

Alcohol Use

Alcoholic beverages have been used in human societies since the beginning of recorded history¹ and remain socially and legally acceptable in most of the Western world. For the majority of people who drink, alcohol is a pleasant accompaniment to social activities. However, when harms to the individual and to others are considered, alcohol is the most harmful drug, legal or illicit, in society.² When alcohol is consumed while smoking tobacco it is undoubtedly the most common drug combination used in the United States.³ Moderate alcohol use (up to two drinks per day for men and one drink per day for women and older people) is not harmful for most adults. Nonetheless, a large number of people get into serious trouble because of their drinking. Nearly a third of Americans abuse or become dependent on alcohol over the course of their lives and only 24% are ever treated for it.⁴

Accompanying the near ubiquity of alcoholic beverages in human history has been an appreciation of the social and health problem caused by drinking.⁵ It has been estimated that 3-8% of all deaths across the globe are alcohol-related and that 4-6% of global disability-adjusted life-years are attributable to alcohol.⁶ The burden of alcohol-related disease is closely related to the volume of alcohol consumption and falls heaviest among poor people and in those who are marginalized from society. Alcohol has been shown to be causally related to more than 60 different medical conditions. In most, but not all cases, the effects of alcohol are detrimental.⁷ Alcohol use impacts both chronic and acute diseases and injuries; heavy episodic drinking increases risks for some disease and all injury outcomes.⁸

For most diseases, there is a dose-response relationship to the volume of alcohol consumption; there is an increased risk of the disease with higher intake levels. The exceptions are in the area of cardiovascular diseases, especially coronary heart disease and stroke, diabetes, and injuries. In these instances, other dimensions of consumption, including lifestyle, social status, and overall health status, play a crucial role in determining outcomes.⁹ According to

the National Institute of Alcohol Abuse and Alcoholism (NIAAA), a history of heavy drinking reduces life span by up to 25 years across all major chronic diseases. Annually, an estimated 80,000 alcohol-attributable deaths occur in the United States and 2.3 million years of potential life are lost due to the harmful effects of excessive alcohol use.¹⁰ Heavy drinking during young adulthood is negatively associated with labor market success at midlife, especially among blacks.¹¹ Conversely, abstaining from alcohol or using it at a low frequency may lead to increased risk for anxiety and depression.¹² Alcohol and drugs were ranked by Kansas City residents as the 2nd leading community concern in a survey conducted by the Kansas City Health Commission. Health care providers ranked alcohol and drugs as the leading community concern.¹³

Drinking alcohol during pregnancy has been reported to raise the risk of premature births, low birthweight infants, and infections in babies after birth.^{14 15 16} Heavy drinking during the first trimester also increases the risk of birth defects four-fold.¹⁷ At the extreme, prenatal exposure to alcohol can result in fetal alcohol spectrum disorder and its various component disorders, such as fetal alcohol syndrome, alcohol-related birth defects, fetal alcohol effects, and alcohol-related neurological disorders.¹⁸

According to the National Institutes of Health (NIH), early alcohol use, independent of other risk factors, may contribute to the risk of developing future alcohol problems.¹⁹ Alcohol consumption is the 3rd leading actual cause of death in this country.²⁰ In purely economic terms, alcohol-related problems cost society approximately \$185 billion per year. Of these costs, more than 70% are due to productivity losses and illnesses attributed to alcohol, while less than 10% are for medical treatment of alcoholism and alcohol abuse.

Alcohol abuse and alcohol dependency are two negative outcomes resulting from alcohol consumption. Alcohol abuse is defined by the NIAAA as causing a failure to fulfill major role obligations at work, school, or home; interpersonal social and legal

problems; and/or drinking in hazardous situations, such as driving. Alcohol dependence (alcoholism) is characterized by impaired control over drinking, compulsive drinking, preoccupation with drinking, and tolerance to alcohol and/or withdrawal symptoms. The brain pathology induced by a history of dependence has three key features: 1) a history of dependence established through repeated cycles of excessive alcohol intake and withdrawal leads to long lasting, perhaps lifelong pattern of excessive alcohol intake; 2) an equally persistent increase in responses to fear and stress; and, 3) while stress does not affect voluntary alcohol intake, it does so potently in individuals with a history of dependence.²¹

Alcohol dependence contributes to other health problems and increases the use of health care services. Between 15-30% of patients in acute care hospitals have alcohol problems, regardless of their admitted diagnosis. Unfortunately, only a fraction of these alcohol diagnoses are reflected in discharge diagnoses. In addition, the families of alcoholics consume more health care services than do those of non-alcoholics.

Workplace alcohol use and impairment di-

rectly affect an estimated 15% of the U.S. workforce (19.2 million workers).²² Specifically, an estimated 1.8% (2.3 million workers) drink before work, 7.1% (8.9 million workers) drink during the workday, 1.7% (2.1 million workers) work under the influence of alcohol, and 9.23% (11.6 million workers) work with a hangover. Drinking on the job, being under the influence, or working with a hangover is more prevalent among men, younger workers, and unmarried workers. The highest levels of alcohol use and impairment are found in management, sales, catering, and construction.

Three approaches have been recommended for mitigating binge drinking and other forms of harmful use of alcohol: higher taxes on alcoholic drinks,^{23 24} tighter marketing regulations,²⁵ and limiting alcohol outlet density.²⁶ Greater density of alcohol retailers is associated with higher levels of poverty and higher proportions of blacks and Hispanics in urban areas.²⁷ These disparities could contribute to higher morbidity in these geographic areas. Figure 19.1 shows the distribution of package liquor outlets in Kansas City, while Figure 19.2 shows the distribution of taverns.



Prevalence

National data show that about 61% of adults aged 18 years or more drink alcohol (51.6% of persons aged 12 years or more), 14% are former drinkers, and 25% are lifetime abstainers.^{28 29} Men are more likely to be a regular drinker than women while women are nearly twice as likely to be lifetime abstainers. The prevalence of drinking declines with increasing age, although the gap between men and women is decreasing.^{30 31} Non-Hispanic whites are more likely to be a current drinker and Asians are the most likely to be lifetime abstainers. The prevalence of current drinking increases with educational attainment level and the gap in sex-specific prevalence rates also narrows. The prevalence of drinking is also associated with family income; lower income men and higher income women are more likely to be heavy drinkers. The Missouri Behavioral Risk Factor

Surveillance System (BRFSS) found that adults in the Kansas City area were less likely to drink alcohol than residents in the St. Louis area.

Nearly 16 million Americans aged 12 years or more meet the criteria of the American Psychiatric Association for alcohol abuse and dependence. Dependency often begins prior to 18 years of age.³² Several million more adults engage in risky drinking that could lead to alcohol problems. These patterns include binge drinking and heavy drinking on a regular basis. In addition, more than half of adults report that one or more of their close relatives have a drinking problem. Nearly 4% of Missourians aged 12 years or more are dependent upon alcohol.³³ In a telephone survey commissioned by the Kansas City Health Department, 1.6% of respondents reported that they abused alcohol.³⁴

Underage Drinking

Alcohol use is a major problem from pre-adolescence through young adulthood, with deleterious effects on adolescent brain development.³⁵ The evidence supporting the minimum legal age for alcohol purchase and consumption of 21 years is strong,³⁶ yet it is clear that many persons become current drinkers at earlier ages.

In Missouri, 39% of high school students are current consumers of alcohol, with little difference between males and females (Table 19.1).³⁷ Most had their first drink when 12-14 years-old, although

25% of boys claim they were younger than 11 years of age. Among students who did not drink, the overwhelming reason for not drinking was that they did not want to drink, followed by the idea it is wrong; religious beliefs was the least mentioned reason for abstaining.

Boys report drinking more to get drunk and girls drink more for social reasons; almost half of the students report frequently being around drunken peers. Binge drinking is the most common pattern of alcohol consumption among high school youth, with no difference by sex.³⁸ Nationally, about 24% of high

Table 19.1. Consumption of at least part of one drink by students in the Kansas City metropolitan area

Frequency	8 th grade			10 th grade			12 th grade		
	Male	Female	Overall	Male	Female	Overall	Male	Female	Overall
Lifetime			59%			75%			85%
30 day	46%	49%	47%	61%	56%	59%	70%	66%	68%
7 day	23%	22%	23%	37%	28%	32%	46%	36%	41%

Source: Partnership for Children. 2006. *Kauffman Teen Survey Community Report, 2004-2005 Results*. www.pfc.org

school students binge drink, according to Youth Risk Behavior Surveillance data.

Columbia University's National Center on Addiction and Substance Abuse found that underage drinkers and adult excessive drinkers are responsible for 50.1% of the alcohol consumption in this country and 48.9% of the money spent on alcohol. Underage drinkers consumed 19.7% of the alcohol nationally (\$22.5 billion worth of alcohol). "Excessive" drinking by adults (consumption of more

than 2 drinks daily) accounted for 30.4% of the alcohol consumed (\$34.4 billion worth of alcohol expenditures).

While there have been calls to lower the legal drinking age from 21 years, data show that in states which historically had lower drinking ages there is an association with pregnancy complications.³⁹ A drinking age of 18 is associated with higher incidences of unplanned pregnancies, low birth-weight, and premature birth.

Binge Drinking

Binge drinking was responsible for more than 50% of the estimated 79,000 deaths and 66% of the estimated 2.3 million years of potential life lost as result of excessive drinking each year in the United States during 2001-2005. Binge drinking is defined as having 5 or more drinks on the same occasion at least once in the prior month. Binge drinking is common among adults, particularly those with higher household incomes, and among high school students.⁴⁰ It is growing at a faster rate among underage girls than boys.⁴¹ While both younger men and women are likely to behave in this manner, men are considerably more likely to do so than women. Additionally, binge drinking occurs across all age groups⁴² (Figure 19.3). On average, binge drinkers consume 8 drinks per binge drinking episode, with

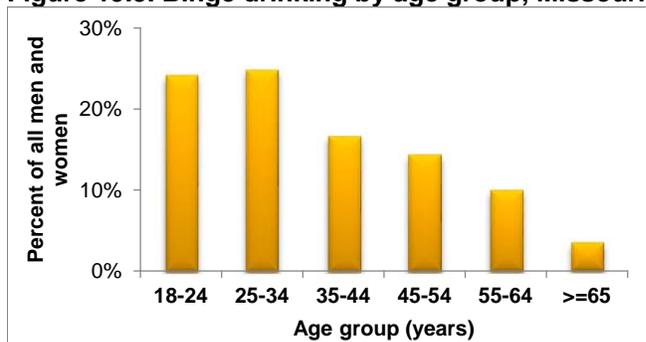
those aged fewer than 35 years consuming more drinks than older individuals.⁴³ Adult binge drinkers tend to prefer beer, while youth binge drinkers tend to use hard liquor.⁴⁴ The estimated rates of binge drinking place Missouri above the national average (Figure 19.4).

Rates for binge drinking are higher among non-Hispanic whites (24.0%) than for Hispanics (16.7%) and non-Hispanic blacks (11.6%). The prevalence of this behavior also seems to correlate with sleep deprivation; persons who get less sleep have higher prevalence. Among women in their 20's, binge drinking is more common among higher educated women; but, by age 40, less educated women are more likely to be drinking too much.⁴⁵ Binge drinking among women has been reported to double the risk of breast cancer.⁴⁶ Individuals who participate in binge drinking have also been strongly associated with alcohol-impaired driving.⁴⁷

Approximately 13% of adult women and 23% of adult men in Missouri are binge drinkers. The national Youth Risk Behavior Surveillance program reported that 25% of Missouri high school students periodically binge drink.

In addition to binge drinking, heavy drinking is defined as an average of more than 2 drinks per day during the preceding month for men and an average of more than 1 drink per day during the preceding month for women. The prevalence of heavy drinking in the Kansas City BRFSS region is

Figure 19.3. Binge drinking by age group, Missouri

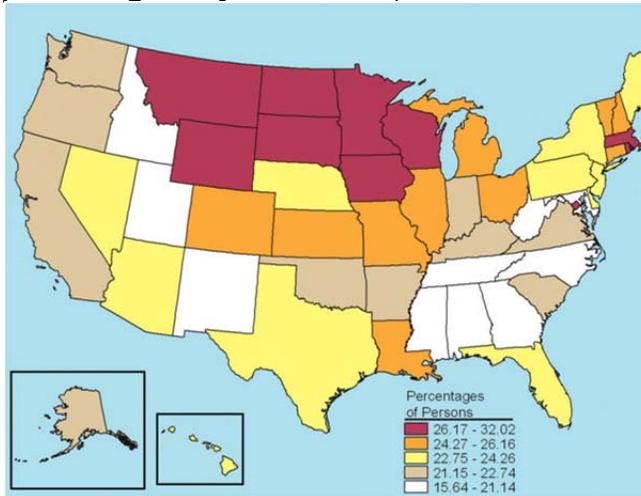


Source: 2008 Behavioral Risk Factor Surveillance System

approximately 7% for men and 4% for women. Heavy drinking has been associated with causing high blood pressure, stiff arteries, and rigid heart muscles in men and enlarged hearts in women. Enlarged hearts are associated with increased risk of heart attack and/or stroke. While there is a cardio-protective effect of light or moderate regular alcohol consumption, irregular heavy drinking occasions negate this effect.⁴⁸

Smoking while drinking may encourage individuals to drink more. This is due to the enhanced stimulation of neural pleasure centers via a change in the expression of certain genes.⁴⁹ In rats, the level of alcohol in the bloodstream falls as nicotine levels increase.⁵⁰ It is hypothesized that somehow the presence of nicotine delays the release of alcohol from the stomach to the intestines. This delay allows the alcohol molecules to be metabolized, leaving less alcohol to be absorbed by the intestines into the bloodstream. Thus, in people, nicotine would diminish the desired effect of the alcohol and would encourage drinkers to drink more to achieve the

Figure 19.4. Binge drinking in prior month among persons aged 12 years or more, United States



Source: Substance Abuse and Mental Health Services Administration

pleasurable desired effect, particularly among heavy and binge drinkers.

Health Consequences

Riskier patterns of drinking and other health risk behaviors are associated with an increased preference for hard liquor and beer.⁵¹ In Kansas City, age-adjusted hospitalization rates due to alcoholism have plateaued (Figure 19.5). The proportion

of alcohol-related deaths is highest among persons aged between 45 and 64 years (Figure 19.6).

It is well established that there is a relationship between alcohol use and injuries. Injury is the current leading cause of visits to emergency de-

Figure 19.5. Age-adjusted rates per 100,000 population for hospitalization due to alcoholism, Kansas City, MO, 2002-2009

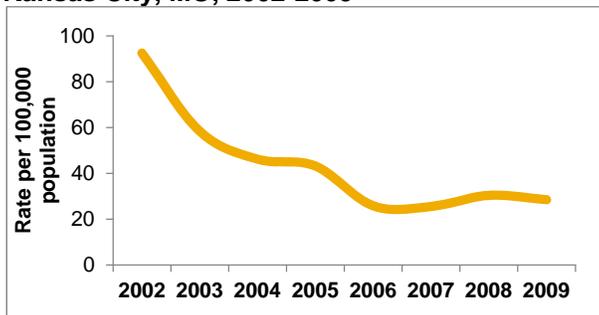
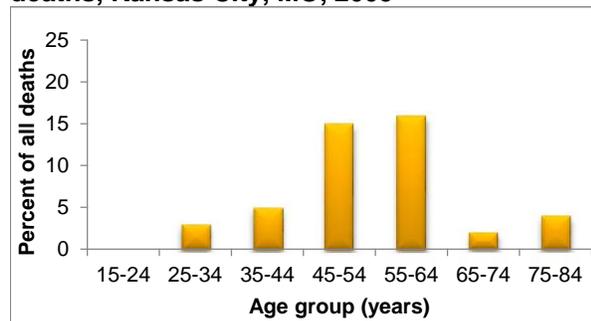


Figure 19.6. Age-distribution of alcohol-related deaths, Kansas City, MO, 2009



partments in Kansas City. A recent study suggested that 2-6% of all injuries that are seen in emergency departments can be attributed to alcohol consumed

prior to incurring the injury.⁵² For violence-related injuries, 43% were attributed to drinking before the injury.

Driving Under the Influence

Driving under the influence (DUI) of alcohol is both a safety and public health problem. Roughly 12% of adults in the United States drove under the influence during the past year.⁵³ Men and women are more likely to operate a vehicle while under the influence after receiving their first documented violation, with higher rates of recidivism as the number of prior violations increase.⁵⁴ Over 80% of the people involved in DUI episodes had been binge drinking. Binge drinkers were more than 13 times more likely to drive under the influence than people who drank alcohol but did not binge drink. The age distribution of persons arrested by the Kansas City Police Department for DUI violations is presented in Figure 19.7.⁵⁵ Males comprised 80% of the violators. Missouri does not have an open container law. Currently, only the driver of a vehicle is prohibited from drinking alcoholic beverages in a moving vehicle. Missouri's permissible blood alcohol level for drivers is 0.08%.

The National Highway Traffic Safety Administration reported that, in 2009, an estimated 10,839 people were killed in alcohol-impaired crashes – a decline of 7.1% from the 11,711 fatalities in 2008. Of all 2008 Missouri traffic crashes, 4.9% were alcohol-

related as were 28.6% of all fatal crashes. A total of 262 persons were killed and 4,511 were injured. Although there was a 5.3% decline in alcohol-impaired crashes, there was 4.9% increase in fatalities compared to 2007. In 2009, Kansas City ranked first in alcohol-related crashes among Missouri municipalities (Table 19.2).

Table 19.2. Motor vehicle crashes in which alcohol was involved, Kansas City, MO, by county, 2009¹

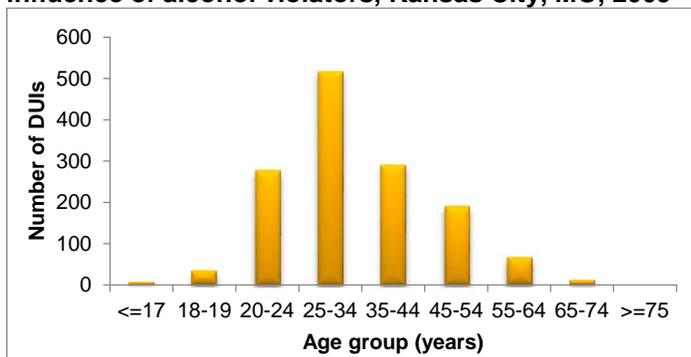
	Total	Portion of Kansas City			
		Cass	Clay	Jackson	Platte
Crashes	647	0	219	380	48
Fatalities	22	0	7	15	0
Injuries	260	0	80	161	19

¹ From Missouri State Highway Patrol, 2009 Missouri Traffic Safety Compendium

According to the NIAAA, the prevalence of driving after drinking has been declining, most significantly among persons aged 18-29 years, although 22 and 23 year olds still had the highest prevalences of 11.5% and 10.4%, respectively. Overall, 11.9% of binge drinkers nationwide drive within 2 hours of their binge drinking episode.⁵⁶ There was no decline in this behavior among females and among college students.⁵⁷

SAMHSA reported that 21% of drivers aged fewer than 21 years had driven in the past year while under the influence of alcohol or illicit drugs.⁵⁸ Non-Hispanic whites and Native Americans were more likely to report this behavior, as were males. In addition, 44% of 16-20 year-olds had used alcohol in prior month, 30% were binge drinkers, and 10% were heavy drinkers. The prevalence of DUI in this age group was highest in the Midwest (approximately 25% of drivers aged fewer than 21 years).

Figure 19.7. Age distribution of driving while under the influence of alcohol violators, Kansas City, MO, 2009



Source: Kansas City Police Department

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