

The Economic Costs of Drug and Alcohol Abuse in Washington State, 2005

Prepared for:

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EXECUTIVE SUMMARY

Background and Purpose

Drug and alcohol abuse are major causes of widespread illness, disability, and premature death. The burden on society of these disorders encompasses the use of costly medical resources, significant losses of productivity, serious motor vehicle accidents, fire destruction, and criminal activity resulting in property destruction and incarceration. To quantify the economic costs of drug and alcohol abuse in Washington State, the Division of Alcohol and Substance Abuse within the Department of Social and Health Services sponsored two prior studies conducted in 1993 (Wickizer et al. 1993) and 1999 (Wickizer 1999). Those studies analyzed and documented the costs of substance abuse for 1990 and 1996.

The current study, also sponsored by the Division of Alcohol and Substance Abuse, updates the earlier 1996 study and documents the economic costs of substance abuse for Washington State for 2005. It follows the same general methodology as the earlier studies and documents costs within seven areas: drug and alcohol treatment, morbidity, mortality, medical care, crime, other specific diseases, and other costs.

Methodology

This study builds directly on the previous Washington State economic cost study (Wickizer 1999) and on two national studies, the first conducted by Rice et al. (1990), and the second conducted by Lewin Inc. under the sponsorship of the National Institute on Drug Abuse (NIDA) and the National Institute on Alcoholism and Alcohol Abuse (NIAAA) (NIDA/NIAAA 1998). This study, like the previous state and national studies, used a prevalence-based, cost-of-illness assessment methodology that relied on the human capital approach to value life and estimate productivity losses. Studies using the human capital approach estimate direct and

indirect costs of specific categories of illness. Direct costs are those for which payments are made (e.g., medical care or substance abuse treatment); indirect costs are those for which resources are lost (e.g., lost productivity due to morbidity).

Cost estimates were made for each of the following areas: (1) substance abuse treatment, including costs for both public clients and private clients; (2) morbidity; (3) mortality; (4) crime; (5) medical care; (6) other diseases (HIV/AIDS and hepatitis B); and (7) other costs, including social welfare administration, fire destruction and nonmedical costs of motor vehicle accidents.

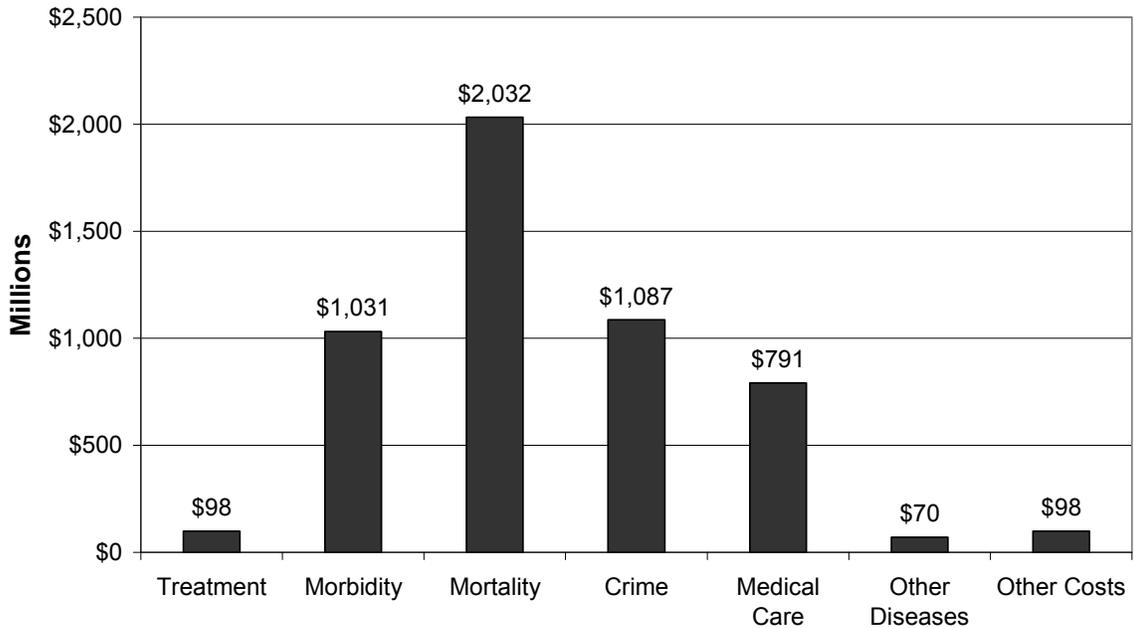
A considerable amount of information was gathered for this study. Whenever possible, state data were used to derive the cost estimates. For some analyses, it was not possible to obtain state data. National data were then obtained and were extrapolated to Washington State. Cost estimates based on extrapolation should be interpreted more cautiously, since they are generally less reliable. Though the values presented in this report are seemingly precise, they should be treated as approximations because of the inherent uncertainty of the estimation procedures used to derive the reported values.

Findings

Total economic costs of drug and alcohol abuse in Washington State in 2005 were estimated at \$5.21 billion. This represents a 105% increase over the 1996 cost estimate of \$2.54 billion. Approximately 24% of this increase was due to inflation, another 12% was due to population growth. On a per capita basis, the 2005 aggregate cost represents approximately \$832 per non-institutionalized person in the state. The per capita 1996 cost, measured in 2005 dollars, was \$565. Thus, the inflation-adjusted per capita economic costs of substance abuse increased by 47% from 1996 to 2005.

The magnitude and distribution of costs for 2005 among the seven areas analyzed are shown in Figures A and B below. As shown, premature mortality resulting from alcohol or drug abuse accounted for the largest cost, approximately \$2 billion, followed by crime (\$1.09 billion), morbidity (\$1.03 billion) and medical care (\$790 million). In relative terms, as shown in Figure B, mortality accounted for 39% of total costs, while crime accounted for 21%.

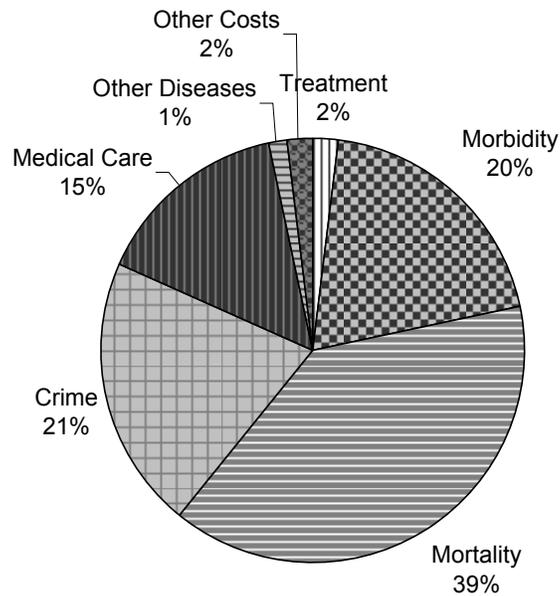
Figure A. Economic Costs of Drug and Alcohol Abuse in Washington, 2005



Treatment costs include both public clients and private clients treated for drug abuse or alcohol abuse or both. Morbidity represents lost productivity (decreased earnings) related to substance abuse. Crime includes costs for police protection, legal and court costs, costs of incarceration in both local jails and state correctional facilities. Medical care includes hospital inpatient costs as well as outpatient care,

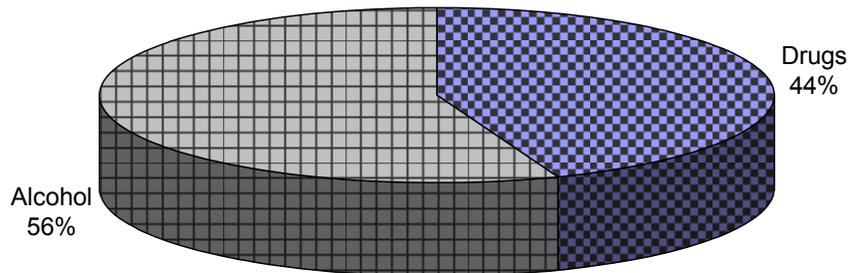
prescription drugs, nursing home services and other professional services. Other diseases include HIV/AIDS and hepatitis B (HBV). Other costs include social welfare administration, fire destruction and nonmedical costs related motor vehicle accidents.

Figure B. Distribution of Economic Costs



Alcohol abuse accounted for 56% of total costs, with drug abuse accounting for 44% of the costs (Figure C).

Figure C: Alcohol Versus Drug Costs



A comparison of drug and alcohol costs for 1996 and 2005 is shown in Figure D. The cost categories with the largest total expenditure increases were mortality, crime and morbidity. On a relative basis, the greatest cost increase was for medical care (375%). The decrease in costs for treatment and “other costs” reflects changes in estimation procedures and data sources.

In addition to estimating economic losses arising from drug and alcohol abuse, the study generated other findings of interest. Some of the key findings were:

Mortality:

- 3,224 deaths occurred in Washington in 2005 caused by or related to drug and alcohol abuse. These deaths resulted in approximately 89,000 years of potential life lost. The leading causes of substance abuse-related deaths were:
 - Accidental drug-related poisoning—677 deaths
 - alcohol cirrhosis and alcohol liver damage—437 deaths
 - suicide—233 deaths

There was little change in the number of alcohol-related deaths from 1996 to 2005. However, drug-related deaths increased substantially, by 65%, as shown in Figure E. Much of this increase was due to an increase in accidental drug-related poisoning.

Figure D: Comparison of 1996 and 2005 Costs

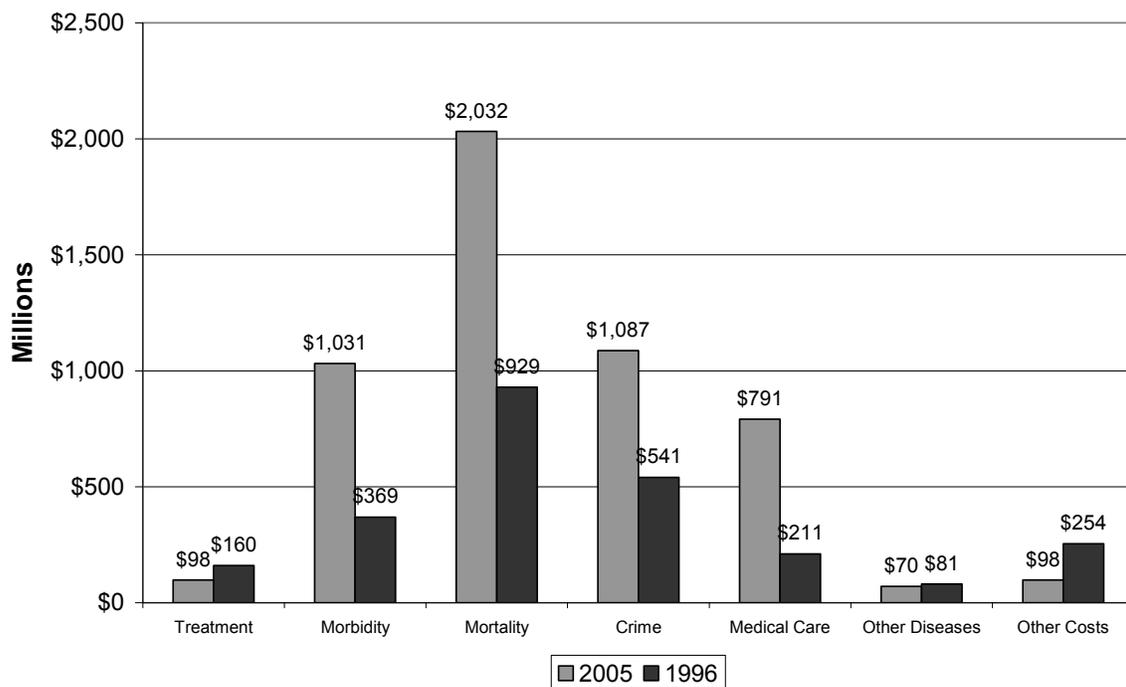
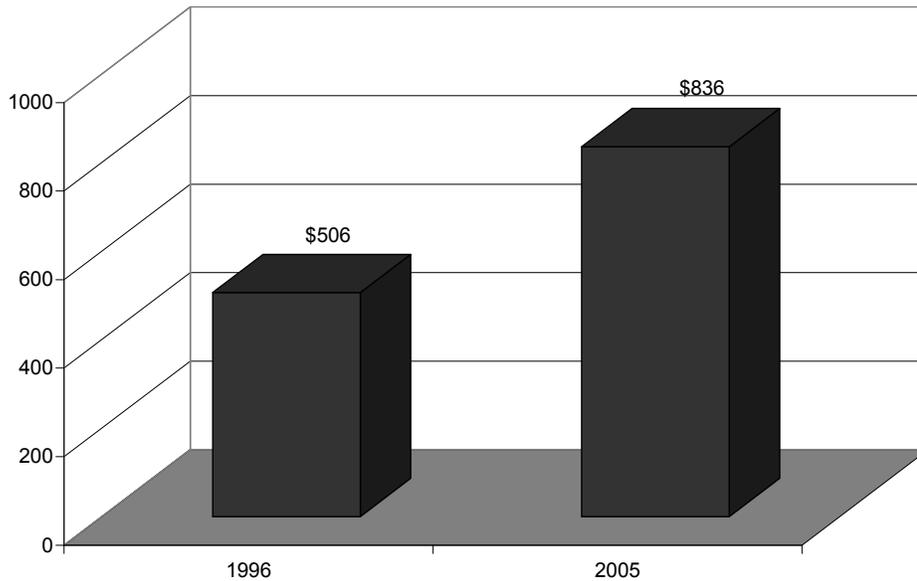


Figure E: Drug Deaths, 1996 Versus 2005

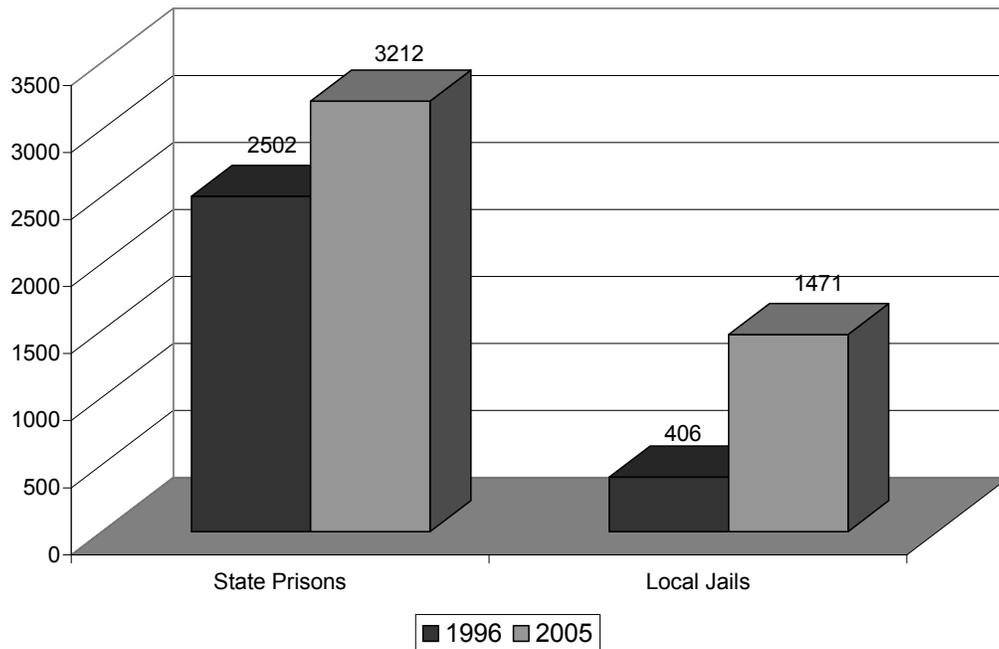


Crime:

- Of the 154 arrests for homicide in 2005, 48 were related to alcohol and 24 to drug abuse.
- Of the 5,128 arrests for felonious assaults, 1,379 were alcohol-related and 513 were drug-related.
- Of the 30,362 arrests for larceny-theft, 8,978 were drug-related and 1,154 were alcohol-related.
- 7,061 person years were served in state prisons or local jails as a result of criminal activity related to drugs. An additional 2,233 years were served as a result of criminal activity related to alcohol.

- A major reason for the increase in crime costs from 1996 to 2005 was the increase in incarceration for violation of drug laws, as shown in Figure F. Person years served in state prisons increased by 28%, while the person years served in local jails increased by 260%.

Figure F: Person Years Served for Violation of Drug Laws



Medical Care:

- There were approximately 39,000 hospital discharges classified as drug- or alcohol-related, an increase of 140% from 1996.
- The total cost of treating these hospital cases was \$377 million, of which \$316 million resulted from diseases and injuries classified as alcohol related.
- Injuries, alcohol psychosis/dependence, acute pancreatitis, cerebrovascular disease, alcohol cirrhosis, accidental drug poisoning, and drug psychosis/dependence represented the major disease categories in terms of hospital inpatient costs.

Summary

Drug and alcohol abuse in Washington State result in significant economic losses. For 2005, the economic loss was estimated at \$5.21 billion, which represents a 105% increase over the \$2.54 billion estimated for 1996. However, population growth and inflation accounted for approximately 36% of this increase. The largest losses in 2005 resulted from premature death and crime. Significant losses also resulted from morbidity and from medical care. The drug and alcohol abuse costs for Washington State are approximately 40% less than would be expected based upon similar costs estimated for the nation as a whole. The reason for this is unclear but may reflect better access to treatment services in Washington or more effective prevention efforts compared to the nation as a whole.

While the focus of this report is on the economic costs of substance abuse, one should not forget the other very real consequences of drug and alcohol abuse. In 2005, 3,224 persons died of causes related to drug and alcohol abuse, resulting in a combined loss of 89,000 years of potential life. Drunk driving affects thousands of persons in the state. In 2005, there were 109 fatalities in Washington involving alcohol-related automobile accidents, and almost 1,200 additional alcohol-related injury accidents. Approximately 5% of these injuries could be classified as severe or critical, and some no doubt led to lifelong disability.

One question raised by the cost estimates presented in this report is the following: Are we putting enough resources into preventing and treating the serious problem of drug and alcohol abuse? Washington State does devote significant resources to prevention and treatment, yet, as this report indicates, these resources are very limited in comparison to the economic burden imposed by substance abuse. Washington State collects revenue through specially designated alcohol excise taxes and allocates a portion of this revenue to treatment, prevention and research. In fiscal year 2005, approximately \$150 million was gathered through state alcohol taxes levied on beer, wine and spirits. However, for every \$1 the state collected in

tax revenue from alcohol sales in 2005, \$20 were “spent” as a result of alcohol abuse.

Washington State suffers considerable economic loss as a result of substance abuse. This loss for 2005 alone was estimated at \$5.2billion, or \$832 for every non-institutionalized person in the state. Continued attention needs to be directed at finding more effective ways to reduce the economic and human loss arising from substance abuse.

Chapter 1

Introduction

Introduction and Background

The problem of alcohol and drug abuse continues to be a major social concern, with serious personal, social and economic consequences for the nation as a whole as well as Washington State. Alcohol and drug abuse are major causes of widespread illness, disability, and premature death. The burden on society of these disorders encompasses the use of costly health care resources, significant productivity (economic) losses due to morbidity, serious injuries from motor vehicle accidents, and criminal activity resulting in property damage and incarceration.

It is not possible to quantify in monetary terms all of the consequences of drug and alcohol abuse, but some of the economic losses can be estimated. There are two important reasons for analyzing the economic costs of alcohol and drug abuse. First, public and private resources are allocated for prevention and treatment, based upon perceived needs and priorities. Understanding the economic impact of substance abuse is necessary in order to assess the need for treatment and prevention and to justify the allocation of resources to meet this need. Second, it is important to understand if the economic impact of substance abuse is changing over time and which cost components are contributing most to this change. Such information can contribute in important ways to program planning.

This report analyzes the economic costs of alcohol and drug abuse for Washington State for 2005 and updates two earlier cost studies (Wickizer et al. 1993; Wickizer 1999), which analyzed costs for 1990 and 1996. Both of the prior studies were sponsored by the Division of Alcohol and Substance Abuse (DASA), within the Department of Social and Health Services. Similar efforts to analyze the economic costs of substance abuse have been undertaken by other states, including Texas, Minnesota, and Oregon, as well as by the federal government. Because the methodologies, time periods, and data sources for these studies differ, comparing

their results is difficult. However, the two national studies, sponsored by the National Institute of Drug Abuse (NIDA) and the National Institute of Alcoholism and Alcohol Abuse (NIAAA) do provide the basis for a limited comparison of costs (Rice et al. 1990; NIDA/NIAAA 1998).

Methodology

This study builds directly on the two earlier Washington State cost analysis (Wickizer et al. 1993; Wickizer 1999) as well as on the two national studies. All of these studies used the same general approach, employing prevalence-based data and the human capital method to estimate costs. Prevalence-based costs provide an estimate of the direct and indirect economic burden incurred in a time period (the base period) resulting from the prevalence of a disease (e.g., substance abuse). Prevalence-based costs measure the value of resources used or lost during a specified period of time, regardless of the time of disease onset. In estimating the economic burden resulting from the prevalence of disease, the present discounted value of future losses due to mortality are calculated.

Cost-of-illness studies, like this one, require the valuation of human life. Two approaches can be used to value life, the human capital and willingness-to-pay approach. This study, and all previous economic cost studies, used the human capital approach, which measures an individual's value to society in terms of his or her production potential, reflected in earnings. From this perspective, the value of an individual to society is his or her earnings, and the value of a lost life due to premature death becomes the discounted stream of future earnings of that individual.

Studies employing the human capital approach measure the direct and indirect costs of specific disease categories. Direct costs are those for which payments are made (e.g., medical care or alcohol treatment); indirect costs are those for which resources are lost (e.g., lost productivity due to morbidity or mortality). The estimation of direct costs is straightforward, but indirect costs are more difficult to analyze because they require valuation of a person's production potential. The

human capital approach is based on the restrictive assumption that a person's earnings reflect his or her value. Obviously, this undervalues certain members of society: children, elderly, ethnic minorities and women. Despite its limitations, the human capital approach remains widely used and provides a useful method for analyzing the cost of disease.

Limitations of Current Study

This analysis has two limitations that merit mention. First, to estimate costs related to drug and alcohol abuse, the analysis had to link different "cost factors" to alcohol and drug abuse. This was done in the usual manner by applying "attributable fractions" to these cost factors. For example, if 30% of all stomach cancer is associated with alcohol abuse, then 30% of all medical costs incurred in treating stomach cancer should be attributed to alcohol abuse. The attributable fractions used here are the same as those used for the earlier national cost analysis (NIDA/NIAAA 1998). While these are based on the best available information, many of the attributable fractions were developed from research conducted as much as 25 years ago. Second, though an effort was made to obtain data from Washington State, appropriate data elements were not always available. In this case, national data were obtained and were extrapolated to Washington State. In general, estimates based upon extrapolated data are less reliable.

Organization of the Report

The report is organized into nine chapters. Chapters two through eight present cost estimates for each of the seven cost areas analyzed: alcohol and drug treatment, morbidity, mortality, crime, medical care, other related diseases, and other related costs. The final chapter summarizes the findings of the analysis and outlines some policy implications. This report does not include as much technical discussion of the cost estimation procedures as the first cost report (Wickizer et al. 1993). Readers interested in a more detailed discussion of the methods used to estimate morbidity, mortality and medical care costs should review the appendices included in the earlier report (Wickizer et al. 1993).

Chapter 2 Treatment

Treatment services available in Washington to help persons with chemical dependency problems include inpatient residential programs, outpatient programs, methadone maintenance, detoxification, and special youth treatment programs. Resources, both public and private, used to support these services constitute one of the types of economic costs associated with alcohol and drug abuse.

This chapter provides cost estimates for substance abuse treatment for 2005, and also presents descriptive information concerning service utilization. Complete information regarding treatment utilization and costs is difficult to obtain because of the multiplicity of funding sources and the large number of programs. Though reasonably accurate information is available for public clients, little information is available for private clients. Information on treatment admissions and costs was obtained from several different sources, described below, and used to generate the cost estimates provided in this chapter.

The major findings of the analysis were:

- An estimated 63,147 admissions occurred in 2005 to treatment representing both public and private clients.
 - The total estimated cost of providing this treatment was \$97.9 million.
 - Nineteen percent of the admissions were for were treatment of clients who abused only alcohol, with a similar percentage representing clients who abuse methamphetamine.
-

Methodology

The primary data source used to derive cost estimates for treatment was the 2005 Treatment Episode Data Set (TEDS), an administrative data system, established by SAMHSA, designed to gather information about clients admitted to substance abuse treatment programs. Information regarding the cost of treatment was provided by Research and Data Analysis (RDA) within the Department of Social and Health Services. TEDS does not provide complete data on all admissions because it does not capture data for treatment programs that receive no public funds or programs that report to federal agencies such as the Bureau of Prisons or the Veterans Administration. We considered using other data sources, such as the National Survey of Substance Abuse Treatment Services (N-SSATS), a national annual program survey administered by SAMHSA and a special state survey conducted in 2003, the Washington State Needs Assessment Household Survey (WANAHS). Both of these data sources had significant limitations that made their use for the present purpose impractical.

Preliminary summary data from the 2005 TEDS indicated there were 63,147 admissions to treatment programs in Washington State during 2005. TEDS includes admissions to treatment programs that receive any public funding either directly or through state agencies. Programs report on all admissions not just those admissions representing public clients. Thus, while not providing a complete count of all admissions, TEDS probably provides the most complete data on admissions to treatment. The degree of undercounting inherent in TEDS data is unknown.

This report uses the admission figure reported by the 2005 TEDS for Washington State (63,147) as the basis for the cost estimates. DASA admission data for SFY 2005 reported in the Strategic Plan, 2007 – 2011 indicate an admission count of 36,002 public clients. Based upon the TEDS 2005 admission count of 63,147, it

appears there were 27,145 (63,147 – 36,002) admissions representing private clients in 2005.

To derive cost estimates, we apply average cost figures from RDA to the utilization data and assume the mix of residential, outpatient and methadone maintenance is the same for private clients as public clients. For methadone maintenance, cost data were not provided by RDA. Instead cost estimates were obtained from a recent research study by Masson et al. (2004) that indicated, on average, methadone maintenance clients incur annual costs of \$5,200 (excluding medical costs). Given the limitations of the data used for the treatment cost estimates, readers should use caution in interpreting the cost estimates. The cost figures presented here underestimate the true costs by some unknown amount.

Results

Table 2.1 presents descriptive information on the primary substance of abuse for the 63,147 admissions reported to TEDS for 2005. As indicated, 19% of the admissions were for alcohol abuse only, 22% were for alcohol and some secondary drug(s), 19% for methamphetamine, 15% for marijuana, 14% for heroin or other opiates, and 8% for cocaine.

Table 2.2 presents demographic information on the clients admitted to treatment during 2005. As shown, 63% of the admissions were male clients. Twelve percent of the clients admitted to treatment were under 18 years of age, while 31% were over 40. Whites comprised 70% of the admissions, and blacks accounted for approximately 9%.

Table 2.1
Number of Admissions by Type of
Primary Substance of Abuse
Washington, 2005

Substance Abused	Number	(%)
Alcohol only	12,231	19.4
Alcohol and secondary drugs	14,106	22.3
Methamphetamine	11,865	18.8
Marijuana	9,667	15.3
Heroin and other opiates	8,695	13.8
Cocaine	5,489	8.3
Other drugs	1,094	1.7
Total	63,147	100%

Source: 2005 TEDS data.

Table 2.2
Demographic Characteristics of Admissions
Washington, 2005 (N = 63,147)

Demographic Characteristic	Number	(%)
Male	39,466	62.5
Age at admission		
< 18	11,493	12.0
18 – 25	12,440	19.7
26 – 40	23,364	37.0
> 40	19,765	31.3
Race		
White	44,140	69.9
Black	5,494	8.7
Other non-white	13,513	21.4

Source: 2005 TEDS data.

The cost estimates are presented in Table 2.3. As shown total estimated treatment costs for the 63,147 admissions were \$97.9 million. Adult outpatient treatment accounted for 53% of these costs, while opiate substitution accounted for 21%. The estimated \$97.9 million in treatment costs is actually less than the comparable estimate reported in the prior 1996 cost report (\$160 million). In that report, it was estimated that 35,000 persons received treatment. Thus, the cost per client for the 1996 report was considerably higher than the cost per admission for the current report. Since the two reports used different approaches and data sources to derive the cost estimates, it is difficult to reconcile the disparate estimates. The average cost per client estimate generated by the 1996 analysis, \$4,570, seems high, given the fact that many clients receive only outpatient treatment.

**Table 2.3
Treatment Cost Estimates
Washington, 2005**

Admission Type	Admissions (%)	Cost Estimates (\$) [%]
Adult residential	14,651 (23.2)	13,508,222 [13.8]
Adult outpatient	34,983 (55.4)	51,425,010 [51.5]
Opiate substitution	3,852 (6.1)	20,030,400 [20.5]
Youth residential	2,273 (3.6)	2,095,706 [2.1]
Youth outpatient	7,388 11.7)	10,860,360 [11.1]
Total	63,147 (100%)	\$97,919,698 [100%]

Summary

Treatment costs in Washington in 2005 were estimated to be \$97.9 million. Though Washington has made progress in expanding substance abuse treatment services, there remains significant gaps between the need for treatment and use of treatment, as documented in the recent WANAHS. Further, as discussed in subsequent chapters of this report, the investment in treatment is small (< 5%) in relation to the economic costs associated with substance abuse. Whether this modest investment is adequate given the large economic costs incurred for drug- and alcohol-related mortality, morbidity, and other costs is an important question that remains the subject of debate.

Chapter 3 Morbidity

Alcohol and drug abuse or dependence may adversely affect an individual's work productivity as well as his or her ability to function in other roles. Examples of reduced work productivity would include a worker feeling hung-over from heavy drinking the night before, using drugs or alcohol on the job, or leaving work early to use drugs or consume alcohol. An individual's productivity in other non-work roles may also be affected by alcohol or drug abuse, e.g., performing household or child care duties. In all these cases, reduced output resulting from alcohol or drug abuse can be measured as an economic loss.

This chapter analyzes morbidity costs associated with alcohol/drug abuse or dependence for Washington for 2005. It follows the same general methodology as used for the previous Washington State economic cost report (Wickizer et al. 1993). Readers can obtain more detailed information on the methods used to derive morbidity cost estimates from Appendix A of the earlier cost report (Wickizer et al. 1993).

The major findings of the analysis were:

- Total morbidity costs for 2005 were \$1.03 billion.
 - Approximately 86% of the morbidity costs were attributable to alcohol abuse.
 - Males accounted for 51% of total costs.
 - Total morbidity costs in 1996 were \$369 million. Thus, 2005 morbidity costs were 2.8 times greater than 1996 costs. The increased morbidity costs were due to a combination of factors, including increased population, updated wages and housekeeping values, and increased drug/alcohol prevalence for selected age-sex groups.
-

Methodology

Morbidity costs represent reduced productivity from alcohol and drug abuse, measured in terms of either wage earnings for workers or housekeeping values for non-workers. The method used to estimate morbidity costs was the same as used for the two earlier cost reports (Wickizer et al. 1993; Wickizer 1999). However, this report used a different data source to obtain prevalence estimates for the analysis, and defined alcohol/drug abuse somewhat differently. This report relied principally on the 2005 National Survey on Drug Use and Health (NSDUH) sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA) for the prevalence estimates, and defined alcohol/drug abuse as “past year dependence or abuse” based upon DSM-IV criteria. The report also used information from the 2003 Washington State Needs Assessment Household Survey (WANAHS) to provide supplementary information that was used to construct weights for the prevalence estimates. The 1996 cost report used an earlier (1993) DASA-sponsored household survey to estimate prevalence. These surveys defined drug and alcohol abuse somewhat differently and used different DSM criteria. Nonetheless, the prevalence estimates for the 1996 cost report and the 2005 cost report were, in general, quite similar for most of the age-sex groups analyzed.

Estimating morbidity costs involved several steps. First, the numbers of persons with a drug or alcohol use disorder (defined as past year abuse or dependence) were estimated based upon data gathered through the 2005 NSDUH, as described earlier. Second, the numbers of persons with a drug or alcohol use disorder within age-sex groups were multiplied by the labor force participation rate within each group to calculate the numbers of employed persons with a substance use disorder. Even if an individual does not work, substance abuse may result in some economic loss through reduced ability to perform other activities, such as maintaining a household. Therefore, the numbers of unemployed persons with a substance use disorder were also determined by taking 100% minus the labor force participation rate. Third, average earnings for each age-sex group were

calculated and then multiplied by the relevant impairment rate to generate estimates of lost earnings due to drug and alcohol abuse. This procedure was repeated using data for housekeeping values to generate economic loss estimates for unemployed persons. Finally, the average loss per person with a substance use disorder was multiplied by the number of persons within each age-sex cell to derive estimates of total morbidity costs.

Results

Approximately 410,000 individuals aged 18 or older in Washington State were estimated to have an alcohol abuse/dependence problem in 2005, an additional 121,500 persons had a drug abuse/dependence problem (Table 3.1). Thus, approximately 11 in every 100 Washington adults were identified as having a alcohol or drug abuse/dependence problem during 2005 according to the criteria described earlier.

Based upon the labor force participation rates shown in Table 3.2 below, there were approximately 305,000 employed persons with an alcohol abuse problem and 89,000 additional employed persons with a drug abuse problem. Thus, within Washington State's labor force, there were almost 400,000 persons with serious substance abuse problems working in 2005. There were an estimated 105,000 additional persons not in the labor force who could be considered to have an alcohol abuse problem based on DSM-IV criteria and 33,000 additional persons with a drug abuse problem.

Table 3.1
Population, Prevalence, and Abusers by Age and Sex, 2005

Male	Population [1]	Alcohol Dependence or Abuse Past Year [2] %	Illicit Drug Dependence or Abuse Past Year [2] %	Alcohol Abusers [1*2]	Drug Abusers [1*2]
18-24	322,272	23.0	8.0	74,123	25,782
25-44	904,183	12.0	3.0	108,502	27,125
45-64	799,294	7.0	2.0	55,951	15,986
65+	306,257	3.3	0.75	10,106	2,297
Total	2,332,006			248,682	71,190

Female	Population [1]	Alcohol Dependence or Abuse Past Year [2] %	Illicit Drug Dependence or Abuse Past Year [2] %	Alcohol Abusers [1*2]	Drug Abusers [1*2]
18-24	304,074	14.0	6.0	42,570	18,244
25-44	871,507	8.5	2.0	74,078	17,430
45-64	812,411	4.5	1.5	36,558	12,186
65+	404,244	2.0	0.6	8,085	2,425
Total	2,392,236			161,292	50,286

Sources:

[1] Population: 2005 population estimates, Washington State Office of Financial Management.

[2] Alcohol and drug prevalence: 2005 SAMHSA National Survey on Drug Use and Health and Washington State Needs Assessment Household Survey, Research and Data Analysis, September 2005. Estimates based upon alcohol dependence or abuse past year or illicit drug dependence or abuse past year.

Table 3.2
Labor Force Participation Rates, Employed and Unemployed
Abusers by Age and Sex, 2005

Male	Labor Force Participation Rates [1] %	Employed Alcohol Abusers [2]	Employed Drug Abusers [3]	Unemployed Alcohol Abusers [4]	Unemployed Drug Abusers [5]
18-24	68	50,404	17,532	23,719	8,250
25-44	91	98,737	24,684	9,765	2,441
45-64	80	44,761	12,798	11,190	3,197
65+	18	1,819	413	8,287	1,884
Total		195,720	55,418	52,962	15,772

Female	Labor Force Participation Rates [1] %	Employed Alcohol Abusers [2]	Employed Drug Abusers [3]	Unemployed Alcohol Abusers [4]	Unemployed Drug Abusers [5]
18-24	63	28,819	11,494	15,751	6,750
25-44	78	57,781	13,595	16,297	3,835
45-64	65	23,763	7,921	12,795	4,265
65+	9	728	218	7,357	2,207
Total		109,090	33,228	52,201	17,057

Sources:

- [1] Labor Force Participation Rate (2005) Washington State Office of Financial Management "Long-Term Forecast of the Washington Labor Force, April 2004.
- [2,3] Produced by multiplying the alcohol and drug dependent/abuser populations by the labor force participation rates.
- [4,5] Produced by multiplying the alcohol and drug dependent/abuser populations by 100% - the labor force participation rates.

Median annual male wages in Washington State in 2005 ranged from an estimated \$21,268 for persons aged 18-24 to \$44,380 for persons aged 45-64 (Table 3.3). The corresponding earnings for females were less. Employment earnings do not capture all of the productive capacity of individuals, because people have to maintain households apart from their jobs. Thus, Table 3.3 includes two sets of housekeeping values, one for persons in the labor force, the second for persons not in the labor force. Housekeeping values are significantly higher for females than males, reflecting the relative amount of time spent in this activity.

**Table 3.3
Earnings, Housekeeping Rates, and Impairment Rates
by Age and Sex, 2005**

Male	Median Earnings [1]	Housekeeping [2] \$	Housekeeping Not in the Labor Force [3] (\$)	Impairment Rates	
				Alcohol [4] %	Drugs [4] %
18-24	\$21,268	\$5,210	\$10,160	1.4	1.1
25-44	\$38,116	\$6,736	\$11,707	3.0	2.6
45-64	\$44,380	\$7,431	\$12,333	5.5	8.3
65+	\$33,488			9.3	7.3
		\$5,490	\$9,113		

Female	Median Earnings [1]	Housekeeping [2] (\$)	Housekeeping Not in the Labor Force [3] \$	Impairment Rates	
				Alcohol [4] %	Drugs [4] %
18-24	\$19,812	\$9,569	\$18,908	0.8	0.2
25-44	\$31,044	\$14,022	\$23,484	2.8	1.1
45-64	\$33,358	\$13,425	\$22,746	11.9	1.8
65+	\$25,584	\$9,673	\$16,340	18.7	7.3

Sources:

- [1] Earnings: Bureau of Labor Statistics Data, Monthly Labor Review (2005).
- [2,3] Housekeeping Values: Max et al. 2004. 2000 values adjusted by CPI to reflect 2005 prices.
- [4] Impairment Rates: Rice et al. (1990)

Table 3.3 includes impairment rates for different age-sex groups for alcohol and drugs. These impairment rates provide an estimate of reduced productivity, measured by decreased earnings, associated with drug or alcohol abuse. For example, for males aged 45-64 the alcohol impairment rate is 8.3%, indicating that males in this age group are, on average, 8.3% less productive as a result of alcohol abuse/dependence. The impairment rates shown in Table 3.3 were the same as those used for the earlier cost reports.

The data presented in Tables 3.1 - 3.3 were used to derive morbidity cost estimates shown below in Table 3.4. Total morbidity costs for Washington State in 2005 were estimated at \$1.03 billion. Males accounted for slightly more than half of these costs. In contrast, in 1996 males accounted for 63% (\$234 million) of total

morbidity costs. The difference in gender costs between 1996 and 2005 resulted in part from updated female wage and housekeeping figures. Alcohol abuse was responsible for 86% of the total morbidity costs, or \$883 million out of \$1.03 billion. The higher costs associated with alcohol abuse is primarily a function of its higher prevalence rates, and to a lesser extent differences in impairment rates (Tables 3.1 and 3.3).

**Table 3.4
Total Morbidity Costs by Age and Sex, 2005**

Male	Alcohol [1]	Drugs [2]	Total
18-24	\$22,058,160	\$5,036,961	\$27,095,121
25-44	\$193,070,815	\$54,095,446	\$247,166,260
45-54	\$182,059,653	\$49,457,134	\$231,516,787
65+	\$13,617,478	\$3,242,794	\$16,860,272
Subtotal	\$410,806,106	\$111,832,335	\$522,638,441
Female	Alcohol [1]	Drugs [2]	Total
18-24	\$9,156,452	\$930,673	\$10,087,125
25-44	\$221,016,023	\$9,838,352	\$230,854,375
45-64	\$215,148,082	\$21,561,681	\$236,709,763
65+	\$27,279,269	\$3,193,589	\$30,472,858
Subtotal	\$472,599,826	\$35,524,296	\$508,124,121
Total	\$883,405,932	\$65,150,962	\$1,031,315,129

[1,2] Calculated by multiplying the average loss per person with a substance use disorder by the population of such persons for each age and sex group.

Summary

The findings of the analysis presented in this chapter indicate that alcohol and drug abuse in Washington result in substantial economic loss through reduced productivity. Total morbidity costs for 2005 were estimated at \$1.03 billion. Over 80% of these costs resulted from alcohol abuse. The age-sex group with the highest morbidity cost was females aged 25-44 (\$221 million). A relatively high

prevalence rate for alcohol abuse, coupled with a relatively high impairment rate and housekeeping value, accounted for this figure.

The 2005 morbidity cost estimate is substantially higher than the 1996 cost estimate (\$368.7 million). But the two cost estimates are not strictly comparable, because they were derived from different data sources. With 11 out of 100 Washington adult residents having a substance abuse problem in 2005, the data presented here indicate a clear need for effective prevention and treatment services.

Chapter 4 Mortality

Premature death due to drug and alcohol use and abuse imposes a major economic loss on society. Premature death through illness or injury can occur through auto accidents involving alcohol, through increasing the risk of cancer or cerebrovascular disease, or through violence involving drugs or alcohol. When an individual dies prematurely, there is an economic cost to society in the form of loss of that individual's productive capacity.

This chapter analyzes mortality costs for Washington for 2005. It has three aims: (1) to determine the number of alcohol- and drug-related deaths, (2) to estimate the number of years of potential life lost from these deaths, and (3) to estimate the total economic costs of drug- and alcohol-related deaths.

The major findings of the analysis were:

- 3,224 deaths related to drug and alcohol abuse occurred in 2005, including 2,388 alcohol- and 836 drug-related deaths. In contrast, in 1996 2,824 drug- and alcohol-related deaths occurred. The increase in deaths was due almost entirely to an increase in drug-related deaths.
 - These 3,224 deaths resulted in 89,149 years of potential life lost.
 - Major causes of death were:
 - accidental drug-related poisoning—677 deaths
 - alcoholic cirrhosis and alcohol-related liver damage—437 deaths
 - suicide—233 deaths
 - Total mortality costs for 2005 were \$2.03 billion, as compared to \$929 million for 1996. Of the \$2.03 billion, \$1.21 billion resulted from alcohol abuse and \$824 million from drug abuse.
-

Methodology

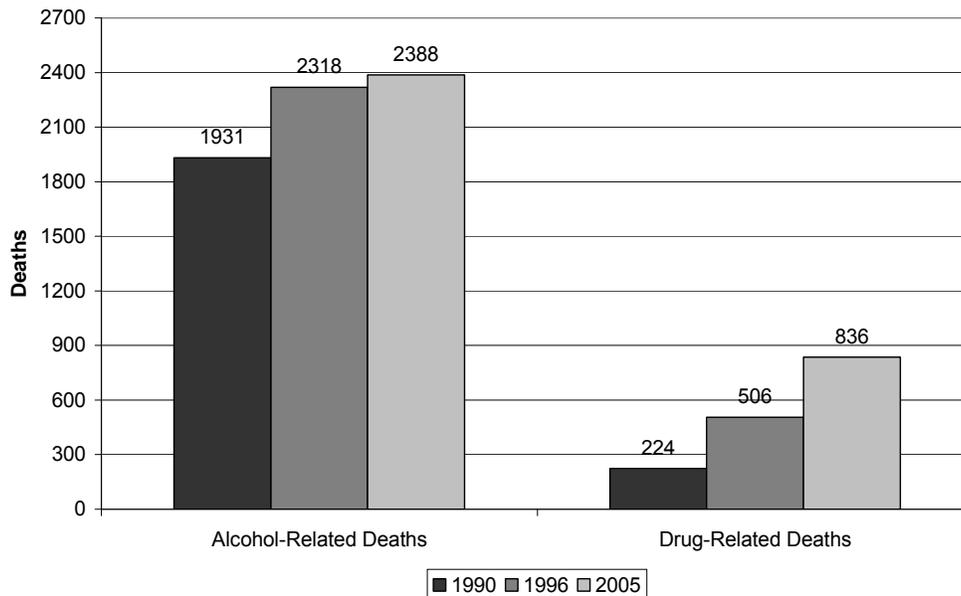
The same basic methodology used to estimate mortality costs for the earlier cost reports (Wickizer et al. 1993; Wickizer 1999) was used for this report, except the discount rate was changed from 4% to 3% to reflect updated lifetime earnings estimates provided by Max et al. (2004). Interested readers can consult the 1993 report (see Appendix B) for methodological details. In brief, four steps were followed. First, death records for 2005 provided by the Washington State Health Department were examined to determine the number of people dying from alcohol- and drug-related causes. Second, the number of years of potential life lost was calculated for each death, based on vital statistics data regarding life expectancy. Third, the lifetime earnings for age-sex cohorts were determined. Fourth, the number of alcohol- and drug-related deaths for each age-sex cohort was multiplied by the lifetime earnings to derive estimates of mortality costs.

Results

There were 3,224 deaths in Washington in 2005 caused by or related to drug or alcohol use. As documented in the earlier cost reports (Wickizer et al. 1993; Wickizer 1999), 2,155 and 2,824 deaths occurred in 1990 and 1996, respectively (see Figure 4.1).

As shown in Figure 4.1, the number of alcohol-related deaths remained fairly constant from 1996 to 2005. In contrast, the number of drug-related deaths increased by 65%, from 506 deaths to 836 deaths. A breakdown of the deaths by age and sex is shown in Table 4.1 below. Alcohol accounted for 73% of all deaths, and persons over 65 represented the greatest proportion of these deaths. In contrast, younger persons aged 25-44 accounted for the greatest proportion of drug-related deaths.

Figure 4.1 Alcohol and Drug Deaths, 1990, 1996 and 2005



More detailed information concerning alcohol- and drug-related deaths is presented in Tables 4.2 and 4.3, which show how the mortality estimates were derived. Table 4.2 includes a column labeled alcohol attributable fraction (AAF), which represents the percentage of deaths within a given diagnosis believed to be attributable to alcohol. For example, the AAF for acute alcoholic hepatitis is 1 indicating 100% of deaths in this category were due to alcohol. The AAF for cancer of the larynx is .5 indicating 50% of the deaths from this form of cancer could reasonably be associated with alcohol use. Table 4.3 has a column labeled drug attributable fraction (DAF) which provides corresponding information for drug-related deaths. Multiplying the total number of deaths within a diagnostic category by the AAF or DAF gives an estimate of the number of deaths attributable to drug or alcohol use. The AAF and DAF values used for this report are the same as those used for the national cost studies (Rice et al. 1990; NIDA/NIAAAA 1998). These values are based on research reported by Ravenholt (1984) and Roizen (1985).

Table 4.1
Alcohol- and Drug-Related Deaths by Age and Sex

Age	Alcohol Related Deaths				Drug Related Deaths			
	Female		Male		Female		Male	
	No.	%	No.	%	No.	%	No.	%
≤ 18	18	2.1	43	2.7	1	0.2	6	1.2
19-24	20	2.4	80	5.2	16	4.9	46	8.1
25-34	30	3.6	114	7.4	39	12.3	73	13.0
34-44	63	7.5	147	9.5	78	24.5	144	25.6
45-54	100	11.9	287	18.5	100	37.3	186	34.6
55-64	113	13.4	283	18.2	44	13.8	71	12.6
65+	496	59.1	594	38.4	22	7.0	10	1.8
Total	840	100.0	1548	100.0	300	100.0	536	100.0

Source: Washington State Department of Health Death Records.

As shown in Table 4.2, alcoholic cirrhosis and liver damage accounted for the greatest number of alcohol-related deaths (437), followed by motor vehicle accidents (256), and suicide (333). For drugs (Table 4.3), accidental poisoning was by far the leading cause of death (677 deaths). In 1990 and 1996 accidental drug-related poisoning accounted for 81 and 330 deaths, respectively. It is unclear to what extent this increase in drug-related accidental deaths resulted from misuse of prescription opiates.

Table 4.4 provides detailed information on the number of years of potential life lost (YPLL) due to drug and alcohol use and the estimated economic cost of premature death. The increased number of deaths in 2005—3,268 as compared to 2,824 in 1996—led to an increase in the YPLL and a corresponding increase in mortality costs. In 1996, deaths associated with drug and alcohol use resulted in 70,163 YPPL. As shown in Table 4.4, this increased to 89,147 in 2005, with alcohol accounting for 59,286 (67%) years of lost life and drugs accounting for 29,861 (33%). In 2005, drugs accounted for a greater proportion (33%) of total years of life lost than in 1996 (26%). This increase in drug-related YPLL, in part, resulted from the sharp increase in accidental poisoning. The category representing the

single greatest number of years of lost life was males 19-44 dying of alcohol-related causes. Males in this age group accounted for 14,822 (17%) years of potential life lost.

As Table 4.4 shows, premature death due to alcohol and drug use resulted in an estimated economic loss of approximately \$2.03 billion in Washington in 2005. The corresponding economic loss in 1996 was \$929 million. Twenty-four percent of this increase was due to general inflation (higher wages) and 12% was due to population growth. Approximately 16% of the increase was due to using a 3% discount rate instead of the 4% rate used earlier. The remaining increase in mortality costs was due to the increased number of alcohol- and drug-related deaths and to changes in the age-sex distribution of deaths.

The estimated economic loss due to premature death in 2005 related to alcohol use was \$1.2 billion, as compared to \$824 million for drug use. Alcohol-related deaths among males aged 19 to 45 accounted for the largest costs, \$498 million.

Summary

In 2005, 3,224 people died in Washington from drug- and alcohol-related causes, resulting in 89,000 years of potential life lost. Translated into economic terms, this loss of life represented an economic cost of approximately \$2.03 billion.

Approximately 60% of this cost represented premature death related to alcohol use and abuse. The total number of life years lost due to alcohol and drug use increased by approximately 27% between 1996 and 2005. The estimated economic loss associated with this mortality increased by approximately \$1.1 billion, from \$928 million to \$2.03 billion.

Table 4.2
Deaths Attributable to Alcohol by Diagnosis and Sex

Diagnoses	ICD-10-CM Diagnostic Code	Alcohol Attributable Fraction	Age (Years) [1]	Total Deaths	Male		Female	
					Total Deaths	Alcohol Related Deaths	Total Deaths	Alcohol Related Deaths
Direct Causes								
Acute alcoholic hepatitis	K70.1	1	≥15	23	14	14	9	9
Alcohol abuse, dependence or psychosis	F10.0-F10.9	1	≥15	132	93	93	39	39
Alcoholic cardiomyopathy	I142.6	1	≥15	11	9	9	2	2
Alcoholic cirrhosis, fatty liver and liver damage	K70.0, K70.2-K70.9	1	≥15	437	287	287	150	150
Fetal alcohol syndrome		1	≥0	0	0	0	0	0
Alcohol poisoning	X45	1	≥15	3	2	2	1	1
Indirect Causes								
Cancer of the esophagus	C15	0.75	≥35	291	228	171	63	47
Cancer of the larynx [2]	C32	0.5	≥35	60	45	23	15	8
Cancer of the liver	C22	0.15	≥35	323	200	30	123	19
Cancer of the oral cavity [2]	C00-C14	0.5	≥35	190	120	60	70	35
Cancer of the stomach	C16	0.2	≥35	187	103	21	84	17
Respiratory tuberculosis	A16	0.25	≥35	6	5	1	1	< 1
Diabetes mellitus	E10-E14	0.05	≥35	949	489	25	460	23
Essential hypertension	I10	0.08	≥35	42	8	< 1	34	3
Cerebrovascular disease	I60-I69	0.07	≥35	2940	1147	80	1793	126
Pneumonia and influenza	J10-J18	0.05	≥35	920	402	20	518	26
Diseases of the stomach, esophagus, duodenum	K20-K31	0.1	≥35	143	75	8	68	7
Other cirrhosis of liver		0.5	≥35	114	57	29	57	29
Chronic pancreatitis	K86	0.6	≥35	17	12	7	5	3

Table 4.2 (continued)

Diagnoses	ICD-10-CM Diagnostic Code	Alcohol Attributable Fraction	Age (Years) [1]	Total Deaths	Male		Female	
					Total Deaths	Alcohol Related Deaths	Total Deaths	Alcohol Related Deaths
Unintentional Injuries								
Accidental drownings	W65-W74, I21	0.38	≥0	103	83	32	20	8
Accidental falls	W00-W19	0.35	≥15	587	275	96	312	109
Accidents caused by fire	X00-X09	0.45	≥0	57	36	16	21	10
Air and transport accidents	V95-V99	0.16	≥0	26	20	3	6	1
All other accidents	V80-V89	0.25	≥15	266	185	46	81	20
Motor vehicle accidents	V20-V79	0.42	≥0	610	448	188	162	68
Other road vehicle accidents	V01-V19	0.20	≥0	130	91	18	39	8
Water transport accidents	V90-V94	0.20	≥0	27	22	5	5	1
Intentional Injuries								
Suicide	X60-X84	0.28	≥15	833	665	186	168	47
Homicide	X85-X99, Y00-Y06	0.46	≥15	229	171	79	58	27
Total				9,656	5,292	1,548	4,364	840

Notes:

[1] Deaths occurring before this age are not included in the calculations.

[2] The AAF for females is 0.40.

Sources:

1. Washington State Department of Health Death Records 2005.
2. International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM), 1st Edition, Practice Management Corporation.
3. Rice et al (1990).

Table 4.3
Deaths Attributable to Drugs by Diagnosis and Sex

Diagnoses	ICD-10-CM Diagnostic Code	Drug Attributable Fraction	Age (Years)	Total Deaths	Male		Female	
					Total Deaths	Drug Related Deaths	Total Deaths	Drug Related Deaths
Direct Causes								
Drug dependence and abuse	F11-F16, F18-F19	1	≥0	49	32	32	17	17
Accidental poisoning by drugs	X40-X44	1	≥0	677	431	431	246	246
Undetermined injury from drugs	Y10-Y14, Y16	1	≥0	47	28	28	19	19
Indirect Causes								
AIDS	B20-B24	0.05	≥0	139	114	23	25	10
Hepatitis B	B16	0.28	≥0	0	0	0	0	0
Homicides	X85-X99, Y00-Y09	0.13	≥15	229	171	22	58	8
Total				1,141	776	536	365	300

Note: Numbers may not add due to rounding.

Sources:

1. Washington State Department of Health Death Certificate Data for 2005.
2. International Classification of Diseases, 10th revision, Clinical Modification (ICD-10-CM), 1st Edition, Practice Management Corporation.
3. Rice et al (1990).

Table 4.4
Mortality Costs and Years of Potential Life Lost (YPLL)

Age	Alcohol		Drugs		Total	
	Costs (\$)	YPLL	Costs (\$)	YPLL	Costs (\$)	YPLL
Male						
1-18	78,843,229	2,887	18,069,172	396	96,912,401	3,283
19-44	498,490,524	14,822	379,466,081	10,999	877,956,605	25,821
45-64	359,506,257	13,126	221,351,706	7,073	580,857,963	20,199
65+	27,036,851	7,722	610,956	130	27,647,807	7,852
Total	963,876,861	38,557	619,497,915	18,598	1,583,374,776	57,155
Female						
1-18	22,755,555	1,278	4,493,278	71	27,248,833	1,349
19-44	138,339,840	5,220	125,683,453	6,030	264,023,292	11,250
45-64	74,973,300	5,799	74,034,085	4,788	149,007,386	10,587
65+	7,804,074	8,432	673,748	374	8,477,822	8,806
Total	243,872,769	20,729	204,884,564	11,263	448,757,333	31,992
Total	\$1,207,749,630	59,286	\$824,382,479	29,861	\$2,032,132,109	89,147

Chapter 5 Crime

Evidence has shown a strong link between drug abuse and alcohol abuse and crime. Although the exact nature of the relationship remains unclear, there is little doubt that substance abuse increases the likelihood that certain crimes will be committed. Substance abuse can act as a disinhibitor, allowing anti-social tendencies to evolve into criminal activities (Tonry & Wilson 1990). An example of this is domestic violence, wherein the batterer exhibits excessively controlling behaviors when sober, but only becomes assaultive while under the influence of alcohol (Chaiken & Chaiken 1990). Studies have found that as many as 50% - 80% of persons arrested for felonies have tested positive for drugs (Tonry & Wilson 1990). Surveys of incarcerated populations provide further evidence of the strong link between crime and substance abuse. Approximately one in four federal inmates and one in two state inmates reported that they were under the influence of alcohol or illicit drugs at the time of their current offense (Bureau of Justice Statistics, www.ojp.usdoj.gov/bjs/dcf/duc.htm).

This chapter analyzes the costs of crime for Washington in 2005 related to drug and alcohol abuse. It examines four types of costs related to criminal activity: (1) Law Enforcement Costs, (2) Judicial Costs, (3) Correctional Costs, and (4) Other Societal Costs.

The major findings of the analysis were:

- Of 154 arrests for homicide in 2005, 48 were related to alcohol and 24 to drug abuse.
 - There were 5,128 arrests for felonious assaults in 2005, of which 1,379 were related to alcohol abuse and 513 were related to drug abuse.
 - Total estimated drug- and alcohol-related crime costs in Washington in 2005 were \$1.09 billion. This compares to \$541 million in 1996, the year of the most recent Washington State drug and alcohol abuse cost report.
 - Crime costs were grouped into four major categories representing law enforcement, judicial, correctional and other social costs. Social costs were the highest, followed by correctional costs and law enforcement costs.
-

Methodology

This chapter follows the same general methodology as used for the previous two cost reports. Information was gathered from various sources on different criminal activities (offenses and arrests), prison populations, numbers of crime victims, and property destruction. The variables were then adjusted to reflect criminal activity related specifically drug and alcohol abuse. The major data sources for the analysis were “*Crime in Washington, 2005, Annual Report*,” “*Client Characteristics 2005*,” State of Washington Department of Corrections, and “*Jail Information Program 2005 Annual Report*,” Washington Association of Sheriffs and Police.

The analysis was restricted to the set of crimes believed to be most closely linked to substance abuse, which were analyzed in the previous 1996 cost report and in the national cost study (NIDA/NIAAA 1998). These crimes included the following Part I felonies: homicide, felonious assault (aggravated assault and forcible rape), robbery, burglary, larceny (property theft), and auto theft. Less serious Part II offences analyzed included driving while intoxicated (DWI), liquor law violations, public drunkenness, stolen property (buying, receiving and selling), prostitution, and drug law violations (possession, sale, use, or manufacture).

The numbers of drug- and alcohol-related crimes were estimated by multiplying crime figures by attributable fractions in the same manner as done to derive other cost estimates. The attributable fractions used were the same as used for the national cost study (NIDA/NIAAA, 1998), and represent the most current evidence available. The attributable fractions ranged from 2.8% for alcohol-related larceny crimes to 100% for DWI. In other words, it was assumed that 2.8% of all larcenies were related to alcohol use/abuse; by definition, 100% of DWI offenses were related to alcohol use.

The attributable fractions used for the analysis are shown below (crimes such as DWI with attributable fractions of 100% are not shown):

	<u>Alcohol</u>	<u>Drugs</u>
	(%)	(%)
Homicide	30.0	15.8
Felonious Assault	30.0	2.4
Robbery	3.4	27.2
Burglary	3.6	30.0
Larceny	2.8	29.6
Auto Theft	3.5	6.8
Stolen Property	0.0	15.1
Prostitution	0.0	12.8

To derive some cost estimates (correctional and judicial costs), it was necessary to convert numbers of arrests or offenses into dollar equivalents. This conversion was done using the same procedure as Rice et al. (1990), which assumed that costs were proportional to the numbers of crimes committed.

Results

Law Enforcement Costs

Police Protection:

Police protection costs were estimated based on the number of Part I offenses and Part II arrests (data on Part II offenses were unavailable so arrests were used as a proxy for more common offenses) committed in 2005 (Table 5.1). The number of offenses were multiplied by the above attributable fractions to obtain estimates of the number of drug- and alcohol-related offenses committed. The cost per offense was based on information reported by Rice et al. (1990), updated to reflect 2005 prices.

**Table 5.1
Police Protection Costs, Washington, 2005**

Type of Offense	Number of Known Offenses (1)	Number of Alcohol and Drug Related Offenses		Average Cost per Offense (\$)	Alcohol Related Costs (2) (\$)	Drug Related Costs (2) (\$)	Total Costs (\$)
		Alcohol	Drug				
Part 1							
Homicide	204	61	32	1,851	112,770	59,392	172,162
Felonious Assault	17,628	5,288	423	1,827	9,659,368	772,749	10,432,118
Robbery	5,774	196	1,571	1,263	248,057	1,984,456	2,232,513
Burglary	60,099	2,164	18,030	1,827	3,951,793	32,931,608	36,883,401
Larceny	197,020	5,517	58,318	1,235	6,813,172	72,024,964	78,838,136
Auto Theft	49,151	1,720	3,342	1,827	3,142,135	6,104,719	9,246,854
Part II							
DWI	37,406	37,406	0	55	2,040,871	0	2,040,871
Liquor Laws	11,748	11,748	0	55	640,971	0	640,971
Public Drunkenness	3	3	0	55	164	0	164
Stolen Property	5,298	0	800	415	0	2,617,881	2,617,881
Prostitution	1,659	0	212	449	0	95,321	95,321
Drug Laws	25,535	0	25,535	1,926	0	49,204,924	49,204,924
Total	411,525	64,103	108,263		\$26,609,301	\$165,796,014	\$192,405,315

Sources:

- 1) *Crime in Washington State, 2005 Annual Report.*
- 2) Cost estimates were derived by taking the average cost per offense, calculated from the 1996 cost report, based upon information provided in Rice et al. (1990) using updated 2005 prices, and multiplying by the numbers of alcohol- and drug-related offenses.

The total police protection costs for 2005 were estimated at \$192.4 million (Table 5.1). In contrast, police protection costs for 1996 were \$139.2 million. Thus, police protection costs increased by 38%, but a substantial portion (two-thirds) of this increase was due to inflation. The total number of drug- and alcohol-related offenses committed in 2005 was 172,366, with almost 35% of these being drug-related theft (larceny). The great majority of police protection costs were drug related (86%); alcohol-related costs accounted for only 14% of police protection costs.

Drug Control:

Drug traffic control is a national priority involving a wide range of federal, state and local agencies. Because so many different agencies are involved in drug control it is difficult to estimate accurately the costs for Washington State. Initially national data on drug traffic control costs were obtained for 2005 and were used to estimate drug control costs. But these data yielded estimates that seemed unreasonably high. We therefore used the 1996 estimated drug control costs, updated to reflect 2005 dollars. Total estimated drug control expenditures for Washington for 2005 were \$265.5 million, a fourfold increase over the corresponding 1996 costs.

**Table 5.2
Drug Control Expenditures, Washington, 2005**

Type of Activity	Estimated Expenditures (\$)
Interdiction	28,520,000
Investigations	22,568,000
International	10,044,000
Intelligence	3,844,000
Research & Development	12,400,000
Regulatory & Compliance	744,000
Total	\$78,120,000

Source: Drugs and Crime Facts, Department of Justice, 1996.
1996 figures inflation adjusted to reflect 2005 dollars.

Judicial Costs

Legal and judicial costs were estimated based on the number of arrests for Part I and II crimes (Table 5.3). Base cost figures used for the estimation were obtained from data gathered by the U.S. Bureau of Justice Statistics. The most costly Part I crime category was larceny-theft due to the large number of drug-related arrests (8,987). The most costly Part II crime category was drug law violations. The total estimated 2005 cost for drug- and alcohol-related legal and adjudication activities was \$45 million, with drug abuse accounting for 84% of the costs.

Correctional Costs

State Correctional Costs:

Total state corrections costs were estimated at \$189 million (Table 5.4), with drug-related costs accounting for \$128.8 million, or 68% of the total costs. Data obtained from the Washington State Department of Corrections indicated the annual cost of maintaining a prisoner in 2002 was \$24,000. This figure was price adjusted to reflect 2005 prices (\$27,000). The annual per inmate costs were multiplied by the number of inmates to obtain total cost estimates shown in Table 5.4. As the table shows, the most costly offender category was for drug crimes (\$86.7 million), followed by felonious assault (\$45.9 million) and homicide (\$23.8 million). In contrast to the \$189 million total cost figure shown in Table 5.4, the corresponding 1996 cost figure was \$132 million.

**Table 5.3
Legal and Adjudication Costs, Washington, 2005**

Type of Offense	Number of Arrests (1)	Number of Alcohol and Drug Related Arrests		Alcohol Related Costs (2) (\$)	Drug Related Costs (2) (\$)	Total Costs (2) (\$)
		Alcohol	Drug			
Part I						
Homicide	154	46	24	65,396	34,442	99,838
Felonious Assault	5,128	1379	513	1,952,586	725,868	2,678,454
Robbery	1,306	51	350	72,097	495,436	567,533
Burglary	6,026	283	1808	400,901	2,558,941	2,959,842
Larceny-Theft	30,362	1154	8987	1,633,142	12,721,314	14,354,455
Auto Theft	2,571	118	478	167,406	676,901	844,306
Part II						
DWI	37,406	37,406		2,062,193	--	2,062,193
Liquor Laws	11,748	11,748		647,667	--	647,667
Public Drunkenness	3	3		165	--	164
Stolen Property	5,298	--	985	--	1,484,439	1,484,439
Prostitution	1,659	--	212	--	319,885	319,885
Drug Laws	25,535	--	25,535	--	18,998,040	18,998,040
Total	127,196	52,189	38,893	\$7,001,552	\$38,015,266	\$45,016,818

Sources:

- 1) *Crime in Washington State, 2005 Annual Report.*
- 2) Justice Expenditures and Employment Extracts, 1996, U.S. Dept. of Justice, Office of Justice Programs, Bureau of Justice Statistics. Expenditure data were price adjusted to reflect 2005 prices.

**Table 5.4
State Corrections Costs, Washington, 2005**

Type of Offense	Total Inmates (1)	Inmate Population		Alcohol Related Costs (2) (\$)	Drug Related Costs (2) (\$)	Total Costs
		Alcohol	Drug			
Homicide	1,925	578	304	15,592,500	8,212,050	23,804,550
Felonious Assault	5,590	1,007	196	40,600,170	\$5,282,550	45,882,720
Robbery	1,662	65	452	1,750,086	12,205,728	13,955,814
Burglary	1,214	57	364	1,540,566	9,833,400	11,373,966
Theft	650	25	192	666,900	5,194,800	5,861,700
Auto Theft	135	6	29	167,670	247,860	415,530
Stolen Property	278	--	42	--	1,133,406	1,133,406
Drug Crime	3,212	--	3,212	--	86,724,000	86,724,000
Total	14,666	2,234	4,772	\$60,317,892	\$128,833,794	\$189,151,686

Sources:

- 1) *Client Characteristics 2005*, State of Washington Department of Corrections.
- 2) Bureau of Justice Statistics, 2005, U.S. Department of Justice.

Local Corrections Costs:

Individuals arrested for alcohol- and drug-related crimes are booked into local jails. Thus, some of the expense of operating these jails should be included in the analysis as drug- and alcohol-related costs. The same general procedure for estimating state corrections costs was followed for local corrections costs. As shown in Table 5.5, total alcohol- and drug-related local corrections costs for 2005 were estimated at \$122.3 million, with drug-related costs accounting for \$104.4 million (85%). The large proportion of drug-related costs reflects the number of prisoners booked into local jails for drug-related crimes (5,885).

Table 5.5
Local Corrections Costs, Washington, 2005

Type of Offense	Number of Local Admissions (1)	Alcohol and Drug Related Admissions in Local Institutions		Alcohol Related Costs (2) (\$)	Drug Related Costs (2) (\$)	Total Costs (\$)
		Alcohol	Drug			
		Homicide	34			
Felonious Assault	3,988	1,073	140	13,570,566	1,765,687	18,615,386
Robbery	228	9	62	112,484	784,502	885,450
Property (Burglary, Larceny)	6,827	321	2,048	4,058,993	25,908,465	29,967,458
Drug Crime	5,885	--	5,885	--	74,445,250	74,445,250
Sex Crimes	875		112	--	1,416,800	
Total	17,837	1,413	8,252	\$17,871,072	\$104,388,660	\$122,259,733

Sources:

- 1) *Jail Information Program 2005 Annual Report*, Washington Association of Sheriffs and Police Chiefs.
- 2) Total local corrections costs from *Sourcebook of Criminal Justice Statistics 1996*, Bureau of Justice Statistics. Costs adjusted for inflation to reflect 2005 prices.

Other Societal Costs

Other social costs are costs that may not be directly or explicitly borne by any group or organization, but are costs to society. This cost category includes the costs of lost productivity due to incarceration, the value of lost productivity due to criminal victimization, and the cost of property damage arising from substance abuse-related accidents.

Productivity Losses Due to Incarceration:

Inmates of state prisons and local jails are unable to participate in the economy as workers. This results in a substantial economic cost to society in the form of lost productivity. The cost estimates were based upon the numbers of individuals entering state prisons and local jails and the amount of time, on average, spent during the year. Since annual costs were calculated, the maximum time served was 12 months even though for some crimes (e.g., homicide) much more time is served. Following the estimation procedure used by the national cost study (NIDA/NIAAA 1998), this cost report used the average 2005 market and non-market annual earnings of persons 25 to 44 (weighted by sex) as the basis for calculating lost productivity. This earnings figure was \$42,000.

The findings are presented in Table 5.6. Total productivity losses due to incarceration were estimated to be \$390.3 million, with \$274.2 million representing losses associated with incarceration in state prisons. Of the \$390.3 million in lost productivity, \$296.5 million (76%) was for drug-related crimes. The total economic loss due to incarceration in 1996 was \$97 million. The increase in estimated economic loss was due to the higher base earnings figure used to estimate the incarceration costs for 2005 and also due to an increase in the number of prisoners. In 1996, there were 4,135 person-years served in state prisons or local jails related to drug abuse. In 2005, the number of person-years served increased to 7,061 (71%).

Table 5.6
Productivity Losses Due to Incarceration, Washington, 2005

Type of Offense	Drugs		Alcohol		Total Losses (\$)
	Person Years Served	Productivity Losses (\$)	Person Years Served	Productivity Losses (\$)	
State Prisons					
Homicide	304	12,768,000	578	24,255,000	37,023,000
Felonious Assault	196	8,232,000	1007	42,311,010	50,543,010
Robbery	452	18,984,000	65	2,722,356	21,706,356
Burglary	364	15,296,400	57	2,396,436	17,692,836
Larceny	192	8,080,800	25	1,037,400	9,118,200
Auto Theft	29	1,218,000	6	260,820	1,478,820
Stolen Property	42	1,763,076	--	0	1,763,076
Drug Laws	3,212	134,904,000	--	0	134,904,000
Total	4,792	\$201,246,276	1,738	\$72,983,022	\$274,229,298
Local Jails					
Homicide	4	180,250	9	367,710	547,960
Assault	49	2,043,300	376	15,773,100	17,816,400
Robbery	29	1,215,200	4	174,283	1,389,483
Property (Burglary, Larceny)	682	28,673,400	107	4,492,166	33,165,566
Drug Crime	1,471	61,792,500	--	0	61,792,500
Sex Crimes	33	1,372,000	--	0	1,372,000
Total	2,269	\$95,276,650	495	\$20,807,259	\$116,083,909
Total State & Local	7,061	\$296,522,926	2,233	\$93,790,281	\$390,313,207

Notes:

- 1) Productivity was based on average annual earnings of \$42,000, reflecting the median annual wage and household values, based upon a weighted average for males and females, for persons age 25 to 44.

Sources:

- 1) *Client Characteristics, 2005*, State of Washington Department of Corrections.
- 2) Rice DP, et al (1990), *The Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985*.
- 3) *Jail Information Program 2005 Annual Report*, Washington Association of Sheriffs and Police Chiefs.

Property Destruction:

State data on property destruction costs for 2005 were unavailable. Estimates of property destruction costs were generated by taking the 1996 cost estimates, updating them to account for inflation, and applying the 2005 number of offenses adjusted to reflect drug and alcohol attributable fractions. The 2005 cost figures are presented in Table 5.7. Overall, property destruction costs due to criminal activity related to drug or alcohol abuse were estimated at \$36.4 million, with drug-related costs accounting for \$27.5 million. Property destruction costs increased by \$14 million from 1996 to 2005.

Table 5.7
Property Destruction Due to Crime, Washington, 2005

Type of Offense	Alcohol Related Losses (\$)	Drug Related Losses (\$)	Total Losses (\$)
Robbery	55,967	447,624	503,591
Assault	406,713	40,187	446,899
Larceny	329,926	3,487,460	3,817,386
Burglary	1,225,902	10,218,117	11,444,019
Motor Vehicle Theft	6,857,198	13,323,695	20,180,893
Total Losses	\$8,875,706	\$27,517,082	\$36,392,788

Sources:

- 1) Rice DP, et al. (1990), *The Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985*.
- 2) *Crime in Washington State, 2005 Annual Report*.

Criminal Victimization Costs:

The economic cost associated with criminal victimization is the value of lost productivity due to time lost from work and the cost of medical care that the victim requires. There were no state level data on the number of crime victims, so the number of Part I offenses were used for the analysis, based upon the assumption that there was one victim per offense. The average number of days lost from work was estimated in an earlier report by Liu (1992). In addition to the costs of lost work time, the (inflation adjusted) costs of medical care needed by victims, as reported in the recent national study conducted by NIDA/NIAAA (1998), were incorporated in

the analysis. The number of offenses was multiplied by the estimated monetary loss, based on lost work days and medical expenses, and the product was then multiplied by the appropriate attributable fraction for the offense. Table 5.8 presents the estimates.

Table 5.8
Productivity Losses for Victims of Crime, Washington, 2005

Type of Offense	Number of Offenses	Average Work Days Lost	Alcohol Productivity Losses (\$)	Drug Productivity Losses (\$)	Total Productivity Losses (\$)
Forcible Rape	2,772	6.2	657,380	149,006	806,386
Aggravated Assault	12,879	3.8			
Robbery	5,774	4.5	3,695,950	299,676	2,695,626
Burglary	60,099	2.1	150,182	1,201,454	1,351,636
Larceny	197,020	1.6	772,392	6,436,603	7,208,995
Motor Vehicle Theft	49,151	2.5	1,500,504	15,862,474	17,362,979
			731,121	1,420,464	2,151,585
Total	327,695		\$7,507,530	\$25,369,677	\$32,877,207

Notes:

- 1) Productivity was based on average annual earnings of \$170 per day. This figure includes market earnings and non-market (household) values, as discussed in the NIDA/NIAAA (1998) cost study.
- 2) Productivity losses include estimated costs for medical care required by the victims, as indicated in the NIDA/NIAAA (1998) national study (source #4 below).
- 3) Productivity losses were calculated based upon the attributable fractions shown at the beginning of the chapter.

Sources:

- 1) *Crime in Washington State 2005 Annual Report*, Washington Association of Sheriffs and Police Chiefs, p. 83.
- 2) Liu Ly, (1992) *Economic Costs of Alcohol and Drug Abuse in Texas-1989*.
- 3) Rice DP et al. (1990), *The Economic Cost of Alcohol and Drug Abuse and Mental Illness: 1985*.
- 4) The Economic Costs of Alcohol and Drug Abuse in the United States – 1992, Table C.6, NIDA/NIAAA (1998).

As shown in Table 5.8, the total economic loss in 2005 due to criminal victimization related to drug and alcohol abuse was \$32.9 million, with drug abuse accounting for \$25.4 million. The total victimization cost for 1996 was \$20.3 million. While the number of drug- and alcohol-related offenses increased during this time, a sizeable portion of the cost increase shown Table 5.8 reflects the effects of inflation. Between 1996 and 2005 the Consumer Price Index (CPI) value increased by 24%.

Summary

The analysis presented in this chapter has estimated crime costs for 2005 at \$1.09 billion, double the 1996 cost estimate (\$541 million). As such, criminal activity represents a major component of overall drug- and alcohol-related costs. The categories with the greatest cost were other social costs, followed by corrections. The great majority of crime costs were drug related. In 2005, over 32,000 individuals were incarcerated in state prisons or arrested and booked in local jails for crimes related to drug and alcohol abuse. This represents an increase of almost 80% from 1996, the year of the previous cost report. The combined number of person years of prison and jail time served by these individuals was over 16,500. Crime costs in 1996 were estimated at \$541 million. Adjusting for inflation would increase the 1996 costs to approximately \$671 million. But even after adjusting for inflation, crime costs increased on a relative basis by 60% over the nine-year intervening period between the last economic cost report (1996) the current report. The potential savings in crime-related costs that could accrue from effective drug and alcohol prevention and treatment are large and likely to increase in the future.

Chapter 6 Medical Care

Alcohol or drug abuse may increase the risk of illness or injury and thereby increase the use of health care services. The effects of substance abuse on health care utilization may be obvious and immediate or more indirect and long term. The link between alcohol and drug use is clear in the case of an individual overdosing on drugs and then requiring hospitalization, or a drunk driver who sustains serious injury in an auto accident and requires emergency hospital treatment. But prolonged alcohol abuse can also increase the risk for a number of diseases, including stomach cancer, cancer of the esophagus, respiratory tuberculosis, diabetes, and hypertension, thereby increasing the demand for costly medical care as well as nursing home care.

This chapter analyzes medical costs for Washington for 2005 related to drug and alcohol abuse. Five types of health costs are reported: hospital inpatient costs, outpatient medical costs, prescription drugs, nursing home costs, and costs for other professional services. .

The major findings of the analysis were:

- There were approximately 39,000 hospital discharges in Washington in 2005 directly or indirectly related to drug and alcohol use or abuse.
 - Total estimated cost of providing hospital inpatient treatment for these patients was \$377 million.
 - The estimated cost of outpatient medical care, prescription drugs, nursing home care and other professional care provided to patients hospitalized with a drug or alcohol problem was approximately \$414 million.
 - The total estimated substance abuse-related medical costs (\$791 million) for 2005 represent an increase of over 400% from the previous 1996 cost estimate.
-

Methodology

The estimation of hospital inpatient costs was based upon data from the Washington Comprehensive Hospital Abstract Reporting System (CHARS). CHARS gathers information on total hospital charges, length of stay, diagnosis, sex and age for all hospital discharges in Washington. For this analysis, CHARS data representing patients discharged from short-term hospitals during 2005 with specified diagnoses related to drug or alcohol abuse were obtained and were used to estimate inpatient hospital costs. The adjustment process used followed the same approach as used to estimate mortality costs (see Chapter 4) and is commonly known as the illness-specific approach used for the 1998 national cost study sponsored by NIDA and NIAAA (NIDA/NIAAA 1998).

The illness-specific approach does not take account of the extra days a patient may stay in the hospital if he or she has a co-occurring alcohol or drug disorder. This was done for the national 1998 NIDA/NIAAA cost study, and these costs accounted for approximately 20% of the total estimated inpatient drug- and alcohol-related costs. We obtained CHARS data with the intent of replicating this analysis. However, a fairly small proportion of cases had co-occurring drug or alcohol diagnoses and those that did showed mixed findings, with average costs and length of stay increasing for some diagnoses but unexpectedly—and in contrast to the national study—decreasing for others. Because of this, it was decided not to incorporate this additional analysis in the estimation procedure.

CHARS gathers information on hospital charges, which do not accurately reflect actual costs (real resource utilization). The two prior Washington State drug-alcohol cost reports presented information on hospital charges. For this report, it was decided to adjust charges to more accurately reflect actual hospital costs. The standard approach for this adjustment is to use the cost-to-charge ratios used by Medicare to determine certain types of allowable hospital payments. While it is possible to obtain cost-to-charge ratios for individual hospitals, the identify of individual hospitals was made

known for confidentiality reasons. To make the adjustment, we obtained national data from Medicare representing the global cost-to-charge ratios for urban hospitals (.55) and rural hospitals (.71). We then computed a weighted average of these two ratios, assuming that two-thirds of discharges would occur in urban hospitals. The weighted average figure is .63. In other words, it is assumed that actual costs are 63% of the charge figures reported by CHARS.

To facilitate comparison with the two earlier cost reports, data representing different individual diagnoses (see Table 6.1) were left unadjusted, reflecting hospital charges as reported by CHARS. The summary figures representing total alcohol, drug and combined (drug and alcohol) charges were adjusted to reflect costs, as described above (total charge figures were multiplied by .63).

In addition to hospital inpatient costs, other cost estimates representing outpatient medical care, prescription drugs, nursing home care and other professional care are presented. Estimating drug- and alcohol-related costs for these types of costs is difficult because there is no data source for them equivalent to CHARS. The previous national cost study conducted by NIDA/NIAAA estimated these costs. This study found that for every dollar spent on inpatient hospital care, 39.3 cents was spent on outpatient care, 35.6 cents was spent on pharmaceuticals, 14 cents was spent on nursing homes, and 21 cents was spent on other professional services. Thus, for every \$1 dollar spent on hospital inpatient care, it was assumed \$1.10 was spent for the other four service categories. Following the method of a recent California alcohol cost study (Max et al. 2004), we applied these figures to the CHARS data (adjusted costs) to obtain estimates of costs for these four areas (Table 6.2).

Results

As shown in Table 6.1, approximately 29,400 hospital discharges occurred in 2005 as a result of a medical condition or injury related to drug or alcohol abuse. Approximately 22,200 (76%) of these discharges were related to alcohol abuse. Total hospital

discharges were divided almost equally between males and females. Of the \$376.9 million in hospital (adjusted) costs shown in Table 6.1, \$316.6 million (84%) were for hospital care for an alcohol-related condition or injury. The major cost categories were: accidental falls, motor vehicle accidents, alcoholic cirrhosis, acute pancreatitis, alcoholic psychosis, drug-related accidents and poisonings, and alcohol-related injuries and poisonings.

The four other cost categories for which estimates are presented are: outpatient medical costs, prescription drug costs, nursing home costs and other professional health costs (Table 6.2). The estimates for these four categories are based upon information reported in the national NIDA/NIAAA (1998) cost study, as discussed earlier. As shown, the estimated cost for outpatient medical services was \$148.1 million. For prescription drugs the cost was \$134.2 million. For nursing home care and other professional services, the costs, respectively, were \$52.8 million and \$79.2 million. The total estimated cost for the four categories combined was \$414.3 million.

Summary

Total medical costs, based upon adjusted hospital charges, associated with drug and alcohol abuse for Washington in 2005 were estimated at \$791.2 million. Over 80% of the total costs were related to medical problems and injuries resulting from alcohol use and abuse. Outpatient medical services accounted for \$148.1 million, while prescription drugs accounted for \$134.2 million.

The total cost estimate for 2005 (\$791.2 million) were almost four times greater than the 1996 cost estimate (\$210.9 million), even though the earlier estimate (1) was based upon unadjusted hospital charges and (2) assumed co-occurring substance abuse problems increased charges by 20%. If one takes this into account, the difference between the 1996 estimate and the 2005 estimate would be substantially larger. Direct cost comparisons between the two time periods are difficult to make because of the different estimation procedures used for the two time periods. The greater cost for 2005 reflects in part the increase in persons hospitalized for drug and alcohol problems.

Approximately 80% more persons were hospitalized in 2005 for a drug or alcohol problem than in 1996 (29,000 versus 16,000). But this in part reflects the fact that the state population increased by 12% between 1996 and 2005. The cost of hospital services and other medical services also increased substantially from 1996 to 2005, which no doubt contributed to the observed increase in medical costs. Nonetheless, the significant increase in the number of persons hospitalized (even adjusting for population growth) for illnesses and injuries related to drug and alcohol abuse and the estimated costs for treating these persons suggests the health consequences of substance abuse are becoming more serious.

Table 6.1
Drug- and Alcohol-Related Hospital Inpatient
Costs, Washington, 2005

Diagnosis or Condition	AAF DAF (1)	Hospital Discharges (2)		Hospital Inpatient Charges (3)		
		Females	Males	Females (\$)	Males (\$)	Total (\$)
<u>100% Alcohol-Caused Condition</u>						
Alcoholic psychoses	1	752	1425	6,730,468	14,941,367	21,671,835
Alcohol dependence	1	226	334	1,762,936	2,830,553	4,593,489
Alcoholic polyneuropathy	1	2	8	28,681	105,242	133,923
Nondependent alcohol abuse	1	42	58	290,159	538,025	828,184
Alcoholic cardiomyopathy	1	2	21	57,771	938,743	996,514
Alcoholic gastritis	1	40	100	390,471	1,282,488	1,672,959
Alcoholic fatty liver	1	2	1	30,457	33,555	33,585
Acute alcoholic hepatitis	1	108	162	2,285,164	3,537,411	5,822,575
Alcoholic cirrhosis of liver	1	234	494	7,418,612	14,191,622	21,610,234
Alcoholic liver damage, unspecified	1	18	31	231,528	579,767	811,295
Toxic effects of ethyl alcohol	1	51	76	526,376	916,228	1,442,604
Accidental poisoning by alcohol	1	38	82	442,594	1,069,382	1,511,976
<u>Alcohol-Related Conditions</u>						
Cancer of the lip, tongue, oral cavity, pharynx	0.47	130	194	2,120,616	3,426,557	5,547,173
Cancer of the esophagus	0.75	53	113	3,009,119	4,595,783	7,604,902
Cancer of the stomach	0.2	23	36	857,431	1,632,059	2,489,490
Cancer of the liver and intrahepatic bile ducts	0.15	8	14	296,968	521,540	818,508
Cancer of the larynx	0.49	7	36	212,348	1,085,652	1,298,000
Essential hypertension	0.08	29	20	283,376	251,128	534,504
Cerebrovascular disease	0.07	455	411	10,429,246	9,709,953	20,139,199
Respiratory tuberculosis	0.25	5	10	78,342	312,279	390,621
Diabetes mellitus	0.05	98	116	1,831,781	2,209,519	4,041,300
Pneumonia and influenza	0.05	414	373	6,470,282	6,053,680	12,523,962
Diseases of esophagus, stomach, duodenum	0.1	363	311	6,777,108	5,877,805	12,654,913
Cirrhosis without mention of alcohol	0.5	84	104	2,460,804	3,891,604	6,352,408
Chronic hepatitis	.5	6	2	94,786	70,774	165,560
Acute pancreatitis	0.41	608	639	12,341,641	14,863,897	27,205,538
Chronic pancreatitis	0.67	108	107	2,136,539	1,595,037	3,731,576
Motor vehicle accidents	.42	661	1,240	24,707,415	48,709,798	73,417,213
Pedal cycle accidents	.20	16	70	330,870	1,483,167	1,814,037
Air and transport accidents	.16	<1	2	7,245	84,036	91,281
Accidental falls	.35	3,892	2,408	85,837,917	62,642,242	148,480,159

Table 6.1 (continued)

Diagnosis or Condition	AAF DAF (1)	Hospital Discharges (2)		Hospital Inpatient Charges (3)		
		Females	Males	Females (\$)	Males (\$)	Total (\$)
Accidents caused by fires	.45	32	85	1,187,870	3,628,259	4,816,129
Accidental drowning	.35	3	5	77,930	205,637	283,567
Attempted suicide	.28	581	371	7,712,316	6,208,566	13,920,882
Attempted homicide	.46	123	535	2,443,461	13,028,439	15,471,900
Other injuries and adverse events	.25	141	304	2,650,765	6,403,850	9,054,615
Injuries and poisoning	.10	1,298	1,266	31,261,103	37,253,316	68,514,419
Total		10,654	11,564	\$225,782,069	\$276,708,960	\$502,491,029
Adjusted Alcohol Costs (4)				\$142,242,704	\$174,326,645	\$316,569,349

100% Drug-Caused Conditions

Drug psychoses	1	865	897	7,492,466	7,134,415	14,626,881
Drug dependence	1	151	192	1,220,811	1,372,781	2,593,592
Nondependent drug abuse	1	38	77	285,078	645,195	930,273
Narcotics affecting fetus or newborn	1	0	1	0	5,561	5,561
Drug withdrawal syndrome in newborn	1	6	5	145,530	166,743	312,273
Poisoning by opiates and related narcotics	1	301	288	5,026,685	5,509,938	10,536,623
Poisoning by sedatives and hypnotics	1	109	62	1,443,086	791,793	2,234,879
Poisoning by depressants	1	23	19	223,896	257,100	480,996
Poisoning by psychotropic agents	1	922	599	10,683,435	7,877,377	18,560,812
Poisoning by central nervous system stimulants	1	55	85	976,918	1,418,916	2,395,834
Accidental poisoning		1055	904	17,010,155	14,489,710	31,499,865

Table 6.1 (continued)

Diagnosis or Condition	AAF DAF (1)	Hospital Discharges (2)		Hospital Inpatient Charges (3)		Total (\$)
		Females	Males	Females (\$)	Males (\$)	
<u>Drug-Related Conditions</u>						
Injury undetermined	.2	42	43	649,323	769,217	1,418,540
Injury purposely inflicted	.28	75	325	1,487,324	7,930,354	9,417,678
Tuberculosis	.25	8	19	189,504	645,902	835,406
Total		3,650	3,516	\$46,834,211	\$49,015,002	\$95,849,213
Adjusted Drug Costs (4)				\$29,505,553	\$30,879,451	\$60,385,004
<hr/>						
Drug and Alcohol-Related Discharges and Hospital Charges Combined		14,304	15,080	\$272,616,280	\$325,723,962	\$598,340,242
Combined Adjusted Costs (4)				\$171,748,256	\$205,206,096	\$376,954,352

Notes:

- (1) AAF and DAF refer to alcohol and drug attributable fractions, respectively.
- (2) Hospital discharges are the total number of discharges multiplied by the corresponding attributable fraction.
- (3) Hospital inpatient charges are the average charge per case multiplied by the corresponding number of discharges.
- (4) Hospital (unadjusted) charges are reported for individual diagnostic categories. Adjusted aggregate costs were derived by multiplying the unadjusted charge figures by .63 (see text for explanation of calculation of adjustment figure).

Source: Washington Comprehensive Hospital Abstract Reporting System (CHARS), 2005 data file.

Table 6.2
Other Drug- and Alcohol-Related Medical Costs

Cost Category	Total Costs* \$
Outpatient Medical Services	148,143,060
Prescription Drugs	134,195,749
Nursing Home Care	52,773,609
Other Professional Services	79,160,414
Total	\$414,272,833

* Costs shown in Table 6.2 are based upon total adjusted costs shown in Table 6.1 (\$376,954,352). See text for explanation of estimation procedure.

Chapter 7 Specific Diseases

In this chapter, the costs associated with two specific diseases are presented: (1) human immunodeficiency virus (HIV)/acquired immune deficiency (AIDS), and (2) hepatitis B (HBV). In the previous 1996 report, a third condition, fetal alcohol syndrome (FAS), was included. It is not included in this report because a recent study (Astley 2004) indicated a sharp drop in the prevalence of maternal heavy drinking during pregnancy and a corresponding reduction in FAS incidence, as documented by the state's surveillance and screening system. A less serious condition is fetal alcohol effect (FAE). While FAE may lead to increased medical and social costs, there is little information on its prevalence or cost consequences. Thus, this chapter limits its focus to HIV/AIDS and HBV.

Unlike other alcohol- and drug-related diseases and illnesses, these two diseases result in long-term medical and social costs. For example, an HIV/AIDS patient is about 60% less productive at work due to the illness, and he or she requires frequent medical attention and monitoring (Scitovsky and Rice, 1987; Schackman et al. 2006). Because of the special nature of HIV/AIDS and HBV and because of their close association with drug abuse, the cost estimates for these diseases for 2005 are presented separately in this chapter. The chapter follows the same general methodology as used for the previous economic cost report.

The major findings of the analysis were:

- Total costs for HIV/AIDS and HBV associated with injection drug use were \$88,800,440. Of these costs, AIDS accounted for approximately \$84,700,000.
 - AIDS contracted through injected drug use (IDU) accounted for 139 deaths in 2005.
 - There were zero recorded deaths from HBV in 2005.
-

Results

HIV/AIDS and HBV are blood-borne communicable diseases that can be transmitted to anyone who comes in contact with the viruses. AIDS and HBV are readily spread among injection drug users who share needles. Injection drug users can then transmit these diseases to non-drug users through sexual activities. The cost estimates presented in this chapter represent the costs of AIDS and HBV associated with injected drug use.

Other chapters included in this report have presented separate sections describing the methodology used to derive the cost estimates. Because of the special characteristics of the two diseases, the methodological discussion is provided as part of results section.

AIDS and HIV Associated with Injection Drug Use

As noted in the earlier 1996 cost report, the link between AIDS and drug use is well documented. On a national basis, as many as 25% of AIDS cases result from injected drug use (IDU), while an additional 6% result from IDU and male-male sex (Centers for Disease Control, 1997). In Washington, these percentages are somewhat lower but still substantial, approximately 8% and 10%, respectively (Washington State Health Department, 1998). In addition to this direct relationship between drugs and HHIV/AIDS, drug or alcohol abuse often is a contributing factor in that it impairs judgment leading to unsafe sexual practices.

Since the mid-1990s, drug treatment for HIV has improved markedly through the use of antiretroviral therapy (ART), extending life expectancy for HIV patients by almost 20 years (Schackman et al. 2006). With new ART approaches, has come increased costs to treat HIV. Current estimates suggest the lifetime (undiscounted) expected expenditures of a HIV patient receiving standard of care ART would be approximately \$620,000, with 73% of these costs going to drug therapy.

According to surveillance data reported by the Seattle-King County Health Department in collaboration with the Washington State Department of Health (Washington State/ Seattle-King County HIV/AIDS Epidemiology Report, 2005), there were 9,077 reported prevalent cases of HIV (3,954 cases), AIDS (5,074 cases), or pediatric HIV/AIDS (49 cases) as of December 31, 2005. This does not include unreported cases. It is estimated in Washington State there were approximately 11,000 to 13,000 persons living with HIV infection including AIDS as of December 2005. These include persons who have been diagnosed but whose case has not been reported as well as persons who have not yet been diagnosed. It seems reasonable to include in this analysis persons who may have been diagnosed but not yet reported. This may include 5% of the AIDS cases and possibly 10% of the HIV cases. Accounting for this would yield an estimate of 9,800 HIV/AIDS cases. Washington State surveillance data indicate that approximately 17% of these cases would have contracted HIV/AIDS through injected drug use (IUD). Accordingly, we estimate that as December 2005, there were 1,666 persons living in Washington with HIV/AIDS that contracted HIV/AIDS directly or indirectly from IUD. Of these persons, there were 139 HIV/AIDS deaths in 2005. The mortality deaths from these 139 deaths have been included in the mortality costs presented in Chapter 4 but were not shown separately. They are shown here but are not counted separately in the calculation of the total economic costs of drug and alcohol abuse to avoid double counting.

Recent research conducted by Schackman et al (2006) indicates the average annual cost to treat HIV is approximately \$24,100. Once a person develops AIDS, expected medical costs increase. An earlier study by Hellinger (1993) suggests the annual medical cost of treating AIDS in 2005 would be approximately \$42,000. Multiplying the respective HIV and AIDS medical costs by the number of injection drug users with AIDS (933) and HIV (733) yields estimates of approximately \$39,200,000 and \$17,665,000, respectively. The estimated total 2005 medical care cost to treat AIDS/HIV patients would be \$56,865,000.

Non-personal medical costs (i.e., testing/counseling, patient care/support services, administration) were estimated in the previous 1996 report (Intergovernmental AIDS Report, 1991). The non-personal medical costs incurred in 1996 for caring and supporting injection drug user AIDS patients were \$1,681,000. Updating this figure to reflect current prices would yield an estimate of \$2,084,440.

Indirect costs of IDU-related AIDS and HIV include mortality (premature death) and morbidity (lost productivity). Mortality figures for injection drug use-related AIDS were based on 2005 vital statistics data gathered by the state Health Department. A total of 139 persons died as a result of AIDS (Table 4.3). Using our 13% figure noted above as the fraction of AIDS cases resulting from IDU yields an estimate of 24 drug-related deaths. Following the same methodology as outlined in Chapter 4, the economic loss associated with these 24 premature deaths would be \$18,290,000. (These costs are included in the overall mortality cost estimates presented in Chapter 4.)

Morbidity costs of AIDS and HIV disease, representing reduced productivity as measured by earnings, were estimated to be approximately \$7,423,000, based on the methodology described in Chapter 3. Table 7.1 summarizes the cost estimates.

Table 7.1
Cost Associated with HIV/AIDS
Washington, 2005

Type of Cost	Total (\$)
Direct	
Medical	56,865,000
Nonpersonal	2,084,440
Indirect	
Mortality	18,290,000
Morbidity	7,423,000
Total	\$84,662,440

Hepatitis B

Hepatitis B (HBV) is an infectious disease that is most often transmitted by injection drug use, heterosexual contact with an infected person or multiple partners, and homosexual activity. On a national basis, approximately 28% of all HBV cases are related to injection drug use (Morbidity & Mortality Weekly Report, 1990). Some additional cases result from transmission of HBV from injection drug users to non-injection drug users through sexual activity, but reliable estimates of how frequently this occurs do not exist, so cost estimates related to this form of transmission are not presented.

The prevalence of HBV in Washington peaked in 1989 at approximately 25 per 100,000. Since that time the prevalence has dropped steadily, reflecting broader national trends. In 1996, there were 255 reported cases of HBV in Washington, and in 2005 only 80 incident cases of HBV were reported through the State Health Department surveillance system. Consistent with the decline in HBV incidence, the death rate from HBV also declined. In 1996, there were 28 HBV deaths, 8 of which were attributed to IDU (injected drug use), whereas in 2005 there were zero reported HBV deaths (Table 4.3). The underlying prevalence of HBV is unknown, since many persons remain symptom-free for long periods of time. Reliable data on HBV prevalence for active cases is unavailable. The only costs associated specifically with HBV would be medical costs for treatment and indirect costs representing reduced morbidity (mortality costs would equal zero since no deaths were recorded). Conservatively, it could be assumed that the 80 incident HBV cases received medical care during 2005. Data suggest the annual cost for treating HBV cases where the disease has not progressed is approximately \$2,500. This figure implies aggregate medical costs of \$200,000.

Persons with more advanced liver disease arising from HBV would also need treatment, but it is unclear how many such persons would have received treatment. Data presented in Chapter 6 (Table 6.1) indicate that in 2005 188 persons were hospitalized

for treatment of cirrhosis without mention of alcohol and 8 persons were hospitalized with chronic hepatitis. The total cost of treating these cases was \$6.5 million. Clinically speaking it could reasonably be assumed that the substantial majority (75%) of patients with a diagnosis of cirrhosis without mention of alcohol acquired that condition as a result of HBV. Twenty-eight percent of those patients would have acquired HBV from IDU. Thus, of the \$6.5 million in medical costs, it could reasonably be assumed that 21% (.75 X .28) of the costs, or \$1,365,000, could be attributed to IDU.

Given the uncertainty of the data, it is difficult to estimate morbidity costs. At a minimum, the 80 incident cases would incur morbidity costs. But other persons with more advanced liver disease arising from HBV would also incur morbidity costs. Unfortunately, there are no reliable data on the number of such cases but they could represent a sizeable number of persons. In the absence of data, we have chosen to use the figure from the earlier 1996 cost report (\$2,075,000), updated to reflect the increase in prices over the nine-year interval. The adjusted estimate is \$2,573,000. Total HBV costs associated with injected drug use are summarized in Table 7.2.

Table 7.2
Cost of Hepatitis B (HBV) Associated with
Injected Drug Use, Washington, 2005

Type of Cost	Total (\$)
Medical Cost	1,565,000
Morbidity Cost	2,573,000
Total	4,138,000

Summary

This chapter has summarized the costs associated with two specific diseases that are closely linked to drug abuse, AIDS and hepatitis B. The total estimated costs of these two diseases were, respectively, \$84,662,440 and \$4,138,000. Injection drug use is a major risk factor for both AIDS and hepatitis B. Drug use not only threatens the lives of drug users, but also places others at risk for serious illness or possible premature death when injection drug users engage in unsafe sexual practices.

Chapter 8 Other Related Costs

In addition to the costs examined in the previous chapters, there are three other drug- and alcohol-related costs that are included in this analysis. These are the costs of social welfare administration, fire destruction and non-medical costs of motor vehicle accidents. Cost estimates for social welfare administration and fire destruction were based upon national cost figures that were extrapolated to Washington State. Cost estimates for motor vehicle accidents were based on state data on accident rates and on attributable risk coefficients taken from Rice et al. (1990) and from the NIDA/NIAAA (1998) national cost report. Of these three cost categories, by far the largest cost was for motor vehicle accidents. Social welfare administrative costs and fire destruction costs were small in comparison. The methods used to derive each of the cost estimates are discussed as part of the results sections.

The major findings of the analysis were:

- An estimated \$18.3 million was spent on social welfare administration in Washington during 2005 related to drug and alcohol abuse.
 - Alcohol is believed to play a role in a large proportion of fires started as a result of smoking. In 2005, the estimated cost of these fires was approximately \$9 million.
 - There were 109 fatal motor vehicle accidents and 37,986 non-fatal injury accidents during 2005.
 - The total nonmedical cost of alcohol-related motor vehicle accidents was \$70.7 million.
-

Results

Social Welfare Administration

Social welfare programs serve individuals with substance abuse problems. Therefore, it is appropriate to include in the estimation of substance abuse economic costs a portion of these expenses for administration. Since direct payments to clients are considered transfer (redistribution) payments, these costs are not included. Actual state-level data representing the budgets of different social welfare programs are difficult to obtain. For the previous two cost reports, national data were gathered and extrapolated to Washington State. For this report the same general approach was followed. Two national reports provide updated information on alcohol- and drug-related social welfare administrative costs. NIAAA sponsored a study to update national alcohol abuse estimates from 1992 to 1998 (NIAAA 2000). Similarly, NIDA sponsored a study to update national drug abuse cost estimates from 1992 to 2002 (Office of National Drug Control Policy 2004). These two reports provide data on drug- and alcohol-related social welfare administrative costs that served as the basis for generating updated 2005 per capita administrative welfare costs for Washington State. These per capita cost estimates were then used to final cost estimates for Washington State.

A number of changes occurred in social welfare programs since 1996 that changed cost estimates. For example, in 1997 drug abuse no longer became a factor that qualified individuals for SSI. Other changes occurred in the food stamp program. As discussed in the national cost reports, only a small proportion (usually < 5%) of social welfare administrative costs can be attributed to drug or alcohol abuse (NIAAA 2000; Office of National Drug Control Policy 2004). In the previous 1996, we estimated drug- and alcohol-related social welfare administrative costs of approximately \$8.9 million. On a national level, total drug- and alcohol-related costs for 2005 were estimated at \$870 million, with alcohol abuse accounting for 65% of these costs. Based upon per capita national expenditures, it was estimated state drug- and alcohol-related costs for social welfare administration would be \$18.3 million.

Fire Destruction

Alcohol plays in a role in economic losses resulting from fire destruction. While the extent of this role is unclear, the best available information from an early study (Berry & Boland 1977) suggests that approximately 6.1% of all fire destruction can be linked to alcohol. Our earlier 1996 cost analysis indicated the annual alcohol-related fire destruction costs in Washington were \$7.9 million. Recent research (Karter 2006) indicates the cost of property damage caused by fires on a national basis was \$7 billion in 2005. Extrapolating this cost to Washington State would imply corresponding costs of \$8,967,000 for Washington State.

Motor Vehicle Accidents

Use or abuse of drugs and alcohol is a significant risk factor for motor vehicle accidents. Costs resulting from alcohol- or drug-related accidents result from premature death, medical care, vehicle damage, and legal and court costs. The costs related to premature death have been presented in Chapter 4, and the costs related to medical care were reported in Chapter 6. This section reports on other motor vehicle accident costs, including legal and court costs, insurance administration, and vehicle damage. Data on the cost per accident comes from a detailed study by Blincoe and Faigin (1992). Data on the number and type (injury versus non-injury) of motor vehicle accidents comes from the Washington State Department of Transportation. While drug abuse is believed to contribute to some accidents, there is no published, reliable research on the frequency of drug-related accidents that do not involve alcohol. Because of this lack of data, the recent NIDA/NIAAA (1998) national cost study limited its cost estimates to alcohol-related crashes only. The same approach is followed here.

Based on available data maintained by the National Highway Traffic Safety Administration and on the research of Blincoe and Faigin (1992), the following alcohol attributable fractions were used for the analysis: fatal crashes, 39.7%; non-fatal injury accidents, 20%; and property damage only accidents, 13.9%. Below are shown the numbers of accidents by type of accident and the estimated cost per accident for Washington in 2005.

**Table 8.1
Number of Alcohol-Related Accidents and Cost by Type
of Accident, Washington, 2005**

	Fatal Accidents	Non-Fatal Injury Accidents	Property Damage Only Accidents
Total accidents	274	5,900	32,086
Number of alcohol-related accidents	109	1,180	4,460
Legal/Court	\$89,454	\$9,715	\$140
Insurance Administration	\$42,169	\$11,745	\$128
Vehicle Damage	\$14,119	\$10,851	\$3,470

Based on the above information, estimates were derived representing the nonmedical alcohol-related costs associated with motor vehicle accidents (see Table 8.2). The total costs were estimated at \$70.7 million. The most costly accident category was non-fatal injury accidents, which accounted for 54% of total costs. Although on a per crash basis, fatal accidents were much more costly, such accidents made up only a small percentage of all accidents.

Table 8.2
Nonmedical Costs Associated with Motor Vehicle Accidents
Washington, 2005

	Fatal Accidents (\$)	Non-Fatal Injury Accidents (\$)	Property Damage Only Accidents (\$)	Total Costs (\$)
Legal / Court	9,750,486	11,463,700	624,400	21,838,586
Insurance Administration	4,596,421	13,859,100	570,880	19,026,401
Vehicle Damage	1,538,971	12,804,180	15,476,200	29,819,351
Total Costs	\$15,885,878	\$38,126,980	\$16,671,480	\$70,684,338

Note: Numbers may not add up due to rounding.

Summary

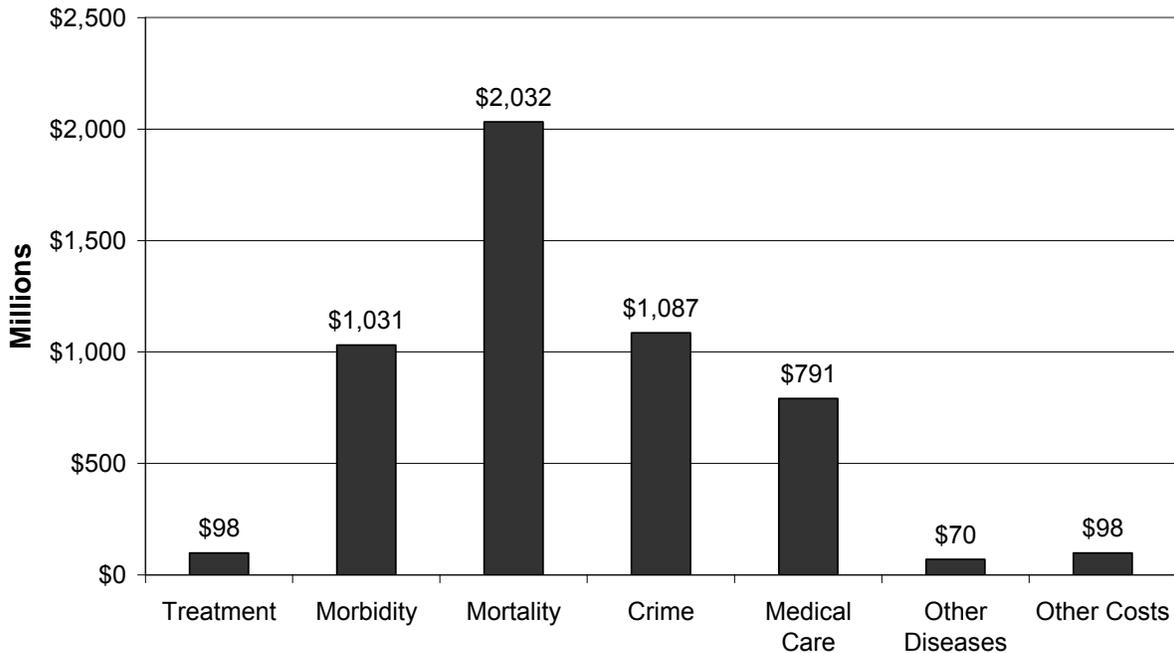
This chapter presented estimates for selected costs not included in previous chapters. Of the three cost categories examined, social welfare administration, fire destruction, and nonmedical motor vehicle accident costs, the third category was by far the most prominent, accounting for over 70% of all costs. Within this category, vehicle damage resulted in the greatest cost, \$29.8 million out of \$70.7 million. There were 109 fatal crashes involving alcohol in Washington in 2005 and approximately 38,000 other crashes, 5,900 of which involved a personal injury. This analysis highlights the significant economic loss associated with alcohol use and abuse resulting from motor vehicle accidents.

CHAPTER 9 SUMMARY

Summary of Findings

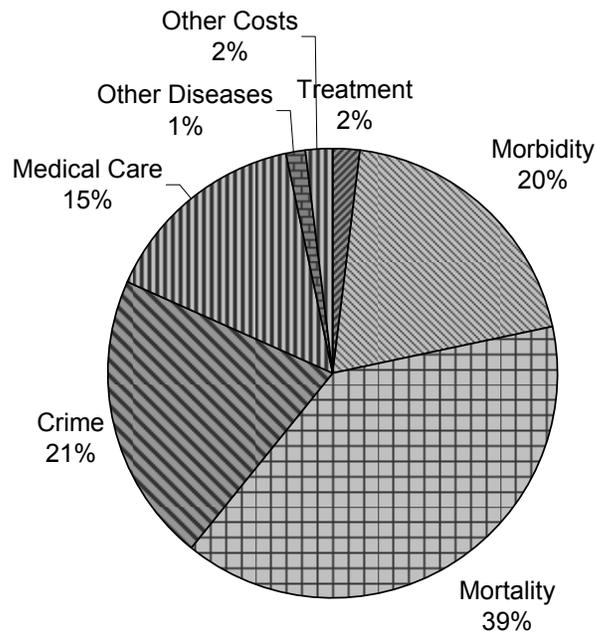
The total economic cost of drug and alcohol abuse in Washington in 2005 was estimated at \$5.21 billion. Figure 9.1 summarizes these costs for the seven areas analyzed in the previous chapters. As shown, the largest single cost category was mortality, which accounted for \$2.03 billion. The next largest cost category was crime (\$1.09 billion), followed by morbidity (\$1.03 billion) and medical care (\$791 million). The \$5.21 billion translates into a (per capita) cost of \$832 for every non-institutionalized person in Washington State.

Figure 9.1: Economic Costs of Drug and Alcohol Abuse in Washington, 2005



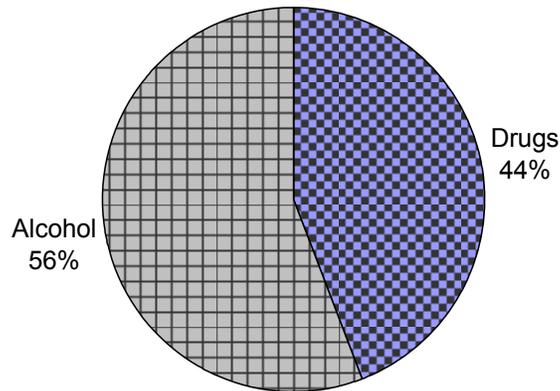
The percentage distribution of costs is shown in Figure 9.2. As shown, mortality accounted for 37% of total costs, followed by crime (24%) and morbidity (19%).

Figure 9.2: Distribution of Economic Costs



As shown in Figure 9.3, in 2005 alcohol abuse accounted for 56% of total costs, drug abuse accounted for the remaining 44%. The corresponding percentage figures for 1996 presented in the earlier cost report (Wickizer 1999) were 59% and 41%, respectively. The increase in the proportion of total costs accounted for by drug abuse reflects the relative increase in crime costs.

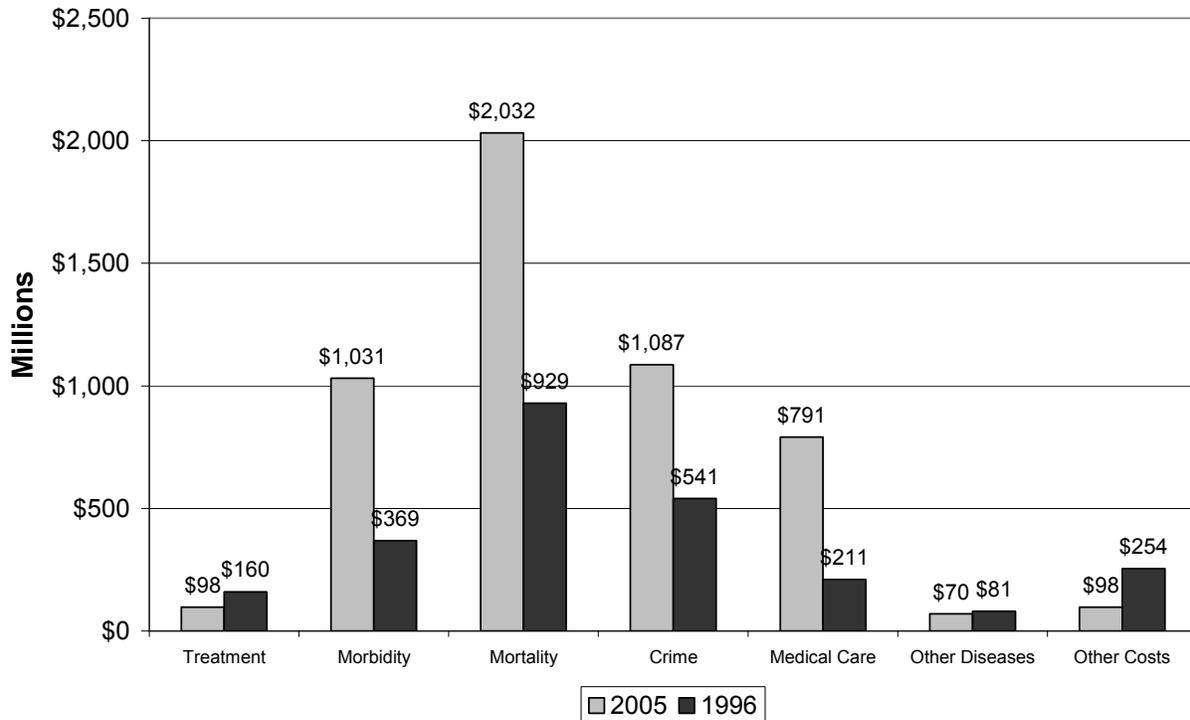
Figure 9.3: Alcohol Versus Drug Costs



The costs of drug and alcohol abuse increased from \$2.54 billion in 1996 to \$5.21 billion in 2005, or 105%. Figure 9.4 shows the changes in costs for the different cost categories. The cost categories with the largest absolute expenditure increases were mortality (\$1.2 billion), crime (\$729 million) and morbidity (\$662 million). On a relative basis, the cost of medical care increased the most—almost 400%. The decrease in costs for treatment and “other costs” reflects changes in estimation procedures and data sources.

Part of the observed increase in costs reflects the effect of inflation and the growth in state population. Between 1996 and 2005 prices increased by 24%, so roughly a quarter of the cost increase would be due to inflation. During this same period, the state’s population increased by approximately 12%. We can adjust for these two factors by calculating the inflation-adjusted per capita costs for 1996 and 2005. These costs, respectively, are \$565 and \$832. Thus, on a relative basis the per capita economic costs (in constant dollars) of drug and alcohol abuse in Washington increased by 47% from 1996 to 2005.

Figure 9.4: Comparison of 1996 and 2005 Costs



The goal of this report was to document the economic costs associated with drug and alcohol abuse. But readers should keep in mind that drug abuse and alcohol abuse also have serious--often tragic--consequences that affect families and individuals in ways that cannot be quantified through economic analysis. In 2005, it was estimated that 3,224 persons died of causes related to drug or alcohol abuse. These deaths resulted in a loss of approximately 89,000 years of potential life. The problem of drunk driving affects thousands of persons. In 2005, there were 109 fatalities in Washington involving alcohol-related automobile accidents and over 1,000 injuries. Approximately 5% of these injuries could be classified as severe or critical, and some may result in lifelong disability.

How do the costs reported here for Washington State compare with the national as whole? Though differences in methods, definitions and data make detailed comparisons hazardous, limited general comparisons can be made. Updated cost estimates from the earlier two national studies (NIAAA 2000; Office of National Drug Control Policy 2004) imply that total economic costs in 2005 for drug and alcohol abuse in the U.S. were on the order of \$413 billion. Assuming Washington's cost reflected the national average, estimated 2005 costs for the state would be approximately \$8.7 billion instead of \$5.2 billion. In other words, Washington's costs are almost 40% lower than would be expected based upon national cost estimates. Whether, or the extent to which, these cost differences are a result of Washington State's treatment and prevention efforts is unclear. It is plausible that at least some of the difference is a result of Washington's treatment and prevention efforts.

Between 1996 and 2005, the cost of drug abuse grew more rapidly than the cost of alcohol abuse. A major reason for this was the increase in incarceration of drug offenders. While debate continues about the wisdom of incarcerating nonviolent individuals for drug offenses as opposed to expanding access to treatment under controlled circumstances, it is clear that incarceration is costly. More research is needed about the long-term deterrent effects of incarceration versus a greater reliance on treatment. Research on the use of criminal drug courts as an alternative to the traditional adjudication process and incarceration has generated promising findings (Belenko 1998).

One question raised by the cost estimates presented in this report is the following: Are we putting enough resources into preventing and treating the serious problem of drug and alcohol abuse? Washington State devotes significant resources to prevention and treatment, yet, as this report indicates, these resources are very limited in comparison to the economic burden imposed by substance abuse. As discussed in the 2003 Washington State Needs Assessment Household Survey (WANAHS), significant gaps in treatment remain with only a small percentage of persons needing treatment actually getting it.

The results of this study can also be placed in context by considering the amount of revenue collected by the state through specially designated alcohol taxes in relation to the total economic loss resulting from alcohol abuse. In fiscal year 2005, approximately \$150 million was gathered through state alcohol excise taxes levied on beer, wine and spirits. For every \$1 the state collected in tax revenue from alcohol sales in 2005, \$20 was “spent” on problems arising from alcohol abuse.

Washington State suffers considerable economic loss as a result of substance abuse. This loss for 2005 alone was estimated at \$5.21 billion, or \$832 for every non-institutionalized person in the state. Continued attention needs to be directed at finding more effective ways to reduce the economic and human loss arising from substance abuse.

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