

CHAPTER 8: PROFILES OF SELECTED CANCERS – MELANOMA OF THE SKIN



Skin cancer is the most common form of cancer in the United States. The two most common types of skin cancer—basal cell and squamous cell carcinomas—are highly curable. Melanoma, the third most common skin cancer, is almost always curable in its early stages, but it is much more likely than basal or squamous cell cancer to spread to other parts of the body if not diagnosed early.¹⁰ About 65–90 percent of melanomas are caused by exposure to ultraviolet (UV) light.¹¹ UV rays are an invisible kind of radiation that comes from the sun and tanning beds, and can change skin cells.¹²

Melanoma Incidence and Mortality

Each year, more than 700 melanomas are diagnosed in Kansas, among them about 100 cases were diagnosed in late-stage. In addition, about 90 Kansans die from the disease annually. In Kansas, the age-adjusted melanoma overall incidence rates increased significantly during the period 2008-2017 from 24.1 cases per 100,000 persons (95% Confidence Interval (CI): 22.3 to 25.9) in 2008 to 28.6 cases per 100,000 persons (95% CI: 26.7 to 30.5) in 2017 (Figure 8-1). The average Annual Percent Change (APC) in the lung cancer overall incidence rates in Kansas was +2.1 during the period 2008-2017.

Although the age-adjusted melanoma mortality rate between 2008 (3.0 deaths per 100,000 persons; 95% CI: 2.4 to 3.7) and 2018 (2.4 deaths per 100,000 persons; 95% CI: 1.9 to 2.9) looks similar (Figure 8-1), the APC in the melanoma mortality rates in Kansas was -2.6 during the period 2008-2018.

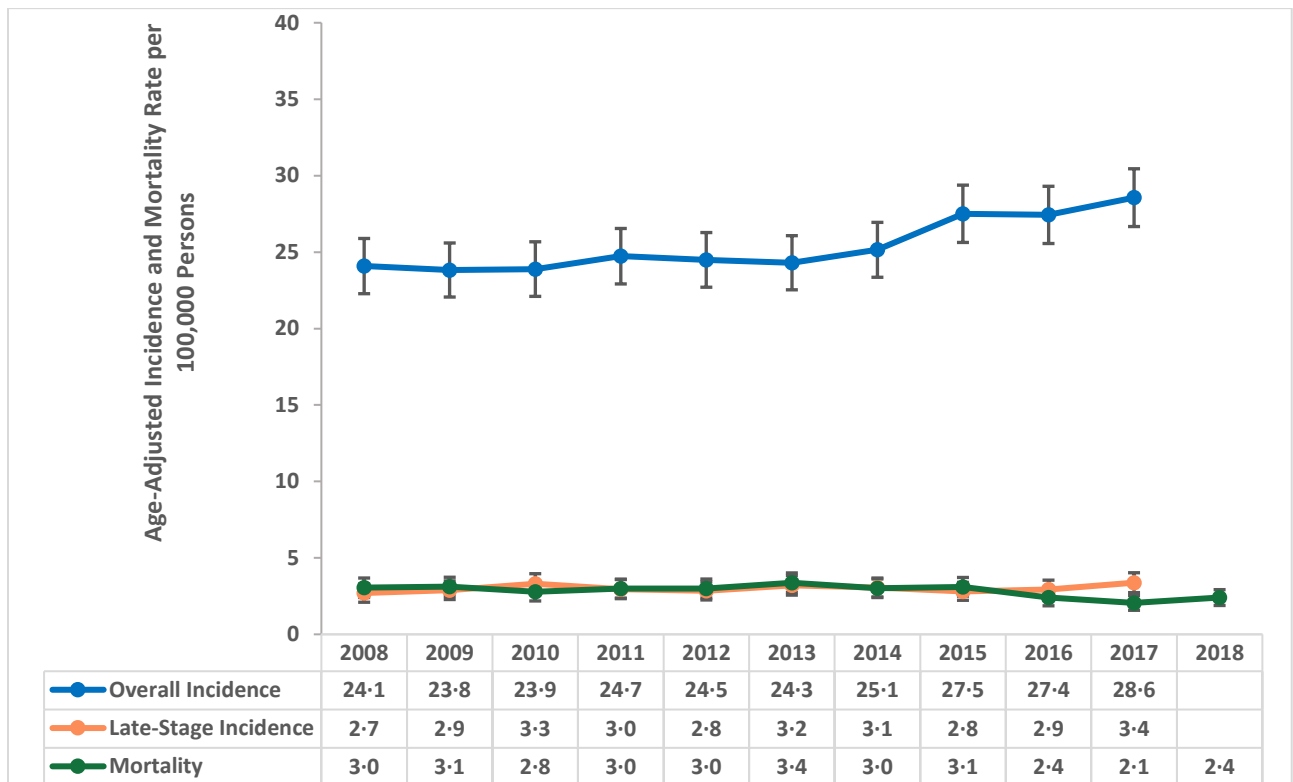
The age-adjusted melanoma late-stage incidence remained stable during the period 2008-2017 in Kansas, and the rate in 2018 was 3.4 cases per 100,000 persons (95% CI: 2.7 to 4.0) (Figure 8-1).

¹⁰ “Key Statistics for Melanoma Skin Cancer.” American Cancer Society. <https://www.cancer.org/cancer/melanoma-skin-cancer/about/key-statistics.html>. Accessed Sep 6, 2020

¹¹ Armstrong BK, Kricger A. How much melanoma is caused by sun exposure? *Melanoma Research* 1993;3(6):395–401.

¹² “Basic Information about Skin 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/skin/basic_info/index.htm. Accessed Sep 6, 2020

Figure 8-1. Age-adjusted melanoma incidence and mortality rates, Kansas 2008-2018

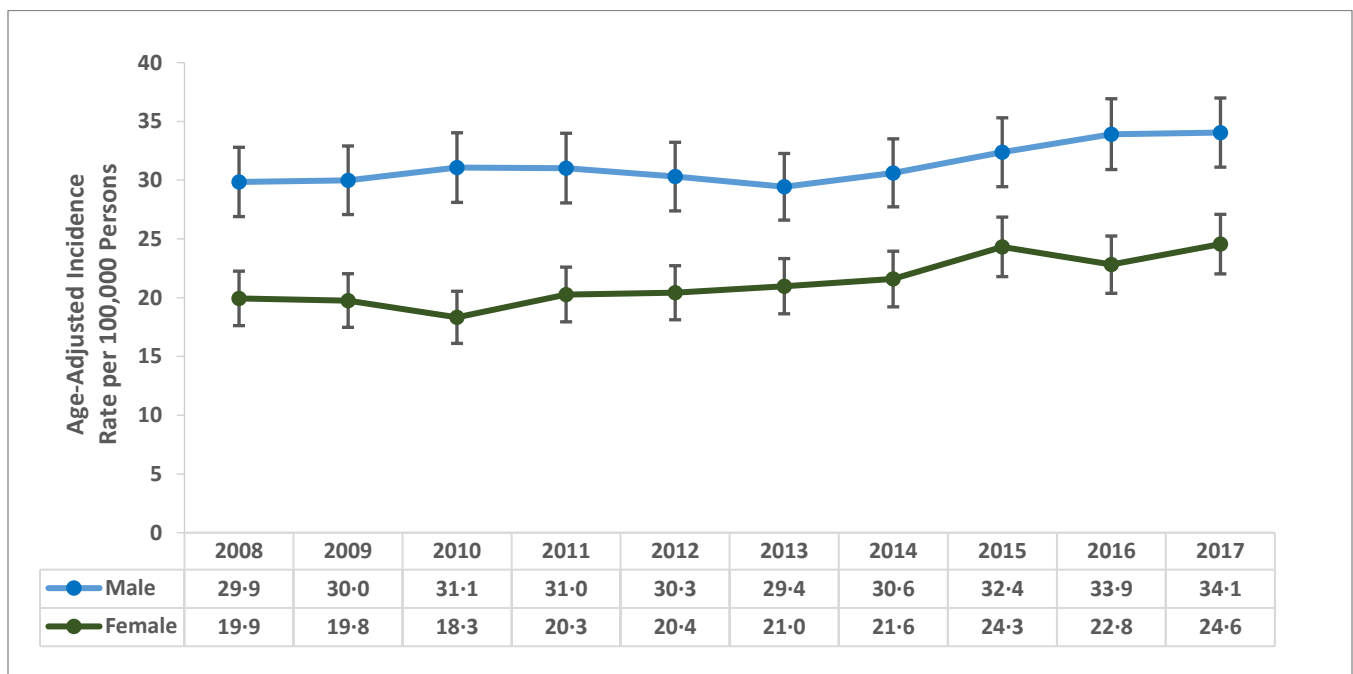


Source: 2008-2017 Kansas Cancer Registry. 2008-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Cancer incidence data for 2009 were not available at the time the document was created. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Melanoma incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 25010 with a behavior code indicating invasive malignancy. Melanoma mortality was defined as ICD-10 code C43. 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.

Melanoma overall Incidence among Gender Groups

The age-adjusted melanoma overall incidence rates were significantly higher for males as compared to females during the period 2008-2017 (Figure 8-2). The melanoma overall incidence rates increased significantly for males during the period 2008-2017 from 29.9 cases per 100,000 males (95% CI: 26.9 to 32.8) in 2008 to 34.1 cases per 100,000 males (95% CI: 31.1 to 37.0) in 2017 (Figure 8-2). The melanoma overall incidence rates increased significantly for females during the period 2008-2017 from 19.9 cases per 100,000 females (95% CI: 17.6 to 22.3) in 2008 to 24.6 cases per 100,000 males (95% CI: 22.0 to 27.1) in 2017 (Figure 8-2). The average Annual Percentage Change (APC) in the melanoma overall incidence rates among Kansas females (+2.8) was double the APC among males (+1.4).

Figure 8-2. Age-adjusted melanoma overall incidence rates among gender groups, Kansas 2008-2017

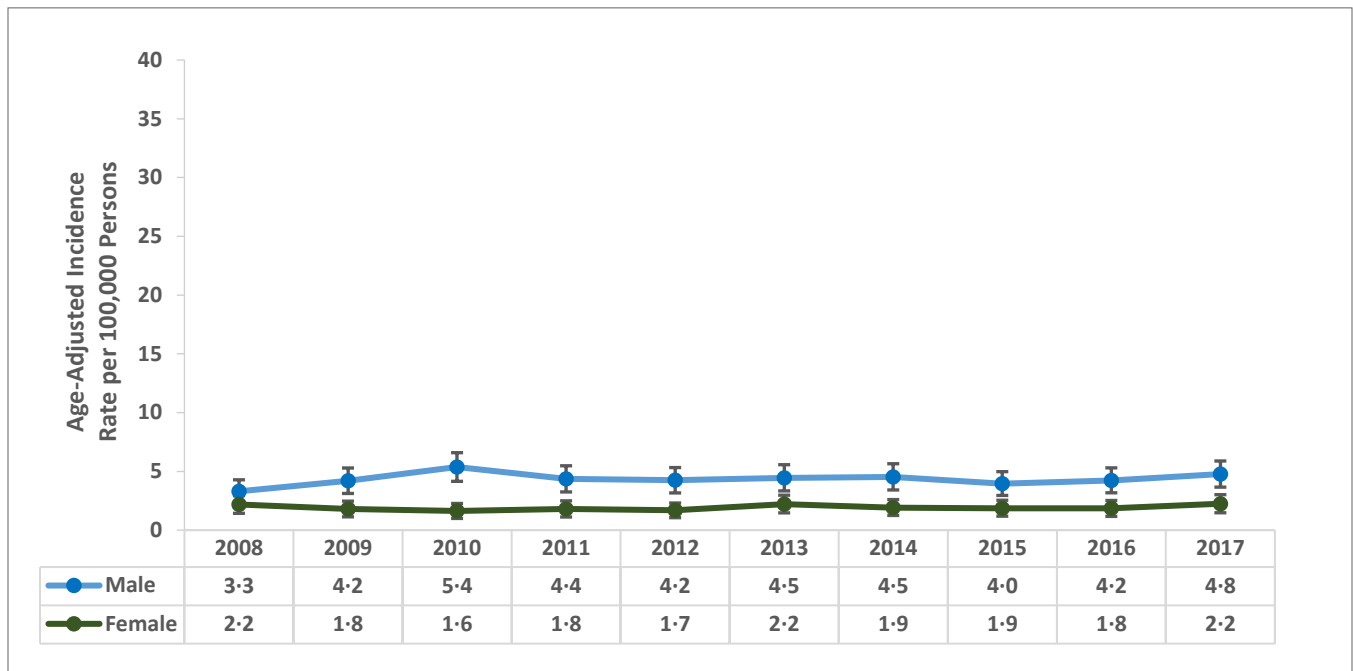


Source: 2008-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Melanoma incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 25010 with a behavior code indicating invasive malignancy. Melanoma mortality was defined as ICD-10 code C43. 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.

Melanoma Late-Stage Incidence among Gender Groups

The age-adjusted melanoma late-stage incidence rates were significantly higher for males as compared to females during the period 2008-2017 (Figure 8-3). The melanoma late-stage incidence rates for both males and females remained stable during the period 2008-2017 in Kansas. In 2017, the melanoma late-stage incidence rate among Kansas males was 4.8 cases per 100,000 males (95% CI: 3.7 to 5.9), and 2.2 cases per 100,000 females (95% CI: 1.5 to 3.0) among Kansas females (Figure 8-3).

Figure 8-3. Age-adjusted late-stage melanoma incidence rates among gender groups, Kansas 2008-2017

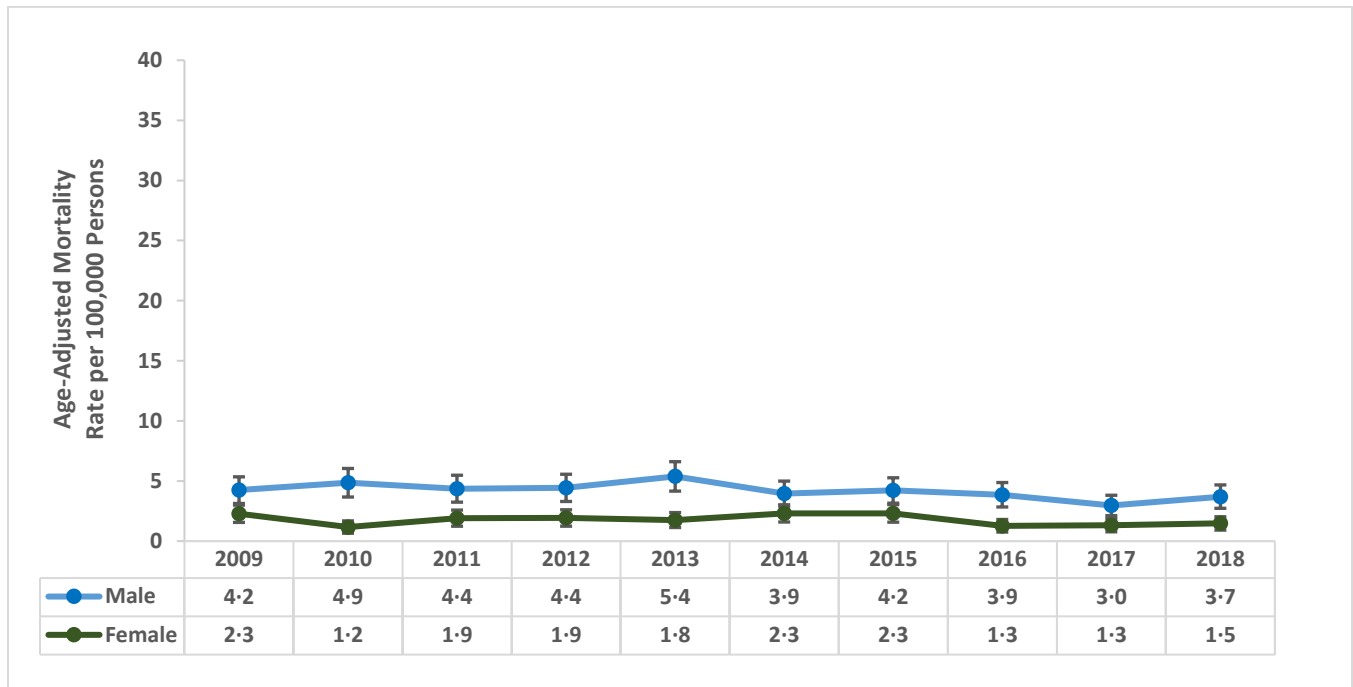


Source: 2008-2017 Kansas Cancer Registry. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Melanoma incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 25010 with a behavior code indicating invasive malignancy. Melanoma mortality was defined as ICD-10 code C43. 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.

Melanoma Mortality among Gender Groups

The age-adjusted melanoma mortality rates were significantly higher for males as compared to females during the period 2009-2018 (Figure 8-4). The melanoma mortality rates remained stable for both males and females from 2009 to 2018. In 2018, the melanoma mortality rate among Kansas males was 3.7 deaths per 100,000 males (95% CI: 2.7 to 4.7), and 1.5 deaths per 100,000 females (95% CI: 0.9 to 2.0) among Kansas females (Figure 8-4).

Figure 8-4. Age-adjusted melanoma mortality rates among gender groups, Kansas 2009-2018

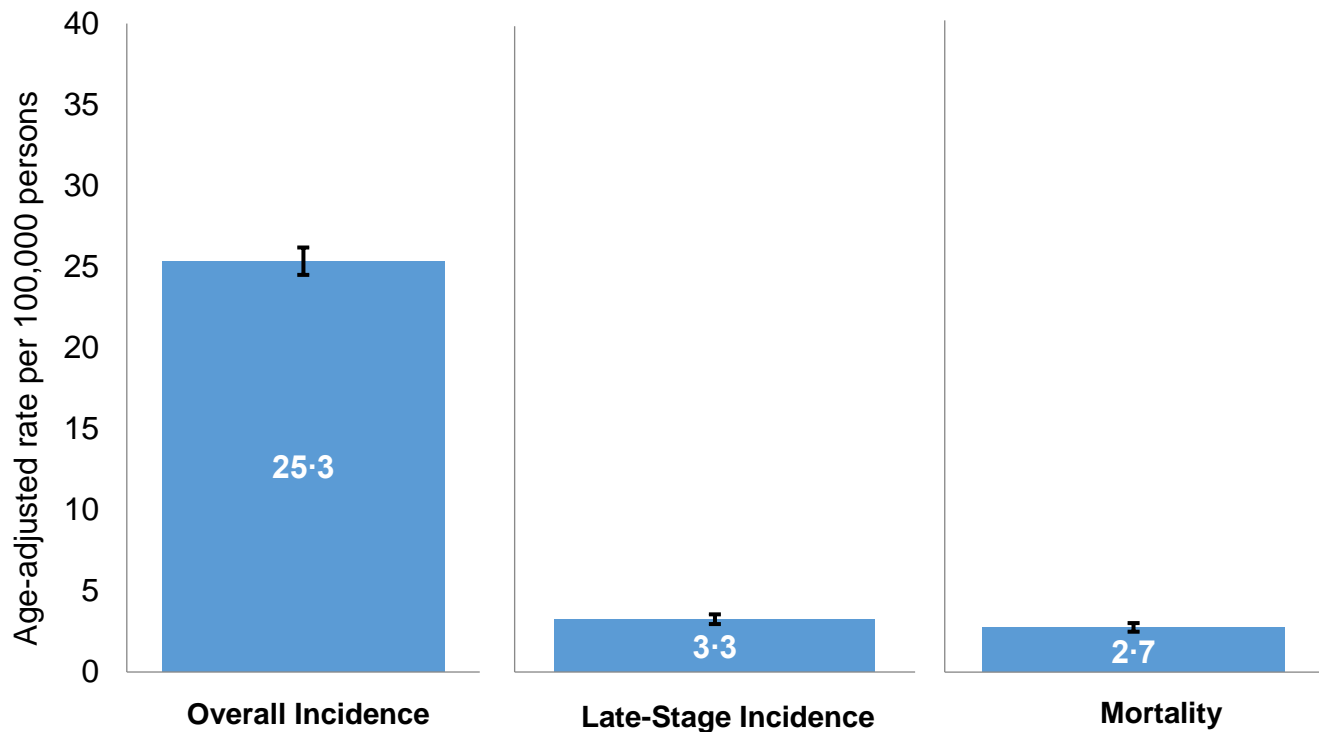


Source: 2009-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Melanoma mortality was defined as ICD-10 code C43. 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.

Melanoma Incidence and Mortality among Race Groups

The age-adjusted melanoma overall incidence rate for White Kansans during the period 2013-2017 was 25.3 cases per 100,000 persons; 95% CI: 24.5 to 26.2) (Figure 8-5). In addition, the age-adjusted late-stage melanoma incidence rate for White Kansans during the period 2013-2017 was 3.3 cases per 100,000 persons; 95% CI: 3.0 to 3.6) (Figure 8-5). Also, the age-adjusted melanoma mortality rate for White Kansans was 2.7 deaths per 100,000 persons; 95% CI: 2.5 to 3.0) during the period 2014-2018 (Figure 8-5). Data for African American and other racial group of Kansans are not shown because the number of cases was insufficient for computing a statistically reliable rate for these race groups.

Figure 8-5. Age-adjusted melanoma incidence and mortality rates among Whites, Kansas 2013-2018

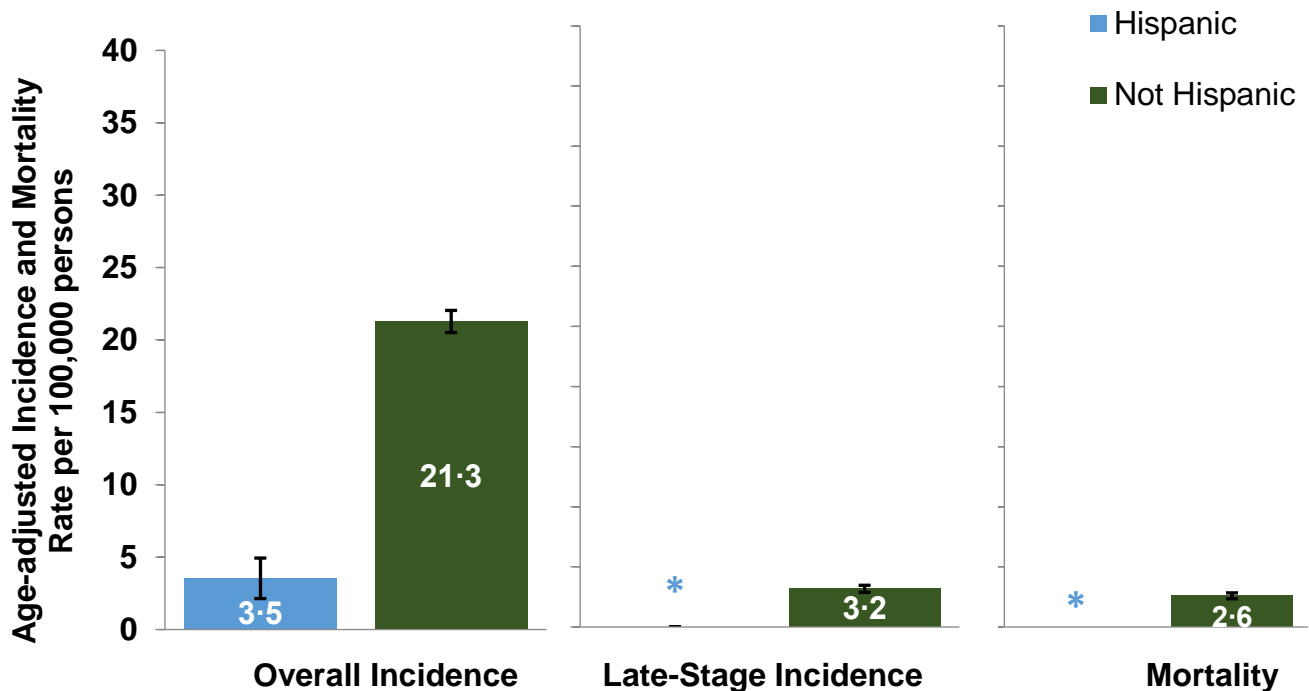


Source: 2013-2017 Kansas Cancer Registry. 2014-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. The rate is not reported for African Americans due to insufficient number of cases. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. Vertical bars indicate 95% CIs. Melanoma incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 25010 with a behavior code indicating invasive malignancy. Melanoma mortality was defined as ICD-10 code C43.

Melanoma Incidence and Mortality among Ethnic Groups

The age-adjusted melanoma overall incidence rate for non-Hispanic Kansans (21.3 cases per 100,000 persons; 95% CI: 20.5 to 22.0) was significantly higher than that rate for Hispanic Kansans (3.5 cases per 100,000 persons; 95% CI: 2.1 to 4.9) during the period 2013-2017 (Figure 8-6). In addition, the age-adjusted melanoma late-stage incidence rate for non-Hispanic Kansans was 3.2 cases per 100,000 persons (95% CI: 2.9 to 3.5) during this period, while the age-adjusted melanoma mortality rate for non-Hispanic Kansans was 2.6 deaths per 100,000 persons (95% CI: 2.3 to 2.8) during this period (Figure 8-6). Data for Hispanic Kansans are not shown for late-stage incidence and mortality because the number of cases was insufficient for computing a statistically reliable rate for this ethnic group. Nationally, the age-adjusted melanoma incidence and mortality rates are about four times higher among non-Hispanics as compared to Hispanics.¹³

Figure 8-6. Age-adjusted melanoma incidence and mortality rates among ethnic groups, Kansas 2013-2018



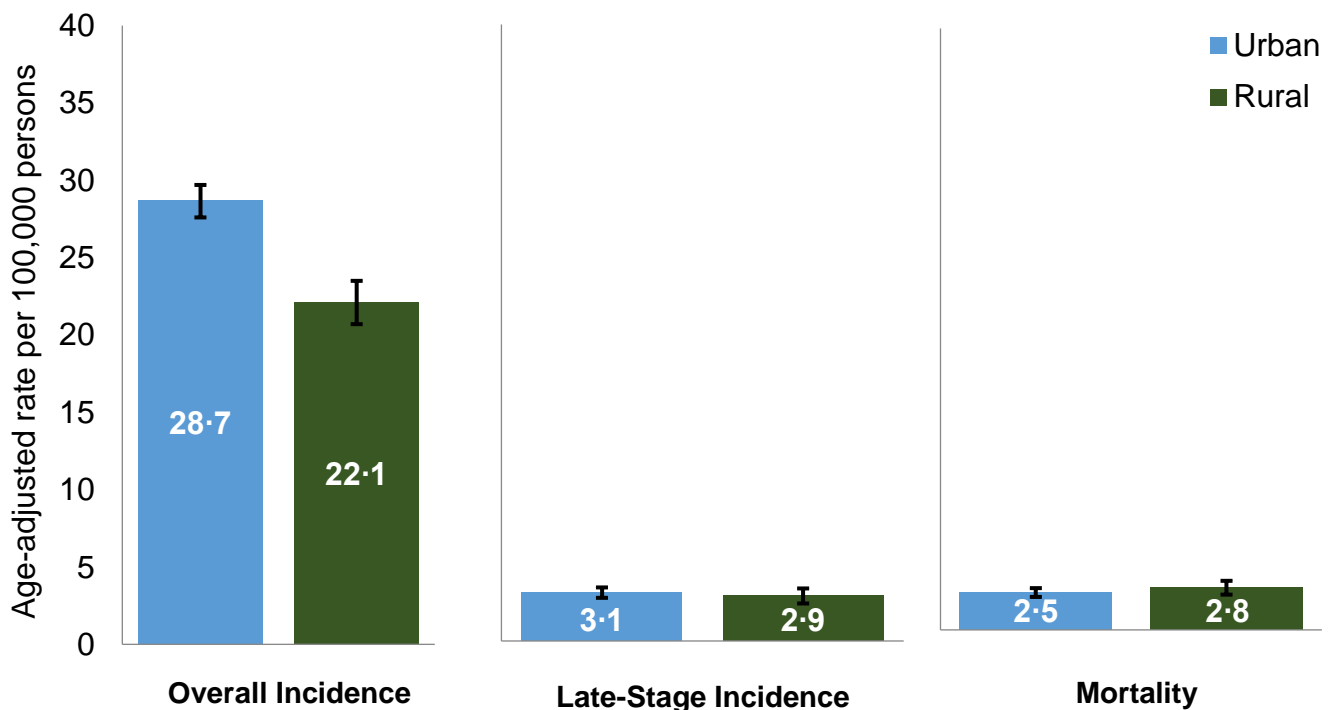
Source: 2013-2017 Kansas Cancer Registry. 2014-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. * denotes that the rate is not reported due to insufficient number of cases. The rate is not reported for Hispanics due to insufficient number of cases. Rates were 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. Melanoma incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 25010 with a behavior code indicating invasive malignancy. Melanoma mortality was defined as ICD-10 code C43. 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.

¹³ Cancer Stat Facts: Melanoma of the Skin. Surveillance, Epidemiology, and End Results Program. <https://seer.cancer.gov/statfacts/html/melan.html>. Accessed September 6, 2020

Melanoma Cancer Incidence and Mortality among County Population Density Peer Groups

In Kansas, the age-adjusted melanoma overall incidence rate was significantly higher for Kansans living in urban counties (28.7 cases per 100,000 persons; 95% CI: 27.6 to 29.7) than for Kansans living in rural counties (22.1 cases per 100,000 persons; 95% CI: 20.7 to 23.5) during the period 2013-2017 (Figure 8-7). There were no significant differences between Kansans living in urban or rural counties regarding the age-adjusted melanoma late-stage incidence (during the period 2013-2017) and mortality (during the period 2014-2018) rates (Figure 8-7).

Figure 8-7. Age-adjusted melanoma incidence and mortality rates among county population density peer groups, Kansas 2013-2018

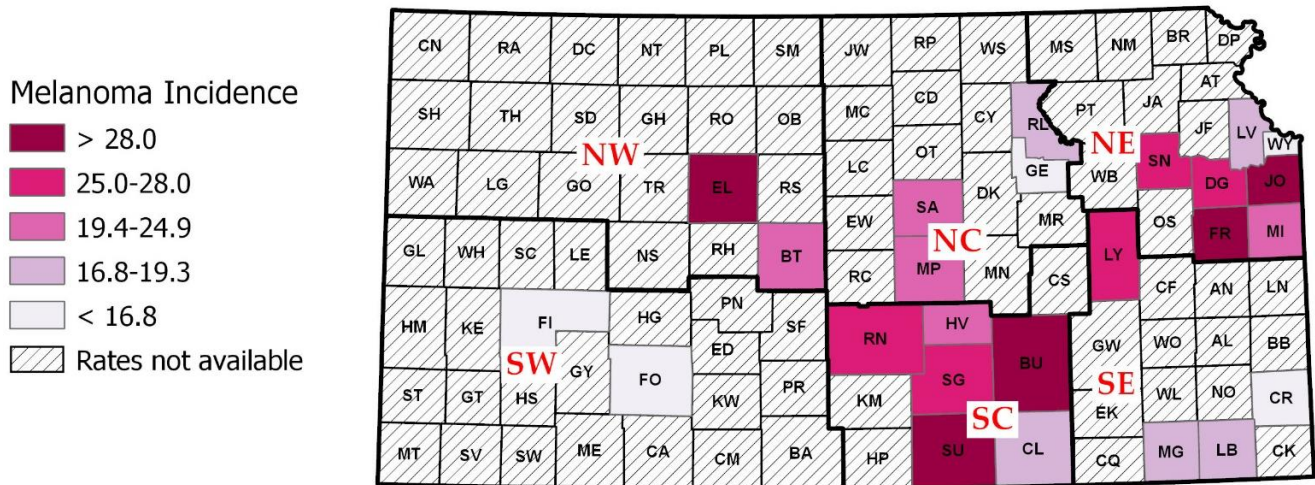


Source: 2013-2017 Kansas Cancer registry. 2014-2018 Kansas Vital Statistics, Bureau of Epidemiology and Public Health Informatics, KDHE. Rates were age-adjusted to the U.S. 2000 standard population using the direct method. See Technical Appendix for details on how rates were calculated. County population 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. Melanoma incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 25010 with a behavior code indicating invasive malignancy. Cancer mortality was defined as ICD-10 codes C43.

Melanoma Incidence and Mortality among Kansas Counties

The distribution of the age-adjusted melanoma incidence rates by county in Kansas shows that the Butler, Ellis, Franklin, Johnson, and Sumner counties represent the highest quantile (the highest 20% of Kansas counties) of the melanoma incidence rates in Kansas (Figure 8-8).

Figure 8-8. Age-adjusted melanoma incidence rates among 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. Melanoma incidence was defined as SEER Site Recode ICD-O-3 codes/WHO 2008 definition 25010, with a behavior code indicating invasive malignancy. The map also shows the boundaries of KDHE district offices.

Regarding the distribution of the age-adjusted melanoma mortality rates by county in Kansas, the rates are available for three counties only: Johnson, Sedgwick, and Shawnee. The rates were 2.4, 2.5, and 2.5 cases per 100,000 persons, respectively.

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. See Technical Appendix for details on how rates were calculated. Melanoma mortality was defined as ICD-10 code C43.