

SOCIETAL COSTS OF SUBSTANCE ABUSE

The economic costs of alcohol abuse in the United States were estimated to be \$184.6 billion annually in 1998 and were increasing at a rate of 3.8 percent per year [51]. Productivity losses accounted for more than two-thirds of these costs, including 47 percent for alcohol related illnesses, 20 percent for premature deaths, and five percent for alcohol related crime. Other major cost components were 14 percent for alcohol related health care expenditures and 13 percent for property damage. Missouri's portion of the 1998 cost was at least \$3.7 billion.

Projected costs to society of drug abuse were \$160.7 billion in 2000 [57], and Missouri's share was an estimated \$3.2 billion. As with alcohol abuse, productivity losses comprised almost 70 percent of these costs, including 40 percent for the perpetrators and victims of crime, 16 percent for drug related illnesses, and 14 percent for premature deaths. Other crime-related losses, including goods and services, accounted for 22 percent of the societal costs, and health care expenditures totaled nine percent.

The estimated societal costs of cigarette smoking in the United States were \$167 billion per year during the period 1997-2001. Productivity losses due to premature deaths accounted for 55 percent of these costs, and 45 percent were smoking related health care expenditures [47]. Missouri's estimated annual costs were \$3.94 billion, including \$2.27 billion in lost productivity and \$1.67 billion in health care and related expenditures [48]. These estimates yield Missouri per capita costs of \$704 per year, somewhat higher than the nation-wide cost burden of \$593 per person.

CONSUMPTION DATA

A small number of widely-used surveys collect national and state data on alcohol, tobacco, and other drug use. Some of these include questions which indicate alcohol or drug dependence, high-risk behaviors, and the need for treatment or intervention services. Surveys are used to estimate prevalence—the percentage and number of people using alcohol and other drugs within a population. However, most surveys rely on a subset to represent a population and therefore are subject to sampling error. The Missouri estimates, in particular, from the national surveys should be interpreted with caution due to relatively small sample sizes.

National Survey on Drug Use and Health

The National Survey on Drug Use and Health (NSDUH) uses a sampling methodology that provides national and state data on alcohol, illicit drugs and tobacco [54]. The survey collects information on past month (current), past-year, and lifetime use of these substances. It also probes attitudes toward substance use, problems experienced by users, and efforts to receive substance abuse treatment. Analysis yields estimates of alcohol and drug abuse, dependence, and unmet treatment need. The table on page 36 provides national trends in current and lifetime drug use for adolescents and adults age 12 and older, and page 37 provides these rates for specific age groups. The table on page 38 compares national and Missouri rates of current and past-year use of several drugs, alcohol and drug problems, and beliefs regarding the risk associated with drug use, while the table on page 39 converts the Missouri rates into population estimates [53, 55]. Data from years 2003 and 2004 are combined to increase sample sizes and improve estimates. Some of the NSDUH results and projections are discussed below and in other sections of the report.

Alcohol: Among adolescents and adults, Missouri's estimated percentage of current drinkers decreased from 53.2 percent in the combined 2002/2003 samples to 49.8 percent in 2003/2004—a reduction that is statistically significant. This percentage is very close to the

2003/2004 U.S. rate of 50.2 percent. Binge alcohol use—defined in the NSDUH as consuming at least five drinks on a single drinking occasion at least once in the preceding 30 days—increased slightly in Missouri from 24.6 percent in 2002/2003 to 25.1 percent in 2003/2004. This rate is higher than the national binge drinking rate of 22.7 percent. Among adolescents 12-17 years of age, current alcohol use in Missouri was 20.2 percent in 2003/2004, not significantly higher (statistically) than the 19.7 percent rate in 2002/2003. Nationally, however, current use was reported by only 17.6 percent of that age group in 2003/2004. Among Missouri adolescents, binge drinking was 12.6 percent in 2002/2003 and 13.7 percent in 2003/2004, compared to the U.S. rate of 10.9 percent in 2003/2004. Current alcohol use among young adults 18-25 years of age had no significant change between the pairs of years although, at 63.8 percent, Missouri's rate was somewhat higher than the national rate of 60.9 percent for that age group. Binge alcohol use among young adults in Missouri reached 45.2 percent in 2003/2004, higher than the rate of 43.9 percent posted in 2002/2003 and 3.8 percentage points higher than the 2003/2004 national rate of 41.4 percent for the age group of 18-25 years. Missouri's population age 26 and older had a significant reduction in current use of alcohol, dropping from 55.8 percent in 2002/2003 to 51.4 percent in 2003/2004—lower than the U.S. rate of 52.8 percent for this adult age group. Binge drinking among adults at least 26 years of age was 23.1 percent in Missouri in 2003/2004, compared to 21.0 percent nationally. For many years, research has recognized that favorable attitudes toward alcohol and other drug use contribute to abuse and dependence. While 41.3 percent of the U.S. population 12 years of age and older perceives great risk in binge drinking once or twice a week, only 38.1 percent of the Missouri population perceives that risk.

Illicit Drugs: Missouri's rate of past month (current) use of any illicit drug among the population 12 years of age and older was virtually the same as the U.S. rate at 8.1 percent in 2003/2004. At 6.4 percent current use in Missouri, marijuana accounted for most of that figure. Nationally, 6.1 percent of adolescents and adults were current marijuana users in 2003/2004. Past month illicit drug use among Missouri adolescents 12-17 years of age was 11.0 percent in 2003/2004, approximately the same as the national rate. Current marijuana use among this population was 8.2 percent, compared to the U.S. rate of 7.7 percent. Among young adults 18-25 years of age, Missouri's use of illicit drugs was 18.9 percent—almost one percentage point lower than the national rate. Missouri's rate for current use of marijuana in this age group was 16.5 percent in 2003/2004, almost matching the U.S. rate of 16.6 percent. In the adult age group of 26 and older, Missouri's past month use of illicit drugs was 5.8 percent in 2003/2004 compared to 5.6 percent in the United States. Marijuana use was also higher in Missouri than nationally with a current use rate of 4.3—not significantly different than the State's rate of 4.6 percent for this age group in 2002/2003. Increasing percentages believe there is great risk in smoking marijuana once a month. In 2003/2004, 38.2 percent of the Missouri population 12 years of age and older perceived marijuana smoking as a risk, compared to 36.7 percent in 2002/2003. Missouri's increase was greatest for the population older than 26 years of age, with 41.5 percent perceiving great risk in 2003/2004 compared to 39.5 percent in 2002/2003. Despite these increases, Missouri's overall rate was lower (indicating a perception of less risk) than the U.S. rate of 39.7 percent. Missouri's average annual rate of first use of marijuana was 6.9 percent of adolescents 12-17 years of age in 2003/2004, compared to 6.2 percent of adolescents nationwide. Past-year use of cocaine, including crack, was reported by 2.6 percent of Missouri's population 12 years of age and older in 2003/2004, compared to 2.4 percent of the U.S. population. However, this percentage was a decrease from Missouri's 2002/2003 rate of 2.9 percent. Among those 12-17 years of age, 2.0 percent of the Missouri population and 1.7 percent of the U.S. population used cocaine in the year preceding the survey in 2003/2004.

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Tobacco: Current use of any tobacco product decreased slightly in each age group in Missouri between the 2002/2003 and 2003/2004 surveys, yet Missouri's overall rate remained 6.6 percentage points higher than the national rate in 2003/2004. Cigarette smoking accounted for most of the tobacco use, and 30.6 percent of Missouri's population 12 years of age and older were current cigarette users in 2003/2004, compared to 25.2 percent nationally. While the U.S. posted modest but significant reductions in cigarette use among the 12-17 and 18-25 age groups, Missouri's adolescent and young adult populations continued to have smoking rates at least five percentage points higher than the national rates. In 2003/2004, 17.1 percent of the 12-17 year olds in Missouri—and 45.5 percent of the 18-25 year olds—were current cigarette smokers. Smoking rates for the Missouri population at least 26 years of age were 29.8 percent in 2003/2004, considerably lower than the young adult rate but higher than the U.S. rate of 24.4 percent for that age group. Consistent with the higher Missouri rates, smaller percentages of the population in each age group perceive great risk in smoking one or more packs of cigarettes per day. In 2003/2004, 72.8 percent of the U.S. population 12 years of age and older perceived this risk, compared to 69.4 percent of the Missouri population. Perception of risk was highest—71.0 percent—for Missouri's adult population 26 years of age and older, and lowest—63.0 percent—for the 12-17 age group.

Alcohol and Drug Dependence: The NSDUH also collects data on past-year alcohol and drug problems and mental health problems to quantify the need for treatment services. These data are summarized in the *Treatment Need* section on page 17.

Monitoring the Future Survey

Monitoring The Future (MTF) is an annual survey of students in grades 8, 10, and 12, college students, and young adults 19-28 years of age in the United States [1, 2, 3]. The tables on pages 40-44 provide national trend data from this survey. The trend charts of current alcohol, cigarette, marijuana, and cocaine use on pages 22-24 utilize the MTF survey results for the national data. Missouri subsets of the MTF data are not available, but the Youth Risk Behavior Survey provides comparisons for Missouri on similar survey items and grade levels.

Youth Risk Behavior Survey

The Youth Risk Behavior Survey (YRBS) is administered by the Centers for Disease Control and Prevention (CDC). The survey is conducted nationally and in Missouri to students in high school grades 9-12 every two years [8, 49]. The survey collects data on lifetime and current use of alcohol, tobacco, and illicit drugs, and use of these substances before age 13. The tables on pages 46-47 provide U.S. survey results for selected items for years 1995-2003 and Missouri results for 1995-2005. Due to potentially large sampling errors (particularly for the state data) confidence intervals of the percentage estimates are provided. Although Missouri students' use of alcohol, cigarettes, and marijuana appears to be generally lower—and their use of other drugs higher—in 2005 than in 2003, most of the estimates for the two years have overlapping confidence intervals and thus the differences are not statistically significant. The following discussions of the data are based on the published estimate midpoints without reference to margins of error.

Alcohol: Among Missouri's high school students, current (past 30-day) use of alcohol declined from 49.2 percent in 2003 to 40.8 percent in 2005. Binge drinking in the 30 days preceding the survey was reported by 30.5 percent of the students in 2003 but only 24.9 percent in 2005. Ninth-grade students posted the largest reductions on both of these measures, with current use decreasing from 44.4 percent in 2003 to 30.4 percent in 2005 and binge drinking decreasing from 25.3 percent to 13.6 percent. The percentage of students reporting that they began drinking before age 13 changed very little between 2003 and 2005, but it has declined considerably in the last decade from 39.9 percent in 1995 to 24.2 percent in 2005. National data for 2005 are not yet available

for comparison. In 2003, Missouri's high school students had higher rates of alcohol use and binge drinking than students nationwide.

Tobacco: Cigarette smoking among Missouri high school students decreased between 2003 and 2005. In 2003, Missouri high school students had higher rates than their counterparts in the United States for lifetime (ever) smoking, smoking before age 13, current smoking, and daily smoking for at least one month during their lifetime. Although comparative national data for 2005 are not yet available, 49.6 percent of Missouri students reported in 2005 that they had ever smoked cigarettes, considerably lower than the 63.3 percent in 2003. Students in grade 9 had the most significant reduction—from 60.8 percent in 2003 to 40.7 percent in 2005. Missouri students reporting that they smoked a whole cigarette before age 13 decreased from 20.2 percent in 2003 to 14.8 percent in 2005. Current (past 30-day) smoking was reported by 21.3 percent of Missouri high school students and only 14.1 percent of the ninth graders, compared to 24.8 percent of all students and 25.6 percent of the ninth grade students in 2003. Among the current smokers, 57.7 percent tried to quit smoking during the past 12 months. In 2005, 13.8 percent of the Missouri students reported that they had ever smoked daily for at least one month, compared to 18.1 percent in 2003 and 23.4 percent in 2001. While smoking rates were down in 2005, increases occurred in the use of smokeless tobacco. In 2005, 6.9 percent of high school students reported using chewing tobacco, snuff, or dip within the past month, compared to 5.7 percent in 2003. However, the rate was only 3.6 percent among ninth graders.

Marijuana: Missouri high school students had lower rates of marijuana use in 2005 than in 2003. Current use decreased from 21.8 percent to 18.1 percent, lifetime use decreased from 41.3 percent to 35.0 percent, and the percentage of students who used marijuana before age 13 decreased from 10.0 percent in 2003 to 8.8 percent in 2005. Students in grade 9 had the lowest rate of current marijuana use at 11.7 percent, followed by high school seniors with a rate of 15.5 percent. In 2003 Missouri's current use of marijuana was slightly lower than the national rate of 22.4 in grades 9-12, the lifetime rate was slightly higher than the U.S. rate of 40.2 percent, and the percentage using marijuana before age 13 was virtually the same nationally and in Missouri.

Other Drugs: Although 4.1 percent of high school students in the United States had used cocaine in the past 30 days in 2003, Missouri's rate was lower that year at 2.7 percent and increased to 3.0 percent in 2005. Lifetime cocaine use among Missouri students was 7.4 percent in 2005, compared to 6.6 percent in Missouri and 8.7 percent nationally in 2003. The percentage of Missouri students who ever used cocaine ranged from 3.1 percent among ninth graders to 11.1 percent among students in grade 12. Lifetime methamphetamine use among Missouri high school students was 6.4 percent in 2005, close to the rate of 6.2 percent in 2003. Missouri's largest percentage of students who reported ever using methamphetamine was 10.4 percent in 2001, due mainly to a rate of 14.8 percent that year among high school seniors. In 2005, lifetime inhalant use was 12.2 percent among the Missouri high school population, compared to the 2003 Missouri rate of 10.5 percent and national rate of 12.1 percent. In 2003, lifetime heroin use was 3.3 percent among high school students nationwide but only 1.7 percent among Missouri students. In 2005, 2.7 percent of Missouri's students reported that they had ever used heroin. Needle drug use also increased in Missouri, with 2.3 percent of high school students reporting in 2005 that they had ever injected an illicit drug, compared to 2003 rates of 1.3 percent in Missouri and 3.2 percent in the United States. Lifetime non-prescription steroid use decreased from 4.5 percent in 2003 to 3.5 percent in 2005, compared to a national rate of 6.1 percent in 2003. Although 11.1 percent of high school students nationwide reported in 2003 that they had ever used ecstasy (or MDMA), Missouri had a rate that year of 6.7 percent. In 2005, 6.1 percent of Missouri students had lifetime ecstasy use ranging from 3.8 percent for grade 9 to 8.5 percent for grade 12.

Other Surveys

The Missouri Student Survey is conducted in even-numbered years throughout Missouri for students in grades 6 through 12, with a primary focus on grade 9. The survey became web-based in 2004, and the statewide prevalence rates from that survey are summarized in the table on page 48 [59]. The next survey will be administered in 2006.

The Core Alcohol and Drug Survey, a project supported by Southern Illinois University, was administered to 68,000 undergraduate students at 133 colleges and universities in 2004 [43, 58]. Missouri Partners in Prevention administered the survey on 12 Missouri campuses. The survey measures binge drinking and past-month and past-year use of alcohol, tobacco, and illicit drugs. In 2004, binge alcohol use—consuming five or more drinks at one sitting at least once during the two weeks prior to the survey—was reported by 48.8 percent of the students nationally and 49.9 percent of the Missouri college students. In 2005, Missouri's binge drinking rate decreased to 48.4 percent.

Other Consumption Data

The National Institute on Alcohol Abuse and Alcoholism manages the Alcohol Epidemiologic Data System. Using data on sales of beer, wine, and distilled spirits, the system estimates annual consumption of ethanol (absolute alcohol). In 2003, per capita consumption of alcohol among the Missouri population age 14 and older was 2.26 gallons of ethanol, a decrease from the two-decade record of 2.39 gallons reached in 2002. Missouri's 2003 alcohol consumption was slightly higher than the national average of 2.22 gallons of ethanol [50].

CONSEQUENCES DATA

Health

Prenatal alcohol, tobacco, and drug exposure can cause low birth weight, newborn addiction, serious birth defects, mental retardation, and lifelong impairments. This report includes medical conditions of newborns identified on birth certificates and hospital data on maternal drug exposure using International Classification of Diseases, 9th Revision (ICD-9) coding developed by the World Health Organization. Substance abuse during pregnancy showed no improvement in 2004 [15, 16]. The reported number of mothers of newborns who drank during their pregnancies increased from 464 in 2003 to 472 in 2004, a slight rate increase to 60.7 per 10,000 live births. Studies have shown that alcohol use during pregnancy is substantially underreported, so the number of babies at-risk for fetal alcohol syndrome and fetal alcohol effects is unknown. Illicit drug use by pregnant women is also underreported, yet hospitals reported 302 drug-affected births in 2004, compared to 258 in 2003 and 222 in 2002. Although maternal smoking during pregnancy puts the newborn at-risk for low birth weight and other problems, 14,083 births among women who smoked were reported in 2004, over 18 percent of the live births [16]. Division of Alcohol and Drug Abuse treatment programs admit pregnant women on a priority basis in accordance with federal requirements. Among the 13,582 women served during fiscal year 2005, 518 were pregnant when admitted to treatment [23]. Clients in CSTAR Women and Children programs had 91 births during their treatment, and 88 of those babies were documented to be born drug-free.

Several communicable diseases, including hepatitis, tuberculosis, and HIV/AIDS are frequently acquired through substance abuse. In 2004, Missouri had 3,150 reported cases of Hepatitis C compared to 3,071 in 2003. Hepatitis B cases have increased substantially, from 135 in 2002 to 339 in 2003 and 529 in 2004 [19]. The total number of HIV cases that have been reported in Mis-