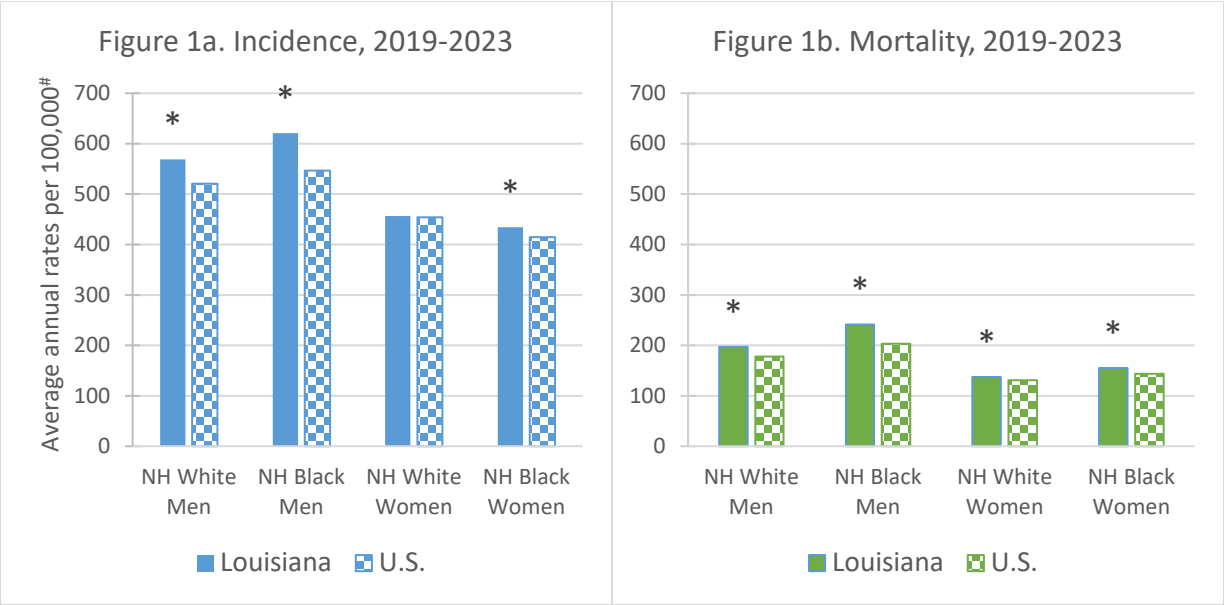
Figures

Figure 1. All Cancers Combined



Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.

* The Louisiana rate is significantly higher than the U.S. rate ($p < 0.05$).

U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.

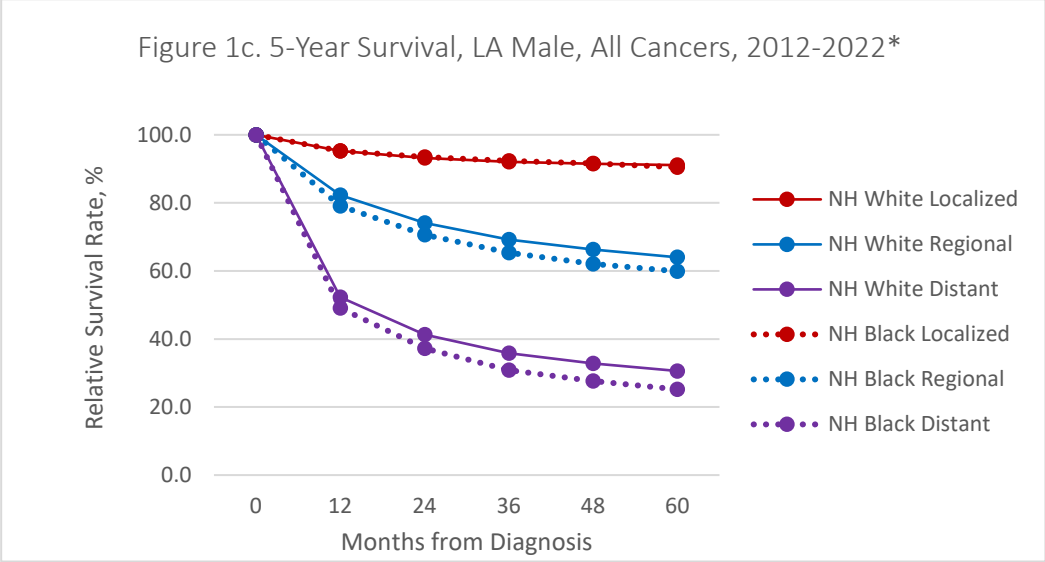
Underlying mortality data provided by NCHS (National Center for Health Statistics).

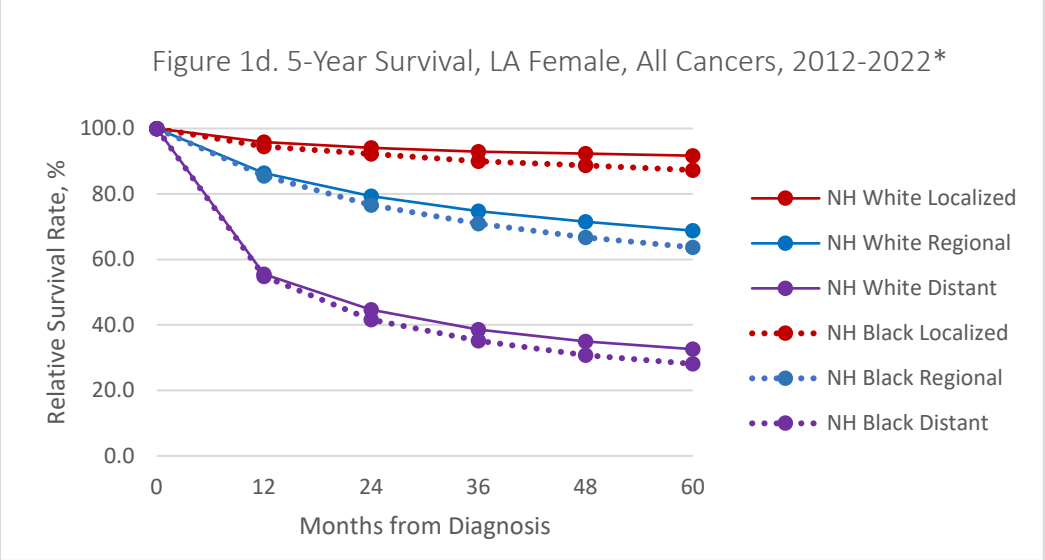
Incidence

- An average of **27,756 new cases of invasive cancer** were diagnosed each year, 2019-2023, in Louisiana (Table A1).
- Invasive cancer incidence rates are significantly higher in Louisiana for NH White men, NH Black men, and NH Black women when compared to their national counterparts (Figure 1a, above).

Mortality

- An average of **9,284 deaths** had an underlying cause of death of cancer in Louisiana each year, 2018-2022 (Table J1).
- Cancer mortality rates in Louisiana are significantly higher for all four race-sex groups when compared to their national counterparts (Figure 1b, above).
- Nearly half (48.8%) of the cancer deaths in Louisiana from 2019-2023 were attributed to lung, colorectal, breast, and pancreatic cancers (Table J2).





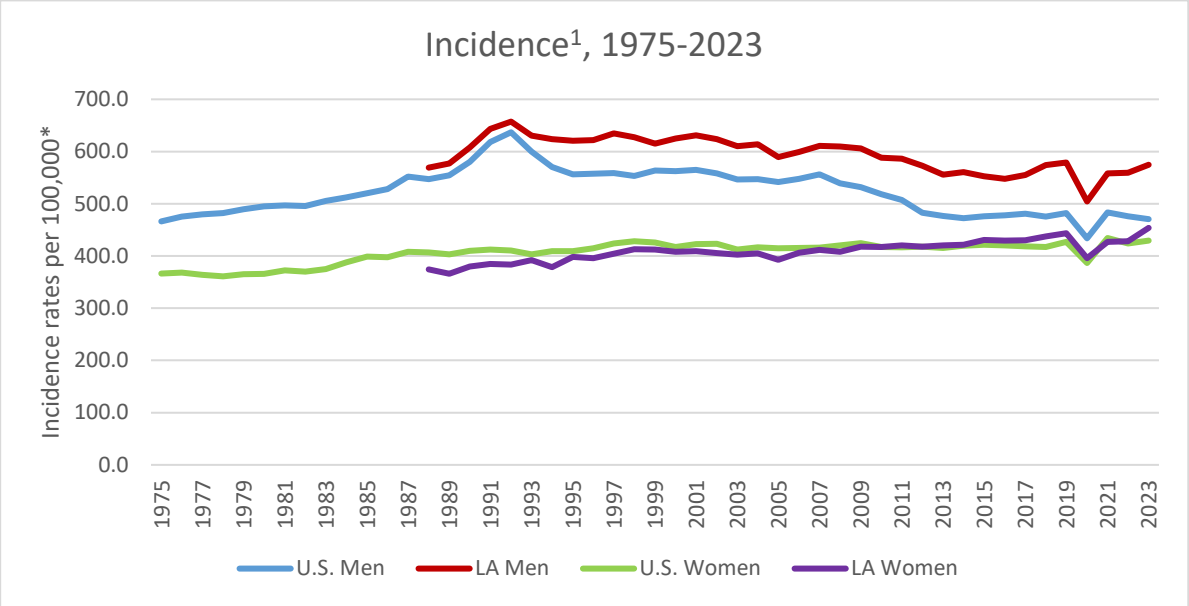
*Cases diagnosed from 2012 through 2022 and followed into 2023

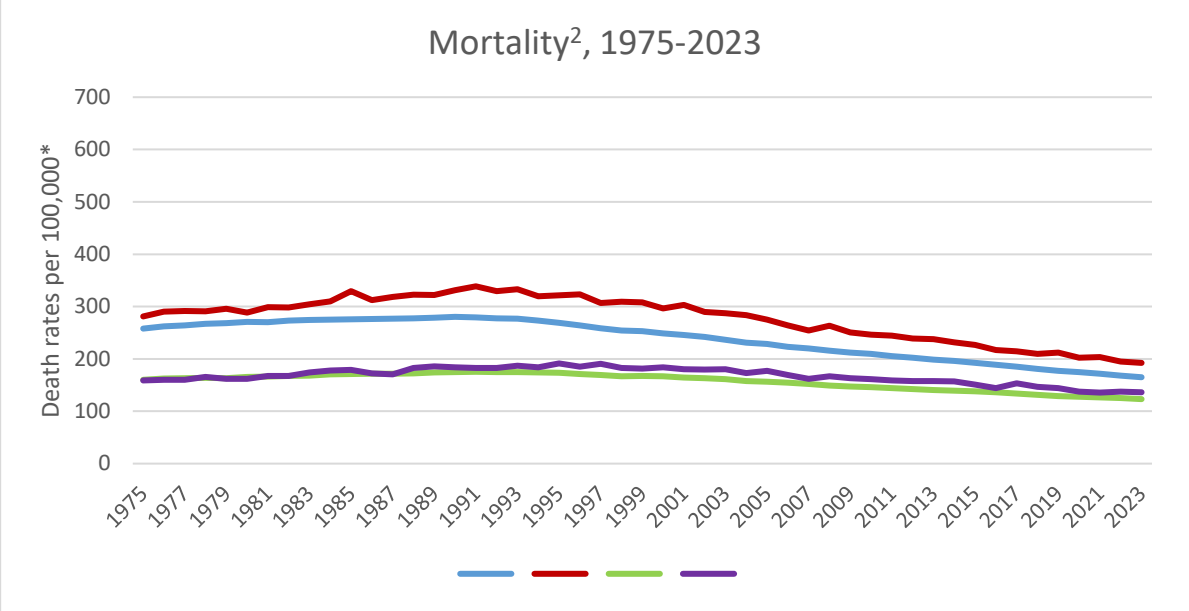
Survival rates calculated using the Actuarial method with the Ederer II method used for cumulative expected.

5-Year Relative Survival

- Five-year relative survival for all cancers combined diagnosed in Louisiana between 2012 and 2022 showed a steady decline by summary stage at diagnosis for males (90.8%, 62.7%, and 29.1% for localized, regional, and distant stage, respectively) and females (90.4%, 67.2%, and 31.4%, respectively) of both races.
- NH White males diagnosed at regional and distant stages had a significantly higher survival rate compared to NH Black males in the same category; no significant difference was identified at the localized stage.
- NH White females had significantly higher 5-year relative survival rates than NH Black females at all stages of diagnosis.

Figure 2. Time Trends: All Cancers Combined



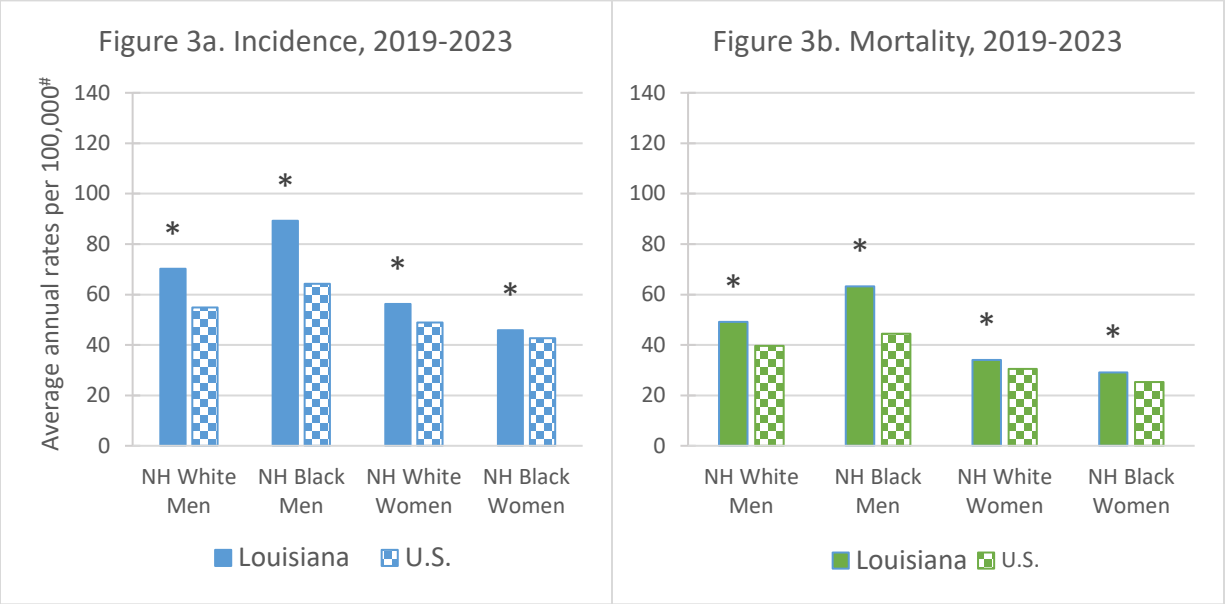


[1]U.S. incidence rates are based on 8 regions from the SEER Program of the National Cancer Institute.
[2]Underlying mortality data provided by NCHS (National Center for Health Statistics).
*Rates are per 100,000 and age-adjusted to the 2000 US Population (19 age groups - Census P25-1130) standard.

Incidence & Mortality

- Cancer incidence and mortality are higher for men in Louisiana than in the U.S.
- Over time, however, trends have been declining for men in Louisiana and in the U.S.
- For women, mortality is declining in Louisiana and the U.S., but this trend is not seen in the overall cancer incidence rates.
- The sharp decline in incidence rates from 2019 to 2020 is attributed to delayed cancer screenings and diagnoses caused by the COVID-19 pandemic.

Figure 3. Lung Cancer



Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.

* The Louisiana rate is significantly higher than the U.S. rate ($p < 0.05$).

U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.

Underlying mortality data provided by NCHS (National Center for Health Statistics).

Risk factors for lung cancer include [2]**:**		
Cigarette use	Certain metals (chromium, cadmium, arsenic)	Other occupational risks:
Cigar and pipe smoking	Some organic chemicals	Rubber manufacturing, paving,
Secondhand smoke	Radiation	roofing, painting, and chimney
Radon gas	Air pollution	Sweeping.
Asbestos	Diesel exhaust	

Incidence

- Lung cancer incidence rates are significantly higher in Louisiana than in the U.S. for all four race-sex groups (Figure 3a, above).
- Lung cancer accounted for 12.9% of all new cancer diagnoses from 2019 to 2023 in Louisiana (Table A2).
- For NH White men and NH White women, lung cancer incidence rates in the 7-Parish Industrial Corridor are significantly lower than the statewide rates (Table C1). For the 11-Parish Industrial Corridor, lung cancer incidence rates are significantly lower than the statewide rates for all race-sex groups except NH Black women (Table C2).

Mortality

- Louisiana mortality is significantly higher than the national levels for all four race-sex groups (Figure 3b, above).
- Lung cancer accounted for 24.8% of all cancer deaths from 2019-2023 in Louisiana (Table J2).

Figure 3c. 5-Year Survival, LA Male, Lung Cancer, 2012-2022*

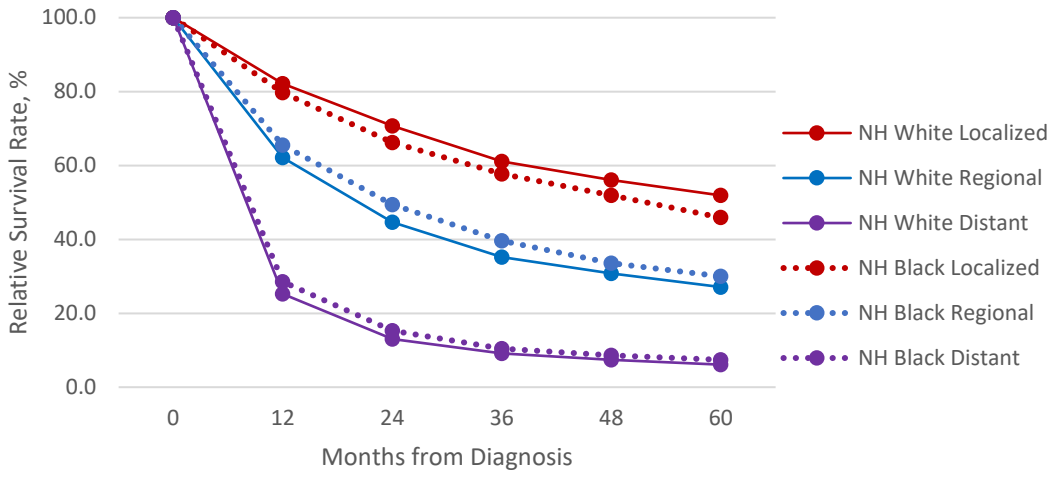
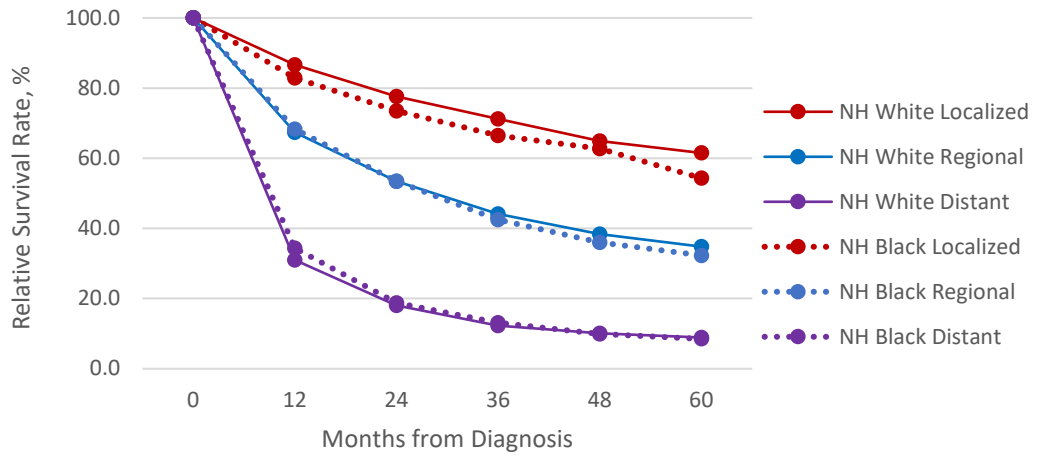


Figure 3d. 5-Year Survival, LA Female, Lung Cancer, 2012-2022*



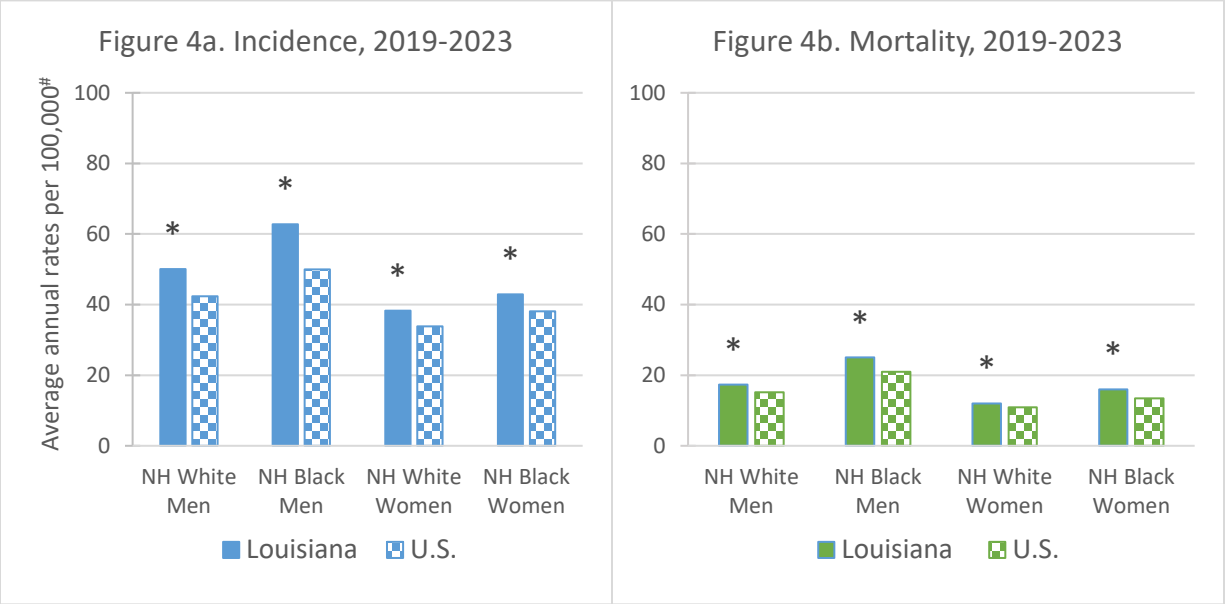
*Cases diagnosed from 2012 through 2022 and followed into 2023

Survival rates calculated using the Actuarial method with the Ederer II method used for cumulative expected.

5-Year Relative Survival

- For lung cancer diagnosed in Louisiana (2012-2022), the 5-year relative survival consistently dropped based on the summary stage at diagnosis for both males (50.2%, 28.1%, and 6.6% for localized, regional, and distant stage respectively) and females (59.9%, 34.2%, and 8.9%, respectively).
- Females had a 5-year relative survival significantly higher than males at all stages of diagnosis.
- NH White women had significantly higher 5-year relative survival at the localized and distant stages of diagnosis when compared to their NH Black counterparts.
- Though not detectible above, five-year relative survival at a distant stage at diagnosis was significantly higher for NH Black males when compared to their NH White counterparts.

Figure 4. Colorectal Cancer



Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.

* The Louisiana rate is significantly higher than the U.S. rate ($p < 0.05$).

U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.

Underlying mortality data provided by NCHS (National Center for Health Statistics).

Risk factors for colorectal cancer include [2]**:**		
Excess body weight[3]	Heavy alcohol consumption	Type 2 Diabetes
Physical inactivity	Low intake of calcium, whole-grain, and/or fiber	Certain inherited genetic disorders
Long-term cigarette smoking	Personal or family history of colorectal cancer and/or polyps	Personal history of chronic inflammatory bowel disease
Diet high in red or processed meat		

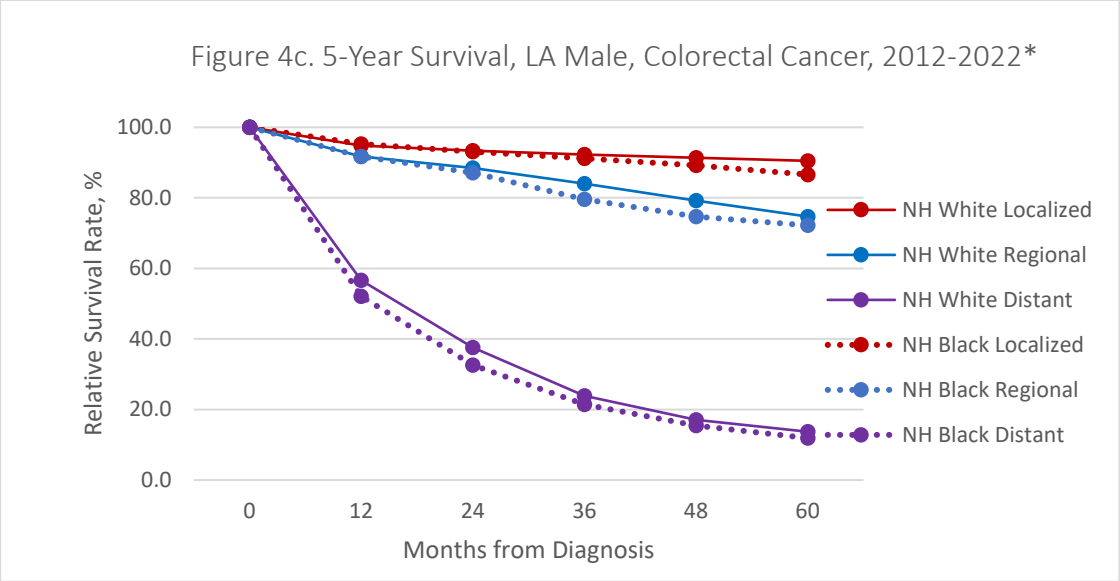
Incidence & Mortality

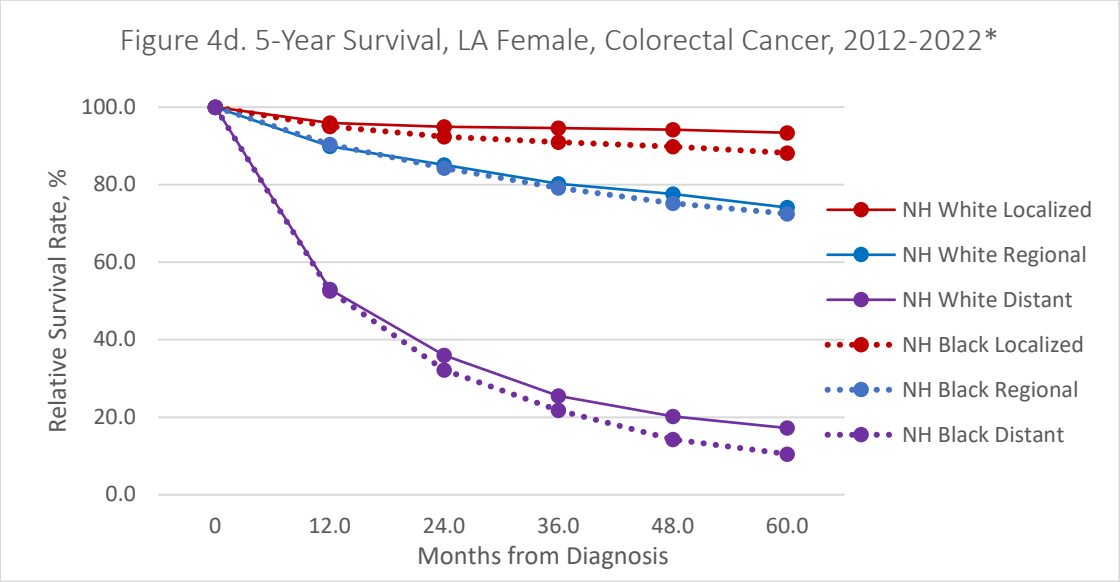
- Colorectal cancer incidence and mortality rates are significantly higher in Louisiana than in the U.S. for all race-sex groups (Figure 4a-4b, above).
- Colorectal cancer accounted for 8.8% of all new cancer diagnoses and 9.2% of all cancer deaths from 2019 through 2023 in Louisiana (Table A2, Table J2).
- Incidence and mortality rates of colorectal cancer have decreased in the U.S. and in Louisiana for several decades, which has been attributed to colorectal cancer screening tests, changes in risk factors, and improvements in treatment. However, recent incidence and mortality trends among younger people are rising [2].

Screening

- People at *average risk* for colorectal cancer should begin screening by the age of 45 and continue up to age 75 depending on health status and prior screening history. Screening provides an opportunity to detect and remove precancerous and cancerous growths early; it can identify cancer at an early stage when it is easier to treat. Following screening guidelines can reduce the number of premature deaths related to colorectal cancer. Everyone should discuss the timing and type of screening procedure with his or her physician [2].

[3] Defined as those with a body mass index falling in the overweight or obesity categories (BMI ≥ 25.0 kg/m^2).





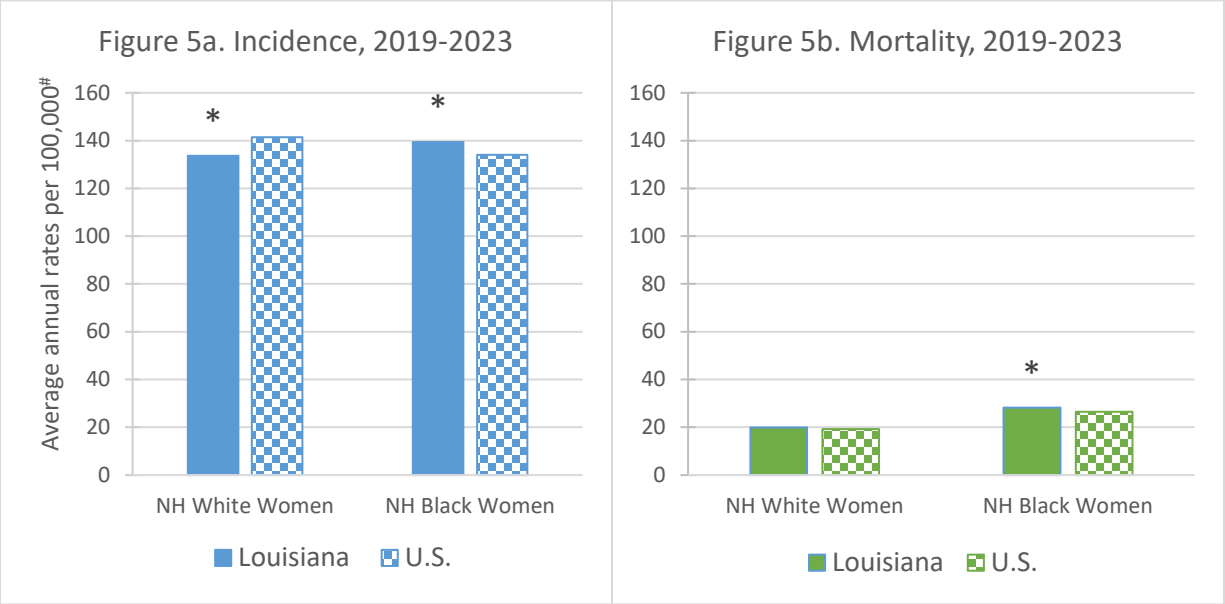
*Cases diagnosed from 2012 through 2022 and followed into 2023

Survival calculated using the Actuarial method with the Ederer II method used for cumulative expected.

5-Year Relative Survival

- For cancers of the colon and rectum diagnosed in Louisiana between 2012 and 2022, the 5-year relative survival fell dramatically between regional and distant stage at diagnosis for both males (89.0%, 74.1%, and 12.9% for localized, regional, and distant stage, respectively) and females (91.5%, 73.2%, 14.9%, respectively).
- There was no statistically significant difference in 5-year relative survival between sexes at all stages of diagnosis.
- NH White males diagnosed at distant stages had significantly higher ($p < 0.05$) 5-year relative survival than their NH Black male counterparts (Fig. 4c). NH White females diagnosed at localized and distant stages had significantly higher ($p < 0.05$) 5-year relative survival than NH Black females in the same categories (Fig. 4d).

Figure 5. Female Breast Cancer



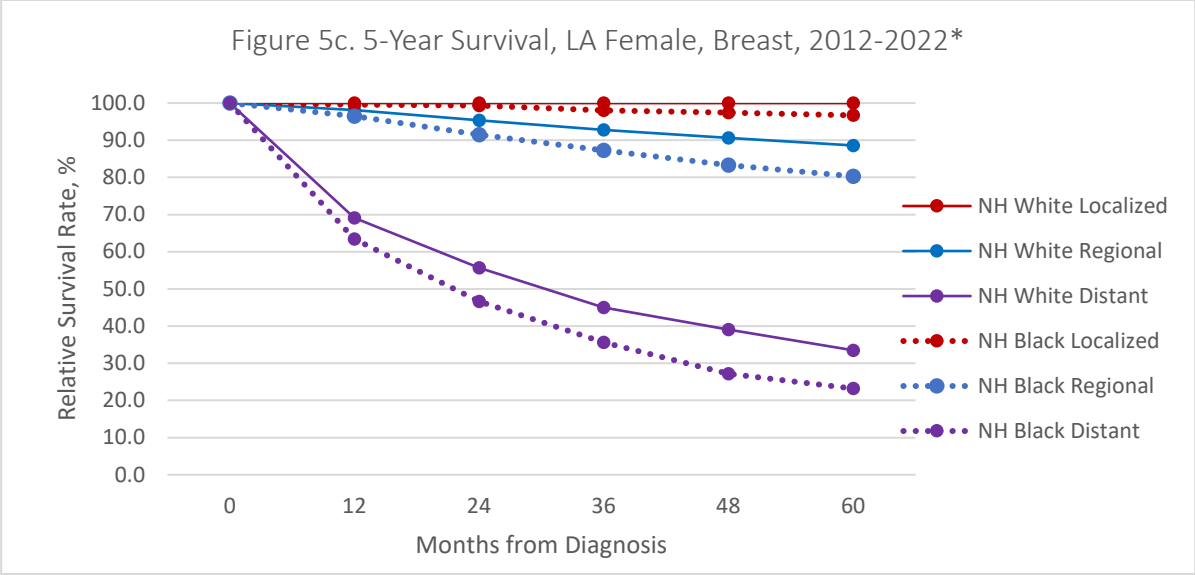
Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.
* The Louisiana rate differs significantly from the U.S. rate ($p < 0.05$).
U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.
Underlying mortality data provided by NCHS (National Center for Health Statistics).

Incidence & Mortality

- Breast cancer is the most frequently diagnosed cancer among women, both in Louisiana and the U.S (Table C).
- NH Black women in Louisiana have significantly higher incidence rates than their national counterparts (Figures 5a, and Tables C1 & C2).
    - Continued efforts to expand early detection programs can narrow these gaps. Information about no-cost or reduced-cost mammograms is available through the Louisiana Breast and Cervical Health Program at www.lbchp.org or by calling (888) 599-1073.
- In recent years, breast cancer incidence rates have increased slightly over time. However, since 1989, declines in breast cancer mortality in the U.S. among women have been observed and attributed to both early detection and advances in treatment. Between 1989 and 2023, the mortality rate decreased by 44% in the U.S. [2].

Risk Factors

- Increasing age, family history of breast, ovarian, prostate, pancreatic, and/or other cancers associated with BRCA variants, a long menstrual history, never having had children, having a first child after age 30, recent use of hormonal contraceptives, certain inherited mutations in BRCA1 or BRCA2, certain benign breast conditions, and high breast tissue density are risk factors associated with breast cancer [2].
- Weight gain during adulthood, being overweight or obese, use of menopausal hormone therapy (combined estrogen and progestin), physical inactivity, and alcohol consumption are potentially modifiable risk factors associated with increased risk of breast cancer [2].



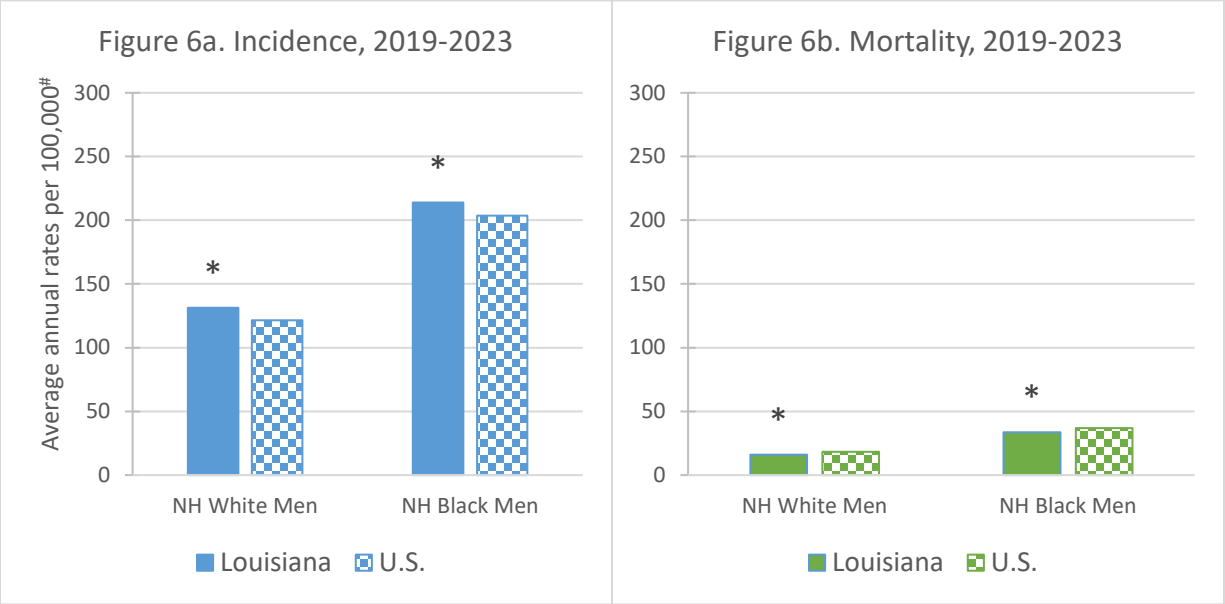
*Cases diagnosed from 2012 through 2022 and followed into 2023

Survival calculated using the Actuarial method with the Ederer II method used for cumulative expected.

5-Year Relative Survival

- For Louisiana women, breast cancer 5-year relative survival rates for those diagnosed between 2012 and 2022 differed significantly by race for each stage at diagnosis.
- The 5-year relative survival for NH White females (100.0%, 88.6%, and 33.5% for localized, regional, and distant stage, respectively) was significantly higher than that for black females (96.7%, 80.3%, and 23.2% for localized, regional, and distant stage, respectively) diagnosed at the same stage.

Figure 6. Prostate Cancer



Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.
* The Louisiana rate differs significantly from the U.S. rate ($p < 0.05$).
U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.
Underlying mortality data provided by NCHS (National Center for Health Statistics).

Incidence & Mortality

- Prostate cancer incidence rates are significantly higher in Louisiana than in the U.S. for both NH White and NH Black men (Figure 6a, above).
- Prostate cancer incidence and mortality are notably higher among NH Black men than NH White men (Figure 6a and 6b, above). This discrepancy is not fully understood.
- Prostate cancer accounted for 28.5% of all new cancer diagnoses and 8.6% of all cancer deaths from 2019-2023 for Louisiana men (Table A2, Table J2).

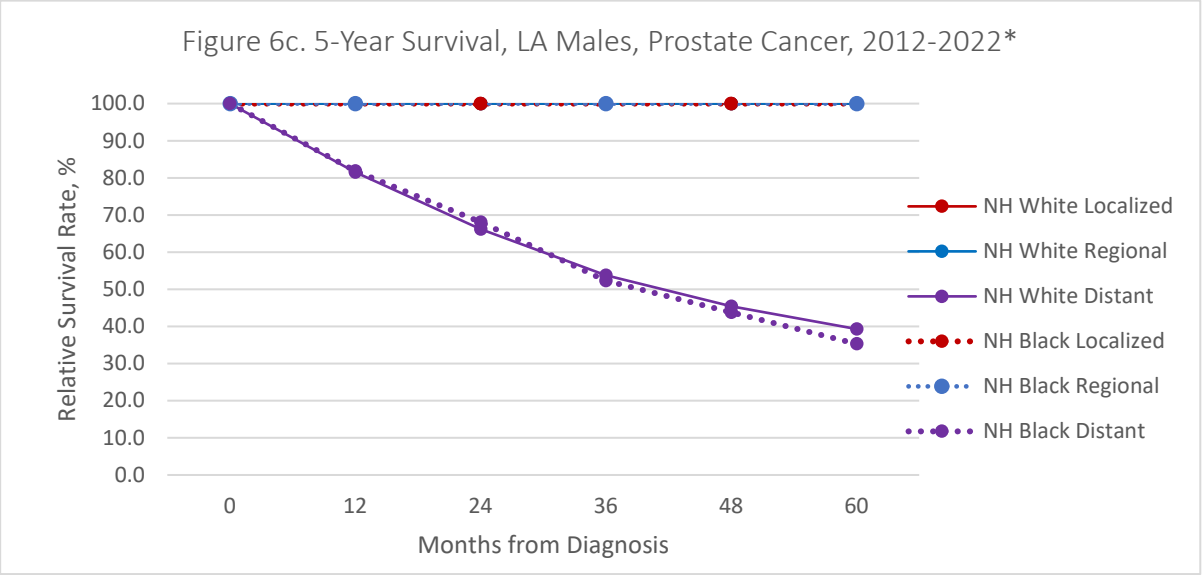
Risk Factors

- Well-established risk factors include increasing age, African ancestry, family history of the disease, and certain inherited genetic conditions [2].
- Inherited conditions associated with increased risk include Lynch syndrome and BRCA1 and BRCA2 mutations. Smoking and excess body weight[4] may increase the risk of aggressive and/or fatal prostate cancer [2].

Screening

- The prostate-specific antigen (PSA) test permits the early detection of prostate cancer. The American Cancer Society recommends that men 50 or older discuss the benefits and limitations of a PSA test with their physicians. Those men at higher risk (i.e. Black men and those with a family history of prostate cancer) are encouraged to speak with their care providers at an earlier age of 45 [2].

[4] Defined as those with a body mass index falling in the overweight or obesity categories (BMI ≥ 25.0 kg/m^2).



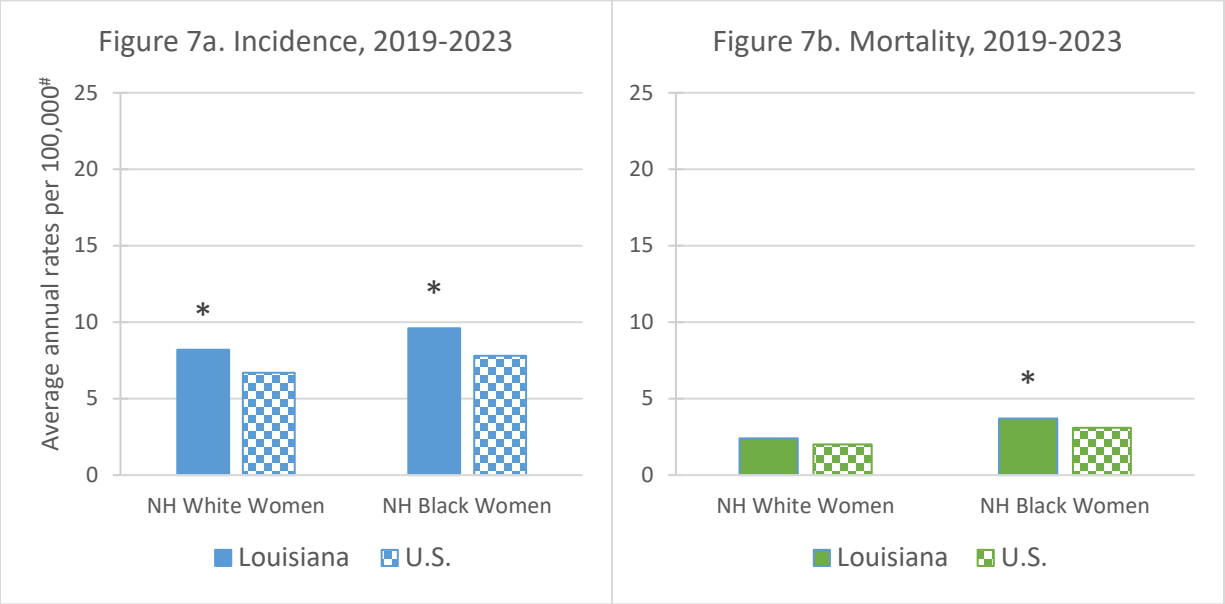
*Cases diagnosed from 2012 through 2022 and followed into 2023

Survival calculated using the Actuarial method with the Ederer II method used for cumulative expected.

5-Year Relative Survival

- The 5-year relative survivals for prostate cancer diagnosed at localized and regional stages are 100% for both NH White and NH Black males in Louisiana.
- There was no statistically significant difference in 5-year relative survival among NH Black and NH White males when diagnosed at any stage in Louisiana between 2012 and 2022.
- Although 5-year relative survival for NH White men with distant disease (39.3% for NH White; 35.3% for NH Black) was slightly higher than that for NH Black men diagnosed at the same stage, the observed difference was not statistically significant (p = 0.45).

Figure 7. Cervical Cancer



Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.
* The Louisiana rate is significantly higher than the U.S. rate ($p < 0.05$).
U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.
Underlying mortality data provided by NCHS (National Center for Health Statistics).

Incidence & Mortality

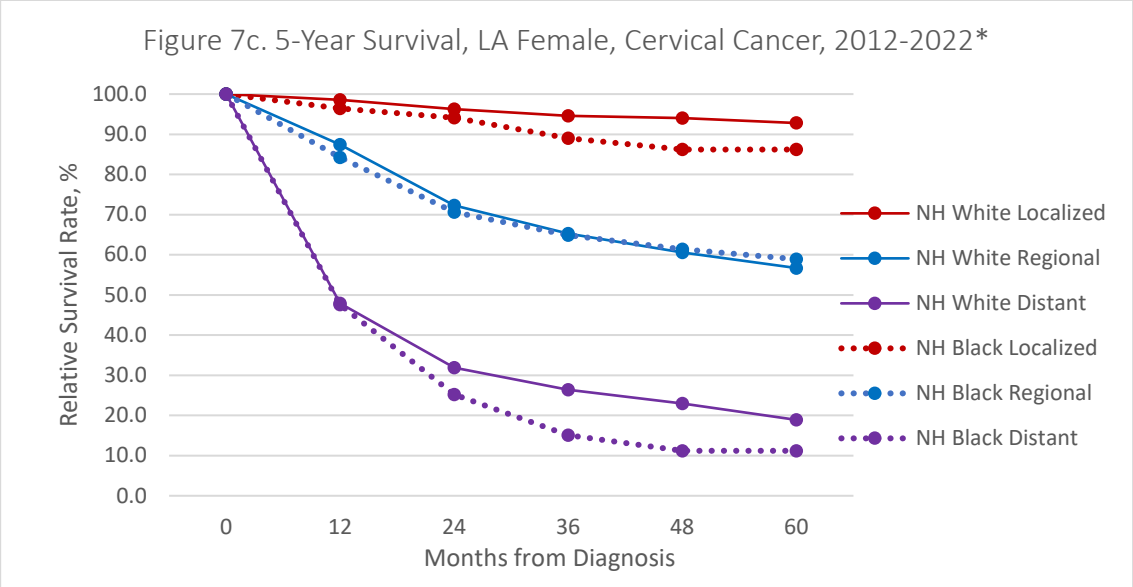
- Cervical cancer incidence rates are significantly higher in Louisiana than in the U.S. for NH Black and NH White women; however, mortality rates are significantly higher in Louisiana only for NH Black women when compared to their national counterparts. (Figure 7a-7b, above).
- Among women, cervical cancer accounted for 1.7% of all new cancer diagnoses and 1.6% of all cancer deaths from 2019 through 2023 in Louisiana (Table A2, Table J2).
- Both incidence and mortality have declined over the past several decades, though declines in mortality have begun to taper off in recent years. Among women 20-24 years, incidence has decreased by 11% per year since 2012. This is likely attributed to the first signs of cancer prevention due to the human papillomavirus (HPV) vaccine [2].

Risk Factors

- Risk factors for cervical cancer include persistent infection with certain types of HPV, having sex at an early age or with multiple partners, immunosuppression, a high number of childbirths, cigarette smoking, and long-term use of oral contraceptives [2].

Prevention & Screening

- Cervical cancer attributed to the most common types of HPV can be prevented through vaccination. These vaccines are available for use in those that are 9 to 12 years of age, with catch-up vaccination through age 26 [2].
- Screening with the Pap test is still recommended and allows for early detection and removal of precancerous lesions. A newer HPV test can detect cervical cancer and precancer by identifying the infection that precedes the cancer [2].



*Cases diagnosed from 2012 through 2022 and followed into 2022

Survival calculated using the Actuarial method with the Ederer II method used for cumulative expected.

5-Year Relative Survival

- For Louisiana women, 5-year relative survival for cervical cancer for those diagnosed between 2012 and 2022 did not differ significantly by race for regional and distant stages at diagnosis.
- NH White females diagnosed at a localized stage had significantly higher (P<0.05) 5-year relative survival (92.8%) than NH Black females in the same category (86.2%) (Fig. 7c).

Pre-Invasive Cervical Lesions by Age and Race

To assess the impact of the HPV vaccine, the LTR collects data on pre-invasive cervical lesions (CIN3). The frequency of these lesions by diagnosis year and age and race can be found in the tables below:

Table 7a. CIN3 Case Count by Diagnosis Year

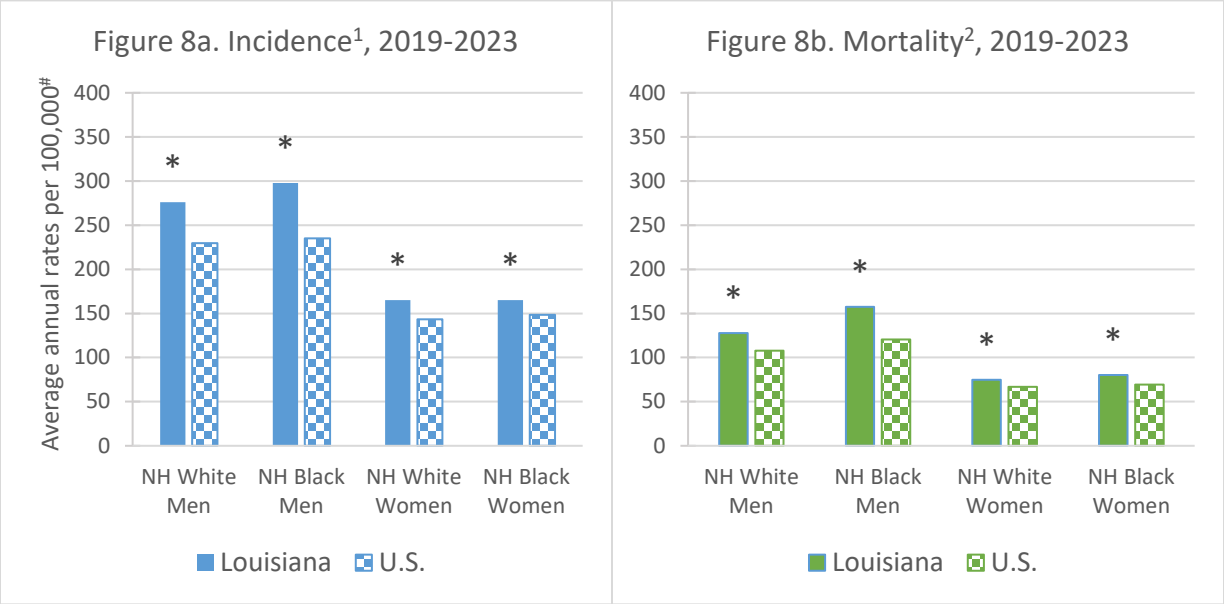
Year	Count	%
2019	2,143	20.4
2020	1,801	17.2
2021	2,102	20.1
2022	2,100	20.0
2023	2,336	22.3
Total	**10,482**	**100.0**

Table 7b. CIN3 Case Count (%) by Age Group and Race, 2019-2023

Age Group	NH White	NH Black	Other	Total
20-29	1,454 (27.0)	1,034 (27.5)	282 (28.4)	2,770 (27.3)
30-39	2,262 (42.0)	1,612 (42.9)	421 (42.4)	4,295 (42.4)
40-49	995 (18.5)	641 (17.1)	185 (18.7)	1,821 (18.0)
50-59	412 (7.6)	259 (6.9)	65 (6.6)	736 (7.3)
60+	269 (5.0)	210 (5.6)	39 (3.9)	518 (5.1)
Total	5,392 (53.2)	3,756 (37.0)	992 (9.8)	10,140 (100.0)

Exclusion Criteria: Cases aged <20 and unknown race.

Figure 8. Tobacco-Related Cancers



[#] Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.

* The Louisiana rate is significantly higher from the U.S. rate ($p < 0.05$).

[1]Incidence rates include all cancers listed in the table below. U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.

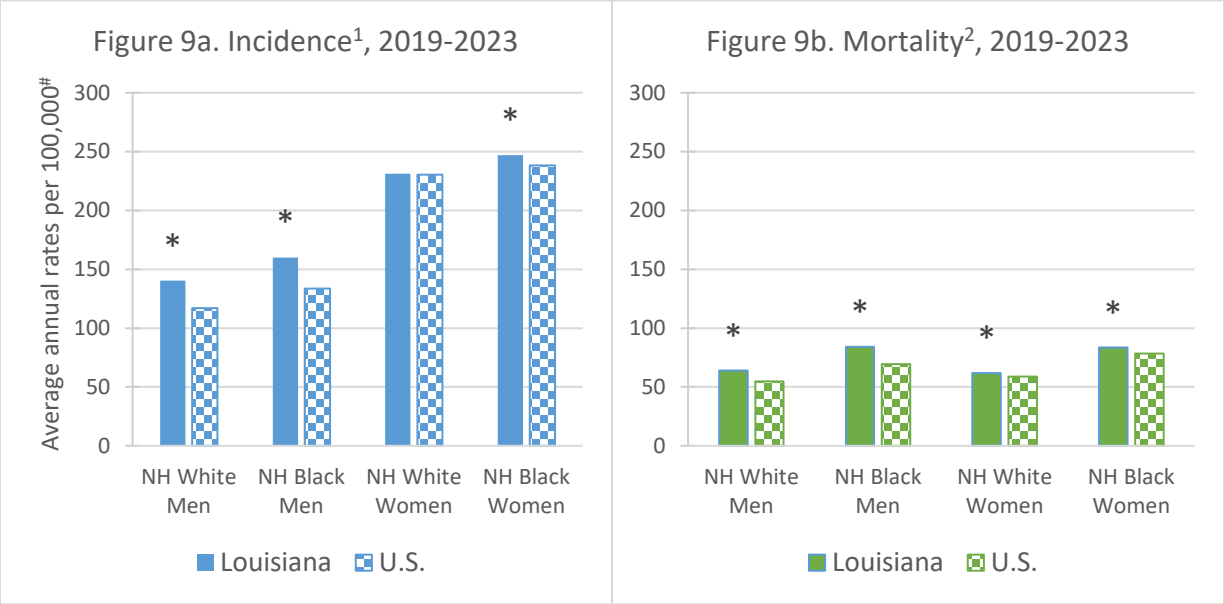
[2]Mortality rates include all cancers listed in the table below. Underlying mortality data provided by NCHS (National Center for Health Statistics).

Tobacco Use (cigarettes, smokeless tobacco products, and cigars) increases your risk for cancers listed below [3]**:**			
oral cavity	esophagus	bladder	acute myeloid leukemia
pharynx	pancreas	stomach	trachea
larynx	uterine cervix	colorectum	
lung and bronchus	kidney	liver	

Incidence & Mortality

- Incidence and mortality rates for tobacco-related cancers are significantly higher in Louisiana than in the U.S. for the four major race-sex groups (Figures 8a-8b).
    - Despite this, Louisiana is ranked 38th in the nation for its cigarette tax of $1.08; 37 states have higher cigarette taxes [4].
- While the risk of these cancers increases with tobacco use, not all the cases utilized to calculate these rates are tobacco related. In other words, it is not known how many of these cases can be attributed to tobacco use.

Figure 9. Obesity-Related Cancers



[#] Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.

* The Louisiana rate is significantly higher than the U.S. rate ($p < 0.05$).

[1]Incidence rates include all cancers listed in the table below. U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.

[2]Mortality rates include the following sites due to limitations of the cause of death recode: postmenopausal female breast, colorectum, liver, gallbladder, pancreas, corpus uterus, ovary, kidney, thyroid, myeloma, stomach, and esophagus. Underlying mortality data provided by NCHS (National Center for Health Statistics).

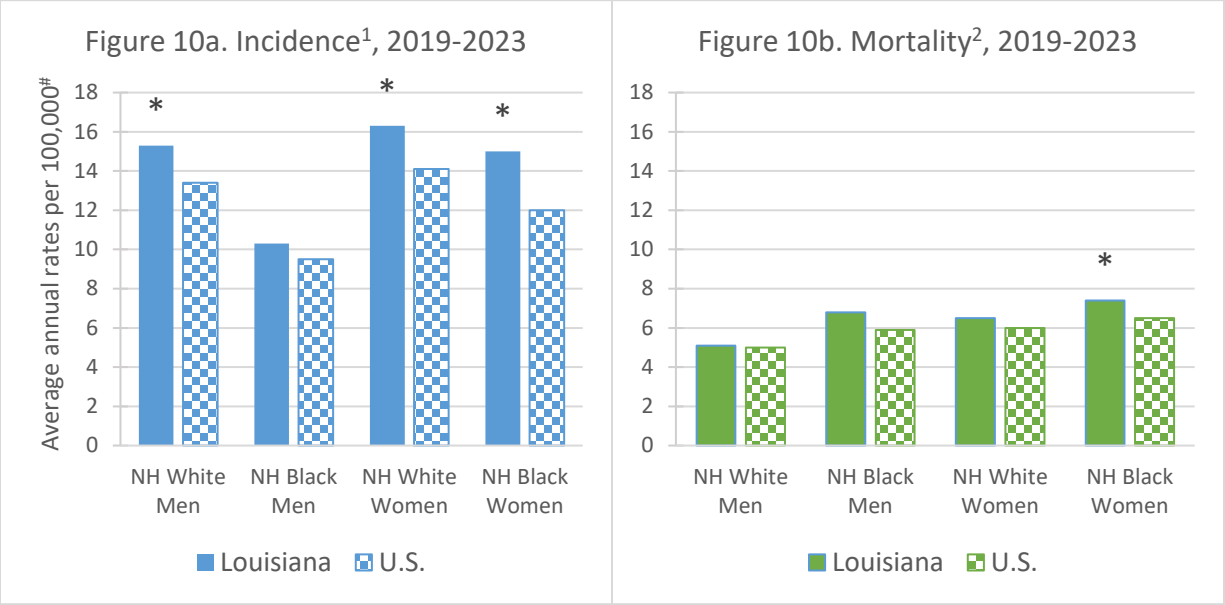
Obesity[5] increases your risk for the cancers listed below [5]**:**			
Colorectum	Liver	Gallbladder	Pancreas
Corpus Uterus	Ovary	Kidney	Thyroid
Multiple Myeloma	Postmenopausal Female Breast	Gastric Cardia	Meningioma
Esophageal adenocarcinoma			

Incidence & Mortality

- Incidence and mortality rates for obesity-related cancers are significantly higher in Louisiana than in the U.S. for the four major race-sex groups, except incidence rates for NH White women (Figures 9a-9b).
    - The most common obesity-related cancer among women is postmenopausal breast cancer; among men, the most common obesity-related cancer is colorectal cancer [5].
    - While all states had more than 20% of adults with obesity, Louisiana ranks 4th highest for self-reported obesity at 39.8% [6].
- While the risk of these cancers increases with adult obesity, not all the cases utilized to calculate these rates are obesity related. In other words, it is not known how many of these cases can be attributed to adult obesity.

[5] Defined as those with a body mass index greater than or equal to 30.0 kg/m^2.

Figure 10. Human Papillomavirus (HPV)-Related Cancers



Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 100,000.

* The Louisiana rate is significantly higher than the U.S. rate ($p < 0.05$).

[1]Incidence rates include all cancers listed in the table below. U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.

[2]Mortality data includes all cervical, anal, vulvar, vaginal, penile, rectal, and oropharyngeal cancers. Underlying mortality data provided by NCHS (National Center for Health Statistics).

HPV increases your risk for cancers listed below as defined by the CDC [7]**:**				
Cervical				
Squamous cell carcinomas of:				
Oropharynx	Penis	Anus	Vulva	Vagina
Rectum				

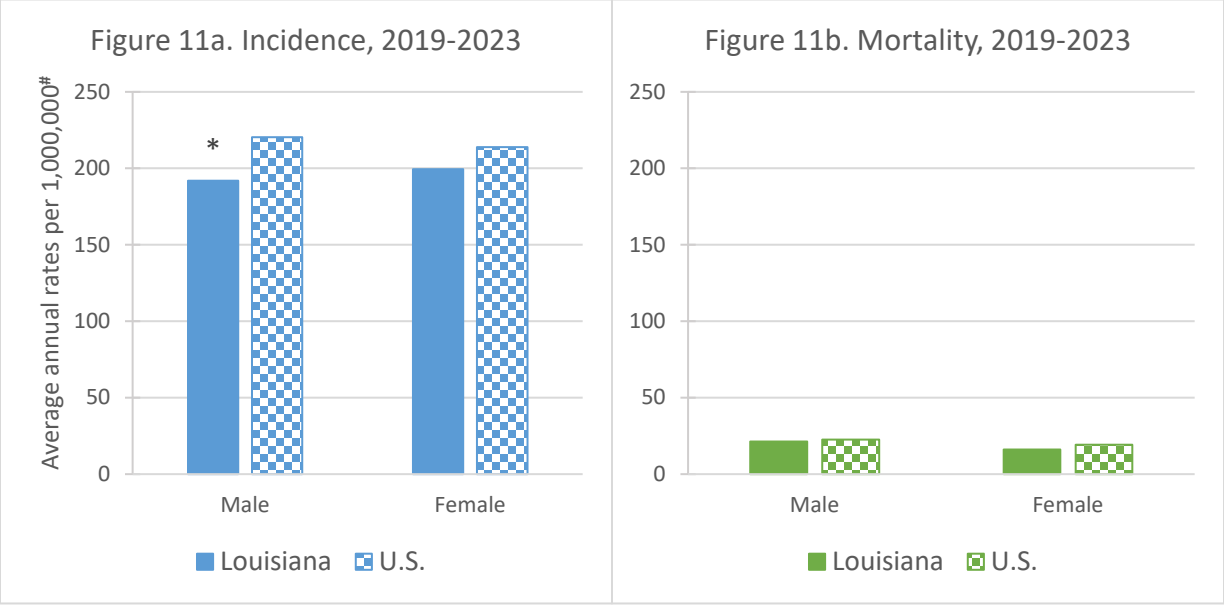
Incidence & Mortality

- Incidence rates for HPV-related cancers are significantly higher in Louisiana than in the U.S. for all major race-sex groups with the exception of NH Black men (Figure 9a).
- The mortality rate for HPV-related cancers is significantly higher for NH Black men in Louisiana when compared to their national counterparts (Figure 9b).
- While the risk of these cancers increases with HPV, not all the cases utilized to calculate these rates are HPV-related. In other words, it is not known how many of these cases can be attributed to HPV.

Prevention

- CDC recommends that all children who are 11 or 12 years of age should receive two doses of the HPV vaccine.
- If not vaccinated previously, HPV vaccination is also recommended for everyone through age 26 [8].

Figure 11. Pediatric Cancer



Average Annual Age-Adjusted (2000 U.S. Standard Population) Rates per 1,000,000.

* The Louisiana rate differs significantly from the U.S. rate ($p < 0.05$).

U.S. incidence rates are from the SEER Program (17 regions) of the National Cancer Institute.

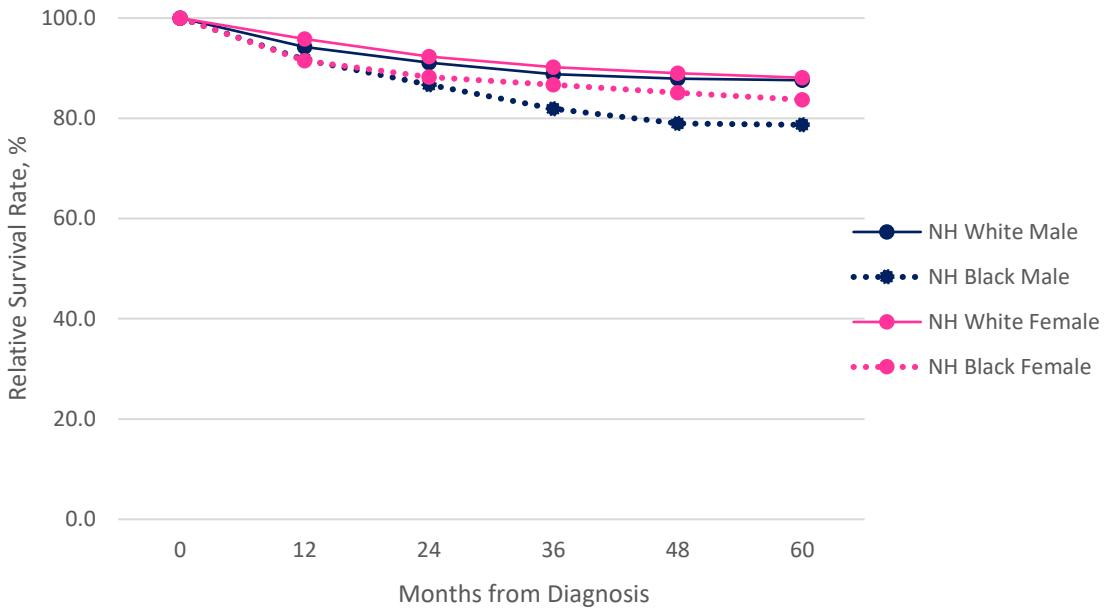
Underlying mortality data provided by NCHS (National Center for Health Statistics).

Incidence rates include all cancers diagnosed among individuals aged 0-19, including myelodysplastic syndromes, benign/borderline brain/CNS tumors, and in situ bladder tumors.

Incidence & Mortality

- Pediatric cancer incidence rates for boys and girls are lower in Louisiana when compared to their national counterparts; however, only the incidence rate for boys in Louisiana and the U.S. are significantly different (Figure 11a, above).
- The most commonly diagnosed cancers in Louisiana among the 0-19 age group continue to be brain and central nervous system tumors, leukemia, and lymphoma (Table H3).
- The mortality rate for boys and girls aged 0-19 was lower for Louisiana than the U.S., but this difference was not significant (18.9 vs. 21.1 per 1,000,000, respectively).
- Advances in treatment have led to a steady decline in cancer deaths for children and adolescents. In 1975, the mortality rate was 50.7 per 1,000,000 youth, age 0-19, in the U.S., but this has dropped to 21.1 per 1,000,000 youth (2019-2023).

Figure 11c. 5-Year Survival, Pediatric Cancers in LA, 2012-2022*



*Cases diagnosed from 2012 through 2022 and followed into 2023

Survival calculated using the Actuarial method with the Ederer II method used for cumulative expected.

Survival rates exclude benign/borderline brain/CNS tumors.

5-Year Relative Survival

- The 5-year relative survival for all pediatric cancers combined diagnosed in Louisiana between 2012 and 2022 falls between 88.1% for NH White females and 78.7% for NH Black males.
- NH White female 5-year relative survival is significantly higher than NH Black female survival (White: 88.1%, Black: 83.7%).
- Similarly, NH White male survival is significantly higher than NH Black male survival (White: 87.6%, Black: 78.7%).
- No statistically significant difference was found by gender when all races were combined (Male: 85.0% and Female: 86.1%).