

CHAPTER 10: CANCER RISK AND PROTECTIVE FACTORS

Smoking

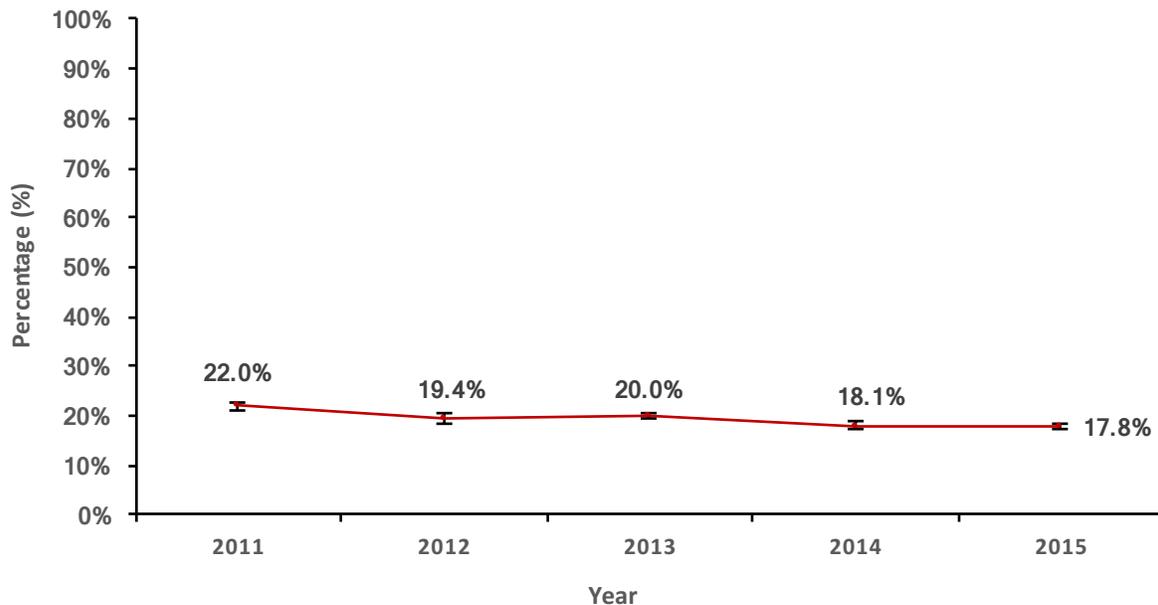
Smoking is the major cause of lung cancer in the United States. About 90 percent of lung cancer deaths in men and almost 80 percent of lung cancer deaths in women in the U.S. are due to smoking. Smoking also causes several other cancers, including cancer of the bladder, cervix, esophagus, kidney, larynx, oral cavity, pancreas, throat and stomach, as well as acute myeloid leukemia.²⁸

Smoking among Kansas Adults

In 2015, 18 percent (95% confidence interval: 17.1% to 18.5%) of Kansas adults 18 years and older were current smokers (Figure 10-1). The percentage of Kansas adults who are current smokers has remained steady since 2011.



Figure 10-1. Percentage of adults 18 years and older who are current smokers, Kansas 2011-2015.



Source: 2011-2015 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Department of Health and Environment. Vertical bars indicate 95% confidence intervals.

²⁸ U.S. Department of Health and Human Services. The Health Consequences of Smoking: A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2004.

In 2015, the percentage of Kansans who were current smokers was significantly higher among male (19.4%; 95% confidence interval: 18.4% to 20.4%) as compared to female (16.2%; 95% confidence interval: 15.4% to 17.1%).

The percentage of Kansans who were current smokers in 2015 was significantly higher among Kansans aged 25 to 34 years (23.6%; 95% confidence interval: 21.5% to 25.6%), followed by adults aged 45 to 64 years (20.0%; 95% confidence interval: 18.9% to 21.0%), and adults aged 18 to 24 years (15.4%; 95% confidence interval: 13.2% to 17.6%). However, the percentage of Kansans who were current smokers was significantly lower among Kansans aged 65 years and older (8.7%; 95% confidence interval: 7.9% to 9.5%) as compared to any other age group.

The age-adjusted percentage of Kansans 18 years and older who were current smokers was significantly higher among non-Hispanic African Americans (23.5%; 95% confidence interval: 20.3% to 26.7%), and non-Hispanic Kansans of other races or multi-racial Kansans (21.2%; 95% confidence interval: 18.5% to 23.9%), compared to non-Hispanic whites (17.0%; 95% confidence interval: 16.4% to 17.7%) and Hispanics (14.1%; 12.3% to 16.0%).

In 2015, the percentage of Kansans 18 years and older who were current smokers was significantly lower among college graduates (7.3%; 95% confidence interval: 6.6% to 8.0%) compared to those who attained lower levels of education. Similarly, the percentage of Kansans 18 years and older who were current smokers was significantly lower among those whose annual household income was \$50,000 or higher (11.7%; 95% confidence interval: 10.8% to 12.6%) compared to those whose household income was lower.

The percentage of Kansans 18 years and older who were current smokers did not differ significantly by county population density subgroups.

In Kansas, the percentage of adults 18 years and older who were current smokers was significantly higher among those living with a disability (24.7%; 95% confidence interval: 23.3% to 26.2%) compared to those living without a disability (15.8%; 95% confidence interval: 15.1% to 16.6%).

Smoking among Kansas Adults with and without History of Cancer Diagnosis

In 2015, approximately 15 percent (15.2%; 95% confidence interval: 13.2% to 17.1%) of Kansas adults 18 years and older ever diagnosed with cancer currently smoked cigarettes, while 18.0% (95% confidence interval: 17.3% to 18.7%) of Kansas adults with no history of cancer diagnosis currently smoke. However, after adjusting for age, sex, race/ethnicity, employment status, and education level, the adjusted prevalence of smoking among those ever diagnosed with cancer did not differ significantly as compared to those with no history of cancer diagnosis (adjusted odds ratio: 1.05; 95% confidence interval: 0.88 to 1.24; $p=0.61$).

Smoking among Kansas Adolescents

In 2013, approximately 10 percent (10.2%; 95% confidence interval: 8.8% to 11.9%) of Kansas high school students in grades 9-12 currently smoked cigarettes. The percentage of Kansas high school students in grades 9-12 who currently smoked cigarettes did not differ significantly by gender groups. The percentage of Kansas students who currently smoked cigarettes did not differ significantly by their grade levels. The percentage of high school students in grade 9-12 (males, females, or both) who currently smoked cigarettes did not differ significantly by race/ethnic groups.

Table 10-1. Percentage of adults 18 years and older who are current smokers, by selected characteristics, Kansas 2015.

Characteristic	Percentage of adults 18 years and older who are current smokers	95% Confidence Interval		
			to	
Total	17.8%	17.1%	to	18.5%
Gender				
Male	19.4%	18.4%	to	20.4%
Female	16.2%	15.4%	to	17.1%
Age Group				
18-24	15.4%	13.2%	to	17.6%
25-34	23.6%	21.5%	to	25.6%
35-44	20.7%	18.9%	to	22.5%
45-64	20.0%	18.9%	to	21.0%
65 and older	8.7%	7.9%	to	9.5%
Race and Ethnicity (age-adjusted)				
White, Non-Hispanic	17.0%	16.4%	to	17.7%
African American, Non-Hispanic	23.5%	20.3%	to	26.7%
Other/Multi-Race, Non-Hispanic	21.2%	18.5%	to	23.9%
Hispanic	14.1%	12.3%	to	16.0%
Education				
Less than high school	28.8%	25.8%	to	31.7%
High school graduate or G.E.D.	23.2%	21.9%	to	24.5%
Some College	18.7%	17.5%	to	19.9%
College Graduate	7.3%	6.6%	to	8.0%
Household Income				
Less than \$15,000	31.3%	28.1%	to	34.6%
\$15,000 to \$24,999	27.8%	25.7%	to	29.9%
\$25,000 to \$34,999	22.3%	19.9%	to	24.6%
\$35,000 to \$49,999	19.1%	17.3%	to	21.0%
\$50,000 or higher	11.7%	10.8%	to	12.6%
County Population Density				
Frontier	16.7%	13.7%	to	19.7%
Rural	18.4%	16.5%	to	20.3%
Densely-settled rural	19.6%	17.8%	to	21.4%
Semi-urban	18.9%	17.2%	to	20.5%
Urban	16.9%	16.0%	to	17.9%
Disability Status				
Living with a disability	24.7%	23.3%	to	26.2%
Living without a disability	15.8%	15.1%	to	16.6%

Source: 2014 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. Prevalence estimates for race and ethnicity were age-adjusted to the U.S. 2000 standard population. See Technical Appendix for details on how prevalence estimates were calculated. County population density peer groups are based on the population for each county in the 2000 population and are defined as follows: Frontier (fewer than 6 persons per square mile), Rural (6 to 19.9 persons per square mile), Densely-Settled Rural (20 to 39.9 persons per square mile), Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Smokeless Tobacco Use

Smokeless tobacco includes chewing tobacco, which is placed between the cheek and gums, and snuff, which can be placed between the cheek or lip and gums, or taken orally or inhaled through the nostrils. Newer smokeless tobacco products include lozenges, tablets, tabs, strips, and sticks. Smokeless tobacco is known to cause oral, esophageal, and pancreatic cancer.²⁹

Smokeless Tobacco Use among Kansas Adults

During 2014-2015, approximately 11 percent of Kansas males 18 years and older used smokeless tobacco products (10.6%; 95% confidence interval: 10.0% to 11.2%), while less than 1 percent of Kansas females did (0.9%; 95% confidence interval: 0.7% to 1.1%). Due to the relative low smokeless tobacco use among females in Kansas, the following data describes smokeless tobacco use among Kansas males only. Two years of data were combined to maximize sample size and to allow for descriptive analyses by selected characteristics.



The percentage of Kansas males 18 years and older who currently used smokeless tobacco during 2014-2015 was lower among Kansas males aged 65 years and older (4.7%; 95% confidence interval: 4.0% to 5.4%) compared to Kansas males age 18 to 64 years.

The age-adjusted percentage of Kansas males 18 years and older who currently used smokeless tobacco during 2014-2015 was significantly higher among non-Hispanic whites (12.8%; 95% confidence interval: 12.0% to 13.5%) compared to non-Hispanic African Americans (4.1%; 95% confidence interval: 2.3% to 5.9%), non-Hispanic Kansans of other races or multi-racial Kansans (8.8%; 95% confidence interval: 6.5% to 11.2%), and Hispanics (4.0%; 95% confidence interval: 2.8% to 5.3%).

During 2014-2015, the percentage of Kansas males 18 years and older who currently used smokeless tobacco was significantly lower among college graduates (6.6%; 95% confidence interval: 5.8% to 7.3%) compared to those who received less than college graduate level of education.

The percentage of Kansas males 18 years and older who currently used smokeless tobacco did not differ significantly by household income level during 2014-2015.

The percentage of Kansas males 18 years and older who currently used smokeless tobacco was significantly lower among those who lived in urban (7.1%; 95% confidence interval: 6.4% to 7.9%) and semi-urban (11.3%; 95% confidence interval: 9.9% to 12.6%) areas compared to those who lived in rural (17.4%; 95% confidence interval: 15.2% to 19.6%) and densely-settled rural (15.3%; 95% confidence interval: 13.4% to 17.2%) areas during 2014-2015.

In Kansas, the percentage of adult males 18 years and older who currently used smokeless tobacco did not differ significantly by disability status subgroups.

²⁹ World Health Organization. Smokeless Tobacco and Some Tobacco-Specific N-Nitrosamines. International Agency for Research on Cancer Monographs on the Evaluation of Carcinogenic Risks to Humans Vol. 89. Lyon (France): World Health Organization, 2007.

Table 10-2. Percentage of males 18 years and older who currently use smokeless tobacco, by selected characteristics, Kansas 2014-2015.

Characteristic	Percentage of adults 18 years and older who currently use smokeless tobacco	95% Confidence Interval		
			to	
Total	10.6%	10.0%	to	11.2%
Age Group				
18-24	13.3%	11.3%	to	15.4%
25-34	13.3%	11.6%	to	15.0%
35-44	13.5%	11.9%	to	15.2%
45-64	9.9%	9.0%	to	10.7%
65 and older	4.7%	4.0%	to	5.4%
Race and Ethnicity (age-adjusted)				
White, Non-Hispanic	12.8%	12.0%	to	13.5%
African American, Non-Hispanic	4.1%	2.3%	to	5.9%
Other/Multi-Race, Non-Hispanic	8.8%	6.5%	to	11.2%
Hispanic	4.0%	2.8%	to	5.3%
Education				
Less than high school	8.1%	6.2%	to	10.1%
High school graduate or G.E.D.	13.1%	11.9%	to	14.3%
Some College	12.7%	11.5%	to	13.9%
College Graduate	6.6%	5.8%	to	7.3%
Household Income				
Less than \$15,000	8.6%	6.3%	to	11.0%
\$15,000 to \$24,999	10.3%	8.6%	to	11.9%
\$25,000 to \$34,999	11.9%	9.9%	to	14.0%
\$35,000 to \$49,999	11.5%	9.9%	to	13.1%
\$50,000 or higher	10.7%	9.8%	to	11.6%
County Population Density				
Frontier	15.7%	12.2%	to	19.2%
Rural	17.4%	15.2%	to	19.6%
Densely-settled rural	15.3%	13.4%	to	17.2%
Semi-urban	11.3%	9.9%	to	12.6%
Urban	7.1%	6.4%	to	7.9%
Disability Status				
Living with a disability	9.8%	8.6%	to	11.0%
Living without a disability	10.9%	10.2%	to	11.6%

Source: 2014-2015 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. Prevalence estimates for race and ethnicity were age-adjusted to the U.S. 2000 standard population. See Technical Appendix for details on how prevalence estimates were calculated. County population density peer groups are based on the population for each county in the 2000 population and are defined as follows: Frontier (fewer than 6 persons per square mile), Rural (6 to 19.9 persons per square mile), Densely-Settled Rural (20 to 39.9 persons per square mile), Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Smokeless Tobacco Use among Kansas Adolescents

In 2013, approximately 13 percent (13.2%; 95% confidence interval: 10.9% to 15.9%) of male high school students in grade 9-12 in Kansas currently used smokeless tobacco, while only 2 percent (2.3%; 95% confidence interval: 1.4% to 3.9%) of female high school students in grade 9-12 did.³⁰ The percentage of high school students in grades 9-12 (males, females, or both) who currently used smokeless tobacco did not differ significantly by grade level or race/ethnicity groups.

Secondhand Smoke

Secondhand smoke contains hundreds of chemicals known to cause cancer, and nonsmokers who are exposed to secondhand smoke at home or at work increase their risk of developing lung cancer by 20 to 30 percent.³¹

In 2014, approximately 7 percent of Kansas adults 18 years and older were exposed to secondhand smoke at home at least once during the past week (6.9%; 95% confidence interval: 6.1% to 7.8%). There was no significant difference in reported exposure to secondhand smoke at home by gender groups.

About 13 percent of Kansas adults 18 years and older were exposed to secondhand smoke in vehicles during this time period (13.0%; 95% confidence interval: 11.9% to 14.1%). The percentage of Kansas males 18 years and older who were exposed to secondhand smoke in vehicles (15.1%; 95% confidence interval: 13.3% to 16.9%) was significantly higher as compared to adult females (11.0%; 95% confidence interval: 9.6% to 12.3%).

Radon

Although cigarette smoking is responsible for about 90 percent of lung cancers in the U.S.,³² long-term exposure to radon—a colorless, odorless, radioactive gas—can also cause lung cancer. In fact, radon is the second leading cause of lung cancer, after cigarette smoking. The combination of cigarette smoking and exposure to radon increases the risk of lung cancer even greater than exposure to either risk factor alone. For most, the largest source of radon exposure occurs at home, and there are several options that people can choose to reduce their exposure, including using radon-resistant building techniques in new homes or installing radon-mitigation systems in existing homes.³³ As of 2013, about 8.5 percent of existing homes in Kansas have radon mitigation systems installed, and only three Kansas cities have adopted building codes requiring radon-resistant building techniques.³⁴ The percentage of existing homes that have radon mitigation systems installed is significantly higher among Kansans with annual household income >\$50,000 (10.2%; 95% confidence interval: 9.0% to 11.5%) as compared to those whose household income was less.



³⁰ 2013 Kansas Youth Risk Behavior Survey. Child Nutrition & Wellness, Kansas Department of Education.

³¹ U.S. Department of Health and Human Services. The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006.

³² U.S. Department of Health and Human Services. The Health Consequences of Smoking: A Report of the Surgeon General (2004).

³³ American Cancer Society (2012). Radon. <http://www.cancer.org/Cancer/CancerCauses/OtherCarcinogens/Pollution/radon>

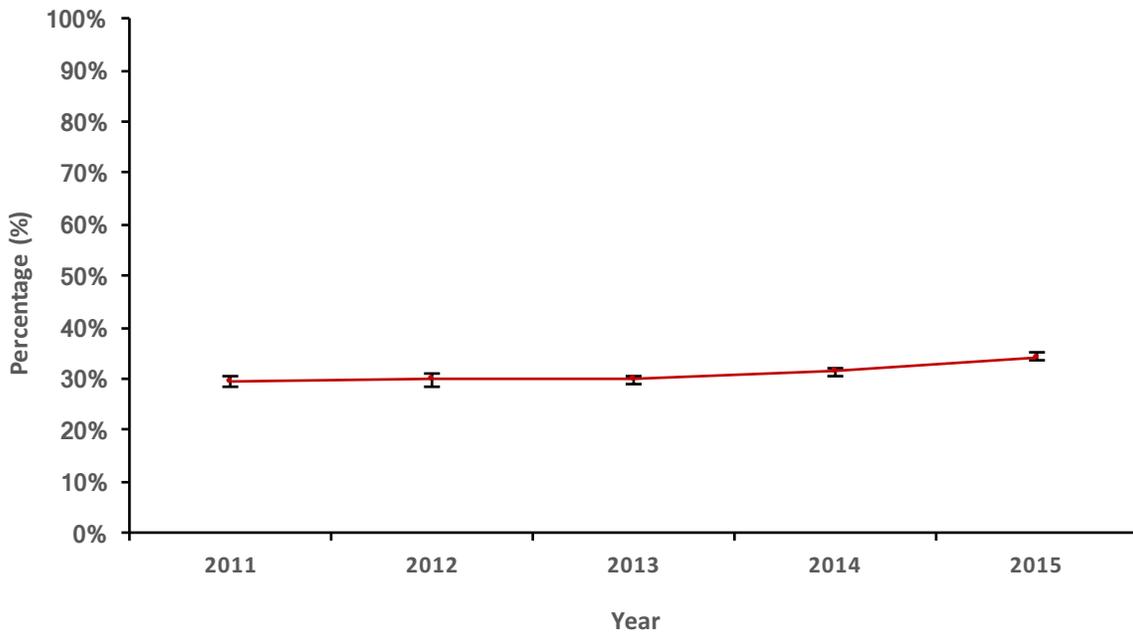
³⁴ Kansas Radiation Control Program, Kansas Department of Health and Environment.

Obesity

Obesity is associated with increased risk of esophageal, postmenopausal breast, endometrial colorectal, kidney, pancreatic, thyroid, and gallbladder cancer. Although the mechanisms that link obesity and cancer remain unknown, several possible explanations include: excessive hormone production; increased levels of insulin and insulin-like growth-factor; and chronic low-level inflammation.³⁵

In 2015, 34 percent (34.3%; 95% confidence interval: 33.5% to 35.1%) of Kansas adults 18 years and older were obese (Figure 10-2). The percentage of Kansas adults who were obese has increased gradually since 2011, but the percentage of Kansas adults who were obese was significantly higher in 2015 as compared to 2011-2014.

Figure 10-2. Percentage of adults 18 years and older who are obese, Kansas 2011-2015.



Source: 2011-2015 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. Vertical bars indicate 95% confidence intervals.

³⁵ National Cancer Institute. Obesity and Cancer Risk, 2012. <http://www.cancer.gov/cancertopics/factsheet/Risk/obesity>

In 2015, the percentage of Kansans who were obese did not differ significantly by gender groups (Table 10-3).

The percentage of Kansans who were obese in 2015 was significantly lower among Kansans aged 18 to 24 years (22.1%; 95% confidence interval: 19.6% to 24.6%) compared to Kansans aged 25 years and older.

The age-adjusted percentage of Kansans 18 years and older who were obese was significantly higher among non-Hispanic African Americans (46.6%; 95% confidence interval: 42.1% to 51.0%) and Hispanics (39.7%; 95% confidence interval: 36.4% to 43.0%) compared to non-Hispanic whites (33.6%; 95% confidence interval: 32.7% to 34.6%) and other/multi-racial groups (29.0%; 95% confidence interval: 25.4% to 32.3%).

In 2015, the percentage of Kansans 18 years and older who were obese was significantly lower among college graduates (30.1%; 95% confidence interval: 28.9% to 31.3%) compared to those who attained lower levels of education. During the same time period, the percentage of Kansans 18 years and older who were obese was significantly lower among those whose annual household income was \$50,000 or higher (32.2%; 95% confidence interval: 31.0% to 33.4%) compared to those whose annual household income was less than \$50,000.

The percentage of Kansans 18 years and older who were obese in 2015 did not differ significantly by county population density.

In Kansas, the percentage of adults 18 years and older who were obese in 2015 was significantly higher among those living with a disability (44.7%; 95% confidence interval: 43.0% to 46.3%) compared to those living without a disability (31.2%; 95% confidence interval: 30.3% to 32.1%).



Table 10- 3. Percentage of adults 18 years and older who are obese, by selected characteristics, Kansas 2015.

Characteristic	Percentage of adults 18 years and older who are obese	95% Confidence Interval		
Total	34.3%	33.5%	to	35.1%
Gender				
Male	35.1%	33.9%	to	36.3%
Female	33.4%	32.3%	to	34.5%
Age Group				
18-24	22.1%	19.6%	to	24.6%
25-34	35.8%	33.5%	to	38.1%
35-44	38.0%	35.8%	to	40.2%
45-64	39.2%	37.9%	to	40.5%
65 and older	30.5%	29.2%	to	31.7%
Race and Ethnicity (age-adjusted)				
White, Non-Hispanic	33.6%	32.7%	to	34.6%
African American, Non-Hispanic	45.6%	42.1%	to	51.0%
Other/Multi-Race, Non-Hispanic	29.0%	25.4%	to	32.6%
Hispanic	39.7%	36.4%	to	43.0%
Education				
Less than high school	39.3%	36.0%	to	42.6%
High school graduate or G.E.D.	36.4%	34.9%	to	38.0%
Some College	34.5%	33.0%	to	35.9%
College Graduate	30.1%	28.9%	to	31.3%
Household Income				
Less than \$15,000	38.4%	34.9%	to	41.8%
\$15,000 to \$24,999	37.7%	35.4%	to	40.0%
\$25,000 to \$34,999	38.2%	35.5%	to	40.8%
\$35,000 to \$49,999	37.5%	35.2%	to	39.7%
\$50,000 or higher	32.2%	31.0%	to	33.4%
County Population Density				
Frontier	33.7%	29.9%	to	37.6%
Rural	36.1%	33.8%	to	38.4%
Densely-settled rural	36.7%	34.6%	to	38.8%
Semi-urban	35.8%	34.0%	to	37.7%
Urban	32.8%	31.7%	to	34.0%
Disability Status				
Living with a disability	44.7%	43.0%	to	46.3%
Living without a disability	31.2%	30.3%	to	32.1%

Source: 2015 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. Prevalence estimates for race and ethnicity were age-adjusted to the U.S. 2000 standard population. See Technical Appendix for details on how prevalence estimates were calculated. County population density peer groups are based on the population for each county in the 2000 population and are defined as follows: Frontier (fewer than 6 persons per square mile), Rural (6 to 19.9 persons per square mile), Densely-Settled Rural (20 to 39.9 persons per square mile), Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Fruit and Vegetable Consumption

The American Cancer Society (ACS) recommends eating at least 2½ cups of fruits and vegetables per day to reduce the risk of cancer. Research studies have reported associations between higher fruit and vegetable consumption and lower risk of breast, colorectal, oral, esophageal, prostate, and stomach cancers.³⁶

In 2015, about 42 percent (95% confidence interval: 40.8% to 42.4%) of Kansas adults 18 years and older consumed both fruits and vegetables one or more times per day (Table 10-4).

The percentage of Kansas males 18 years and older who consumed both fruits and vegetables one or more times per day in 2015 (35.8%; 95% confidence interval: 34.7% to 36.9%) was significantly lower than the percentage of Kansas females (47.2%; 95% confidence interval: 46.1% to 48.3%) who did.

In 2015, the percentage of Kansans who consumed both fruits and vegetables one or more times per day was significantly higher among adults 65 years and older (45.2%; 95% confidence interval: 43.9% to 46.5%) compared to adults 18-34 years old.

The age-adjusted percentage of adults 18 years and older who consumed both fruits and vegetables one or more times per day in 2015 was significantly lower among non-Hispanic African Americans (34.5%; 95% confidence interval: 30.4% to 38.6%) compared to non-Hispanic whites and Hispanics.

The percentage of Kansas adults 18 years and older who consumed both fruits and vegetables one or more times per day in 2015 was significantly higher among college graduates (52.1%; 95% confidence interval: 50.8% to 53.4%) compared to those who attained lower levels of education.

In 2015, the percentage of Kansans 18 years and older who consumed both fruits and vegetables one or more times per day was significantly higher among those whose annual household income was \$50,000 or higher (48.6%; 95% confidence interval: 47.4% to 49.9%) compared to those whose annual household income was less than \$50,000, and significantly lower among those with annual household income less than \$15,000 (32.6%; 95% confidence interval: 29.4% to 35.8%).

The percentage of Kansas adults 18 years and older who consumed both fruits and vegetables one or more times per day in 2015 was significantly higher among residents of urban counties (43.2%; 95% confidence interval: 42.0% to 44.3%) compared to residents of densely-settled rural counties (39.3%; 95% confidence interval: 37.3% to 41.3%).

In Kansas, the percentage of adults 18 years and older who consumed both fruits and vegetables one or more times per day was significantly higher among those living without a disability (44.2%; 95% confidence interval: 43.3% to 45.2%) compared to those living with a disability (39.8%; 95% confidence interval: 38.3% to 41.4%).



³⁶ Kushi, L. H., Doyle, C., McCullough, M., Rock, C. L., Demark-Wahnefried, W., Bandera, E. V., Gapstur, S., Patel, A. V., Andrews, K., Gansler, T. and The American Cancer Society 2010 Nutrition and Physical Activity Guidelines Advisory Committee (2012), American Cancer Society guidelines on nutrition and physical activity for cancer prevention. CA: A Cancer Journal for Clinicians, 62: 30–67.

Table 10- 4. Percentage of adults 18 years and older who consume both fruits and vegetables one or more times per day, by selected characteristics, Kansas 2015.

Characteristic	Percentage of adults 18 years and older who consume both fruits and vegetables 1+ times/day	95% Confidence Interval		
			to	
Total	41.6%	40.8%	to	42.4%
Gender				
Male	35.8%	34.7%	to	36.9%
Female	47.2%	46.1%	to	48.3%
Age Group				
18-24	35.5%	32.7%	to	38.3%
25-34	39.5%	37.3%	to	41.6%
35-44	42.3%	40.2%	to	44.4%
45-64	42.7%	41.5%	to	44.0%
65 and older	45.2%	43.9%	to	46.5%
Race and Ethnicity (age-adjusted)				
White, Non-Hispanic	42.1%	41.2%	to	43.0%
African American, Non-Hispanic	34.5%	30.4%	to	38.6%
Other/Multi-Race, Non-Hispanic	41.1%	37.3%	to	44.9%
Hispanic	42.8%	39.7%	to	45.8%
Education				
Less than high school	33.6%	30.7%	to	36.6%
High school graduate or G.E.D.	33.8%	32.4%	to	35.2%
Some College	42.1%	40.7%	to	43.6%
College Graduate	52.1%	50.8%	to	53.4%
Household Income				
Less than \$15,000	32.6%	29.4%	to	35.8%
\$15,000 to \$24,999	40.0%	37.7%	to	42.2%
\$25,000 to \$34,999	40.5%	37.9%	to	43.1%
\$35,000 to \$49,999	40.4%	38.2%	to	42.6%
\$50,000 or higher	48.6%	47.4%	to	49.9%
County Population Density				
Frontier	39.2%	35.5%	to	43.0%
Rural	37.1%	34.9%	to	39.3%
Densely-settled rural	39.3%	37.3%	to	41.3%
Semi-urban	41.3%	39.4%	to	43.1%
Urban	43.2%	42.0%	to	44.3%
Disability Status				
Living with a disability	39.8%	38.3%	to	41.4%
Living without a disability	44.2%	43.3%	to	45.2%

Source: 2015 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. Prevalence estimates for race and ethnicity were age-adjusted to the U.S. 2000 standard population. See Technical Appendix for details on how prevalence estimates were calculated. County population density peer groups are based on the population for each county in the 2000 population and are defined as follows: Frontier (fewer than 6 persons per square mile), Rural (6 to 19.9 persons per square mile), Densely-Settled Rural (20 to 39.9 persons per square mile), Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Physical Activity

The U.S. Department of Health and Human Services' 2015-2020 Physical Activity Guidelines for Americans and the American Cancer Society's (ACS) Guidelines on Nutrition and Physical Activity for Cancer Prevention recommends that adults participate in at least 150 minutes a week of moderate-intensity aerobic activity, or 75 minutes a week of vigorous-intensity aerobic activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity, and muscle strengthening activity on two or more days a week.³⁷⁻³⁸ Physical activity has been linked to lower risk of several types of cancer, including cancers of the breast, colon/rectum, uterus, pancreas, and prostate.

In 2015, 19.3 percent (95% confidence interval: 18.6% to 20.0%) of Kansas adults 18 years and older met physical activity guidelines (i.e. 150 minutes a week of moderate-intensity aerobic activity, or 75 minutes a week of vigorous-intensity aerobic activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity) (Table 10-5).



Kansas males 18 years and older were significantly more likely to meet physical activity guidelines (21.2%; 95% confidence interval: 20.1% to 22.3%) compared to females (17.5%; 95% confidence interval: 16.6% to 18.5%) in 2015.

In 2015, Kansas adults aged 18 to 24 years (27.3%; 95% confidence interval: 24.5% to 30.2%) were significantly more likely to meet physical activity guidelines compared to adults aged 25 to 64, and was significantly lower among adults aged 65 and older (15.8%; 95% confidence interval: 14.8% to 16.8%).

The age-adjusted percentage of adults 18 years and older who met physical activity guidelines in 2015 did not differ significantly by race and ethnicity status.

In 2015, the percentage of Kansas adults 18 years and older who met physical activity guidelines was significantly lower among those with lower levels of education compared to those who attained college level (15.8%; 95% confidence interval: 18.9% to 21.5%) or graduated from college (24.7%; 95% confidence interval: 23.5% to 25.8%). Similarly, the percentage of Kansas adults 18 years and older who met physical activity guidelines was significantly lower among those whose annual household income was less than \$35,000 compared to those whose annual household income was \$35,000 or greater.

The percentage of Kansas adults 18 years and older who met physical activity guidelines in 2015 was significantly lower among residents of frontier, rural or densely-settled rural counties as compared to residents of urban counties (20.7%; 95% confidence interval: 19.7% to 21.7%).

In Kansas, the percentage of adults 18 years and older who met physical activity guidelines in 2015 was significantly lower among those living with a disability (13.0%; 95% confidence interval: 11.9% to 14.1%) compared to those living without a disability (21.2%; 95% confidence interval: 20.3% to 22.0%).

³⁷ U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans (2015-2020).

³⁸ Kushi, L. H., Doyle, C., McCullough, M., Rock, C. L., Demark-Wahnefried, W., Bandera, E. V., Gapstur, S., Patel, A. V., Andrews, K., Gansler, T. and The American Cancer Society 2010 Nutrition and Physical Activity Guidelines Advisory Committee (2012), American Cancer Society guidelines on nutrition and physical activity for cancer prevention. CA: A Cancer Journal for Clinicians, 62: 30-67.

Table 10-5. Percentage of adults 18 years and older who met physical activity guidelines, by selected characteristics, Kansas 2015.

Characteristic	Percentage of adults 18 years and older who met physical activity guidelines	95% Confidence Interval		
			to	
Total	19.3%	18.6%	to	20.0%
Gender				
Male	21.2%	20.1%	to	22.3%
Female	17.5%	16.6%	to	18.5%
Age Group				
18-24	27.3%	24.5%	to	30.2%
25-34	21.0%	19.0%	to	23.0%
35-44	19.6%	17.8%	to	21.4%
45-64	17.2%	16.2%	to	18.2%
65 and older	15.8%	14.8%	to	16.8%
Race and Ethnicity (age-adjusted)				
White, Non-Hispanic	19.7%	18.9%	to	20.5%
African American, Non-Hispanic	19.6%	15.6%	to	23.6%
Other/Multi-Race, Non-Hispanic	21.6%	18.0%	to	25.1%
Hispanic	17.7%	15.1%	to	20.3%
Education				
Less than high school	11.8%	9.4%	to	14.2%
High school graduate or G.E.D.	15.3%	14.0%	to	16.5%
Some College	20.2%	18.9%	to	21.5%
College Graduate	24.7%	23.5%	to	25.8%
Household Income				
Less than \$15,000	13.6%	11.1%	to	16.2%
\$15,000 to \$24,999	15.9%	14.1%	to	17.8%
\$25,000 to \$34,999	16.5%	14.3%	to	18.7%
\$35,000 to \$49,999	20.9%	18.8%	to	23.0%
\$50,000 or higher	22.5%	21.4%	to	23.6%
County Population Density				
Frontier	13.4%	10.5%	to	16.2%
Rural	15.4%	13.5%	to	17.4%
Densely-settled rural	17.5%	15.7%	to	19.2%
Semi-urban	19.7%	18.0%	to	21.3%
Urban	20.7%	19.7%	to	21.7%
Disability Status				
Living with a disability	13.0%	11.9%	to	14.1%
Living without a disability	21.2%	20.3%	to	22.0%

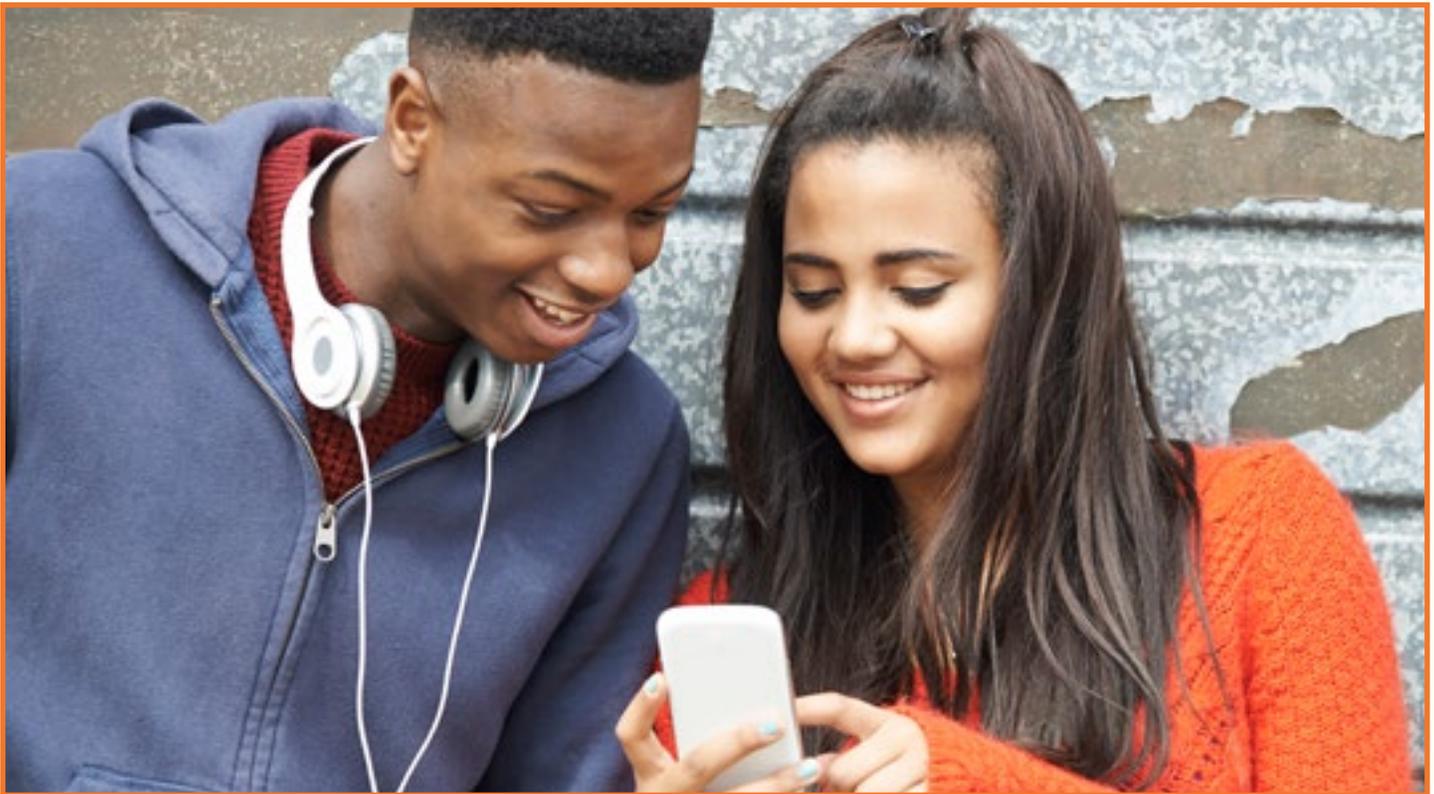
Source: 2015 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. Prevalence estimates for race and ethnicity were age-adjusted to the U.S. 2000 standard population. See Technical Appendix for details on how prevalence estimates were calculated. County population density peer groups are based on the population for each county in the 2000 population and are defined as follows: Frontier (fewer than 6 persons per square mile), Rural (6 to 19.9 persons per square mile), Densely-Settled Rural (20 to 39.9 persons per square mile), Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile). Note: ACS Guidelines on Physical Activity for Cancer Prevention recommends that adults participate in at least 150 minutes a week of moderate-intensity aerobic activity, or 75 minutes a week of vigorous-intensity aerobic activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity, and muscle strengthening activity on two or more days a week.

Human Papillomavirus (HPV) Vaccination

Human papillomavirus (HPV) is a common virus that is transmitted during sex. Although HPV often does not cause health problems, nearly all cervical cancers are caused by HPV.³⁹ HPV also increases the risk of vulvar, vaginal, penile, anal, and oropharyngeal (throat) cancer.

HPV vaccine has been found to be safe and effective for both males and females aged 9-26 years. In 2016, the CDC began recommending two doses of HPV vaccine at least six months apart for males and females aged 9-14 years to protect against cancers, and three doses for those who begin in the series at a later age (15-26 years). However, teens and young adults aged 9-26 who received 2 doses of HPV vaccine less than 5 months apart are required to have 3 doses to complete the series.⁴⁰

In 2015 before the new guidelines, 51 percent (95% confidence interval: 42.1% to 59.7%) of Kansas females ages 13-17 years had received one or more doses of the HPV vaccine, while only 32 percent (95% confidence interval: 23.7% to 39.7%) received the recommended three (or more) doses of the vaccine. The percentage of Kansas males ages 13-17 years had received one or more doses of the HPV vaccine is 36 percent (95% confidence interval: 27.9% to 44.1%), while only 19 percent (95% confidence interval: 11.8% to 25.2%) received the recommended three (or more) doses of the vaccine.⁴¹



³⁹ Centers for Disease Control and Prevention (2014). Cervical cancer risk factors.

http://www.cdc.gov/cancer/cervical/basic_info/risk_factors.htm

⁴⁰ Centers for Disease Control and Prevention (2016). CDC recommends only two HPV shots for younger adolescents.

<https://www.cdc.gov/media/releases/2016pl020-hpv-tshots.htm>

⁴¹ Reagan-Steiner S, Yankey D, Jeyarajah J, et al. National, Regional, State, and Selected Local Area Vaccination Coverage Among Adolescents Aged 13–17 Years — United States, 2015. *MMWR Morb Mortal Wkly Rep* 2016;65:850–858. DOI:

<http://dx.doi.org/10.15585/mmwr.mm6533a4>

Ultraviolet Radiation (UV)

About 65-90% of melanomas are caused by exposure to ultraviolet (UV) light, which is an invisible kind of radiation that comes from the sun, tanning beds, and sunlamps.⁴² Unprotected and/or excessive exposure to UV light and a history of severe sunburns increases the risk for melanoma.⁴³

In 2015, Kansas BRFSS has collected a population-based data related to prevalence estimates of sunburn for adults 18 years and older. About 40 percent (95% confidence interval: 38.4% to 40.9%) of Kansas adults had sunburn within the past 12 months (Table 10-6).

The percentage of Kansas adults 18 years and older who had sunburn within the past 12 months were significantly higher among males (43.9%; 95% confidence interval: 42.0% to 45.8%) compared to females (35.6%; 95% confidence interval: 33.8% to 37.3%).

In 2015, the percentage of Kansans who had sunburn within the past 12 months in 2015 was significantly higher among adults aged 18 to 44 years compared to adults aged 45 years and older, and significantly lower among adults aged 65 years and older (13.5%; 95% confidence interval: 12.2% to 14.8%).

The age-adjusted percentage of adults 18 years and older had sunburn within the past 12 months in 2015 was significantly lower among non-Hispanic African Americans (7.4%; 95% confidence interval: 3.5% to 11.4%) compared to any other race and ethnicity subgroups.

In 2015, the percentage of Kansas adults 18 years and older who had sunburn within the past 12 months was significantly lower among those with less than high school education (25.9%; 95% confidence interval: 21.1% to 30.8%) compared to those who attained higher levels of education. Conversely, the percentage of Kansas adults 18 years and older who had sunburn within the past 12 months was significantly higher among those whose annual household income was \$50,000 or more (47.5%; 95% confidence interval: 45.6% to 49.4%) compared to those whose annual household income was less than \$50,000.

The percentage of Kansas adults 18 years and older who had sunburn within the past 12 months in 2015 did not differ significantly by county population density.

In Kansas, the percentage of adults 18 years and older who had sunburn within the past 12 months in 2015 was significantly lower among those living with a disability (29.1%; 95% confidence interval: 26.8% to 31.5%) compared to those living without a disability (42.6%; 95% confidence interval: 41.1% to 44.1%).

⁴² Armstrong BK, Kricger A. How much melanoma is caused by sun exposure? *Melanoma Research* 1993;3(6):395–401.

⁴³ American Cancer Society. *Skin Cancer Facts* (2012).

Table 10-6. Percentage of adults 18 years and older reported having sunburn, by selected characteristics, Kansas 2015.

Characteristic	Percentage of adults 18 years reported having sunburn	95% Confidence Interval		
			to	
Total	39.6%	38.4%	to	40.9%
Gender				
Male	43.9%	42.0%	to	45.8%
Female	35.6%	33.8%	to	37.3%
Age Group				
18-24	59.9%	55.2%	to	64.6%
25-34	56.0%	52.4%	to	59.7%
35-44	50.2%	46.9%	to	53.5%
45-64	35.0%	33.1%	to	36.9%
65 and older	13.5%	12.2%	to	14.8%
Race and Ethnicity (age-adjusted)				
White, Non-Hispanic	48.9%	47.5%	to	50.3%
African American, Non-Hispanic	7.4%	3.5%	to	11.4%
Other/Multi-Race, Non-Hispanic	24.4%	19.2%	to	59.6%
Hispanic	21.1%	17.4%	to	24.9%
Education				
Less than high school	25.9%	21.1%	to	30.8%
High school graduate or G.E.D.	33.4%	31.0%	to	35.7%
Some College	44.7%	42.4%	to	47.1%
College Graduate	44.0%	42.0%	to	46.0%
Household Income				
Less than \$15,000	31.4%	26.3%	to	36.5%
\$15,000 to \$24,999	30.8%	27.4%	to	34.3%
\$25,000 to \$34,999	31.9%	27.8%	to	35.9%
\$35,000 to \$49,999	39.2%	35.8%	to	42.6%
\$50,000 or higher	47.5%	45.6%	to	49.4%
County Population Density				
Frontier	38.6%	32.6%	to	44.7%
Rural	46.8%	43.1%	to	50.6%
Densely-settled rural	40.7%	37.4%	to	44.0%
Semi-urban	41.6%	38.6%	to	44.5%
Urban	37.2%	35.4%	to	39.0%
Disability Status				
Living with a disability	29.1%	26.8%	to	31.5%
Living without a disability	42.6%	41.1%	to	44.1%

Source: 2015 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. Prevalence estimates for race and ethnicity were age-adjusted to the U.S. 2000 standard population. See Technical Appendix for details on how prevalence estimates were calculated. County population density peer groups are based on the population for each county in the 2000 population and are defined as follows: Frontier (fewer than 6 persons per square mile), Rural (6 to 19.9 persons per square mile), Densely-Settled Rural (20 to 39.9 persons per square mile), Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).