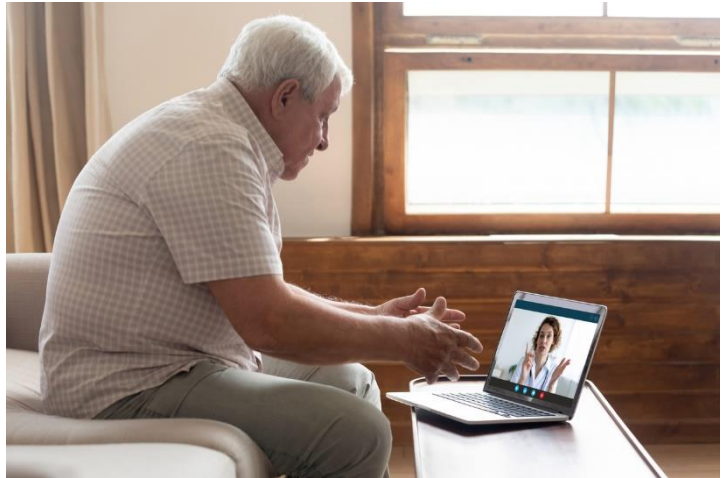


CHAPTER 4: PROFILES OF COLORECTAL CANCER in Kansas

Colorectal cancer develops from precancerous polyps in the colon (large intestine) or rectum. The exact cause of most colorectal cancers is not yet known; however, research has shown that increased physical activity and maintaining a healthy weight can decrease the risk for colorectal cancer.⁶ In Kansas, colorectal cancer is the third leading cause of cancer death among both males and females, as well as the third most commonly diagnosed cancer among both males and females.

Colorectal Cancer Incidence and Mortality

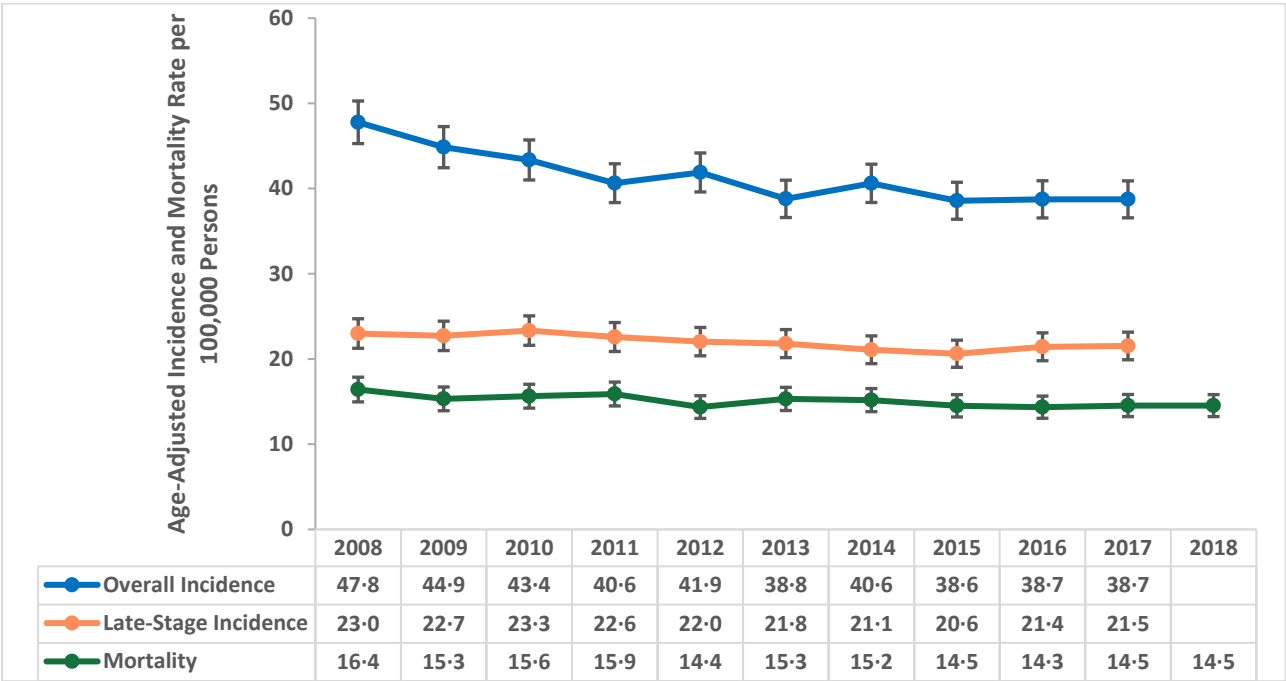


Each year, on average, nearly 1,300 colorectal cancers are diagnosed among Kansas residents, and more than half of them (700) are diagnosed in late-stage. In addition, more than 500 Kansans die from the disease annually. The age-adjusted colorectal cancer overall incidence decreased significantly from 47.8 cases per 100,000 persons (95% Confidence Interval (CI): 45.3 to 50.3) in 2008 to 38.7 cases per 100,000 persons (95% CI: 36.6 to 40.9) in 2017 (Figure 4-1). The average Annual Percent Change (APC) in the lung cancer overall incidence rates was -2.2 in Kansas during that period.

Although the age-adjusted colorectal cancer late-stage incidence rates in 2008 (23.0 cases per 100,000 persons; 95% CI: 21.3 to 24.7) and 2017 (21.5 cases per 100,000 persons; 95% CI: 19.9 to 23.1) look similar (Figure 4-1), the trend analysis of the rates resulted in a significant APC of -1.1 during that period. Similarly, the age-adjusted colorectal cancer mortality rate was 16.4 deaths per 100,000 persons (95% CI: 15.0 to 17.9) in 2008 and 14.5 deaths per 100,000 persons (95% CI: 13.2 to 15.8) in 2018 (Figure 4-1), with a significant APC of -1.1 during that period.

⁶ "Basic Information about Colorectal Cancer." Division of Cancer Prevention and Control, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention. www.cdc.gov/cancer/colorectal/basic_info/index.htm. Accessed September 6, 2020

Figure 4-1. Age-adjusted colorectal cancer incidence and mortality rates, Kansas 2008-2018



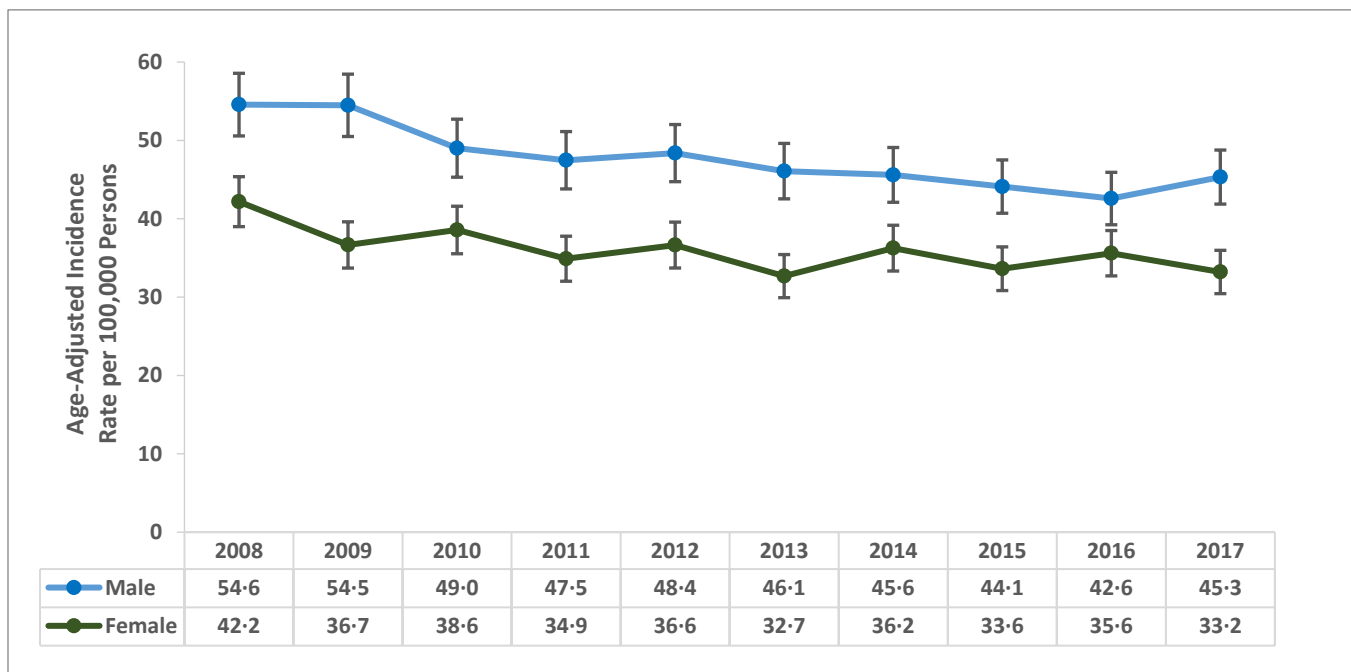
Source: 2008-2017 Kansas Cancer Registry. 2008-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Cancer incidence data for 2018 were not available at the time the document was created. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Colorectal cancer incidence was defined as ICD-O-3 codes C180-C189, C199, C209, or C260 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy. Colorectal cancer mortality was defined as ICD-10 codes C18-C20 or C260. 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.

Colorectal Cancer Overall Incidence among Gender Groups in Kansas

The age-adjusted colorectal cancer overall incidence rates were significantly higher for males as compared to females during the period 2008-2017 (Figure 4-2).

The age-adjusted colorectal cancer overall incidence rates decreased significantly for men from 54.6 cases per 100,000 males (95% CI: 50.6 to 58.6) in 2008 to 45.3 cases per 100,000 males (95% CI: 41.9 to 48.8) in 2017 (Figure 4-2). The age-adjusted colorectal cancer overall incidence rates also decreased significantly for women during the same period from 42.2 cases per 100,000 females (95% CI: 39.0 to 45.4) in 2008 to 33.2 cases per 100,000 females (95% CI: 30.4 to 36.0) in females (Figure 4-1). The average Annual Percent Change (APC) for colorectal cancer overall incidence rates were -2.5 for males and -1.9 for females.

Figure 4-2. Age-adjusted colorectal cancer overall incidence rates by gender and year, Kansas 2008-2017

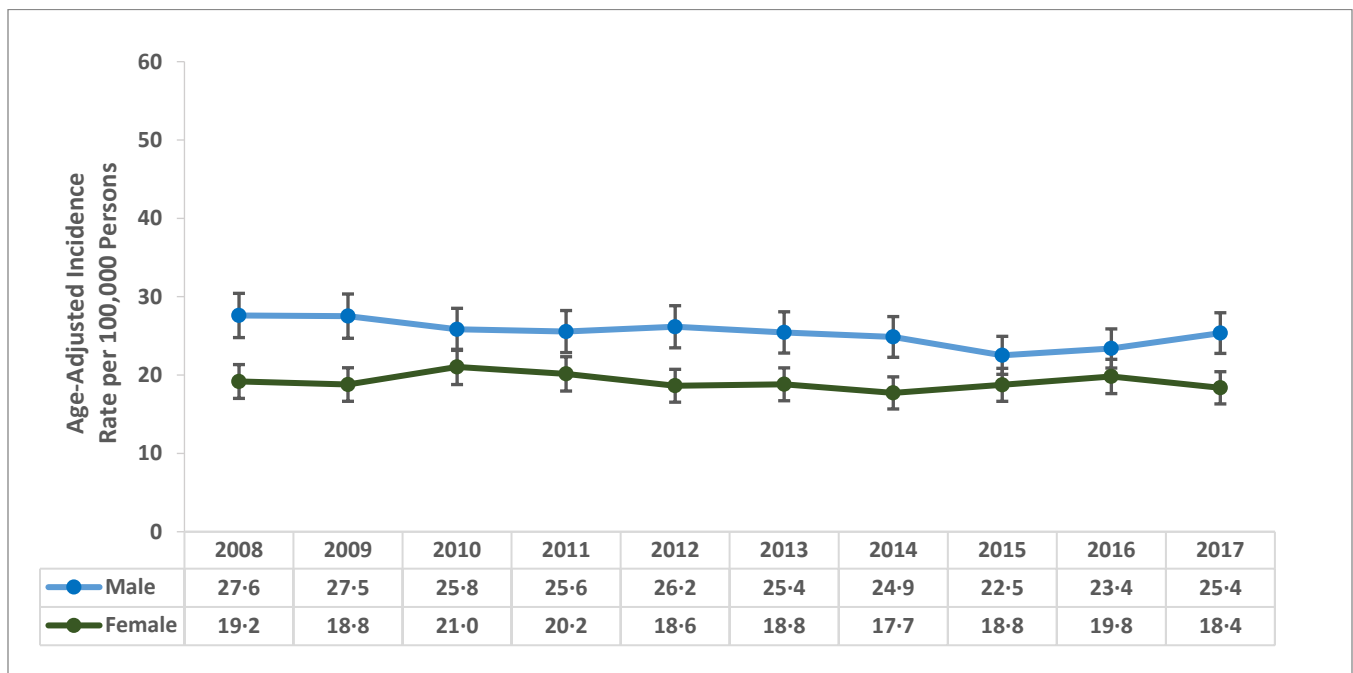


Source: 2008-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Colorectal cancer incidence was defined as ICD-O-3 codes C180-C189, C199, C209, or C260 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy. 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.

Colorectal Cancer Late-Stage Incidence among Gender Groups in Kansas

The age-adjusted colorectal cancer late-stage incidence rates were significantly higher for males as compared to females in most of the years during the period 2008-2017 (Figure 4-3). Although the age-adjusted colorectal cancer late-stage incidence rates among Kansas males in 2008 (27.6 cases per 100,000 males; 95% CI: 24.8 to 30.4) and 2017 (25.4 cases per 100,000 males; 95% CI: 22.8 to 28.0) look similar (Figure 4-3), the average Annual Percent Change (APC) of the colorectal cancer late-stage incidence rate among Kansas males was -1.6 during 2008-2017. Conversely, the age-adjusted colorectal cancer late-stage incidence rates among Kansas females remained stable during the same period, with a rate of 18.4 cases per 100,000 females (95% CI: 16.3 to 20.4) in 2017 (Figure 4-3).

Figure 4-3. Age-adjusted late-stage colorectal cancer incidence rates by gender and year, Kansas 2008-2017

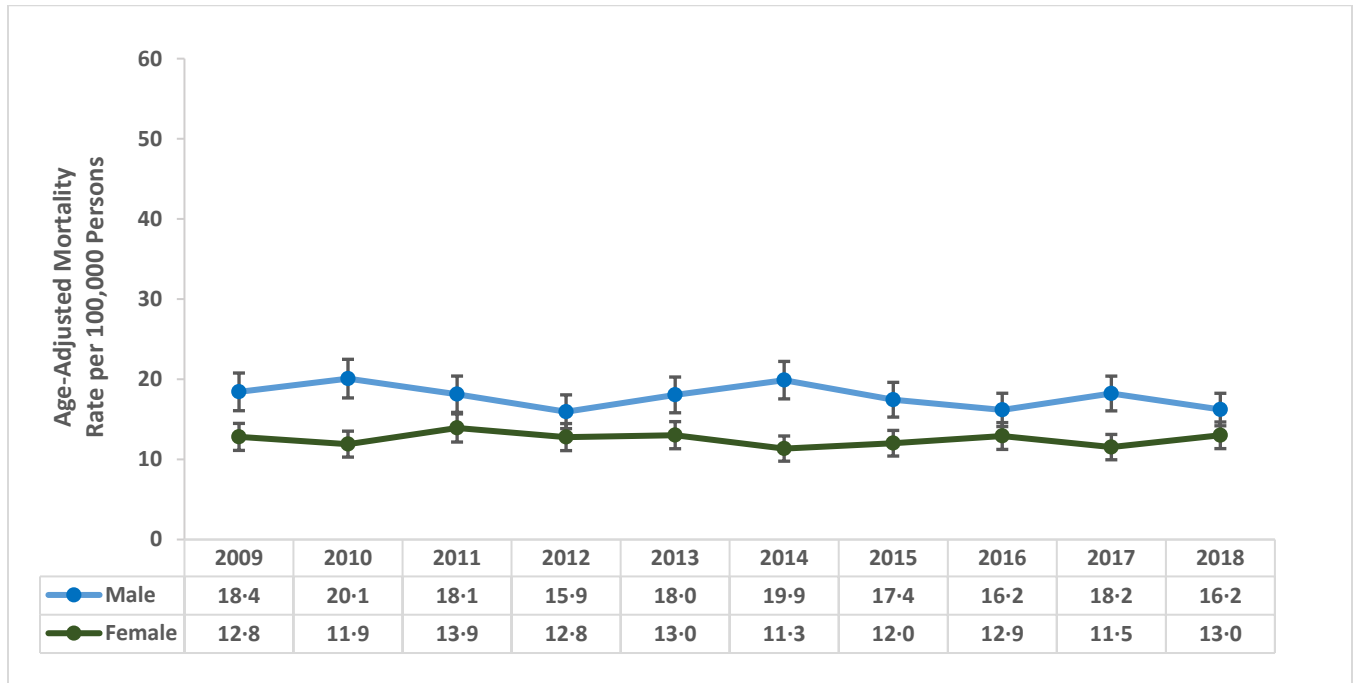


Source: 2008-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Colorectal cancer incidence was defined as ICD-O-3 codes C180-C189, C199, C209, or C260 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy. 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.

Colorectal Cancer Mortality among Gender Groups in Kansas

The age-adjusted colorectal cancer mortality rates were significantly higher for males as compared to females during the period 2009-2018 (Figure 4-4). The age-adjusted colorectal cancer mortality rates did not change significantly for either males or females during the period from 2009 to 2018. In 2018, the age-adjusted colorectal mortality rate for males was 16.2 deaths per 100,000 males (95% CI: 14.2 to 18.2) and for females was 13.0 deaths per 100,000 females (95% CI: 11.3 to 14.7) (Figure 4-4).

Figure 4-4. Age-adjusted colorectal cancer mortality rates among gender groups, Kansas 2009-2018

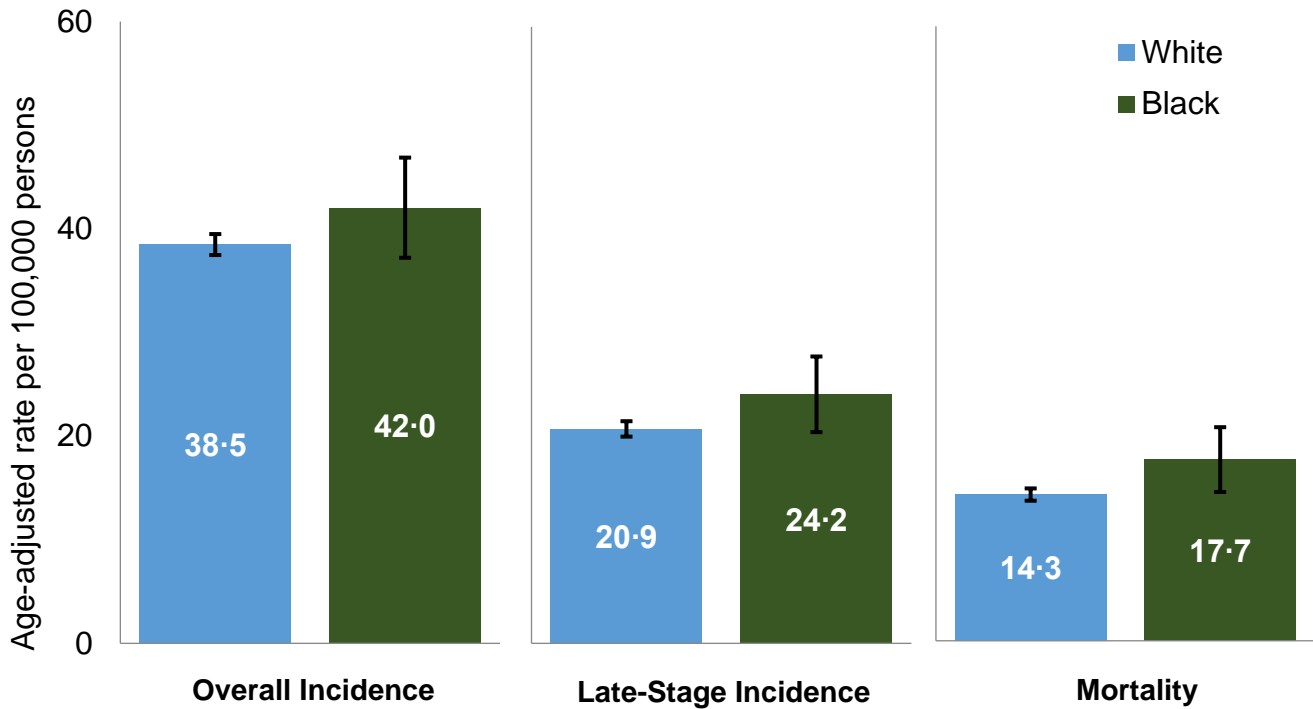


Source: 2009-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Colorectal cancer mortality was defined as ICD-10 codes C18-C20 or C260. 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.

Colorectal Cancer Incidence and Mortality among Race Groups in Kansas

In Kansas, the age-adjusted colorectal cancer overall incidence, late-stage, and mortality rates did not differ significantly among Kansans by race during the period 2013-2018 (Figure 4-5).

Figure 4-5. Age-adjusted colorectal cancer incidence and mortality rates among race groups, Kansas 2013-2018

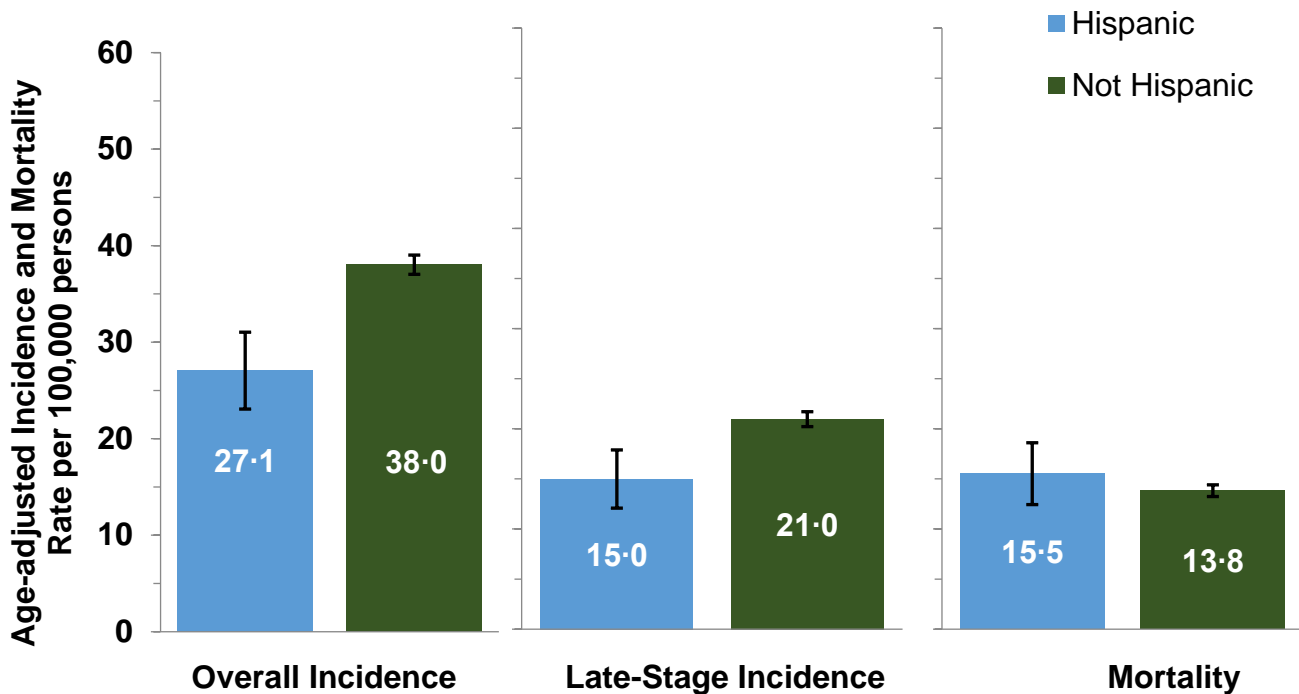


Source: 2013-2017 Kansas Cancer Registry. 2014-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Colorectal cancer incidence was defined as ICD-O-3 codes C180-C189, C199, C209, or C260 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy. Colorectal cancer mortality was defined as ICD-10 codes C18-C20 or C260, incidence rates for 2010-2014 were not available at the time the document was created.

Colorectal Cancer Incidence and Mortality among Ethnic Groups in Kansas

The age-adjusted colorectal cancer overall incidence rate was significantly lower for Hispanic Kansans (27.1 cases per 100,000 persons; 95% CI: 23.1 to 31.0) than for non-Hispanic Kansans (38.0 cases per 100,000 persons; 95% CI: 37.0 to 39.0) during the period 2013-2017 (Figure 4-6). In addition, the age-adjusted colorectal cancer late-stage incidence rate was significantly lower for Hispanic Kansans (15.0 cases per 100,000 persons; 95% CI: 12.1 to 17.9) than for non-Hispanic Kansans (21.0 cases per 100,000 persons; 95% CI: 20.2 to 21.7) during the period 2013-2017 (Figure 4-6). The age-adjusted colorectal cancer mortality rate did not differ significantly between Hispanic and non-Hispanic Kansans during the period 2014-2018 (Figure 4-6).

Figure 4-6. Age-adjusted colorectal cancer incidence and mortality among ethnic groups, Kansas 2013-2018

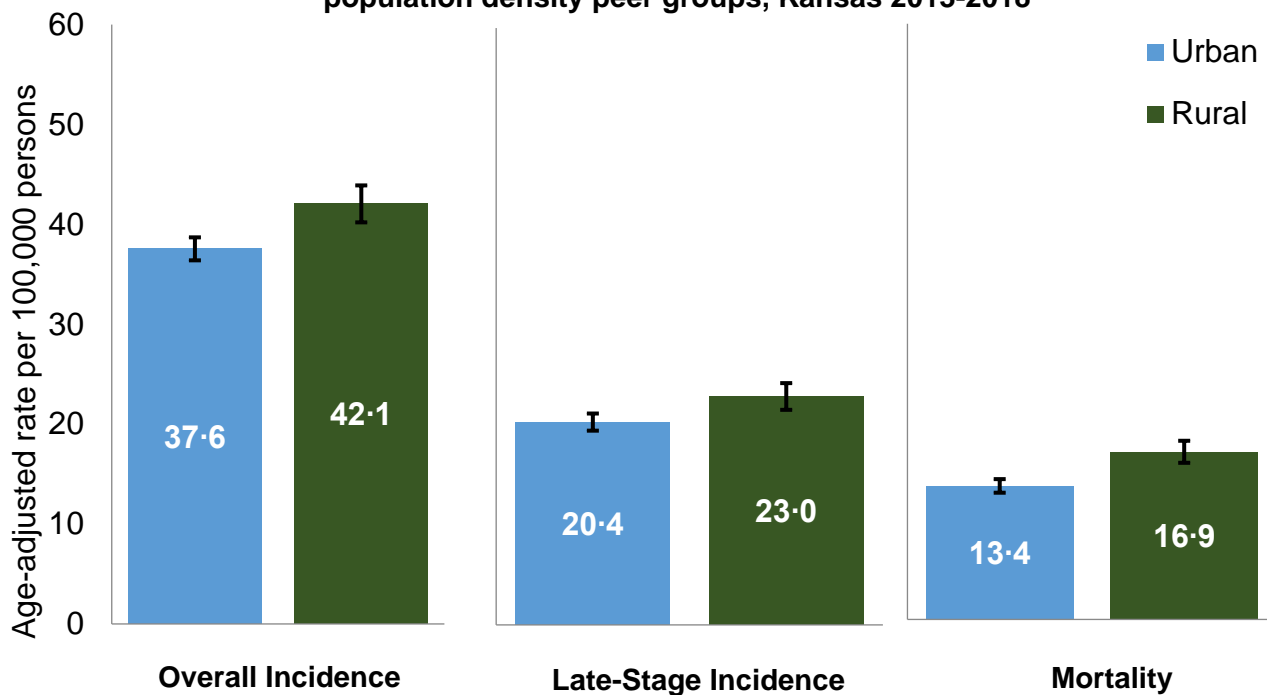


Source: 2013-2017 Kansas Cancer Registry. 2014-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Colorectal cancer incidence was defined as ICD-O-3 codes C180-C189, C199, C209, or C260 (excluding histology codes 9590-9989) with a behavior code indicating invasive malignancy, incidence rates for 2010-2014 were not available at the time the document was created. Colorectal cancer mortality was defined as ICD-10 codes C18-C20 or C260. 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.

Colorectal Cancer Incidence and Mortality among County Population Density Groups in Kansas

In Kansas, the age-adjusted colorectal cancer overall incidence rate was significantly higher for Kansans living in rural counties (42.1 cases per 100,000 persons; 95% CI: 40.2 to 43.9) than for Kansans living in urban counties (37.6 cases per 100,000 persons; 95% CI: 36.4 to 38.7) during the period 2013-2017 (Figure 4-7). In addition, the age-adjusted colorectal cancer late-stage incidence rate was significantly higher for Kansans living in rural counties (23.0 cases per 100,000 persons; 95% CI: 21.6 to 24.3) than for Kansans living in urban counties (20.4 cases per 100,000 persons; 95% CI: 19.5 to 21.2) during the period 2013-2017 (Figure 4-7). Furthermore, the age-adjusted colorectal cancer mortality rate was significantly higher for Kansans living in rural counties (16.9 cases per 100,000 persons; 95% CI: 15.8 to 18.0) than for Kansans living in urban counties (13.4 cases per 100,000 persons; 95% CI: 12.8 to 14.1) during the period 2013-2017 (Figure 4-7).

Figure 4.7. Age-adjusted colorectal cancer incidence and mortality rates among county population density peer groups, Kansas 2013-2018

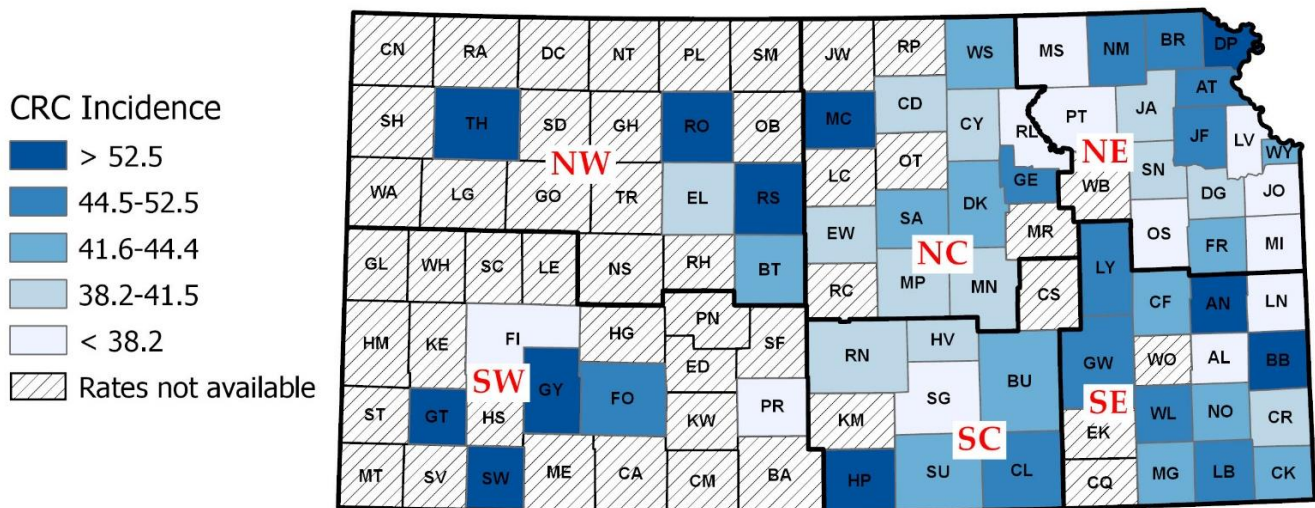


Source: 2013-2017 Kansas Cancer registry. 2014-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. County population density peer groups are based on the population for each county in the 2000 population; the Rural counties 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 the Urban counties included Semi-Urban (40 to 149.9 persons per square mile), and Urban (150 or more persons per square mile). Vertical bars indicate 95% CIs. Cancer mortality was defined as ICD-10 codes C00-C97.

Colorectal Cancer Incidence and Mortality among Kansas Counties

The distribution of the age-adjusted colorectal cancer incidence rates by county in Kansas shows that the Anderson, Bourbon, Doniphan, Grant, Gray, Harper, Mitchell, Rooks, Russell, Seward, and Thomas counties represents the highest quantile (the highest 20% of Kansas counties) of the colorectal cancer incidence rates in Kansas (Figure 4-8).

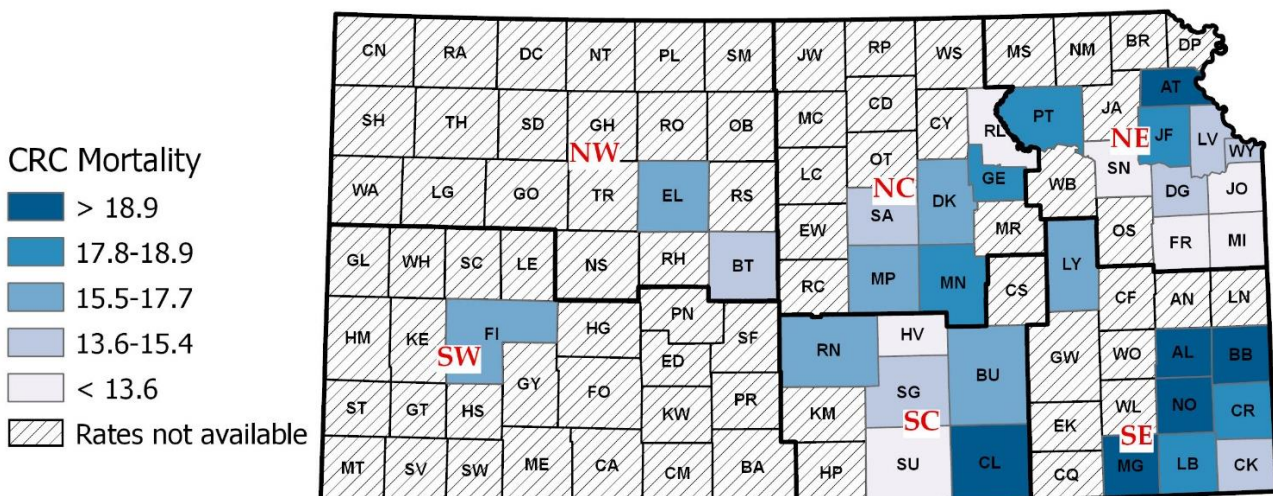
Figure 4-8. Age-adjusted colorectal cancer incidence rates by county, Kansas 2013-2017



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. The map also shows the boundaries of KDHE district offices.

Regarding the distribution of the age-adjusted colorectal cancer mortality rates by county in Kansas, the Allen, Atchison, Bourbon, Cowley, Montgomery, and Neosho counties constitute the highest quantile (the highest 20% of Kansas counties) of the colorectal cancer mortality rates in Kansas (Figure 4-9).

Figure 4-9. Age-adjusted colorectal cancer mortality rates by county, Kansas 2014-2018



Source: 2014-2018 Kansas Vital Statistics, 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. The map also shows the boundaries of KDHE district offices.