hypothesize that the components within a group will be affected similarly by changes in both the real factors (incidence, prevalence or population) and by price trends. Thus, a trend factor is developed and applied to each of these components to calculate the updated cost estimate (which is documented in this report).

b) Sample Algorithm

To illustrate how this methodology is applied, we provide a detailed example. In 1992 \$14.2 billion in lost productivity was attributed to drug abuse-related illness. The real change in the estimated cost of lost productivity related to drug related illness is measured as the change in the number of persons reporting more than 100 days of marijuana or cocaine use in their lifetime as reported from the National Household Survey of Drug Abuse (NHSDA). Table III-1 shows that between 1992 and 1993, the number of persons reporting more than 100 days of marijuana or cocaine use in their lifetime declined 5.4 percent. The price change in the estimated cost of lost productivity related to drug related illness is measured based on the Bureau of Labor Statistics hourly compensation index. Table II-1 also shows that between 1992 and 1993 the hourly compensation index rose from 100.0 to 102.4 or 2.4 percent.

Table II-1
Components of the Update of Lost Productivity
Due to Drug Related Illness
1992-1993

Data Series	1992	1993	Trend 1992-1993
Number of Adults Reporting More Than 100 Days of Marijuana and Cocaine Use in Their Lifetime	19,224	18,193	0.946
BLS Hourly Compensation Index	100.0	102.4	1.024

Source: Analysis by The Lewin Group, 2001.

We applied these two factors to the base 1992 estimate to derive the 1993 update value.

$$\$14,205 * 0.9464 * 1.0240 = \$13,766$$

This process was repeated to calculate the 1994 value based on the 1993 update and so on until updated values through 2002 were calculated.

III. DATA AND ESTIMATION OF BASE COST COMPONENTS

The economic costs related to drug abuse can be divided into three major components: health care, lost productivity, and other impacts (primarily criminal justice impacts). In this section of the report we discuss how the updated estimates have been developed for the respective detailed components and identify key data used for this purpose. As indicated previously, these estimates are built upon the original detail calculations of Harwood et al. (1998), and the estimates developed in the prior update study (ONDCP, 2001).

A. Health Care Costs

Table III-1 displays the health care cost detailed components and their estimated cost for 2002. We assessed the available data and determined the most appropriate method for updating each of these numerous components. The methods for updating each component are described below.

Table III-1
Health Care Costs, 1992 and 2002
(in millions of dollars)

Detailed Cost Components	1992	2002	Annual Change
Community-Based Specialty Treatment	\$3,770	\$5,997	4.8%
Federally-Provided Specialty Treatment			
Department of Defense	\$14	\$8	-5.8%
Indian Health Services	\$26	\$54	7.6%
Bureau of Prisons	\$17	\$39	8.8%
Department of Veterans Affairs	\$113	\$116	0.2%
Health Infrastructure and Support			
Federal Prevention	\$616	\$1,203	6.9%
State and Local Prevention	\$89	\$148	5.2%
Training	\$49	\$69	3.5%
Prevention Research	\$158	\$402	9.8%
Treatment Research	\$195	\$564	11.2%
Insurance Administration	\$268	\$476	5.9%
Medical Consequences			
Hospital and Ambulatory Care Costs	\$518	\$1,454	10.9%
Special Disease Costs			
Drug-Exposed Infants	\$407	\$605	4.0%
Tuberculosis	\$30	\$19	-4.6%
HIV/AIDS	\$3,489	\$3,755	0.7%
Hepatitis B and C	\$462	\$312	-3.9%
Crime Victim Health Care Costs	\$92	\$110	1.8%
Health Insurance Administration	\$340	\$513	4.2%
Total	\$10,653	\$15,844	4.1%

Source: Analysis by The Lewin Group, 2004.

The objective of this part of the report is to provide the reader with the most important data and estimates that relate to the estimates as well as provide a brief description of how the updated estimates have been developed. In accomplishing this, we present or describe the critical data that has been used in developing the updated estimates. This report is actually an extension of Bouchery and Harwood (2001) in the sense that the methods and data sources employed herein are generally identical to those of the earlier report. Thus, the following text does not attempt to replicate all of the data tables and specifications presented in the earlier report, since they can still be directly accessed elsewhere. There have been a few changes necessitated because data series published by agencies have been dropped or replaced. These are noted where applicable.

1. Community-Based Specialty Treatment

Community-based specialty treatment includes all specialty drug abuse treatment which is not delivered through facilities operated by or at a federal agency. The most comprehensive and recent study of treatment spending was done by Mark et al. (1999a and 1999b). Specialty drug treatment spending in 1997 was \$5.3 billion. SAMHSA has commissioned a new study to develop more current estimates of spending, which will take advantage of new data and improved data sets. Estimates from this study should be released in the next year.

The Mark et al. (1999a) estimates include costs for community-based specialty treatment as well as for the Department of Defense, Bureau of Indian Affairs, Bureau of Prisons, and Veterans Affairs. To update the estimate of community-based specialty treatment costs, we obtained estimates of the federal spending for these agencies costs from the ONDCP *National Drug Control Strategy: Budget Summary* (various years) and subtracted these costs from the overall Mark et al (1999a) estimates. The federal specialty treatment costs are discussed in the next section.⁷

Spending for community-based treatment is projected for 1998-2002, since the Mark et al. (1999a) estimates are only available through 1997. While there are numerous factors that influence spending, the projection method has identified two major elements: the number of persons getting “expensive” substance abuse treatment and the rate of inflation in medical prices to consumers (Table III-2). Between 1998 and 2002 the number of persons getting inpatient or residential treatment modestly declined—from 122,600 to 116,100, or 5 percent. Medical costs to urban consumers grew 18 percent, about 4.3 percent annually. The adjustment factors for earlier years are not presented because Mark et al. (1999a) developed estimates for those years.

⁷ Once these amounts were subtracted, the Mark et al. (1999a) estimate for the cost of community-based specialty treatment in 1992 is \$374 million higher than the Harwood et al (1998) estimate of community-based specialty treatment costs. The Mark et al. (1999a) estimate is higher because it is more comprehensive.

Table III-2
Factors for Updating Specialty Treatment Costs, 1998-2002

Data Series	1998	1999	2000	2001	2002
Daily Census of Clients in Inpatient or Residential Care (in 000s)	122.6	(116.0)	109.3	(112.7)	116.1
Consumer Price Index - Medical Services, All Urban Consumers	242.1	250.6	260.8	272.8	285.6

Note: values in () are interpolated from adjacent values because they were not estimated by SAMHSA.

Sources: UFDS/N-SSATS client census online from Substance Abuse Mental Health Services Administration; CPI-M online from U.S. Department of Labor, Bureau of Labor Statistics.

2. Federal Specialty Treatment Costs

A relatively limited amount of specialty substance abuse treatment is funded and delivered through federal agencies. These expenditures were \$217 million in 2002. Specifically, we obtained cost estimates for the Department of Defense, Bureau of Indian Affairs, and Bureau of Prisons from the *National Drug Control Strategy: Budget Summary* (Office of National Drug Control Policy), which is published annually. Thus, estimates were obtained for each year between 1992 and 2001 from these reports. The estimate for 2002 is based on the budget request for that year as reported in the *Budget Summary* for 2002. Values for 1992-2002 are in Appendix C.

The \$116 million estimate for the Department of Veterans Affairs (VA) was derived from an alternative source because the value reported in the ONDCP *Budget Summary* is too broad—it includes costs of many types of health services that drug abusers have obtained. Fortunately, the annual VA spending on specialty substance abuse treatment has been estimated by the VA research department in Palo Alto, CA (Chen et al., 2001 and 2003). They estimated that specialty care worth \$358 million was delivered in 2002, but did not allocate costs between drug and alcohol abuse. The online analytic files of the Treatment Episode Data Set (TEDS) operated by SAMHSA allows veterans entering public treatment clinics to be studied. In 2000, 32.3 percent of veterans being admitted to public substance abuse clinics tracked by TEDS were drug abusers, increasing steadily from only 22.5 percent in 1992. It was thus estimated that \$116 million was spent by VA on specialty substance abuse treatment in 2002, and similar calculations and have been made for 1992-2001.

3. Health Infrastructure and Support

Prevention, training, research, and health administration are also critical health services. The methodology for updating each of the components of health infrastructure and support is discussed, respectively, below.

a) Prevention

The federal government is the primary source of funding for drug abuse prevention services, although the services are primarily delivered through state and local governments in the form of in-school and community initiatives. It is estimated that national spending on drug abuse

prevention was about \$1.35 billion in 2002. The vast majority of this was from federal financing (\$1.2 billion) and the remainder from state and local government funding (\$150 million).

Total federal appropriations for substance abuse prevention in FY2002 was \$2.15 billion. Note that this includes alcohol as well as drug prevention. The values for 1999-2002 are from the *National Drug Control Strategy, FY 2003 Budget Summary*, published February 2002 and values for earlier years were drawn from prior editions of the NDCS. Because these estimates include funding for prevention of alcohol abuse, as well as drug abuse we apportion the spending estimate between alcohol and drug abuse based on data from analyses of the primary reason for treatment among clients in the SAMHSA National Survey of Substance Abuse Treatment Services (or N-SSATS; previously known as the Uniform Facility Data Set or UFDS; Substance Abuse Mental Health Services Administration). The 2002 data indicated that 24 percent of current clients were treated for drug abuse only, and 61.6 percent for both alcohol and drugs (Table III-3). Splitting the comorbid group in half to avoid double counting, the cost of alcohol and drug abuse treatment was apportioned 54.8 percent to drugs. The share allocated to drug abuse has increased from about 40 percent in 1992, as larger shares of clients present with primary drug problems or both drug and alcohol problems.

In addition, State and local substance abuse agencies spent about \$599 million in 1999 on substance abuse prevention, according to *State Resources and Services Related to Alcohol and Other Drug Problems* (National Association of State Alcohol and Drug Abuse Directors, annual). This report and data was terminated due to lack of funding after 1999.

Table III-3
Derivation of State and Local Drug Abuse Prevention Spending, 1992-2002

Data Series	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Spending on Alcohol and Drug Abuse Prevention	\$515	\$517	\$524	\$563	\$495	\$492	\$524	\$599	\$599	\$599	\$599
State and Local as Share of Total Spending	43.4	44.9	43.6	44.7	41.1	43.3	43.6	44.9	44.9	44.9	44.9
Share of TX Clients with Drug Abuse	40.0	40.0	40.0	40.0	40.0	40.0	51.6	52.4	53.3	54.1	54.8
State & Local Spending for DA Prevention	\$89	\$93	\$91	\$101	\$81	\$85	\$118	\$141	\$143	\$145	\$148

Source: National Association of State Alcohol and Drug Abuse Directors. (annual); UFDS/N-SSATS data from Substance Abuse Mental Health Services Administration Web Site.

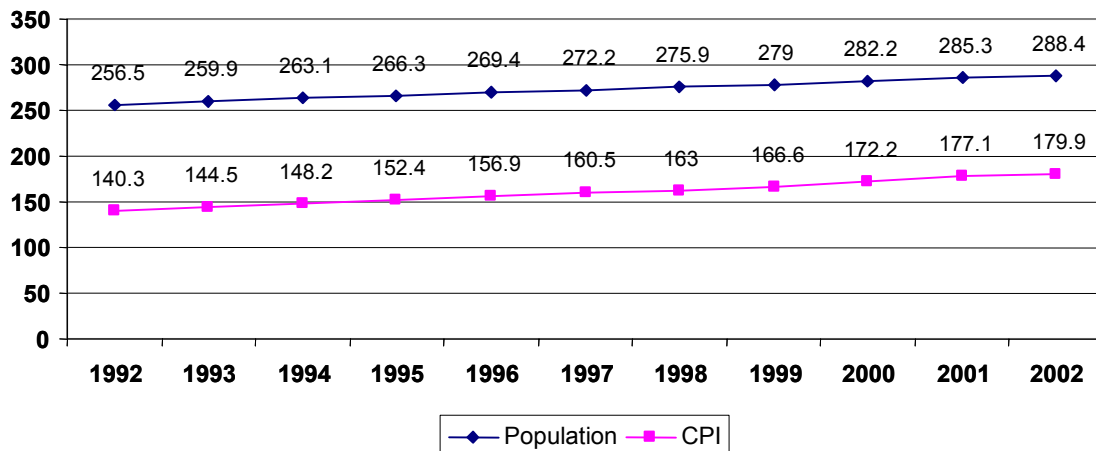
In principle an estimate is desired for spending on prevention that is directed against drug abuse and that includes only spending funded by state and local government (Table III-3). To apportion the spending between alcohol and drug abuse, we use the same ratio applied for federal spending on treatment. To apportion prevention funding between state and local government funds and funds from the federal government and other sources, we use estimates of the proportion of total spending included in the NASADAD report (i.e., spending for treatment, prevention, and all other activities) for alcohol and drug abuse that is from state and local government funds. This proportion was 44.9 percent in 1999, and ranged from 41.1 to 44.9 percent during the 1990s.

Prevention spending related to drug abuse that was funded by state and local governments was estimated at \$141 million in 1999. Prevention spending estimates for 2000-2002 were adjusted only to reflect the growing proportion of those entering treatment with drug abuse problems. Because state and local governments experienced severe budget problems during this period no adjustments were made for either population or inflation growth over these years.

b) Training

The cost of training is projected to total about \$69 million in 2002, from a base of \$49 million in 1992. This estimate includes initial and continuing education related to drug abuse for specialists in substance abuse treatment as well as for other health professionals, law enforcement officials, criminal justice professionals, and clergy. No published data specific to these costs are available. Therefore, we update the 1992 estimate based on real change in the U.S. population and the change in the Consumer Price Index (Figure III-1).

Figure III-1
Trends in Factors for Updating Substance Abuse Training, 1992-2002



Sources: Population data from the Bureau of Census online files; CPI online from U.S. Department of Labor, Bureau of Labor Statistics.

c) Research

Virtually all research related to drug abuse is funded by the federal government and is reported annually in the *NDCS Budget Summary*. Although some foundations, notably the Robert Wood Johnson Foundation, support research as part of their efforts, no breakout between research and services is published. For FY 2002 federal prevention and treatment related research enacted funds came to \$966 million of which about 58 percent was for treatment. Actual spending estimates are available for these two components through 2001. Research spending almost tripled between 1992 and 2002. Annual research expenditures are presented in Appendix C.

d) Health Administration

The cost of operating reimbursement systems (e.g., Medicaid, private insurance, state substance abuse agencies) is not included in estimates of the value of care delivered. The national health

accounts developed by the Centers for Medicare and Medicaid Services (CMS; Web Site) accordingly break out the cost of operating private and public insurance and reimbursement mechanisms. In 2002 CMS analysts estimated that health administration expenses were \$107 billion (an additional 8 percent) on top of \$1.33 trillion in total nation personal health care expenses (Table III-4). This factor has been applied to the projection of about \$6.2 billion spending on substance abuse treatment, and \$6.4 billion spent for care of other health consequences of drug abuse, on other yielding an estimate of \$500 million and \$153 million, respectively for these two components.

Table III-4
Health Insurance Administration Costs, 1992-2002

Data Series	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Health insurance administration costs (\$ in billions)	49	53	58	61	61	61	65	73	80.	90	105
Personal health care expenditures (PHCE; \$ in billions)	720	776	817	866	911	959	1010	1065	1135	1231	1340
Health insurance as % of PHCE	6.9%	6.8%	7.1%	7.0%	6.7%	6.3%	6.4%	6.9%	7.1%	7.3%	7.8%

Sources: Data on national health accounts published online by Centers for Medicare and Medicaid Services.

Based on CMS data, the level of health administration costs has increased more rapidly than personal health care costs. During most of the 1990s these costs were about 7 percent. Annual ratios from the CMS national health accounts were used in developing these values for 1998-2002, as was done for estimates in ONDCP (2001) and Harwood et al. (1998).

4. Medical Consequences

In addition to the care offered by the specialty substance abuse providers above, drug abuse increases health care costs in the following ways:

- Drug abuse may cause other illnesses (e.g., AIDS) that require treatment;
- Drug abuse may complicate the treatment of other illnesses or injuries, perhaps resulting in longer lengths of hospital stays; or
- Drug abuse may precipitate violent crimes that result in injuries that require medical care.

The methodology for updating these costs is described in the next several sections. In the section on hospital care costs, we describe our methodology for updating the costs for the following types of hospital medical care:

- Care for conditions specifically caused by drug abuse (e.g., polyneuropathy due to drugs, narcotics affecting fetus or newborn via placenta or breast feeding); and
- Additional hospital days resulting from comorbid drug abuse (secondary to other disorders).

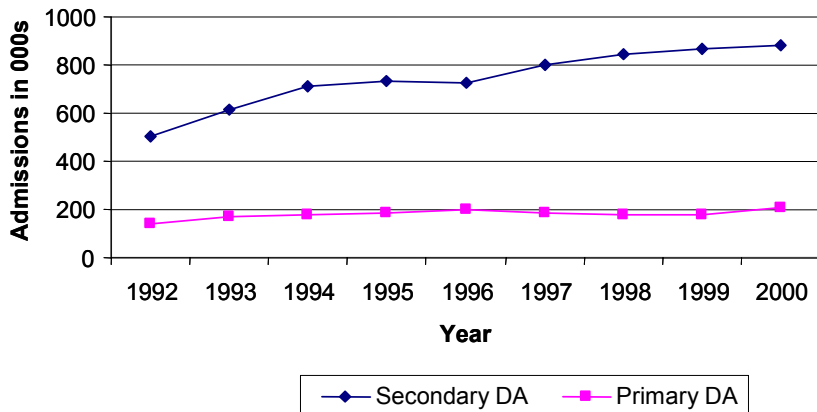
In the section on “specific disease costs” we describe the methodology for updating the estimated cost of specific health problems that are partially attributable to drug abuse. These illnesses are, respectively, HIV/AIDS, hepatitis B and C, drug-exposed infants, TB, and the health care costs related to violent crime. Finally, we describe how updates were done for health administration costs.

a) Additional Hospital Care Costs

Harwood et al. (1998) found that hospital stays where the patient has a secondary, but no primary, diagnosis of drug abuse are longer on average. The cost of hospital stays with primary diagnoses of drug abuse are included under the specialty care estimate, above. That study found that just over 2 percent of hospital stays (about 800 thousand) had a secondary drug abuse diagnosis, accounting for 500,000 days of hospital care in 1992, at a cost of \$518 million.

The projected estimate for 2002 is \$1.454 billion. The projected estimates were extrapolated from the 1992 value based on changes in (a) the number of hospital patients with secondary diagnoses of drug abuse and (b) the consumers price index for medical services. The data on hospital patients with secondary drug abuse diagnoses is from the National Hospital Discharge Survey (NHDS), which was the same data source used in Harwood et al. (1998) to analyze this issue initially. Tabulations of NHDS data are published annually by the National Center for Health Statistics on their web site. We have tabulated the number of admissions to short term hospitals in the US that had either a primary or secondary diagnosis of drug abuse⁸. Data for 1992 through 2000 (the most recent year) is graphed in Figure III-2 and appears in Appendix B..

Figure III-2
Admissions to Short-term Hospitals
with Primary or Secondary Diagnosis of Drug Dependence/Abuse, 1992-2000
(in thousands)



Source: NHDS data published online by the National Center for Health Statistics.

⁸ Since the primary objective was to represent the trends in this factor, only the major drug abuse diagnoses were tabulated: drug dependence, drug abuse (exclusive of tobacco and alcohol) and drug psychoses.

While there was rapid growth in the early 1990s in the number of hospital admissions with secondary drug abuse diagnoses, growth then moderated to about 3.5 percent annually from 1994 forward. This rate was used to develop the cost projections for 2001-2002.

b) Specific Disease Costs

Certain types of medical consequences of drug abuse are underrepresented in the hospital and ambulatory care costs. These include the cost of drug-exposed infants, TB, HIV/AIDS, and hepatitis B and C and violent crime. Methods for updating these disease specific costs are described in this section.

(1) Drug-Exposed Infants

This cost has been trended forward from 1992, and is \$605 million for 2002. The original estimate of \$407 million for 1992 was based on several studies in the early 1990s (United States General Accounting Office; 1990, Phibbs et al., 1991; Joyce et al., 1994) that found newborns of women who used cocaine during their pregnancy were more likely to require care in neonatal intensive care units and to end up as “boarder babies.”

While there appears to have been no rigorous national level analysis of the trends in the problems experienced by drug-exposed infants, a SAMHSA (2004) analysis of the National Survey on Drug Use and Health (NSDUH) found that in 2002, 3 percent of pregnant women had used illicit drugs in the past month, about half the rate of other women. However, use of cocaine, which is the major correlate of neonate problems, was only reported by 0.1 percent of pregnant women (about 4,000 pregnant women in a given month). Most of the illicit use was of marijuana (2.7 percent) or prescription medications (0.9 percent). Estimates from the NHSDA for earlier years were based on small numbers of observations and displayed significant variability from year to year. In contrast, one of the earliest analyses of the NHSDA (Gomby and Shiono, 1991) estimated that 4.5 percent of newborns had been exposed to cocaine in utero. It is very possible that cocaine use by pregnant women has declined massively, perhaps due in large measure to the research and public information campaigns in the 1990s. If this is the case, then the current “projection” may be much too high.

The projection was based on growth 1992-2002 in the number of babies born per year (National Center for Health Statistics; this was virtually constant at about 4 million) and the change in the consumer price index for medical services, at 50.2 percent between 1992 and 2002 (see Appendix Table B-4).

(2) Tuberculosis (TB)

This component of costs has actually declined in both nominal as well as real terms since the initial estimate was developed for 1992. At \$19 million in 2002 (versus \$30 million in 1992 and \$22 million in 1998), this is one of the smallest cost components separately trended forward. However, in the early 1990s TB was a major concern because after many decades of declines in incidence the rates were once again on the increase, and a number of patients had multiple-drug-resistant strains of TB. CDC data (published on the CDC web site) show that since 1992 the number of new TB cases has declined over 40 percent to about 15,000 cases per year, and the proportion of TB cases presenting with drug abuse as an exposure factor fell from 11.5 percent in

1996 to 9.2 percent in 2002. Note however, that only about 4.5 percent of TB cases were attributed to drug abuse in Harwood et al. (1998), recognizing that many TB patients had multiple exposure factors.

TB costs related to drug abuse were projected from the 1992 estimate of \$30 million based on the change in drug-related TB cases (a decline of about 55 percent 1992-2002; see Table III-5) and the change in the consumer price index for medical services (50 percent in 1992-2002).

We measure the real change in the health care costs attributable to tuberculosis (TB) as the change in the number of cases of TB that are attributable to injecting or non-injecting drug users according to the Center for Disease Control (CDC). The number of TB cases is available from the CDC for each year between 1992 and 2002. However, the percentage of cases attributable to injecting or non-injecting drug users is only available for 1996 through 2002. Between 1992 and 1996, we assume the percentage of cases attributable to injecting or non-injecting drug users was fixed at the 1996 level. Table III-5 shows the number of TB cases overall and related to drug use between 1992 and 2002. We measure the price change in the TB costs related to drug abuse based on the change in the CPI-M (Appendix B).

Table III-5
Tuberculosis Cases, 1992-2002

Data Series	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total Cases (in 000s) ¹	26.7	25.3	24.4	22.9	21.3	19.9	18.4	17.5	16.4	16.0	15.1
Percent Non-Injecting Drug Use ¹	N.A.	N.A.	N.A.	N.A.	7.7%	7.8%	7.7%	7.1%	7.5%	7.2%	7.0%
Percent Injecting Drug Use ¹	N.A.	N.A.	N.A.	N.A.	3.8%	3.3%	2.9%	2.6%	2.5%	2.3%	2.2%
Drug Related TB Cases ²	3,067	2,908	2,802	2,629	2,454	2,203	1,946	1,701	1,638	1,519	1,387

¹ Source: National Center for Health Statistics (2003). *TB Surveillance Reports, 1996-2002*.

² Source: calculation by The Lewin Group.

This update assumes that there was not a major change in the treatment cost per case for TB between 1992 and 2002. However, in the face of resurgent TB, a major public health push was undertaken, involving new patterns of care. These changes may have affected treatment costs.

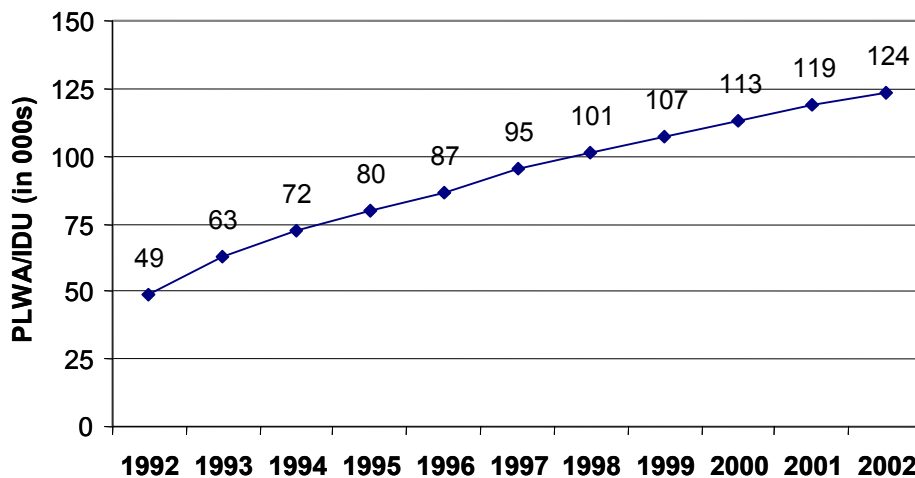
(3) HIV/AIDS

Risk of infection with HIV from injection drug use is one of the most feared consequences of drug abuse. This report estimates that in 2002 \$3.75 billion was spent to treat 122,000 persons living with AIDS that have a history of injection drug use.

Data reported to the CDC indicate that nearly a third of persons living with AIDS in 2002 (and marginally higher proportions in the 1990s) have a history of injection drug use (*HIV/AIDS Surveillance Reports*, Centers for Disease Control and Prevention, 2003). This comes to an estimated 122,000 persons out of the total of 385,000 persons living with AIDS in 2002. Due to

both the increased effectiveness of HIV therapies and the spread of the disorder, the total population living with AIDS has grown from about 140,000 in 1992. Bozzette et al. (2001) have shown that most of the costs of treating HIV are for those that meet clinical criteria for AIDS, in contrast to HIV infected individuals that have few symptoms or are asymptomatic. This analysis uses the proportion of “persons living with AIDS” (PLWA) with a history of injection drug use to determine the share of national HIV spending to allocate to drug abuse. Figure III-3 shows the number of adult persons living with AIDS in 1992 through 2002. Detailed data and tabulations are in Appendix B.

Figure III-3
Persons Living with AIDS, with Injection Drug Use Exposure, 1992-2002
 (persons in thousands)



Source: analysis of data from Center for Disease Control and Prevention, 2003

The most recent comprehensive study of the cost of caring for individuals with HIV/AIDS (Hellinger and Fleishman, 2000) estimated that the cost of treating all people with HIV disease in 1996 was between \$6.7 and \$7.8 billion. This range was calculated through two different approaches, specifically, payer-based and provider-based. The estimates calculated under each approach were compared. We use the mid-point between these two estimates, \$7.25 billion, as our estimate for total medical spending on HIV/AIDS in 1996. A more recent study (Bozzette et al., 2001) essentially confirmed the earlier estimate. The value was moderately lower, but the study design was expected to capture fewer of the costs and the study found that costs per person treated for HIV infection declined about 14 percent from 1996 to 1997-98. This was the time that new, more effective medications for HIV became generally available.

This study assumes that after 1998 HIV costs increased at the same rate as the CPI for medical care (the CPI-M), which may be a conservative assumption because pharmaceutical prices in general have risen more rapidly than the cost of other medical services since the late 1990s.

(4) Hepatitis B and C

Injection drug use is also known to be a vector for transmission of viral hepatitis B and C (HBV and HCV, respectively). Studies by CDC (1996, 2000) found that in the mid-1990s about 12

percent of hepatitis B cases and 23.6 percent of hepatitis C cases belonged to the injection drug user exposure category. Data on injection drug exposure has not been published since that time.

In this update it is projected that the cost of treating injection drug related viral hepatitis was about \$312 million in 2002, down from the estimate of \$462 million for 1992 and \$434 million in 1998. Despite 50 percent growth in medical costs between 1992 and 2002 these costs have declined because the acute incidence of HBV and HCV declined by more than half, and two thirds, respectively over this time period. In 2002 there were only 6,800 reported acute HBV cases and 3,600 estimated HCV cases, although there are 1.25 million and 2.7 million individuals with chronic (non-acute) cases that could cause health problems in the future. The change in these costs since 1992 has been projected based on the changes in (a) the incidence of “reported” and “estimated” acute hepatitis B and C cases (**Table III-7**) and (b) the change in consumer prices for medical services. These estimates assume that there has not been a major change in the treatment cost per case for hepatitis between 1992 and 2002, apart from the average increase in medical inflation.

Table III-6
Acute Hepatitis Cases, 1992-2002
Hepatitis B (Reported) and Hepatitis C (Estimated)
(cases in thousands)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Hepatitis B	16.1	13.4	12.5	10.8	10.6	10.4	10.3	7.7	8.0	7.8	6.8
Hepatitis C	12.0	9.4	8.9	5.9	5.9	6.3	6.8	6.4	5.7	4.0	3.6
Total	28.1	22.8	21.4	16.7	16.5	16.7	17.1	14.1	13.7	11.8	10.4

Sources: Web site of Centers for Disease Control and Prevention. Fact sheet on *Disease Burden from Hepatitis in the United States*, and the *Morbidity Mortality Weekly Report*.

(5) Violent Crime

The cost of medical care provided to victims of drug abuse-related violent crime was estimated at \$110 million in 2002. The National Crime Survey estimated that there were about 5.25 million violent victimizations, of which 380,000 (or 7.2 percent) are attributed to drug abuse. Studies of arrestees and prisoners find that about 5 percent of assaults and a quarter of robberies are committed by individuals addicted to expensive drugs (this literature was discussed in Harwood et al., 1998). The number of violent crimes as estimated by the NCS declined almost 50 percent since 1992 and most of that (35 percent) was since 1998. There has been no analysis of whether or how the role of drug abuse in violent crime has changed over this time period.

This \$110 million estimate is based on 2002 data about the number and type of violent crimes. Also, annual estimates of violent crimes for other years are in Appendix B. In order to develop cost estimates we need data on how many of the violent crimes are caused by drug addiction, and the cost of health care per crime. These factors are not tracked in periodic data series, however, so these factors have been adapted and updated from Harwood et al. (1998). The CPI for medical services has been used to adjust the medical care cost per crime. The adjusted cost per victim factors are in Table IV-7. Thus, the estimated average cost of \$210 in 1992 for medical care of assault victims was \$315 in 2002 dollars, and the cost for robbery, rape and homicide were \$6, \$42 and \$13,900, respectively. Fortunately, many victims of non-fatal victimizations

require very little or no medical care immediately after the attack, which makes the averages seem low. However, these estimates do not include costs for future disability, care for emotional trauma or the pain and suffering that many experience following trauma. The details of the calculations are in Table III-7.

Table III-7
Estimated Cost of Medical Care for Crime Victims, 2002

Type of Offense	Annual Offenses (in 000s)	Share attributed to Drug Abuse	Offenses attributed to DA (in 000s)	Cost per victim	Annual Cost (\$ in millions)
Assault	4,581	5.1%	233.6	\$315	\$73.71
Rape	146	2.4%	6.5	\$42	\$0.15
Robbery	512	27.2%	139.4	\$6	\$0.84
Homicide	16	15.8%	2.6	\$13,900	\$35.40
Subtotal	5,255	7.3%	382.1	\$288	\$110.10

c) Health Administration

Similar to the calculation of health insurance administration costs related to specialty care, health administration costs related to the medical consequences of drug abuse are calculated as a percentage of the total medical service costs related to medical consequences of drug abuse. In 2002 these additional health consequences entailed projected costs of \$6.378 billion. Based on the ratio that health insurance administration was almost 8 percent of personal health care expenditures, these costs totaled \$513 million, an increase from \$298 million in 1992.

B. Productivity Losses

Productivity losses represent a loss of potential economic activity, in contrast to expenditures for health goods and services and criminal justice system operations. Thus, productivity losses might be thought of as a loss of potential gross domestic product brought about because of a reduction in the supply or the quality and effectiveness of the labor force. In the US economy sustained growth (or contraction) in the workforce results on average in sustained growth in gross domestic product, although there certainly are short term variations as the business conditions change--as reflected by swings in the unemployment rate. Between 1970 and 2000 the US labor force (those wanting to work) grew 59 million persons (from 84 to 143 million) and the level of employment increased by 59 million persons (from 79 to 138 million). Growth or shrinkage of the labor force results in remarkably similar changes in legitimate employment. In general, there is reason to believe that a sustained decrease in the legitimate labor supply reduces not only the pool of workers but ultimately the number of persons employed in the legitimate economy and therefore the size of the economy as measured by, e.g., the gross domestic product. For example, 2 million drug abusers are unavailable or choose not to work in order to pursue crime careers or are incarcerated)

There are several different ways in which any major health problem decreases the size or effectiveness of the legitimate labor supply in the United States, or any other economy. These

include premature deaths, as well as disability and sickness, including time convalescing or recovering. Moreover, in the case of drug abuse we have the drain on our legitimate workforce and economy posed by individuals pursuing “crime careers” (theft, drug sales) instead of legitimate work, as well as the loss from incarceration of drug offenders. Since a single drug abusers may experience all of these over time, the calculations have been performed in a manner to attempt to avoid “double counting.” This is done by using “annual averages” which account for individuals moving in and out of particular states or activities.

Valuation of the loss of a worker from productive activities is based on his/her expected value of productivity. In the labor market this equals their expected wage rate plus the value of fringe benefits (about 30 percent on top of wage/salary before taxes). Under this methodology non-market, or household productivity is also valued. It is equal to the cost of hiring someone to perform the services they are unable to perform due to sickness, disability or death. If a person has primary household responsibility, studies find their household productivity and thus household services replacement cost is higher than for a person that also works out of the home.

In 2002 the average hourly compensation for civilian employees (the “employer cost for employee compensation”, or ECEC) was just over \$23, of which \$6.50 was for benefits such as employer contributions for insurance of various types, retirement contributions, social security and employment taxes. Studies have estimated the cost of replacing full-time household services to be somewhat less than the value of full-time employment. Individuals of different ages and genders have different average rates of expected employment, compensation and housekeeping contributions. The original, detailed estimates from 1992 incorporated national averages for these productivity-related factors as well as available detail about the demographic composition of drug abusers in the workforce, in treatment, engaged in crime careers and/or incarcerated. By updating the 1992 estimates it is assumed that those demographic distributions have not changed over time.

Figure III-4 below illustrates the impact of drug abuse on the loss of potential productivity from the legitimate economy. Total economic productivity (gross domestic product) is the product of the size of the employed workforce and the value of their productivity, or box OABC. When drug abuse impairs or diverts workers it effectively reduces the size of the workforce and therefore the size of legitimate productivity to ODEC, which is smaller than box OABC. This graphic could be modified to reflect some drug abusers staying in the legitimate workforce, but at lower productivity jobs. This could take the form of impacts of drugs on functioning and productivity or avoiding jobs with drug testing that might have higher responsibilities and wages.

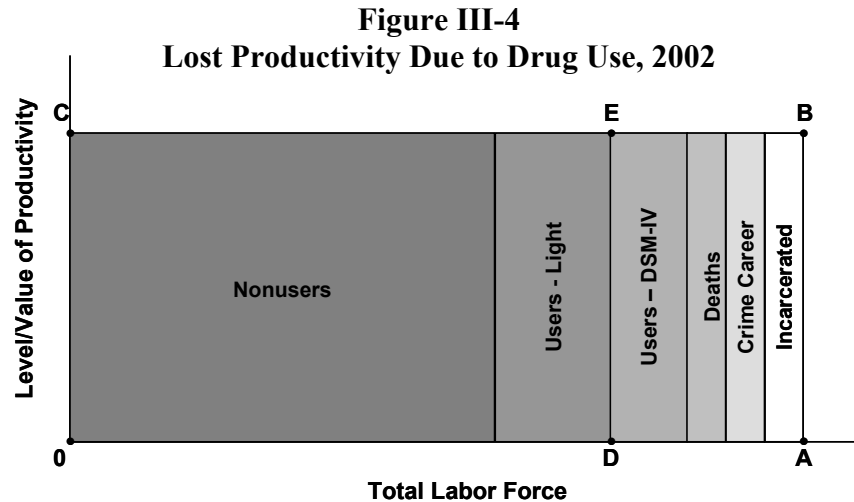


Table III-8 displays the cost components of lost productivity and the 1992 and 2002 estimated cost for each component. The cost for all of the components of the productivity loss estimate increased in this period. The fastest increases were for productivity losses related to drug abuse-related illness and to incarceration. The losses attributed to these components, respectively, increased 8.9 and 8.1 percent annually. In contrast, costs due to drug abuse-related deaths increased very little, primarily due to the fact that effective treatments are now available for HIV.

Table III-8
Productivity Losses, 1992 and 2002
(in millions of dollars)

Cost Components	1992	2002	Annual Change
Premature Death	\$22,586	\$24,646	0.9%
Drug Abuse-related Illness	\$14,205	\$33,452	8.9%
Institutionalization/Hospitalization	\$1,477	\$1,996	3.1%
Productivity Loss of Victims of Crime	\$2,059	\$1,800	-1.3%
Incarceration	\$17,907	\$39,095	8.1%
Crime Careers	\$19,198	\$27,576	3.7%
Total	\$77,432	\$128,566	5.2%

Source: Analysis by The Lewin Group, 2004.

In the next sections we address how we update each of these cost components.

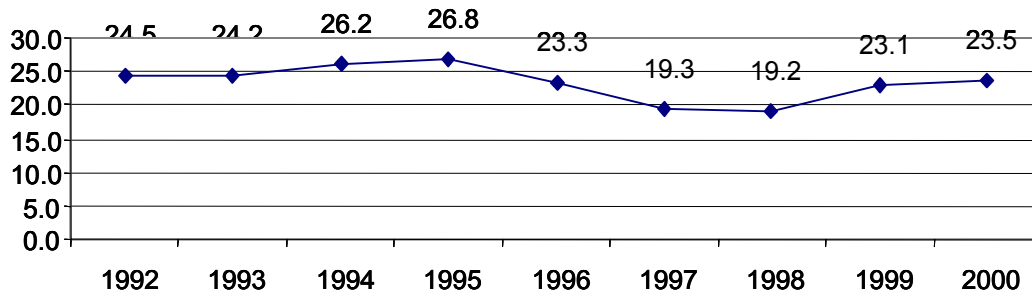
1. Premature Death

In the most recent year with mortality data (2000) a total of 23,544 deaths have been attributed to drug abuse, and costs have been projected at \$24.6 billion in 2002. This amounts to an average loss of just over \$1 million for each death, and reflects the expected lifetime value of productivity discounted at 3 percent. The previous estimate was for 1992, with \$14.6 billion in losses from 24,476 deaths. This cost estimate was projected ahead to 2002 based on the rate of 5.7% change in 1999-2000.

The costs of premature mortality are somewhat different from all other costs included in this study. Mortality costs include the value of lost potential employment in the year of the death, as well as the discounted value of productivity over the remainder of their actuarially expected lifetime. This is similar conceptually to how the valuation of capital equipment or structures is done. Consequently, individuals (or equipment) that are early in their productive life have a much higher valuation than those that are further along in their productive life. This valuation method is termed the “human capital approach” and is the most commonly used valuation approach in cost of illness studies for health problems. The human capital approach yields cost estimates that can be considered “conservative,” in the sense that they are substantially lower than estimates that come from the alternative valuation method called “willingness-to-pay” (or WTP; see Miller et al., 1998)⁹.

The estimates in this update are generally comparable to prior estimates. However the national system for collecting data about deaths changed from the ICD-9 to the ICD-10 diagnostic coding systems¹⁰ beginning in 1999. While there is general concordance between the old and new editions (see the annual totals from 1992 through 2000, Figure III-5), there is always some uncertainty about the implementation of a major reporting system change. Consequently it is difficult to know to what extent coding or real factors accounted for the increase in deaths attributed to substance abuse from 19,227 in 1998 (using ICD-9) to 23,070 in 1999 (using ICD-10) and 23,544 in 2000.

Figure III-5
Drug Abuse-Related Deaths, 1992- 2000
(patients in 000s)



Source: Mortality data from National Center for Health Statistics Web Site.

The costs due to premature death were re-estimated using the following components:

- The number of deaths by diagnosis, age, and sex;
- The percent of deaths attributable to drug abuse by diagnosis; and
- The estimated lost lifetime productivity per death by age and sex.

⁹ This alternative method recognizes that communities and families are generally willing to spend much more to treat or prevent life threatening illnesses than the benefited person is likely to earn over the remainder of their expected life. WTP studies variously put the value of a life/death in the range of \$4 to \$6 million.

¹⁰ The ICD, or International Classification of Diseases is the standard coding system used across the world to record and collect mortality data. The ICD is coordinated by the World Health Organization.

This analysis used the same list of diagnoses and attribution factors that was used by Harwood et al. (1998) to calculate the baseline 1992 estimate (this can be found in Appendix B).¹¹ The initial list of diagnoses and attribution factors was obtained from the National Institute on Drug Abuse which developed the list for the Drug Abuse Warning System. The list includes diagnoses including abuse of and dependence on psychoactive drugs as well as accidental and intentional (i.e., suicide) poisoning by a range of drugs and medications, psychoactive and otherwise. The Harwood et al. (1998) study added TB, hepatitis B and C and HIV/AIDS to the list of diagnoses attributable to drug abuse and reviewed the literature to arrive at attribution factors..

Data on the number of deaths by age and sex were obtained for each cause of death from death certificate data compiled and published (via both hard copy and their Web Site) by the National Center for Health Statistics for 1992 through 2000. Tables B-9 and B-10 in *Appendix B* show the number of deaths and the attribution factor (the proportion of deaths attributed to drug abuse) for each diagnosis used in the calculations. The largest change in drug-related mortality from 1992 to 2000 was the decline in drug-related AIDS deaths from about 10,700 to 4,600.

The number of deaths for each age/sex category was multiplied by the estimated value of lifetime earnings. The original lifetime earnings table was obtained from Dorothy Rice (personal communication), a leading cost of illness researcher. The estimates for the expected value of lifetime earnings for 1992 are trended to future years based on the Bureau of Labor Statistics series on "Employer Cost for Employee Compensation, Civilian, All Workers, Total Compensation, Cost per Hour Worked." (U.S. Dept. of Labor, Bureau of Labor Statistics, web page for National Compensation Survey). The ECEC increased by an average of 3.0 percent annually between 1992 and 2002 and 4.1 percent between 1998 and 2002 (Appendix B-4).

The cost estimates for 2001 and 2002 are projections, because mortality data was not available for 2001-2002. The annualized increase between 1999 and 2000 was 5.7 percent. The number of deaths increased by 2 percent from 1999-2000 and the remaining 3.7 percent is slightly smaller than the increase in the ECEC.

2. Drug Abuse-related Illness

Individuals with medical problems may become disabled or otherwise have difficulty in getting or functioning in jobs, depending on the nature and severity of the health problem. There is evidence that this can happen with individuals with severe drug problems. This report projects that such productivity losses were \$33.5 billion in 2002, an increase from \$14.2 billion in 1992 and \$23.1 billion in 1998. These costs have been projected to increase by 9.7 percent annually since 1998.

Analyses have found that individuals who have used drugs intensively enough to meet clinical criteria for drug dependence are less successful in the workforce than their peers, although other studies have found that drug users on average do not have adverse workforce outcomes. Analysis of the National Longitudinal Alcohol Epidemiology Survey estimated that about 3

¹¹ The definition of deaths attributed to drug abuse in this study is broader than the definition used by the CDC in its tabulation of "drug-induced" deaths.

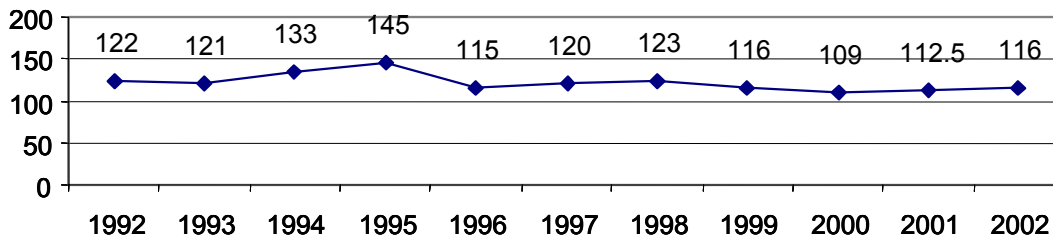
percent of the population age 18-64 (about 4.5 million persons) were or had previously been dependent on illicit drugs and that these individuals either had lower wages or higher rates of unemployment than their peers (Harwood et al., 1998).

This component was trended forward, adjusting for changes in wage increases using the ECEC (see above) and for real increases by the trend in the number of persons that had used cocaine or marijuana more than 100 times in their lives. Use on 100+ days increased by 5.2 percent annually between 1992 and 1998, according to the NHSDA. This measure has been discontinued since 1998, thus for this update the growth trend in this factor was projected forward. Note, however, that this measure is only a proxy for the number of persons that are or have ever been drug dependent—which the NHSDA and other major surveys did not estimate until late in the 1990s. The complexity of the analysis made it necessary to trend rather than re-estimate this component. It will be important to reanalyze this in the future, particularly given that the forecasting method yields a rate of increase that is materially higher than for most of the other cost components.

3. Institutionalization/Hospitalization

When drug abusers are in residential or hospital treatment facilities they are unable to work, and again this constitutes a loss of potential productivity, estimated at \$2.0 billion in 2002. The 2002 N-SSATS survey of substance abuse treatment facilities estimated that 116,000 patients were in a 24 hour care facility on a given day, slightly below the 122,000 enrolled in 1998 (Figure III-6). Just over half of these patients were drug (as opposed to alcohol) abusers (see Table III-3, above).

Figure III-6
Substance Abusers in 24 Hour Specialty Care, 1992- 2002
(patients in 000s)



Source: Data from the N-SSATS and UFDS, SAMHSA Web Site.

The 2002 estimate was produced by adjusting the 1992 estimate for the change in the number of patients and change in hourly employee compensation (the ECEC, discussed above). This cost component increased by about 3 percent annually between 1992 and 2002, less than the increase in employee compensation, because enrollment in 24 hour care dropped fractionally.

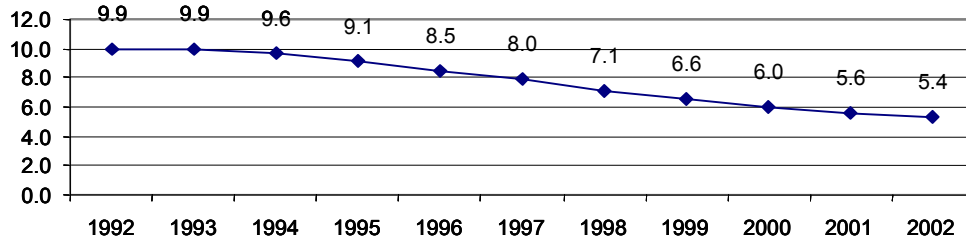
4. Victims of Crime

Crime victims often need to take time away from work and/or household responsibilities to recuperate or otherwise get affairs in order after a violent crime or theft. These losses of potential productivity are estimated at \$1.8 billion in 2002, which is a slight reduction from the

\$2.1 billion in such losses in 1992. These costs fell because violent and property crime rates fell by more than 50 percent in the past 10 years.

In the section on health costs (above), it was reported that in 2002 about 382,000 individuals suffered drug abuse-attributable violent crimes. Property crimes are much more numerous. This study attributes about 5 million property offenses in 2002 as offenses committed in order to pay for illicit drugs driven by drug disorders. Thus, this study estimates that over a quarter of the 17.5 million property offenses in 2002 may be attributable to drug abuse (annual data from the Bureau of Justice Statistics National Crime Survey are in Appendix B). Thus, in 2002 a total of 5.4 million violent plus property victimizations were attributable to drug abuse. The trend in this data from 1992 to 2002 is graphed in Figure III-7.

Figure III-7
Drug Abuse-Related Victimizations, 1992- 2002
(in millions)



Source: Lewin Group analysis of the National Crime Survey from the Bureau of Justice Statistics.

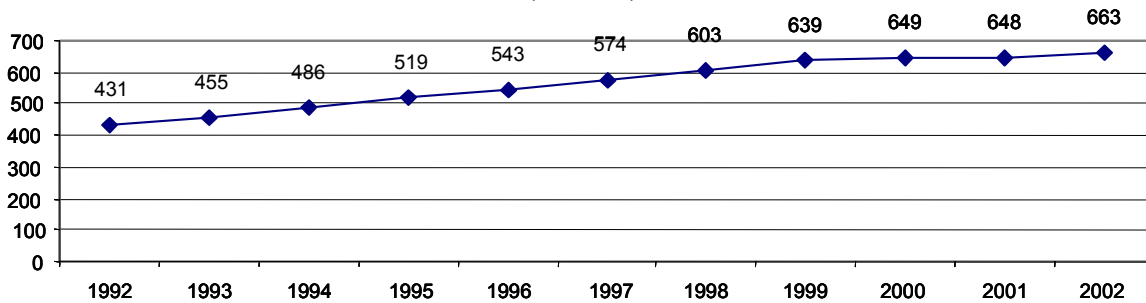
These calculations assume that the same amount of productive activity was lost by type of crime as in the estimates for 1992 (on average 4+ days for violent crime and 2 days for property crimes) and that victims had the same average demographic profile. The value of each day lost was estimated to be \$133 in 1992, which was adjusted to \$180 per day in 2002 based on the 35 percent increase in the ECEC from 1992 to 2002.

5. Incarceration

Incarceration of offenders for drug-related crimes is the largest cost component of drug abuse at \$39 billion in 2002, or about 21.7 percent of total costs. These costs rose from \$17.9 billion in 1992 to \$30 billion in 2002. Costs increased by 8.1 percent annually between 1992 and 2002 due in almost equal measures to increases in the number of incarcerated drug offenders and wage increases.

In 2002 there were about 663,000 individuals incarcerated on drug-related offenses: 475,000 for violations of drug laws, and another 190,000 for drug-related property or violent crimes. This total had increased from 431,000 in 1992 (Figure III-8).

Figure III-8
Inmates Incarcerated for Drug-Related Offenses, 1992-2002
 (in 000s)



Source: Analysis of BJS online data on prison and jail inmates.

Similar to the update factors derived for the lost productivity of crime victims, productivity lost due to incarceration is updated based on two factors. The number of individuals under incarceration for drug abuse-related crime in each year between 1992 and 2002 is calculated based on three components:

- The number of individuals under incarceration on June 30th of the year;
- The distribution of individuals under incarceration by primary offense; and
- The percentage of crimes of each type that are attributable to drug abuse (Table III-8, above).

The number of individuals under incarceration in local jails is reported by the Bureau of Justice Statistics as of June 30th of each year. The number of individuals in state and federal prison was reported as of December 31st of each year between 1992 and 2002. For this time period, the number of prisoners as of June 30th of a particular year is estimated by averaging the number of prisoners from the preceding and subsequent December 31st. Beginning in 1998 the number of state and federal prison inmates is reported in each year as of June 30th of the year.

The offense distribution of jail inmates is only available for 1989 and 1996. The offense distribution of state and federal prison inmates is only available for 1991 and 1997. The distribution of individuals under incarceration by primary offense has been calculated for the remaining years by assuming a constant trend between these years, and assuming no further change in the distribution through 2002. Appendix Table B-10 lists the percentage of local jail, state prison, and federal prison inmates by primary offense based on this assumption. Appendix Table B-11 provides detail for 1992 to 2002 on the number individuals under incarceration by offense and the attribution factors for drug abuse. Figure III-7 shows the number of individuals incarcerated for drug abuse-related offense between 1992 and 2002. The price change in the cost of lost productivity due to drug abuse-related crime is measured via the BLS's ECEC.

6. Crime Careers

Studies of addicts of expensive drugs such as heroin and cocaine entering treatment consistently find that on the order of a third of them rely on illegal activities, such as drug dealing and manufacture, property crime and commercial sex, to buy drugs and make a living. In this report, it is projected that crime career costs were \$27.6 billion in 2002, an increase from \$19.2 billion

in 1992. This may be the most tentative estimate in the study because of the enormous challenges in studying and quantifying the population of addicts.

The 1992 estimate was based on an estimate that there were about 600,000 heavy drug users that had dropped out of the legitimate labor market for a crime career, out of a total of about 1.7 million heavy drug users (Rhodes et al., 1995). The estimate that about 35 percent of heavy drug users pursued crime careers came from drug treatment populations—arguably among the most dysfunctional drug abusers.

The estimate of drug abusers engaged in crime careers has been trended forward using two different data series because the series from 1992 through 1998 (see Appendix Table B-4 for these estimates of “heavy drug users” published in the 2001 *National Drug Control Strategy*) was discontinued. The estimates from 1998 to 2002 trended down by 1.4 percent annually. This was based on Rhodes et al., (2001) study of trends in the number of hardcore cocaine and heroin users from 1988 to 2000. Note, however, the Rhodes et al., (2001) estimate of 3.6 million hardcore cocaine and heroin users is twice as large as the hard core heavy drug user population for 1992. This set of estimates has not accordingly doubled the crime careers estimate because it is necessary to look more carefully at the degree of involvement in crime of the population studied. It seems likely that the most recent Rhodes et al., (2001) estimate uses a less severe definition than the earlier studies, and that a smaller fraction of the 3.6 million hard core users are engaged in drug-related crime careers. The price change in the cost of lost productivity due to drug abuse-related crime has been measured via the BLS's ECEC (Appendix Table B-4).

C. Cost of Other Effects

There are two additional types of costs. These are the cost of goods and services used or lost due to drug-related crime and of certain administration costs of the social welfare system. The government spent over \$167 billion on criminal justice services (police, courts, prosecutors, corrections) in 2001 (Bureau of Justice Statistics, 2004), increasing by about 6 percent annually between 1992-2001. Much of this is used for drug abuse. In this section we present estimates of how much of this is attributable to drug abuse, trended forward to 2002.

The costs associated with the social welfare system are different than might be expected. First, it appears that a relatively small fraction of social welfare beneficiaries get benefits *because of* their drug abuse. Second, in social cost studies only the cost of administering the program is counted, not the value of the resources distributed. Table III-9 displays the estimates of these costs for 1992 and 2002.

Table III-9
Cost of Other Effects of Drug Abuse, 1992 and 2002
(in millions of dollars)

Cost Components	1992	2002	Annual Change
Cost of Goods and Services Lost to Crime			
Criminal Justice System Public Costs			
State and Local Police Protection	\$4,503	\$9,785	8.1%
State and Local Legal Adjudication	\$1,074	\$2,336	8.1%
State and Federal Corrections	\$7,495	\$14,236	6.6%
Local Corrections	\$1,333	\$2,694	7.3%
Federal Spending to Reduce Supply	\$4,126	\$6,228	4.2%
Private Costs			
Private Legal Defense	\$365	\$647	5.9%
Property Damage for Victims of Crime	\$193	\$206	0.7%
Social Welfare	\$337	\$231	-1.8%
Total	\$19,426	\$36,413	6.5%

Source: Analysis by The Lewin Group, 2001.

The largest rates of increases among the components were for police protection and legal adjudication costs. These costs both increased at 8.1 percent annually during this period. These increases are due to growth in overall police protection and legal adjudication spending (which was about 6.5 percent annually) as well as growth in the proportion of that spending that we attribute to drug abuse. The percentage of arrests attributable to drug abuse increased from 12.9 percent in 1992 to 15.5 percent in 2001.

Two of the components had very low rates of increase or declined between 1992 and 2002. The cost of property damage for victims of crime grew less than 1 percent annually, and social welfare program administration costs decreased 3.7 percent annually. These two components represented only 1.2 percent of the cost of other effects in 1992.

1. Loss of Goods and Services Due to Crime

Crime-related costs include both the resources used by the public to address crime as well as private resources. These costs include costs for police protection, legal adjudication, corrections, federal funds for supply reduction efforts, and private costs for legal defense and property damage. Each of these components of cost is discussed in the following sections.

a) Criminal Justice System Public Costs

We address three types of public costs. These are police protection and legal adjudication, corrections costs, and the cost of federal efforts to reduce the supply of drugs.

(1) State and Local Police Protection, Legal and Adjudication Costs

Drug abuse-related police and legal and adjudication costs are estimated to be \$9.8 and \$2.3 billion, respectively, in 2002. This is primarily based on the fact that in that year 11.2 percent of all arrests in the US were for drug offenses and another 4.3 percent were estimated for drug-related offenses such as property crime to pay for expensive drug habits. These expenditures came out of projected 2002 total state and local police protection and legal adjudication and court costs of \$63.1 and \$30.1 billion, respectively. These estimates exclude federal funding provided to state and local criminal justice jurisdictions. Federal funding is accounted for in a later section, and with a greater degree of specificity.

These costs are calculated in a direct fashion: drug-related police costs are equal to the share of all arrests that are considered drug abuse-attributable or -related. In 2002 there were a total of 13.7 million arrests (U.S. Dept of Justice, Federal Bureau of Investigations, 2003), of which 1.54 million (11.2 percent) were on drug charges, and another 590 thousand (4.3 percent) were for offenses deemed attributable to drug abuse. These proportions were applied to spending on police and half¹² of the legal adjudication/court costs, respectively, to derive the cost estimates. The most recent data published for police and court costs were \$53.4 and \$25.3 billion respectively in 1999 (Bureau of Justice Statistics, 1993). These costs project in 2002 to \$63.1 and \$30.1 billion respectively, based on trends 1992-1999. When these percentages are applied to total police protection and legal adjudication/court costs the resulting costs attributable to drug abuse are listed in Table III-10.

Table III-10
Police and Legal/Adjudication/Court Costs, 1992-2002
(spending in billions of dollars, arrests in % of total)

Data Series	Actual								Projected		
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Police, Total	\$34.8	\$36.7	\$38.7	\$41.1	\$44.7	\$47.7	\$50.5	\$53.4	\$56.5	\$59.7	\$63.1
Courts, Total	\$16.6	\$16.9	\$17.9	\$19.2	\$20.5	\$21.6	\$23.6	\$25.3	\$26.8	\$28.4	\$30.1
Drug Offenses	7.6%	8.3%	9.1%	9.8%	9.9%	10.4%	10.7%	10.9%	11.3%	11.6%	11.2%
Drug-Related	5.4%	5.3%	5.2%	5.1%	4.9%	4.8%	4.5%	4.3%	4.3%	4.3%	4.3%
Police, Drugs	\$4.5	\$5.0	\$5.5	\$6.1	\$6.6	\$7.2	\$7.7	\$8.1	\$8.8	\$9.5	\$9.8
Courts, Drugs	\$1.1	\$1.1	\$1.3	\$1.4	\$1.5	\$1.6	\$1.8	\$1.9	\$2.1	\$2.3	\$2.3

Note: 1992-1999 trend projected to 2002.

Source: Justice expenditures from Bureau of Justice Statistics; arrest data from *Crime in the United States*, Federal Bureau of Investigation.

(2) Corrections Costs

The cost of incarcerating drug offenders in 2002 was \$16.9 billion. About 34.3 percent of inmates in state and federal prisons and 15.5 percent of those in local jails were incarcerated on drug offenses or other drug-related offenses. Total spending on state and federal prisons was

¹² The court costs are adjusted down by 50 percent in order to account for the cost of civil and other cases that do not involve arrests.

projected at \$41.5 billion and \$17.4 billion, respectively. Again, at the state and local level this only includes funding from their own sources, and excludes federal support.

Estimated costs are produced in a straight forward manner: drug-related corrections costs are equal to the share of all prisoners incarcerated on drug offenses or other drug abuse-attributable offenses times the total spent on corrections. In 2002 there were 1.35 million inmates in state and federal prisons (the one day census), of which 329 thousand (24.4 percent) were for drug offenses, and another 134 thousand (9.9 percent) were for drug-related offenses. Annual data on prison census, as well as offense charged is collected and reported annually (see Appendix Table B-11). In local jails the allocation of costs has been based on the proportion of arrests for drug offenses plus drug-related offenses (a total of 15.5 percent in 2002; discussed under police costs, above). The arrest distribution is used because jail populations are largely made up of arrestees that have not yet been adjudicated, and the assumption is made that the composition of arrestees and the jail census is similar. These proportions were applied to spending on state, federal, and local corrections to produce the estimates.

Corrections costs for local jails and state and federal prisons are published periodically by the Bureau of Justice Statistics in the Criminal Justice Expenditure and Employment Extract Program. There is a substantial lag in the publication of these estimates. The most recent published estimate published for state and federal and local corrections costs were \$34.1 billion and \$14.9 billion, respectively in 1999. These costs project to \$41.5 billion and \$17.4 billion in 2002 based on the trend from 1992 to 1999.

(3) Federal Funds to Reduce the Supply of Drugs

ONDCP reports annually in the *National Drug Control Strategy* on federal funds spent to reduce the supply of drugs. The detailed components of this funding for 1992 through 2002 are presented in the Appendix Table B-16. This was reported to be \$6.3 billion in 2002. This had grown 4.2 percent annually since 1992, from \$4.1 billion. Federal supply reduction spending is spread across nearly 20 distinct federal agencies, from the Drug Enforcement Agency (\$1.6 billion) and Department of Defense (\$1 billion) to the National Park Service, Fish and Wildlife Service and Agricultural Research Service (each less than \$10 million). The values for 1992 through 2001 report actual spending. The 2002 funds indicate the appropriated amounts.

b) *Private Costs*

This study updates two types of private costs related to crime. The first is private legal defense costs. The second cost is the cost of property lost due to crime. The next two sections, respectively, describe how we update these two components.

(1) Private Legal Defense

It is estimated that the cost of private legal defense attributable to drug abuse was \$647 million in 2002 (the costs of publicly provided legal aid are included under legal adjudication costs above). These costs are projected to have increased by 5.9 percent annually, from \$365 million in 1992. This estimate is updated based on three factors:

- total annual revenue for legal services as reported by the Bureau of Economic Analysis;

- the percentage of lawyers practicing criminal law; and
- the percentage of arrests attributed to drug abuse.

The Bureau of Economic Analysis (2003) reports revenue for legal services annually. Annual revenue was \$176.7 billion in 2001, and increased by 5 percent annually in 1992-2001. This projects to \$185.6 billion in 2002. The criminal law section constituted 2.25 percent of members in 2002 (American Bar Association, 2003), down from 2.6 percent in the mid-1990s. Based on this, we assume that the overall percentage of lawyers practicing criminal law is 2.25 percent and is constant across 1999-2002. As discussed above, in 2002 drug-related arrests made up 15.5 percent of the total. Detailed data and calculations for 1992 to 2002 are in Appendix Table B-17.

(2) Property Damage due to Crime

This cost was estimated at \$206 million in 2002. This estimate does not include the value of property that was stolen, but only the value of damaged property. Social cost estimates treat the value of stolen property as “transfers” of wealth from the victim to the thief, which are considered to be “offsetting” from the societal perspective, although this value is quite important in motivating public policy.

Property damage due to crime is estimated based on the following three components:

- Number of victimizations by offense;
- Percentage of victimizations for each offense attributed to drug abuse; and
- Estimated mean property loss per crime by offense.

The number of victimizations is reported annually in the National Crime Victimization Survey. There were 5.1 million drug-related victimizations in 2002 of types that sometimes involve property damage (theft, motor vehicle theft, household burglary, robbery and rape). This calculation is based on the attribution factors for crime already introduced.

Unfortunately, the estimated mean property loss per offense is estimated in the National Crime Victimization Survey infrequently. The estimates we have are for 1992, and average about \$10 each crime for burglary and motor vehicle theft, \$5 each for larceny and robbery and a dollar for rape. These values may seem low because only a very small proportion of offenses involve property damage. These have been trended to subsequent years based on the CPI for all services, about 28 percent between 1992 and 2002.

2. Social Welfare

The best available evidence available (reviewed in Harwood et al., 1998) indicated that drug abuse may only account for about 1 percent of social welfare payments and associated

administrative costs—in this study accounting for \$281 million in administrative costs in 2002¹³. Several rigorous studies (United States General Accounting Office, 1994; Office of the Inspector General, 1994) found that drug abuse was rarely used as a formal reason for benefit eligibility. This study has trended the 1992 estimate forward based on trends in the value of Food Stamp benefits (Bureau of Economic Analysis, 2003). In fact, this estimate represents a decline from the \$337 million in 1992, and a slight increase from the estimate of \$249 million in 1998.

The primary reason these expenditures are low relative to 1992 is that effective January 1, 1997 drug abuse-related disorders no longer constituted an acceptable basis for Supplemental Security Income eligibility, and this value went to zero. Other changes in social welfare that became effective in 1997 significantly reduced payments to beneficiaries. Data on Food Stamp benefits came from the Bureau of Economic Analysis National Income and Product Accounts web site. Estimates were only available through 2001. The 2002 value assumes the 2000-2001 growth rate continued in 2002.

D. Reliability of Estimates

The estimates presented in this update should be considered comparable to the initial estimates developed in Harwood et al. (1998). We believe that the cost estimates give meaningful relative order of magnitude estimates that differentiate the relatively larger and smaller cost impacts of drug abuse in the United States. Also, these cost estimates can be used to make meaningful comparisons to the costs of other health problems. The costs which have been re-estimated can be considered comparable in quality to the original estimates. The costs which have been trended are somewhat less rigorous, although we believe that they still provide valid order of magnitude estimates of these respective impacts.

The objective of developing the estimates and of producing updates is to yield a meaningful indication of the absolute and relative economic impact of substance abuse. Updated cost estimates can be put in context with cost estimates for other health problems (e.g., alcohol abuse, heart disease, cancer, diabetes, mental illness) as well as current economic values such as the gross domestic product, government spending in total and for particular types of initiatives. The updated estimates make it possible to compare the relative magnitude of the cost impacts of the respective components.

In this section, we provide a qualitative assessment of the validity of each component.

a) Health Care Costs

Most of these costs are based on data or projections that are more current than that used in the 1992 cost estimates. However, only several smaller components have direct cost estimates that are as current as the year 2002 or even 2000. The largest number of health cost components have been trended forward from the most recent year with good data.

¹³ Although the value of social welfare benefits distributed is not counted in the social cost estimate, it can be relevant in policy discussions. Based on the prior analysis, it is projected that \$2.8 billion in social welfare benefits were paid out due to drug abuse in 2002.

Current expenditure data are primarily available for items tracked in the *Budget Summary* of the *National Drug Control Strategy*. These components include spending on treatment by several federal agencies (including the Department of Veterans Affairs), federal funding for treatment and prevention research, and grants to states and localities for treatment and prevention services. These components totaled \$2.4 billion in 2002.

The two largest health cost components--community-based specialty drug abuse treatment and HIV/AIDS treatment costs--had good estimates for 1997 and 1998, respectively. These estimates were then trended forward through 2002 based on indicators of changes in incidence, utilization and medical care service cost factors, respectively. Accordingly, the 2002 estimates for these should be reasonable indicators of the relative impact of these two factors.

Estimates of the 2002 costs for other medical consequences of drug abuse were derived based on application of trend factors.

b) Lost Productivity

Several of the components of lost productivity due to drug abuse were re-estimated for recent years. These components are productivity losses related to:

- Premature death (through 2000);
- Incarceration (through 2002);
- Victims of crime (through 2002); and
- Institutionalization for treatment.

For each of these components there was current or recent data on the incidence or prevalence of the problem in question, which is the most important element of the calculation. Accordingly, they should be highly reliable. The other main elements of the calculation are the valuation of lost productivity per person and the attribution fractions. The productivity factors have been trended forward based on the BLS-ECEC. This index is expected to be a good proxy for the actual change in the value of the time lost from productive activities. In this update the attribution fractions (e.g., what proportion of particular types of crimes are due to drug abuse) have mainly been assumed constant, since re-analysis is beyond the scope of this report.

The cost of premature mortality through 2000 was estimated based on detailed data on the number of deaths by diagnosis as well as age and sex, and this value was trended to 2002 based on the change between 1999 and 2000. Incarceration losses were estimated based on the number of persons incarcerated by type of crime for each respective year. Productivity losses related to victims of crime was based on the number of victimizations by type of crime weighted by the estimated number of days of productivity lost for each type of crime. Finally, there were data for 2002 of the number of persons enrolled in 24 hour treatment settings.

The valuation of lost time for most of these components, (except for premature mortality), assumes that the age and gender distribution of persons affected has remained the same. This is a reasonable premise, given that the demographic characteristics of populations (e.g., drug abusers, arrestees, prisoners, crime victims) change very slowly over time.

Lost productivity due to crime careers and drug abuse-related illness are likely to be less accurately measured than the other components of lost productivity, or perhaps any other components of cost in this study. This is primarily because these costs are the most difficult to measure. The analysis requires data from “hidden populations” about illegal and stigmatized behaviors, which is very difficult to develop reliable information about. Despite the data challenge, the original estimates were undertaken using the best data available because the calculations can give us some indication of the severity and order of magnitude of these problems. The trend estimates are confronted with the same challenges. The data series used to update or project these estimates are believed to be meaningful indicators of trends in these costs over time, however it will be necessary to re-estimate these costs in the future.

The point estimates and general trends in these components should be used with caution.

c) Other Effects

Most of the components of the cost of other effects were re-estimated for their primary components and can be considered as reliable as the original estimates. These include the following components:

- Criminal justice system costs (i.e., police protection, legal adjudication, and corrections);
- Federal spending to reduce the supply of drugs; and
- Property loss by crime victims.

Criminal justice system costs are based on current data such as arrests differentiated by charge, and offenders under supervision, also differentiated by charge, as well as total criminal justice system expenditures. The former types of data are published with little lag. The expenditure data come from surveys performed by the Bureau of Justice Statistics through 1999. The trends in these costs after 1999 were based on average annual changes over the prior 6 years.

Estimates of federal spending through 2002 to reduce the supply of drugs were obtained from the ONDCP *National Drug Control Strategy Budget Summary* (various years).

The real cost of property loss to crime victims is also recalculated using current data on victimizations. However, values for property loss per crime have been trended forward from the 1992 estimates based on the CPI for all services. This estimate, as well as the estimates of health care and lost productivity costs of crime victims are somewhat less reliable because the impact and costs on victims per crime have not been re-analyzed by BJS since the early 1990s. Thus these factors have been trended forward using the CPI. In addition, the National Crime Survey has been redesigned since 1992, with uncertain effects on the cost estimates.

Two components of the cost of other effects are less accurately projected. These are the costs of private legal defense and social welfare costs. Data on total annual receipts for legal services were obtained through 2001. However, as for the original estimate, the portion of this spending that is attributable to drug related crime can only be estimated indirectly. Trends in social welfare administration expenses are projected by trends in food stamp expenditures (available through 2001). These trends may not be highly correlated, given the recent major welfare reforms.

d) Summary

Overall just over half of the costs estimated for 2002 are likely to be very reliable. The main components that should be used with caution are:

- Productivity losses for drug abuse-related illness; and
- Productivity losses related to crime careers.

The general magnitude of the estimates of these components should be accurate. However, the point estimates and the trends from year to year for these components should be used with caution.

IV. ESTIMATES FOR 1992-2002

In this section the updated cost estimates derived based on the methodology discussed above are presented. The updated cost estimates overall and for health care, productivity, other costs, and crime-related costs are displayed, respectively, in Tables IV-1 through IV-5. For the majority of the cost components observed data are available to calculate the updates through 2002. There are several exceptions, however. Public Criminal Justice System costs for police protection, legal adjudication, and corrections are only available through 1999 and costs for community-based specialty treatment are only available through 1997. The estimates for these cost categories subsequent to the last year of observed data are projections based on the observable trends in the cost category.

A. Overall Costs

Table IV-1 displays the estimates for 1992 through 2002 overall and for the three major categories.

Table IV-1
Estimated Societal Cost of Drug Abuse, 1992-2002
Overall Costs
(in billions of dollars)

Cost Category	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Health Care Costs	\$10.7	\$11.8	\$12.1	\$11.9	\$11.5	\$11.8	\$12.5	\$13.0	\$13.5	\$14.6	\$15.8
Productivity Losses	\$77.4	\$79.3	\$83.9	\$89.2	\$93.4	\$95.5	\$99.3	\$107.3	\$113.4	\$120.0	\$128.6
Other Costs	\$19.4	\$19.8	\$21.3	\$23.8	\$24.7	\$26.7	\$28.4	\$31.1	\$33.8	\$34.6	\$36.4
Total	\$107.5	\$110.9	\$117.3	\$124.9	\$129.6	\$133.9	\$140.1	\$151.4	\$160.7	\$169.2	\$180.8

Source: Analysis by The Lewin Group, 2004.

Between 1992 and 2002 the overall economic cost of drug abuse to society increased at a rate of 5.9 percent annually. By 2002 the economic cost of drug abuse was \$180.8 billion.¹⁴ The rate of increase in costs was in excess of the combined increase of 3.5 percent for the adult population and consumer price index for all services for this period.

¹⁴ We have re-estimated the 1992 cost of drug abuse originally estimated by Harwood et al. (1998) based on more recent data. The revised estimate is \$107.5 billion. This estimate is 10 percent higher than the previous Harwood et al. (1998) estimate of \$97.7 billion.

B. Health Care Costs

Table IV-2 displays the estimates of health care related costs for 1992 through 2002.¹⁵ Overall the health care costs related to drug abuse increased 2.9 percent annually over this six-year period. This rate of increase is somewhat lower than the increases in the adult population and prices for medical services. Between 1992 and 1998, the adult population increased at 1.0 percent annually and prices for medical services increased 4.1 percent annually for a combined 5.1 percent annual increase. The rate of growth in health care service costs was moderated by projected declines in the cost of caring for HIV/AIDS patients that have resulted from the new treatments available to these patients. The cost of HIV/AIDS care is estimated to have declined from \$3.7 billion in 1992 to \$3.4 billion in 2002.

The two categories of service with the greatest annual increase in spending were treatment research and hospital and ambulatory care for the medical consequences of drug abuse which increased at a 11.2 and 10.9 percent annually, respectively. One category of service, Department of Defense spending on treatment saw a sharp decline between 1992 and 1994, dropping from \$14 to \$5 million, rising to \$8 million in 2002.

The distribution of spending across the components remained relatively constant during this period. However, the share of HIV/AIDS spending declined and then rose. In 1992, HIV/AIDS spending represented the second largest component of health care spending attributable to drug abuse. HIV/AIDS costs were \$3.7 billion or 34.2 percent of total health care costs in 1992. In 1997, the spending level dropped to \$2.5 billion representing or 21.2 percent of all spending, and then rose again to \$3.75 billion, or 23.7 percent of the total. Meanwhile, the cost of community-based specialty health treatment increased from \$3.8 billion to \$6.0 billion. Community-based specialty represented 35.7 percent of all health care related drug abuse costs in 1992. By 2002, this component represented 37.9 percent.

C. Productivity Losses

Table IV-3 displays the estimates of productivity losses related to drug abuse for 1992 through 2002.¹⁶ Overall the productivity losses related to drug abuse increased 5.2 percent annually over this ten-year period. This rate of increase is somewhat higher than the 4.1 percent annual combined increase in the adult population and the BLS ECEC. Between 1992 and 1998, the adult population increased 1.1 percent annually and the BLS ECEC increased 3.0 percent annually for a combined 4.1 percent annual increase.

¹⁵ We have re-estimated the 1992 cost of drug abuse originally estimated by Harwood et al. (1998) based on more recent data. The revised estimate for health care related costs is \$10.65 billion. This estimate is 9.0 percent higher than the previous Harwood et al. (1998) estimate. The largest source of this increase is a revised estimate of spending on drug abuse by the Department of Veterans Affairs (VA). The revised estimate is \$671 million relative to the original estimate of \$235 million. The second component of health care costs that was revised substantially is spending for community-based specialty treatment. The original estimate for this component was \$2.8 billion. The revised estimate is \$3.2 billion. The revised estimate is based on a study by Mark et al. (1999) that was more comprehensive than the original study.

¹⁶ The 1992 estimates are identical to the Harwood et al. (1998) estimates for the productivity loss cost components.

Table IV-2
Estimated Societal Cost of Drug Abuse, 1992-2002
Health Care Costs
(in millions of dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Community-Based Specialty Treatment	\$3,770	\$4,188	\$4,423	\$4,569	\$4,930	\$5,091	\$5,369	\$5,257	\$5,159	\$5,563	\$5,997
Federally-Provided Specialty Treatment											
Department of Defense	\$14	\$9	\$5	\$5	\$5	\$5	\$5	\$7	\$7	\$7	\$8
Indian Health Services	\$26	\$33	\$31	\$31	\$33	\$31	\$32	\$41	\$42	\$52	\$54
Bureau of Prisons	\$17	\$17	\$17	\$18	\$19	\$20	\$21	\$32	\$34	\$38	\$39
Department of Veterans Affairs	\$113	\$127	\$153	\$169	\$152	\$135	\$119	\$108	\$109	\$119	\$116
Support											
Federal Prevention	\$616	\$623	\$639	\$624	\$560	\$657	\$725	\$934	\$1,024	\$1,075	\$1,203
State and Local Prevention	\$89	\$93	\$91	\$101	\$81	\$85	\$118	\$141	\$143	\$145	\$148
Training	\$49	\$51	\$53	\$55	\$57	\$59	\$60	\$62	\$65	\$67	\$69
Prevention Research	\$158	\$164	\$175	\$180	\$212	\$231	\$250	\$286	\$317	\$353	\$402
Treatment Research	\$195	\$242	\$254	\$261	\$283	\$313	\$328	\$382	\$417	\$497	\$564
Insurance Administration	\$268	\$302	\$329	\$335	\$344	\$333	\$333	\$349	\$365	\$413	\$476
Medical Consequences											
Hospital and Ambulatory Care Costs	\$518	\$657	\$796	\$848	\$879	\$1,000	\$1,103	\$1,172	\$1,239	\$1,341	\$1,454
Special Disease Costs											
Drug-Exposed Infants	\$407	\$424	\$439	\$453	\$468	\$480	\$503	\$523	\$558	\$579	\$605
Tuberculosis	\$30	\$29	\$29	\$28	\$27	\$25	\$22	\$20	\$20	\$20	\$19
HIV/AIDS	\$3,489	\$3,894	\$3,694	\$3,221	\$2,592	\$2,484	\$2,603	\$2,853	\$3,138	\$3,461	\$3,755
Hepatitis B and C	\$462	\$399	\$419	\$457	\$394	\$439	\$434	\$371	\$376	\$340	\$312
Crime Victim Health Care Costs	\$92	\$142	\$148	\$139	\$136	\$132	\$127	\$118	\$111	\$109	\$110
Health Insurance Administration	\$340	\$383	\$392	\$360	\$301	\$287	\$308	\$347	\$397	\$448	\$513
Total	\$10,652	\$11,776	\$12,087	\$11,854	\$11,474	\$11,806	\$12,461	\$13,004	\$13,522	\$14,628	\$15,843

Source: Analysis by The Lewin Group, 2004.

Table IV-3
Estimated Societal Cost of Drug Abuse, 1992-2002
Productivity Losses
(in millions of dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Premature Death	\$22,586	\$22,391	\$23,094	\$24,064	\$20,709	\$17,755	\$17,507	\$20,869	\$22,059	\$23,317	\$24,646
Drug Abuse Related Illness	\$14,205	\$13,766	\$15,845	\$17,737	\$20,270	\$19,916	\$23,143	\$24,999	\$27,427	\$30,203	\$33,452
Institutionalization/ Hospitalization	\$1,477	\$1,502	\$1,683	\$1,872	\$1,533	\$1,662	\$1,786	\$1,735	\$1,706	\$1,841	\$1,996
Productivity Loss of Victims of Crime	\$2,059	\$2,488	\$2,554	\$2,377	\$2,332	\$2,293	\$2,065	\$1,955	\$1,847	\$1,806	\$1,800
Incarceration	\$17,907	\$19,366	\$21,095	\$22,983	\$24,833	\$27,221	\$30,133	\$32,782	\$34,693	\$36,295	\$39,095
Crime Careers	\$19,198	\$19,755	\$19,603	\$20,172	\$23,758	\$26,608	\$24,627	\$24,960	\$25,688	\$26,538	\$27,576
Total	\$77,432	\$79,268	\$83,874	\$89,205	\$93,435	\$95,455	\$99,261	\$107,300	\$113,420	\$120,000	\$128,566

Source: Analysis by The Lewin Group, 2004.

Costs related to premature death increased dramatically between 1992 and 1995 with the increase in the number of HIV/AIDS deaths. New treatments lead to a decline in AIDS' deaths between 1995 and 1998. For the period as a whole the percentage of the productivity losses attributed to premature death declined from 21.0 to 19.2 percent.

Meanwhile during this period the share of productivity losses related to incarceration increased from 25.8 to 30.4 percent. The productivity losses related to incarceration increased at a 8.1 percent annualized rate during this period. The productivity loss related to incarcerations was updated based on the change in the number of incarcerations attributable to drug abuse and the BLS ECEC. The number of persons under incarceration in local jails and federal and state prisons increased 4.7 percent annually in this period. The estimated number attributable to drug abuse increased at 4.7 percent annually.

In addition to the increase in productivity losses related to incarceration, there was an 8.9 percent annual increase in productivity losses due to drug abuse related illness. The productivity loss for drug abuse related illness was updated based on two factors. The real change was measured based on the change in the number of persons reporting more than 100 days of marijuana or cocaine use in their lifetime from 1992 to 1998, after which this data series was discontinued by SAMHSA. This measure increased at a 5.1 percent annual rate between 1992 and 1998. The share of productivity related losses represented by this component increased from 20.5 to 26.0 percent.

D. Cost of Other Effects

Table IV-4 displays the estimates of losses for other effects related to drug abuse for 1992 through 2002. Overall the losses related to other effects increased 6.5 percent annually over this six-year period. This rate of increase is somewhat higher than the increases in the adult population and prices for all services. Between 1992 and 2002, the adult population increased 1.1 percent annually and prices for all goods and services increased 2.5 percent annually for a combined 3.6 percent annual increase.

Criminal justice system costs increased rapidly in this period. Costs for police protection and legal and adjudication both increased at a 8.1 percent annualized rate. These increases are due to increases in overall police protection and legal and adjudication spending as well as increases in the proportion of that spending that we attribute to drug abuse. Driving the increase in criminal justice costs was an increase in the percentage of arrests attributable to drug abuse from 12.9 percent in 1992 to 15.5 percent in 2002.

Table IV-4
Estimated Societal Cost of Drug Abuse, 1992-2002
Cost of Other Effects
(in millions of dollars)

Cost Component	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Cost of Goods and Services Lost to Crime											
Criminal Justice System and Other Public Costs											
Police Protection	\$4,503	\$4,991	\$5,505	\$6,093	\$6,612	\$7,216	\$7,713	\$8,130	\$8,780	\$9,504	\$9,785
Legal Adjudication	\$1,074	\$1,149	\$1,273	\$1,423	\$1,516	\$1,634	\$1,802	\$1,926	\$2,085	\$2,263	\$2,336
State and Federal Corrections	\$7,495	\$7,616	\$8,416	\$9,806	\$10,046	\$10,467	\$10,959	\$11,888	\$12,573	\$13,235	\$14,236
Local Corrections	\$1,333	\$1,390	\$1,587	\$1,746	\$1,679	\$1,730	\$2,108	\$2,269	\$2,439	\$2,628	\$2,694
Federal Spending to Reduce Supply	\$4,126	\$3,691	\$3,521	\$3,697	\$3,827	\$4,620	\$4,827	\$5,938	\$6,912	\$5,900	\$6,228
Private Costs											
Private Legal Defense	\$365	\$388	\$429	\$447	\$445	\$522	\$548	\$514	\$571	\$633	\$647
Property Damage for Victims of Crime	\$193	\$229	\$231	\$217	\$214	\$208	\$186	\$191	\$198	\$203	\$206
Social Welfare	\$337	\$355	\$367	\$368	\$364	\$283	\$249	\$234	\$225	\$241	\$281
Total	\$19,426	\$19,809	\$21,330	\$23,797	\$24,703	\$26,680	\$28,391	\$31,090	\$33,784	\$34,608	\$36,413

Source: Analysis by The Lewin Group, 2004.

E. Direct and Indirect Costs

The most basic manner in which cost of illness estimates are presented is to separate direct and indirect costs. Direct costs represent impacts where there is a requirement for use of goods or services or where property is destroyed. Direct costs include the value of goods and services that are paid for, such as health care, as well as services provided by government, as in the case of criminal justice services). Indirect costs represent the loss of potential productivity—time that would have been put toward legitimate employment or useful purposes in household activities if not for the substance abuse disorder.

In the cost estimates for drug abuse, direct costs constituted about \$52.3 billion and indirect costs \$128.6 billion. In fact, direct costs are the sum of health care costs plus the “other” costs, and indirect costs are simply the productivity losses (Table IV-5).

Table IV-5
Estimated Societal Cost of Drug Abuse, 1992-2002
Direct and Indirect Costs
(in billions of dollars)

Cost Category	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Direct Costs	\$30.1	\$31.6	\$33.4	\$35.7	\$36.2	\$38.4	\$40.8	\$44.1	\$47.3	\$49.2	\$52.2
Indirect Costs	\$77.4	\$79.3	\$83.9	\$89.2	\$93.4	\$95.5	\$99.3	\$107.3	\$113.4	\$120.0	\$128.6
Total	\$107.5	\$110.9	\$117.3	\$124.9	\$129.6	\$133.9	\$140.1	\$151.4	\$160.7	\$169.2	\$180.8

Source: Analysis by The Lewin Group, 2004.

F. Crime Related Costs

Many health care, productivity, and other costs listed in the three previous sections are crime-related costs. In this section, we aggregate all the crime-related costs attributed to drug abuse. The costs reported in this section are not in addition to the costs from the prior sections. Instead, this represents a “cross-cut” of all of the crime-related costs that were estimated and presented in earlier sections. These costs totaled \$107.8 billion in 2002, growing from \$61.8 billion in 1992.

Table IV-6 displays the estimates of crime related costs for 1992 through 2002. In 1992, crime related costs represented 57.5 percent of the total cost of drug abuse. In 2002 crime costs represented a slightly greater share, 59.6 percent of the overall cost of drug abuse. Overall the costs related to crime increased 5.7 percent annually over this ten-year period between 1992 and 2002. This rate of increase is somewhat higher than the increases in the adult population and prices for all services. Between 1992 and 2002, the adult population increased 1.1 percent annually and consumer prices increased 2.5 percent annually for a combined 3.6 percent annual increase.

Table IV-6
Estimated Societal Cost of Drug Abuse, 1992-2002
Crime Related Costs
(in millions of dollars)

Cost Component	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Health Care Costs											
Crime Victim Health Care Costs	\$92	\$142	\$148	\$139	\$136	\$132	\$127	\$118	\$111	\$109	\$110
Productivity Losses											
Homicide Victims	\$3,459	\$3,348	\$3,237	\$3,126	\$3,014	\$2,903	\$2,792	\$2,681	\$2,776	\$2,935	\$3,102
Productivity Loss of Victims of Crime	\$2,059	\$2,488	\$2,554	\$2,377	\$2,332	\$2,293	\$2,065	\$1,955	\$1,847	\$1,806	\$1,800
Incarceration	\$17,907	\$19,366	\$21,095	\$22,983	\$24,833	\$27,221	\$30,133	\$32,782	\$34,693	\$36,295	\$39,095
Crime Careers	\$19,198	\$19,755	\$19,603	\$20,172	\$23,758	\$26,608	\$24,627	\$24,960	\$25,688	\$26,538	\$27,576
Cost of Other Effects											
Criminal Justice System and Other Public Costs											
Police Protection	\$4,503	\$4,991	\$5,505	\$6,093	\$6,612	\$7,216	\$7,713	\$8,130	\$8,780	\$9,504	\$9,785
Legal Adjudication	\$1,074	\$1,149	\$1,273	\$1,423	\$1,516	\$1,634	\$1,802	\$1,926	\$2,085	\$2,263	\$2,336
State and Federal Corrections	\$7,495	\$7,616	\$8,416	\$9,806	\$10,046	\$10,467	\$10,959	\$11,888	\$12,573	\$13,235	\$14,236
Local Corrections	\$1,333	\$1,390	\$1,587	\$1,746	\$1,679	\$1,730	\$2,108	\$2,269	\$2,439	\$2,628	\$2,694
Federal Spending to Reduce Supply	\$4,126	\$3,691	\$3,521	\$3,697	\$3,827	\$4,620	\$4,827	\$5,938	\$6,912	\$5,900	\$6,228
Private Costs											
Private Legal Defense	\$365	\$388	\$429	\$447	\$445	\$522	\$548	\$514	\$571	\$633	\$647
Property Damage for Victims of Crime	\$193	\$229	\$231	\$217	\$214	\$208	\$186	\$191	\$198	\$203	\$206
Total	\$61,804	\$64,553	\$67,599	\$72,226	\$78,412	\$85,554	\$87,886	\$93,351	\$98,673	\$102,049	\$107,815

Source: Analysis by The Lewin Group, 2004.

V. FURTHER COMPARISONS AND ANALYSES

Ultimately, the question arises as to the meaning of the estimates that have been developed and presented in this report. The meaning is both direct and limited at the same time. Economic cost analysis indicates that drug abuse is one of the major health problems in the United States. However, the results of this particular analysis do not provide guidance on how to address the drug problem. Furthermore, the estimates count both the costs of the efforts taken to reduce drug abuse (prevention, treatment and drug law enforcement) and the costs of the consequences (drug abuse-related death, illness and crime). Cost estimates can and should motivate the search to design effective and efficient strategies to address drug abuse. But cost benefit and cost effectiveness studies are needed to learn how we may more effectively and efficiently do this.

A. Drug Abuse versus Other Health Problems

Table V-1 compares the economic cost estimates for drug abuse with the estimates for other major health problems in the United States. These values have been assembled by the Office of Science Policy and Planning in the National Institute of Health, (published at the NIH website; <http://ospp.od.nih.gov/ecostudies/COIreportweb.htm>). Values are reported for the largest health disorders for which estimates have been developed using generally comparable methodologies. Costs are in dollars of the year for which the estimate was developed, thus there is some imprecision in comparisons due to the effects of inflation and population growth. However, even given these differences the primary point holds.

Table V-1
Comparison of Costs of Major Health Problems in US
(costs in billions of estimate year dollars)

Health Problem	Total	Direct	Indirect	Year of Estimate
Drug abuse	\$180	\$52	\$129	2002
Alcohol abuse	\$185	\$50	\$134	1998
Alzheimer's	\$100	\$15	\$85	1997
Arthritis	\$65	\$15	\$50	1992
Cancer	\$96	\$27	\$69	1990
Diabetes	\$98	\$44	\$54	1997
Eye diseases	\$38	\$22	\$16	1991
Heart disease	\$183	\$102	\$81	1999
HIV/AIDS	\$29	\$13	\$16	1999
Homicide	\$34	\$10	\$23	1989
Kidney	\$40	\$26	\$14	1985
Mental illness	\$161	\$67	\$94	1992
Obesity	\$99	\$52	\$46	1995
Pain, chronic	\$79	\$45	\$34	1986
Smoking	\$138	\$80	\$58	1995
Stroke	\$43	\$28	\$15	1998

Source: National Institute of Health, Office of Policy and Analysis website (<http://ospp.od.nih.gov/ecostudies/COIreportweb.htm>).

Comparison of cost of illness estimates indicate that drug abuse clearly ranks among the leading health problems in the nation in terms of annual economic impact. This holds whether the comparison is for total cost, direct costs (current health care and other expenditures) or indirect costs (loss of potential productivity from illness, disability and death).

This study and prior estimates indicate that drug abuse is one of the most costly health problems in the United States. The estimates have followed guidelines developed by the U.S. Public Health Service for cost of illness studies. These guidelines have been applied in earlier studies of drug abuse in the U.S. (e.g., for 1992, 1985, 1980, and 1977), and to cost of illness studies for virtually all of the major health problems. Accordingly, these estimates can be compared meaningfully to estimates for e.g., cancer, stroke, heart disease, diabetes, alcohol abuse and mental illness. The National Institute of Health collects and reports on cost estimates for the major health problems in the nation.

Based on estimates from the 1990s employing generally comparable methodologies, drug abuse (\$124.9 billion in 1995) is comparable to heart disease (\$183.1 billion in 1999; American Heart Association, 1998), cancer (\$96.1 billion in 1990; Brown and Fintor, 1995), diabetes (\$98.2 billion in 1997; American Diabetes Association, 1998), alzheimer's disease (\$100 billion in 1997; NIH extrapolation based on Huang et al., 1988), stroke (\$43.3 billion in 1998; NCHS and NHLBI), smoking (\$138 billion in 1995; Rice, 1999), obesity (\$99.2 billion in 1995; Wolf and Colditz, 1998), alcohol abuse (\$184.6 billion in 1998; Harwood, 2000) and mental illness (\$160.8 billion in 1992; Harwood et al., 2000). Even if we only compare the health-related costs of drug abuse--\$51 billion in 1995—it still must be considered one of the more costly health problems in the nation.

The data provide a basis to argue that drug abuse is among the top five health problems in terms of economic impacts—together with mental illness, heart disease, alcohol abuse and smoking. However, it is probably more realistic to consider these cost estimates to be general order of magnitude indicators. It is reasonable to argue that “drug abuse is among the most expensive health problems in the nation.” There differences across the estimates in the years they were estimated and other aspects argue against over-interpretation of the rank ordering of disorders or specific differences in amounts. While the estimates are probably in aggregate comparable, there are other factors to consider such as inclusion and omission of some smaller cost components, overlaps in some of the cost estimates (such as smoking with heart disease, cancer, lung disease and stroke), quality of life and other “intangible” impacts, and greater concern by the public about some disorders than others.

For example, out of the \$181 billion in costs of drug abuse about \$108 billion is related to impacts of drug-related crime. The involvement of crime in drug addiction is qualitatively different from the costs of most other health disorders, although there are also non-negligible crime-related components for alcohol abuse and mental illness as well. This distinction is pointed out because it might be argued that the crime costs are more serious -- or less serious -- than the components that are more like the costs of heart disease, cancer, diabetes and other disorders that are “mainstream” health problems. Even when the crime related costs are taken out of the comparison among “health impacts” the remaining costs of about \$53 billion place drug abuse roughly comparable in economic impact to stroke, eye disease, HIV/AIDS, and

homicide. It is also reasonable that many policy makers and citizens would weigh the crime-related impacts of drug abuse more heavily than the direct dollar calculation indicates.

B. Costs in Other Nations

Another issue that can be examined is the relative severity of drug abuse in the United States relative to other nations. This can be very difficult to examine using standard epidemiological data because respective nations have quite different patterns of drug problems, and there are different mixes of drug problems. Economic cost studies provide an approach that essentially “weights” the various types of impacts using economic measures, which can be summed in order to assess the total impact.

Unfortunately, there have been very few such studies across the world. The several that have been performed have been in higher income nations including the United States, Canada, Australia, the United Kingdom, and Germany. To date there have been no rigorous studies completed for lower income nations, although an initiative is currently underway to study the economic impact of drug abuse in Central and South America.

The United States has the most severe drug abuse problem among the several nations for which economic cost studies have been completed to date. The cost estimate of \$181 billion in 2002 (about \$650 per capita) is roughly equivalent to 1.7 percent of gross domestic product (GDP; the most widely used measure of a nation’s market-derived economic activity).

The next most severely affected nation is the United Kingdom (Godfrey et al., 2002), with estimated total costs of drug abuse at about 12 billion pounds, or 300 pounds per capita (about \$18 billion US, or \$450 per capita US). The loss was equivalent to about 1.8 percent of GDP, which is slightly more than the ratio in the US. In several other nations the estimated losses have been smaller proportions of GDP: Canada 0.2 percent (Single et al., 1998); Australia 1.0 percent (Collins and Lapsley, 2002); Germany 0.4 percent (Hartwig and Pies, 1996; as cited in United Nations on Drug Control report *Economic and Social Consequences of Drug Abuse and Illicit Trafficking*).

In the near future there may be a larger research data base to draw upon in order to compare the impact of drug abuse across the nations of the world.

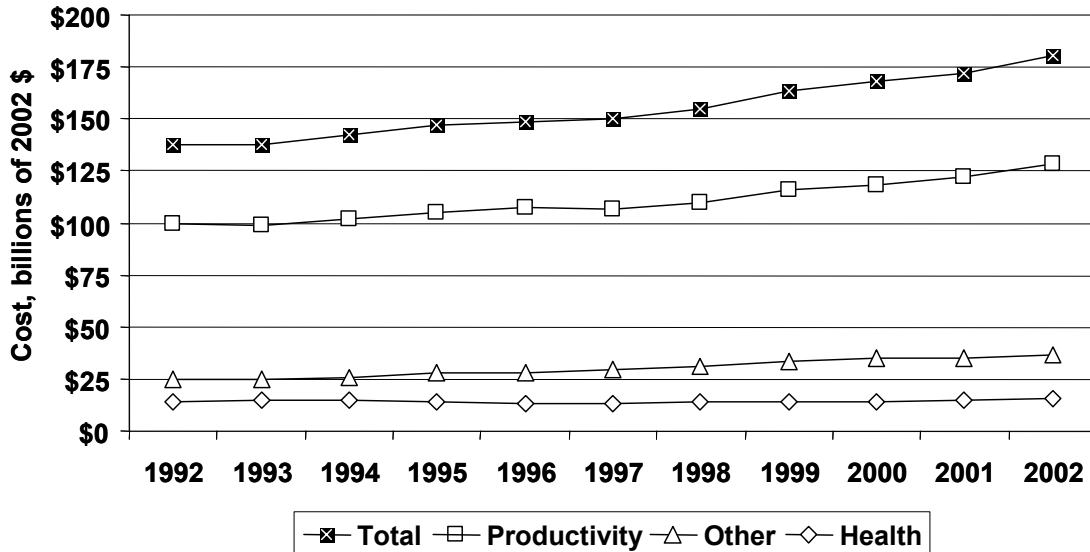
C. Real Costs 1992-2002

With the completion of this set of estimates and updates there now exists a complete series of values from 1992 through 2002. The base 1992 value is fundamentally as estimated in Harwood et al., (1998), with several minor adjustments for more current data. Trends in the current dollar estimates for the major components have been presented in previous sections of this report. The values of the detailed components are all presented in Appendix C. The current values shown in earlier figures have displayed a fairly consistent upward trend. Most financial time series have this pattern because of the impact of inflationary price increases over time.

In this section we net out the effect of inflation using the consumer price index for urban consumers in order to examine the “real” increase in the cost of drug abuse over the period 1992-

2002. Real trends for total costs and the main components are presented in Figure V-1. The values are presented in 2002 dollars.

Figure V-1
Trends in Real Economic Costs of Drug Abuse
Total and Major Components, 1992-2002
 (costs in billions of 2002 dollars)



All adjustments have been made with the consumer price index for urban consumers for all items (the CPI-U). This measure increased by 2.5 percent annually between 1992 and 2002. The values in Figure V-1 have netted out the effect of this factor, thus rates of change greater than “0” represent real increases in the loss or burden associated with drug abuse.

In 2002 total costs of drug abuse were \$180.8 billion. This was an increase from \$137.9 billion in 1992 (again, in real or constant 2002 dollars). Thus, total costs increased 30.2 percent over the ten year period, for a 2.8 percent annual rate of change. This represents real growth in the cost of drug abuse over the time period. However, over one third of this 2.8 percent annual growth was probably due to annual population growth of 1 percent. Thus it appears that between 1992 and 2002 the cost of drug abuse was increasing somewhat more (about 1.8 percent annually) than would be expected based on general inflation and population growth.

There are differences between the major components that are worth noting. For example, although the CPI-U has been used to perform the adjustments, there have been somewhat different rates of price increases across the economy. For example, the CPI for medical services actually increased by about 4.2 percent annually between 1992 and 2002 (about 1.7 percent greater than the CPI-U), and employee compensation (wages and salaries plus benefits) increased by about 3.0 percent (0.5 percent annually greater than CPI-U). Thus, the finding that health-related costs increased by 1.5 percent annually after adjusting for CPI-U indicates that health-related costs actually had no real growth over this time period. Also, since population

grew by 1 percent annually, this indicates that *per capita* real health-related costs probably declined by about 1 percent annually over this time period.

CPI-adjusted productivity losses grew by 2.6 percent annually. Because employee compensation increased by about 0.5 percent annually more than CPI-U, this means that the growth in excess of compensation growth was about 2.1 percent, and of this about 1.0 percent was related to population growth. Thus there was an annual increase in “real” per capita productivity losses of about 1.1 percent.

The greatest growth was in “other” costs consisting primarily of criminal justice system services. These costs grew 3.9 percent annually after adjustment for CPI-U. Because the CPI-U is probably the best indicator of inflation for these services, it would appear that, after accounting for 1 percent population growth, about 2.9 percent annual growth represented real per capita increases in drug-related criminal justice system costs.

A final comparison can also be made to judge the growth of the economic costs of drug abuse: with gross domestic product. Costs of drug abuse grew by 2.8 percent after inflation adjustment, or 5.3 percent in nominal dollars. Over the 1992-2002 period GDP grew by 3.2 percent annually when adjusted for inflation, or 5.2 percent in nominal (unadjusted) dollars. These comparisons suggest that the cost of drug abuse was a fairly constant proportion of the national economy—that as the GDP grew, drug abuse costs were growing roughly in parallel. By this criterion the real burden of drug abuse was certainly growing, just as total and per capita GDP was growing.

D. Discussion

The estimates produced for this study have followed guidelines developed by the U.S. Public Health Service for cost of illness studies. These guidelines have been applied in earlier studies of drug abuse in the U.S. (e.g., for 1998, 1992, 1985, 1980, and 1977), and to cost of illness studies for virtually all of the major medical problems. Accordingly, these estimates can be compared meaningfully to estimates for e.g., cancer, stroke, heart disease, diabetes, alcohol abuse and mental illness. The National Institute of Health compiles and publishes these estimates.

Based on these guidelines we estimate that the societal cost of drug abuse in the United States was \$180.8 billion in 2002. The majority of these costs are productivity losses—losses of potential market and household production--related to incarceration, crime careers, drug abuse-related illness, and premature death. The share of the societal cost related to the three major components of costs and that related to crime remained relatively constant between 1992 and 2002.

The overall cost of drug abuse rose 5.3 percent annually between 1992 and 2002 increasing from \$107.5¹⁷ to \$180.8 billion. This increase is greater than the combined increase in the adult population and consumer prices of 3.5 percent annual growth during that period. The primary

¹⁷ This estimate is a revision of the original estimate of \$97.7 billion. Most (\$8 billion) of the increase comes from use of a lower discount rate for calculating mortality costs, in keeping with recent cost of illness studies and Office of Management and Budget guidance on health cost analyses, and the remainder is from more current data for 1992 exceeding values which had been projects from earlier years.

sources of this increase are increases in productivity losses related to incarceration and drug abuse-related illness.

The estimates presented in this report and prior related analyses do have recognized limitations (see Reuter, 1999; Kleiman, 1999; Kopp, 1999; and Cohen, 1999):

- The reliability of the underlying data and methods; and
- Limited scope of the study.

The calculations for this study yield apparently very precise values. However, they should be treated as approximations, just as should be done for virtually any quantitative analysis. This is particularly true for the component values that have been estimated by trending. This method is less reliable than re-estimation, because the estimates are based on data that are not as closely related to the actual component value.

Another consideration is that, all the estimates for this study are based on data from secondary sources. Generally, the data from secondary sources can have limitations because it was not designed with exactly the purposes of this study in mind.

Third, the estimates for many if not most component values rely on attribution fractions that are difficult to estimate with precision. It is very difficult to discern and measure the role of drugs in violent and acquisitive crime, just as it is very difficult to measure the nature and size of the illicit drug trade. The data used to develop attribution fractions was not revisited for this study, but were adopted from Harwood et al (1998). The scientific basis and ability to measure and understand such relationships is constantly improving. Future cost of illness studies will need to re-examine the scientific literature on crime and drugs as well as health and drugs.

Finally, for many components data were not available through 2002. In these cases, the values of the components from the last available published data were projected.

The scope of this study is limited. It has followed guidelines developed by the U.S. Public Health Service for cost of illness studies. There are other approaches that could have been used to develop estimates of the cost of drug abuse, such as “willingness to pay” (Miller et al., 1998) or the “demographic” approach (Collins and Lapsey, 2002). These methods examine different facets of the economic impacts of drug abuse. They are able to incorporate factors costs such as the costs of pain, suffering, anxiety, and impacts on families and children and other intangible impacts of drug abuse that are not included in this study. In applying the estimates from this or other cost of illness studies, analysts must consider which approach is most appropriate for the particular issue they are assessing.

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APPENDIX A: ACRONYMS AND ABBREVIATIONS

Acronyms and Abbreviations

BEA – Bureau of Economic Analysis, U.S. Department of Commerce

BJS – Bureau of Justice Statistics

BLS – Bureau of Labor Statistics

CB – Census Bureau

CDC – Center for Disease Control and Prevention

CJEE – Bureau of Justice Statistics Criminal Justice Expenditures and Employment Program

CMS – Centers for Medicare and Medicaid Services

CPI-M – Consumer Price Index for Medical Services

ECEC – Employer Cost for Employee Compensation

HCFA – Health Care Financing Administration

HCI – Hourly Compensation Index

IVDU – Intravenous Drug Use

NASADAD – National Association of State Alcohol and Drug Abuse Directors

NCHS – National Center for Health Statistics

NDCS – National Drug Control Strategy

NHSDA – National Hospital Discharge Survey

NHSDA – National Household Survey of Drug Abuse

NSDUH – National Survey on Drug Use and Health

N-SSATS – National Survey of Substance Abuse Treatment

ONDCP – Office of National Drug Control Policy

SAMHSA – Substance Abuse and Mental Health Services Administration

SB – Sourcebook of Criminal Justice Statistics

SSA – Social Security Administration

SSI – Supplemental Security Income

TEDS – Treatment Episode Data Set

UFDS – Uniform Facility Data Set

VA – Department of Veterans Affairs

APPENDIX B:
SUPPLEMENTAL TABLES FOR
CALCULATION OF COST ESTIMATES

Summary of Cost Components and Data Sources

Tables B-1 through B-3 display the 32 base cost components and the data sources used to update each component for health care costs, lost productivity, and other effects, respectively.

Table B-1 summarizes the methodology used to update the health care cost components. The values for most of the components were estimated by applying update factors for real and price change in the costs.

Table B-2 displays the methodology used to update the productivity loss components. The values for three of these cost components were re-estimated at least for several years. These components are premature death, lost productivity for victims of crime, and incarceration. The values for the remaining components were estimated by applying update factors for real and price change in the costs.

Table B-3 summarizes the methodology used to update the cost of other effects components. The values for all of the cost components except social welfare spending were re-estimated. The values for social welfare were estimated by applying update factors for real and price change in the costs.

Table B-1
Base Cost Components and the Data Sources for the Updates
Health Care Costs

Cost Component	Real Change	Cost/Price Index
Community-Based Specialty Treatment	Mark et al. (1999) National Spending Estimates for Mental Health, Alcohol, and Drug Abuse Treatment, 1987-1997.	
Federally-Funded Specialty Treatment		
Department of Defense	ONDCP National Drug Strategy Budget Summary (1992-2000)	
Veterans Affairs	ONDCP National Drug Strategy Budget Summary (1992-2000)	
Bureau of Prisons	ONDCP National Drug Strategy Budget Summary (1992-2000)	
Indian Health Services	ONDCP National Drug Strategy Budget Summary (1992-2000)	
Support		
Prevention (Federal)	ONDCP National Drug Strategy Budget Summary (1992-2000)	
Prevention (State and Local)	National Association Of State Alcohol and Drug Abuse Directors (1999)	
Training	Growth in Population 18 or Older (U.S. Department of Commerce, U.S. Census Bureau [Census])	Consumer Price Index-All Services (U.S. Department of Labor, Bureau of Labor Statistics [BLS])
Research	ONDCP National Drug Strategy Budget Summary (1992-2000)	
Insurance Administration	National Health Expenditures, Health Care Financing Administration	
Medical Consequences		
Hospital and Ambulatory Care Costs	Number of Individuals 18 or Older Reporting Any Lifetime History of Drug Abuse (National Household Survey of Drug Abuse [NHSDA])	Consumer Price Index - Medical Services (BLS)
Special Disease Costs		
Drug-Exposed Infants	Number of Births (National Center for Health Statistics [NCHS])	Consumer Price Index - Medical Services (BLS)
Tuberculosis	Number of Tuberculosis Cases Related to Drug Use (Center for Disease Control [CDC])	Consumer Price Index - Medical Services (BLS)
HIV/AIDS	Hellinger and Fleishman (2000) "Estimating the National Cost of Treating People with HIV Disease: Patient, Payer, and Provider Data."	
Hepatitis B and C	Number of Hepatitis Cases Related to Drug Use (CDC)	Consumer Price Index - Medical Services (BLS)
Violent Crime	Number of Victimitizations (U.S. Department of Justice, Bureau of Justice Statistics [BJS])	Consumer Price Index - Medical Services (BLS)
Health Insurance Administration	National Health Expenditures, Health Care Financing Administration	

Table B-2
Base Cost Components and the Data Sources for the Updates
Productivity Costs

Cost Component	Real Change	Cost/Price Index
Premature Death	Number of Deaths Related to Drug Use, weighted by age and gender (CDC)	Employer Cost for Employee Compensation (ECEC), Civilian, All Workers, Total Compensation, Cost per Hour Worked (BLS)
Drug Abuse-related Illness	Persons Reporting More Than 100 Days of Marijuana or Cocaine in their Lifetime (NHSDA) 1992-1998 trend projected to 2002	ECEC (BLS)
Institutionalization/ Hospitalization	Clients Using Inpatient Hospital or Residential Treatment (National Survey of Substance Abuse Treatment Services/Uniform Facilities Data Set)	ECEC (BLS)
Lost Productivity of Victims of Crime	Victims of Crimes Attributed to Drug Abuse Weighted by the Mean Hours Lost per Offense (BJS)	ECEC (BLS)
Incarceration	Number of Individuals Incarcerated for Offenses Attributed to Drug Abuse (BJS)	ECEC (BLS)
Crime Careers	Change in Number of Chronic Hardcore Cocaine and Heroin Users (Rhodes et al., 2001)	ECEC (BLS)

Table B-3
Base Cost Components and the Data Sources for the Updates
Cost of Other Effects

Cost Component	Real Change	Cost/Price Index
Value of Goods and Services Lost to Crime		
Criminal Justice System and Other Public Costs		
State and Local Police Protection	State and Local Police Protection Costs allocated by the Percent of Arrests Attributable to Drug Abuse (BJS)	
State and Local Legal/ Adjudication	State and Local Legal Adjudication Costs allocated by the Percent of Arrests Attributable to Drug Abuse (BJS)	
State and Federal Corrections	State and Federal Corrections Costs allocated by the Percent of Incarcerations Attributable to Drug Abuse (BJS)	
Local Corrections	Local Corrections Costs allocated by the Percent of Arrests Attributable to Drug Abuse (BJS)	
Federal Funding to Reduce the Supply of Drugs	ONDCP National Drug Control Strategy Budget Summary	
Private Costs		
Private Legal Defense	Proportion of Arrest that are Drug Related (BJS), the Percent of the American Bar Association in the Criminal Justice Section	Total Revenue for Legal Services (Statistical Abstract of U.S.)
Property Damage for Victims of Crime	Property Offenses Attributed to Drug Abuse Weighted by the Average Loss per Offense (BJS)	Consumer Price Index-All Services (BLS)
Social Welfare	SSI=0; Balance Trended by Food Stamps (Department of Agriculture)	

Table B-4
Cost Adjustment Factors, 1992-2002

Data Series (Source)	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Consumer Price Index – All Services (BLS)	140.3	144.5	148.2	152.4	156.9	160.5	163	166.6	172.2	177.1	179.9
Consumer Price Index – Medical Services (BLS)	190.1	198.8	207.4	216.1	224.8	233.4	242.1	250.6	260.8	272.8	285.6
Personal Health Care Spending (CMS) (\$ in billions)	\$720	\$776	\$817	\$866	\$911	\$959	\$1010	\$1065	\$1135	\$1231	\$1340
Health Insurance Admin Costs (CMS) (\$ in billions)	\$49	\$53	\$58	\$61	\$61	\$61	\$65	\$73	\$80	\$90	\$105
Employer Cost for Employee Compensation (ECEC), Civilian, All Workers, Total Compensation, Cost per Hour Worked (BLS)	\$17.27	\$17.88	\$18.30	\$18.21	\$18.68	\$19.22	\$19.76	\$20.29	\$21.16	\$22.15	\$23.32
US Resident Population 18+ years (CB)	188.9	190.7	192.4	194.2	196.1	198.2	200.3	202.5	209.8	212.5	215.1
US Resident Population in millions (CB)	256.5	259.9	263.1	266.3	269.4	272.6	275.9	279	282.2	285.3	288.4
Births in the US in millions (NCHS)	4.065	4.000	3.953	3.900	3.891	3.881	3.942	3.959	4.059	4.026	4.019
Chronic Hardcore Drug Users in millions (ONDCP)	4.718	4.741	4.610	4.646	5.303	5.726	5.031	n.e.	n.e.	n.e.	n.e.
Food Stamp Expenditures (BEA) (\$ in billions)	\$22.5	\$23.7	\$24.5	\$24.6	\$24.3	\$21.5	\$16.5	\$15.5	\$14.9	\$16.0	\$18.6

Sources: Referenced in the section of the report where each data series is introduced and applied.

Table B-5
Number of Individuals with 100 or More Days
of Marijuana or Cocaine Use in Their Lifetime, 1992-1998

Age Group	1992	1993	1994	1995	1996	1997	1998
Population (in thousands)							
18-25	27,964	28,327	28,027	27,820	27,796	27,691	27,966
26-34	38,215	37,194	36,588	35,975	35,474	35,246	34,603
35 +	118,850	120,453	123,023	125,529	128,265	130,722	133,136
Percentages of persons reporting more than 100 days of cocaine use in their lifetime							
18-25	1.9%	1.5%	1.2%	2.0%	1.6%	1.3%	1.5%
26-34	4.5%	4.0%	4.2%	4.2%	4.7%	3.3%	3.1%
35 +	1.1%	1.2%	1.5%	1.7%	2.1%	2.0%	2.1%
Percentages of persons reporting more than 100 days of marijuana use in their lifetime							
18-25	10.4%	8.6%	9.7%	10.4%	13.5%	12.2%	14.9%
26-34	16.9%	15.2%	16.3%	14.9%	16.1%	13.0%	13.1%
35 +	5.3%	5.6%	6.6%	8.0%	8.3%	8.8%	9.8%
Sum of the percentage of persons reporting 100 or more days of cocaine or marijuana use in their lifetime							
18-25	12.3%	10.1%	10.9%	12.4%	15.1%	13.5%	16.4%
26-34	21.4%	19.2%	20.5%	19.1%	20.8%	16.3%	16.2%
35 +	6.4%	6.8%	8.1%	9.7%	10.4%	10.8%	11.9%
Estimated number of persons using 100 or more days of cocaine or marijuana in their lifetime							
18-25	3,440	2,861	3,055	3,450	4,197	3,738	4,586
26-34	8,178	7,141	7,501	6,871	7,379	5,745	5,606
35 +	7,606	8,191	9,965	12,176	13,340	14,118	15,843
Total	19,224	18,193	20,520	22,497	24,915	23,601	26,035

Source: Substance Abuse and Mental Health Services Administration (1996-1998)
National Household Survey of Drug Abuse.

Note: The questionnaire items used to construct this data series were discontinued after the 1998 survey.

Table B-6
Drug Abuse-Related Admissions to Short Stay Hospitals
by Primary/Secondary Drug Related Diagnosis 1992-2002
(annual admissions in thousands)

Primary Diagnosis	1992	1993	1994	1995	1996	1997	1998	1999	2000
Drug Psychoses	19	21	28	34	59	47	58	64	89
Dependence	106	126	130	131	115	116	96	84	93
Abuse	17	20	23	23	24	24	24	28	29
Subtotal	142	167	181	188	198	187	178	176	211
Non-Primary Diagnosis									
Drug Psychoses	47	61	69	65	69	75	98	88	102
Dependence	231	252	272	279	283	321	345	351	368
Abuse	229	302	373	386	376	401	405	431	414
Subtotal	507	615	714	730	728	797	848	870	884

Drug psychoses: ICD-9 diagnosis 292.

Drug dependence: ICD-9 diagnosis 304.

Drug abuse: ICD-9 diagnosis 305.1-9.

Source: National Center for Health Statistics, Centers for Disease Control and Prevention. On-line tabulations of statistics from the National Hospital Discharge Survey, annual surveys for 1992-2000.

Table B-7
Number of Persons Living with AIDS
with Drug Related Exposure 1992-2002

Exposure Category	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Male Adult - Injecting Drug Use	26,176	34,465	40,153	44,589	49,074	54,249	56,450	60,075	63,756	67,366	68,636
Male Adult - Have Sex with Men and Injecting Drug Use	11,325	13,645	14,635	15,369	16,034	17,203	19,265	20,107	20,756	21,520	23,495
Female Adult - Injecting Drug Use	10,245	13,793	16,175	18,294	20,285	22,586	24,307	25,737	27,395	29,145	30,158
Total Adults Living with AIDS Related to Drug Use	47,746	61,903	70,963	78,252	85,393	94,038	100,022	105,919	111,907	118,031	112,289
Total Children Age <13 Living with AIDS	2,654	3,039	3,267	3,404	3,475	3,569	3,731	3,784	3,827	3,864	3,893
Estimated Percentage of Adult Exposure Related to Drug Use	34.7%	36.1%	36.6%	36.7%	36.1%	35.5%	35.1%	34.4%	33.8%	33.2%	32.1%
Estimated Number of Children Living with AIDS Related to Drug Use*	922	1,098	1,194	1,248	1,254	1,268	1,310	1,303	1,292	1,284	1,249
Total Persons Living with AIDS Attributable to Drug Use	48,668	63,001	72,157	79,500	86,647	95,306	101,332	107,222	113,199	119,315	123,538

*Estimated Based on the percentage of adults whose exposure was drug related.

Source: Centers for Disease Control and Prevention. (1993-2002) *HIV/AIDS Surveillance Report*.

Table B-8
Number of Crime Victims
and the Percentage of Victimizations Attributable to Drug Abuse, 1992-2002
(victimizations in thousands)

Crime	Percentage Attributable to Drug Abuse	Actual				Estimated	Actual					
		1992	1993	1994	1995	1996 ¹	1997	1998	1999	2000	2001	2002
Rape	2.4%	141	160	168	141	128	115	110	141	92	84	87
Assault	5.1%	5,255	9,072	9,129	8,122	7,741	7,359	6,897	6,164	5,330	4,865	4,581
Robbery	27.2%	1,226	1,291	1,299	1,142	1,043	944	886	810	732	631	512
Burglary	30.0%	4,757	5,984	5,483	4,822	4,729	4,635	4,054	3,652	3,444	3,140	3,056
Larceny	29.6%	20,312	23,020	23,766	22,006	20,877	19,749	17,703	16,495	14,916	14,135	13,495
Motor vehicle theft	6.8%	1,959	1,961	1,764	1,654	1,544	1,433	1,138	1,068	937	1,009	989
Homicide	15.8%	24	24	23	22	20	18	17	16	16	16	16

¹ Data for 1996 is not available. Therefore the 1996 values are estimated to be the mid-point of the 1995 and 1997 values. The methodology for counting crimes was revised between 1992 and 1993 making the 1993 definition of crimes more comprehensive than the 1992 definition. We do not make any adjustment for this revision. The revision would imply that the 1992 cost of crime may be understated and the increase between 1992 and 1993 may be overstated.

Source: Bureau of Justice Statistics (1992-1998) Sourcebook of Criminal Statistics.

Table B-9. Number of Deaths Related to Drug Abuse, 1992-1998

Cause of Death	ICD-9 Code	Percent Attributable to Drug Abuse	Number of Deaths Attributable to Drug Abuse						
			1992	1993	1994	1995	1996	1997	1998
DIRECT PRIMARY CAUSES									
Drug psychosis	262	100%	13	3	10	9	8	4	11
Drug Dependence	304	100%	309	333	267	301	335	273	264
Nondependent abuse of drugs	305.2-305.9	100%	777	806	932	1,104	1,276	1,251	1,336
Drug withdrawal syndrome in newborn	779.5	100%	6	0	1	0	0	0	3
Accidental overdose of psychoactive drugs									
Opiates and related narcotics	E850.0	100%	1,279	1,728	1,732	1,904	2,075	2,377	2,718
Aromatic analgesics, not elsewhere classified	E850.2	100%	69	88	90	85	80	107	94
Other non-narcotic analgesics	E850.7	100%	0	0	0	0	0	0	0
Other	E850.8	100%	167	149	182	181	179	178	175
Unspecified analgesics and antipyretics	E850.9	100%	2	1	4	3	2	7	9
Barbiturates	E851	100%	21	17	15	17	19	24	16
Other sedatives and narcotics	E852	100%	11	17	10	13	15	9	8
Tranquilizers	E853	100%	65	11	63	73	82	94	107
Other psychotropic agents (i.e., antidepressants)	E854	100%	269	315	355	350	344	393	334
Other drugs acting on the central and autonomic nervous system	E855	100%	1,113	1,183	1,393	1,402	1,411	1,336	1,540
Agricultural and horticultural chemical pharmaceutical preparations other than plan foods and fertilizers	E863	100%	18	16	11	14	16	12	8
Accidental Overdose of Drugs and Medicaments									
Salicylates	E850.1	100%	56	47	37	42	47	27	32
Pyrazole derivatives	E850.3	100%	2	1	1	1	1	2	2
Antirheumatics	E850.4	100%	3	3	6	5	4	4	7
Other non-narcotic analgesics	E850.5	100%	79	77	96	99	102	111	104
Accidental poisoning by antibiotics	E856	100%	55	43	44	46	47	48	39
Accidental poisoning by other anti-infectives	E857	100%	5	9	11	9	6	8	4
Hormones and synthetic substitutes	E858.0	100%	18	9	26	24	21	29	21
Primarily systemic agents	E858.1	100%	44	60	51	47	42	49	57
Agents primarily affecting blood constituents	E858.2	100%	33	34	27	32	36	53	51
Agents primarily affecting cardiovascular system	E858.3	100%	218	213	244	236	227	195	194
Agents primarily affecting gastrointestinal system	E858.4	100%	3	5	3	4	5	1	3
Water mineral and uric acid metabolism drugs	E858.5	100%	75	74	72	58	44	42	33
Agents primarily acting on the smooth and skeletal muscles and respiratory system	E858.6	100%	8	18	15	17	18	12	27
Agents primarily affecting skin and mucous membrane, ophthalmological, otorhinolaryngological, dental drugs	E858.7	100%	7	7	11	11	10	9	4
Other specified drugs	E858.8	100%	1,328	1,902	1,981	1,997	2,012	2,163	2,465
Unspecified drug	E858.9	100%							
Heroin, methadone, other opiates and related narcotics, and other drugs causing adverse effects in therapeutic use.	E935.0-E935.2, E937-940	100%	27	20	20	22	23	44	60
INJURY UNDETERMINED WHETHER ACCIDENTAL OR PURPOSELY INFLICTED									
Analgesics, antipyretics, and antirheumatics	E980.0	100%	491	689	687	712	737	857	899
Barbiturates	E980.1	100%	13	7	10	8	6	10	8
Other sedatives and hypnotic	E980.2	100%	8	3	9	8	6	4	8
Tranquilizers and other psychotropic agents	E980.3	100%	159	168	180	173	166	178	171
Other unspecified drugs and medicinal substances	E980.4	100%	478	618	657	659	661	780	846
Unspecified drug or medicinal substance	E980.5	100%	252	257	291	290	288	371	366
Other and unspecified solid or liquid substance	E980.9	100%	63	50	32	36	39	50	48
Homicide and injury inflicted purposely by other persons	E960-E969	15.8%	3,972	4,053	3,879	3,569	3,260	3,079	2,827
OTHER CAUSES									
Tuberculosis	010-018	4.5%	77	73	67	60	54	52	50
Hepatitis C	Various	20%	900	214	326	404	476	545	691
Hepatitis B	Various	30%	2,700	312	336	323	340	326	329
AIDS	Various	32%	10,741	12,060	13,475	13,794	9,959	5,283	4,295
TOTAL			25,934	25,694	27,658	28,133	24,480	20,398	20,265

Source: National Center for Health Statistics (1993-1998)

Table B-10
Number of Deaths Related to Drug Abuse, 1999-2000

Cause of Death	ICD-10 Code	Percent Attributable to Drug Abuse	Deaths Attributable to Drug Abuse	
			1999	2000
DIRECT PRIMARY CAUSES				
Mental and behavioral disorders due to psychoactive substance use				
Opioids	F11	100%	251	234
Cannabinoids	F12	100%	5	3
Sedatives or hypnotics	F13	100%	3	1
Cocaine	F14	100%	444	364
Other stimulants, including caffeine	F15	100%	26	35
Hallucinogens	F16	100%	3	2
Volatile solvents	F18	100%	2	7
Multiple drug use and use of other psychoactive substances	F19	100%	1,198	1,269
Accidental poisoning by and exposure to noxious substances				
Nonopioid analgesics, antipyretics and antirheumatics	X40	100%	168	176
Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	X41	100%	671	704
Narcotics and psychodysleptics [hallucinogens], not elsewhere classified	X42	100%	6,009	6,139
Other drugs acting on the autonomic nervous system	X43	100%	21	21
Other and unspecified drugs, medicaments and biological substances	X44	100%	4,286	4,672
Organic solvents and halogenated hydrocarbons and their vapours	X46	100%	63	38
Injury, undetermined whether accidental or purposely inflicted				
Nonopioid analgesics, antipyretics and antirheumatics	Y10	100%	38	43
Antiepileptic, sedative-hypnotic, antiparkinsonism and psychotropic drugs, not elsewhere classified	Y11	100%	231	219
Narcotics and psychodysleptics [hallucinogens], not elsewhere classified	Y12	100%	1,425	1,357
Other drugs acting on the autonomic nervous system	Y13	100%	4	8
Other and unspecified drugs, medicaments and biological substances	Y14	100%	775	802
Organic solvents and halogenated hydrocarbons and their vapours	Y16	100%	9	12
OTHER CAUSES				
Homicide or injury inflicted by another person with intent to injure or kill, by any means	X85-Y09	15.8%	2,639	2,616
Tuberculosis	A15-A19	4.5%	42	35
Hepatitis C	B17.1, B18.2	20%	753	845
Hepatitis B	B16, B18.0, B18.1	30%	250	266
HIV	B20-B24	32%	4,737	4,633
Total			23,070	23,544

Note: Mortality data for prior years used the ICD-9 coding system. See Table B-8.

Source: Mortality data published on web: National Center for Health Statistics (1999-2000).

Table B-11
Jail and Prison Inmates by Offense

Offense	Percentage of Jail Inmates		Percentage of State Prison Inmates		Percentage of Federal Prison Inmates	
	1989	1996	1991	1997	1991	1997
Homicide	2.8%	2.8%	10.6%	11.7%	1.9%	1.5%
Assault	7.2%	11.6%	8.2%	9.4%	1.5%	1.3%
Sexual Assault	3.4%	3.2%	9.4%	8.6%	0.7%	0.8%
Robbery	6.7%	6.5%	14.8%	14.1%	11.2%	10.0%
Burglary	10.7%	7.6%	12.4%	10.7%	0.7%	0.3%
Larceny-Theft	7.9%	8.0%	4.9%	4.2%	0.9%	0.5%
Auto Theft	2.8%	2.6%	2.2%	1.8%	0.5%	0.2%
Drug Laws	23.0%	22.0%	21.3%	20.7%	57.9%	62.6%
Receiving Stolen Property	2.4%	2.1%	1.4%	1.6%	0.8%	0.5%

Source: Sourcebook of Criminal Justice, 1998 Tables 6.31 and 6.0016.

Table B-12
Number of Inmates by Offense
And the Number Attributable to Drug Related Crime, 1992-2000

Data Series	Attributed to Drug Abuse	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
		Homicide		95	102	112	123	132	141	147	153	157
Assault		105	115	128	142	154	166	174	180	184	187	192
Sexual Assault		85	89	94	101	106	110	115	119	122	123	126
Robbery		148	156	166	178	187	195	205	214	219	223	227
Burglary		133	137	142	148	151	156	163	170	173	175	179
Larceny-Theft		72	75	79	83	86	90	94	97	100	101	104
Auto Theft		28	29	31	32	33	34	35	37	38	38	39
Drug Laws		300	318	341	364	381	404	426	445	462	473	488
Receiving Stolen Property		21	23	24	26	27	29	31	32	33	33	34
Total		1,266	1,340	1,436	1,541	1,622	1,719	1,802	1,875	1,929	1,960	2,014
Homicide	15.8%	15	16	18	19	21	22	23	24	25	25	25
Assault	5.1%	5	6	7	7	8	8	9	9	9	10	10
Sexual Assault	5.1%	4	5	5	5	5	6	6	6	6	6	6
Robbery	27.2%	40	42	45	48	51	53	56	58	60	61	62
Burglary	30.0%	40	41	43	44	45	47	49	51	52	53	54
Larceny-Theft	29.6%	21	22	23	25	25	27	28	29	30	30	31
Auto Theft	6.8%	2	2	2	2	2	2	2	2	3	3	3
Drug Laws	100.0%	300	318	341	364	381	404	426	445	462	473	488
Receiving Stolen Property	15.1%	3	3	4	4	4	4	5	5	5	5	5
Total		431	455	486	519	543	574	603	630	652	664	684

Source: Bureau of Justice Statistics (2003) *Prison and Jail Inmates at Midyear 2001*.

Table B-13
Total State and Local Criminal Justice Expenditures, 1992-1999
(in millions of dollars)

Data Series	1992	1993	1994	1995	1996	1997	1998	1999
Police Protection Costs ¹	\$34.8	\$36.7	\$38.7	\$41.1	\$44.7	\$47.7	\$50.5	\$53.4
Legal Adjudication Costs ¹	\$16.6	\$16.9	\$17.9	\$19.2	\$20.5	\$21.6	\$23.6	\$25.3
Fed & State Corrections Costs	\$21.2	\$21.4	\$23.9	\$28.0	\$28.8	\$30.6	\$31.4	\$34.1
Local Corrections Costs	\$10.3	\$10.4	\$11.0	\$11.8	\$12.2	\$12.9	\$13.8	\$14.9

¹ Includes spending only by state and local justice jurisdictions.

Source: Bureau of Justice Statistics (2001) Criminal Justice Expenditure and Employment Extracts Program (CJEE), Table 05: *Total direct and intergovernmental expenditure, by activity and type of government, fiscal years 1980-99.*

Table B-14
Number of Arrests by Type of Offense and Drug Abuse Attribution Factors, 1992-2002
(arrests in thousands)

Type of Offense	Percent Attributed to Drug Abuse	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Homicide ¹	15.8%	23	23	22	21	19	18	17	15	13	14	14
Aggravated Assault	5.1%	507	519	548	568	522	535	507	484	478	478	472
Forcible Rape	2.4%	39	38	37	35	33	32	31	29	27	27	28
Other Assaults	5.1%	1,075	1,145	1,224	1,290	1,329	1,396	1,339	1,294	1,312	1,316	1,289
Robbery	27.2%	173	174	172	172	156	132	121	109	106	108	106
Burglary	30.0%	424	403	396	387	365	356	331	296	290	291	288
Larceny-Theft	29.6%	1,505	1,476	1,515	1,530	1,486	1,473	1,307	1,189	1,166	1,161	1,160
Motor Vehicle Theft	6.8%	198	196	200	192	175	167	151	142	148	147	149
Driving Under the Influence	0.0%	1,625	1,525	1,385	1,436	1,467	1,477	1,403	1,511	1,471	1,435	1,462
Liquor Laws	0.0%	542	519	542	595	677	636	630	658	683	611	654
Drunkenness	0.0%	832	727	713	708	719	735	710	656	638	619	573
Stolen Property	15.1%	162	158	165	167	151	155	138	122	119	122	126
Prostitution	12.8%	96	98	99	98	99	102	94	92	88	81	80
Drug Abuse Violations	100.0%	1,066	1,126	1,351	1,476	1,506	1,584	1,559	1,532	1,580	1,587	1,539
Other	0.0%	5,810	5,910	6,281	6,445	7,636	6,486	6,190	5,901	5,861	5,703	5,802
Total		14,075	14,036	14,649	15,120	16,341	15,284	14,528	14,031	13,980	13,699	13,742

¹ Homicide includes murder and non-negligent manslaughter.

Source: Federal Bureau of Investigation (2003 and previous) *Uniform Crime Reports*.

Table B-15
Percentage of Arrests Attributed to Drug Abuse, 1992-2002

Data Series	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total Arrests ¹	14.1	14.0	14.6	15.1	16.3	15.3	14.5	14.0	14.0	13.7	13.7
Number of Arrests Attributed to Drug Abuse ²	1.82	1.87	2.11	2.24	2.24	2.31	2.22	2.14	2.17	2.18	2.13
Percentage of Total Arrests Attributed to Drug Abuse	12.9%	13.3%	14.4%	14.8%	13.7%	15.1%	15.3%	15.2%	15.5%	15.9%	15.5%

Source: Analysis by The Lewin Group, 2001.

Table B-16
Percentage of Persons Under Incarceration in Local Jails and
in State and Federal Prison for Drug Related Crimes, 1992-2002

Data Series	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Local Jails											
Number of Individuals Incarcerated for Drug Related Crime ¹	138	142	149	154	156	171	178	182	187	190	200
Total Number of Individuals Incarcerated ²	445	460	486	507	518	567	592	606	621	631	665
Percentage of Individuals Incarcerated for Drug Related Crime	31.1%	30.9%	30.6%	30.4%	30.1%	30.1%	30.1%	30.1%	30.1%	30.1%	30.1%
State and Federal Prison											
Number of Individuals Incarcerated for Drug Related Crime ¹	293	314	337	365	387	403	425	448	465	474	484
Total Number of Individuals Incarcerated ²	822	880	950	1,034	1,103	1,152	1,210	1,269	1,308	1,329	1,349
Percentage of Individuals Incarcerated for Drug Related Crime	35.6%	35.6%	35.5%	35.3%	35.1%	35.0%	35.1%	35.3%	35.5%	35.7%	35.9%

Source: Analysis by The Lewin Group, 2001.

Table B-17
Federal Funds for Reducing the Supply of Drugs, 1992-2002

Federal Agency	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Justice											
Drug Enforcement Administration	\$707.9	\$756.6	\$768.1	\$801.4	\$866.7	\$1,056.9	\$1,208	\$1,304	\$1,341.3	\$1,480.4	\$1,605.4
Federal Bureau of Investigation	\$204.7	\$257.0	\$476.5	\$540.0	\$694.6	\$802.2	\$824	\$589.4	\$709.6	\$707.5	\$415.5
Immig. & Naturalization Service	\$141.2	\$147.0	\$157.4	\$184.6	\$225.2	\$324.1	\$373	\$428.7	\$465.8	\$525	\$538
Interpol	\$1.9	\$1.9	\$1.9	\$1.8	\$1.6	\$0.8	\$0	\$0.2	\$0.2	\$0.3	\$0.3
Treasury											
Bur. Alcohol, Tob. and Firearms	\$135.9	\$151.0	\$158.8	\$166.7	\$171.2	\$175.6	\$213	\$231.7	\$252	\$164.9	\$185.4
Internal Revenue Service	\$102.8	\$91.8	\$113.0	\$100.9	\$68.2	\$73.4	\$72	\$72.4	\$73.5	\$51.5	\$39.1
U.S. Customs Service	\$784.7	\$561.0	\$572.9	\$536.4	\$531.2	\$583.2	\$606	\$956.1	\$664	\$707.7	\$994.8
Transportation											
Federal Aviation Administration	\$15.8	\$21.0	\$25.3	\$18.0	\$18.1	\$19.0	\$23	\$23.6	\$23.9	\$19.9	\$19.1
U.S. Coast Guard	\$436.4	\$310.5	\$314.8	\$306.1	\$323.2	\$478.1	\$485	\$815.3	\$760.8	\$754.4	\$540.4
State											
Agency for Intl. Development	\$250.2	\$139.8	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Bureau of Intl. Narcotics Matters	\$144.8	\$147.8	\$144.9	\$231.8	\$135.0	\$193.0	\$210.0	\$489.2	\$273.8	\$279.3	\$197.5
U.S. Information Agency	\$9.7	\$9.3	\$7.9	\$8.0	\$8.3	\$7.2	\$8.2	\$8.5	\$8	\$8.8	\$9.1
Agriculture											
Agriculture Research Service	\$6.5	\$6.5	\$6.5	\$6.5	\$4.7	\$4.7	\$4.8	\$5.3	\$4.8	\$4.8	\$4.8
U.S. Forest Service	\$9.4	\$9.6	\$9.6	\$9.8	\$9.8	\$5.8	\$5.8	\$5.8	\$6.8	\$5.8	\$5.8
Interior											
Bureau of Indian Affairs	\$19.1	\$19.4	\$22.2	\$19.9	\$15.6	\$16.0	\$21.3	\$17.5	\$20.3	\$23.2	\$23.3
Bureau of Land Management	\$8.5	\$10.0	\$5.1	\$5.1	\$5.0	\$5.0	\$5.0	\$5	\$5	\$5	\$5
Fish and Wildlife Service	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1.0	\$1	\$1	\$1.7	\$1
National Park Service	\$10.8	\$8.7	\$8.8	\$8.8	\$8.8	\$9.3	\$9.4	\$9.5	\$9.5	\$9.5	\$9.5
BUNLE: Plan Columbia/Andean Initiative								0	\$1018.5	\$0	\$625
Defense											
DOD Plan Columbia								0	\$300.6	\$103.3	\$10.9
Total	\$4,126.3	\$3,690.5	\$3,520.8	\$3,697.1	\$3,827.2	\$4,619.9	\$4,826.7	\$5,867.5	\$5,478.6		

Source: ONDCP (1992-2002) *National Drug Control Strategy: Budget Summary*.

Table B-18
Private Legal Defense Spending, 1992-2002
(in millions of dollars)

Data Series	Actual										Projected
	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Total Annual Receipts for Legal Services (billions of dollars)	\$108.4	\$112.1	\$114.6	\$116.0	\$124.6	\$132.8	\$141.8	\$150.0	\$163.1	\$176.7	\$185.6
Estimated Percent of Lawyers Practicing Criminal Law	2.6%	2.6%	2.6%	2.6%	2.6%	2.6%	2.25%	2.25%	2.25%	2.25%	2.25%
Percentage of Arrests for Drug Abuse Related Crimes	12.9%	13.3%	14.4%	14.8%	13.7%	15.1%	15.3%	15.2%	15.5%	15.9%	15.5%
Estimated Drug Abuse Related Legal Spending (in millions of dollars)	\$364.7	\$388.4	\$429.4	\$447.1	\$444.8	\$522.3	\$487.3	\$513.9	\$570.6	\$632.1	\$647.3

Sources: Bureau of Economic Analysis, 2003; American Bar Association, 2003.

**APPENDIX C:
ESTIMATED COSTS IN CONSTANT
2002 DOLLARS**

Table C-1
The Economic Cost of Drug Abuse, 1992-2002 in Real 2002 Dollars
(in billions of 2002 dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Health Care Costs	\$13.7	\$14.7	\$14.7	\$14.0	\$13.2	\$13.2	\$13.8	\$14.0	\$14.1	\$14.9	\$15.8
Productivity Losses	\$99.3	\$98.7	\$101.8	\$105.3	\$107.1	\$107.0	\$109.6	\$115.9	\$118.5	\$121.9	\$128.6
Other Costs	\$24.9	\$24.7	\$25.9	\$28.1	\$28.3	\$29.9	\$31.3	\$33.6	\$35.3	\$35.2	\$36.4
Total	\$137.9	\$138.0	\$142.4	\$147.4	\$148.6	\$150.1	\$154.6	\$163.5	\$167.9	\$171.9	\$180.8

Source: Analysis by The Lewin Group, 2004.

Table C-2
Health Care Costs of Drug Abuse 1992-2002 in Real 2002 Dollars
(in millions of 2002 dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Community-Based Specialty Treatment	\$4,834	\$5,214	\$5,369	\$5,394	\$5,653	\$5,707	\$5,926	\$5,677	\$5,390	\$5,651	\$5,997
Federally-Provided Specialty Treatment											
Department of Defense	\$18	\$11	\$6	\$6	\$6	\$6	\$6	\$7	\$7	\$7	\$8
Indian Health Services	\$33	\$41	\$38	\$37	\$38	\$35	\$35	\$44	\$43	\$53	\$54
Bureau of Prisons	\$22	\$21	\$21	\$21	\$22	\$22	\$23	\$35	\$36	\$39	\$39
Department of Veterans Affairs	\$145	\$158	\$186	\$199	\$174	\$151	\$132	\$117	\$114	\$121	\$116
Health Infrastructure and Support											
Federal Prevention	\$790	\$776	\$776	\$737	\$642	\$736	\$800	\$1,009	\$1,070	\$1,092	\$1,203
State and Local Prevention	\$114	\$116	\$110	\$119	\$93	\$95	\$130	\$152	\$150	\$148	\$148
Training	\$63	\$63	\$64	\$65	\$65	\$66	\$66	\$67	\$68	\$68	\$69
Prevention Research	\$203	\$204	\$212	\$212	\$243	\$259	\$276	\$309	\$331	\$359	\$402
Treatment Research	\$250	\$301	\$308	\$308	\$324	\$351	\$362	\$412	\$436	\$505	\$564
Insurance Administration	\$344	\$376	\$399	\$396	\$395	\$373	\$368	\$377	\$381	\$420	\$476
Medical Consequences											
Hospital and Ambulatory Care Costs	\$664	\$818	\$966	\$1,001	\$1,008	\$1,121	\$1,218	\$1,265	\$1,294	\$1,363	\$1,454
Special Disease Costs											
Drug-Exposed Infants	\$522	\$528	\$533	\$535	\$537	\$538	\$555	\$565	\$583	\$588	\$605
Tuberculosis	\$38	\$37	\$36	\$35	\$33	\$30	\$26	\$23	\$23	\$21	\$20
HIV/AIDS	\$4,473	\$4,847	\$4,484	\$3,802	\$2,972	\$2,784	\$2,873	\$3,081	\$3,278	\$3,516	\$3,755
Hepatitis B and C	\$592	\$497	\$509	\$539	\$452	\$492	\$479	\$401	\$393	\$345	\$312
Violent Crime	\$112	\$118	\$177	\$180	\$164	\$156	\$148	\$140	\$127	\$116	\$111
Health Insurance Administration	\$362	\$436	\$476	\$476	\$425	\$346	\$322	\$340	\$375	\$415	\$455
Total	\$13,659	\$14,662	\$14,673	\$13,996	\$13,158	\$13,236	\$13,756	\$14,044	\$14,128	\$14,861	\$15,845

Source: Analysis by The Lewin Group, 2004.

Table C-3
Productivity Losses of Drug Abuse 1992-2002 in Real 2002 Dollars
(in millions of 2002 dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Premature Death	\$28,961	\$27,877	\$28,034	\$28,406	\$23,745	\$19,901	\$19,323	\$22,535	\$23,045	\$23,686	\$24,646
Drug Abuse-related Illness	\$18,214	\$17,138	\$19,234	\$20,938	\$23,241	\$22,323	\$25,542	\$26,995	\$28,654	\$30,681	\$33,452
Institutionalization/Hospitalization	\$1,894	\$1,870	\$2,043	\$2,210	\$1,758	\$1,863	\$1,971	\$1,873	\$1,782	\$1,870	\$1,996
Productivity Loss of Victims of Crime	\$2,640	\$3,098	\$3,100	\$2,806	\$2,674	\$2,570	\$2,279	\$2,111	\$1,930	\$1,835	\$1,800
Incarceration	\$22,961	\$24,110	\$25,607	\$27,130	\$28,473	\$30,511	\$33,257	\$35,399	\$36,244	\$36,869	\$39,095
Crime Careers	\$24,617	\$24,595	\$23,796	\$23,812	\$27,241	\$29,824	\$27,180	\$26,952	\$26,836	\$26,957	\$27,576
Total	\$99,287	\$98,688	\$101,815	\$105,301	\$107,132	\$106,993	\$109,553	\$115,866	\$118,492	\$121,897	\$128,566

Source: Analysis by The Lewin Group, 2004.

Table C-4
Costs for Other Effects of Drug Abuse 1992-2002 in Real 2002 Dollars
(in millions of 2002 dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Cost of Goods and Services Lost to Crime											
Criminal Justice System/Public Costs											
Police Protection	\$5,774	\$6,213	\$6,683	\$7,192	\$7,581	\$8,088	\$8,512	\$8,779	\$9,173	\$9,654	\$9,785
Legal Adjudication	\$1,377	\$1,431	\$1,546	\$1,680	\$1,738	\$1,831	\$1,989	\$2,080	\$2,179	\$2,299	\$2,336
State and Federal Corrections	\$9,610	\$9,482	\$10,216	\$11,575	\$11,519	\$11,732	\$12,095	\$12,837	\$13,136	\$13,444	\$14,236
Local Corrections	\$1,709	\$1,731	\$1,926	\$2,061	\$1,925	\$1,939	\$2,326	\$2,450	\$2,548	\$2,670	\$2,694
Federal Supply Reduction	\$5,291	\$4,595	\$4,274	\$4,364	\$4,388	\$5,178	\$5,327	\$6,412	\$7,221	\$5,993	\$6,228
Private Costs											
Private Legal Defense	\$468	\$483	\$521	\$528	\$510	\$585	\$605	\$555	\$596	\$643	\$647
Property Damage Crime Victims	\$247	\$285	\$280	\$256	\$245	\$233	\$205	\$206	\$206	\$206	\$206
Social Welfare Administration	\$337	\$418	\$432	\$442	\$446	\$434	\$417	\$317	\$275	\$253	\$235
Total	\$24,909	\$24,662	\$25,892	\$28,091	\$28,325	\$29,905	\$31,334	\$33,572	\$35,294	\$35,155	\$36,413

Source: Analysis by The Lewin Group, 2004.

Table C-5
Crime Related Costs of Drug Abuse 1992-2002 in Real 2002 Dollars
(in millions of 2002 dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Health Care Costs											
Crime Victim Health Care Costs	\$112	\$118	\$177	\$180	\$164	\$156	\$148	\$140	\$127	\$116	\$111
Productivity Losses											
Homicide Victims	\$4,435	\$4,168	\$3,929	\$3,690	\$3,456	\$3,254	\$3,082	\$2,895	\$2,900	\$2,981	\$3,102
Victims of Crime	\$2,640	\$3,098	\$3,100	\$2,806	\$2,674	\$2,570	\$2,279	\$2,111	\$1,930	\$1,835	\$1,800
Incarceration	\$22,961	\$24,110	\$25,607	\$27,130	\$28,473	\$30,511	\$33,257	\$35,399	\$36,244	\$36,869	\$39,095
Crime Careers	\$24,617	\$24,595	\$23,796	\$23,812	\$27,241	\$29,824	\$27,180	\$26,952	\$26,836	\$26,957	\$27,576
Other Costs											
Criminal Justice System/Public Costs											
Police Protection	\$5,774	\$6,213	\$6,683	\$7,192	\$7,581	\$8,088	\$8,512	\$8,779	\$9,173	\$9,654	\$9,785
Legal Adjudication	\$1,377	\$1,431	\$1,546	\$1,680	\$1,738	\$1,831	\$1,989	\$2,080	\$2,179	\$2,299	\$2,336
State and Federal Corrections	\$9,610	\$9,482	\$10,216	\$11,575	\$11,519	\$11,732	\$12,095	\$12,837	\$13,136	\$13,444	\$14,236
Local Corrections	\$1,709	\$1,731	\$1,926	\$2,061	\$1,925	\$1,939	\$2,326	\$2,450	\$2,548	\$2,670	\$2,694
Federal Supply Reduction	\$5,291	\$4,595	\$4,274	\$4,364	\$4,388	\$5,178	\$5,327	\$6,412	\$7,221	\$5,993	\$6,228
Private Costs											
Private Legal Defense	\$468	\$483	\$521	\$528	\$510	\$585	\$605	\$555	\$596	\$643	\$647
Property Damage: Crime Victims	\$247	\$285	\$280	\$256	\$245	\$233	\$205	\$206	\$206	\$206	\$206
Total	\$79,249	\$80,367	\$82,059	\$85,258	\$89,907	\$95,895	\$96,998	\$100,804	\$103,086	\$103,662	\$107,815

Source: Analysis by The Lewin Group, 2004.

**APPENDIX D:
ESTIMATED COSTS IN CONSTANT
1998 DOLLARS**

Table D-1
The Economic Cost of Drug Abuse, 1992-2002 in Real 1998 Dollars
(in billions of 1998 dollars)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Health Care Costs	\$12.4	\$13.3	\$13.3	\$12.7	\$11.9	\$12.0	\$12.5	\$12.7	\$12.8	\$13.5	\$14.4
Productivity Losses	\$90.0	\$89.4	\$92.3	\$95.4	\$97.1	\$96.9	\$99.3	\$105.0	\$107.4	\$110.4	\$116.5
Other Costs	\$22.6	\$22.3	\$23.5	\$25.5	\$25.7	\$27.1	\$28.4	\$30.4	\$32.0	\$31.9	\$33.0
Total	\$124.9	\$125.0	\$129.0	\$133.5	\$134.7	\$136.0	\$140.1	\$148.1	\$152.1	\$155.8	\$163.8

Source: Analysis by The Lewin Group, 2004.

Table D-2
Per Capita Economic Cost of Drug Abuse, 1992-2002 in Real 1998 Dollars
(in 1998 dollars per capita)

Cost Components	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Health Care Costs	\$48	\$51	\$51	\$48	\$44	\$44	\$45	\$46	\$45	\$47	\$50
Productivity Losses	\$351	\$344	\$351	\$358	\$360	\$356	\$360	\$376	\$382	\$387	\$404
Other Costs	\$88	\$86	\$89	\$96	\$95	\$99	\$103	\$109	\$114	\$112	\$114
Total	\$487	\$481	\$490	\$501	\$500	\$499	\$508	\$531	\$541	\$546	\$568

Source: Analysis by The Lewin Group, 2004.

Executive Office of the President
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