Tobacco Use

Worldwide, smoking will kill nearly 6.4 million people a year by 2015, 50% more than HIV.[321] By 2030, global annual smoking deaths are expected to double to be between 8.3 and 10 million.[322] Men have been more than 3 times as likely to die as women;[323] however, the gap in tobacco use by males and females is narrowing which would then increase the overall impact of tobacco on mortality.[324] [325]

Although cigarette consumption in the United States has fallen to its lowest point, tobacco use remains the number one actual cause of death in this country.[326] Yet many states, including Missouri, failed to take advantage of the Master Settlement Agreement funds from the tobacco industry to support smoking prevention and cessation activities. And, while the Master Settlement Agreement brought significant revenues to states, the settlement caused no major harm to the tobacco industry; some features of the settlement may actually have increased company value and profitability.[327]

In 2004 and 2006, US Surgeon General Richard Carmona issued reports summarizing the health consequences of smoking (Table 92)[328] and the health effects of involuntary exposure to tobacco smoke (Table 93).[329] The Centers for Disease Control and Prevention (CDC) reported that, during 1997-2001, cigarette smoking and exposure to tobacco smoke resulted in approximately 438,000 premature deaths in the US, 5.5 million years of potential life loss, and $92 billion in productivity losses annually.[330]

Nationally, about 21% of adults are current smokers and another 21% are former smokers.[331] [332] [333] Men are more likely to have begun smoking before the age of 16 years old and are more likely to

[321] Mathers CD, Loncar D. Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med* 2006;3(11):e442.

[322] Peto R, Lopez AD. Future worldwide health effects of current smoking patterns. In: Koop CE, Pearson CE, Schwarz MR, eds. Critical Issures in Global Health. San Francisco, CA: Jossey-Bass. 2001.

[323] Ezzati M, Lopez AD. Regional, disease specific patterns of smoking-attributable mortality in 2000. *Tob Control* 2004;13:388-395.

[324] Global Youth Tobacco Survey Collaborating Group. Differences in worldwide tobacco use by gender: findings from the Global Youth Tobacco Survey. *J School Health* 2003;73:207-215.

[325] Mochizuki-Kobayashi Y et al. Use of cigarettes and other tobacco among students aged 13-15 years – worldwide, 1999-2005. *MMWR* 2006;55:553-556.

[326] Mokdad AH et al. Actual causes of death in the United States, 2000. *J Am Med Ass* 2004;291:1238-1245.

[327] Sloan FA, et al. Impacts of the Master Settlement Agreement on the tobacco industry. *Tob Control* 2004;13:356-361.

[328] US Department of Health and Human Services. *The Health Consequences of Smoking: A Report of the Surgeon General*. Atlanta GA: Department of HHS, CDC, NCCDPHP, Office on Smoking and Health. 2004.

[329] US Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General.* Atlanta, GA. Department of HHS, CDC, NCCDPHP, Office on Smoking and Health. 2006.

[330] Amour BS et al. Annual smoking-attributable mortality, years of potential life lost, and productivity losses – United States, 1997-2001. *MMWR* 2005;54:625-628.

[331] Pleis JR, Lethbridge-Çejku M. Summary health statistics for U.S. adults: National health interview survey, 2005. *Vital Health Stat* 2006;10(232). www.cdc.gov/nchs

[332] Mariolis P et al. Tobacco use among adults – United States, 2005. *MMWR* 2006;55:1145-1148.

[333] Maurice E et al.. State-specific prevalence of current cigarette smoking among adults and secondhand smoke rules and policies

Table 92 The four major conclusions from the Surgeon General's 2004 report on the health consequences of smoking.

Conclusions	
1.	Smoking harms nearly every organ of the body, causing many diseases and reducing the health of smokers in general.
2.	Quitting smoking has immediate as well as long-term benefits, reducing risks for diseases caused by smoking and improving health in general.
3.	Smoking cigarettes with lower machine measured yields of tar and nicotine provides no clear benefit to health.
4.	The list of diseases caused by smoking has been expanded to include abdominal aortic aneurysm, acute myeloid leukemia, cataract, cervical cancer, kidney cancer, pancreatic cancer, pneumonia, periodontitis, and stomach cancer

Table 93 The six major conclusions from the Surgeon General's 2006 report on the health consequences of involuntary exposure to tobacco smoke.

Conclusions	
1.	Secondhand smoke causes premature death and disease in children and in adults who do not smoke.
2.	Children exposed to secondhand smoke are at an increased risk for sudden infant death syndrome (SIDS), acute respiratory infections, ear problems, and more severe asthma. Smoking by parents causes respiratory symptoms and slows lung growth in their children.
3.	Exposure of adults to secondhand smoke has immediate adverse effects on the cardiovascular system and causes coronary heart disease and lung cancer.
4.	The scientific evidence indicates that there is no risk-free level of exposure to secondhand smoke
5.	Many millions of Americans, both children and adults, are still exposed to secondhand smoke in their homes and workplaces despite substantial progress in tobacco control.
6.	Eliminating smoking in indoor spaces fully protects nonsmokers from exposure to secondhand smoke. Separating smokers from nonsmokers, cleaning the air, and ventilating buildings cannot eliminate exposures of nonsmokers to secondhand smoke.

smoke more cigarettes per day than women. There are racial/ethnic differences among youth with regard to cigarette smoking and susceptibility to start smoking.[334] It has been reported that girls who start dating at about 11 or 12 y of age were 9 times more likely to begin smoking by 13 y of age and have 3 times the risk of being a smoker by the time they left school.[335] Children who smoke are almost 4 times more likely to develop asthma than those who do not smoke, and their risk is even greater if their mothers smoked while pregnant with them.[336] There also is data to suggest that non-Hispanic blacks extract more nicotine from cigarettes and become addicted at lower levels of smoking than non-Hispanic whites.[337] [338]

in homes and workplaces – United States, 2005. *MMWR* 2006;55:1148-1151.

[334] Gfroerer J, Caraballo R. Racial/ethnic differences among youths in cigarette smoking and susceptibility to start smoking – United States, 2002-2004. *MMWR* 2006;55:1275-1277.

[335] Fidler J et al. Early dating predicts smoking during adolescence: A prospective study. *Addiction* 2006;101:1805-1813

[336] Gilliland FD et al. Regular smoking and asthma incidence in adolescents. *Am J Respir Crit Care Med* 2006;174:1094-1100.

[337] Caraballo RS et al. Racial and ethnic differences in serum cotinine levels of cigarette smokers: Third National Health and Nutrition Survey, 1988-1991. *J Am Med Ass* 1998;280:135-139.

[338] Perez-Stable EJ et al. Nicotine metabolism and intake in black and white smokers. *J Am Med Ass* 1998;280:152-156.

In general, smoking rates in the nation are highest among persons with 9 to 11 years of education and lowest among those with ≥16 years of education.[339] Those living below the poverty level have a higher prevalence of smoking than persons above the poverty level. What is lacking, however, is good information on the smoking prevalence of foreign-born individuals.[340] [341] From the limited data available, except for male Asians, the foreign-born have significantly lower rates of smoking than do US-born members of the same racial and ethnic group.

It is estimated that 8.6 million people have at least one serious illness caused by smoking, and exposure to tobacco smoke is projected to contribute to some 440,000 deaths each year.[342] Among current smokers, chronic lung disease accounts for 73% of smoking-related conditions and, among former smokers, 50% of smoking related conditions. A survey of US smokers found that they believed they had a lower risk of developing lung cancer than the average smoker.[343] Furthermore, their perceived risk of lung cancer and of cancer in general barely increased with the number of cigarettes smoked per day. More than half of these smokers believed that exercise undoes most smoking effects.

One of the health effects of smoking that is often overlooked is its effect on dental health. Cigarette smoking accounts for approximately half of all cases of periodontal disease in the US which, in turn, is associated with issues related to the retention of natural teeth. Among smokers ≥65 years old, there is a lower prevalence of tooth retention than among non-smokers or former smokers.

Smoking cessation lowers the death rate even among middle-aged smokers with mild lung disease.[344] Heavy smokers cannot simply reduce the number of cigarettes they smoke if they want to minimize their risk of early death, they must stop completely.[345] Among former smokers, it takes approximately 10 years for their arteries to return to the level of stiffness seen in non-smokers.[346] Because of genetics, some former smokers remain at a higher risk for developing lung cancer than persons who never smoked.[347]

The CDC estimates that each pack of cigarettes sold costs society $7.18 in medical care and lost productivity.[348] Therefore, it is in society's best interest to decrease the prevalence of smoking. To

[339] Bombard J et al. State-specific prevalence of current cigarette smoking among adults – United States, 2003. *MMWR* 2004;53:1035-1037

[340] Baluja KF et al. Inclusion of immigrant status in smoking prevalence statistics. *Am J Public Health* 2003;93:642-646.

[341] Acevedo-Garcia D et al. Undoing an epidemiological paradox: the tobacco industry's targeting of US immigrants. *Am J Public Health* 2004;94:2188-2193.

[342] American Lung Association. *Lung disease data in culturally diverse communities: 2005*. www.lungusa.com.

[343] Weinstein ND et al. Smokers' unrealistic optimism about their risk. *Tob Control* 2005;14:55-59.

[344] Anthonisen NR et al. The effect of a smoking cessation intervention on 14.5-year mortality: a randomized clinical trial. *Ann Intern Med* 2005;142:233-239.

[345] Tverdal A, Bjartveit K. Health consequences of reduced daily cigarette consumption. *Tob Control* 2006;15:472-480.

[346] Jatoi NA et al. Impact of smoking and smoking cessation on arterial stiffness and aortic wave reflection in hypertension. *Hypertension* 2007;49:981-985.

[347] Chari R et al. Effect of active smoking on the human bronchial epithelium transcriptome. *BMC Genomics* 2007;8:297.

[348] Centers for Disease Control and Prevention. Annual smoking attributable mortality, years of potential life loss, and economic costs – United States , 1995-199. *MMWR* 2002;51:300-303.

accomplish this goal, there are two basic approaches. Since more than a third of current smokers began smoking prior to 16 years of age, one approach is to discourage youth from adopting tobacco usage.[349] This can be accomplished via a mix of educational and monetary approaches. However, adolescents 12-17 y of age in Missouri see less than 0.5 state-funded anti-tobacco television advertisements per month, compared to 10 per month in Utah.[350] Simply raising the taxes on cigarettes and other tobacco products can be effective in discouraging youth from starting to smoke and motivate adults to stop as the cost of smoking becomes more expensive. Studies have shown that a 10% increase in the price of cigarettes reduces smoking by 7% for youth and consumption by 4% for adults. Only South Carolina had a lower cigarette tax (as of 1/1/07) than Missouri's $0.17 (www.taxadmin.org/FTA/rate/cigarett.html).

The second approach is to get current smokers to stop smoking. Yet, there is evidence to suggest that minorities who smoke are less likely to receive physician-provided smoking cessation advice.[351] In general, about 42% of current smokers attempted to stop smoking in the prior year. Older people may be more successful than younger individuals in quitting smoking and their smoking cessation is associated with different subject characteristics from those that predict successful cessation in younger populations, suggesting that older smokers may have unique reasons to stop smoking.[352] While smoking cessation is a desirable outcome, the benefits from cessation may not be the same for women and men. The Lung Health Study, supported by the National Heart, Lung, and Blood Institute, found that, in general, women's lung function improves significantly more than men's after sustained smoking cessation, although the differences narrow over time. [353] The decline in lung function in those who continued to smoke was similar for men and women.

While most smoking cessation costs are borne by the smoker, some states offer assistance through Medicaid but not Missouri.[354] There are more than 17 smoking cessation programs offered in Kansas City.

Missouri

The health and economic burden of tobacco smoking in Missouri is not inconsequential. Annually, some 9,600 Missourians die from smoking-attributable causes (17% of all deaths), 132,103

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[349] Tauras JA et al. State tobacco control spending and youth smoking. *Am J Public Health* 2005;95:338-344.

[350] Szczypka G et al. Estimated exposure of adolescents to state-funded anti-tobacco television advertisements – 37 states and the District of Columbia, 1999-2003. *MMWR* 2005;54:1077-1080.

[351] Lopez-Quintero C et al. Racial/ethnic disparities in report of physician-provided smoking cessation advice: analysis of the 2000 National Health Interview Survey. *Am J Public Health* 2006;96:2235-2239.

[352] Whitson HE et al. Patterns and predictors of smoking cessation in an elderly cohort. *J Am Geriatrics Soc* 2006;54:466-471.

[353] Connet JE et al. Changes in smoking status affect women more than men: results of the Lung Health Study. *Am J Epidemiol* 2003;157:973-979.

[354] Halpin HA et al. State medicaid coverage for tobacco-dependence treatments – United States, 2005. *MMWR* 2006;55:1193-1197.

years of potential life are lost, and $2.4 billion in economic productivity is lost.[355] According to 2006 BRFSS data, 23% of Missouri adults smoke cigarette (www.dhss.mo.gov/BRFSS). Twenty-seven percent are former smokers, while 50% have never smoked.

Significant regional differences are seen in current smoking prevalence among the Central (31%) and Southeast (30%) regions compared to the Kansas City (20%) and St. Louis (20%) regions. Significantly more adults with less than a high school education (45%) were current smokers than adults with a high school education (28%) and adults with more than a high school education (16%). And, significantly more adults at lower income levels reported currently smoking than those at higher income levels. There were no significant differences in current smoking within gender and race. A significantly higher percentage of black respondents (60%) reported never smoking compared to white respondents (49%). Significantly more women (57%) reported never having smoked than men (43%). In 2005, 23.7% of high school students were current smokers (www.dhss.mo.gov/SmokingAndTobacco/youth_use.html).

BRFSS data from 2002-2003 were used to demonstrate that among Missourians who have asthma, 28.4% remained active smokers and that 19.9%-36.4% were exposed to secondhand smoke (depending on the setting).[356]

The American Lung Association (ALA) estimates that the economic costs due to smoking were $3,841,000,000 in Missouri (www.lungusa.com). The ALA gave Missouri a grade of “F” for tobacco prevention and control spending, smoke free air, cigarette tax, and a “B” for youth access to tobacco products.

Kansas City

There were 518 smoking-attributable deaths (13.8% of all deaths) in Kansas City during 2005, with 33 deaths being attributed to breathing secondhand smoke. The Kansas City Region BRFSS 2005 data found that 24.8% of respondents smoked (the region includes Cass, Clay, Clinton, Jackson, Lafayette, Platte and Ray counties) which was higher than the statewide rate of 23.7%. Lesbians and gay men in the Kansas City metropolitan area had a much higher prevalence of smoking, 34.8%.[357] A similar disparity between lesbians/gay men and the general population has been reported from California.[358]

In Kansas City proper, in 2006, 1,234 residents were surveyed to see if they smoked (20.3% said yes) and if they lived with someone who smokes (18.2% said yes).[359] They also were asked whether they believed smoking or breathing in some else’s tobacco smoke can cause various health problems (Table

[355] Kayani NA et al. The health and economic burden of smoking in Missouri, 2000-2004. *Missouri Med* 2007;104:265-269.

[356] Yun S et al. Active and passive smoking among asthmatic Missourians: implications for health education. *Prev Med* 2006;42:286-290.

[357] Kansas City Health Department and the Lesbian and Gay Community Center of Greater Kansas City. *THE PULSE 2006: A health assessment of the lesbian, gay, bisexual, & transgendered (LGBT) community in the Kansas City, Missouri, metropolitan area.* www.kcmo.org/health

[358] Gruskin EP et al. Disparities in smoking between the lesbian, gay, and bisexual population and the general population of California. *Am J Public Health* 2007;97:1496-1502.

[359] Kansas City Health Department. *2006 Community Health Planning and Assessment Survey*. www.kcmo.org.

94).

Table 94 Responses of 1,234 Kansas City, Mo, residents to questions on tobacco smoke and health

Do you believe that smoking is the cause of	Yes	No	Don't know
Heart disease	78.4%	9.7%	11.8%
Lung cancer	90.4%	4.3%	5.3%
Stroke	72.4%	10.2%	17.4%
Low birthweight	72.0%	7.3%	20.7%
Impotence in men	41.8%	10.6%	47.6%
Do you believe that breathing in someone else's tobacco smoke can cause			
Heart disease	67.8%	13.8%	18.4%
Lung cancer	79.4%	9.7%	10.9%
Respiratory problems in children	85.1%	5.9%	8.9%
Sudden infant death syndrome	45.9%	13.3%	40.8%

Work by the Kansas City Health Department and its community partners at the Kansas City University of Medicine and Biosciences and at Children's Mercy Hospital has examined various issues related to smoking during pregnancy. These efforts demonstrated that smoking alone or in combination with alcohol and/or drug use was associated with low birthweight for term[360] and preterm infants[361] as well as infants who were small for their gestational age.[362] Depending on the combination of smoking, alcohol, and drugs, these health compromising behaviors were associated with 11.8-31.4% of preterm births and 5.5-18.5% of low birthweight term births. Among women who had two pregnancies, 24.9% of those who smoked during their first pregnancy did not smoke during their second pregnancy, while only 4.8% of the women who did not smoke during the first pregnancy did so in the second pregnancy.[363] During 2001-2005, 13% of pregnant women who had a live birth smoked during pregnancy. Infants born to smokers had a risk of dying that was 76% higher than for those born to non-smokers.[364]

Two of the Yr 2010 national health objectives are to reduce the prevalence of any tobacco use during the preceding month to ≤21% and the prevalence of current cigarette use to ≤16% among high school students. According to the Centers for Disease Control and Prevention, in 2005, 23.0% of high school students were current smokers and 9.4% were frequent smokers.[365]

In the Kansas City metropolitan area there has been a significant decline of smoking among 8th,

[360] Okah, F et al. Term-gestation low birth weight and health compromising behaviors during pregnancy. *Obstet Gynecol* 2005;105:543-550.

[361] Dew PC et al. The effect of health compromising behaviors on preterm births. *Matern Child Health J* 2007;11:227-233.

[362] Okah F et al. Cumulative and residual risks of small for gestational age neonates after changing pregnancy-smoking behaviors. *Am J Perinatol* 2007;24:191-196.

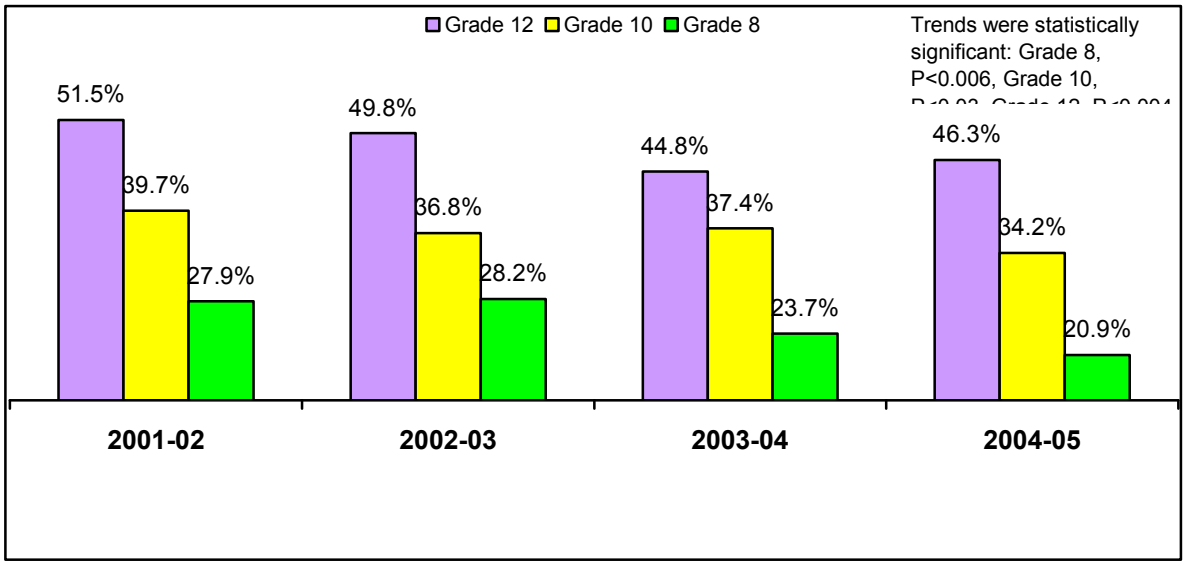
[363] Hoff GL et al. Changes in smoking behavior between first and second pregnancies. *Am J Health Behav* 2007;31:583-590.

[364] Hoff GL, Cai J. *Dying so young. Infant mortality in Kansas City.* 2007. www.kcmo.org/health

[365] Centers for Disease Control and Prevention. 2006. Cigarette use among high school students – United States, 1991-2005. *MMWR* 55:724-726.

10th and 12th graders (Figure 88), although the 2004-2005 data saw a rise in 12th graders who ever used cigarettes (www.pfc.org). More than 25% of students who smoked reported having their first cigarette when they were ≤11 y old, and 40% between the ages of 12 and 14. These surveys also found that the percentage of students that have used smokeless tobacco had increased at all grade levels: 29% in 8th grade, 29% in 10th grade, and 31% in 12th grade. More than 1 in 8 users of smokeless tobacco were girls and 8th grade girls reported the highest use rate among girls. These local data are supported by national surveys (www.monitoringthefuture.org).

Figure 88 Lifetime cigarette use among teenagers by grade level, Kansas City, Mo, metropolitan area; data from Kauffman Teen Surveys



In addition to the smoking itself, there is the related issue of protecting individuals from the effects of environmental (second hand) smoke, whether at home,[366] in the work place, or at other venues in the community.[367] [368] Of 1,234 Kansas Citians surveyed in 2006, 70.2% said smoking was not permitted in the home which was higher than the 64.0% reported statewide in Missouri in 2003[369] and similar to the national median (73.7%) for homes where smoking is prohibited. Of those who allow smoking in the home, 36.2% permitted it only in designated rooms. Smoking was permitted in designated areas outside of the home by 76.3% of respondents, although 9% of these individuals indicated that permission was

[366] Kum-Njii P et al. Environmental tobacco smoke exposure: prevalence and mechanisms of causation of infections in children. *Pediatrics* 2006;117:1745-1754.

[367] Levy DT et al. Recent trends in home and work smoking bans. *Tob Control* 2004;13:258-263.

[368] Winickoff JP et al. A national survey of the acceptability of quitlines to help parents quit smoking. *Pediatrics* 2006;117:e695-e-700.

[369] Trosclair A et al. State-specific prevalence of smoke-free home rules – United States, 1992-2003. *MMWR* 2007;56:501-504.

conditional. Of the respondents, 74.1% did not permit smoking in their car, van, or truck, while 20.3% indicated that in the prior week they had been a passenger in a vehicle with a person who was smoking.

Many employers, including the City of Kansas City, have policies that restrict smoking in the workplace. As of the 31st of May 2005, Kansas City, by ordinance (Chap.34, Article XII), prohibited smoking in non-hospitality industry work settings. This ordinance did not represent a major imposition on workplaces, as a 2003 BRFSS survey conducted by the Missouri Department of Health and Senior Services found that 80% of respondents in the Kansas City metropolitan area reported that smoking was not permitted in their work areas or in common areas of the workplace. About half of the respondents also felt that smoking should be prohibited in the indoor dining areas of restaurants and shopping malls, with nearly 60% reporting they would prohibit smoking in public buildings, indoor concerts, and sporting events; only 22% felt it should be prohibited in bars and cocktail lounges. Missouri and Kansas currently have no preemptive state laws related to smoke free indoor air.[370]

The Kansas City 2006 Community Health Planning and Assessment survey found that when it came to restaurants, 71.4% of respondents said they prefer to dine in a non-smoking establishment, and, of those individuals, 75.3% would like all restaurants in Kansas City to be non-smoking. However, only 39.6% of all the respondents said they would like to see all bars in Kansas City be non-smoking.

[370] Linberger L et al. Preemptive state smoke-free indoor air laws – United States, 1999-2004. *MMWR* 2005;54:250-254.