CHAPTER 10: CANCER SCREENING PRACTICES

Cancer screening is the process of undergoing tests or examinations to detect disease in the absence of symptoms. If detected at an early stage, cancer can be treated more effectively, and in the case of cervical and colorectal cancer, prevented from occurring altogether. Recommended guidelines for cancer screening are becoming more individualized, depending on each person's family history, genetics, lifestyle behaviors, and other risk or protective factors. It is more important than ever that clinicians keep abreast of the most recent recommendations from professional organizations and groups, so they are able to respond to patients' questions about cancer screening.

National Cancer Screening Recommendations

Lung

In December 2013, the United States Preventive Services Task Force (USPSTF) recommended annual screening for lung cancer with low-dose computed tomography (LDCT) for asymptomatic persons aged 55 to 80 years who have a 30 pack or more per year smoking history and currently smoke or have quit within the past 15 years.[16] Currently, USPSTF is in the process of updating these guidelines. The American Cancer Society (ACS) has similar guidelines, but its age range is 55 to 74 years. In addition, the high-risk group should receive smoking cessation counseling if they are current smokers; be involved in informed/shared decision making about the benefits, limitation, and harms of screening with LDCT scans; and have access to a high volume, high quality lung cancer screening and treatment center.[17]

Colorectal

Several screening tests are used to detect polyps and colorectal cancer, including:

- High-sensitivity fecal occult blood test (FOBT), fecal immunochemical test (FIT), and Multitargeted stool DNA test (FIT-DNA) which detect blood in the stool;
- Flexible sigmoidoscopy, an examination by a physician using a short, thin, flexible light to check for polyps and cancer inside the rectum and lower third of the colon; and
- Colonoscopy, an examination by a physician using a longer, flexible, lighted tube to check for polyps or cancer inside the rectum and entire colon.
- Computed Tomography (CT) Colonography, also called a virtual colonoscopy, uses X-rays and computers to produce images of the entire colon, which are displayed on a computer screen for the doctor to analyze.

USPSTF recommends screening for colorectal cancer among adults age 50-75 years using FOBT or FIT annually, FIT-DNA annually or every three years, sigmoidoscopy every 5 years, CT colonography every 5 years, sigmoidoscopy every 10 years combined with annual FIT, or colonoscopy every 10

[16] Moyer VA, Force USPST. 2014. Screening for lung cancer: U.S. Preventive services task force recommendation statement. Ann Intern Med 160:330-338.
[17] Wender R, Fontham ET, Barrera E, Jr., Colditz GA, Church TR, Ettinger DS, et al. 2013. American cancer society lung cancer screening guidelines. CA Cancer J Clin 63:107-117.

years.[18] USPSTF also recommends that the decision for screening after age 75 should be made on an individual basis. ACS recommends regular screening for colorectal cancer to start at the age of 45. For people ages 76 through 85, the decision to be screened should be based on a person's preferences, life expectancy, overall health, and prior screening history, while people over 85 should no longer get colorectal cancer screening.[19]

Breast

There are three main tests used to screen for breast cancer:

- Mammogram, an x-ray of the breast;
- Breast Magnetic Resonance Imaging (MRI), a breast MRI uses magnets and radio waves to take pictures of the breast.
- Clinical breast exam, an examination by a physician or nurse using their hands to feel a woman's breasts for lumps or other changes; and
- Breast self-exam (awareness), a self-examination where a woman uses her hands to feel her own breasts for lumps or other changes.

Mammograms are considered the best method for detecting breast cancer. The USPSTF recommends biennial (every two years) screening mammography for women aged 50 to 74 years, and for women 40-49 years, the decision to start screening should be an individual one.[20] ACS recommends that women should have the opportunity to begin annual screening between the ages of 40 and 44 years, women aged 45 to 54 years should be screened annually, and women 55 years and older should transition to biennial screening or have the opportunity to continue screening annually.[21]

Cervical

There are two screening tests used to help prevent cervical cancer or detect it early:

- The Pap test (or Pap smear) looks for *precancers,* cell changes on the cervix that might become cervical cancer if they are not treated appropriately.
- The HPV test looks for the virus (human papillomavirus) that can cause these cell changes.

USPSTF recommends women aged 21-65 years receive a Pap test every three years or, for women aged 30 to 65 years, receive primary HPV test (an HPV test that is done by itself for screening) every five years, or HPV-Pap co-testing every five years.[22] ACS recommends that women aged 25 to 65 to receive primary HPV test every 5 years. If primary HPV testing is not available, screening may be done with either a co-test that combines an HPV test with a Pap test every 5 years or a Pap test alone every 3 years.[23]

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[18] Force USPST, Bibbins-Domingo K, Grossman DC, Curry SJ, Davidson KW, Epling JW, Jr., et al. 2016b. Screening for colorectal cancer: Us preventive services task force recommendation statement. JAMA 315:2564-2575.

[19] Smith RA, Andrews KS, Brooks D, Fedewa SA, Manassaram-Baptiste D, Saslow D, et al. 2018. Cancer screening in the united states, 2018: A review of current american cancer society guidelines and current issues in cancer screening. CA Cancer J Clin 68:297-316.

[20] Siu AL, Force USPST. 2016. Screening for breast cancer: U.S. Preventive services task force recommendation statement. Ann Intern Med 164:279-296.

[21] Oeffinger KC, Fontham ET, Etzioni R, Herzig A, Michaelson JS, Shih YC, et al. 2015. Breast cancer screening for women at average risk: 2015 guideline update from the american cancer society. JAMA 314:1599-1614.

[22] Force USPST, Curry SJ, Krist AH, Owens DK, Barry MJ, Caughey AB, et al. 2018a. Screening for cervical cancer: Us preventive services task force recommendation statement. Ibid. 320:674-686.

[23] Fontham ETH, Wolf AMD, Church TR, Etzioni R, Flowers CR, Herzig A, et al. 2020. Cervical cancer screening for individuals at average risk: 2020 guideline update from the american cancer society. CA Cancer J Clin.

Prostate

There are two tests commonly used to screen for prostate cancer:

- Digital rectal exam (DRE), an examination by a doctor or nurse who estimates the size of the prostate and feels for any lumps or other abnormalities; and
- Prostate specific antigen test (PSA), a blood test that measures the level of PSA in the blood.

USPSTF recommends that for men ages 55 to 69, prostate cancer screening is up to the individual, and each man should discuss the potential benefits and harms of screening with his doctor. The USPSTF recommends against PSA-based screening for prostate cancer in men ages 70 and older.[24] ACS has similar recommendations,[25] but they recommend that the discussion about screening should take place at:

- Age 50 for men who are at average risk of prostate cancer and are expected to live at least 10 more years,
- Age 45 for men at high risk of developing prostate cancer, which includes African-Americans and men who have a first-degree relative (parent, offspring, siblings) diagnosed with prostate cancer at an early age, and
- Age 40 for men at even higher risk, those with more than one first-degree relative who had prostate cancer at an early age.

Melanoma

The USPSTF has concluded there is not enough evidence to recommend skin cancer screening (total body examination by a doctor) for most people, but people with a history of skin cancer or those who are at higher risk should talk to their doctor.[26] The USPSTF recommends also that health care providers counsel young adults, adolescents, children, and parents of young children with fair skin about minimizing their UV exposure to lower their risk for skin cancer.[27] ACS does not have guidelines for skin cancer early detection.

[24] Force USPST, Grossman DC, Curry SJ, Owens DK, Bibbins-Domingo K, Caughey AB, et al. 2018c. Screening for prostate cancer: Us preventive services task force recommendation statement. JAMA 319:1901-1913.
[25] Smith RA, Andrews KS, Brooks D, Fedewa SA, Manassaram-Baptiste D, Saslow D, et al. 2018. Cancer screening in the united states, 2018: A review of current american cancer society guidelines and current issues in cancer screening. CA Cancer J Clin 68:297-316.
[26] Force USPST, Bibbins-Domingo K, Grossman DC, Curry SJ, Davidson KW, Ebell M, et al. 2016a. Screening for skin cancer: Us preventive services task force recommendation statement. JAMA 316:429-435.
[27] Force USPST, Grossman DC, Curry SJ, Owens DK, Barry MJ, Caughey AB, et al. 2018b. Behavioral counseling to prevent skin cancer: Us preventive services task force recommendation statement. Ibid. 319:1134-1142.

Lung Cancer Screening: Receiving LDCT for lung cancer screening

During 2017 and 2019, 13.1 percent (95% Confidence Interval (CI): 9.6% to 16.6%) of Kansans at high-risk for lung cancer (55 to 80 years who have a 30 pack or more per year smoking history and currently smoke or have quit within the past 15 years) [28] received the LDCT for lung cancer screening (Table 10-1).

The percentage of Kansas at high-risk for lung cancer who received LDCT for lung cancer screening did not differ significantly by gender, age group, education, county population density, or disability status. The only significant difference was that the percentage of Kansans at high-risk for lung cancer who received LDCT for lung cancer screening was higher among those whose annual household income was $25,000 to less than $35,000 (30.5%; 95% CI: 16.0% to 45.1%) compared to those whose annual household income was $50,000 or more (8.5%; 95% CI: 3.4% to 13.6%).

Differences in lung cancer screening rate could not be examined by race, ethnicity, and insurance status due to having insufficient numbers needed to calculate the screening rates for some categories in these sociodemographic groupings.

Lung Cancer Screening: A health care professional recommended CT scan for lung cancer

In 2017 and 2019, the high-risk group for lung cancer who did not receive CT for lung cancer early detection was asked if they have been recommended CT scan for lung cancer, but the rates are unstable to present either for the two years separately or combined.

[28] Moyer VA, Force USPST. 2014. Screening for lung cancer: U.S. Preventive services task force recommendation statement. Ann Intern Med 160:330-338.

Table 10-1. Percentage of lung cancer high-risk adults who had a CT scan for lung and bronchus cancer screening by selected characteristics, Kansas 2017 and 2019*

Characteristic	Percentage of high-risk adults who had a CT scan for lung cancer screening by selected characteristics	95% Confidence Interval		
Total	13.1%	9.6%	to	16.6%
Gender				
Male	13.5%	8.8%	to	18.2%
Female	12.6%	7.3%	to	17.8%
Age group				
55-70	11.0%	6.6%	to	15.5%
71-80	16.7%	10.9%	to	22.5%
Race				
White	13.1%	9.4%	to	16.8%
African American**	-	-	-	-
Asian/Pacific Islander**	-	-		-
American Indian/Native Alaskan**	-	-	-	-
Ethnicity				
Hispanic	-	-		-
Non-Hispanic	13.5%	9.8%	to	17.1%
Education				
Less than high school**	-	-	-	-
High school graduate or GED	10.4%	6.1%	to	14.7%
Some college	15.8%	9.6%	to	22.0%
College graduate	11.0%	4.7%	to	17.3%
Household Income				
Less than $15,000	-	-		-
$15,000 to $24,999	11.8%	4.8%	to	18.8%
$25,000 to $34,999	30.5%	16.0%	to	45.1%
$35,000 to $49,999	12.9%	5.2%	to	20.5%
$50,000 or higher	8.5%	3.4%	to	13.6%
Insurance Status				
Insured	13.9%	10.1%	to	17.6%
Uninsured*	-	-	-	-
County Population Density				
Rural	10.9%	6.4%	to	15.4%
Urban	14.3%	9.5%	to	19.0%
Disability Status				
Living without a disability	12.1%	7.0%	to	17.2%
Living with a disability	14.5%	9.5%	to	19.4%

* the high-risk group for lung cancer screening are those aged 55 to 80 years who have a 30 pack or more per year smoking history and currently smoke or have quit within the past 15 years

**Prevalence estimate are unable to be presented due to insufficient counts.

Source: 2019 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile)

Colorectal Cancer Screening: Colonoscopy in the past 10 years

In 2018, 64.6 percent (95% Confidence Interval (CI): 63.1% to 66.2%) of Kansas adults 50-75 years had a colonoscopy in the past 10 years (Table 10-2).

The percentage of Kansans who had a colonoscopy in the last 10 years was significantly lower among Kansans aged 50 to 64 years (60.1%; 95% CI: 58.0% to 62.2%) compared to Kansans aged 65 years and older (73.3%; 95% CI: 71.6% to 75.9%).

The percentage of Kansans 50-75 years who had a colonoscopy in the past 10 years was significantly higher among White (65.7%; 95% CI: 64.1% to 67.3%) compared to other racial groups. The screening rate was also significantly lower among Hispanic (50.2%; 95% CI: 40.7% to 59.7%) compared to non-Hispanic (65.5%; 95% CI: 63.9% to 67.1%) Kansans.

In 2018, there was a trend of having a higher rate of colonoscopy in the past 10 years with increased level of education and more annual household income. The percentage of Kansans 50-75 years who had a colonoscopy in the past 10 years was significantly higher among college graduates (72.9%; 95% CI: 70.7% to 75.1%) compared to those with lower levels of education. In addition, the percentage of Kansans 50-75 years who had a colonoscopy in the past 10 years was significantly lower among those with less than high school (45.8%; 95% CI: 38.2% to 53.4%) compared to those with higher levels of education. Regarding annual household income, the percentage of Kansans 50-75 years who had a colonoscopy in the past 10 years was significantly lower among those whose annual household income was less than $15,000 (49.1%; 95% CI: 44.3% to 54.0%) compared to those whose annual household income was $25,000 or higher. In addition, the rate was significantly lower among those whose household income was less than $25,000 compared to those whose household income was $35,000 and higher. Furthermore, the rate was significantly lower among those whose household income was less than $35,000 compare to those whose household income was $50,000 or higher (71.5%; 95% CI: 69.4% to 73.7%).

The percentage of Kansans 50-75 years who had a colonoscopy was significantly lower among those without health insurance (31.7%; 95% CI: 25.2% to 38.1%) compared to others with health insurance (67.4%; 95% CI: 65.8% to 69.0%). Additionally, the percentage of Kansans 50-75 years who had a colonoscopy was significantly lower among Kansans living in rural counties (60.5%; 95% CI: 57.8% to 63.2%) compared to those living in urban counties (66.6%; 95% CI: 64.6% to 68.5%). In Kansas, the percentage of adults 50-75 years who had a colonoscopy was significantly lower among those living with a disability (61.2%; 95% CI: 58.2% to 64.2%) compared to those living without a disability (66.3%; 95% CI: 64.5% to 68.2%).

The percentage of Kansans 50-75 years who had a colonoscopy in the past 10 years did not differ significantly by gender groups.

Table 10-2. Percentage of adults 50-75 years who have had a colonoscopy during the past 10 years by selected characteristics, Kansas 2018

Characteristic	Percentage adults 50-75 years and older who have had a colonoscopy during the past 10 years by selected characteristics	95% Confidence Interval		
Total	64.6%	63.1%	to	66.2%
Gender				
Male	63.4%	61.0%	to	65.7%
Female	65.8%	63.7%	to	68.0%
Age group				
50-64	60.1%	58.0%	to	62.2%
65-75	73.3%	71.6%	to	75.9%
Race				
White	65.7%	64.1%	to	67.3%
African American	57.3%	48.2%	to	66.3%
American Indian/Native Alaskan	50.8%	35.0%	to	66.7%
Asian/Pacific Islander	37.3%	18.7%	to	55.6%
Ethnicity				
Hispanic	50.2%	40.7%	to	59.7%
Non-Hispanic	65.5%	63.9%	to	67.1%
Education				
Less than high school	45.8%	38.2%	to	53.4%
High school graduate or GED	61.0%	57.9%	to	64.0%
Some college	64.5%	61.7%	to	67.3%
College graduate	72.9%	70.7%	to	75.1%
Household Income				
Less than $15,000	42.8%	36.4%	to	49.2%
$15,000 to $24,999	52.9%	47.6%	to	58.1%
$25,000 to $34,999	60.3%	54.8%	to	65.8%
$35,000 to $49,999	66.4%	62.3%	to	70.6%
$50,000 or higher	71.5%	69.4%	to	73.7%
Insurance Status				
Uninsured	31.7%	25.2%	to	38.1%
Insured	67.4%	65.8%	to	69.0%
County Population Density				
Rural	60.5%	57.8%	to	63.2%
Urban	66.6%	64.6%	to	68.5%
Disability Status				
Living with a disability	61.2%	58.2%	to	64.2%
Living without a disability	66.3%	64.5%	to	68.2%

*Prevalence estimates are unable to be presented due to insufficient counts.
Source: 2018 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Colorectal Cancer Screening: Fecal Occult Blood Test (FOBT) in the past year

In 2018, 6.5 percent (95% Confidence Interval (CI): 5.7% to 7.2%) of Kansas adults 50-75 years have had an FOBT in the past year (Table 10-3).

The percentage of Kansans who have had an FOBT in the past year was significantly lower among Kansans aged 50 to 64 years (4.5%; 95% CI: 3.6% to 5.3%) compared to Kansans aged 65-75 years (10.5%; 95% CI: 9.0% to 11.9%).

However, the percentage of Kansans 50-75 years who had an FOBT in the past year was significantly lower among college graduates (4.7%; 95% CI: 3.8% to 5.7%) when compared with high school graduates (8.2%; 95% CI: 6.7% to 13.4%).

In Kansas, the percentage of adults 50-75 years who had an FOBT in the past year was significantly lower among those living without a disability (5.4%; 95% CI: 4.6% to 6.2%) compared to those living with a disability (8.7%; 95% CI: 7.1% to 10.2%).

In 2018, the percentage of Kansans 50-75 years who had an FOBT in the past year did not differ significantly by race, household income, or the county population density. It was not available to evaluate differences by ethnicity or the insurance status due to the insufficient numbers to calculate the rates in some categories.

The percentage of Kansans who had an FOBT in the past two years did not differ significantly by gender.

Table 10-3. Percentage of adults 50-75 years and older who have had an FOBT in the past year by selected characteristics, Kansas 2018

Characteristic	Percentage adults 50-75 years and older who have had an FOBT in the past by selected characteristics	95% Confidence Interval		
Total	6.5%	5.7%	to	7.2%
Gender				
Male	7.2%	6.1%	to	8.3%
Female	5.8%	4.8%	to	6.8%
Age group				
50-64	4.5%	3.6%	to	5.3%
65-75	10.5%	9.0%	to	11.9%
Race				
White	6.5%	5.7%	to	7.3%
African American	5.6%	2.3%	to	9.0%
American Indian/Native Alaskan*	-	-	-	-
Asian/Pacific Islander*	-	-	-	-
Ethnicity				
Hispanic*	-	-	-	-
Non-Hispanic	6.7%	5.9%	to	7.5%
Education				
Less than high school	6.1%	3.0%	to	9.9%
High school graduate or GED	8.2%	6.7%	to	13.4%
Some college	6.9%	5.5%	to	8.2%
College graduate	4.7%	3.8%	to	5.7%
Household Income				
Less than $15,000	9.0%	5.3%	to	12.8%
$15,000 to $24,999	6.3%	4.1%	to	8.4%
$25,000 to $34,999	8.1%	5.3%	to	11.0%
$35,000 to $49,999	6.6%	4.6%	to	8.6%
$50,000 or higher	6.0%	5.0%	to	7.1%
Insurance Status				
Uninsured*	-	-	-	-
Insured	6.9%	6.1%	to	7.6%
County Population Density				
Rural	7.0%	5.7%	to	8.3%
Urban	6.2%	5.3%	to	7.1%
Disability Status				
Living without a disability	5.4%	4.6%	to	6.2%
Living with a disability	8.7%	7.1%	to	10.2%

*Prevalence estimates are unable to be presented due to insufficient counts.
Source: 2018 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Colorectal Cancer Screening: Meeting the U.S. Prevention Services Task Force Recommendations

The U.S. Preventive Services Task Force (USPSTF) recommends screening for colorectal cancer among adults age 50-75 years using FOBT or FIT annually, FIT-DNA annually or every three years, sigmoidoscopy every 5 years, CT colonography every 5 years, sigmoidoscopy every 10 years combined with annual FIT, or colonoscopy every 10 years.[29]

In 2018, 67.3 percent (95% Confidence Interval (CI): 65.7% to 68.8%) of Kansas adults aged 50-75 years old met the USPSTF recommendation for colorectal cancer screening (Table 10-4).

The percentage of Kansans adults who met the USPSTF recommendation for colorectal screening was significantly lower among Kansans aged 50-64 years (62.1%; 95% CI: 60.0% to 64.2%) compared to Kansans aged 65-75 years (77.6%; 95% CI: 75.6% to 79.6%).

In 2018, the percentage of Kansans aged 50-75 years old who met the USPSTF recommendation for colorectal screening was significantly lower among Hispanics (51.5%; 95% CI: 41.9% to 61.0%) compared to Non-Hispanics (65.5; 95% CI: 63.9% to 67.1%).

In 2018, the percentage of Kansans aged 50-75 years old who have met the USPSTF recommendation for colorectal screening were significantly lower among those with education level less than high school, followed by those who were high school graduates, and significantly higher among those who graduated from college, followed by those who attended some college education.

In Kansas, there is a trend of increasing the screening rate of colorectal cancer with increasing the household income, where the lowest percentage of Kansans aged 50-75 years who have met the USPSTF recommendation for colorectal screening was for those whose annual household income was less than $15,000 (47.0%; 95% CI: 40.5% to 53.6%) and the highest percentage was for those whose annual household income was $50,000 or more (73.7%; 95% CI: 71.5% to 75.6%).

The percentage of Kansans aged 50-75 years old who have met the USPSTF recommendation for colorectal screening was significantly lower among those without health insurance (32.7%; 95% CI: 26.2% to 39.2%) compared to adults with health insurance (70.2%; 95% CI: 68.6% to 71.7%) in 2018.

The percentage of Kansans aged 50-75 years old who have met the USPSTF recommendation for colorectal screening was significantly lower among Kansans living in rural (63.2%; 95% CI: 60.5% to 65.9%) when compared to those living in urban counties (69.2%; 95% CI: 67.3% to 71.1%).

In Kansas, the percentage of adults aged 50-75 years old who have met the USPSTF recommendation for colorectal screening did not differ significantly by gender, race, or the disability status.

[29] Force USPST, Bibbins-Domingo K, Grossman DC, Curry SJ, Davidson KW, Epling JW, Jr., et al. 2016b. Screening for colorectal cancer: Us preventive services task force recommendation statement. JAMA 315:2564-2575.

Table 10-4. Percentage of adults aged 50-75 years old who have met the USPSTF screening guidelines for colorectal cancer, Kansas 2018

Characteristic	Percentage adults 50-75 years old who have met the USPSTF screening guidelines by selected characteristics	95% Confidence Interval		
Total	67.3%	65.7%	to	68.8%
Gender				
Male	65.8%	63.5%	to	68.2%
Female	68.6%	66.5%	to	70.7%
Age group				
50-64	62.1%	60.0%	to	64.2%
65-75	77.6%	75.6%	to	79.6%
Race				
White	68.2%	66.6%	to	69.8%
African American	60.3%	51.3%	to	69.3%
American Indian/Native Alaskan	55.2%	39.0%	to	71.3%
Asian/Pacific Islander	43.5%	24.0%	to	63.0%
Ethnicity				
Hispanic	51.5%	41.9%	to	61.0%
Non-Hispanic	65.5%	63.9%	to	67.1%
Education				
Less than high school	49.5%	41.9%	to	57.1%
High school graduate or GED	63.9%	60.9%	to	66.9%
Some college	67.6%	64.9%	to	70.3%
College graduate	74.6%	72.4%	to	76.7%
Household Income				
Less than $15,000	47.0%	40.5%	to	53.6%
$15,000 to $24,999	56.0%	50.7%	to	61.2%
$25,000 to $34,999	64.2%	58.8%	to	69.6%
$35,000 to $49,999	68.7%	64.6%	to	72.8%
$50,000 or higher	73.6%	71.5%	to	75.6%
Insurance Status				
Uninsured	32.7%	26.2%	to	39.2%
Insured	70.2%	68.6%	to	71.7%
County Population Density				
Rural	63.2%	60.5%	to	65.9%
Urban	69.2%	67.3%	to	71.1%
Disability Status				
Living with a disability	64.5%	61.5%	to	67.4%
Living without a disability	68.6%	66.8%	to	70.4%

Source: 2018 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Breast Cancer Screening: Having a mammogram within the past two years

In 2018, 69.1 percent (95% Confidence Interval (CI): 67.4% to 70.8%) of Kansas women aged 40 years and older had a mammogram within the past two years (Table 10-5).

The percentage of women who had a mammogram within the past two years was significantly lower among Kansas women aged 40 to 49 years (57.3%; 95% CI: 52.8% to 61.8%) compared to women 50 years and older.

In 2018, there is a trend of increasing the prevalence of breast cancer screening among Kansas women 40 years and older with increased level of education and household income, where the percentage of women 40 years and older who had a mammogram within the past two years was significantly lower among those who did not graduate from high school (55.2%; 95% CI: 46.3% to 64.2%) compared to those who attended some or graduated from college. On the other side, the percentage of women 40 years and older who had a mammogram within the past two years was significantly higher among college graduates (75.3%; 95% CI: 72.9% to 77.8%) compared to those with less education levels.

Regarding the household income, the percentage of women 40 years and older who had a mammogram within the past two years was significantly lower among those whose annual household income was less than $15,000 (57.2%; 95% CI: 50.3% to 64.1%) compared to those whose annual household income was $50,000 or higher (77.4%; 95% CI: 75.1% to 79.7%). Additionally, the percentage of women 40 years and older who had a mammogram within the past two years was significantly lower among those whose annual household income was less than $25,000 compared to those whose annual household income was $35,000 or higher. On the other hand, the percentage of women 40 years and older who had a mammogram within the past two years was significantly higher among those whose annual household income was $50,000 or higher (77.4%; 95% CI: 75.1% to 79.7%) compared to those whose annual household income was less than $50,000.

In Kansas, the percentage of Kansans women 40 years and older who had a mammogram within the past two years was significantly lower among those without health insurance (30.2%; 95% CI: 23.3% to 37.2%) when compared with adults with health insurance (72.3%; 95% CI: 70.6% to 74.0%).

The percentage of women 40 years and older who had a mammogram within the past two years was significantly lower among women with disability (62.3%; 95% CI: 59.1% to 65.5%) compared to women without disability (72.5%; 95% CI: 70.5% to 74.6%).

The percentage of women 40 years and older who had a mammogram within the past two years did not differ significantly by race, ethnicity and county population density.

Table 10-5. Percentage of women 40 years and older who have had a mammogram within the past two years by selected characteristics, Kansas 2018

Characteristic	Percentage of women 40 years and older who have had a mammogram within the past two years	95% Confidence Interval		
Total	69.1%	67.4%	to	70.8%
Age group				
40-49	57.3%	52.8%	to	61.8%
50-64	72.4%	69.9%	to	75.0%
65 and older	73.0%	70.8%	to	75.2%
Race				
White	70.1%	68.4%	to	71.8%
African American	68.7%	59.2%	to	78.2%
American Indian/Alaskan Native	63.4%	47.6%	to	79.2%
Asian/Pacific Islander	49.4%	28.5%	to	70.3%
Ethnicity				
Hispanic	61.8%	51.6%	To	72.1%
Non-Hispanic	69.6%	67.9%	to	71.3%
Education				
Less than high school	55.2%	46.3%	to	64.2%
High school graduate or GED	66.3%	63.1%	to	69.6%
Some college	68.6%	65.6%	to	71.6%
College graduate	75.3%	72.9%	to	77.8%
Household Income				
Less than $15,000	57.2%	50.3%	to	64.1%
$15,000 to $24,999	53.3%	47.9%	to	58.7%
$25,000 to $34,999	63.1%	57.7%	to	68.6%
$35,000 to $49,999	65.9%	61.0%	to	70.9%
$50,000 or higher	77.4%	75.1%	to	79.7%
Insurance Status				
Uninsured	30.2%	23.3%	to	37.2%
Insured	72.3%	70.6%	to	74.0%
County Population Density				
Rural	67.3%	64.5%	to	70.1%
Urban	70.0%	67.8%	to	72.1%
Disability Status				
Living with a disability	62.3%	59.1%	to	65.5%
Living without a disability	72.5%	70.5%	to	74.6%

Source: 2018 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Breast Cancer Screening: Discussion with health care providers

Discussing the need for breast cancer screening with health care providers is important, especially if women are at high risk for breast cancer. Some people have an inherited mutation in one or both of BRCA1 and BRCA2 genes that increases their risk of breast cancer. BRCA1 and BRCA2 mutations can be passed to offspring from either parent and can affect the risk of cancers in both women and men. A person who has a BRCA1 or BRCA2 mutation is sometimes called a BRCA1 or BRCA2 carrier. Like other gene mutations, BRCA1 and BRCA2 mutations are rare in the general population. In the United States, about 1 in 400 people have a BRCA1 or BRCA2 mutations, prevalence varies by ethnic group and data is not available for all ethnicities. For BRCA1, the prevalence is 1%, 8-10%, 2-3%, and 4% for African-American, Ashkenazi Jewish, White (non-Ashkenazi Jewish), and Hispanic women, respectively. For BRCA2, the prevalence is 3% and 2% for African-American and White (non-Ashkenazi Jewish) women, respectively.[30] It is important for women to know their own family history of breast cancer and if they need to be tested for the BRCA1 and BRCA2 gene mutations to know their personal risk.

In 2018, 86.5 percent (95% Confidence Interval (CI): 84.7% to 88.3%) of Kansas women 40 years and older had a discussion with their health care provider about screening for breast cancer (Table 10-6).

In 2018, Kansas women 40 years and older who had a discussion with their health care provider about screening for breast cancer was significantly lower among those who did not graduate from high school (76.3%; 95% CI: 66.2% to 86.3%) compared to college graduates (91.9%; 95% CI: 89.8% to 93.9%).

In Kansas, the percentage of women 40 years and older who had a discussion with their health care provider about screening for breast cancer was significantly lower among those whose annual household income was less than $15,000 (71.1%; 95% CI: 61.8% to 80.4%) compared to those whose annual household income was $25,000 or higher. And the percentage of women 40 years and older who had a discussion with their health care provider about screening for breast cancer was significantly lower among those whose annual household income was less than $25,000 compared to those whose annual household income was $35,000 or higher.

In Kansas, the percentage of women 40 years and older who had a discussion with their health care provider about screening for breast cancer was significantly lower among those without health insurance (67.3%; 95% CI: 56.8% to 77.8%) compared to adults with insurance (87.9%; 95% CI: 86.2% to 89.7%).

In 2018, the percentage of Kansas women 40 years and older who had a discussion with their health care provider about screening for breast cancer was significantly lower among those living with a disability (82.4%; 95% CI: 78.8% to 85.9%) compared to those living without a disability (88.6%; 95% CI: 86.6% to 90.7%).

The percentage of women 40 years and older who had a discussion with their health care provider about screening for breast cancer did not differ significantly by age, race, ethnicity, and county population density.

[30] Malone KE, Daling JR, Doody DR, Hsu L, Bernstein L, Coates RJ, et al. 2006. Prevalence and predictors of brca1 and brca2 mutations in a population-based study of breast cancer in white and black american women ages 35 to 64 years. Cancer Res 66:8297-8308.

Table 10-6. Percentage of women 40 years and older who have had a discussion with their health care provider about screening for breast cancer by selected characteristics, Kansas 2018

Characteristic	Percentage of women 40 years and older who had a discussion with their health care provider about screening for breast cancer	95% Confidence Interval		
Total	86.5%	84.7%	to	88.3%
Age group				
40-49	84.5%	79.6%	to	89.4%
50-64	87.7%	85.1%	to	90.3%
65 and older	86.5%	83.9%	to	89.0%
Race				
White	87.5%	85.8%	to	89.3%
African American	77.3%	63.4%	to	91.1%
American Indian/Alaskan Native	66.4%	41.7%	to	91.1%
Asian/Pacific Islander	76.7%	50.2%	to	100.0%
Ethnicity				
Hispanic	84.3%	74.8%	To	93.7%
Non-Hispanic	86.6%	84.8%	to	88.5%
Education				
Less than high school	76.3%	66.2%	to	86.3%
High school graduate or GED	83.4%	79.6%	to	87.1%
Some college	86.2%	83.0%	to	89.4%
College graduate	91.9%	89.8%	to	93.9%
Household Income				
Less than $15,000	71.1%	61.8%	to	80.4%
$15,000 to $24,999	80.1%	74.1%	to	86.1%
$25,000 to $34,999	87.4%	81.8%	to	93.0%
$35,000 to $49,999	91.2%	87.4%	to	95.0%
$50,000 or higher	91.7%	89.4%	to	94.0%
Insurance Status				
Uninsured	67.3%	56.8%	to	77.8%
Insured	87.9%	86.2%	to	89.7%
County Population Density				
Rural	86.6%	83.7%	to	89.6%
Urban	86.4%	84.2%	to	88.7%
Disability Status				
Living with a disability	82.4%	78.8%	to	85.9%
Living without a disability	88.6%	86.6%	to	90.7%

Source: 2018 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Cervical Cancer Screening: Meeting the U.S. Prevention Services Task Force Recommendations

In 2018, 83.9 percent (95% Confidence Interval (CI): 82.0% to 85.8%) of Kansas women aged 21-65 years old who met the USPSTF recommendation for cervical cancer screening (Table 10-7). USPSTF recommends women aged 21-65 years receive a Pap test every three years or, for women aged 30 to 65 years, receive primary HPV test (an HPV test that is done by itself for screening) every five years, or HPV-Pap co-testing every five years.

In Kansas, the percentage of Kansas women who met the USPSTF recommendation for cervical cancer screening was the lowest among women aged 21 to 30 years (74.5%; 95% CI: 69.5% to 79.6%) compared to women in older age groups. In addition, the percentage of Kansas women who met the USPSTF recommendation for cervical cancer screening was higher among women aged 31 to 40 years old (92.1%; 95% CI: 89.2% to 95.0%) compared to women in the 21 to 30 and 51 to 65 age groups. Furthermore, the screening rate was higher among women aged 41 to 50 years old (89.5%; 95% CI: 86.3% to 92.6%) compared to women aged 21 to 30 and 51 to 65 years old.

In 2018, the percentage of Kansas women aged 21-65 years old who met the USPSTF recommendation for cervical cancer screening was significantly higher among college graduate (89.1%; 95% CI: 86.8% to 91.3%) compared to those who graduated from high school and those who attended some college.

In Kansas, the percentage of women aged 21-65 years old who met the USPSTF recommendation for cervical cancer screening was significantly higher among those whose annual household income was $50,000 and more (90.8%; 95% CI: 88.8% to 92.8%) compared to those with lower annual household income in 2018.

In 2018, the percentage of Kansas women aged 21-65 years old who met the USPSTF recommendation for cervical cancer screening was significantly lower among those without health insurance (71.0%; 95% CI: 64.0% to 78.0%) when compared with women with health insurance (86.4%; 95% CI: 84.5% to 88.3%).

In addition, the percentage of Kansas women aged 21-65 years old who met the USPSTF recommendation for cervical cancer screening was significantly lower among those living with a disability (78.0%; 95% CI: 73.1% to 82.9%) compared to those living without a disability (85.8%; 95% CI: 83.7% to 87.8%).

The percentage of Kansas women aged 21-65 years old who met the USPSTF recommendation for cervical cancer screening did not differ significantly by race, ethnicity, or county population density subgroups in 2018.

Table 10-7. Percentage of women 21-65 years old who have had screening for cervical cancer according to USPSTF guidelines by selected characteristics, Kansas 2018

Characteristic	Percentage of women 21-65 years old who had screening for cervical cancer according to USPSTF guidelines	95% Confidence Interval		
Total	83.9%	82.0%	to	85.8%
Age group				
21-30	74.5%	69.5%	to	79.6%
31-40	92.1%	89.2%	to	95.0%
41-50	89.5%	86.3%	to	92.6%
51-65	82.2%	80.1%	to	85.6%
Race and Ethnicity				
White	84.2%	82.1%	to	86.2%
African American	90.3%	83.8%	to	96.8%
American Indian/Alaskan Native	81.1%	64.6%	to	97.6%
Asian/Pacific Islander	68.1%	49.3%	to	86.3%
Ethnicity				
Hispanic	79.3%	71.2%	to	87.4%
Non-Hispanic	84.7%	82.7%	to	86.6%
Education				
Less than high school	78.8%	67.7%	to	89.9%
High school graduate or GED	80.6%	76.1%	to	85.0%
Some college	81.9%	78.3%	to	85.5%
College graduate	89.1%	86.8%	to	91.3%
Household Income				
Less than $15,000	74.7%	66.1%	to	83.2%
$15,000 to $24,999	78.9%	73.0%	to	84.9%
$25,000 to $34,999	82.5%	76.3%	to	88.6%
$35,000 to $49,999	82.3%	76.7%	to	87.9%
$50,000 or higher	90.8%	88.8%	to	92.8%
Insurance Status				
Uninsured	71.0%	64.0%	to	78.0%
Insured	86.4%	84.5%	to	88.3%
County Population Density				
Rural	79.8%	76.0%	to	83.6%
Urban	85.5%	83.3%	to	87.8%
Disability Status				
Living with a disability	78.0%	73.1%	to	82.9%
Living without a disability	85.8%	83.7%	to	87.8%

Source: 2018 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).

Prostate Cancer Screening: Having a PSA test within the past two years

In 2018, 32.9 percent (95% Confidence Interval (CI): 31.1% to 34.7%) of Kansas men aged 40 years and older had a PSA test within the past two years (Table 10-8).

The percentage of men who had a PSA test within the past two years was significantly lower among Kansas men aged 40 to 49 years (9.1%; 95% CI: 6.3% to 11.9%), followed by the age group of 50 to 64 (31.2%; 95% CI: 28.4% to 34.1%), and was significantly higher among men aged 65 years and older (54.7%; 95% CI: 51.7% to 57.7%).

The percentage of men aged 40 years and older who had a PSA test within the past two years was significantly higher among White (34.5%; 95% CI: 32.6% to 36.4%) when compared with other racial subgroups in 2018. In addition, the percentage of men aged 40 years and older who had a PSA test within the past two years was significantly lower among Hispanics (18.1%; 95% CI: 9.6% to 26.7%) compared to non-Hispanics (33.9%; 95% CI: 32.0% to 35.7%) in 2018.

In 2018, the percentage of men aged 40 years and older who had a PSA test within the past two years was significantly higher among college graduates (42.6%; 95% CI: 39.6% to 45.5%) as compared to those who attained lower levels of education.

The percentage of men aged 40 years and older who had a PSA test within the past two years was significantly lower among those whose annual household income was less than $15,000 (16.6%; 95% CI: 10.1% to 22.1%) compared to those whose annual household income was $25,000 and more. In addition, the percentage of men aged 40 years and older who had a PSA test within the past two years was significantly lower among those whose annual household income was less than $25,000 compared to those whose annual household income was $35,000 and more.

In Kansas, the percentage of men aged 40 years and older who had a PSA test within the past two years was significantly lower among adults without health insurance (7.1%; 95% CI: 4.0% to 10.1%) when compared with those with health insurance (35.6%; 95% CI: 33.6% to 37.5%).

The percentage of men aged 40 years and older who had a PSA test within the past two years did not differ significantly by county population density or disability status subgroups.

Table 10-8. Percentage of men 40 years and older who have had a PSA test within the past two years by selected characteristics, Kansas 2018

Characteristic	Percentage of men 40 years and older who have had a PSA test within the past two years	95% Confidence Interval		
Total	32.9%	31.1%	to	34.7%
Age group				
40-49	9.1%	6.3%	to	11.9%
50-64	31.2%	28.4%	to	34.1%
65 and older	54.7%	51.7%	to	57.7%
Race				
White	34.5%	32.6%	to	36.4%
African American	21.1%	13.1%	to	29.2%
American Indian/Alaskan Native	19.8%	7.4%	to	32.2%
Asian/Pacific Islander*	-	-	-	-
Ethnicity				
Hispanic	18.1%	9.6%	to	26.7%
Non-Hispanic	33.9%	32.0%	to	35.7%
Education				
Less than high school	25.1%	18.1%	to	32.0%
High school graduate or GED	26.6%	23.4%	to	29.9%
Some college	30.9%	27.5%	to	34.3%
College graduate	42.6%	39.6%	to	45.5%
Household Income				
Less than $15,000	16.6%	10.1%	to	22.1%
$15,000 to $24,999	21.8%	16.9%	to	26.6%
$25,000 to $34,999	31.8%	25.5%	to	38.1%
$35,000 to $49,999	39.1%	34.1%	to	44.3%
$50,000 or higher	36.0%	33.5%	to	38.6%
Insurance Status				
Uninsured	7.1%	4.0%	to	10.1%
Insured	35.6%	33.6%	to	37.5%
County Population Density				
Rural	35.7%	32.5%	to	38.9%
Urban	31.6%	29.3%	to	33.8%
Disability Status				
Living with a disability	34.2%	30.9%	to	37.5%
Living without a disability	32.4%	30.2%	to	34.6%

*Prevalence estimate are unable to be presented due to insufficient counts Source: 2018 Kansas Behavioral Risk Factor Surveillance System, Bureau of Health Promotion, Kansas Department of Health and Environment. 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, where rural group included 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), while urban included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile).