CHAPTER 1: CANCER OVERALL INCIDENCE

Cancer Overall Incidence

Each year, on average, about 15,000 invasive cancers are diagnosed among Kansas residents. In Kansas, the age-adjusted cancer overall incidence rates decreased significantly during the period 2008-2017 from 487.5 cases per 100,000 persons (95% Confidence Interval (CI): 479.5 to 495.5) in 2008 to 449.2 cases per 100,000 persons (95% CI: 441.8 to 456.5) in 2017 (Figure 1-1). Similarly, the age-adjusted cancer overall incidence rates decreased significantly in the U.S. from 483.5 cases per 100,000 persons (95% CI: 483.0 to 484.5) in 2008 to 437.8 cases per 100,000 persons (95% CI: 437.2 to 438.5) in 2017 (Figure 1-1). The average Annual Percent Change (APC) in the cancer overall incidence rates during that period was -0.9 in Kansas and -1.2 in the U.S.

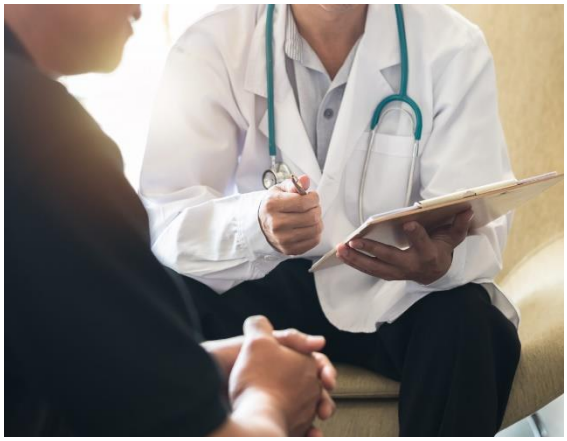
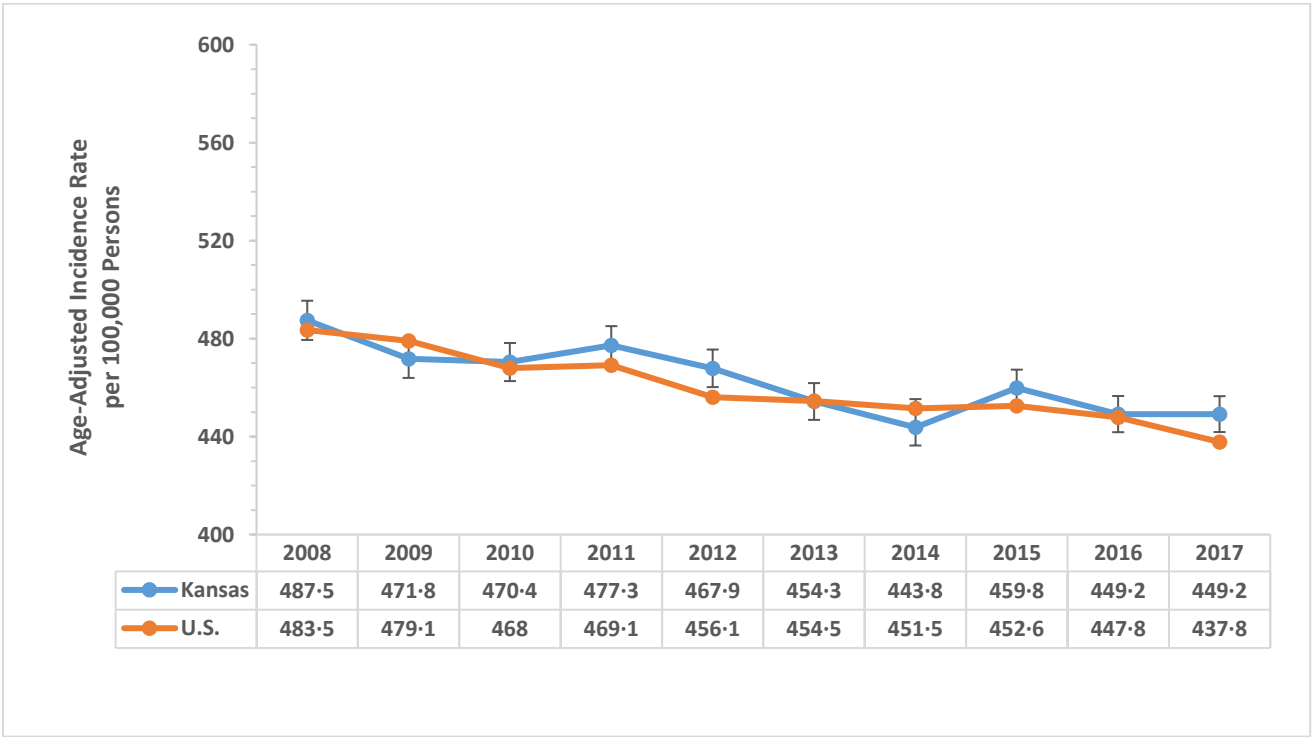


Figure 1-1. Age-adjusted cancer overall incidence rates, Kansas and the U.S. 2008-2017



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Kansas	487·5	471·8	470·4	477·3	467·9	454·3	443·8	459·8	449·2	449·2
U.S.	483·5	479·1	468	469·1	456·1	454·5	451·5	452·6	447·8	437·8

Source: For Kansas rates, 2008-2017 Kansas Cancer Registry; for US rates, U.S. Cancer Statistics Working Group. U.S. Cancer Statistics Data Visualizations Tool, based on 2019 submission data (1999-2017): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention and National Cancer Institute; www.cdc.gov/cancer/dataviz, released in June 2020. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Overall cancer incidence was defined according to ICD-O-3 codes/WHO 2008 definition 00000-99999 with a behavior code indicating invasive malignancy; includes in situ bladder cancer. The average Annual Percent Change (APC) in the annual rates was calculated using the Joinpoint software, see Technical Appendix for more details.

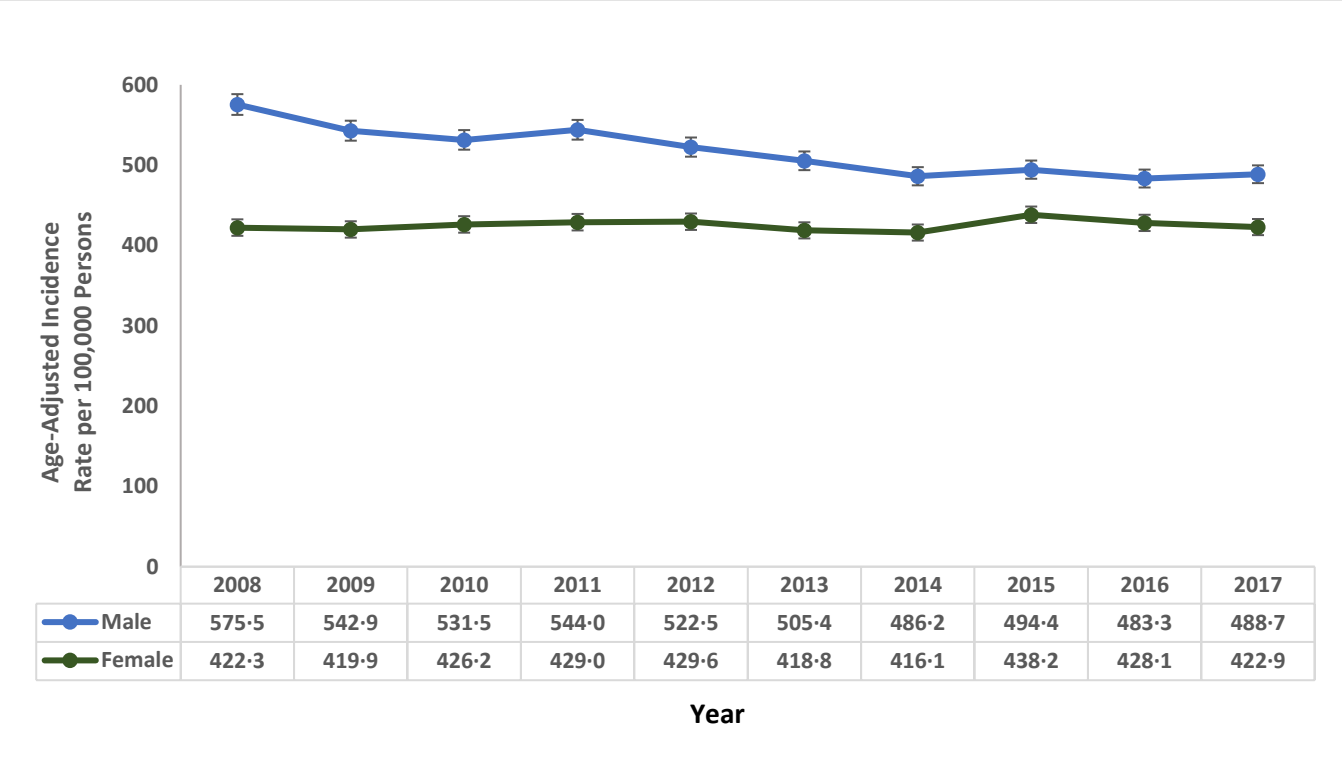
Cancer Overall Incidence among Gender Groups

In Kansas, the age-adjusted cancer overall incidence rates were 15 percent to 35 percent higher for men than for women during the period 2008-2017 (Figure 1-2). The large difference in the overall incidence rates between Kansas males and females is similar to the difference at the national level.[3]

The age-adjusted cancer overall incidence rates among Kansas males decreased significantly from 575.5 cases per 100,000 persons (95% CI: 562.6 to 588.4) in 2008 to 488.7 cases per 100,000 persons (95% CI: 477.6 to 499.7) in 2017 (Figure 1-2). The average Annual Percent Change (APC) in the age-adjusted cancer overall incidence rates among Kansas males was -1.2 during the period 2008-2017.

The age-adjusted cancer overall incidence rates in Kansas females remained stable during the period 2008-2017, with a rate of 422.9 cases per 100,000 persons (95% CI: 412.9 to 432.9) in 2017 (Figure 1-2).

Figure 1-2. Age-adjusted cancer overall incidence rates among gender groups, Kansas 2008-2017



	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Male	575·5	542·9	531·5	544·0	522·5	505·4	486·2	494·4	483·3	488·7
Female	422·3	419·9	426·2	429·0	429·6	418·8	416·1	438·2	428·1	422·9

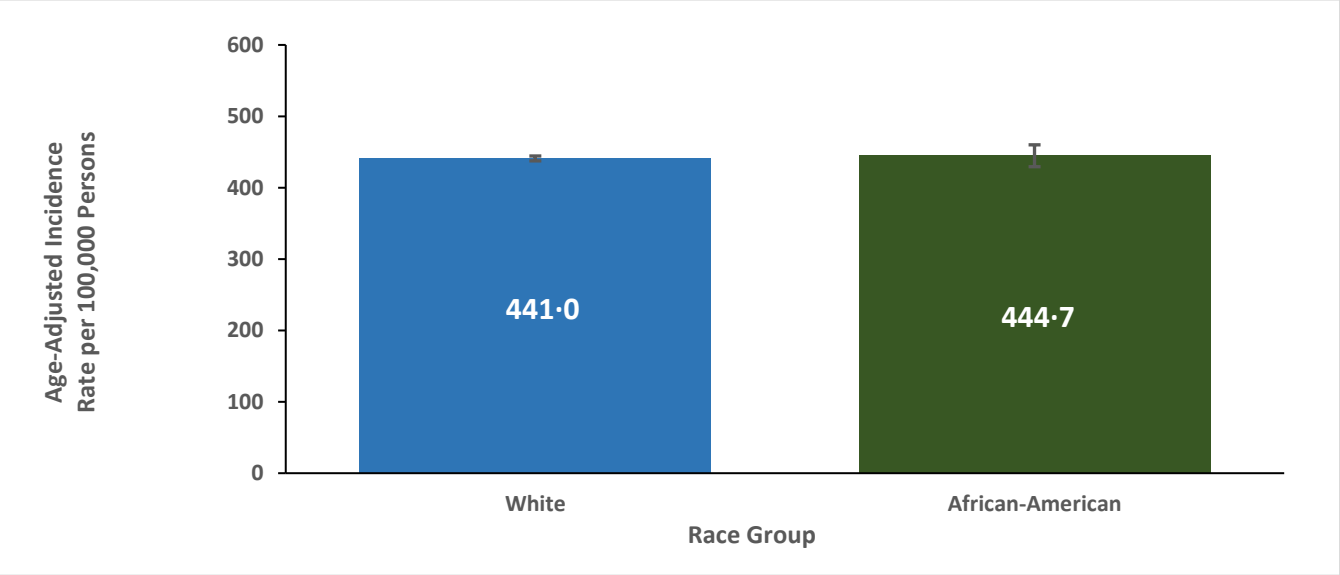
Source: 2008-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Overall cancer incidence was defined according to ICD-O-3 codes/WHO 2008 definition 00000-99999 with a behavior code indicating invasive malignancy; includes in situ bladder cancer. The average Annual Percent Change (APC) in the annual rates was calculated using the Joinpoint software; see Technical Appendix for more details on trend analysis.

[3] Eheman C, Henley SJ, Ballard-Barbash R, Jacobs EJ, Schymura MJ, Noone AM, Pan L, Anderson, RN, Fulton JE, Kohler BA, Jemal A, Ward E, Plescia M, Ries LAG, Edwards BK. Annual Report to the Nation on the Status of Cancer, 1975-2008, Featuring Cancers Associated with Excess Weight and Lack of Sufficient Physical Activity. Cancer. Epub 2012 Mar 28.

Cancer Overall Incidence among Race Groups

The age-adjusted cancer overall incidence rates did not differ significantly between African American (444.7 cases per 100,000 persons; 95% CI: 429.4 to 460.0) and White Kansans (441.0 cases per 100,000 persons; 95% CI: 437.5 to 444.4) during the period 2013-2017 (Figure 1-3). Overall incidence rates for Kansans of other race categories are not shown because the number of cases were insufficient for computing statistically reliable rates for these race groups.

Figure 1-3. Age-adjusted cancer overall incidence rates among race groups, Kansas 2013-2017

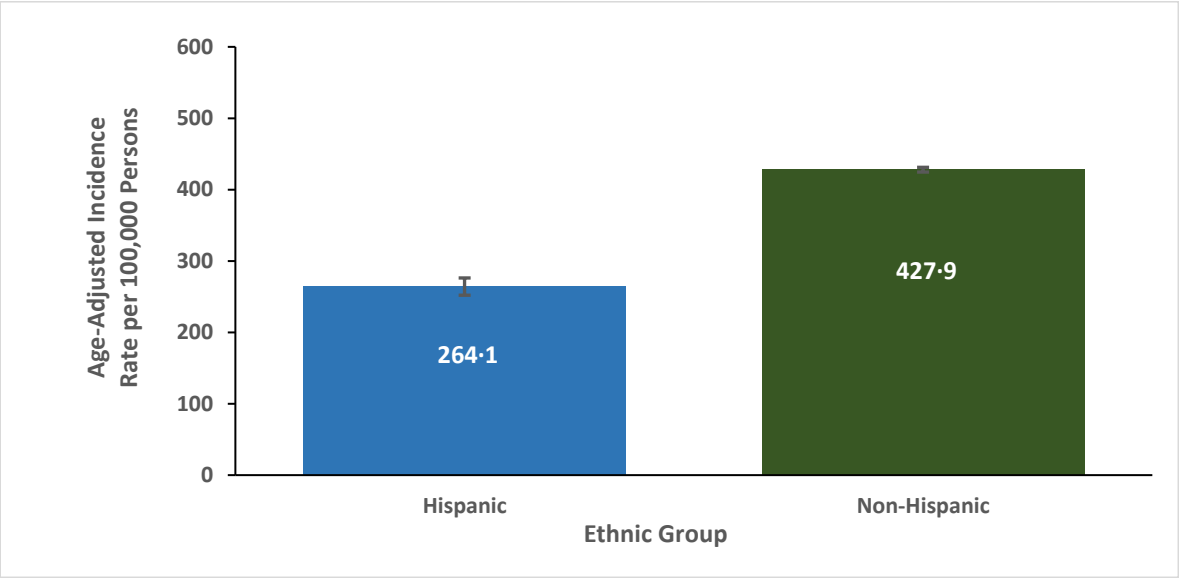


Source: 2013-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Overall cancer incidence was defined according to ICD-O-3 codes/WHO 200 definition 00000-99999 with a behavior code indicating invasive malignancy; includes in situ bladder cancer.

Cancer Overall Incidence among Ethnic Groups

In Kansas, the age-adjusted cancer overall incidence rates were significantly lower for Hispanics (264.1 cases per 100,000 persons; 95% CI: 252.0 to 276.2) as compared to non-Hispanics (427.9 cases per 100,000 persons; 95% CI: 424.6 to 431.3) during the period 2013-2017 (Figure 1-4).

Figure 1-4. Age-adjusted cancer overall incidence rates among ethnic groups, Kansas 2013-2017

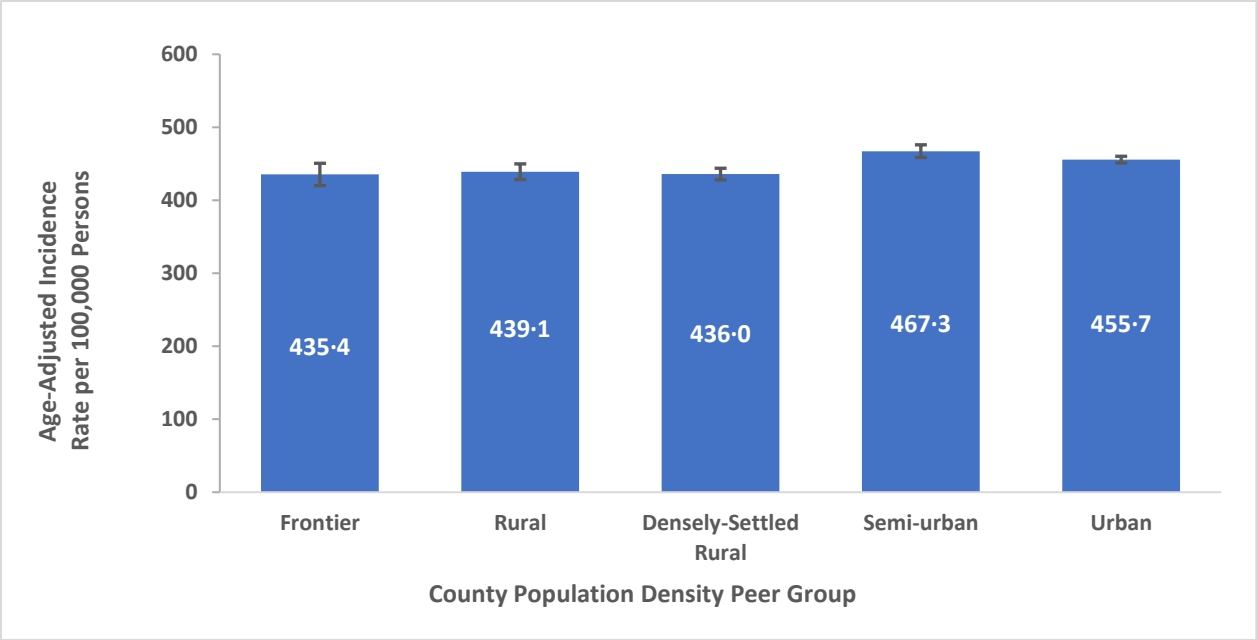


Source: 2013-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Overall cancer incidence was defined according to ICD-O-3 codes/WHO 2008 definition 00000-99999 with a behavior code indicating invasive malignancy; includes in situ bladder cancer. Hispanics were defined as persons of Mexican, Puerto Rican, Cuban, South or Central American, Other Spanish, Spanish not otherwise specified, or Dominican Republic ethnicity. Persons with Spanish surname only or unknown ethnicity were excluded.

Cancer Overall Incidence among County Population Density Groups

The age-adjusted cancer overall incidence rates among Kansans living in semi-urban (466.9 cases per 100,000 persons; 95% CI: 458.2 to 475.5) and urban (455.7 cases per 100,000 persons; 95% CI: 451.1 to 460.3) population density counties were significantly higher than the rates in other county population density groups during the period 2013-2017 (Figure 1-5).

Figure 1-5. Age-adjusted cancer overall incidence rates among county population density peer groups, Kansas 2013-2017

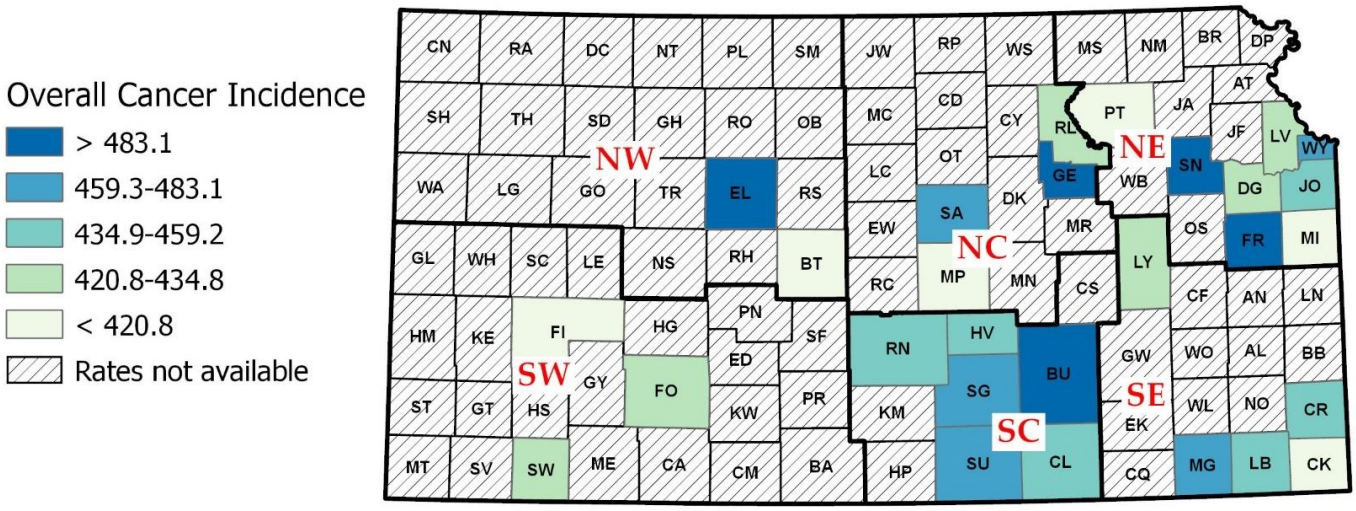


Source: 2013-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. County population density peer groups are based on the population for each county in the 2000 population and 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). Vertical bars indicate 95% CIs. Overall cancer incidence was defined according to ICD-O-3 codes/WHO 2008 definition 00000-99999 with a behavior code indicating invasive malignancy; includes in situ bladder cancer.

Cancer Overall Incidence among Kansas Counties

The distribution of the age-adjusted overall cancer incidence rates by county in Kansas shows that the Butler, Ellis, Franklin, Geary, and Shawnee counties represent the highest quantile (the highest 20% of Kansas counties) of the overall cancer incidence rates in Kansas (Figure 1-9).

Figure 1-9. Age-adjusted cancer overall incidence rates by county, Kansas 2013-2017

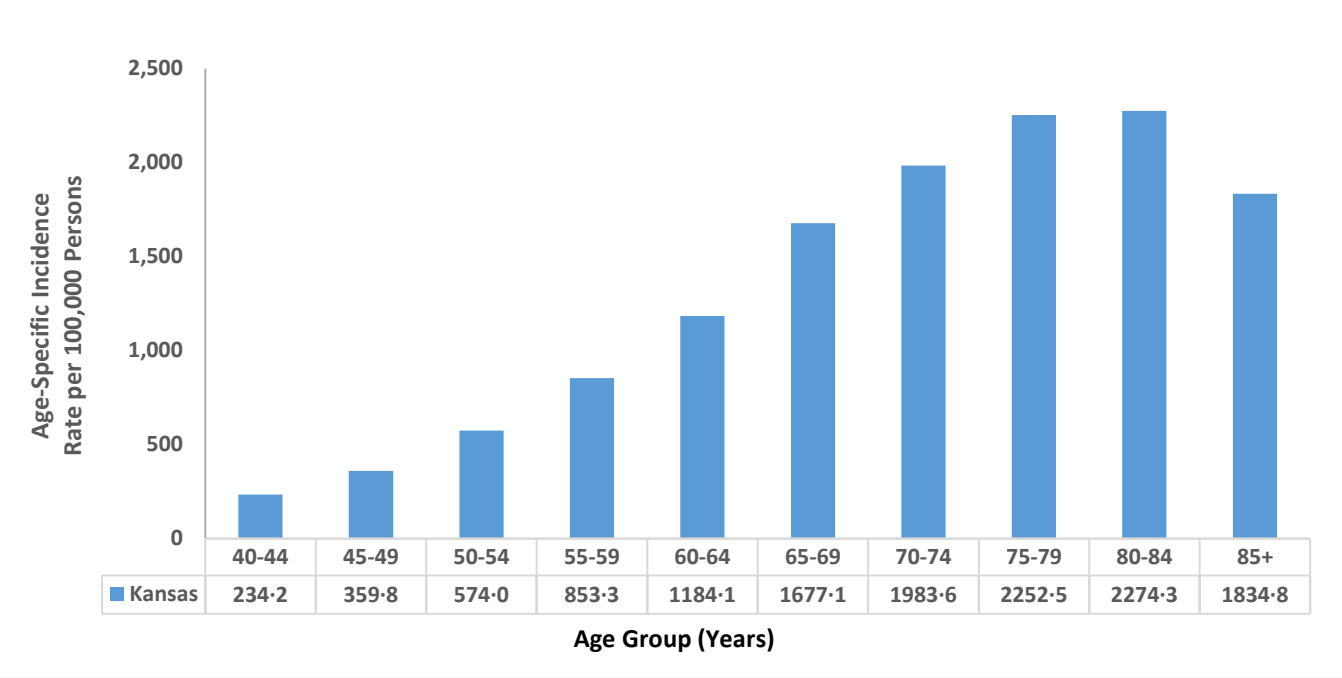


Source: 2013-2017 Kansas Cancer registry, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates are the number of cases per 100,000 persons and they were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Overall cancer incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 00000-99999 with a behavior code indicating invasive malignancy; includes in situ bladder cancer. The map also shows the boundaries of KDHE district offices.

Cancer Overall Incidence among Age Groups

In Kansas, cancer overall incidence increased dramatically with age during the period 2013-2017 (Figure 1-6). Cancer incidence rates peaked among Kansans aged 80-84 years old (2274.3 cases per 100,000 persons; 95% CI: 2218.3 to 2331.4), and then decreased thereafter.

Figure 1-6. Age-specific cancer incidence rates for Kansas residents 40 years and older, Kansas 2013-2017



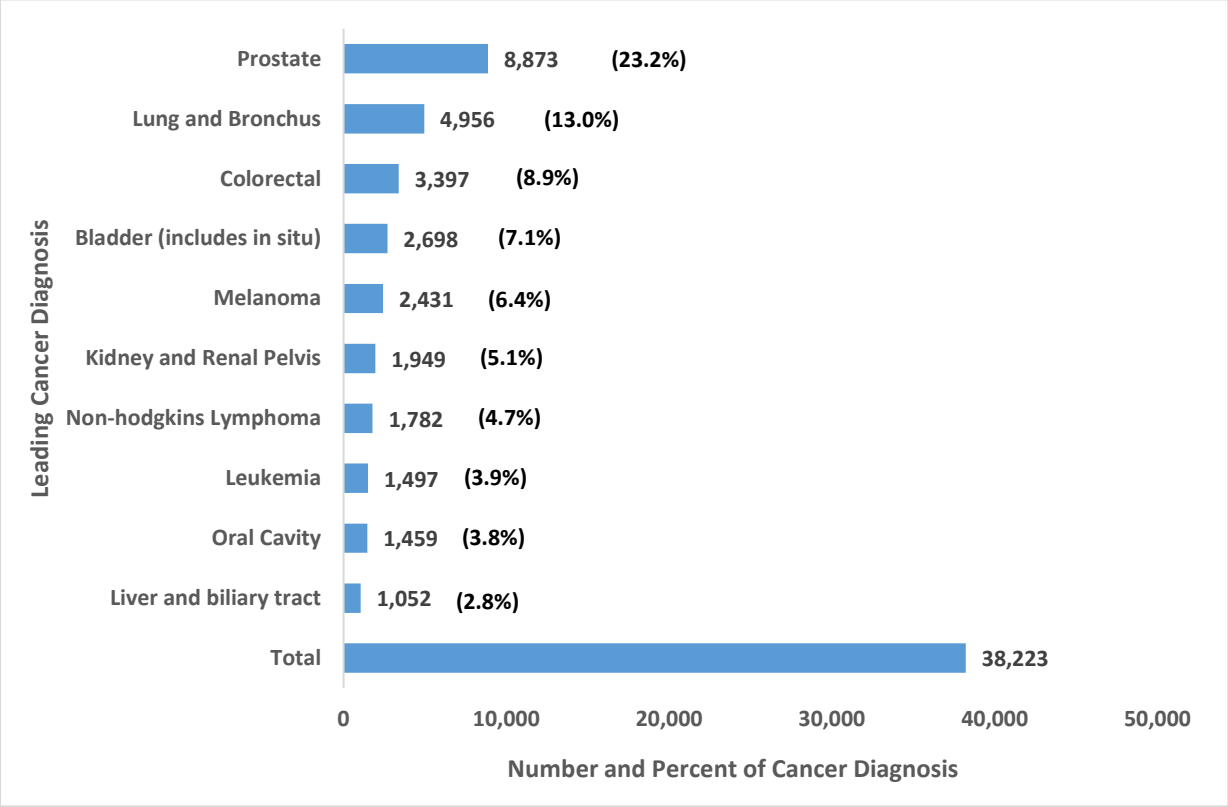
	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
Kansas	234·2	359·8	574·0	853·3	1184·1	1677·1	1983·6	2252·5	2274·3	1834·8

Source: 2013-2017 Kansas Cancer Registry. See Technical Appendix for details on how rates were calculated. Overall cancer incidence was defined according to ICD-O-3 codes/WHO 2008 definition 00000-99999, with a behavior code indicating invasive malignancy; includes in situ bladder cancer.

Most Commonly Diagnosed Cancers by Gender

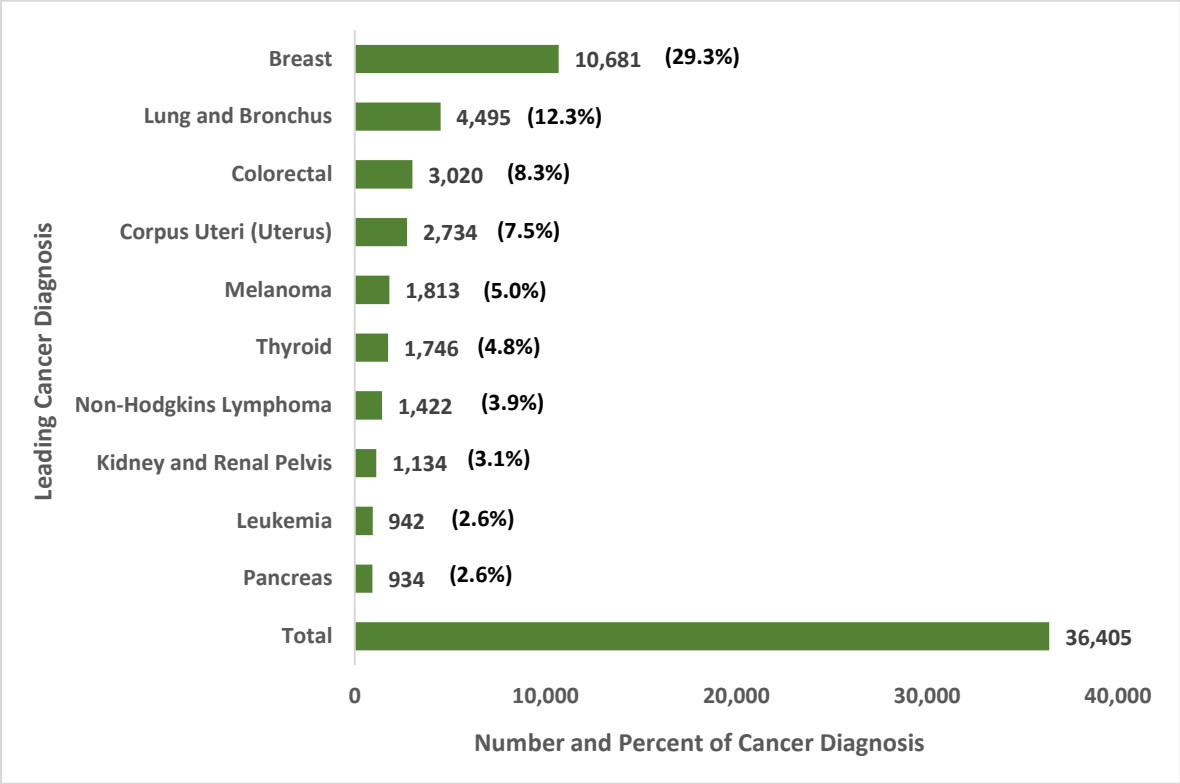
The most commonly diagnosed cancers among Kansas males during the period 2013-2017 were prostate (23.2%), lung and bronchus (13.0%), and colorectal (8.9%) cancer (Figure 1-7). Among Kansas females, the most commonly diagnosed cancers during this period were breast (29.3%), lung and bronchus (12.3%), and colorectal (8.3%) cancer (Figure 1-8).

Figure 1-7. Top 10 cancer diagnoses among males, Kansas 2013-2017



Source: 2013-2017 Kansas Cancer Registry. See Technical Appendix for details on how leading cancer diagnoses were defined.

Figure 1-8. Top 10 cancer diagnoses among females, Kansas 2013-2017



Source: 2013-2017 Kansas Cancer Registry. See Technical Appendix for details on how leading cancer diagnoses were defined.