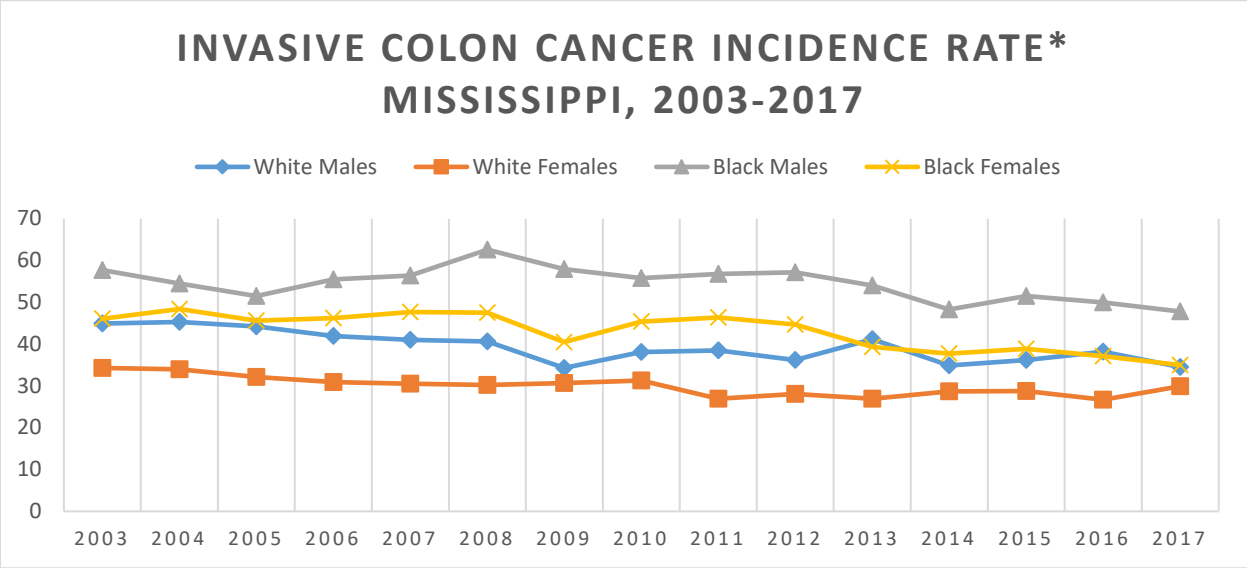
Physical Activity-Related Cancers in Mississippi, 2003-2017

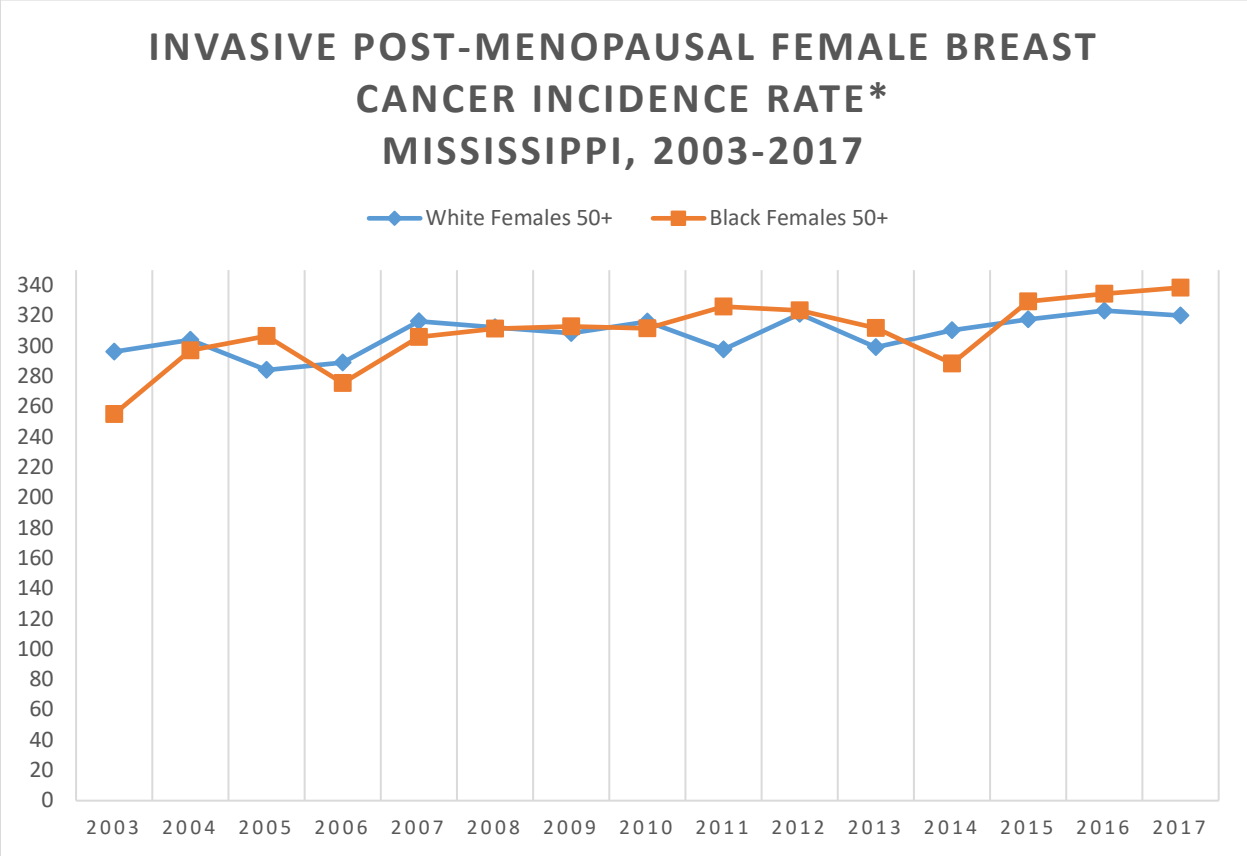
Lack of physical activity is a modifiable risk factor that increases the risk of developing certain cancers. According to data from the Behavioral Risk Factor Surveillance System for 2018, 68.0% of Mississippi adults over age 18 reported participating in any physical activity over the past month. Mississippi has the lowest rate in the nation for participation in physical activity.[1] Lack of physical activity is associated with developing cancers of the colon and uterus, as well as, development of breast cancer after menopause. Below are graphs of the trends in physical activity-related cancers over the period 2003 to 2017 by race and sex with a description of the trends occurring in each group both for the full time period and for the most recent period between 2013 and 2017. All analysis was done using SEER*Stat software[2].



*Rates age-adjusted to the 2000 U.S. standard million population

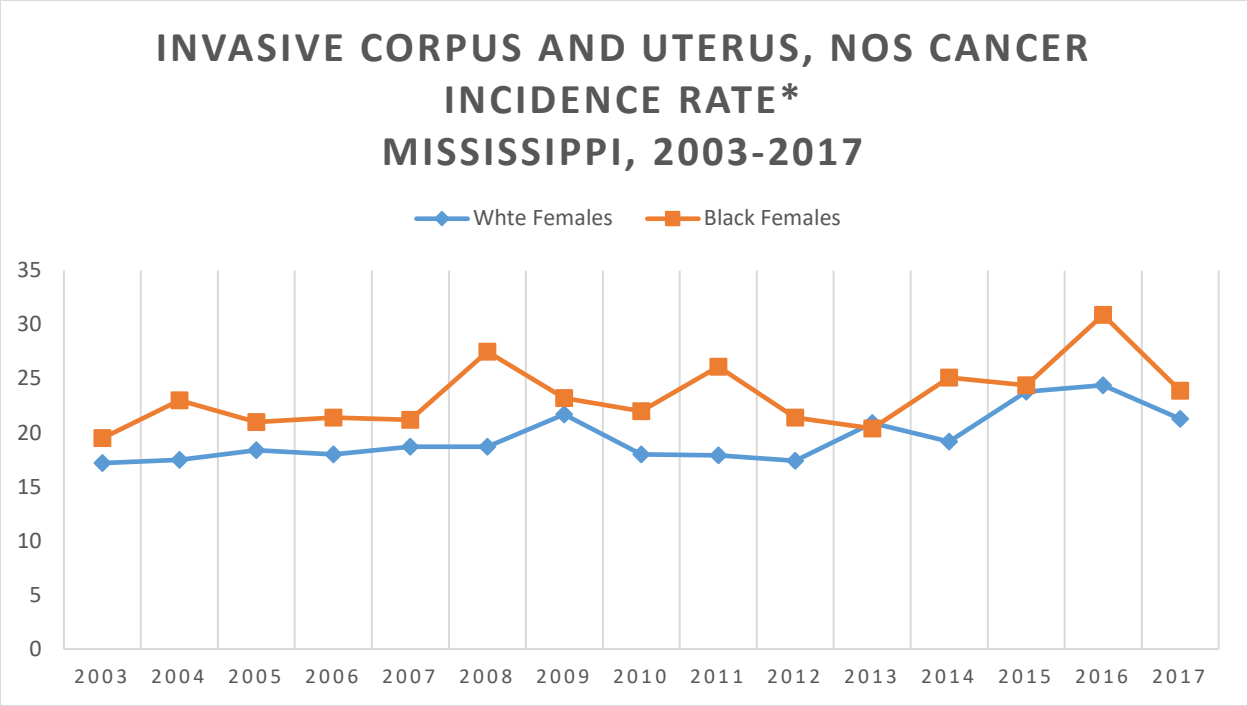
Black males had significantly higher rates of colon cancer than white females for all years. Black males had significantly higher rates than black females in 2003 and again from 2008 to 2017. Black males also had significantly higher rates of colon cancer than white males for 2003 and for the time period from 2006 to 2017. The rate for white females was significantly lower than white males except for 2009 and 2017 and was significantly lower than for black females all years except 2017. White males, white females, and black females had statistically significant decreasing trends for the full-time period from 2003 to 2017. White males experienced an annual decrease of 1.65%. White females experienced an annual decrease of 1.40%, and black females experienced an annual decrease of 2.00%. Between 2003 and 2005, black males experienced a decrease of 5.32% annually. Then, during the period from 2005 to 2008, black males experienced an increase of 5.57% annually. Neither of these trends for black males was statistically significant. From 2008 to 2017, black males experienced a significant 2.60% decrease annually.

For the latest five-year time period between 2013 and 2017, there were no significant changes in the rates of colon cancer for any race/sex group. White males, black males, and black females all had decreasing trends for this time period. The annual decrease for white males was 2.69%, for black males was 2.08%, and for black females was 2.42%. In contrast, white females had an increasing trend for this period of 1.46% annually. The combination of this observed increasing trend in white females and the decreasing trends in white males and black females closed the disparity between the rates for white females and both white males and black females in 2017.



*Rates age-adjusted to the 2000 U.S. standard million population

Post-menopausal breast cancer is defined as breast cancer diagnosed in women ages 50 and older. The rates of post-menopausal breast cancer between 2003 and 2017 increased significantly by 0.75% annually. The annual percent increase for white females was a significant 0.57% and for black females was a significant 1.16%. The rates of breast cancer by race were very similar to each other over time. For the most recent five-year time from 2013 to 2017, white females experienced a significant annual increase of 1.76%. Black females also experienced an annual increase over the period of 2013 to 2017 of 3.13%, though this change was not statistically significant.



*Rates age-adjusted to the 2000 U.S. standard million population

Uterine cancer rates increased significantly in white females between 2003 and 2017. The annual percent change over that period of time was 1.83%. Black females experienced a significant increase of 1.56% annually, and white females experienced a significant increase of 1.90%. The trend over the latest five-year period from 2013 to 2017 for white females was an annual increase of 2.87% which was not statistically significant. For black females, there was an increase of 5.43% annually. Rates for white and black females were similar to each other for most years.

Definitions

Age Adjusting: A statistical method that allows comparisons of populations that take into account age-distribution differences between the populations. The 2000 U.S. standard population is used and applied to all of the time periods being considered. This assures that the rates do not reflect differences in the age distribution of the population.

Annual Percent Change (APC): The average annual percent change over several years. It is used to measure the change in rates over time. Calculating the APC involves fitting a straight line to the natural logarithm of the data when it is displayed by calendar year.

Statistical Significance: This is a mathematical measure of the difference between groups. A difference is said to be statistically significant if it is greater than what might be expected to happen by chance alone 95% of the time. Rate ratios were used to assess the statistical significance between groups.

Citations

[1]Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Division of Population Health. BRFSS Prevalence & Trends Data [online]. 2015. [accessed Jun 5, 2020]. URL: https://www.cdc.gov/brfss/brfssprevalence/.

[2]Surveillance Research Program, National Cancer Institute SEER*Stat software (seer.cancer.gov/seerstat) version 8.3.6.

Acknowledgement

We acknowledge the Centers for Disease Control and Prevention for their financial support under a cooperative agreement awarded to the Mississippi Cancer Registry.