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## Chapter One: Overview

### **The nature of addiction**

Developing a fact book about addiction is a difficult task because there is no consensus on the nature or defining qualities of addiction. While we might refer to such behavior as indiscriminate sexual activity or intemperate eating habits as addictions, the average person might have a hard time describing addiction in objective terms or explaining when normal behavior crosses the line and becomes unhealthy and compulsive. Similarly, professionals and scientists who work with people experiencing these problems have yet to agree on criteria that define and differentiate addiction from other mental or physical disorders that could also account for the displayed behavior. Some believe that addictions do not exist at all. All this confusion makes it difficult to determine which behaviors should be considered addictions and included in this fact book.

Even with all this confusion in the addictions field, four definitions of addiction have been identified. The first describes addiction as a physical dependence. This dependence is characterized by an increasing tolerance for a drug or substance or a need to use more and more of the substance in order to achieve the same level of satisfaction. Dependence is also characterized by physical or mental reactions to discontinuation of the substance also known as withdrawal symptoms.

There are two problems with this definition. First, this description can only be used for addictions where a substance is ingested, inhaled, or injected. This would leave out behaviors such as gambling or Internet use. Second, not all substances create physical tolerance nor does stopping their use result in stereotypical withdrawal symptoms. Cocaine and marijuana do not create the physical dependency described here but many people would still consider them to be addictive.

The second definition explains addiction as a psychological dependence characterized by the craving for or compulsion to engage in the behavior, a continued use or engagement in the behavior despite negative consequences, and an inability to control the behavior (Shaffer, 1999). This is probably what most people think about when referring to something as addictive and some believe that this is the facet of addiction with which we should be most concerned.

The third definition has only recently begun to emerge and traces addiction to genetic, physiological, or chemical origins. For example, levels of dopamine, a chemical in the brain associated with pleasure, have been found to be associated with the ingestion of a wide variety of drugs (Stilkind, 1997). A person's genetic make-up may also affect how their body regulates dopamine and consequently how they will respond to a substance (Nash, 1997).

The fourth definition relies on criteria specified in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). This manual is the clinical standard for defining and diagnosing a wide range of psychological disorders. Drug

dependency and pathological gambling are defined in the DSM-IV and the criteria for these disorders are provided later in the fact book.

Given the disagreement about the definition of addiction and the uncertainty with which some addictions are perceived, the concept of addiction should be applied cautiously. This fact book does not intend to advocate for or refute the existence of any addiction. It is only meant to present data from studies that have investigated these problematic behaviors.

### **How the fact book was developed**

Knowing that the field of addictions is large and varied, a brief search of the popular and scientific literature was conducted to determine the kinds of behaviors that were being written about and studied. Based on this initial review, five behaviors were identified whose addictive potential was frequently mentioned: drug use, gambling, Internet use, eating, and sexual activity. A more extensive review was conducted in each of these five areas to determine if:

1. Criteria for defining and identifying an addiction associated with the behavior had been adequately established, and
2. There was enough information about the addiction to report in a fact book format.

It was decided to include drug dependency, pathological gambling, and problematic Internet use in the fact book.

As mentioned above, drug dependency and pathological gambling both have clinical definitions and are considered diagnosable disorders by the American Psychiatric Association. In addition, these two disorders have been studied in national surveys and a significant amount of research has been devoted to them. Problematic Internet use does not have an agreed upon definition and has yet to be clinically recognized. It was included because the small body of research provides interesting information about possible clinical criteria for problematic Internet use, its impact on well-being, and its prevalence in the population.

The literature on food and sexual addictions lacked criteria that could be used to differentiate these addictions from other related food and sexual disorders such as bulimia or fetishes. The material reviewed also failed to provide data on the occurrence of these behaviors, their consequences on well-being, or characteristics of the people affected by the behavior.

### **A note about the information and terms in the fact book**

All information in this book was collected from research that has already been conducted. The monitoring systems for these behaviors are limited if they exist at all and there is no one, definitive source for information about this topic. The research reported in this book runs the gamut from national surveys whose findings can be generalized to the U.S. population to research conducted on smaller and specific groups of people. Where possible, data specific to Arizona is included.

To provide some consistency, the terms substance dependency, pathological gambling, and problematic Internet use will be used in the fact book's narrative. Information in the tables is presented as it appears in the original source so the terms used to refer to a behavior in the tables may vary from those appearing in the narrative.

Citations are provided for all tables and information presented in the narrative. The reference list also includes addresses for information that is available on the Internet. Interpretation or positions based on the data have been avoided but positions from other sources are stated to help make the data more meaningful.

## Chapter 2: Substance Dependence

### **Introduction**

Substance use and dependence exact a large toll on our society both financially and socially. According to the National Drug Control Strategy 2000 Annual Report, illegal drugs cost the U.S. \$110 billion in 1995 in expenses and lost revenue (Office of National Drug Control Policy [ONDCP], 2000). \$9.9 billion in 1992 and nearly \$12 billion in 1995 was spent on health care due to drug abuse. A recent report from the National Center on Addiction and Substance Abuse (2001) estimates that of the \$620 billion state governments spent on public services in 1998, 13.1 percent or \$81.3 billion was spent addressing directly or indirectly the affects of substance abuse.

Drug use is associated with a variety of social problems including crime, family violence, sexual assaults, and child abuse (ONDCP, 2000). More than 1.5 million Americans were arrested for drug law violations in 1999 (ONDCP, 2001). Of the adult male arrestees in 34 study sites, at least 50 percent of them tested positive for at least one drug. Drug related offenses have accounted for 19 percent of the total growth in the state inmate population (ONDCP, 2000) and nearly 60 percent of inmates in the federal prison system were sentenced for drug offenses. Approximately one in four inmates are drug offenders.

Studies have found that one fourth to one half of men who commit domestic violence acts have substance abuse problems (ONDCP, 2000) and substance abusing women are more likely to become victims of domestic violence. Alcohol contributes to more cases of sexual violence than any other drug. It is involved in 46 to 75 percent of date rapes among college students and two-thirds of sexual offenders in state prison reported being under the influence of alcohol or other drugs at the time the crime was committed. Reports estimate that seven of ten cases of child maltreatment in the United States can be attributed in some way to substance abuse.

In 1997, 15,973 drug-induced deaths were reported in the United States (ONDCP, 2000). It is estimated that 52,624 drug related deaths occurred in 1995. In 1998, approximately 982,856 visits were made to emergency rooms across the country in which drug use was mentioned. TIME Magazine reported in 1997 that addiction to drugs, cigarettes, and alcohol was considered to account for a third of all hospital admission and a quarter of all deaths (Nash, 1997).

It is important to draw a distinction between substance use and substance dependence. Substance dependence, or the intense craving for and desire to use substances, has a physical and psychological component. Some drugs such as alcohol and heroin can create a physiological reliance so that when the drug ceases to be taken, a physical response or withdrawal symptom occurs (Stilkind, 1997). Other drugs, such as cocaine or methamphetamine, do not display these dramatic withdrawal symptoms when they cease to be taken. However these drugs do create a psychological reliance characterized by intense craving and compulsivity to obtain and use the substance, often even when doing so could result in serious health or social consequences. A person may use a drug,

sometimes repeatedly, and not experience the physical or psychological effects that define dependency.

The DSM-IV's criteria for substance dependence is presented in Table 2.1.

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Table 2.1: DSM IV Criteria for Substance Dependence.

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1. Tolerance, as defined by either of the following:
  - A need for markedly increased amounts of the substance to achieve intoxication or desired effect.
  - Markedly diminished effect with continued use of the same amount of the substance.
2. Withdrawal as manifested by either of the following:
  - The characteristic withdrawal syndrome for the substance.
  - The same substance is taken to relieve or avoid withdrawal symptoms.
3. The substance is often taken in larger amounts or over a longer period than was intended.
4. There is a persistent desire or unsuccessful efforts to cut down or control substance use.
5. A great deal of time is spent in activities necessary to obtain the substance, use the substance, or recover from its effects.
6. Important social, occupational, or recreational activities are given up or reduced because of substance use.
7. The substance use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by the substance.

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Source: American Psychiatric Association, 1994. *Desk Reference to the Diagnostic Criteria from DSM-IV*.

The reader should note that the terms substance dependence and drug addiction are often used interchangeably. Substance dependence will be used in this fact book to remain consistent with DSM-IV terminology.

### **National estimates of substance use and dependence**

The following section presents information about substance dependence and the need for drug treatment in the U.S.

Current estimates of substance use and dependency can be obtained from the National Household Survey on Drug Abuse. This annual study measures the use of alcohol and

illicit drugs and dependence on these substances in the U.S. The Survey uses the DSM-IV criteria to screen for substance dependency.

According to the 1999 study (Substance Abuse and Mental Health Services Administration [SAMHSA], 2000), approximately 14.8 million Americans, 12 years and older, have used an illicit substance in the past 30 days. 3.6 million Americans, or 1.6 percent of the population age 12 and older, were dependent on illicit drugs. Another 8.2 million individuals, or 3.7 percent of the population, reported alcohol dependency. 1.5 million people were dependent on both alcohol and illicit drugs and 10.3 million people were dependent on either alcohol or illicit drugs.

The following tables present substance dependency statistics in a variety of ways. An overview of the nation's dependence on illicit drugs and alcohol is presented in Table 2.2. Approximately 1.6 percent of the population meets the clinical definition of dependency for illicit drugs, 3.7 percent meet the definition for alcohol dependency, and 4.7 percent are dependent on either illicit drugs or alcohol. Males are almost twice as likely to be dependent on illicit drugs or alcohol. Native Americans are estimated to have the highest rates of illicit drug and alcohol dependency of all racial and ethnic groups.

Trends in illicit drug dependency are shown in Table 2.3. In 1994, the survey questionnaire was changed. Results using both the old (1994-A) and new (1994-B) questionnaire are included in the table below. With the exception of individuals between the ages of 12 and 17, drug dependency rates for all groups were highest in 1996.

More detailed information about how substance dependency affects various age groups is reported in Table 2.4. People between the ages of 18 and 25 report the highest rates of past year illicit drug dependency for almost all drugs. Substance dependency rates quickly decrease after the age of 25.

Table 2.2. Percentages of Persons Aged 12 or Older Reporting Past Year Illicit Drug or Alcohol Dependence, by Demographic Characteristics: 1999.

Demographic Characteristic	Type of past year dependence		
	Any Illicit Drug	Alcohol	Any Illicit Drug or Alcohol
Total	1.6	3.7	4.7
Age			
12-17	3.3	3.6	5.7
18-25	4.7	9.2	11.9
26 or Older	0.9	2.8	3.3
Gender			
Male	2.0	4.9	6.0
Female	1.3	2.6	3.4
Hispanic origin and race			
Not Hispanic			
White Only	1.5	3.8	4.6
Black Only	2.3	3.1	4.6
American Indian or Alaska Native Only	4.7	5.1	9.0
Native Hawaiian or Other Pacific Islander	*	*	*
Asian Only	0.8	2.2	2.7
Multiple Race	2.6	7.7	9.3
Hispanic	1.9	3.9	4.8

\*Low precision; no estimate reported.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.3: Percent of Population Age 12 and Older Dependent on any Illicit Drug by Year and Demographic Characteristics.

Group	1991	1992	1993	1994-A	1994-B	1995	1996
Total	1.3	1.0	1.1	0.9	1.4	1.6	1.8
<b>Gender</b>							
Male	1.6	1.3	1.4	1.0	1.9	2.0	2.3
Female	0.9	0.8	0.9	0.8	1.0	1.2	1.2
<b>Race</b>							
White	1.2	1.0	1.1	1.0	1.4	1.6	1.7
Black	1.8	1.0	1.5	1.1	1.9	1.7	2.4
Hispanic	1.3	1.3	1.0	1.1	1.7	1.4	1.8
<b>Age</b>							
12-17	2.0	1.5	1.7	2.2	2.1	3.9	3.6
18-25	3.0	2.8	2.8	3.0	4.1	4.5	5.4
26-34	1.5	1.4	1.6	1.0	1.9	1.9	2.1
35+	0.6	0.4	0.5	0.2	0.5	0.4	0.6

Note: Estimates are not ratio-adjusted to partially account for underestimation due to under reporting and undercoverage in the NHSDA.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.4: Percentages Reporting Past Year Substance Dependence, by Age Group: 1999, U.S.

	Total	Age group (years)		
		12-17	18-25	26 or Older
Any Illicit Drug	1.6	3.3	4.7	0.9
Marijuana and Hashish	1.0	2.6	3.5	0.4
Cocaine	0.3	0.2	0.9	0.3
Heroin	0.1	0.1	0.1	0.1
Hallucinogens	0.1	0.3	0.5	0.0
Inhalants	0.0	0.2	0.1	0.0
Nonmedical Use of Any Psychotherapeutic	0.3	0.7	0.7	0.2
Pain Relievers	0.2	0.5	0.5	0.1
Tranquilizers	0.1	0.1	0.2	0.0
Stimulants	0.1	0.2	0.3	0.1
Sedatives	0.0	0.1	0.1	0.0
Alcohol	3.7	3.6	9.2	2.8
Alcohol or Illicit Drugs	4.7	5.7	11.9	3.3
Alcohol and Illicit Drugs	0.7	1.2	2.0	0.4

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Detailed age breakdowns are provided in Table 2.5.

Table 2.5: Percentages Reporting Past Year Illicit Drug or Alcohol Dependence, by Detailed Age Categories: 1999, U.S.

Age Category	Type of past year dependence		
	Any Illicit Drug	Alcohol	Any Illicit Drug or Alcohol
Total	1.6	3.7	4.7
12	0.5	0.2	0.6
13	1.0	1.0	1.7
14	2.8	2.6	4.5
15	3.9	4.3	6.6
16	5.8	6.5	9.9
17	5.8	6.9	10.7
18	6.8	9.6	13.2
19	6.5	9.6	13.7
20	5.5	10.4	13.5
21	4.6	11.7	14.2
22	4.9	10.2	12.8
23	3.8	8.5	10.9
24	2.5	5.7	7.6
25	1.7	6.6	7.6
26-29	1.8	5.5	6.6
30-34	1.7	4.0	5.2
35-39	1.3	3.9	4.8
40-44	1.7	4.4	5.0
45-49	0.7	3.4	3.8
50-64	0.2	1.4	1.4
65+	*	0.5	0.5

\*Low precision; no estimate reported.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

The following three tables provide drug and alcohol dependency rates by a variety of demographic characteristics for individuals in the 12 to 17, 18 to 25, and 25 and older age groups. 5.7 percent of youth, ages 12 to 17, report dependence on drugs and alcohol, 11.9 percent of young adults between the ages of 18 and 25 report substance dependency, and 3.3 percent of people over the age of 26 are dependent on alcohol or drugs.

Native Americans report the highest rates of illicit drug and alcohol dependency among those people ages 12 to 25. Nearly one in five Native Americans between the ages of 18 and 25 are dependent on alcohol or drugs. Unemployed people are more likely to have an alcohol or drug dependency, especially those who are 26 years or older.

Table 2.6: Percentages of Persons Aged 12 to 17 Reporting Past Year Illicit Drug or Alcohol Dependence by Demographic Characteristics: 1999.

Demographic Characteristic	Type of past year dependence		
	Any Illicit Drug	Alcohol	Any Illicit Drug or Alcohol
Total	3.3	3.6	5.7
Gender			
Male	3.3	3.3	5.6
Female	3.3	3.9	5.8
Hispanic origin and race			
Not Hispanic			
White Only	3.4	4.0	6.0
Black Only	2.5	1.4	3.4
American Indian or Alaska Native Only	7.9	6.6	10.5
Native Hawaiian or Other Pacific Islander	*	*	*
Asian Only	2.2	1.9	3.6
Multiple Race	4.1	1.8	5.2
Hispanic	4.0	4.4	7.0
Gender/race/Hispanic origin			
Male - White	2.8	3.7	5.5
Female - White	3.9	4.4	6.6
Male - Black	3.2	1.3	4.0
Female - Black	1.7	1.5	2.7
Male - Hispanic	4.9	4.2	7.7
Female - Hispanic	3.0	4.7	6.3

\*Low precision; no estimate reported.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.7: Percentages of Persons Aged 18 to 25 Reporting Past Year Illicit Drug or Alcohol Dependence, by Demographic Characteristics: 1999.

Demographic Characteristic	Type of past year dependence		
	Any Illicit Drug	Alcohol	Any Illicit Drug or Alcohol
Total	4.7	9.2	11.9
Gender			
Male	6.1	11.2	14.7
Female	3.4	7.1	9.1
Hispanic origin and race			
Not Hispanic			
White Only	4.9	10.5	13.4
Black Only	4.4	5.3	8.1
American Indian or Alaska Native Only	8.0	14.6	19.5
Native Hawaiian or Other Pacific Islander	*	*	*
Asian Only	3.3	6.0	7.5
Multiple Race	9.3	11.5	15.8
Hispanic	4.0	7.1	9.0
Adult education			
< High School	7.3	8.9	13.1
High School Graduate	4.5	7.9	10.6
Some College	4.2	10.6	13.2
College Graduate	2.1	9.3	10.3
Current employment			
Full-Time	4.3	8.5	11.3
Part-Time	4.9	10.0	12.6
Unemployed	8.3	11.0	15.5
Other <sup>1</sup>	4.6	9.2	11.6

\*Low precision; no estimate reported.

<sup>1</sup> Retired, disabled, homemaker, student, or "other."

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.8: Percentages of Persons Aged 26 or Older Reporting Past Year Illicit Drug or Alcohol Dependence, by Demographic Characteristics: 1999, U.S.

Demographic Characteristic	Type of past year dependence		
	Any Illicit Drug	Alcohol	Any Illicit Drug or Alcohol
Total	0.9	2.8	3.3
Gender			
Male	1.1	4.0	4.6
Female	0.7	1.7	2.2
Hispanic origin and race			
Not Hispanic			
White Only	0.7	2.8	3.2
Black Only	1.9	3.0	4.1
American Indian or Alaska Native Only	3.8	3.4	7.1
Native Hawaiian or Other Pacific Islander	*	*	*
Asian Only	*	1.5	1.6
Multiple Race	*	8.3	8.6
Hispanic	0.9	2.9	3.2
Adult education			
< High School	1.4	3.6	4.2
High School Graduate	0.6	2.5	2.9
Some College	1.2	2.9	3.7
College Graduate	0.5	2.5	2.9
Current employment			
Full-Time	0.8	3.3	3.8
Part-Time	0.8	2.6	3.0
Unemployed	6.0	11.6	14.8
Other <sup>1</sup>	0.5	1.4	1.7

\*Low precision; no estimate reported.

<sup>1</sup> Retired, disabled, homemaker, student, or "other."

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Detailed race/ethnicity data for National Household Surveys conducted from 1991 to 1993 are presented in Tables 2.9 and 2.10. The following table reports alcohol dependency rates by demographic characteristics.

Table 2.9: Percentage Reporting Dependence on Alcohol, by Race/Ethnicity, Gender, and Age, 1991-1993.

Race/Ethnicity	Total	Female	Male	12-17	18-25	26-34	35+
Total surveyed population	3.5	2.1	4.9	2.7	8.0	4.7	2.2
Native American	5.6	6.8	4.3	*	*	*	*
Asian/Pacific Islander	1.8	0.7	3.0	0.4	2.3	2.9	1.5
Hispanic-Caribbean	1.9	0.3	3.6	0.0	*	1.3	1.5
Hispanic-Central America	2.8	0.8	5.4	1.6	5.0	3.9	1.0
Hispanic-Cuba	0.9	0.5	1.3	0.5	2.7	1.6	0.4
Hispanic-Mexico	5.6	2.6	8.4	3.5	7.3	8.4	3.8
Hispanic-Puerto Rico	3.0	1.6	4.7	1.7	4.2	4.8	2.3
Hispanic-South America	2.1	1.8	2.4	2.0	4.2	3.4	*
Hispanic-Other	3.1	1.9	4.5	2.7	8.5	4.7	1.7
Non-Hispanic black	3.4	2.0	5.2	1.6	4.6	4.5	3.1
Non-Hispanic white	3.4	2.2	4.8	3.0	9.1	4.5	2.0

\*Low precision.

Source: SAMHSA, 1998b. *Prevalence of Substance Use among Racial and Ethnic Subgroups in the United States, 1991-93.*

Table 2.10 compares a variety of drug use and dependency statistics by detailed racial/ethnic categories.

Estimations of treatment need are necessary to predict demand on the health care system (SAMHSA, 1998a). The National Household Survey on Drug Abuse defines treatment need differently than substance use or substance dependence. It also makes a distinction between Level 1 treatment need or less severe problems and Level 2 treatment need or persons with severe problems (SAMHSA, 1998a). A person is considered to have a Level 1 treatment need if one or more of the following criteria are met:

1. Drug dependence: Use of a specific drug in the past year and meet three of the six DSM-IV criteria that define drug dependence.
2. Heavy drug use: Have done any of the following in the past year: a) used heroin daily, b) used marijuana daily, or c) used any other illicit drug on a weekly basis.

Table 2.10. Percentage of Persons 12 and Older Using Cigarettes, Alcohol, Any Illicit Drugs, Marijuana, and Cocaine in the Past Year, Percentage in Need of Illicit Drug Abuse Treatment, Percentage Reporting Dependence on Alcohol, Percentage Reporting Heavy Cigarette Use in the Past Month, and Percentage Reporting Heavy Alcohol Use in the Past Month, by Race/Ethnicity, 1991-1993.

Race/ethnicity	Cigarette use-past year	Alcohol use-past year	Any illicit drug-past year	Marijuana -past year	Cocaine-past year	Need drug abuse treatment	Alcohol dependence	Heavy cigarette use-past month	Heavy alcohol use-past month
Total surveyed population	30.9%	66.4%	11.9%	9.0%	2.5%	2.7%	3.5%	13.8%	5.1%
Native American	52.7	63.7	19.8	15.0	5.2	7.8	5.6	23.9	4.6
Asian/Pac Islander	21.7	53.2	6.5	4.7	1.4	1.7	1.8	4.8	0.9
Hispanic-Caribbean	21.2	60.8	7.6	5.6	1.5	1.6	1.9	3.6	2.5
Hispanic-C America	17.9	51.1	5.7	2.7	1.1	1.5	2.8	2.3	2.2
Hispanic-Cuba	27.3	65.7	8.2	5.9	1.7	2.6	0.9	8.9	2.8
Hispanic-Mexico	29.1	63.7	12.7	9.1	3.9	3.6	5.6	4.7	6.9
Hispanic-Puerto Rico	32.7	59.5	13.3	10.8	3.7	3.7	3.0	11.8	4.0
Hispanic-S America	31.3	74.1	10.7	8.4	2.0	1.7	2.1	6.9	3.0
Hispanic-other	25.9	66.3	10.6	9.1	2.3	3.4	3.1	5.3	4.9
Non-Hispanic black	29.9	55.4	13.1	10.6	3.1	3.9	3.4	9.1	4.7
Non-Hispanic white	31.5	68.9	11.8	8.9	2.4	2.5	3.4	15.5	5.3

Note: Heavy cigarette use is defined as smoking a pack or more per day during the past 30 days. Heavy alcohol use is defined as drinking five or more drinks per occasion on 5 or more days during the past 30 days.

Source: SAMHSA, 1998b. *Prevalence of Substance Use among Racial and Ethnic Subgroups in the United States, 1991-93.*

3. Injection drug use: Administered heroin, cocaine, or stimulants with a needle in the past year.
4. Treatment: Received drug abuse treatment at any location in the past year.

A person considered to have a severe or Level 2 treatment need must meet one or more of the following criteria:

1. Drug dependence: Use of a specific drug in the past year and meet three of the six DSM-IV criteria that define drug dependence.
2. Heavy drug use: Have done any of the following in the past year: a) used heroin at least once, b) used marijuana daily and dependent on marijuana, c) used cocaine weekly, or d) used any illicit drug, other than marijuana, daily.
3. Injection drug use: Same as Level 1
4. Treatment: Received treatment for any illicit drug in a specialty facility in the past year.

Table 2.11 estimates the number of people in the United States that have needed and received treatment between 1991 and 1996. A substantial majority of those people needing treatment during this period of time did not receive the necessary services.

Table 2.11: Estimates of Number of Persons Needing and Receiving Treatment for Drug Abuse Problems: NHSDA, 1991-96 (Number of Persons in 1,000s).

	1991	1992	1993	1994	1995	1996
Total Drug Abuse Treatment Need	8,991	8,599	8,067	8,329	8,906	9,383
Level 1 Treatment Need	3,843	3,881	3,326	3,719	4,260	4,080
Persons with Less Severe Problems needing treatment						
Level 2 Treatment Need	5,148	4,718	4,741	4,610	4,646	5,303
Persons with Severe Problems Needing Treatment						
Persons Receiving Treatment	1,649	1,814	1,848	1,984	2,121	1,973
Percent of Level 2 Treated	32%	38%	39%	43%	46%	37%
Percent of Level 2 Not Treated	68%	62%	61%	57%	54%	63%
Treatment Gap	3,499	2,904	2,893	2,626	2,525	3,330

Note: Estimates for 1991-96 are ratio-adjusted to partially account for underestimation due to underreporting and undercoverage in the NHSDA. Estimates for 1991-93 are also adjusted for trend consistency, to account for the change in the NHSDA questionnaire in 1994. Adjustment factors for trend consistency were 1.19020 for total treatment need and 1.21125 for Level 2 treatment need.

Source: SAMHSA, 1998a. *Analyses of Substance Abuse and Treatment Need Issues*.

The percent of the total population in need of treatment is presented in Table 2.12. Treatment need was at its highest in 1996 with 3.4 percent of the population meeting the criteria. Men were twice as likely as women to need treatment and people who were between the ages of 18 and 25 had the highest rates of treatment need.

Table 2.12: Percent of Population Age 12 and Older with Drug Abuse Treatment Need, by Year and Demographic Characteristics.

Group	1991	1992	1993	1994-A	1994-B	1995	1996
Total	3.1	2.7	2.4	2.9	3.1	3.3	3.4
Gender							
Male	3.8	3.3	3.2	4.2	4.3	4.3	4.7
Female	2.4	2.1	1.8	1.7	2.0	2.4	2.2
Race/ethnicity							
White	2.8	2.6	2.1	2.4	3.0	3.2	3.3
Black	4.5	3.5	3.6	5.3	3.9	4.2	4.9
Hispanic	3.3	3.4	3.2	2.5	3.2	3.1	3.1
Age							
12-17	3.6	3.2	3.5	4.0	3.7	5.4	4.8
18-25	6.6	5.9	5.6	6.2	6.0	7.2	8.5
26-34	3.9	4.6	3.9	3.1	4.0	4.3	4.8
35+	1.9	1.2	1.0	1.8	2.0	1.7	1.7

Note: Estimates are not ratio-adjusted to partially account for underestimation due to underreporting and undercoverage in the NHSDA.

Source: SAMHSA, 1998a. *Analyses of Substance Abuse and Treatment Need Issues*.

Table 2.13 presents data for those people categorized as having a Level 2 treatment need. While there are fewer people with these severe problems, the patterns remain the same with men and individuals between 18 and 25 reporting greater treatment need.

A detailed racial/ethnic breakdown of treatment need is shown in Table 2.14.

Table 2.13: Percent of Population Age 12 and Older with Level 2 Drug Abuse Treatment Need, by Year and Demographic Characteristics.

Group	1991	1992	1993	1994-A	1994-B	1995	1996
Total	1.3	1.3	1.2	1.3	1.6	1.6	1.7
Gender							
Male	1.9	1.6	1.5	1.8	2.0	1.9	2.2
Female	1.3	1.0	0.9	1.0	1.1	1.2	1.3
Race/ethnicity							
White	1.3	1.2	1.0	1.2	1.5	1.6	1.7
Black	2.4	1.7	2.0	2.3	2.3	1.7	2.6
Hispanic	2.1	1.6	1.6	1.3	1.5	1.4	1.9
Age							
12-17	1.6	1.3	1.4	1.4	1.5	3.9	2.2
18-25	2.8	3.1	2.4	3.2	2.9	4.5	4.4
26-34	2.2	2.1	1.9	1.7	2.4	1.9	2.7
35+	1.0	0.5	0.6	0.7	1.0	0.4	0.8

Note: Estimates are not ratio-adjusted to partially account for underestimation due to underreporting and undercoverage in the NHSDA.

Source: SAMHSA, 1998a. *Analyses of Substance Abuse and Treatment Need Issues*.

Table 2.14: Percentage in Need of Illicit Drug Abuse Treatment, by Race/Ethnicity, Gender, and Age, 1991-1993.

Race/Ethnicity	Total	Female	Male	12-17	18-25	26-34	35+
Total surveyed population	2.7	2.1	3.5	3.5	6.0	4.2	1.4
Native American	7.8	*	*	1.3	*	*	*
Asian/Pacific Islander	1.7	1.3	2.2	1.2	2.3	4.9	0.5
Hispanic-Caribbean	1.6	1.8	1.3	*	1.4	*	0.5
Hispanic-Central America	1.5	0.8	2.4	2.1	1.8	1.5	1.1
Hispanic-Cuba	2.6	1.3	4.1	2.9	7.9	7.7	0.4
Hispanic-Mexico	3.6	2.8	4.3	5.9	4.6	3.7	2.0
Hispanic-Puerto Rico	3.7	2.7	4.9	3.3	7.3	5.6	2.0
Hispanic-South America	1.7	2.1	1.4	3.0	2.9	2.9	0.4
Hispanic-Other	3.4	4.0	2.6	2.8	11.5	4.0	*
Non-Hispanic black	3.9	2.9	5.0	2.7	5.5	5.9	2.8
Non-Hispanic white	2.5	1.9	3.2	3.5	6.5	3.9	1.1

\* Low precision.

Source: SAMHSA, 1998b. *Prevalence of Substance Use among Racial and Ethnic Subgroups in the United States, 1991-93*.

Tables 2.15 through 2.20 present state comparisons for binge alcohol use, illicit drug dependence, and alcohol or illicit drug dependence. Data is presented in separate tables for numbers of person and percentages of persons engaging in each behavior.

Table 2.15. Estimated Numbers (in Thousands) of Past Month "Binge" Alcohol Users, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Total	44,486		2,534		10,849		31,102	
Alabama	621	(516- 737)	35	(26- 45)	153	(132- 174)	434	(339- 544)
Alaska	105	(91- 121)	8	(6- 10)	28	(24- 32)	70	(57- 85)
Arizona	725	(602- 860)	53	(42- 67)	176	(150- 203)	495	(386- 621)
Arkansas	399	(342- 459)	28	(21- 35)	96	(83- 110)	275	(224- 331)
California	4,692	(4,228- 5,183)	296	(261- 334)	1,175	(1,08- 1,271)	3,221	(2,780- 3,700)
Colorado	738	(626- 858)	46	(35- 59)	186	(162- 210)	506	(405- 620)
Connecticut	558	(470- 656)	33	(25- 43)	131	(111- 151)	394	(314- 484)
Delaware	142	(120- 165)	8	(6- 10)	32	(28- 36)	102	(82- 125)
District of Columbia	74	(63- 87)	3	(2- 4)	18	(15- 20)	54	(43- 66)
Florida	2,181	(1,949- 2,428)	97	(80- 117)	451	(410- 494)	1,633	(1,411- 1,874)
Georgia	1,132	(950- 1,331)	60	(47- 74)	266	(227- 308)	806	(640- 994)
Hawaii	201	(169- 237)	12	(9- 15)	39	(33- 46)	151	(120- 184)
Idaho	197	(167- 230)	13	(10- 16)	47	(40- 55)	137	(109- 168)
Illinois	2,122	(1,937- 2,316)	119	(103- 137)	525	(488- 563)	1,478	(1,303- 1,665)
Indiana	988	(845- 1,143)	56	(44- 71)	253	(222- 285)	679	(548- 827)
Iowa	582	(508- 661)	34	(26- 42)	155	(140- 170)	394	(326- 469)
Kansas	471	(406- 542)	25	(19- 32)	123	(109- 137)	324	(264- 390)
Kentucky	612	(524- 707)	34	(26- 44)	166	(146- 186)	412	(332- 503)
Louisiana	768	(656- 888)	51	(40- 64)	206	(182- 230)	511	(410- 624)
Maine	209	(179- 241)	12	(9- 15)	49	(43- 55)	148	(121- 178)
Maryland	649	(537- 775)	31	(23- 42)	156	(132- 182)	462	(360- 580)
Massachusetts	1,244	(1,052- 1,449)	74	(57- 93)	293	(255- 330)	878	(703- 1,073)
Michigan	1,709	(1,560- 1,865)	89	(76- 104)	408	(375- 442)	1,212	(1,073- 1,360)

Table 2.15. Estimated Numbers (in Thousands) of Past Month "Binge" Alcohol Users, by Age Group and State: 1999.  
 AGE GROUP (Years)

State	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Minnesota	946	(826- 1,073)	59	(47- 74)	258	(232- 285)	628	(520- 749)
Mississippi	413	(350- 481)	29	(22- 36)	111	(97- 125)	273	(217- 338)
Missouri	1,026	(875- 1,189)	49	(38- 63)	249	(217- 281)	728	(591- 881)
Montana	170	(148- 194)	14	(11- 17)	44	(39- 49)	113	(93- 136)
Nebraska	344	(302- 392)	19	(14- 24)	91	(81- 101)	235	(195- 278)
Nevada	331	(277- 390)	22	(17- 27)	61	(52- 72)	248	(198- 305)
New Hampshire	208	(178- 240)	12	(9- 16)	53	(46- 60)	143	(116- 173)
New Jersey	1,328	(1,116- 1,560)	69	(53- 86)	299	(259- 340)	961	(764- 1,184)
New Mexico	315	(273- 360)	23	(18- 29)	82	(70- 93)	211	(173- 252)
New York	3,062	(2,749- 3,393)	163	(135- 194)	729	(671- 789)	2,170	(1,874- 2,490)
North Carolina	1,038	(874- 1,219)	58	(45- 73)	239	(206- 275)	741	(589- 914)
North Dakota	153	(133- 173)	11	(9- 13)	41	(37- 45)	101	(83- 120)
Ohio	2,074	(1,890- 2,268)	99	(84- 116)	483	(449- 517)	1,493	(1,316- 1,681)
Oklahoma	500	(422- 586)	36	(28- 46)	135	(118- 154)	328	(259- 408)
Oregon	525	(443- 617)	32	(25- 40)	128	(110- 146)	366	(290- 453)
Pennsylvania	2,160	(1,958- 2,373)	108	(90- 127)	490	(455- 525)	1,562	(1,368- 1,771)
Rhode Island	175	(150- 202)	10	(8- 13)	41	(36- 47)	124	(101- 149)
South Carolina	539	(451- 637)	28	(22- 36)	127	(108- 146)	384	(305- 475)
South Dakota	155	(136- 175)	12	(10- 15)	42	(37- 46)	101	(84- 119)
Tennessee	788	(665- 920)	38	(29- 50)	200	(171- 230)	549	(440- 674)
Texas	3,373	(3,104- 3,655)	211	(183- 241)	847	(783- 912)	2,316	(2,062- 2,586)
Utah	258	(217- 304)	19	(14- 25)	76	(65- 88)	163	(127- 206)
Vermont	107	(92- 124)	6	(5- 8)	29	(25- 32)	72	(58- 88)
Virginia	1,021	(866- 1,191)	45	(34- 58)	263	(226- 302)	712	(572- 872)
Washington	839	(702- 991)	52	(40- 66)	218	(190- 247)	569	(444- 715)
West Virginia	271	(232- 312)	15	(12- 20)	72	(63- 82)	183	(149- 222)

Table 2.15. Estimated Numbers (in Thousands) of Past Month "Binge" Alcohol Users, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Wisconsin	1,141	(998- 1,291)	70	(57- 86)	280	(251- 310)	790	(659- 933)
Wyoming	101	(87- 116)	8	(7- 10)	31	(28- 34)	63	(50- 77)

NOTE: "Binge" Alcohol Use is defined as drinking five or more drinks on the same occasion on at least 1 day in the past 30 days. By "occasion" is meant at the same time or within a couple hours of each other.

NOTE: Estimates are based on a survey-weighted hierarchical Bayes estimation approach, and the prediction (credible) intervals are generated by Markov Chain Monte Carlo techniques.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.16. Estimated Numbers (in Thousands) of Persons Reporting Past Year Illicit Drug Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Total	3,800		792		1,353		1,655	
Alabama	52	(36- 74)	10	(6- 15)	20	(13- 28)	23	(10- 45)
Alaska	14	(9- 20)	3	(2- 4)	4	(2- 5)	7	(3- 14)
Arizona	75	(48- 112)	13	(8- 20)	23	(15- 34)	39	(16- 80)
Arkansas	29	(20- 41)	8	(5- 11)	9	(6- 13)	12	(5- 24)
California	586	(443- 760)	111	(90- 135)	172	(134- 215)	304	(178- 484)
Colorado	66	(44- 95)	13	(8- 19)	25	(17- 36)	29	(12- 59)
Connecticut	52	(34- 76)	9	(6- 14)	17	(10- 25)	26	(12- 51)
Delaware	15	(9- 23)	3	(2- 4)	5	(3- 7)	7	(3- 16)

Table 2.16. Estimated Numbers (in Thousands) of Persons Reporting Past Year Illicit Drug Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
District of Columbia	9	(6- 14)	1	(1- 2)	2	(2- 3)	6	(3- 10)
Florida	167	(127- 215)	34	(26- 45)	58	(44- 74)	75	(43- 121)
Georgia	94	(65- 129)	19	(13- 27)	37	(25- 53)	38	(17- 72)
Hawaii	13	(9- 20)	4	(2- 5)	4	(3- 7)	6	(2- 12)
Idaho	15	(10- 22)	3	(2- 5)	6	(4- 9)	6	(2- 13)
Illinois	155	(116- 204)	33	(25- 43)	55	(42- 70)	68	(36- 117)
Indiana	79	(56- 107)	15	(10- 22)	33	(23- 47)	30	(14- 58)
Iowa	29	(20- 40)	7	(5- 11)	11	(8- 16)	10	(4- 21)
Kansas	36	(23- 53)	7	(5- 10)	13	(9- 18)	16	(6- 33)
Kentucky	42	(31- 57)	11	(7- 16)	18	(12- 26)	14	(6- 27)
Louisiana	60	(43- 81)	12	(8- 17)	24	(17- 32)	25	(12- 46)
Maine	16	(11- 23)	4	(2- 5)	6	(4- 9)	6	(3- 13)
Maryland	70	(48- 98)	12	(8- 18)	28	(19- 39)	29	(13- 57)
Massachusetts	110	(69- 164)	26	(17- 38)	34	(22- 49)	50	(19- 106)
Michigan	144	(109- 186)	29	(22- 38)	52	(40- 66)	63	(34- 106)
Minnesota	67	(46- 94)	16	(10- 22)	27	(18- 38)	25	(10- 49)
Mississippi	39	(27- 56)	10	(7- 15)	11	(7- 16)	18	(8- 34)
Missouri	74	(51- 105)	15	(9- 22)	29	(19- 42)	30	(13- 60)
Montana	14	(10- 20)	4	(3- 6)	5	(4- 8)	5	(2- 10)
Nebraska	19	(13- 27)	4	(3- 7)	8	(5- 11)	7	(3- 14)
Nevada	41	(27- 61)	8	(5- 11)	11	(7- 15)	23	(11- 44)
New Hampshire	18	(12- 26)	3	(2- 5)	8	(5- 11)	7	(3- 16)
New Jersey	117	(78- 167)	23	(15- 34)	43	(28- 63)	50	(20- 105)
New Mexico	40	(28- 55)	11	(8- 15)	12	(8- 17)	17	(8- 33)

Table 2.16. Estimated Numbers (in Thousands) of Persons Reporting Past Year Illicit Drug Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
New York	270	(199- 359)	49	(35- 66)	107	(80- 140)	115	(58- 203)
North Carolina	92	(64- 128)	21	(14- 29)	27	(18- 39)	44	(22- 79)
North Dakota	8	(6- 11)	2	(2- 4)	3	(2- 4)	2	(1- 5)
Ohio	148	(113- 191)	27	(20- 36)	57	(44- 71)	64	(36- 107)
Oklahoma	40	(28- 56)	9	(6- 14)	17	(11- 24)	14	(6- 29)
Oregon	63	(40- 95)	9	(6- 13)	21	(15- 30)	33	(14- 67)
Pennsylvania	155	(118- 200)	37	(28- 48)	58	(44- 75)	60	(31- 106)
Rhode Island	17	(12- 24)	4	(2- 6)	7	(4- 9)	7	(3- 13)
South Carolina	42	(28- 60)	9	(6- 14)	14	(9- 20)	19	(8- 37)
South Dakota	9	(6- 12)	2	(2- 3)	4	(3- 6)	3	(1- 5)
Tennessee	70	(46- 100)	13	(8- 19)	23	(15- 33)	34	(16- 64)
Texas	218	(173- 271)	58	(45- 74)	87	(67- 110)	73	(40- 122)
Utah	33	(25- 44)	8	(5- 12)	16	(11- 22)	9	(4- 19)
Vermont	10	(7- 14)	3	(2- 4)	4	(3- 6)	4	(1- 8)
Virginia	70	(49- 98)	15	(10- 21)	28	(18- 41)	28	(13- 53)
Washington	101	(68- 144)	20	(14- 28)	37	(26- 51)	44	(18- 91)
West Virginia	19	(13- 26)	6	(4- 9)	6	(4- 9)	7	(3- 13)
Wisconsin	68	(49- 90)	18	(12- 25)	26	(18- 37)	24	(11- 45)
Wyoming	7	(5- 10)	2	(1- 3)	3	(2- 4)	3	(1- 6)

NOTE: Dependence is based on the definition found in the 4<sup>th</sup> ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

NOTE: Estimates are based on a survey-weighted hierarchical Bayes estimation approach, and the prediction (credible) intervals are generated by Markov Chain Monte Carlo techniques.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.17. Estimated Numbers (in Thousands) of Persons Reporting Past Year Illicit Drug or Alcohol Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Total	10,518		1,347		3,359		5,811	
Alabama	142	(105- 187)	18	(12- 25)	47	(35- 61)	78	(47- 121)
Alaska	35	(27- 45)	4	(2- 5)	9	(7- 12)	22	(15- 32)
Arizona	200	(147- 265)	28	(20- 38)	57	(42- 74)	115	(71- 178)
Arkansas	86	(65- 110)	13	(9- 17)	28	(22- 36)	45	(28- 67)
California	1,389	(1,147- 1,665)	164	(137- 194)	363	(308- 424)	862	(638- 1,137)
Colorado	183	(135- 241)	18	(12- 27)	60	(45- 77)	105	(64- 161)
Connecticut	130	(97- 171)	16	(11- 23)	45	(33- 59)	69	(42- 106)
Delaware	41	(29- 55)	5	(3- 6)	12	(9- 15)	25	(15- 38)
District of Columbia	23	(17- 31)	2	(1- 3)	6	(4- 8)	16	(10- 23)
Florida	474	(381- 581)	54	(41- 70)	131	(108- 157)	288	(206- 392)
Georgia	284	(211- 373)	31	(22- 42)	88	(66- 114)	166	(104- 249)
Hawaii	54	(38- 74)	6	(4- 8)	13	(9- 17)	36	(21- 56)
Idaho	48	(35- 63)	7	(5- 10)	15	(11- 20)	25	(15- 40)
Illinois	487	(402- 585)	57	(45- 70)	154	(131- 180)	276	(201- 370)
Indiana	227	(174- 290)	30	(21- 40)	80	(62- 101)	118	(75- 177)
Iowa	105	(82- 131)	18	(13- 25)	43	(33- 54)	44	(27- 68)
Kansas	100	(77- 128)	15	(10- 20)	38	(29- 48)	48	(30- 72)
Kentucky	125	(93- 163)	16	(11- 23)	42	(32- 54)	66	(40- 103)
Louisiana	187	(142- 240)	21	(14- 29)	63	(49- 80)	104	(67- 153)
Maine	41	(31- 53)	6	(4- 8)	14	(11- 19)	21	(13- 32)
Maryland	198	(145- 262)	23	(16- 33)	52	(38- 69)	123	(78- 183)

Table 2.17. Estimated Numbers (in Thousands) of Persons Reporting Past Year Illicit Drug or Alcohol Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Massachusetts	277	(207- 360)	50	(36- 67)	96	(72- 124)	132	(77- 211)
Michigan	423	(353- 501)	48	(38- 59)	138	(117- 161)	237	(175- 312)
Minnesota	220	(173- 274)	30	(22- 40)	72	(56- 89)	118	(78- 169)
Mississippi	112	(82- 147)	14	(10- 20)	35	(27- 44)	63	(38- 97)
Missouri	227	(171- 295)	25	(17- 34)	75	(58- 96)	128	(80- 191)
Montana	37	(28- 47)	7	(5- 9)	12	(10- 16)	18	(11- 27)
Nebraska	75	(58- 96)	9	(6- 12)	28	(22- 35)	39	(25- 58)
Nevada	83	(61- 109)	12	(8- 16)	20	(15- 27)	51	(31- 77)
New Hampshire	43	(33- 55)	6	(4- 8)	18	(13- 23)	19	(12- 30)
New Jersey	258	(191- 340)	39	(27- 54)	97	(73- 125)	123	(70- 200)
New Mexico	95	(73- 121)	14	(10- 19)	33	(25- 41)	49	(31- 72)
New York	680	(561- 816)	91	(70- 115)	269	(225- 318)	320	(220- 450)
North Carolina	259	(192- 342)	36	(26- 48)	68	(51- 89)	156	(97- 236)
North Dakota	30	(23- 38)	5	(4- 7)	10	(8- 13)	15	(9- 22)
Ohio	409	(341- 486)	47	(37- 60)	137	(117- 159)	225	(166- 298)
Oklahoma	123	(93- 160)	14	(10- 21)	43	(33- 54)	66	(41- 99)
Oregon	150	(108- 202)	16	(11- 22)	44	(34- 57)	89	(53- 141)
Pennsylvania	421	(345- 509)	65	(53- 80)	143	(121- 167)	213	(147- 299)
Rhode Island	41	(31- 53)	5	(3- 7)	15	(12- 20)	21	(13- 32)
South Carolina	132	(96- 176)	14	(10- 20)	33	(24- 44)	84	(54- 126)
South Dakota	32	(25- 41)	6	(4- 7)	12	(10- 16)	14	(9- 22)
Tennessee	212	(158- 277)	21	(14- 29)	65	(49- 84)	126	(81- 187)
Texas	729	(608- 867)	112	(92- 134)	257	(219- 299)	360	(257- 490)
Utah	84	(64- 108)	12	(8- 16)	31	(24- 39)	42	(26- 64)
Vermont	24	(18- 30)	4	(3- 6)	10	(8- 13)	10	(6- 16)

Table 2.17. Estimated Numbers (in Thousands) of Persons Reporting Past Year Illicit Drug or Alcohol Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Virginia	230	(165- 312)	26	(18- 37)	59	(42- 80)	145	(89- 223)
Washington	266	(198- 347)	27	(19- 37)	81	(64- 101)	158	(98- 238)
West Virginia	58	(43- 76)	9	(6- 13)	19	(14- 25)	31	(19- 47)
Wisconsin	204	(161- 254)	31	(22- 41)	73	(57- 92)	101	(66- 147)
Wyoming	23	(18- 30)	4	(3- 5)	8	(6- 10)	11	(7- 18)

NOTE: Dependence is based on the definition found in the 4<sup>th</sup> ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

NOTE: Estimates are based on a survey-weighted hierarchical Bayes estimation approach, and the prediction (credible) intervals are generated by Markov Chain Monte Carlo techniques.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.18. Percentages Reporting Past Month "Binge" Alcohol Use, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Total	20.1		10.9		38.1		18.4	
Alabama	17.2	(14.3- 20.4)	9.4	(7.0- 12.2)	32.2	(27.9- 36.8)	15.6	(12.2- 19.6)
Alaska	21.8	(18.8- 25.0)	12.3	(9.6- 15.4)	40.1	(35.1- 45.2)	19.8	(16.1- 24.0)
Arizona	19.2	(16.0- 22.8)	12.6	(9.8- 15.8)	35.4	(30.1- 40.9)	17.4	(13.6- 21.8)
Arkansas	18.7	(16.0- 21.5)	12.3	(9.5- 15.6)	34.6	(30.0- 39.5)	16.8	(13.8- 20.3)
California	18.4	(16.6- 20.3)	10.5	(9.3- 11.9)	34.2	(31.5- 37.0)	16.7	(14.4- 19.2)
Colorado	22.1	(18.7- 25.7)	13.0	(9.9- 16.7)	42.5	(37.1- 48.0)	19.8	(15.9- 24.3)

Table 2.18. Percentages Reporting Past Month "Binge" Alcohol Use, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Connecticut	20.7	(17.4- 24.3)	13.1	(9.9- 16.9)	43.2	(36.7- 49.8)	18.4	(14.7- 22.7)
Delaware	22.8	(19.3- 26.6)	12.5	(9.5- 16.0)	41.6	(36.2- 47.1)	21.2	(17.0- 25.9)
District of Columbia	17.5	(14.7- 20.5)	7.7	(5.5- 10.5)	31.7	(27.0- 36.7)	16.3	(13.1- 20.0)
Florida	17.5	(15.6- 19.5)	8.4	(6.9- 10.1)	33.9	(30.8- 37.0)	16.4	(14.1- 18.8)
Georgia	18.1	(15.2- 21.3)	8.9	(7.0- 11.1)	31.6	(27.0- 36.5)	17.0	(13.5- 21.0)
Hawaii	20.8	(17.4- 24.5)	12.1	(9.2- 15.6)	33.8	(28.6- 39.3)	19.9	(15.9- 24.3)
Idaho	18.7	(15.8- 21.8)	9.9	(7.5- 12.7)	29.5	(25.1- 34.2)	17.9	(14.3- 22.0)
Illinois	21.8	(19.9- 23.8)	11.9	(10.3- 13.8)	40.8	(37.9- 43.8)	19.9	(17.5- 22.4)
Indiana	20.1	(17.2- 23.3)	11.0	(8.6- 13.8)	38.5	(33.8- 43.3)	18.1	(14.6- 22.1)
Iowa	24.4	(21.3- 27.8)	13.3	(10.5- 16.5)	49.2	(44.5- 53.9)	21.7	(18.0- 25.8)
Kansas	22.1	(19.0- 25.4)	10.4	(7.9- 13.5)	42.9	(38.0- 48.0)	20.1	(16.4- 24.2)
Kentucky	18.7	(16.1- 21.7)	10.3	(7.9- 13.2)	38.2	(33.7- 42.8)	16.5	(13.3- 20.1)
Louisiana	21.7	(18.5- 25.1)	12.1	(9.5- 15.1)	40.1	(35.5- 44.8)	19.6	(15.7- 23.9)
Maine	20.0	(17.2- 23.1)	11.5	(8.8- 14.7)	40.6	(35.6- 45.8)	18.1	(14.7- 21.8)
Maryland	15.3	(12.7- 18.3)	7.6	(5.5- 10.1)	31.3	(26.4- 36.5)	13.9	(10.8- 17.4)
Massachusetts	24.4	(20.7- 28.5)	14.9	(11.5- 18.9)	49.2	(42.9- 55.5)	21.9	(17.5- 26.8)
Michigan	21.7	(19.8- 23.6)	10.7	(9.1- 12.5)	39.8	(36.5- 43.1)	20.1	(17.8- 22.5)
Minnesota	24.2	(21.1- 27.4)	13.7	(10.8- 17.0)	49.5	(44.5- 54.5)	21.2	(17.6- 25.3)
Mississippi	18.3	(15.6- 21.4)	11.1	(8.6- 14.0)	34.3	(30.1- 38.7)	16.4	(13.0- 20.3)
Missouri	22.8	(19.4- 26.5)	10.3	(7.9- 13.2)	42.6	(37.2- 48.2)	21.2	(17.2- 25.6)
Montana	22.3	(19.4- 25.5)	16.1	(13.0- 19.7)	44.5	(39.5- 49.5)	19.5	(16.0- 23.4)
Nebraska	25.3	(22.1- 28.7)	12.1	(9.3- 15.6)	48.9	(43.5- 54.3)	22.9	(19.1- 27.1)
Nevada	22.2	(18.6- 26.2)	15.1	(11.7- 18.9)	35.2	(29.6- 41.0)	21.2	(16.9- 26.0)
New Hampshire	20.9	(17.9- 24.2)	11.9	(9.1- 15.2)	45.8	(39.8- 51.9)	18.4	(14.9- 22.3)
New Jersey	19.9	(16.7- 23.4)	11.1	(8.6- 13.9)	38.5	(33.3- 43.8)	18.2	(14.5- 22.5)

Table 2.18. Percentages Reporting Past Month "Binge" Alcohol Use, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
New Mexico	21.6	(18.7- 24.7)	13.1	(10.2- 16.5)	39.4	(34.0- 45.0)	19.5	(16.0- 23.3)
New York	20.7	(18.6- 23.0)	11.2	(9.3- 13.3)	40.4	(37.1- 43.7)	18.9	(16.3- 21.7)
North Carolina	16.6	(14.0- 19.5)	9.1	(7.1- 11.5)	31.3	(26.9- 36.1)	15.2	(12.1- 18.8)
North Dakota	28.7	(25.1- 32.4)	17.2	(13.8- 21.0)	54.7	(49.7- 59.7)	25.6	(21.1- 30.4)
Ohio	22.4	(20.4- 24.5)	10.4	(8.8- 12.2)	40.3	(37.5- 43.1)	21.0	(18.5- 23.7)
Oklahoma	18.4	(15.5- 21.5)	11.8	(9.0- 15.1)	37.5	(32.6- 42.6)	16.0	(12.6- 19.9)
Oregon	18.9	(15.9- 22.2)	11.5	(9.0- 14.6)	36.8	(31.6- 42.3)	16.9	(13.4- 21.0)
Pennsylvania	21.4	(19.4- 23.5)	10.9	(9.2- 12.9)	41.8	(38.8- 44.8)	19.7	(17.2- 22.3)
Rhode Island	21.4	(18.3- 24.7)	12.4	(9.5- 15.8)	44.6	(38.9- 50.4)	19.2	(15.7- 23.2)
South Carolina	17.4	(14.6- 20.6)	8.8	(6.7- 11.3)	33.0	(28.1- 38.1)	16.1	(12.8- 19.9)
South Dakota	25.3	(22.2- 28.5)	16.5	(13.2- 20.2)	48.8	(43.7- 53.9)	22.3	(18.5- 26.4)
Tennessee	17.1	(14.5- 20.0)	8.3	(6.2- 10.9)	34.0	(29.1- 39.1)	15.5	(12.4- 19.0)
Texas	21.3	(19.6- 23.1)	11.3	(9.8- 12.9)	36.7	(33.9- 39.5)	19.9	(17.7- 22.2)
Utah	15.4	(13.0- 18.1)	7.6	(5.6- 10.0)	24.2	(20.7- 28.0)	14.7	(11.4- 18.5)
Vermont	21.2	(18.1- 24.5)	11.2	(8.6- 14.2)	46.7	(40.5- 52.9)	18.5	(15.0- 22.5)
Virginia	18.3	(15.5- 21.3)	8.2	(6.2- 10.6)	38.6	(33.2- 44.3)	16.4	(13.2- 20.1)
Washington	17.8	(14.9- 21.0)	10.7	(8.3- 13.5)	36.9	(32.2- 41.7)	15.7	(12.2- 19.7)
West Virginia	17.4	(14.9- 20.1)	10.8	(8.3- 13.7)	36.4	(31.7- 41.3)	15.2	(12.3- 18.4)
Wisconsin	26.3	(23.0- 29.7)	14.7	(11.9- 17.9)	48.6	(43.5- 53.7)	24.0	(20.1- 28.4)
Wyoming	24.2	(20.9- 27.8)	16.5	(13.3- 20.1)	50.7	(45.7- 55.7)	20.3	(16.2- 24.9)

NOTE: "Binge" Alcohol Use is defined as drinking five or more drinks on the same occasion on at least 1 day in the past 30 days. By "occasion" is meant at the same time or within a couple hours of each other.

NOTE: Estimates are based on a survey-weighted hierarchical Bayes estimation approach, and the prediction (credible) intervals are generated by Markov Chain Monte Carlo techniques.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.19. Percentages Reporting Past Year Illicit Drug Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Total	1.7		3.4		4.8		1.0	
Alabama	1.4	(1.0- 2.0)	2.6	(1.6- 4.0)	4.2	(2.8- 5.9)	0.8	(0.4- 1.6)
Alaska	2.8	(1.8- 4.1)	4.7	(3.0- 6.9)	5.2	(3.4- 7.5)	2.0	(0.9- 3.9)
Arizona	2.0	(1.3- 3.0)	3.1	(2.0- 4.6)	4.7	(3.1- 6.8)	1.4	(0.6- 2.8)
Arkansas	1.4	(0.9- 1.9)	3.4	(2.2- 5.1)	3.4	(2.3- 4.8)	0.7	(0.3- 1.5)
California	2.3	(1.7- 3.0)	4.0	(3.2- 4.8)	5.0	(3.9- 6.3)	1.6	(0.9- 2.5)
Colorado	2.0	(1.3- 2.8)	3.5	(2.3- 5.3)	5.7	(3.8- 8.2)	1.1	(0.5- 2.3)
Connecticut	1.9	(1.3- 2.8)	3.7	(2.3- 5.6)	5.5	(3.5- 8.3)	1.2	(0.5- 2.4)
Delaware	2.4	(1.4- 3.7)	4.3	(2.7- 6.5)	6.4	(4.2- 9.2)	1.5	(0.6- 3.2)
District of Columbia	2.2	(1.4- 3.2)	2.7	(1.6- 4.3)	4.2	(2.8- 6.0)	1.7	(0.9- 3.2)
Florida	1.3	(1.0- 1.7)	3.0	(2.2- 3.9)	4.3	(3.3- 5.6)	0.8	(0.4- 1.2)
Georgia	1.5	(1.0- 2.1)	2.8	(1.9- 4.1)	4.4	(2.9- 6.3)	0.8	(0.4- 1.5)
Hawaii	1.4	(0.9- 2.0)	3.8	(2.3- 5.7)	3.6	(2.2- 5.6)	0.7	(0.3- 1.6)
Idaho	1.5	(1.0- 2.1)	2.6	(1.6- 3.9)	3.7	(2.5- 5.4)	0.8	(0.3- 1.7)
Illinois	1.6	(1.2- 2.1)	3.3	(2.5- 4.3)	4.2	(3.2- 5.5)	0.9	(0.5- 1.6)
Indiana	1.6	(1.1- 2.2)	3.0	(2.0- 4.3)	5.1	(3.5- 7.1)	0.8	(0.4- 1.6)
Iowa	1.2	(0.8- 1.7)	2.9	(1.9- 4.4)	3.6	(2.4- 5.2)	0.6	(0.2- 1.2)
Kansas	1.7	(1.1- 2.5)	2.9	(1.9- 4.3)	4.6	(3.1- 6.5)	1.0	(0.4- 2.0)
Kentucky	1.3	(0.9- 1.7)	3.2	(2.1- 4.7)	4.2	(2.8- 5.9)	0.6	(0.2- 1.1)
Louisiana	1.7	(1.2- 2.3)	2.8	(1.8- 4.1)	4.6	(3.3- 6.3)	1.0	(0.5- 1.7)
Maine	1.5	(1.0- 2.2)	3.4	(2.2- 5.1)	5.1	(3.4- 7.4)	0.8	(0.3- 1.6)
Maryland	1.6	(1.1- 2.3)	3.0	(1.9- 4.4)	5.6	(3.9- 7.9)	0.9	(0.4- 1.7)
Massachusetts	2.1	(1.3- 3.2)	5.3	(3.5- 7.6)	5.7	(3.8- 8.3)	1.2	(0.5- 2.6)
Michigan	1.8	(1.4- 2.4)	3.5	(2.6- 4.5)	5.1	(3.9- 6.5)	1.0	(0.6- 1.8)

Table 2.19. Percentages Reporting Past Year Illicit Drug Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Minnesota	1.7	(1.2- 2.4)	3.6	(2.4- 5.2)	5.1	(3.5- 7.3)	0.8	(0.3- 1.7)
Mississippi	1.7	(1.2- 2.5)	3.9	(2.6- 5.7)	3.4	(2.3- 4.9)	1.1	(0.5- 2.1)
Missouri	1.6	(1.1- 2.3)	3.1	(2.0- 4.6)	5.0	(3.3- 7.2)	0.9	(0.4- 1.8)
Montana	1.9	(1.3- 2.6)	4.8	(3.2- 6.7)	5.6	(3.8- 7.8)	0.8	(0.3- 1.8)
Nebraska	1.4	(0.9- 2.0)	2.9	(1.7- 4.5)	4.2	(2.7- 6.1)	0.7	(0.3- 1.4)
Nevada	2.8	(1.8- 4.1)	5.2	(3.6- 7.4)	6.1	(4.0- 8.8)	2.0	(0.9- 3.7)
New Hampshire	1.8	(1.2- 2.6)	2.9	(1.8- 4.5)	6.6	(4.3- 9.6)	0.9	(0.3- 2.0)
New Jersey	1.7	(1.2- 2.5)	3.7	(2.4- 5.4)	5.6	(3.7- 8.2)	1.0	(0.4- 2.0)
New Mexico	2.7	(1.9- 3.8)	6.4	(4.5- 8.9)	5.7	(3.8- 8.1)	1.6	(0.7- 3.1)
New York	1.8	(1.3- 2.4)	3.4	(2.4- 4.5)	5.9	(4.4- 7.7)	1.0	(0.5- 1.8)
North Carolina	1.5	(1.0- 2.0)	3.2	(2.2- 4.6)	3.5	(2.4- 5.1)	0.9	(0.5- 1.6)
North Dakota	1.5	(1.0- 2.0)	3.8	(2.5- 5.6)	4.1	(2.7- 6.0)	0.6	(0.2- 1.2)
Ohio	1.6	(1.2- 2.1)	2.9	(2.1- 3.8)	4.7	(3.7- 5.9)	0.9	(0.5- 1.5)
Oklahoma	1.5	(1.0- 2.0)	3.1	(1.9- 4.6)	4.6	(3.1- 6.6)	0.7	(0.3- 1.4)
Oregon	2.3	(1.4- 3.4)	3.3	(2.2- 4.8)	6.1	(4.2- 8.6)	1.5	(0.6- 3.1)
Pennsylvania	1.5	(1.2- 2.0)	3.7	(2.8- 4.8)	4.9	(3.7- 6.4)	0.8	(0.4- 1.3)
Rhode Island	2.1	(1.5- 2.9)	4.6	(2.9- 6.9)	7.1	(4.8- 10.1)	1.1	(0.5- 2.1)
South Carolina	1.4	(0.9- 1.9)	2.9	(1.9- 4.3)	3.5	(2.3- 5.2)	0.8	(0.4- 1.5)
South Dakota	1.4	(1.0- 1.9)	3.2	(2.1- 4.6)	4.7	(3.2- 6.6)	0.6	(0.2- 1.2)
Tennessee	1.5	(1.0- 2.2)	2.8	(1.8- 4.1)	3.9	(2.6- 5.6)	1.0	(0.4- 1.8)
Texas	1.4	(1.1- 1.7)	3.1	(2.4- 4.0)	3.8	(2.9- 4.8)	0.6	(0.3- 1.1)
Utah	2.0	(1.5- 2.6)	3.3	(2.2- 4.7)	5.0	(3.6- 6.8)	0.8	(0.3- 1.7)
Vermont	2.0	(1.3- 2.8)	4.6	(3.0- 6.7)	6.4	(4.2- 9.2)	0.9	(0.3- 2.0)
Virginia	1.3	(0.9- 1.8)	2.6	(1.7- 3.8)	4.1	(2.7- 6.0)	0.6	(0.3- 1.2)
Washington	2.1	(1.4- 3.1)	4.1	(2.8- 5.8)	6.2	(4.4- 8.6)	1.2	(0.5- 2.5)
West Virginia	1.2	(0.9- 1.7)	4.2	(2.7- 6.1)	3.3	(2.1- 4.8)	0.6	(0.2- 1.1)

Table 2.19. Percentages Reporting Past Year Illicit Drug Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Wisconsin	1.6	(1.1- 2.1)	3.7	(2.5- 5.2)	4.6	(3.1- 6.5)	0.7	(0.3- 1.4)
Wyoming	1.7	(1.2- 2.4)	4.0	(2.7- 5.7)	4.3	(2.9- 6.2)	0.9	(0.4- 1.8)

NOTE: Dependence is based on the definition found in the 4<sup>th</sup> ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

NOTE: Estimates are based on a survey-weighted hierarchical Bayes estimation approach, and the prediction (credible) intervals are generated by Markov Chain Monte Carlo techniques.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.20: Percentages Reporting Past Year Illicit Drug or Alcohol Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Total	4.8		5.8		11.8		3.4	
Alabama	3.9	(2.9- 5.2)	4.8	(3.3- 6.9)	9.8	(7.3- 12.8)	2.8	(1.7- 4.4)
Alaska	7.3	(5.5- 9.4)	5.7	(3.9- 7.9)	13.6	(10.4- 17.3)	6.3	(4.2- 9.1)
Arizona	5.3	(3.9- 7.0)	6.6	(4.6- 9.0)	11.4	(8.4- 14.9)	4.1	(2.5- 6.2)
Arkansas	4.0	(3.1- 5.1)	5.6	(3.9- 7.8)	10.2	(7.9- 13.0)	2.7	(1.7- 4.1)
California	5.4	(4.5- 6.5)	5.8	(4.9- 6.9)	10.5	(8.9- 12.3)	4.5	(3.3- 5.9)
Colorado	5.5	(4.0- 7.2)	5.1	(3.3- 7.5)	13.7	(10.4- 17.6)	4.1	(2.5- 6.3)
Connecticut	4.8	(3.6- 6.4)	6.5	(4.3- 9.2)	14.7	(10.7- 19.5)	3.2	(2.0- 5.0)
Delaware	6.5	(4.7- 8.9)	7.2	(4.9- 10.2)	15.3	(11.7- 19.5)	5.1	(3.0- 7.9)
District of Columbia	5.5	(4.0- 7.3)	4.4	(2.8- 6.5)	10.6	(7.9- 13.9)	4.8	(3.1- 7.0)

Table 2.20: Percentages Reporting Past Year Illicit Drug or Alcohol Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Florida	3.8	(3.1- 4.7)	4.7	(3.5- 6.0)	9.8	(8.1- 11.8)	2.9	(2.1- 3.9)
Georgia	4.5	(3.4- 6.0)	4.6	(3.3- 6.2)	10.4	(7.8- 13.5)	3.5	(2.2- 5.3)
Hawaii	5.5	(3.9- 7.7)	6.0	(3.9- 8.6)	10.7	(7.6- 14.6)	4.7	(2.8- 7.3)
Idaho	4.5	(3.3- 6.0)	5.7	(4.0- 7.9)	9.4	(7.0- 12.3)	3.3	(2.0- 5.2)
Illinois	5.0	(4.1- 6.0)	5.7	(4.6- 7.0)	12.0	(10.2- 14.0)	3.7	(2.7- 5.0)
Indiana	4.6	(3.5- 5.9)	5.8	(4.1- 7.9)	12.1	(9.4- 15.3)	3.2	(2.0- 4.7)
Iowa	4.4	(3.4- 5.5)	7.2	(5.2- 9.8)	13.7	(10.6- 17.2)	2.4	(1.5- 3.7)
Kansas	4.7	(3.6- 6.0)	6.1	(4.2- 8.4)	13.3	(10.3- 16.8)	3.0	(1.8- 4.5)
Kentucky	3.8	(2.8- 5.0)	5.0	(3.4- 7.0)	9.7	(7.3- 12.5)	2.7	(1.6- 4.1)
Louisiana	5.3	(4.0- 6.8)	4.9	(3.4- 6.8)	12.3	(9.5- 15.5)	4.0	(2.6- 5.9)
Maine	3.9	(2.9- 5.1)	5.5	(3.7- 7.9)	12.0	(9.0- 15.5)	2.6	(1.5- 4.0)
Maryland	4.7	(3.4- 6.2)	5.6	(3.8- 7.8)	10.4	(7.6- 13.8)	3.7	(2.3- 5.5)
Massachusetts	5.4	(4.1- 7.1)	10.0	(7.2- 13.5)	16.1	(12.2- 20.8)	3.3	(1.9- 5.3)
Michigan	5.4	(4.5- 6.4)	5.8	(4.6- 7.1)	13.5	(11.4- 15.7)	3.9	(2.9- 5.2)
Minnesota	5.6	(4.4- 7.0)	7.0	(5.1- 9.3)	13.7	(10.8- 17.1)	4.0	(2.6- 5.7)
Mississippi	5.0	(3.7- 6.5)	5.5	(3.7- 7.7)	10.8	(8.3- 13.8)	3.8	(2.3- 5.8)
Missouri	5.1	(3.8- 6.6)	5.2	(3.6- 7.2)	12.9	(9.9- 16.5)	3.7	(2.3- 5.6)
Montana	4.8	(3.7- 6.1)	7.8	(5.6- 10.4)	12.6	(9.7- 16.0)	3.0	(1.8- 4.7)
Nebraska	5.5	(4.3- 7.0)	5.6	(3.7- 8.0)	15.0	(11.6- 19.0)	3.8	(2.4- 5.6)
Nevada	5.5	(4.1- 7.3)	8.4	(5.9- 11.5)	11.4	(8.3- 15.2)	4.3	(2.7- 6.5)
New Hampshire	4.3	(3.3- 5.6)	5.7	(3.9- 8.1)	15.2	(11.4- 19.8)	2.5	(1.5- 3.9)
New Jersey	3.9	(2.9- 5.1)	6.3	(4.4- 8.6)	12.4	(9.3- 16.1)	2.3	(1.3- 3.8)
New Mexico	6.5	(5.0- 8.3)	8.1	(5.7- 11.0)	15.8	(12.1- 20.0)	4.5	(2.9- 6.7)
New York	4.6	(3.8- 5.5)	6.2	(4.8- 7.9)	14.9	(12.5- 17.6)	2.8	(1.9- 3.9)
North Carolina	4.1	(3.1- 5.5)	5.6	(4.0- 7.5)	8.9	(6.7- 11.6)	3.2	(2.0- 4.8)
North Dakota	5.7	(4.4- 7.2)	8.7	(6.3- 11.8)	13.4	(10.5- 16.7)	3.7	(2.4- 5.6)

Table 2.20: Percentages Reporting Past Year Illicit Drug or Alcohol Dependence, by Age Group and State: 1999.

State	AGE GROUP (Years)							
	Total		12-17		18-25		26 or Older	
	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval	Estimate	Prediction Interval
Ohio	4.4	(3.7- 5.2)	5.0	(3.8- 6.3)	11.4	(9.7- 13.3)	3.2	(2.3- 4.2)
Oklahoma	4.5	(3.4- 5.9)	4.7	(3.1- 6.7)	11.9	(9.1- 15.1)	3.2	(2.0- 4.8)
Oregon	5.4	(3.9- 7.2)	5.7	(4.0- 7.9)	12.8	(9.8- 16.5)	4.1	(2.4- 6.5)
Pennsylvania	4.2	(3.4- 5.0)	6.6	(5.3- 8.2)	12.2	(10.3- 14.2)	2.7	(1.8- 3.8)
Rhode Island	5.0	(3.8- 6.5)	6.1	(4.1- 8.7)	16.6	(12.7- 21.2)	3.2	(2.0- 4.9)
South Carolina	4.3	(3.1- 5.7)	4.5	(3.0- 6.3)	8.7	(6.4- 11.5)	3.5	(2.2- 5.3)
South Dakota	5.3	(4.1- 6.7)	7.6	(5.5- 10.1)	14.6	(11.3- 18.3)	3.2	(2.0- 4.8)
Tennessee	4.6	(3.4- 6.0)	4.5	(3.1- 6.3)	11.1	(8.4- 14.2)	3.6	(2.3- 5.3)
Texas	4.6	(3.8- 5.5)	6.0	(5.0- 7.2)	11.1	(9.5- 13.0)	3.1	(2.2- 4.2)
Utah	5.0	(3.8- 6.4)	4.7	(3.3- 6.5)	9.7	(7.6- 12.3)	3.8	(2.3- 5.7)
Vermont	4.7	(3.6- 6.0)	7.5	(5.3- 10.3)	16.3	(12.4- 20.7)	2.5	(1.5- 4.0)
Virginia	4.1	(3.0- 5.6)	4.7	(3.2- 6.6)	8.6	(6.1- 11.8)	3.3	(2.1- 5.1)
Washington	5.6	(4.2- 7.4)	5.5	(3.9- 7.6)	13.8	(10.8- 17.1)	4.3	(2.7- 6.6)
West Virginia	3.7	(2.8- 4.9)	6.3	(4.3- 8.8)	9.5	(7.1- 12.4)	2.5	(1.6- 3.9)
Wisconsin	4.7	(3.7- 5.9)	6.4	(4.6- 8.5)	12.6	(9.8- 15.9)	3.1	(2.0- 4.5)
Wyoming	5.5	(4.2- 7.1)	8.0	(5.9- 10.7)	12.8	(9.9- 16.1)	3.7	(2.3- 5.7)

NOTE: Dependence is based on the definition found in the 4<sup>th</sup> ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

NOTE: Estimates are based on a survey-weighted hierarchical Bayes estimation approach, and the prediction (credible) intervals are generated by Markov Chain Monte Carlo techniques.

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

## Children and substance dependence

Children of parents who use substances are more at risk for alcohol and drug use, delinquency and depression, and poor school performance (NHSDA, 1998a). The following section uses data from the 1996 National Household Survey on Drug Abuse to estimate the number of children who may be affected by parental substance use.

Approximately four and a half million children under the age of 18, or 6 percent of all children under the age of 18, lived in a household where one or more parent was in need of substance abuse treatment. Almost 3 million children, or 3.8 percent, had one or more parents who were dependent on illicit drugs. Six million children, or 8.3 percent, lived with one or more parents who were dependent on alcohol and 7.5 million children, or 10 percent, lived with one or more parents who were dependent on alcohol or illicit drugs.

These data by detailed age groups are presented in Tables 2.21 through 2.24. A person is considered in need of treatment for illicit drug abuse when they report at least one of the following:

- Dependence on any illicit drug in the past year using criteria similar to those of the DSM-IV
- Frequent illicit drug use in the past year (i.e., using marijuana daily, using cocaine, hallucinogens or inhalants weekly; or nonmedical use of analgesics, sedatives, tranquilizers, or stimulants weekly)
- Injection drug use in the past year
- Any heroin use in the past year
- Having received treatment for illicit drug use in the past year

Table 2.21: Estimated Number and Percentage of Children<sup>1</sup> in Household<sup>2</sup> Who Had One or More Parent in Need of Treatment for Illicit Drug Abuse, by Children's Ages: NHSDA 1996.

Ages of Children (Years)	Estimated population <17	Estimated population <17 who had one or more parent in need of treatment	Percentage of population <17 who had one or more parent in need of treatment
Under 2	8,590,119	539,433	6.3
2-5	18,766,120	1,206,827	6.4
6-9	18,333,494	1,076,074	5.9
10-13	15,015,264	797,348	5.3
14-17	13,801,727	840,883	6.1
Total	74,506,723	4,460,565	6.0

<sup>1</sup> Children are defined as biological, step, adoptive or foster.

<sup>2</sup> Children age 17 and younger who were not living with one or more parent for most of the quarter of the NHSDA interview are excluded from the present analysis. According to the March 1995 Current Population Survey this amounts to approximately 3 million or 4 percent of children under 18 years of age.

Source: SAMHSA, 1998a. *Analyses of Substance Abuse and Treatment Need Issues*.

Table 2.22: Estimated Number and Percentage of Children<sup>1</sup> in the Household<sup>2</sup> Who Had One or More Parent Dependent on Illicit Drugs, by Children's Ages: NHSDA 1996.

Ages of Children (Years)	Estimated Population < 17 <sup>2</sup>	Estimated Population < 17 <sup>2</sup> who had one or more parent dependent on illicit drugs	Percentage of population < 17 <sup>2</sup> who had one or more parent dependent on illicit drugs
Under 2	8,590,119	378,366	4.4
2 - 5	18,766,120	727,827	3.9
6 - 9	18,333,494	702,221	3.8
10-13	15,015,264	539,747	3.6
14-17	13,801,727	477,797	3.5
Total	74,506,723	2,825,957	3.8

<sup>1</sup>Children are defined as biological, step, adoptive or foster.

<sup>2</sup>Children age 17 and younger who were not living with one or more parent for most of the quarter of the NHSDA interview are excluded from the present analysis. According to the March 1995 Current Population Survey this amounts to approximately 3 million or 4 percent of children under 18 years of age.

Source: SAMHSA, 1998a. *Analyses of Substance Abuse and Treatment Need Issues*.

Table 2.23: Estimated Number and Percentage of Children<sup>1</sup> in the Household<sup>2</sup> Who Had One or More Parent Dependent on Alcohol, by Children's Ages: NHSDA 1996.

Ages of Children (Years)	Estimated Population < 17 <sup>2</sup>	Estimated Population < 17 <sup>2</sup> who had one or more parent dependent on alcohol	Percentage of population < 17 <sup>2</sup> who had one or more parent dependent on alcohol
Under 2	8,590,119	678,923	7.9
2 - 5	18,766,120	1,551,952	8.3
6 - 9	18,333,494	1,616,156	8.8
10-13	15,015,264	1,225,437	8.2
14-17	13,801,727	1,115,056	8.1
Total	74,506,723	6,187,524	8.3

<sup>1</sup>Children are defined as biological, step, adoptive or foster.

<sup>2</sup>Children age 17 and younger who were not living with one or more parent for most of the quarter of the NHSDA interview are excluded from the present analysis. According to the March 1995 Current Population Survey this amounts to approximately 3 million or 4 percent of children under 18 years of age.

Source: SAMHSA, 1998a. *Analyses of Substance Abuse and Treatment Need Issues*.

Table 2.24: Estimated Number and Percentage of Children<sup>1</sup> in the Household<sup>2</sup> Who Had One or More Parent Dependent on Alcohol and/or Illicit Drugs, by Children's Ages: NHSDA 1996.

Ages of Children (Years)	Estimated Population < 17 <sup>2</sup>	Estimated Population < 17 <sup>2</sup> who had one or more parent dependent on alcohol and/or illicit drugs	Percentage of population < 17 <sup>2</sup> who had one or more parent dependent on alcohol and/or illicit drugs
Under 2	8,590,119	867,674	10.1
2 - 5	18,766,120	1,884,394	10.0
6 - 9	18,333,494	1,912,796	10.4
10-13	15,015,264	1,464,345	9.8
14-17	13,801,727	1,353,769	9.8
Total	74,506,723	7,482,978	10.0

<sup>1</sup>Children are defined as biological, step, adoptive or foster.

<sup>2</sup>Children age 17 and younger who were not living with one or more parent for most of the quarter of the NHSDA interview are excluded from the present analysis. According to the March 1995 Current Population Survey this amounts to approximately 3 million or 4 percent of children under 18 years of age.

Source: SAMHSA, 1998a. *Analyses of Substance Abuse and Treatment Need Issues*.

### **Arizona and substance dependence**

This section contains substance dependency information specific to Arizona. Arizona estimates for substance abuse derived from the National Household Survey on Drug Abuse are presented in Table 2.25. 5.3 percent of Arizona's population is estimated to be dependent on illicit drugs or alcohol. The highest rate, 11.4 percent, is found among people between the ages of 18 and 25.

Another estimate of substance dependence in Arizona comes from the Arizona Substance Abuse Needs Assessment Study conducted by the Arizona Department of Health Services in 1996 (Arizona Department of Health Services [ADHS], 1998). This telephone survey of more than 8,600 randomly selected households in Arizona measured alcohol and drug use as well as substance abuse problems using criteria for drug dependency in the third edition of the DSM, Revised.

In 1996, an estimated 10.2 percent of Arizona's population had a current problem with alcohol or drugs and 6.3 percent had a past problem with these substances. A current problem was defined as at least one recurring abuse/dependence symptom within the past 18 months and active use of drugs and/or alcohol. Problems with alcohol were reported most frequently with 9.6 percent of Arizonans estimated to be dependent on alcohol. Among illicit drugs, problems with marijuana and stimulants were reported most frequently. This data can be found in Table 2.26.

Table 2.25. Estimates of Past Month Use of Selected Drugs and Past Year Substance Dependence in Arizona, by Age Group: 1999.

Drug Characteristic	AGE GROUP (Years)			
	Total	12-17	18-25	26 or Older
RATE ESTIMATES (Percent)				
<b>PAST MONTH USE</b>				
Any Illicit Drug <sup>1</sup>	7.1	10.7	13.7	5.4
Marijuana	5.4	7.5	12.1	3.9
Any Illicit Drug Other Than Marijuana <sup>1</sup>	3.4	5.2	5.9	2.8
Cigarette	24.4	14.5	39.1	23.3
Binge Alcohol <sup>2</sup>	19.2	12.6	35.4	17.4
<b>PAST YEAR DEPENDENCE<sup>3</sup></b>				
Illicit Drug	2.0	3.1	4.7	1.4
Illicit Drug or Alcohol	5.3	6.6	11.4	4.1
POPULATION ESTIMATES (In Thousands)				
<b>PAST MONTH USE</b>				
Any Illicit Drug <sup>1</sup>	267	46	68	153
Marijuana	203	32	60	111
Any Illicit Drug Other Than Marijuana <sup>1</sup>	130	22	29	78
Cigarette	919	62	194	663
Binge Alcohol <sup>2</sup>	725	53	176	495
<b>PAST YEAR DEPENDENCE<sup>3</sup></b>				
Illicit Drug	75	13	23	39
Illicit Drug or Alcohol	200	28	57	115

NOTE: Estimates are based on a survey-weighted hierarchical Bayes estimation approach.

<sup>1</sup> Any Illicit Drug indicates use at least once of marijuana/hashish, cocaine (including crack), inhalants, hallucinogens (including PCP and LSD), heroin, or any prescription-type psychotherapeutic used nonmedically. Any Illicit Drug Other Than Marijuana indicates use at least once of any of these listed drugs, regardless of marijuana/hashish use; marijuana/hashish users who also have used any of the other listed drugs are included.

<sup>2</sup> "Binge" Alcohol Use is defined as drinking five or more drinks on the same occasion on at least 1 day in the past 30 days. By "occasion" is meant at the same time or within a couple hours of each other.

<sup>3</sup> Dependence is based on the definition found in the 4<sup>th</sup> ed. of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).

Source: SAMHSA, 2000. *Summary of Findings from the 1999 National Household Survey on Drug Abuse.*

Table 2.26: Prevalence of Current and Past Problems: Arizona Adults.

	%	Past Problems		Current Problems	
		Number of Adults	%	Number of Adults	%
Alcohol	5.1%	108,000	9.6%	204,000	
Drugs	2.0%	42,000	1.7%	36,000	
Any Problem (alcohol or drug)	6.3%	134,000	10.2%	217,000	
Illicit Drug Problems					
Marijuana	1.4%	30,000	0.9%	19,000	
Cocaine	1.3%	28,000	0.4%	*	
Stimulants	0.9%	19,000	0.8%	17,000	
Hallucinogens	0.4%	*	0.2%	*	
Narcotics (plus Heroin)	0.6%	13,000	0.1%	*	
Sedatives	0.3%	*	0.1%	*	
Inhalants	<.01%	*	0%	*	

Source: ADHS, 1998. *Substance Abuse in Arizona: Final Report of the 1996 Telephone Household Survey.*

Table 2.27 compares Arizona substance problem estimates with data available from other states.

Table 2.27: Prevalence of Current Alcohol/Drug Problems: National Comparisons.

	Any Problem (alcohol or drugs)	Alcohol Problem	Drug Problem
Iowa	10.6%	9.5%	1.1%
Arizona	10.2%	9.6%	1.7%
South Carolina	8.2%	7.6%	Not available
Colorado	8.0%	7.5%	1.2%
Washington	7.8%	7.1%	1.8%
Maryland	5.6%	4.9%	0.7%

Source: ADHS, 1998. *Substance Abuse in Arizona: Final Report of the 1996 Telephone Household Survey.*

The Arizona Telephone Household Survey was also able to compare regions of the state. This information is detailed in Tables 2.28 and 2.29. The rural south reported more problems with alcohol than the urban counties of Maricopa and Pima and the rural north reported more problems with drugs than either of the urban counties. Mohave County has the highest rate of problems with drugs and alcohol and Apache and Navajo counties have the lowest percentage of people estimated to have problems with these substances. Note that the survey did not include reservations.

Table 2.28: Prevalence of Current Alcohol/Drug Problems by Area.

	Alcohol	Drug
Pima	9.3%	1.4%
Maricopa	9.6%	1.6%
Rural North	9.2%	2.6%
Rural South	10.5%	1.8%

Source: ADHS, 1998. *Substance Abuse in Arizona: Final Report of the 1996 Telephone Household Survey.*

Table 2.29: Weighted Prevalence Estimates by County or Region<sup>1</sup>.

	Population	Sample Size	Past Problem			Current Problem		
			Alcohol	Drugs	Weighted Total (Alcohol/Drugs)	Alcohol	Drugs	Weighted Total (Alcohol/Drugs)
Apache and Navajo	28,815	202	6.1%	2.2%	7.8%	6.5%	1.9%	6.5%
Cochise, Graham, Greenlee and Santa Cruz	90,856	506	5.7%	0.6%	5.9%	9.3%	1.0%	9.4%
Coconino County	50,303	290	10.1%	5.1%	12.6%	7.6%	2.1%	8.9%
Gila and Pinal	80,927	479	3.2%	1.5%	4.4%	11.5%	2.4%	12.9%
La Paz and Yuma	63,922	329	4.3%	1.3%	5.2%	10.2%	2.0%	11.1%
Mohave	52,346	311	7.7%	4.0%	10.4%	13.3%	4.1%	15.5%
Yavapai	58,497	471	8.9%	1.7%	9.9%	8.7%	2.0%	9.5%
Maricopa East	394,899	1,361	4.8%	1.3%	5.4%	9.7%	1.6%	10.2%
Maricopa Northeast	447,642	1,408	4.2%	1.8%	5.2%	10.7%	2.1%	11.5%
Maricopa West	454,298	1,639	4.6%	2.3%	6.2%	8.6%	1.2%	8.9%

<sup>1</sup> Estimates do not include reservations.

Source: ADHS, 1998. *Substance Abuse in Arizona: Final Report of the 1996 Telephone Household Survey.*

As shown in Table 2.30 men were more than twice as likely as women to have a current problem with any substance and close to three times as likely to have a problem with alcohol.

	Any Current Problem	Alcohol Problem	Drug Problem
Men	14.7%	13.9%	2.2%
Women	6.0%	5.5%	1.2%

Source: ADHS, 1998. *Substance Abuse in Arizona: Final Report of the 1996 Telephone Household Survey.*

Table 2.31 describes the relationship of substance problems to race and ethnicity.

	Any Problem (alcohol or drug)	Alcohol Problem	Drug Problem
White	10.6%	10%	1.7%
Hispanic	9.3%	8.6%	1.6%
Other	8.2%	7.3%	2.4%

Source: ADHS, 1998. *Substance Abuse in Arizona: Final Report of the 1996 Telephone Household Survey.*

According to the information provided in Table 2.32, the majority of people with drug and alcohol problems are men between the ages of 18 and 34. A larger percentage of adults with drug problems have not graduated from high school and earn less than \$15,000. People with alcohol and drug problems are more likely to be unemployed and have no health insurance.

	Adults with Alcohol Problems	Adults with Drug Problems	Adults with No Problem
Men	73%	60%	48%
White	79%	69%	76%
18-34 years old	65%	73%	46%
Not High School Grad	9%	22%	18%
Married	37%	27%	59%
Less than \$15,000/year	12%	33%	12%
Unemployed	5%	7.4%	2.8%
No Health Insurance	21%	49%	18%

Source: ADHS, 1998. *Substance Abuse in Arizona: Final Report of the 1996 Telephone Household Survey.*

## Chapter 3: Pathological Gambling

### **Introduction**

An understanding of gambling behavior and its consequences is important for two reasons. First it is associated with a wide range of personal and social problems such as divorce, job loss, bankruptcy, and arrest and incarceration (National Opinion Research Center, 1999). Health problems have also been identified including insomnia, gastrointestinal disorders, cardiac problems, and high blood pressure (Petry and Armentano, 1999). Problem gambling also occurs in conjunction with mental health problems such as substance abuse, anxiety disorders, and depressive disorders (Petry and Armentano, 1999). Pathological and problem gamblers in the U.S. cost society approximately \$5 billion per year and an additional \$40 billion in lifetime costs for productivity reduction, social services, and creditor losses (National Opinion Research Center, 1999). This does not capture costs of divorce and family disruption. The social, physical, and financial consequences of problem gambling are significant.

Second, gambling opportunities and behaviors have increased. The total amount of money legally wagered nationwide increased from \$17.3 billion in 1974 to \$586.5 billion in 1996 (Shaffer, Hall, and Vander Bilt, 1997). Per capita spending on lottery products increased from \$20 to \$150 per year from 1975 to 1996 (Shaffer, Hall, and Vander Bilt, 1997). The number of state lotteries has also increased over 200% from a total of 7 in 1973 to 38 in 1997 (Clotfelter and Cook, 1990). The increase described in these figures may result in a similar increase in the social and financial costs associated with problem gambling.

Disordered gambling has been studied since the mid-1970s and was first accepted by the American Psychiatric Association in the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III). According to the most recent edition of the DSM, pathological gambling is a persistent and recurrent maladaptive gambling behavior indicated by five or more of the following criteria presented in Table 3.1.

Two sources provide substantial information on the prevalence of gambling behaviors and will be referred to frequently in this fact book. The first is a meta-analysis conducted by Howard J. Shaffer, Matthew N. Hall, and Joni Vander Bilt at the Harvard Medical School, Division on Addictions (1999). Meta-analysis is a research technique that integrates the findings of independent studies and allows for comparisons to be made between studies. One hundred and twenty studies from the U.S. and Canada were included in the meta-analysis.

The second source is a 1998 national study, the Gambling Impact and Behavior Study, conducted by the National Opinion Research Center for the National Gambling Impact Study Commission. This study used five methods of data collection including a representative telephone survey of 2,417 adults (aged 18 and older) and an intercept survey of 530 adult patrons of 21 gaming facilities.

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Table 3.1: DSM-IV Criteria for Pathological Gambling.

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1. Is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)
  2. Needs to gamble with increasing amounts of money in order to achieve the desired excitement
  3. Is restless or irritable when attempting to cut down or stop gambling
  4. Gambles as a way of escaping from problems or relieving dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, or depression)
  5. After losing money gambling, often returns another day in order to get even (“chasing one’s losses”)
  6. Lies to family members, therapists, or others to conceal the extent of involvement with gambling
  7. Has made repeated unsuccessful efforts to control, cut back, or stop gambling
  8. Has committed illegal acts (e.g., forgery, fraud, theft, or embezzlement) in order to finance gambling
  9. Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling
  10. Has relied on others to provide money to relieve a desperate financial situation caused by gambling.
- 

Source: American Psychiatric Association, 1994. *Desk Reference to the Diagnostic Criteria from DSM-IV*.

### **Nonproblematic Gambling**

The following tables provide information about the prevalence of gambling behaviors in the U.S.

Table 3.2 presents data from the meta-analysis conducted by Shaffer, Hall, and Vander Bilt and includes a review of 20 studies published from 1988 to 1997. A large percentage of the population, a median of 87 percent, reports ever gambling in their life. A more accurate measure of current gambling behaviors is reports of past year gambling. A median of 72 percent of people responding in these various surveys report having gambled in the past year.

Table 3.2: Percentage of the Adult Population Reporting Lifetime and Past-Year Gambling for Different Types of Gambling (Surveys Conducted 1988-1997).

	Lifetime			Past Year		
	No. of Studies	% Range	Median %	No. of Studies	% Range	Median %
Any gambling	17	64-96	87	11	49-88	72
Lottery	11	28-81	64	10	5-40	24
Video Lottery terminal	9	09-54	26	6	6-44	26
Casino	8	19-66	36	7	6-44	27
Charitable	7	13-67	38	3	4-40	04
Pari-mutuel	11	15-37	30	9	4-12	08
Sports	11	20-45	29	9	9-26	17
Cards	9	20-49	26	5	10-20	18
Skill	6	13-25	18	2	11	11
Financial markets	9	07-20	12	5	5-7	5
Illicit	2	56-65	60	4	4-39	18

Source: The National Academy of Sciences, 1999. *Pathological Gambling: A Critical Review*.

Two national studies of gambling behavior have been conducted. The first was published in 1976 by the Commission on the Review of the National Policy Toward Gambling. The second study, referred to above, was conducted in 1998 and was sponsored by the National Gambling Impact Study Commission. Key findings from the 1998 study and comparisons with the 1975 are presented in Table 3.3

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Table 3.3: Key findings from the Gambling Impact and Behavior Study, 1999.

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#### Changes in Gambling Participation Over Time

- Since the 1975 survey, the ratio of adults who have never gambled fell from one out of three to one out of seven. Gambling expenditures increased from 0.30 percent of personal income to 0.74 percent of personal income.
- Lotteries and casinos are the most common forms of gambling. Since 1975 the proportion of adults who played the lottery in the past year has doubled and the proportion who gambled in a casino in the past year has more than doubled.
- Since 1975, proportionately fewer people aged 18 to 44 years are gambling and proportionately more people 45 and older are gambling. The most dramatic increase is among adults 65 and older.

#### Pathological and problem gambling

- Based on DSM-IV criteria, 2.5 million adults are pathological gamblers and another 3 million could be considered problem gamblers
- Fifteen million adults are at risk for problem gambling and about 148 million are low-risk gamblers.
- Pathological, problem, and at-risk gambling are proportionately higher among African Americans although African Americans comprise a minority of all pathological gamblers
- The availability of a casino within 50 miles is associated with about double the prevalence of problem and pathological gamblers
- Pathological gamblers and problem gamblers are more likely than other gamblers or nongamblers to have been on welfare, declared bankruptcy or to have been arrested or incarcerated
- Pathological and problem gamblers are more likely than low-risk gamblers to have been troubled by mental or emotional problems and to have received mental health care in the past year.
- Pathological and problem gamblers comprise about 2.5 percent of adults and account for 15 percent of casino, lottery, and pari-mutuel receipts from the gamblers represented in the surveys.

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Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

A more detailed comparison of information from the two studies is presented in Table 3.4

Table 3.4: Comparison of 1975 and 1998 Studies on Various Items.

	1975	1998
Past year bettors	61%	63%
Lifetime bettors	68%	86%
<b>Past year gambling by selected games</b>		
Casino	10%	29%
Lottery	24%	52%
Bingo	19%	6%
Horse racing	14%	7%
<b>Sex of past year gamblers</b>		
Male	52%	51%
Female	48%	49%
<b>Lifetime gaming by age group</b>		
18-24	75%	80%
25-44	74%	88%
45-64	67%	88%
65+	35%	80%
<b>Past year gaming by age group</b>		
18-24	73%	64%
25-44	69%	67%
45-64	60%	66%
65+	23%	50%

Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

### **Problem Gambling**

The following section looks at information related to gambling behavior that various authors and studies have referred to as disordered, problematic, or pathological.

Key findings from the meta-analysis conducted by Shaffer, Hall, and Vander Bilt are presented in Table 3.5.

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Table 3.5: Key Findings from *Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis*.

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- Gambling disorders have increased among adults in the general population over the past two decades
- Gambling disorders have not increased over the past two decades among adolescents and adults in prison or treatment.
- Gambling disorders are significantly more prevalent among youth than among the adult general population.
- Males are significantly more likely to have a gambling disorder than females.
- Individuals with psychiatric problems have much higher rates of disordered gambling than either adolescents or adults from the general population.
- There is no significant regional variation in gambling disorder rates for the United States or Canada.

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Source: Shaffer, Hall, & Vander Bilt, 1997. *Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis*.

Table 3.6 provides information about pathological gamblers from the meta-analysis. In an effort to standardize terms used in the various studies, a level system was created. Level 0 refers to nongamblers; Level 1 describes social or recreational gamblers who do not experience gambling problems; Level 2 represents gamblers with less serious gambling problems; and Level 3 denotes pathological gambling.

The median lifetime prevalence of pathological gambling (Level 3) across all the studies reviewed was 1.5 percent. A median of 5.4 percent was computed for the prevalence of lifetime problem and pathological gambling (Level 2 and Level 3 combined). The median past year problem gambling (Level 2) was computed at 2.2 percent across the studies and past year pathological gambling (Level 3) was computed to be 0.9 percent (National Academy of Sciences, 1999).

The researchers also looked at the percentage of problem and pathological gambling among those who gamble. This information is presented in the last two columns. Approximately 3 to 7 percent of those people who gambled in the year prior to the survey reported problem (Level 2) or pathological (Level 3) gambling (National Academy of Sciences, 1999).

Table 3.6: Percentage Classified as Pathological or Problem Gamblers in Adult Population Samples (Surveys Conducted 1988-1997).

Year	State	Lifetime (All Respondents)			Past Year (All Respondents)			Past Year (Gamblers Only)	
		Level 2 & 3	Level 2	Level 3	Level 2 & 3	Level 2	Level 3	Level 2 & 3	Level 3
1989	California			1.2					
1996	Connecticut	5.4	4.2	1.2	2.8	2.2	0.6	3.2	0.7
1994	Georgia	4.4	2.8	1.6	2.3	1.5	0.8	3.5	1.2
1990	Indiana	5.6	5.5	0.1					
1995	Iowa	5.4	3.5	1.9	3.3	2.3	1.0	4.6	1.4
1995	Louisiana	7.0	4.5	2.5	4.8	3.4	1.4	6.6	1.9
1988	Maryland	3.9	2.4	1.5					
1989	Massachusetts			2.3					
1994	Minnesota				4.4	3.2	1.2	6.8	1.8
1996	Mississippi	6.8	3.7	3.1	4.9	2.8	2.1	10.0	4.3
1992	Montana	3.6	2.3	1.3	2.2	1.5	0.7		
1988	New Jersey	4.2	2.8	1.4					
1996	New Mexico				14.7	11.2	3.4		
1996	New York	7.3	4.7	2.6	3.6	2.2	1.4	4.5	1.8
1992	North Dakota	3.5	2.5	1.0	2.0	1.3	0.7	2.7	1.0
1993	South Dakota	2.3	1.4	0.9	1.2	0.7	0.5		
1995	Texas	5.4	3.6	1.8	3.0	2.2	0.8	4.4	1.2
1992	Washington	5.0	3.4	1.4	2.8	1.9	0.9	3.5	1.1
1995	Wisconsin	12.9	12.0	0.9					
1990	Not reported			2.0					

Source: The National Academy of Sciences, 1999. *Pathological Gambling: A Critical Review*.

In order to see changes in gambling behavior over time, it is helpful to compare results of surveys that have been conducted more than once. Table 3.7 lists states that have conducted repeated surveys and their findings for problem (Level 2) and pathological (Level 3) gambling. The authors of the original report note that in the cases of Iowa, Minnesota, and Texas, survey dates encompassed the introduction of new gambling opportunities. In these states, pathological, problem, and pathological and problem gambling all showed increases. These increases were statistically significant for Iowa and Minnesota (National Academy of Sciences, 1999).

Table 3.7: Percentage of (Level 3) Pathological and/or (Level 2) Problem Gamblers in Adult Population Samples in States with Repeated Surveys.

Year	State	Lifetime (All Respondents)			Past Year (All Respondents)			Past Year (Gamblers Only)	
		Level 2 & 3	Level 2	Level 3	Level 2 & 3	Level 2	Level 3	Level 2 & 3	Level 3
1991	Connecticut	6.3	3.6	2.7					
1996	Connecticut	5.4	4.2	1.2	2.8	2.2	0.6	3.2	0.7
1988	Iowa	1.7	1.6	0.1					
1995	Iowa	5.4	3.5	1.9	3.3	2.3	1.0	4.6	1.4
1990	Minnesota	2.5	1.6	0.9	4.0	1.4			
1994	Minnesota	4.4	3.2	1.2	6.8	1.8			
1986	New York	4.2	2.8	1.4					
1996	New York	7.3	4.7	2.6	3.6	2.2	1.4	4.5	1.8
1991	South Dakota <sup>a</sup>	2.8	1.8	1.0	1.4	0.8	0.6		
1993	South Dakota <sup>a</sup>	2.3	1.4	0.9	1.2	0.7	0.5		
1992	Texas	4.8	3.5	1.3	2.5	1.7	0.8	5.1	1.6
1995	Texas	5.4	3.6	1.8	3.0	2.2	0.8	4.4	1.2

<sup>a</sup> The South Dakota surveys asked about gambling problems within the past six months rather than past year.

Source: The National Academy of Sciences, 1999. *Pathological Gambling: A Critical Review*.

Pathological gambling may be associated with certain types of gambling. Table 3.8 investigates this issue and presents the range of differentials between Level 1 and Level 2 and 3 combined gamblers for the various studies. The last column provides a median value for the differences. The percent of problem and pathological gamblers participating in each activity was greater than the percent of gamblers without problems. Problem and pathological gamblers were more active in bingo and charitable games, lotteries, racetrack betting, sports betting, and casino games.

Table 3.8: Participation Rates in Different Types of Gambling for Nonproblem and Problem and Pathological Gamblers Combined.

Gambling Activity	Number of Studies	Range of % Differences Between Level 1 and Level 2/3 Combined	Median % Difference Between Level 1 and Level 2/3 Combined
Bingo, charitable games	3	12-24	21
Lottery, general	9	8-29	20
Instant/daily lottery, pulltabs	11	7-33	16
Racetrack, horse races	3	10-27	18
Sports betting	11	6-35	16
Casino, casino games	8	7-24	15
Card games	6	8-34	12
Games of skill	2	12-13	12
Video poker	2	7-18	12

Source: The National Academy of Sciences, 1999. *Pathological Gambling: A Critical Review*.

Table 3.9 presents data in the meta-analysis categorized by population. The authors of the study concluded that adolescents participating in these surveys reported a significantly higher percentage of Level 3 and Level 2 gambling for both lifetime and past year reporting periods than did adults. College students also had consistently higher estimates of lifetime pathological gambling than the adults surveyed. The treatment/prison population had the highest prevalence of disordered gambling of all groups studied (Shaffer, Hall, and Vander Bilt, 1999).

Table 3.9: Mean Disordered Gambling Prevalence Estimates and Prediction Intervals for 4 Study Populations.

	Adult	Adolescent	College	Treatment/Prison
Level 3 lifetime	1.6 (1.35, 1.85)	3.88 (2.33, 5.43)	4.67 (3.44, 5.90)	14.23 (10.70, 17.75)
Level 2 lifetime	3.85 (2.94, 4.76)	9.45 (7.62, 11.27)	9.28 (4.43, 14.12)	15.01 (8.94, 21.07)
Level 1 lifetime	94.67 (93.71, 95.62)	89.56 (85.88, 93.25)	86.66 (80.90, 92.42)	71.54 (62.90, 80.18)
Level 3 past year	1.14 (0.90, 1.38)	5.77 (3.17, 8.37)	-	-
Level 2 past year	2.80 (1.95, 3.65)	14.82 (8.99, 20.66)	-	-
Level 1 past year	96.04 (95.04, 97.04)	82.31 (75.59, 89.03)	-	-

Source: Shaffer, Hall, and Vander Bilt, 1999. *Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Research Synthesis*.

The analysis also looked at the prevalence of Level 2 and Level 3 gambling over time. These data are reported in Table 3.10 and show that gambling disorders significantly increased between 1974 and 1997 (Shaffer, Hall, and Vander Bilt, 1999).

Table 3.10: Mean Adult Disordered Gambling Prevalence Estimates for Premedian-Year and Post median-Year Groups.

	Early Studies (1977-1993)	Recent Studies (1994-1997)
Lifetime level 2	2.93	4.88 <sup>1</sup>
Lifetime combined	4.38	6.72 <sup>1</sup>
Past year level 3	0.84	1.29 <sup>1</sup>

<sup>1</sup> Significantly higher than early studies' estimates; P<.05

Source: Shaffer, Hall, and Vander Bilt, 1999. *Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Research Synthesis*

Findings from the Gambling Impact and Behavior Study are presented in the following tables. Table 3.11 shows prevalence estimates for pathological, problem, and at-risk gambling as reported by phone survey respondents and phone survey and patron survey combined. Pathological, problem, and at-risk gambling are defined in the second column.

About one in seven or 29 million adults have never gambled and about 148 million adults could be considered low-risk gamblers. The authors of the study estimate that there are about 2.5 million pathological gamblers, 3 million problem gamblers, and 15 million at-risk gamblers in the United States (National Opinion Research Center, 1999).

Table 3.11: Prevalence of Pathological and Problem Gambling.

	Definition	Phone only (n=2,417)	Phone and patron (n=2,947)
Past-year pathological	5+ DSM-IV criteria and lost more than \$100 in a single day or year	0.1%	0.6%
Lifetime pathological		0.8%	1.2%
Past-year problem	3 or 4 DSM-IV criteria and lost more than \$100 in a single day or year	0.4%	0.7%
Lifetime problem		1.3%	1.5%
Past-year at-risk	1 or 2 DSM-IV criteria and lost more than \$100 in a single day or year	2.3%	2.9%
Lifetime at-risk		7.9%	7.7%

Source: The Wager, 1999. *National Gambling Impact Study Commission: Part I.*

Table 3.12 shows the prevalence of gambling types by demographic group for the phone survey and patron survey combined. Men have higher rates than women of at-risk, problem, and pathological gambling do. People over 65 were less likely to engage in at-risk, problem, or pathological gambling than younger respondents. African Americans

reported higher rates of at-risk, problem, and pathological gambling than whites (National Opinion Research Center, 1999).

Table 3.12: Prevalence of Gambling by Demographic Group, Phone Survey and Patron Survey Combined.

	At-risk (n=267)		Problem (n=56)		Pathological (n=67)	
	Lifetime	Past-year	Lifetime	Past-year	Lifetime	Past-year
<b>Gender</b>						
Male	9.6	3.9	2.0	0.9	1.7	0.8
Female	6.0	2.0	1.1	0.6	0.8	0.3
<b>Race</b>						
White	6.8	2.7	1.4	0.6	1.0	0.5
Black	9.2	4.2	2.7	1.7	3.2	1.5
Hispanic	12.7	3.7	0.9	0.7	0.5	0.1
Other	8.8	1.8	1.2	0.5	0.9	0.4
<b>Age</b>						
18-29	10.1	3.9	2.1	1.0	1.3	0.3
30-39	6.9	2.1	1.5	0.8	1.0	0.6
40-49	8.9	3.3	1.9	0.7	1.4	0.8
50-64	6.1	3.6	1.2	0.3	2.2	0.9
65+	6.1	1.7	0.7	0.6	0.4	0.2
<b>Education</b>						
Less than HS	10.0	2.4	1.7	1.2	2.1	1.0
HS graduate	8.0	3.5	2.2	1.1	1.9	1.1
Some college	7.9	3.5	1.5	0.8	1.1	0.3
College graduate	6.4	2.0	0.8	0.2	0.5	0.1
<b>Income</b>						
<\$24,000	7.3	2.6	1.6	0.7	1.7	0.9
\$24,000-49,999	6.9	3.2	1.8	0.9	1.4	0.6
\$50,000-99,999	8.0	2.5	1.3	0.7	0.9	0.2
>\$100,000	13.4	4.9	1.4	0.4	0.7	0.2

Source: The Wager, 1999. *National Gambling Impact Study Commission: Part I*.

One might think that people with gambling related difficulties would perceive gambling to be a good thing. According to Table 3.13, pathological gamblers, more than any other group, believe the opposite and think that gambling has a negative impact. At-risk, problem, and pathological gamblers also differ from those people at low-risk for gambling in that they gamble for excitement and to win money (National Opinion Research Center, 1999).

Table 3.13: Attitudes Toward Gambling in Phone and Patron Survey by Lifetime and Past-Year Gambler Type.

Attitude Toward Gambling	Low Risk		At Risk		Problem Gamblers		Pathological Gamblers	
	Life	Past-year	Life	Past-year	Life	Past-year	Life	Past-year
Overall impact is bad/very bad	32%	24%	21%	11%	27%	18%	49%	19%
Excitement is important/very important	35%	36%	63%	81%	83%	93%	85%	86%
Winning money is important/very important	62%	63%	79%	88%	89%	84%	95%	94%
Usually gamble with friends, family	64%	65%	70%	64%	62%	71%	81%	81%

Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

The Gambling Impact and Behavior Study also looked at the economic consequences of gambling. Employment experiences by gambler type are presented in Table 3.14. Pathological gamblers reported high employment rates but were more likely to have lost or been fired from a job. Problem gamblers reported being significantly more likely to have been unemployed or not working at the time of their interview (National Opinion Research Center, 1999)

Table 3.14: Employment Experiences, by Type of Gambler (Lifetime Only).

Type of Characteristic	Non-gambler	Low risk	At risk	Problem gambler	Path. Gambler
Employed currently	55.3	73.3	71.5	58.9	76.3
Any employment past year	64.4	78.8	80.3	77.2	82.3
	Among those Working Past Year				
Any unemployment	21.5	12.7	17.7	23.8	15.9
Months unemployed	1.6	0.9	1.3	1.8	1.3
Lost a job/fired past year	2.6	4.0	5.6	10.8	13.8
Hourly wage (phone survey only)	\$14.60	\$18.20	\$18.10	\$18.00	\$17.90

Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

As shown in Table 3.15 pathological gamblers have significantly higher rates of bankruptcy. Pathological gamblers also have greater debt, 25 percent greater than low risk gamblers and about 120 percent greater than non-gamblers. When debt is compared to income, pathological gamblers owe \$1.20 for every dollar of annual income. Low-risk and nongamblers owe \$0.80 and \$0.60 respectively.

Table 3.15: Financial Characteristics and Impacts, by Type of Gambler.

Characteristic	Non-gambler	Low-risk	At-risk	Problem gambler	Path. Gambler
Any unemployment benefits, 12 mos.	4.6	4.0	10.9	10.9	15.0
Received welfare benefits, 12. Nos	1.9	1.3	2.7	7.3	4.6
Household income, 12 mos. (phone survey)	\$36,000	\$47,000	\$48,000	\$45,000	\$40,000
Household debt (phone survey)	\$22,000	\$38,000	\$37,000	\$14,000	\$48,000
Filed bankruptcy, ever	4.2	5.5	4.7	10.3	19.2

Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

Criminal justice consequences associated with the various gambler types is presented in Table 3.16. Almost one-third of problem and pathological gamblers has been arrested and one-fifth of pathological gamblers has been incarcerated.

Table 3.16: Weighted Occurrence of Criminal Justice Consequences, by Type of Gambler.

	Non-gambler	Low risk	At risk	Problem gambler	Path. Gambler
Arrested	4.5	11.1	20.7	36.3	32.3
Times arrested	1.7	2.1	2.9	1.6	3.3
Incarcerated (phone survey only)	0.4	3.7	7.8	10.4	21.4

Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

Table 3.17 compares the costs of pathological and problem gambling with other health problems.

Table 3.17: Economic Impact of Major Health Problems.

Type of Problem	Annual Cost (billions)	Prevalence (millions)	Annual Cost per Prevalent Case
Path./prob. gambling	\$5	5.4	\$900
Drug abuse	\$110	6.7	\$10,000
Alcohol abuse	\$166	13.8	\$7,000
Mental illness	\$105	44	\$2,300
Stroke	\$30	3	\$10,000
Heart disease	\$125	21	\$6,000
Diabetes	\$92	15.5	\$5,800
Motor vehicle crashes	\$71	19	\$3,600
Smoking	\$72	46	\$1,500

Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

Results of a survey conducted in five states is presented in Tables 3.18 and 3.19. The survey used random digit dialing and random selection of respondents within households to ensure that inferences could be drawn between the sample and the population in the five states. While this survey was conducted between 1988 and 1990 and is older than data presented in the Gambling Impact Behavior Study, it may be useful for comparison purposes.

Table 3.18 shows lifetime gambling rates and rates for pathological gambling within the five states studied. The author of the study noted that lifetime gambling rates, mean number of gambling activities, and pathological gambling rates are statistically significantly lower in Iowa than in the other states.

Table 3.18: Gambling Involvement and Prevalence of Pathological Gambling in the General Population.

State	Lifetime Gambling Participation, % (n=4500)	Mean No of Gambling Activities (n=4500)	Prevalence Rate, % (n=4500)
Massachusetts	90	3.51	2.3
Maryland	89	3.66	1.5
New Jersey	92	4.05	1.4
California	89	3.86	1.2
Iowa	84	3.05	0.1

Source: Volberg, R, 1994. *The Prevalence and Demographics of Pathological Gamblers: Implications for Public Health.*

Table 3.19 presents characteristics of pathological gamblers when compared to the overall survey sample. Pathological gamblers are significantly more likely to be male, non-White, to have lower education, and to be unmarried. Figures are also provided for pathological gamblers entering treatment in each of the five states. These individuals are mostly white, middle-aged men.

Studying gambling behavior in adolescents is important because of the potential for future gambling problems and the harmful effects gambling problems might pose to this vulnerable population (National Academy of Sciences, 1999). Studies conducted in North America have found that two out of three underage youth have gambled for money (Jacobs, 2000). Approximately 15.3 million youth aged 12 to 17 have gambled with or without adult knowledge and approval and as many as 2.2 million of these may be experiencing serious gambling related problems. Between 1984 and 1999, a substantial increase was noted in the proportion of youth who report gambling in the past year and youth reporting serious gambling related problems.

Table 3.19: Characteristics of Pathological Gamblers in Professional Treatment Programs and in the General Population.							
	Total Survey Sample (n=4442)	Probable Pathological Gamblers in Survey Sample (n=58)	New Jersey (n=155)	Maryland (n=276)	Massachusetts (n=137)	Iowa (n=135)	California (n=71)
Male, %	43	76	93	91	93	86	93
White, %	80	64	90	89	93	92	94
High School Graduate, %	90	79	89	84	93	87	98
Not married, %	46	62	41	60	29	49	69
Median age, y	-	34	38	38	37	35	33

Source: Volberg, R, 1994. *The Prevalence and Demographics of Pathological Gamblers: Implications for Public Health.*

Adolescent gambling data from Shaffer’s meta-analysis are presented in Table 3.20. A high percentage of adolescents, a median of 85 percent, have gambled at some time in their life. A smaller proportion, a median of 75 percent, have gambled within the past year. The types of gambling in which adolescents engaged most frequently were card games, lotteries, and games of skill.

Table 3.20: Percentages of Adolescents Reporting that They Have Participated in Various Types of Gambling.

Form of Gambling	Lifetime			Past Year		
	Range	Median	Number of Studies	Range	Median	Number of Studies
Any gambling	39-92	85	21	52-89	73	6
Cards	21-59	53	17	32-71	42	9
Casino	3-84	27	13	1-71	10	6
Financial markets	15-23	18	7	-	-	-
Illicit	2-10	9	3	-	-	-
Lottery	15-69	42	19	10-65	29	11
Pari-mutuel	7-41	20	15	4-29	9	8
Skill	12-51	41	17	22-60	31	10
Sports betting	11-49	31	17	16-53	40	10
Video lottery terminal	24-28	26	3	-	-	-

Note: the estimates above are independent and not necessarily from the same studies (i.e., some studies reported only lifetime proportions, and some studies reported both lifetime and past-year proportions of various forms of gambling participation).

Source: The National Academy of Sciences. *Pathological Gambling: A Critical Review (1999)*.

Rates of problem and pathological gambling among adolescents as identified in the various studies contributing to the meta-analysis are presented in Table 3.21. A median rate of 20 percent was found for adolescent problem gamblers and a median rate of 6.1 percent was found for pathological gamblers. The authors of the report urged caution when considering the data due to the differences between studies. The proportion of adolescent pathological gamblers could be more than three times that of adults.

Table 3.21: Percentage Classified as Pathological and/or Problem Gamblers in Adolescent Samples (Surveys Conducted 1988-1997).

Year	State	Sample	Lifetime			Past Year		
			Levels 2 & 3	Level 2	Level 3	Levels 2 & 3	Level 2	Level 3
1989	Connecticut	High School	9.9	8.2	1.7	-	-	-
1996	Connecticut	High School	-	-	-	18.1	9.4	8.7
1995	Connecticut	College	-	2.5	-	-	-	-
1995	Florida	High School	-	-	-	27.7	23.0	4.7
1996	Georgia	Adolescent	10.1	6.7	3.4	-	-	-
1997	Louisiana	Middle/high	-	-	-	16.0	10.0	6.0
1995	Massachusetts	Middle/high	-	-	-	19.1	14.8	4.3
1993	Massachusetts	High school	-	-	-	-	-	4.4
1994	Massachusetts	High school	-	-	-	20.0	13.0	7.0
1994	Massachusetts	High school	-	-	-	11.3	10.9	0.3
1994	Michigan	College	30.8	27.7	3.1	-	-	-
1995	Minnesota	High school	19.5	12.3	7.2	-	-	-
1990	Minnesota	High school	-	-	-	24.8	16.6	8.2
1992	Minnesota	High sch/coll	-	-	-	24.2	14.7	9.5
1995	Minnesota	College	7.7	4.8	2.9	-	-	-
1990	Minnesota	Adolescent	-	-	-	26.1	19.9	6.2
1988	Nevada	College	16.0	12.4	3.6	-	-	-
1992	Nevada	College	34.9	23.7	11.2	-	-	-
1994	Nevada	College	25.4	17.4	8.0	-	-	-
1988	New Jersey	College	16.0	10.0	6.0	-	-	-
1990	New Jersey	Adolescent	18.9	7.7	1.2	-	-	-
1988	New York	College	18.0	10.4	7.6	-	-	-
1988	Oklahoma	College	11.0	6.0	5.0	-	-	-
1988	Texas	College	12.0	7.0	5.0	-	-	-
1992	Texas	Adolescent	16.7	11.7	5.0	-	-	-
1995	Texas	Adolescent	12.2	9.9	2.3	-	-	-
1988	Combination	College	15.0	9.5	5.5	-	-	-

Source: The National Academy of Sciences. *Pathological Gambling: A Critical Review (1999)*.

Results from studies of serious gambling-related problems among youth conducted in the United States from 1984 to 1988 are presented in Table 3.22 and studies conducted from 1989 to 1999 in Table 3.23. An increase from 10 percent to 14 percent in the median level of gambling-related problems was found between these two periods of time (Jacobs, 2000).

Table 3.22: Serious Gambling-Related Problems among Juveniles in the United States (1984-1988).

	Lesieur & Klein	Jacobs et al.	Jacobs et al.	Kuley & Jacobs	Steinberg
Year study completed	1984	1985	1987	1987	1988
At-risk/Potential	5%	5%	5%	-	15%
Problem/Pathological	6%	4%	4%	-	5%
State	NJ	CA	CA	VA	CT

Source: Jacobs, 2000. *Juvenile Gambling in North America: An Analysis of Long Term Trends and Future Prospects*.

Table 3.23: Serious Gambling-Related Problems among Juveniles in the United States (1989-1999).

	Kuley & Jacobs	Winters et al.	Wallisch	Volberg	Shaffer et al.	Wallisch	Volberg	Westpahal et al.	Volberg & Moore
Year study completed	1989	1990	1992	1993	1994	1995	1996	1998	1999
At-risk/Potential Problem/Pathological State	- - VA	20% 6% MN	12% 5% TX	9% 1% WA	14% 9% MA	10% 2% TX	9% 2% GA	10% 6% LA	8% 1% WA

Source: Jacobs, 2000. *Juvenile Gambling in North America: An Analysis of Long Term Trends and Future Prospects*.

Table 3.24: Comparison of U.S. Adult Pathological and Problem Gambling with Alcohol and Drug Dependence and Abuse.

	Pathological Gambling	Alcohol Dependence	Drug Dependence	Pathological and Problem Gambling	Alcohol Dependence and Abuse	Drug Dependence and Abuse
12-month	0.9%	7.2%	2.8%	2.9%	9.7%	3.6%
Lifetime	1.5%	14.1%	7.5%	5.4%	23.5%	11.9%
Source	Committee analysis of Shaffer et al. 1997 data	National Comorbidity Survey (NCS): Kessler et al., 1994	National Comorbidity Survey (NCS): Kessler et al., 1994	Committee analysis of Shaffer et al. 1997 data	National Comorbidity Survey (NCS): Kessler et al., 1994	National Comorbidity Survey (NCS): Kessler et al., 1994

Source: The National Academy of Sciences. *Pathological Gambling: A Critical Review (1999)*.

## Gambling and other disorders

As noted earlier, pathological gambling is frequently associated with substance use, mood anxiety disorders, and interpersonal difficulties (Crockford and Nady el-Guebaly, 1998). This section provides information about the extent of this relationship.

Table 3.24 compares the prevalence of pathological gambling with alcohol and drug dependence. The rates of pathological gambling are lower than rates for alcohol or drug dependence.

Table 3.25 provides similar information for adolescents. Pathological gambling rates are comparable to past month alcohol and marijuana use and are equal to or exceed rates for past month use of illicit drugs.

Table 3.25: Comparison of U.S. Adolescent Pathological Gambling, Alcohol Use, and Drug Use Rates.

Gambling	Alcohol Use	Drug Use
1-6%	8-23%	3-9%
pathological gambling, past year	use alcohol once a month or more or have ever had an alcohol problem	Marijuana use, past month
9-23%		1-2.5%
pathological or problem gambling, past year		use of other drugs, past month

Source: The National Academy of Sciences. *Pathological Gambling: A Critical Review (1999)*.

Table 3.26 presents data from the Gambling Impact and Behavior Study on the correlation of pathological gambling and other disorders. Pathological gamblers are twice as likely as other gamblers to describe their general health in the past year as fair or poor (National Academy of Sciences, 1999). Lifetime pathological and problem gamblers are twice as likely as all other groups to have sought help for an emotional or mental health problem in the past 12 months. Lifetime and past year pathological gamblers are more likely to have manic disorder symptoms and the occurrence of a major depressive episode is significantly higher among problem and pathological gamblers. Drug and alcohol dependence and illicit drug use in the past 12 months is more likely among at-risk, problem, and pathological gamblers than in low-risk or non-gamblers. The occurrence of arrest and incarceration is highest among lifetime problem and pathological gamblers and these gamblers are more likely than all other group to have lost a job in the past year or ever declared bankruptcy.

Table 3.26: Percentage of Lifetime and Past-Year Gambler Types by Health, Mental Health, Substance Abuse, and Other Problems.

	Non-gamblers		Low-risk gamblers		At-risk gamblers		Problem gamblers		Pathological gamblers	
	Life-time	Past year	Life-time	Past year	Life-time	Past year	Life-time	Past year	Life-time	Past year
Health poor/fair, past year	22.8	21.0	14.0	12.3	15.7	13.2	16.3	22.6	31.1	29.6
Mentally troubled (currently) (phone survey only)	10.7	14.6	15.9	17.1	26.5	28.5	42.3	24.2	41.9	66.5
Mental health tx, past year	5.1	6.9	6.8	6.3	6.4	10.1	12.8	5.4	13.3	12.9
Emotionally harmful family argument about gambling	NA	0.5	0.1	0.3	0.8	6.8	15.8	10.5	53.1	65.6
Manic symptoms, ever	NA	0.7	NA	1.6	11.3	17.6	16.8	13.4	32.5	40.1
Depressive episode, ever (phone survey only)	NA	0.1	NA	1.0	8.6	17.4	16.9	5.2	29.1	20.0
Alcohol/drug dependent, ever (phone survey only)	1.1	0.9	1.3	1.8	5.6	13.3	12.4	13.9	9.9	20.0
Drug use 5+ days, past year	2.0	2.4	4.2	5.1	9.2	13.5	16.8	16.1	8.1	13.9
Any job loss, past year	2.6	4.8	3.9	3.6	5.5	2.1	10.8	0.0	13.8	25.0
Bankruptcy, ever	3.9	3.3	5.5	6.4	4.6	10.9	10.3	13.8	19.2	10.7
Arrested,, ever	4.0	7.0	10.0	11.9	21.1	25.7	36.3	25.0	32.3	26.4
Incarcerated, ever (phone survey only)	0.4	-	3.7	-	7.8	-	10.4	-	21.4	-

Source: National Opinion Research Center, 1999. *Gambling Impact and Behavior Study*.

The information presented in Table 3.27 was taken from a literature review conducted in 1998 on the link between pathological gambling and substance misuse (Spunt, Dupont, Lesieur, Liberty, and Hunt) and consists of a variety of findings linking pathological gambling with substance use and dependency.

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Table 3.27: Substance Misuse among Pathological Gamblers.

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- 39% of pathological gamblers undergoing treatment at the Veterans Administration Medical Center in Cleveland, Ohio met criteria for alcohol misuse or drug misuse in the year prior to their admission to the treatment program.
- 47% of pathological gamblers undergoing treatment at the Veterans Administration Medical Center in Cleveland, Ohio met criteria for alcohol misuse or drug misuse at some point in their life.
- The rate of alcohol and substance misuse among female pathological gamblers in a Gamblers Anonymous survey was two to three times higher than the general female population.
- A Texas survey found that pathological gamblers disproportionately come from among people who used illicit drugs in the past year.
- Among United States college students, pathological gambling was correlated with the use of alcohol and getting drunk
- Pathological gambling has been found to relate to mild to severe depression, impulsiveness and inability to resist cravings, attempted suicide, eating disorders, and serious nervous disorders.

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Source: Spunt et al., 1998. *Pathological Gambling and Substance Misuse: A Review of the Literature*.

## Chapter 4: Problematic Internet Use

### **Introduction**

Problematic Internet use differs from drug dependence and pathological gambling in several ways. The Internet is a relatively new phenomenon and research into Internet related behavior has only been conducted since the mid-1990s (Mitchell, 2000). Scientists who study impulse disorders and dependence note that very little empirical research has investigated the negative consequences of excessive Internet use and no research has been conducted on the prevalence of such behavior in the general population (Shaffer, Hall, Vander Bilt, 2000).

Maybe more importantly, there is no consensus among scientists and clinical practitioners on what constitutes problematic Internet use and whether or not such a phenomenon even exists. Unlike substance dependence and pathological gambling, which are both disorders recognized by the DSM-IV, there are no clinically agreed upon criteria for problematic Internet use. Some question if heavy use of the Internet and the negative consequences that may follow such use are not manifestations of other conditions such as depression or impulse control and anxiety disorders (Shaffer, Hall, Vander Bilt, 2000).

Still, the availability and use of the Internet is increasing dramatically and concerns remains that significant social, psychological, and occupational impairment is associated with immoderate Internet use. Those who compulsively use the Internet may experience social isolation, increased depression, familial discord, divorce, academic failure, financial debt, and job loss (Young, Pistner, O'Mara, Buchanan, 1999).

Recent research has begun to define the characteristics of problematic Internet use and measure the extent of problems associated with Internet use. Current definitions for problematic Internet use are based on DSM-IV criteria for pathological gambling (Young, 1996). According to this schema, five of the following criteria must be present for a diagnosis of problematic Internet use:

- Preoccupation with the Internet
- Increased use of Internet in order to achieve satisfaction
- Repeated unsuccessful efforts to control, cut back, or stop Internet use
- Restlessness, moodiness, depression, or irritability when attempting to cut down or stop Internet use.
- Staying on-line longer than originally intended
- Jeopardized or risked the loss of a significant relationship
- Lied to others to conceal the extent of involvement with the Internet
- Use of Internet to escape problems or relieve a dysphoric mood.

Research into this area is still in its infancy and lacks the clear definitions and rigorous study designs required for conclusive findings. The information presented below should be cautiously interpreted and should be considered more of a resource than a definitive report on problematic Internet use.

## Internet user characteristics and behaviors

Information in Table 4.1 provides an estimate of the percentage of people in the United States who are using the Internet and the growth of the Internet in the second half of 2000. According to the Pew Internet Project (Rainie and Packel, 2001), the number of American adults on the Internet grew from about 88 million to more than 104 million in the second half of 2000, an increase of 18 percent. Approximately 45 percent of America's children have Internet access or more than 30 million individuals under the age of 18.

Table 4.1: Internet Growth by Demographic Characteristic.

	May-June, 2000	Nov.-Dec., 2000
All adults	47%	56%
Men	50%	58%
Women	45%	54%
<b>Race/ethnicity</b>		
Whites	49%	57%
Blacks	35%	43%
Hispanics	40%	47%
<b>Parental status</b>		
Parents of children under 18	55%	66%
Non-parents	43%	50%
<b>Age cohorts</b>		
18-29	61%	75%
30-49	57%	65%
50-64	41%	51%
65+	12%	15%
<b>Income brackets</b>		
Under \$30,000	28%	38%
\$30,000-\$50,000	50%	64%
\$50,000-\$70,000	67%	72%
\$75,000+	79%	82%
<b>Educational attainment</b>		
High school or less	28%	37%
Some college	62%	71%
College degree or more	76%	82%

Margin of error is +/-3%.

Source: Rainie and Packel, 2001. *Pew Internet Project: Internet Tracking Report*.

Table 4.2 shows the percentage of people who use the Internet for various activities. Searching for material to support a hobby is the most popular use of the Internet. Compared to mid-year 2000, at the end of 2000, about 20 million more Americans were using the Internet for this purpose (Rainie and Packel, 2001).

Table 4.2: The Percent of Internet Users Who Say They Have Gone Online for Various Reasons.

	May-June, 2000	Nov.-Dec., 2000
Look for hobby information	71%	79%
Browse for fun	61%	68%
Buy a product	46%	52%
Get news	60%	63%
Get medical information	55%	57%
Do research for their jobs	50%	52%
Get financial information such as stock prices	43%	45%
Buy or sell stocks	12%	14%

Margin of error is +/-3%.

Source: Rainie and Packel, 2001. *Pew Internet Project: Internet Tracking Report*.

Tables 4.3 and 4.4 report findings from two studies investigating behaviors, both negative and positive associated with Internet use (Brenner, 1997; Pratarelli, Browne, and Johnson, 1999). Table 4.3 presents the percentage of people responding to the survey that experienced Internet related problems. The author of the study reported that the average person used the Internet 19 hours per week and reported that the Internet interfered with their life in at least ten different ways. Eighty percent of users reported at least five signs of interference.

Table 4.3: Percent Reporting Various Internet Use Behaviors.

Question	Response rate
I have spent at least 3 hours on the net at least twice (true)	85
More than once, I have gotten less than four hours of sleep in a night because I was using the net (not due to studying, deadlines, etc.) (true)	40
I have never made arrangements to rendezvous with someone I knew only from the net (false)	36
I have voluntarily gone more than 3 days without connecting in the past 3 months (false)	47
I have been told that I spend too much time on the net (true)	55
I have used net resource intended for Adults only (true)	71
If it has been a while since I last logged on, I find it hard to stop thinking about what will be waiting for me when I do (true)	28
I have attempted to spend less time connected but I have been unable to (true)	22
I have gotten into hot water with my employer/school for net-related activities (true)	6
I routinely cut short on sleep to spend more time online (true)	29
If it weren't for my computer, I wouldn't have any fun at all (true)	8
My work and/or performance has not deteriorated since I started using the net (false)	26
Given the choice between living where I do now but having computer access and moving somewhere strange and far away but having my modem, I would choose to move (true)	40
Most of my friends I know from the net (true)	8

Source: Brenner, 1997. *Psychology of Computer Use: XLVII. Parameters of Internet Use, Abuse and Addiction: The First 90 Days of the Internet Usage Survey*.

The study from which Table 4.4 was derived found that there was a cluster of Internet related behaviors that many users perceived as causing problems in their daily life. These behaviors included being late for appointments, losing track of time while on the Internet, and changes in eating habits.

Table 4.4: Percentage of 341 Subjects Reporting Various Behaviors Related to Internet Use.

Played video games	58	Tried new things	11
Late for meetings	13	Physically aroused	20
Prefer being on line	6	Found info on line	62
Lost sleep	20	Cut short my sleep	8
Missed meals	21	Concerned about government regulation of Internet	24
Used Internet to alleviate depression	23	Prefer face-to-face	77
Had times when access to Internet was down	66	My work has not deteriorated since using the Internet	81
Used Internet to alleviate loneliness	18	No Internet friends	61
Lost track of time	20	No access is okay	70
People say I'm shy	30	Downloaded nudes	36
Don't miss the net	75	Gambling	4
On line too long	14	Leave computer connected to Internet	11
Called nerd, etc.	15	Write computer programs beyond what is required for job	14
Use adult only sites	34	Hacked my way in	13
Introverted	32	Experienced disorientation after being on-line	23
Dietary changes	9	Like to find new sites	24
Internet use is okay	48	Shopping on line	20
Can't stay off line	6	Finding answers	40
I exercise less now	8	Used encryption	12

Source: Pratarelli, Browne, and Johnson, 1999. *The Bits and Bytes of Computer/Internet Addiction: A Factor Analytic Approach*.

### **Prevalence of problematic Internet use and associated behaviors**

The rest of the information in this chapter estimates the number of people that may engage in problematic Internet use and reports on the behaviors associated with such use.

One study used criteria adapted from the DSM-IV standard for pathological gambling to identify problematic Internet users (Young, 1996). This study used a small sample (only 596 respondents) and participants volunteered to take the survey. The author of the study cautions against using the results to generalize to a larger population.

Table 4.5 compares the behaviors of those people who met the criteria for problematic Internet use to those who did not.

Table 4.5: Comparison of Dependent and Non-dependent Internet Users by Various Factors.

	Dependents	Non-dependents
Length of time on Internet		
More than one year	17%	71%
Six months to one year	58%	5%
Three to six months	17%	12%
Less than three months	8%	12%
Average number of hours on-line per week	38.5	4.9
Applications used		
Chat rooms	35%	7%
Multi-user domains	28%	5%
New groups	15%	10%
E-mail	13%	30%
WWW	7%	25%
Information Protocols	2%	24%

Source: Young, 1996. *Internet Addiction: The Emergence of a New Clinical Disorder*.

Table 4.6 categorizes the various kinds of problems experienced by Internet users into five domains and describes how severe survey participants rated each problem. The academic category included such things as difficulty completing homework and getting enough sleep to be ready for class. Disruptions in marriages, dating relationships, and friendships constituted the relationship domain. Excessive on-line service fees comprised the category of financial problems. Occupational problems consisted of using on-line access at work for personal use. Disruption of sleep patterns and lack of exercise characterized physical problems.

Table 4.6: Comparison of Dependent and Non-dependent Internet Users by Various Factors.

	Impairment Level			
	None	Mild	Moderate	Severe
Academic	0%	2%	40%	58%
Relationship	0%	2%	45%	53%
Financial	0%	10%	38%	52%
Occupational	0%	15%	34%	51%
Physical	75%	15%	10%	0%

Source: Young, 1999. *Internet Addiction: The Emergence of a New Clinical Disorder*.

Research reported in the following tables estimate the prevalence of problematic Internet use to be between 6 percent and 13 percent of survey samples. Note that different terms such as pathological Internet use and Internet dependence are used to describe the phenomenon of problematic Internet use.

Table 4.7 summarizes findings from two studies.

Percent of pathological Internet users	8.1%
Percent of males considered pathological Internet users	12.2%
Percent of females considered pathological Internet users	3.2%
Amount of time pathological Internet users spend on-line	8.48 hours a week
Percent of internet dependent individuals	13%
Percent of internet depended individuals who are male	71%
Amount of time Internet dependent individuals spend on-line	8.1 hours a week

Source: Griffiths, 1999. Internet Addiction: Fact or Fiction?

Tables 4.8 and 4.9 present data from a study of 277 undergraduate Internet users. According to this research, 8.1 percent of study participants reported four or more symptoms and were classified as pathological Internet users (Morahan-Martin & Schumacher, 2000). Sixty-four percent reported one to three symptoms, and 27 percent reported no symptoms. Pathological Internet users were more likely to access game sites, file transfer protocol sites, remote support communication software sites, and World Wide Web sites than those with limited or no symptoms. Pathological Internet users were also more likely to use the Internet for the following reasons:

- Meeting new people
- Using adults-only resources
- Emotional support
- Talking to others who share same interests
- Playing games
- Recreation or relaxation
- Gambling
- Virtual reality
- Wasting time
- Staying abreast of new developments

Table 4.8 compares pathological Internet users with those people experiencing limited symptoms or no symptoms.

Table 4.8: Degree of Pathology by Time Online, Gender, Number of Internet Sites Used and Number of Reasons for Using the Internet.

	PIU	LS	NO
Time online	8.48 hours/week	3.18 hours/week	2.47 hours/week
Gender			
Males	12.2%	61.49%	26.35%
Females	3.2%	68.8%	28%
Number of Internet sites used	4.86	3.71	3.6
Number of reasons for using the Internet	11.27	8.18	7.84

<sup>1</sup> PIU, pathological Internet use; LS, limited symptoms; NO, no symptoms

Source: Morahan-Martin and Schumacher, 2000. *Incidence and Correlates of Pathological Internet Use among College Students*.

Table 4.9 presents the items used in the survey and the percentage of survey participants who responded to each item.

Table 4.9: Percent of Agreement with Pathological Use Scale Items by Degree of Pathology<sup>1</sup>.

Survey item	PIU	LS	NO
I have never gotten into arguments with a significant other over being online	68.2	68.2	-
I have been told I spend too much time online	63.6	6.3	-
If it has been a while since I last logged on, I find it hard to stop thinking about what will be waiting for me when I do	59.1	10.2	-
My work and/or school performance has not deteriorated since I started going online (reversed)	54.6	44.0	-
I feel guilty about the amount of time I spend online	45.5	3.4	-
I have gone online to make myself feel better when I was down or anxious	40.9	6.9	-
I have attempted to spend less time online but have not been able to	40.9	1.7	-
I have routinely cut short on sleep to spend more time online	36.2	2.8	-
I have used online to talk to others at times when I was feeling isolated	31.8	11.5	-
I have missed classes or work because of online activities	27.3	1.1	-
I have gotten into trouble with my employer or school because of being online	22.7	1.7	-
I have missed social engagements because of online activities	18.2	0.6	-
I have tried to hide from others how much time I am actually online	13.6	6.3	-

<sup>1</sup> PIU, pathological Internet use; LS, limited symptoms; NO, no symptoms

Source: Morahan-Martin and Schumacher, 2000. *Incidence and Correlates of Pathological Internet Use among College Students*.

Another study was conducted on-line and surveyed over 18,000 Internet users using questions based on the DSM-IV criteria for pathological gambling. Six percent of the survey respondents endorsed five or more of the items on the survey and were classified as compulsive Internet users (Greenfield, 1999). Table 4.10 presents findings from the survey related to sexual behavior both on and off-line.

Table 4.10: Sexual Behaviors of Non-addicted and Addicted Internet Users.

Online behavior	Non-addicted	Addicted
Flirting	20%	57%
Explicit sex talk	9%	38%
Masturbation	12%	37%
Online affair	14%	42%
Phone contact	18%	50%
Real-time sex	13%	31%

Source: Greenfield, 1999. *The Nature of Internet Addiction: Psychological Factors in Compulsive Internet Use*.

Table 4.11 reports the percentage of addicted and non-addicted Internet users reporting various experiences.

Table 4.11: Percentages of People Reporting Various Experiences while Online.

	Non-addicted	Addicted
Intense intimacy	41%	75%
Disinhibition	43%	80%
Loss of boundaries	39%	83%
Feeling out of control	8%	46%

Source: Greenfield, 1999. *The Nature of Internet Addiction: Psychological Factors in Compulsive Internet Use*.

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