Cancer in Oklahoma Data Brief Series:

Colorectal Cancer in Oklahoma – Update 2025

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Introduction

Colon and rectal cancers (CRC), often considered together, were the third most diagnosed cancer among men and women and the third leading cause of death from cancer in the United States (US) with a 2018-2022 age-adjusted incidence rate (AAIR) of 37 cases per 100,000 and the 2019-2023 age-adjusted mortality rate (AAMR) was 13 deaths per 100,000. Oklahoma ranked 7th worst in incidence among states, Puerto Rico, and the District of Columbia (DC), and was 4th worst in CRC overall CRC mortality. CRC screening through approved methods (e.g. high-sensitivity guaiac fecal occult blood test (FOBT) or fecal immunochemical test (FIT) every year; stool DNA-FIT every 1 to 3 years; computed tomography colonography every 5 years; flexible sigmoidoscopy alone every 5 years; flexible sigmoidoscopy every 10 years plus annual FIT; or colonoscopy screening every 10 years) is recommended for adults aged 45 to 75 years, and selectively recommended for adults aged 76 to 85 years based on overall health status, prior screening history, and patient preference.[1] CRC itself can be prevented through the removal of polyps during a colonoscopy. This brief focuses on cancer incidence, mortality, and screening rates for colorectal cancer (CRC) in Oklahoma, concluding with a discussion of the significance of the findings for clinical practice and public health policy.

Methods

Data for cancer incidence were obtained from the Oklahoma Central Cancer Registry (OCCR) through OK2SHARE and the Centers for Disease Control and Prevention's (CDC) National Program of Cancer Registries (NPCR), accessed through CDC WONDER and the United States Cancer Statistics: Data Visualization. CRC cancer mortality data were accessed from the Oklahoma Vital Statistics and the CDC's National Vital Statistics System (NVSS) through OK2SHARE and CDC WONDER. Information about CRC screening (FOBT in the last year and/or flexible sigmoidoscopy in the last 5 years, and FOBT in the previous 3 years and/or colonoscopy in the last 10 years) was obtained from the Behavioral Risk Factor Surveillance System (BRFSS) accessed through the CDC BRFSS. All data sources used in this brief were publicly available.

In this brief, Hispanic persons were classified as Hispanic regardless of race. All individuals in the sample were classified into one of the following ethnic and racial groups: Hispanic, non-Hispanic (NH) White, NH Black or African American, NH American Indian or Alaska Native (AI/AN), or NH Asian or Pacific Islander. There is a new grouping, Multi-racial, for Oklahoma mortality that does not exist for US mortality. Adding this group has been shown to significantly decrease the mortality rate for the NH AI/AN population (CITE). Moreover, due to CDC reporting delays, we have inconsistent dates for incidence and mortality. It was deemed that releasing this critical data was more important than further delaying the reporting.
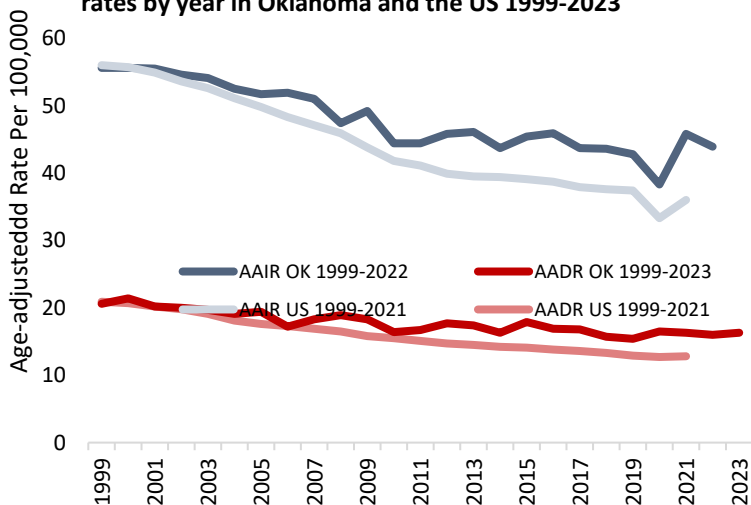
This data brief defines CRC as the following cancer sites: colon (ICD-0-3 C18.0- 18.9), rectosigmoid (ICD-0-3 C19.9), and rectal (ICD-0-3 C20.9). Anus and anal canal (ICD-0-3 C21.0-21.8) and skin (ICD-0-3 C44.5) cancers were excluded. To ensure the stability of estimates and confidentiality, rates were suppressed if fewer than 16 counts were reported in a specific category. All rates, except age-specific rates, were age-adjusted to the 2000 US standard population. BRFSS

estimates were suppressed for stability if the unweighted sample size was less than 50. Unknown values were excluded for all analyses except stage at diagnosis, and resulting percentages were weighted averages estimated from the sample and population sizes. All incidence and mortality rates are per 100,000 population. Staging for this data brief used the SEER summary stage.

Results

Overall, there were 725,363 cases of CRC diagnosed between 2018 and 2022 in the US, with 9,804 cases reported in Oklahoma. For mortality in the US, there were 263,240 CRC deaths between 2018 and 2022, of which 3,822 CRC deaths occurred in Oklahoma. The CRC incidence rate in the US was 37 per 100,000 population compared to 41 for Oklahoma. During this timeframe, the CRC death rate for the US was 13 compared to 16 for Oklahoma.
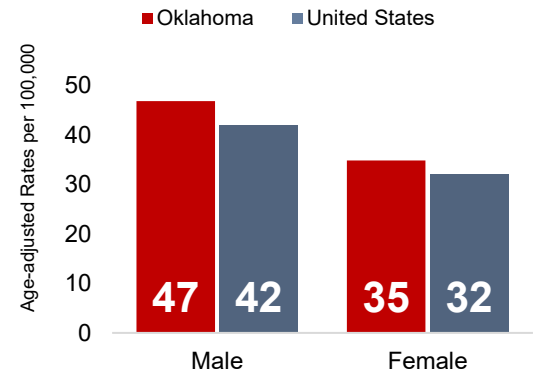
Figure 1: Colorectal cancer age-adjusted incidence rates by sex in Oklahoma (2018-2022) and the US (2017-2021)

Source: United States Cancer Statistics

Figure 2: Colorectal cancer Age-adjusted incidence and mortality rates by year in Oklahoma and the US 1999-2023
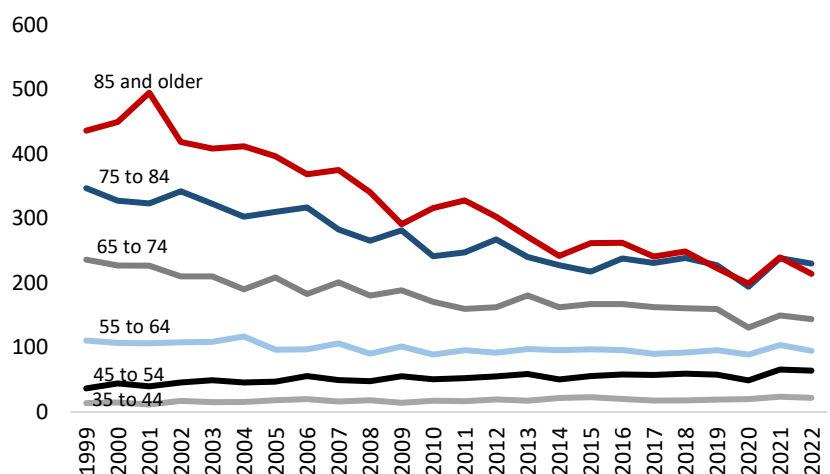

Source: Oklahoma OK2SHARE; US CDC Wonder Cancer Data Statistics

CRC rates are higher in Oklahoma than in the US for both males and females. Also, males in the US and Oklahoma have higher rates of colorectal cancer than females. (**Figure 1**).

Overall, Oklahoma mirrors the US with a steady decrease in CRC incidence and mortality up to the mid-2000s, when Oklahoma rates remained consistently higher than the US ones, with larger gaps occurring over the last five years (**Figure 2**).

CRC incidence and mortality rates increase with age (**Figure 3**). However, there has been a compression of age-specific cancer incidence over time with a dramatic decrease among older ages and an increase, although at lower rates, among younger ages (**Figure 3**). There was an APC 3.0 (p-value<.0001) for those less than 35, 1.9 (p-value<.0001) among those 35 to 44, and 1.7 (p-value<.0001) among those 45 to 54. The rates then begin to decline, with -0.7 (p-value < 0.0004) among those 55 to 64, -2.0 (p-value < 0.0001) among those 65-74, -2.1 (p-value < 0.0001) among those 75-84, and -3.6 (p-value < 0.0001) among those 85 and older. However, examination of colon and rectal cancers separately reveals that most colon deaths occur at an older age than most rectal cancer deaths (**Appendix 1).**

Figure 3: Overall Colorectal cancer incidence rate by age groups, Oklahoma 1999-2022

Source: Oklahoma OK2SHARE; US CDC Wonder Cancer Data Statistics

Figure 4: Colorectal cancer incidence and mortality by race and ethnicity in Oklahoma (2018-2022) and the U.S. (2017-2021)
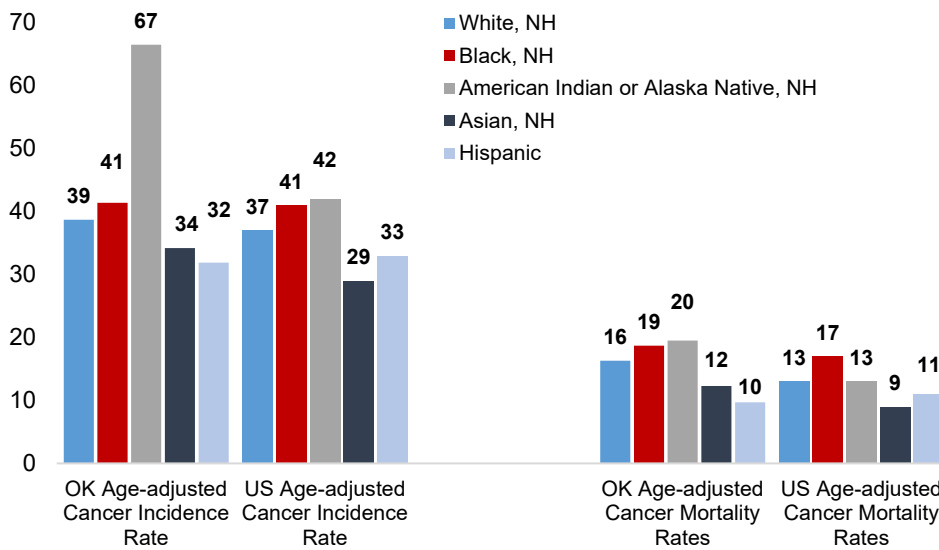
Source: Oklahoma OK2SHARE; US CDC Wonder Cancer Data Statistics

Figure 4 shows that Oklahoma's NH AI/AN population incidence rate was 67 colorectal cases per 100,000, higher than for the

other ethnic and racial populations in the state. NH Black population was 41, NH White population was 39, NH Asian population was 34, and Hispanic population was 32. The NH AI/AN population was 72% more likely to be diagnosed with CRC compared to the NH White population in Oklahoma. The Black population was only 5% more likely to be diagnosed with CRC but 19% more likely to die from it compared to

NH Whites in Oklahoma (**Figure 3**).

Figure 5 shows Oklahoma and the US CRC staging at diagnosis and five-year survival for 2018 through 2022. Oklahoma has slightly more Distant and Unknown stages than the US. Except for the Unknown stage, Oklahoma has lower survival.

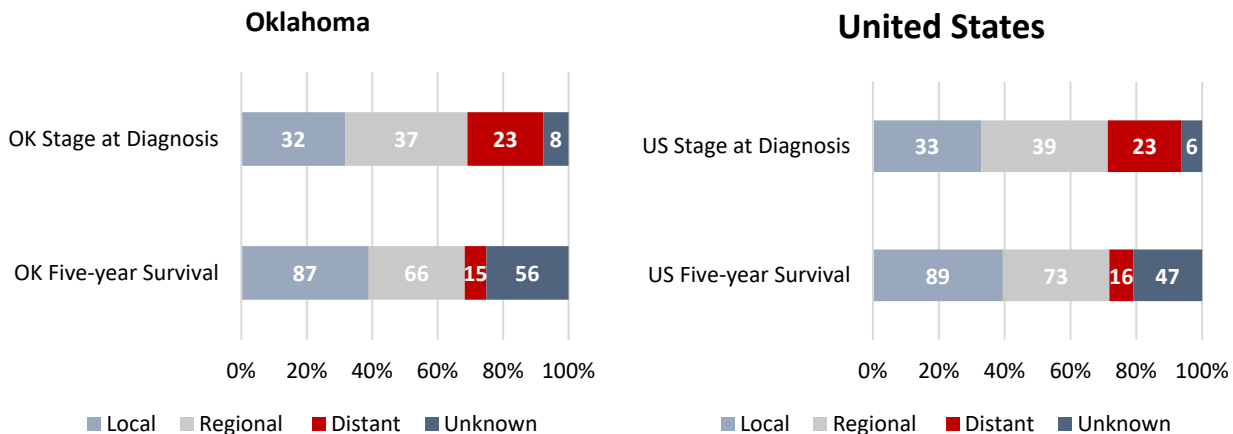**Figure 5: Stage at Diagnosis, and Five-Year Survival, Oklahoma and the US, 2018-2022**

Figure 6 shows maps of the (a) incidence and (b) mortality rates by county for Oklahoma. While there are no clusters of incident CRC, substantial differences exist between rural and urban areas. People residing in rural counties were significantly more likely to be diagnosed with CRC (46.6 per 100,000) than their counterparts residing in metropolitan counties (40.9 per 100,000). Also, people living in rural counties were significantly more likely to die from CRC (18.2 vs 14.9, respectively; data not shown).

Figure 6: Overall age-adjusted colorectal cancer incidence (2018-2022) and mortality (2019-2023) rate by county Oklahoma

a) **Incidence**   b) **Mortality**
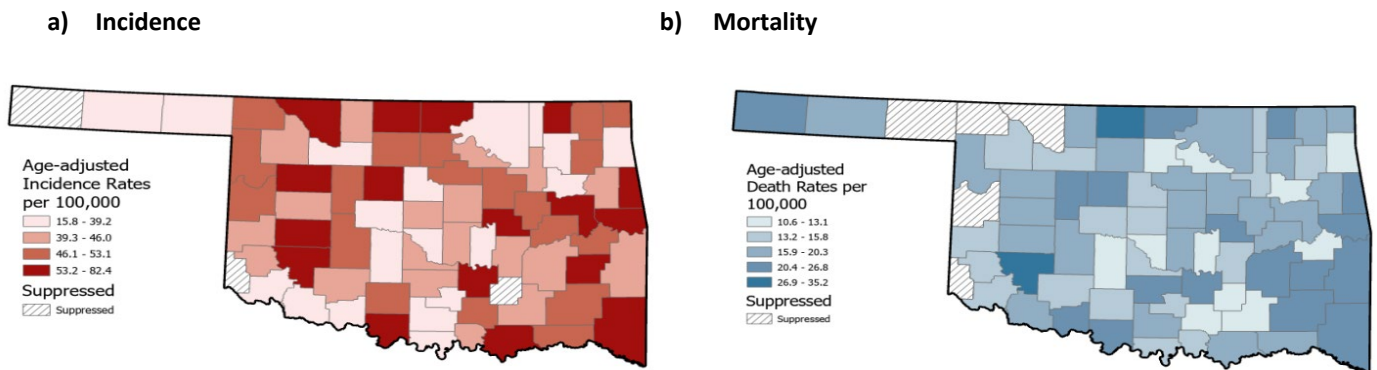
Source: OK2SHARE

Figure 7: Percentage of Oklahoma adults ages 50-75 years satisfying the USPSTF CRC screening guideline, 2022
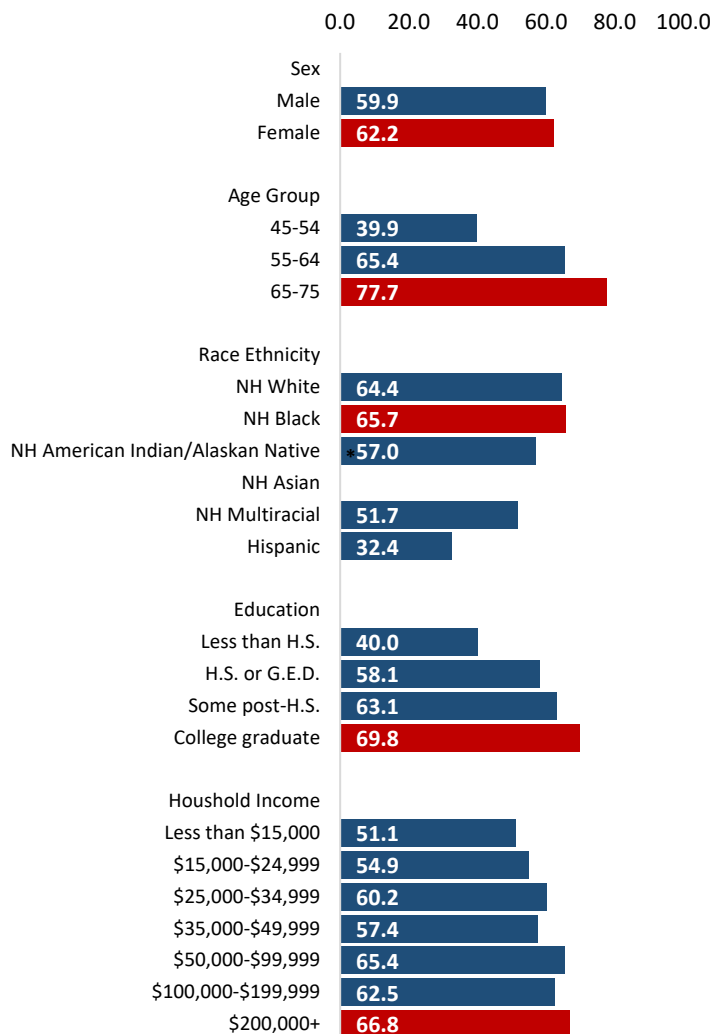
*Suppressed
Source: Oklahoma Behavior Risk Factor Surveillance System

Figure 7 shows the percentages of adults aged 45 to 75 years in Oklahoma who met the USPSTF CRC screening guideline by social and demographic characteristics in 2022. Overall, among Oklahomans aged 45-75, 61% received a CRC screening test within the recommended time intervals, 8% received a CRC screening test but not within the recommended time intervals, and 31% had never received a CRC test. The corresponding figures for the US were 66%, 7%, and 27%, respectively. Younger age groups (ages 45 to 54) were much less likely to have had a CRC screen (40%) compared to those aged 55 to 65 (65%) and 65 or older (78%). Those living in rural areas were less likely than those living in Urban areas to have had a CRC screening (55% vs 62%). Compared to the CRC screening proportion for NH Black respondents (66%), the proportions were lower for NH White respondents (64%), lower for NH AI/AN respondents (57%), and slightly lower for NH Multiracial respondents (52%). Hispanic respondents reported the lowest rates at 32%. As educational attainment increased, CRC screening rates increased, ranging from under 40% for respondents with less than a high school degree or GED to over 70% for college graduates. Similarly, as income increased, the likelihood of CRC screening also increased, ranging from roughly 50% for respondents with incomes below $15,000 to 67% for those with incomes of $200,000 or higher.

Conclusions and Implications for Practice and Policy

CRC is the third most diagnosed cancer among Oklahoma men (following lung and prostate) and women (following lung and breast), and is the third leading cause of death among men (following lung and prostate) and women (following lung and breast). Oklahomans who are male, NH AI/AN, NH Black or African American, and older were more likely to be diagnosed with and die from CRC. Moreover, Oklahoma is one of the worst states for incidence and mortality. productivity of Oklahoma.

Findings in this data brief inform the following recommendations. First, interventions are needed to increase Oklahomans' awareness of the importance of CRC screening, diagnosis, and treatment. Activities to increase awareness need to reach individuals who are at greatest risk of developing colorectal cancer, including men, NH AI/AN persons, NH Black or African American persons, persons living in rural locations, and those who have low educational attainment or income levels. Statewide efforts, such as media campaigns and community health education activities, could increase awareness of CRC symptoms and screening. Second, increased access to screening would help increase screening rates. This could occur through programs to increase health insurance coverage, standing orders for CRC screening at healthcare clinics (i.e., uncoupling screening from the physician visit, such as offering screening when patients present for laboratory tests or nurse visits, and providing screening outside of the doctor's office, including at mass vaccine events, community events, or through mobile van outreach). Third, interventions that improve clinician or clinic performance on screening can help increase rates. This could be accomplished through feedback on CRC screening rates in a health record and academic detailing about CRC symptoms and the most current screening guidelines. Fourth, efforts must ensure that all Oklahomans with CRC have access to the newest treatments. This means reducing barriers to treatment, such as financial, travel, and other healthcare-related barriers. Research is needed to identify the most effective CRC treatments for high-risk groups and to determine ways to increase CRC screening rates in these groups. Funding should also be increased to help ensure diversity among patients enrolled in cancer clinical trials, as this helps improve cancer outcomes.

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2.   United States Preventive Services Task Force, Grossman DC, Curry SJ, et al. Screening for Prostate Cancer: US Preventive Services Task Force Recommendation Statement. *JAMA*. May 8 2018;319(18):1901-1913. doi:10.1001/jama.2018.3710

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Suggested Citation: Campbell JE, Sheikh E, Sambo AB, Pharr SF and Doescher MP. Cancer in Oklahoma Data Brief Series: Female Breast Cancer in Oklahoma Data Brief Series: Colorectal Cancer in Oklahoma. Update 2025.

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