

ARKANSAS

Cancer Facts & Figures

2017



Childhood
Cancer



Female Breast



Colon and
Rectum



Lung and
Bronchus



Lymphoma



Melanoma
of the Skin



Ovary



Pancreatic



Prostate



Urinary
Bladder



Uterine Cervix



in collaboration with



ARKANSAS
DEPARTMENT OF HEALTH



UAMS

Winthrop P. Rockefeller
Cancer Institute

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Cancer Facts & Figures 2017

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Welcome Letter



Dear Colleagues,

The Arkansas Department of Health/Arkansas Central Cancer Registry (ACCR) is pleased to join with the University of Arkansas for Medical Sciences and the Arkansas Cancer Coalition in presenting this new report, the third edition, Arkansas Cancer Facts and Figures 2017. The ACCR greatly appreciates this opportunity to make this report available to our partners working on eliminating cancer disparities, and promoting cancer prevention and control in Arkansas.



Progress in cancer control demands accurate, timely and complete data. This report contains the most recent data available on cancer incidence and mortality in Arkansas. It identifies disparities in cancer incidence and mortality by race, gender, age, stage at diagnosis and geographic area. It also includes county-specific rates for the most commonly diagnosed cancers and those for which public health interventions exist to reduce the cancer burden in Arkansas. The registry contains much more information about the various cancers including stage at diagnosis, follow-up information and treatment that is not included in this report. These additional data are available for research purposes if the requested information meets with the approval of the Science Advisory Committee at the Arkansas Department of Health. This committee reviews such requests to insure that the proposed research has a valid purpose, that IRB approval has been obtained and that the information released is properly protected and then destroyed after the project is completed.

This publication is intended to assist healthcare organizations, health professionals, community groups, research scientists and others who are working to reduce the burden of cancer in Arkansas. It will also be useful for policy-makers, advocates, and news organizations as they seek detailed, easy-to-read information about the impact of cancer on Arkansas. Much of these data would not be available were it not for the dedication of hospital cancer registrars, reporters, physicians, and many others who make the ACCR work. We thank everyone for their participation in our cancer registry and other services that made this report possible. A special thanks to Ms. Abby Holt who serves so ably as the Director of the Arkansas Central Cancer Registry and to Dr. Robert Delongchamp, MPH, PhD for his expertise in analyzing the data.

It is our hope that this report will be a useful tool in cancer control education and research efforts in Arkansas and the United States.

Sincerely,

A handwritten signature in blue ink that reads "Joseph H. Bates".

Joseph Bates, M.D.
Deputy State Health Officer
Chief Science Officer
Arkansas Department of Health
Associate Dean, UAMS College of Public Health

Partner Letter

Dear Dr. Bates and Colleagues,

We at the UAMS Winthrop P. Rockefeller Cancer Institute are pleased and honored to have worked as a collaborating partner on Cancer Facts and Figures 2017.

Having a timely and accurate cancer profile for Arkansas is crucial for the planning and execution of cancer control and research, which is an ongoing effort of the UAMS Cancer Institute. Researchers at UAMS and elsewhere in Arkansas refer to the information compiled by the Arkansas Department of Health/Arkansas Central Cancer Registry (ACCR) to identify our state's most pressing cancer health needs and to design comprehensive strategies addressing cancer sciences and disparities. This collaboration between ACCR, the Arkansas Cancer Coalition and the UAMS Cancer Institute sets a milestone not only for publication of this report, but also for our state's united efforts to address cancer health concerns.

This partnership is particularly important at a time that the Cancer Institute is striving to obtain National Cancer Institute (NCI) designated status. While there are currently 69 NCI-designated cancer centers across the country, the closest to Arkansas are located in Memphis (pediatric care only), Nashville, St. Louis and Birmingham. The Delta and Midsouth region where significant cancer health disparities exist are in great need of the resources an NCI designation could provide.

Collaborations such as this one will enhance our competitiveness in obtaining NCI designated status and allow us to expand our research efforts and increase our ability to receive other valuable research grants and funding.

I hope this successful collaboration will encourage cancer researchers throughout the state to make use of this resource in planning their scientific endeavors. Together we can address the cancer burden in Arkansas.

Sincerely,



Peter Emanuel, M.D.
Director, Winthrop P. Rockefeller Cancer Institute
Professor of Medicine, UAMS College of Medicine
Kent Westbrook, MD Endowed Director's Chair
University of Arkansas for Medical Sciences



Partner Letter

Dear Colleagues and Coalition Members,

The Arkansas Cancer Coalition is pleased to partner with the Arkansas Department of Health/Arkansas Central Cancer Registry (ACCR) to present the third edition of the Arkansas Cancer Facts and Figures 2017.

The Arkansas Cancer Coalition's mission is to facilitate and provide partnerships to reduce the human suffering and economic burden from cancer for the citizens of Arkansas. Together we...

- Provide a current overview of cancer control in Arkansas
- Strengthen & sustain the cancer control partnership and support network
- Direct goals and strategies in the Arkansas Cancer Plan

The information presented in Arkansas Cancer Facts and Figures 2017 provides the most recent and accurate data available for Arkansas. This document also covers current cancer issues and trends, including cancer incidence, mortality, and survival statistics.

The Arkansas Cancer Facts and Figures 2017 is a perfect example of how partners around the state work together to improve cancer outcomes. We encourage healthcare providers, public health practitioners, and cancer advocates to utilize this valuable resource.

Each year, too many Arkansans succumb to cancer. It is critical to join in the fight to reduce the burden of cancer. For more ways on how you can help us advance awareness and understanding of the cancer burden in Arkansas, visit www.arcancercoalition.org

Sincerely,

A handwritten signature in black ink that reads 'Trena Mitchell'.

Trena Mitchell
Executive Director
Arkansas Cancer Coalition

Executive Summary

The Arkansas Central Cancer Registry (ACCR) is a population-based registry designed to collect information on all patients with newly diagnosed cancers. The ACCR began collecting information on all Arkansas residents who were diagnosed with cancer starting January 1, 1996. The ACCR serves as the data reserve for all cancer cases received from hospital registries, physicians' offices, specialty clinics, pathology laboratories and treatment facilities. The registry provides cancer data to numerous entities with a focus on cancer research and public health interventions to reduce the burden of cancer in Arkansas.

This report describes the invasive cancers in Arkansas including new cancer cases and cancer related deaths for the period 1999 through 2013. This report does not include carcinoma in situ (non-invasive cancer) of any site except urinary bladder. This report includes prevention and control strategies and goals for cancers emphasized in the Arkansas Cancer Plan. The Arkansas Cancer Registry Advisory Committee guided the process and determined the selected cancers covered in this publication. Over 50,000 cases were diagnosed during the period 2009 through 2013 for the cancers covered in this publication.

Key Observations

- Cancer is the second leading cause of death in Arkansas and in the United States.¹
- A reported 16,004 Arkansans were diagnosed with cancer, and 6,514 died from cancer in Arkansas in 2013.
- The age-standardized incidence rate of all cancers combined in Arkansas has been at or below the national average during the period from 1999 through 2011. There was a crossover effect in 2012 and 2013 with the Arkansas rate exceeding the national rate in 2013.
 - Lung, colorectal, prostate, and breast (female) cancers continue to be the most frequently diagnosed cancers in Arkansas and the United States.
- Death rates in Arkansas due to the selected cancers during 1999 through 2013 were at or above the death rates in the United States.
 - For all cancers combined, Black and White males had higher death rates than their female counterparts.
 - Lung cancer remains the leading cause of cancer death in Arkansas.
 - Arkansas had significantly higher mortality rates during the period for uterine cervical (among women) and lung cancers.

Introduction

Cancer is described as cellular abnormalities with widely variable courses; some are considered aggressive and grow rapidly, others grow slowly, and some stop growing completely while others regress. The many types of cancers have different causes, population distributions, courses of illness and responses to treatment and survival.¹

Cancer is influenced by genetic, behavioral and environmental factors. According to the American Cancer Society, only a small portion of cancers are caused by inherited genes.² The American Cancer Society estimates that 190,500 cancer deaths in 2017 in the United States will be associated with tobacco use. Cancers caused by lifestyle/environmental exposures are modifiable and can be prevented. Approximately 20 percent of cancers diagnosed in the United States are related to a combination of excess body weight, physical inactivity, excess alcohol consumption, and poor nutrition.² Skin cancer is the most common cancer diagnosed and can be prevented by protecting skin from UV radiation emitted by the sun and indoor tanning devices.²

In 2014, the direct medical costs of all cancer related health care was \$87.8 billion.² Lack of health insurance and other socioeconomic barriers prevent many Arkansans from receiving optimal care. According to the Behavioral Risk Factor Surveillance System at the Centers for Disease Control and Prevention, the implementation of the Affordable Care Act of 2014 decreased the prevalence of uninsured Arkansans by 45 percent from 2013 to 2015.

Chapter 1: Invasive Cancer, All Sites

In 2013, 16,004 men and women in Arkansas were diagnosed with cancer, and 6,514 died of cancer.

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

Figure 1.1: Percentage of Cancer Deaths in Arkansas by Primary Site, 2009 – 2013

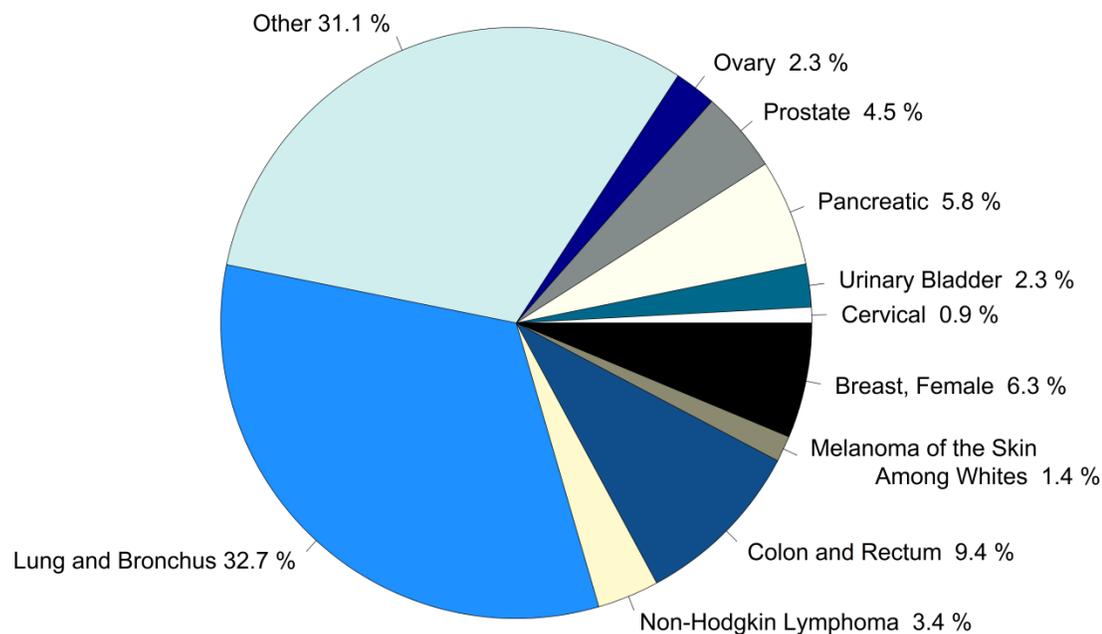


Table 1.1 Cancer Mortality Rates in Arkansas, Selected Cancers, All Sexes, All Races, 2009 – 2013.

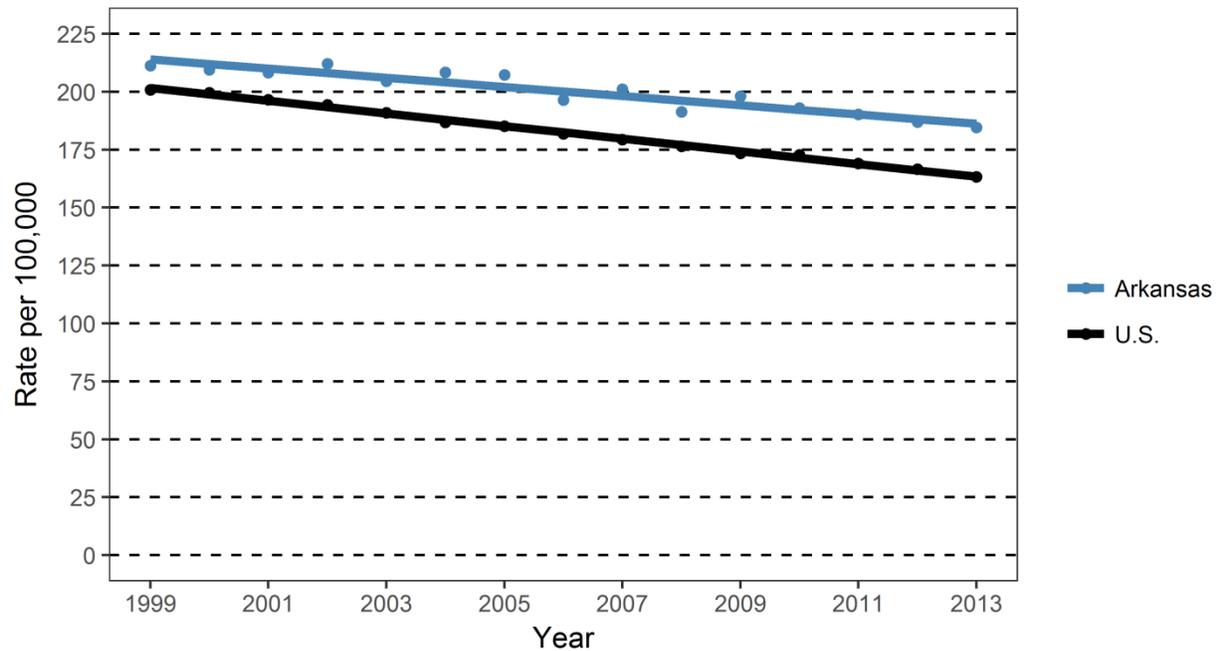
Primary Cancer Site	Total Deaths	Age-Standardized Rate
Lung and Bronchus	10,688	61.9
Female Breast	2,059	22.3
Prostate	1,456	21.8
Colon and Rectum	3,073	18.2
Pancreatic	1,909	11.2
Ovary	749	8.0
Non-Hodgkin Lymphoma	1,105	6.6
Urinary Bladder	768	4.6
Cervical	280	3.4
Melanoma of the Skin Among Whites	467	3.2

Note: All rates are per 100,000.

Rates are age-standardized to the 2000 U.S. Standard Million Population. Rates are based on deaths from malignant tumors.

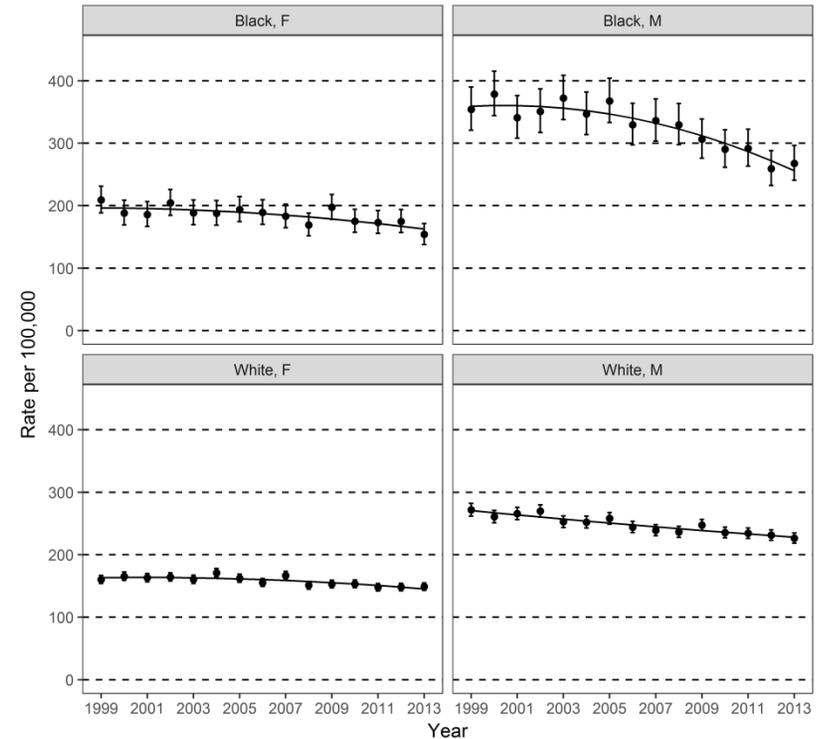
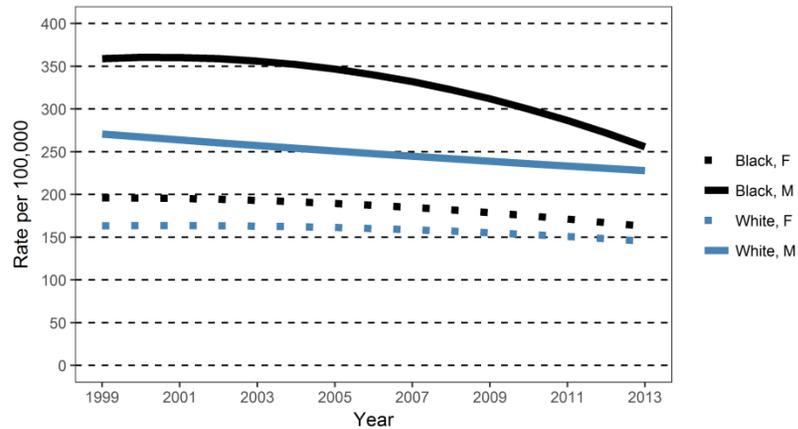
Source: CDC Wonder: <https://wonder.cdc.gov/>.

Figure 1.2: Age-Standardized Mortality Trends, All Cancers, Arkansas and United States, 1999 – 2013



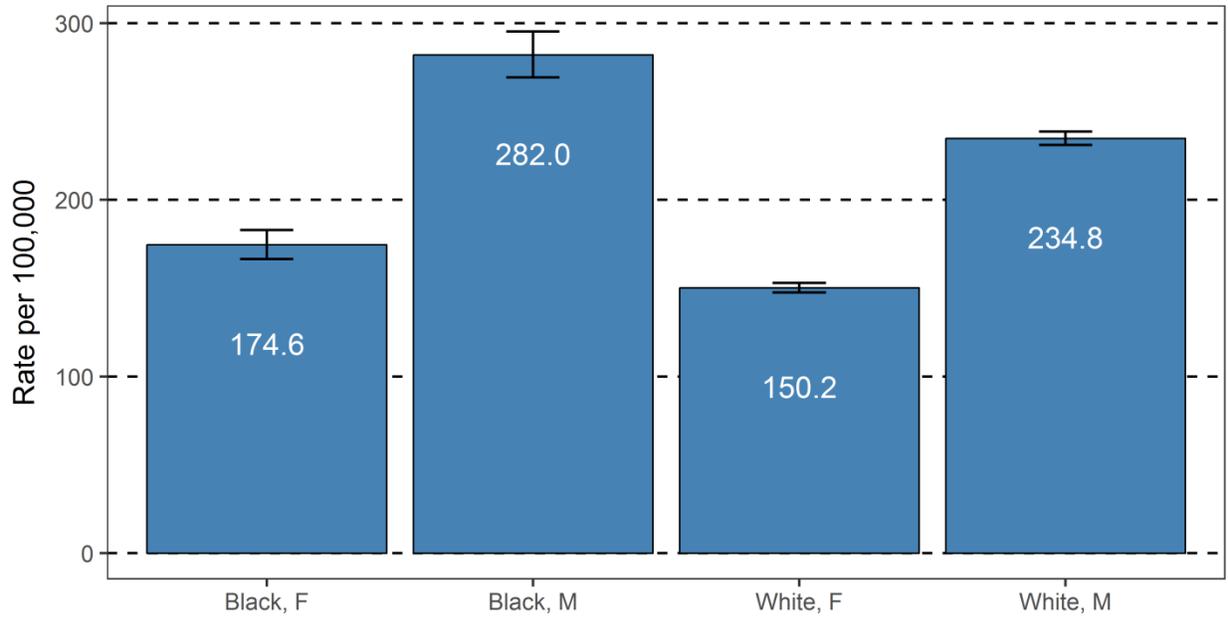
- During 1999 through 2013, Arkansas age-standardized mortality rates were higher than the rates in the United States.
 - United States had 163.2 deaths per 100,000 in 2013.
 - Arkansas had 184.5 deaths per 100,000 in 2013.
- The changes in age-standardized mortality rates over time were significant ($p < 0.01$).
 - Arkansas rates had an average annual decrease of 1.98 deaths per 100,000.
 - The United States rates had an average annual decrease of 2.73 deaths per 100,000.

Figures 1.3: Age-Standardized Mortality Trends, All Cancers, with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1999 – 2013



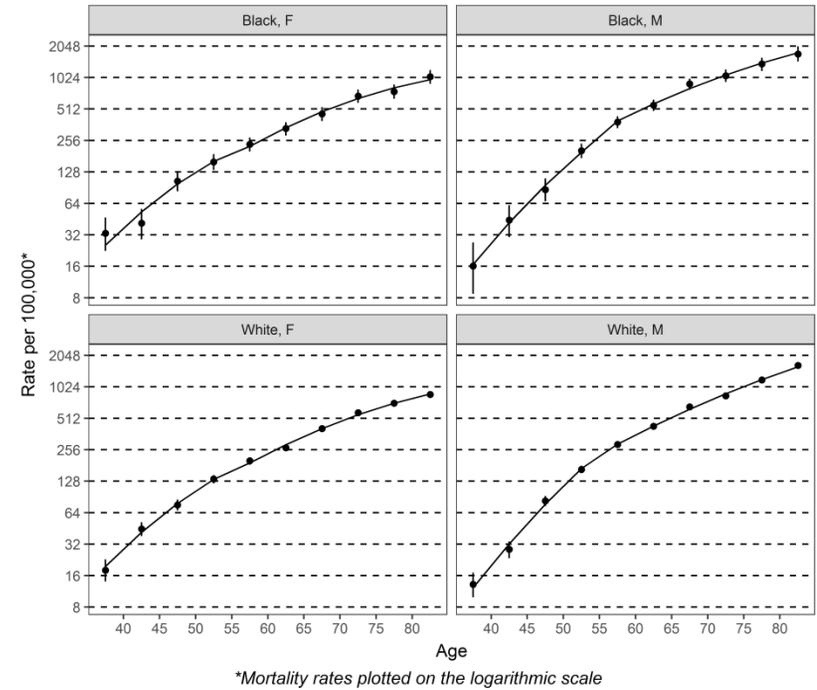
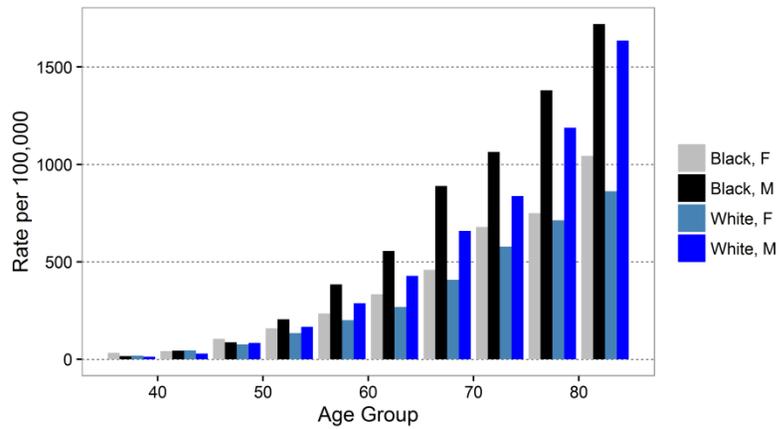
- Age-standardized mortality rates differed substantially by sex and race.
 - Males were more likely to die from cancer than females.
 - In 2013, the age-standardized mortality rates for all cancers combined were: White females 148.9, Black females 153.8, White males 226.5, and Black males 267.4.
- During 1999 through 2013, Black males experienced an average of 79.6 more deaths per 100,000 than White males, and Black females experienced an average of 26.7 more deaths per 100,000 than White females.
- Rates for males of both races declined at an annual rate of 2.9 deaths per 100,000.
- Rates for females of both races declined at an annual rate of 1.7 deaths per 100,000.

Figure 1.4: Age-Standardized Mortality Rates, All Cancers, with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



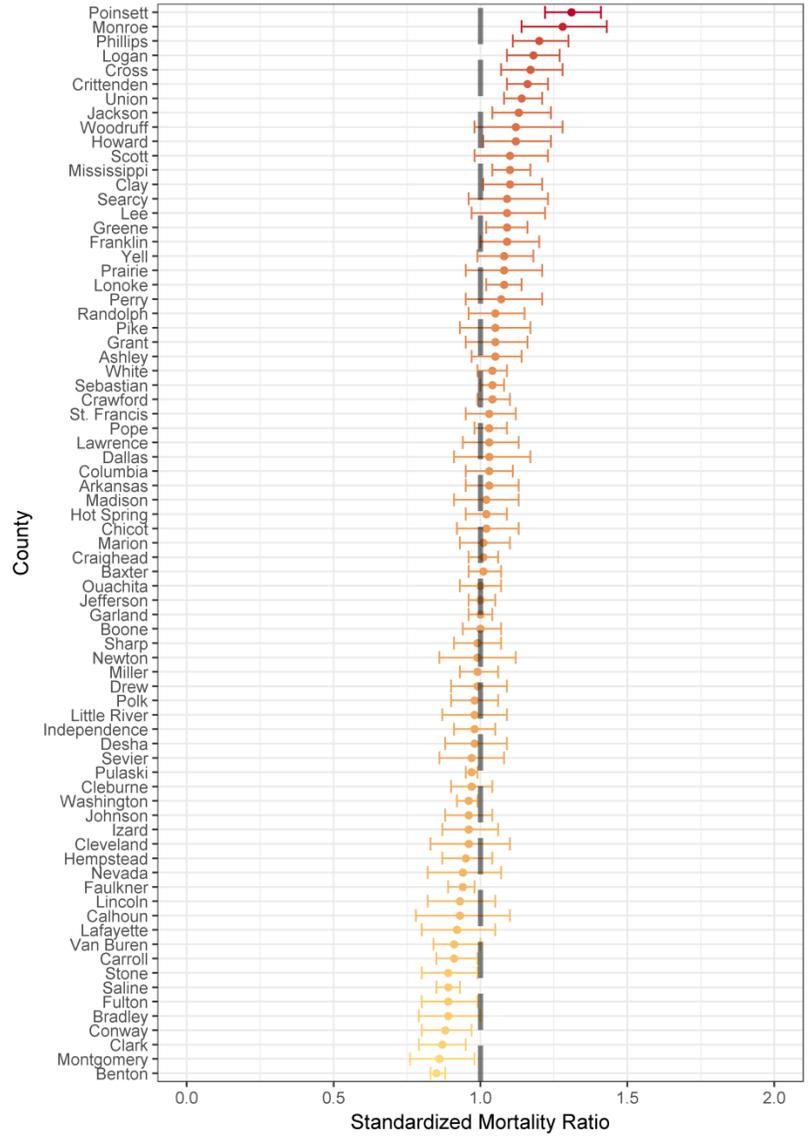
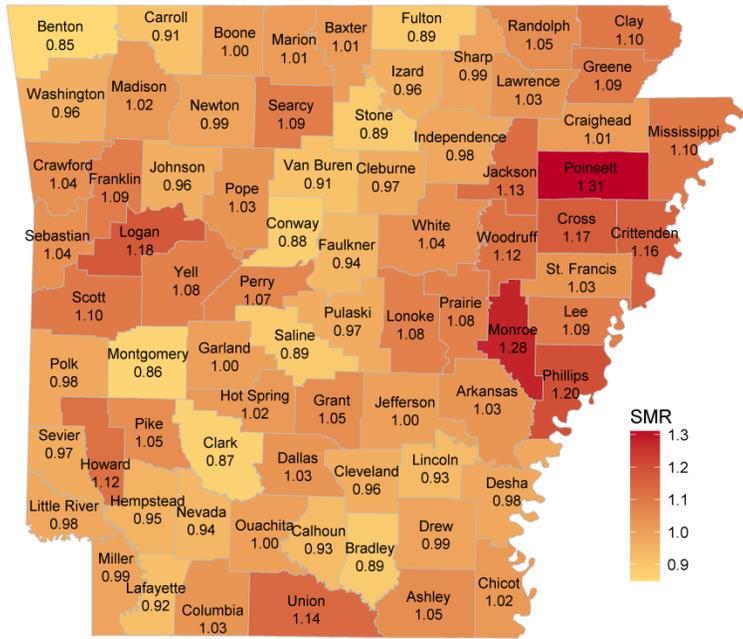
- Males had significantly higher mortality rates than females.
- Black males and females had higher mortality rates than their White counterparts.

Figures 1.5: Age-Specific Mortality Rates, All Cancers, with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Males had greater increase in mortality rates with increasing age compared to females.
- The median age at death from cancer from 2009 through 2013 was 71 years.
- Age-specific death rates for all cancers combined increased steadily by age in all sex and race groups.

Figures 1.6: Standardized Mortality Ratios (SMR), All Cancers, with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.
- Counties with standardized mortality ratios 10 percent or higher (SMR ≥ 1.10) tended to be in rural areas of the state.

Figure 1.7: Percentage of New Cancer Cases in Arkansas by Primary Site, 2009 – 2013

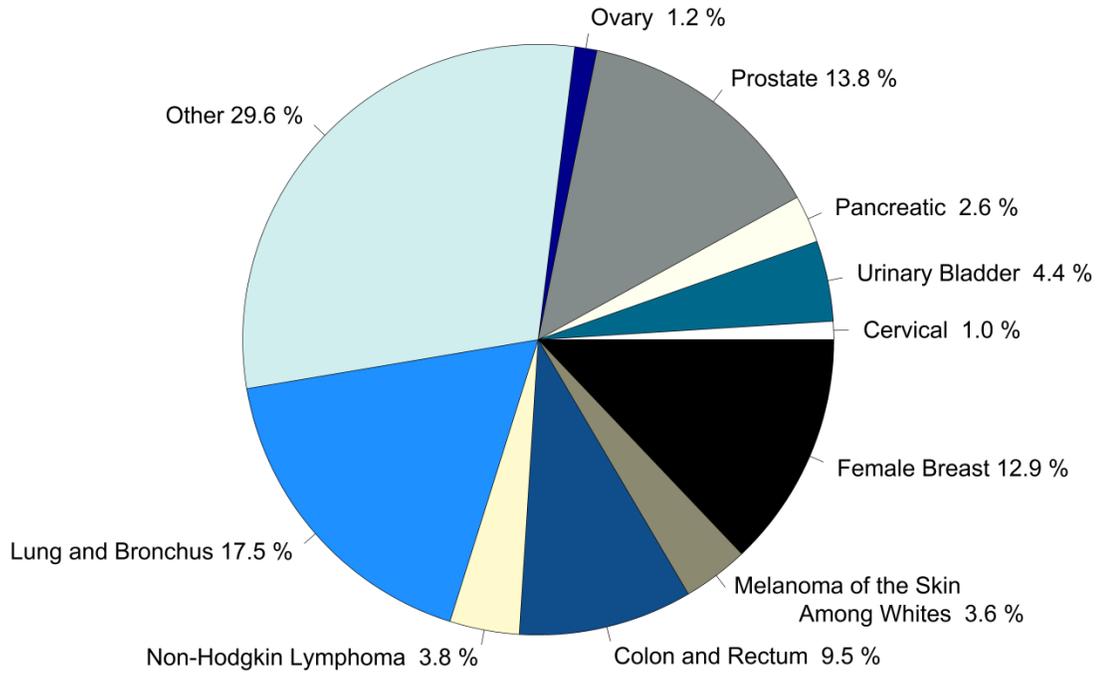
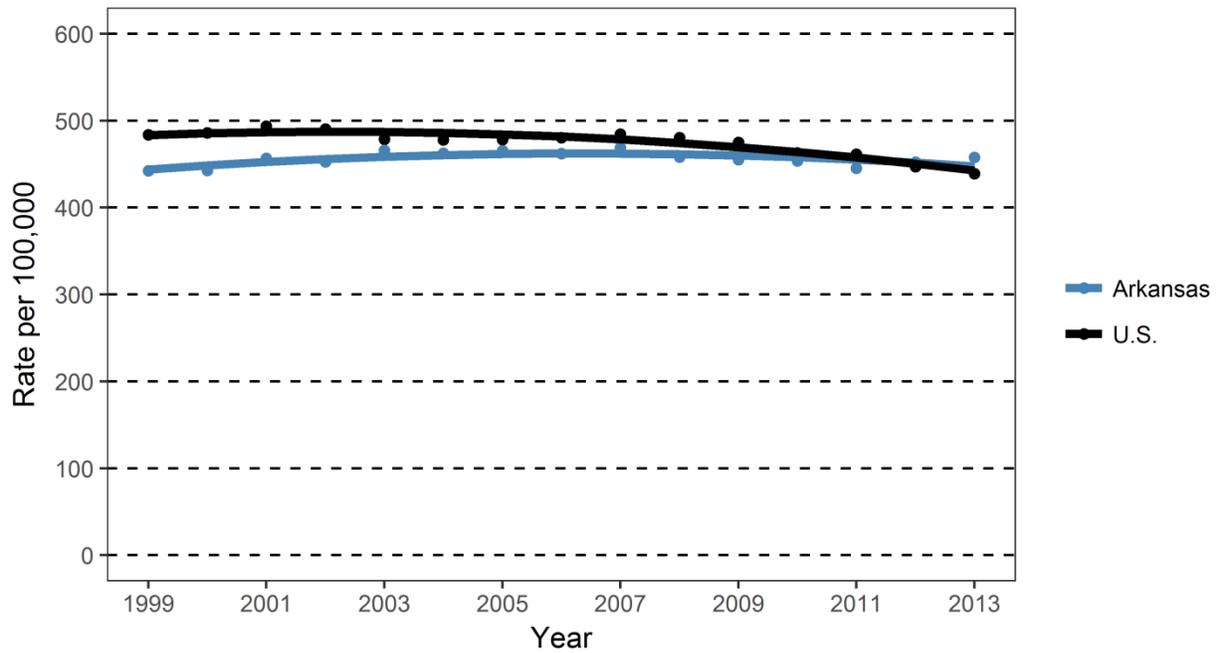


Table 1.2 Invasive Cancer Incidence Rates in Arkansas, Selected Cancers, All Sexes, All Races, 2009 – 2013.

Primary Cancer Site	Total Cases	Age-Standardized Rate
Prostate	10,623	128.4
Female Breast	9,887	111.5
Lung and Bronchus	13,433	77.1
Colon and Rectum	7,284	43.0
Melanoma of the Skin Among Whites	2,767	19.7
Urinary Bladder	3,350	19.6
Non-Hodgkin Lymphoma	2,932	17.5
Pancreatic	2,024	11.8
Ovary	936	10.5
Cervical	735	9.9

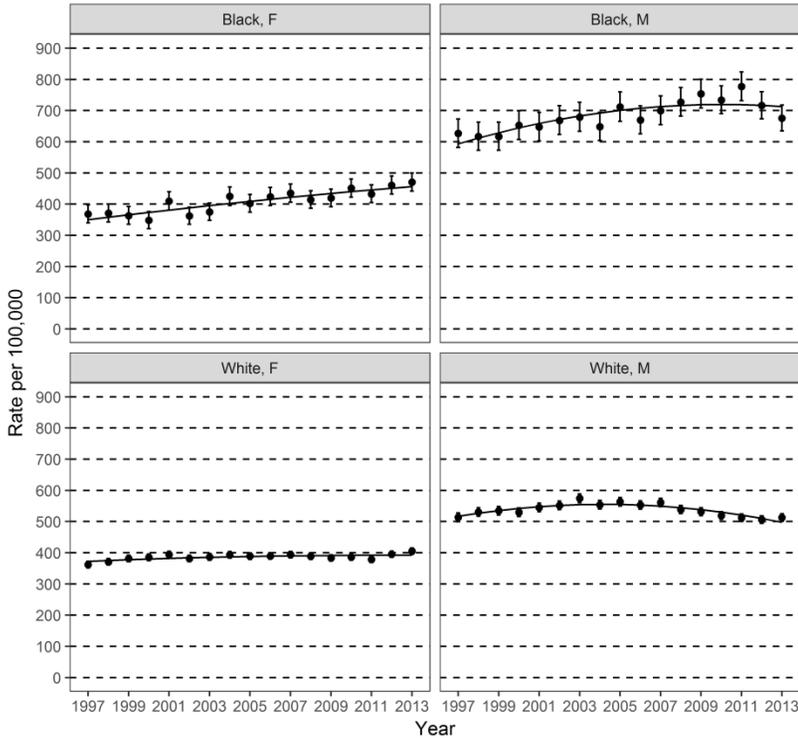
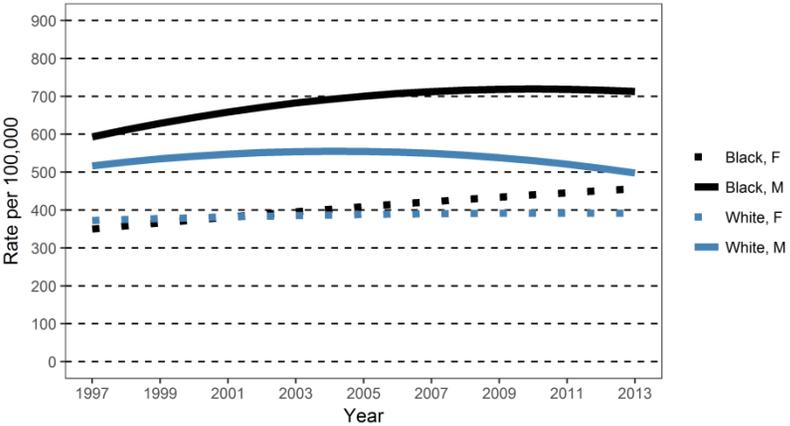
Note: All rates are per 100,000. Rates are age-standardized to the 2000 U.S. Standard Million Population. Rates are based on number of invasive cancers, except urinary bladder (which includes In situ tumors). Source: CDC Wonder: <https://wonder.cdc.gov/>.

Figure 1.8: Age-Standardized Incidence Trends, All Cancers, Arkansas and United States, 1999 – 2013



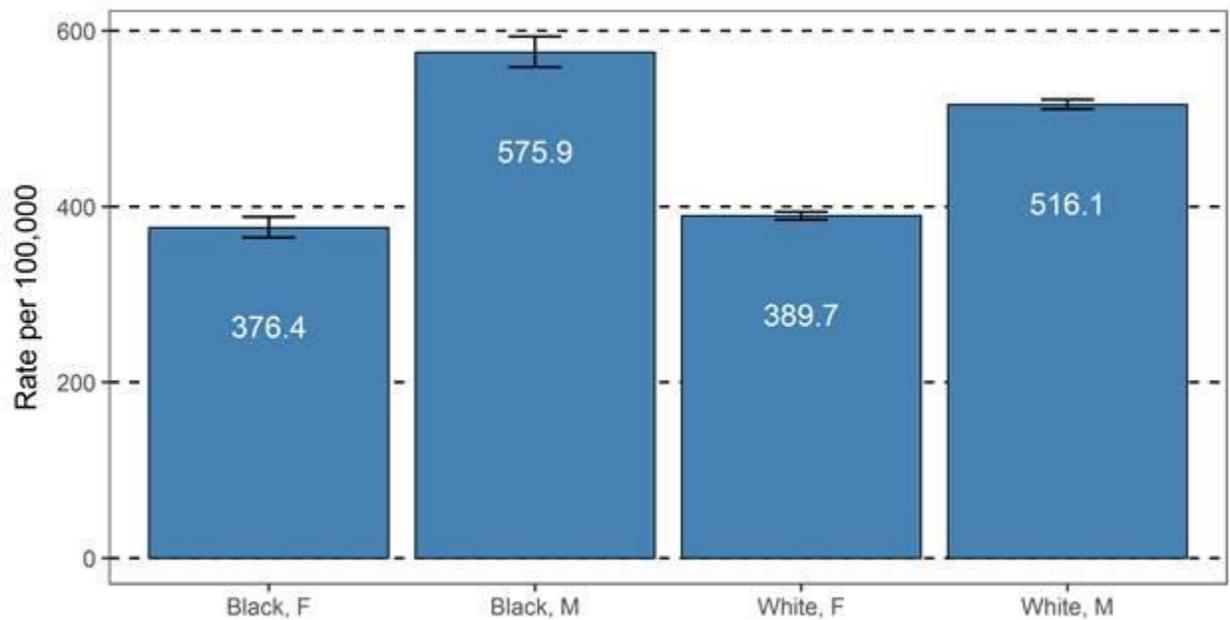
- The 2013 age-standardized cancer incidence rate in Arkansas was 457.6 cases per 100,000.
- The 2013 age-standardized cancer incidence rate in the United States was 439.0 cases per 100,000.

Figures 1.9: Age-Standardized Incidence Trends, All Cancers, with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1997 – 2013



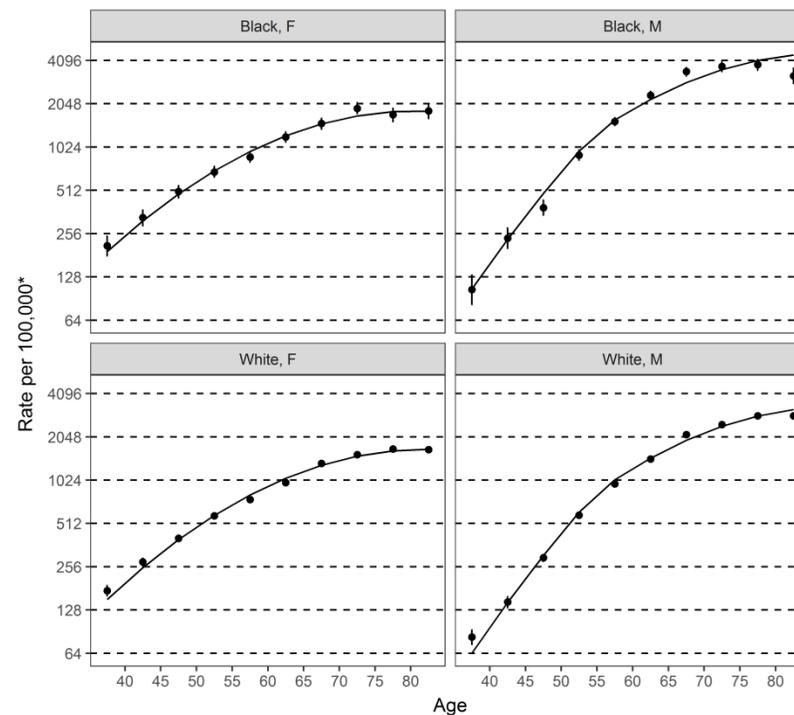
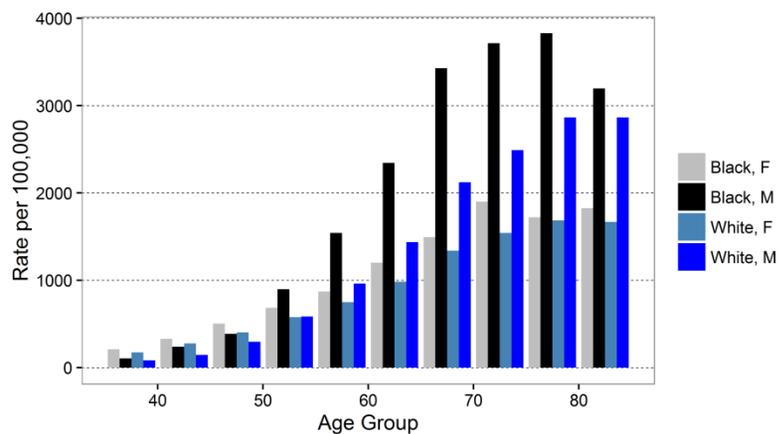
- In 2013, the age-standardized incidence rates for all cancers combined were: White males 512.9, Black males 675.3, White females 405.2, and Black females 470.2.
- White males had decreasing rates since 2005.
- Black and White females had increasing incidence rates from 1997 through 2013.

Figure 1.10: Age-Standardized Incidence Rates, All Cancers, with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Males had significantly higher incidence rates than females.
- Black males and females had higher incidence rates than their White counterparts.

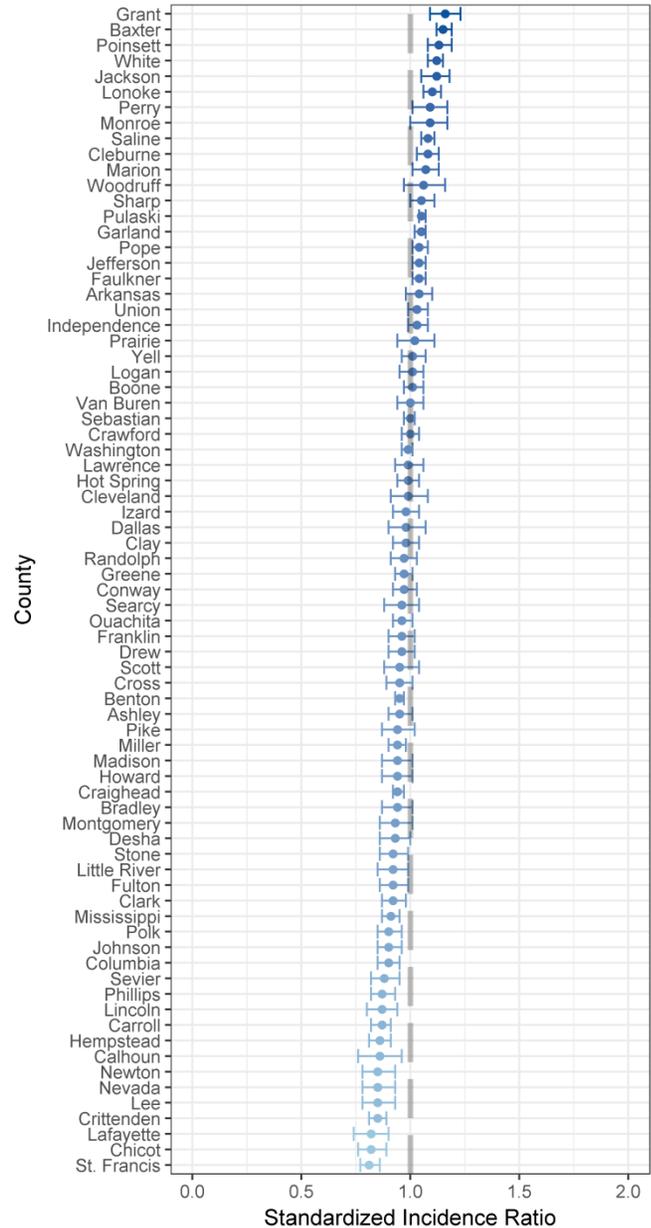
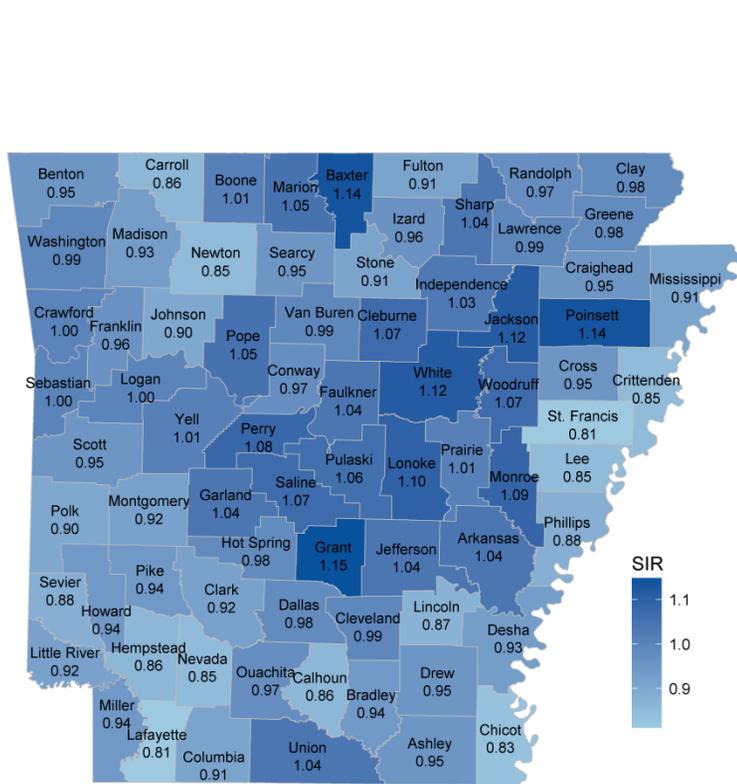
Figures 1.11: Age-Specific Incidence Rates, All Cancers, with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

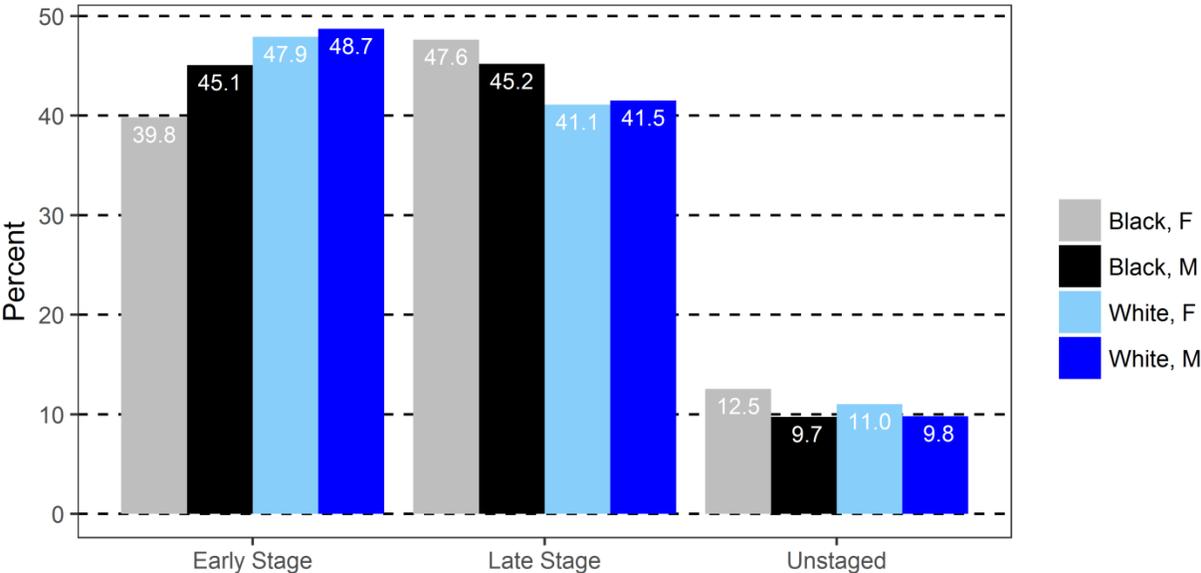
- The median age at cancer diagnosis from 2009 through 2013 was 66 years of age.
- Disease patterns at younger ages were different from patterns at older ages.
 - Females <55 years of age had incidence rates similar to males.
 - Males >55 years of age had higher incidence rates than females.

Figures 1.12: Standardized Incidence Ratios (SIR), All Cancers, with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.
- The incidence of cancer (all sites combined) was higher in the counties in the central part of the state.

Figure 1.13: SEER 2000 Stage at Diagnosis, All Cancers, by Race and Sex, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease

- Survival varies greatly by cancer type and stage at diagnosis.

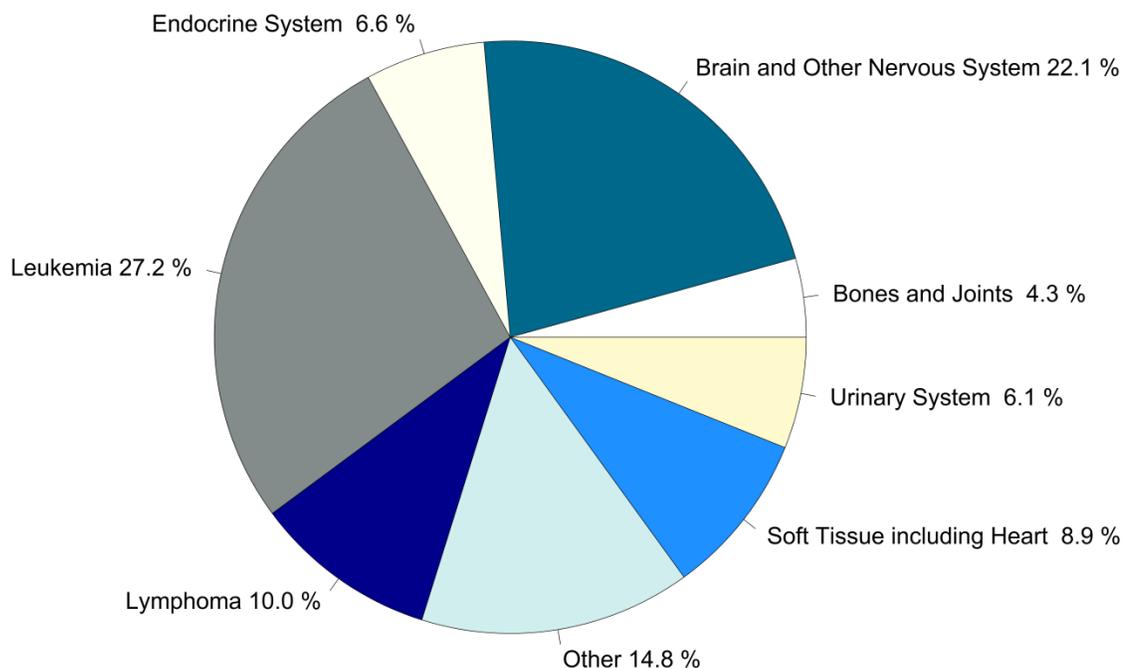
Chapter 2: Childhood Cancer in Arkansas, All Sites

In Arkansas during 1997 through 2013, 2,067 new cancer cases were diagnosed among the population less than 20 years of age and there were 279 cancer deaths.

According to the American Cancer Society, childhood cancers represent less than 1 percent of new cancers diagnosed annually.² Arkansas has maintained lower mortality and incidence trends of childhood cancer than the United States over time (see Figures 2.3 and 2.5). The most common types of cancer diagnosed among children aged 0 to 14 years were leukemia, and brain and other central nervous system cancers. The most common cancers diagnosed among adolescents aged 15 to 19 years were lymphoma, leukemia, brain and central nervous system cancers (see Figures 2.1 and 2.2).

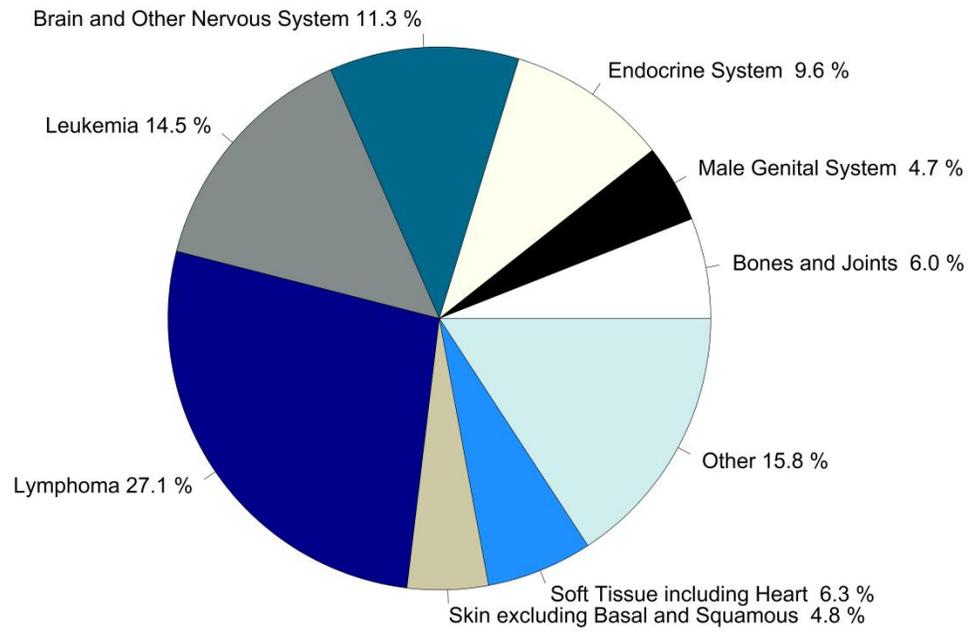
(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

Figure 2.1: Percentage of New Pediatric* Cancer Cases in Arkansas, 2009 – 2013



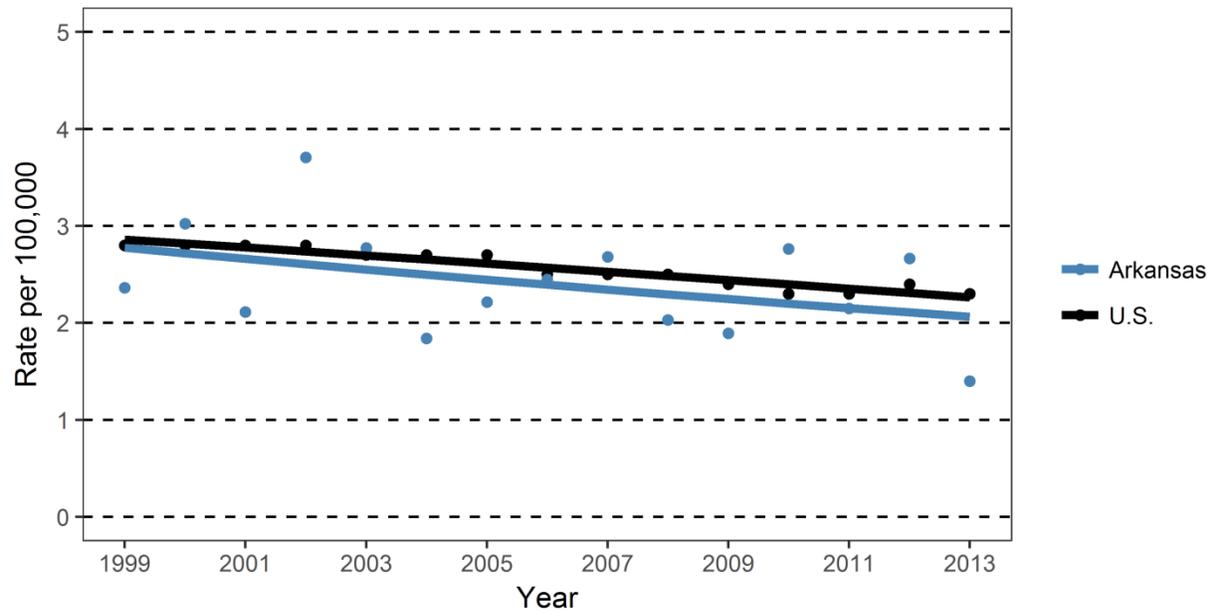
*Note: Cases diagnosed among Children aged 0 – 14.

Figure 2.2: Percentage of New Adolescent* Cancer Cases in Arkansas, 2009 – 2013



*Note: Cases diagnosed among Adolescents aged 15 – 19.

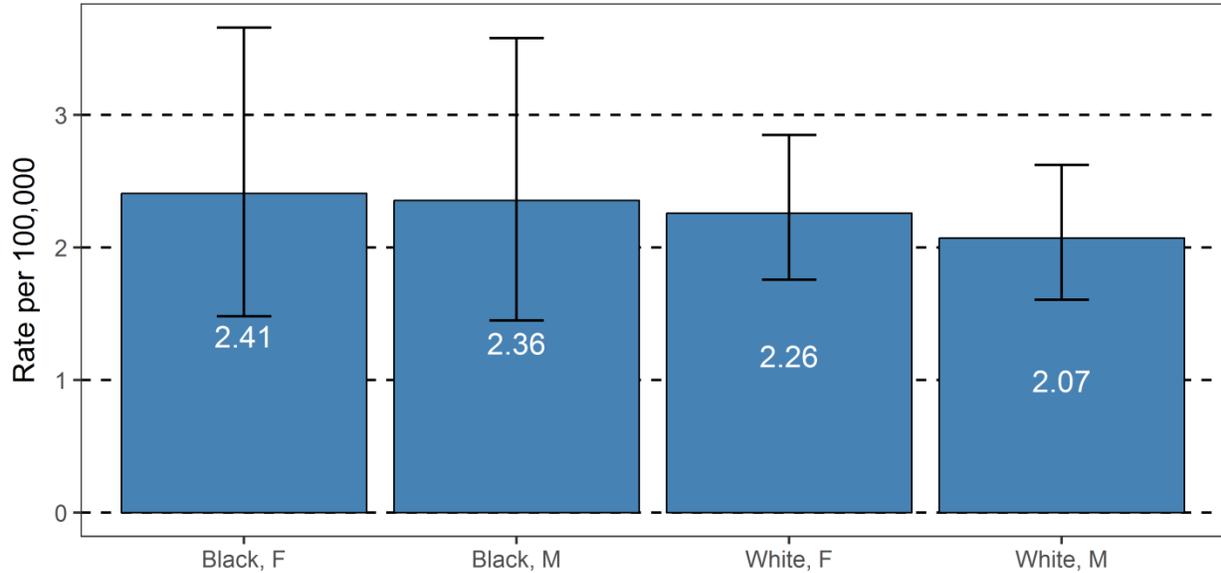
Figure 2.3: Crude Childhood* Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



**Note: Ages 0 – 19 Years.*

- Arkansas maintained lower childhood cancer mortality rates during the period of 1999 through 2013 compared to the United States.
- The average annual mortality rate in Arkansas was 2.4 deaths per 100,000. The average annual mortality rate in the United States was 2.6 per 100,000.
- There was a statistically significant downward trend in Arkansas, and the observed trend was consistent with the trend in the United States.

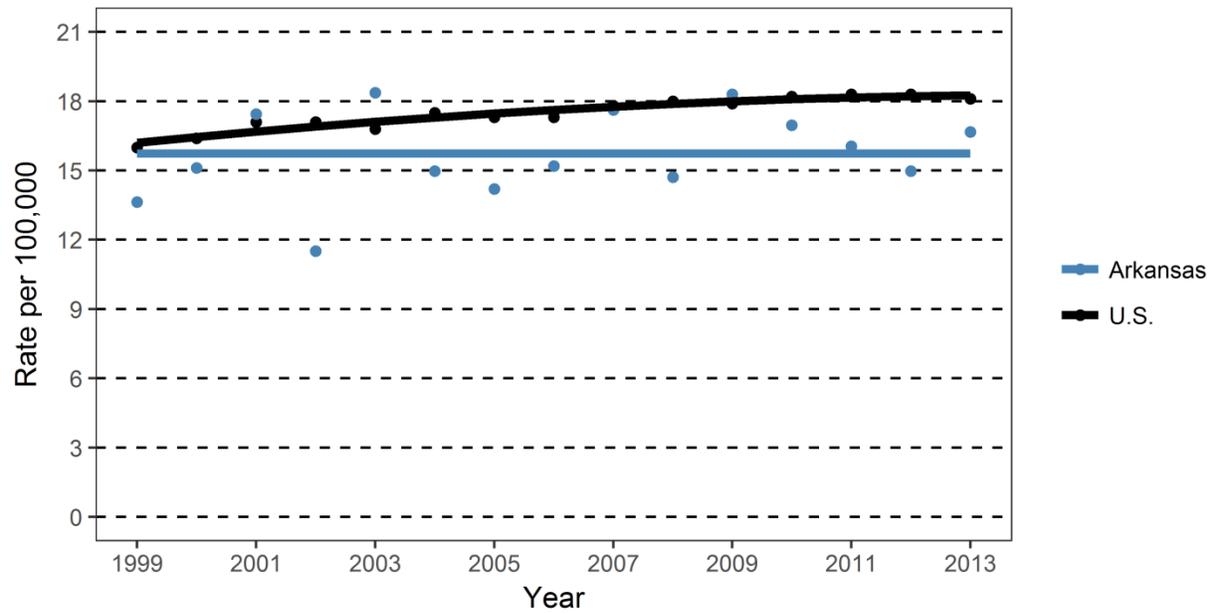
**Figure 2.4: Crude Childhood* Cancer Mortality
with 95 Percent Confidence Intervals by Race and Sex,
Arkansas, 1999 – 2013**



**Note: Ages 0 – 19 Years.*

- Childhood cancer mortality rates were slightly higher among Black males and females compared to their White counterparts, but the differences were not statistically significant.

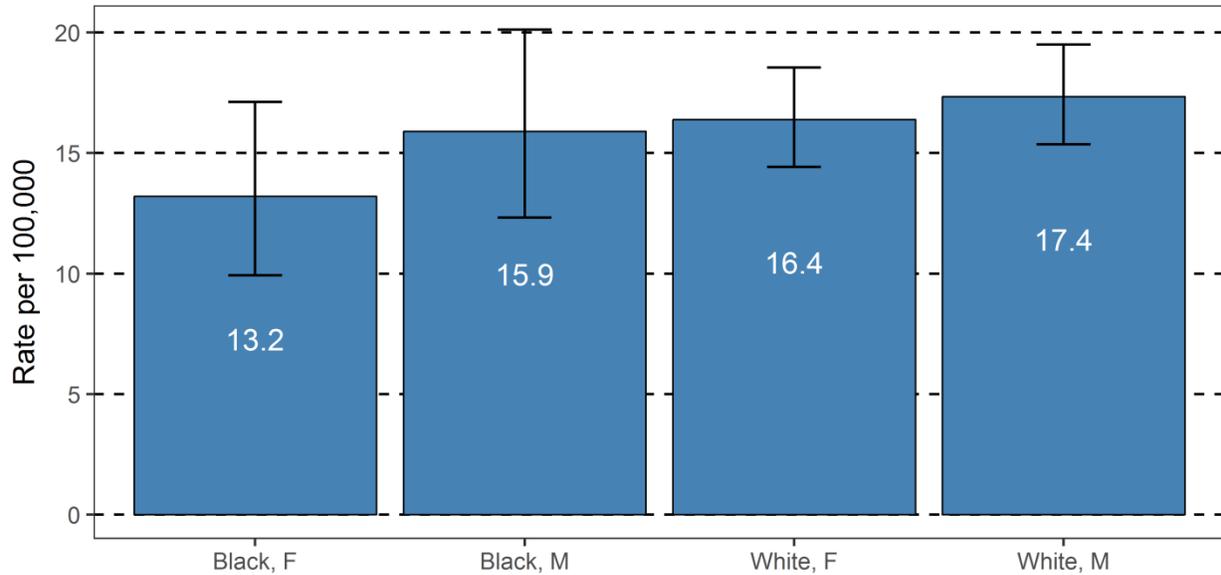
Figure 2.5: Crude Childhood* Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



**Note: Ages 0 – 19 Years.*

- Arkansas childhood cancer incidence rates from 1997 through 2013 remained lower than the United States.
 - The average incidence rate in Arkansas was 15.7 cases per 100,000.
 - The average incidence rate in the United States was 17.5 cases per 100,000.

Figure 2.6: Crude Childhood* Cancer Incidence with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2004 – 2013



**Note: Ages 0 – 19 Years.*

- Childhood cancer incidence rates were higher among White males and females compared to their Black counterparts, but the differences were not statistically significant.

Chapter 3: Female Breast Cancer

In 2013, a total of 2,153 females in Arkansas were diagnosed with invasive breast cancer. There were 392 deaths from breast cancer. The median age at diagnosis for breast cancer among females in Arkansas from 2009 through 2013 was 63 years.

Signs and Symptoms^{1, 2}

Early signs of breast cancer can be detected by mammogram. Some symptoms include:

- Thickening, swelling, distortion, tenderness, redness, skin irritation of the breast;
- Painless mass or lump in the breast; and
- Nipple abnormalities such as ulceration, retraction, or discharge.

Most breast pain results from benign conditions and is not an early sign of breast cancer.

Risk Factors^{1, 2}

The risk of developing breast cancer increases with age. Other risk factors include a family history of breast cancer, genetic changes (BRCA1, BRCA2), breast changes such as atypical hyperplasia, high dose radiation to the chest (related to cancer treatments), high breast tissue density, and high bone mineral density. Reproductive risk factors include a long menstrual cycle (start early and/or end late in life), recent use of oral contraceptives, never having children, or having a first child after age 30. Modifiable risk factors include weight gain after age 18, being overweight or obese, use of combined estrogen and progestin MHT, physical inactivity, and one or more alcoholic drinks per day. The factors associated with reducing the risk of breast cancer include breastfeeding for at least one year, regular moderate or vigorous physical activity, and maintaining a healthy body weight.

Prevention and Early Detection^{2, 4}

The U.S. Preventive Services Task Force (USPSTF) recommends screening mammography every two years for females aged 50 to 74 years who have no risk factors. It is an individual decision to start regular, biennial screening mammography before the age of 50 years.

Alternate recommendations from the American Cancer Society (ACS) suggest that women between 40 and 44 have the option to start screening with a mammogram every year; women 45 to 54 should get mammograms every year; and women 55 and older can switch to a mammogram every other year, or they can choose to continue yearly mammograms. Screening should continue as long as a woman is in good health and is expected to live 10 more years or longer.

Treatment^{1, 2}

Depending on the tumor size, stage, and other characteristics, treatment may include lumpectomy (removal of tumor with clear margins), mastectomy (removal of the breast), removal of the lymph nodes, radiation therapy, chemotherapy, or targeted therapy.

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

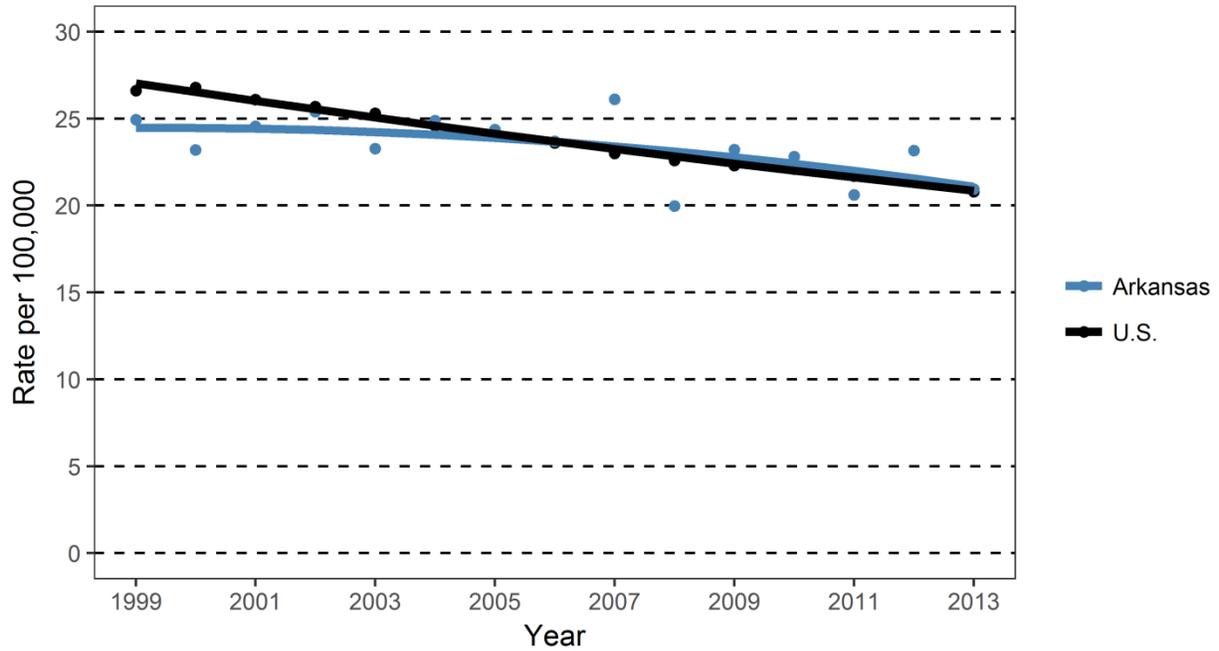
Prevention, Control Goals, and Strategies ^{2, 3, 5, 6, 7}

	Goal/Objective	Baseline	Arkansas Healthy People 2020 Target
Goal	Decrease deaths from female breast cancer	20.9 per 100,000 (2013)	16.0 per 100,000
Objective 1	Increase breast cancer screening for women \geq age 40	67 percent (2012)	78 percent
Objective 2	Decrease the incidence of late-stage breast cancer in females	6.7 per 100,000 (2011)	5.5 per 100,000
Objective 3	Increase the 5-year survival rate for females with breast cancer	90 percent (2001-2008)	99 percent

Proposed Strategies:

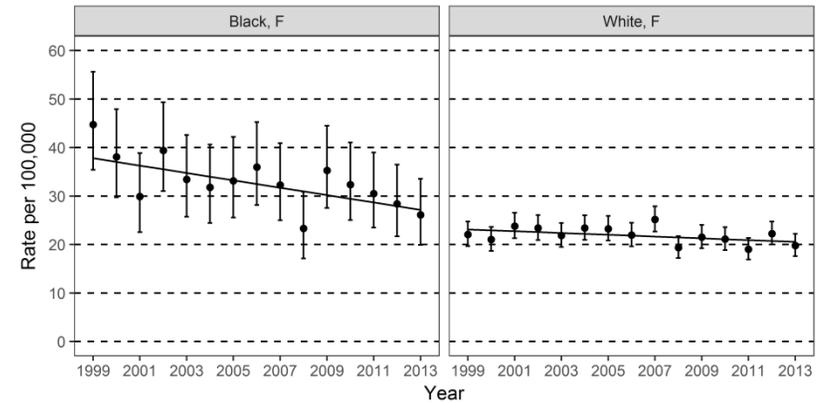
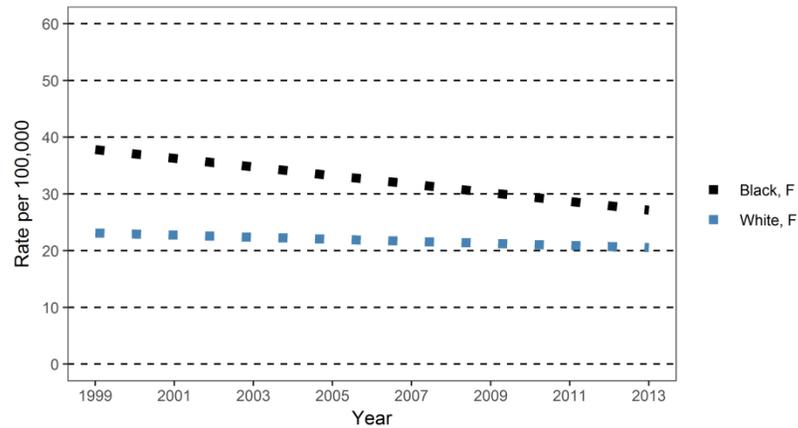
- Reduce structural barriers to screening among women by offering expanded screening hours and transportation assistance.
- Media interventions to increase breast cancer screening particularly among African-American and Hispanic women.
- Increase the awareness of breast cancer screening assistance for eligible women through the Arkansas Department of Health's BreastCare™ program.
- Advocate for patient navigation funding for underinsured and uninsured women through the BreastCare™ program.
- Increase coverage and access to counseling for risk reduction strategies such as weight management and exercise, genetic counseling and testing, chemoprevention, avoiding or reducing post-menopausal combination hormone therapy, and minimizing radiation exposure.
- Provide appropriate follow-up care to women with inherited cancer syndromes associated with increased risk of breast cancer.
- Increase mammography services in the 27 counties without these services.
- Increase the utilization of community resources by breast cancer survivors.

Figure 3.1: Age-Standardized Female Breast Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



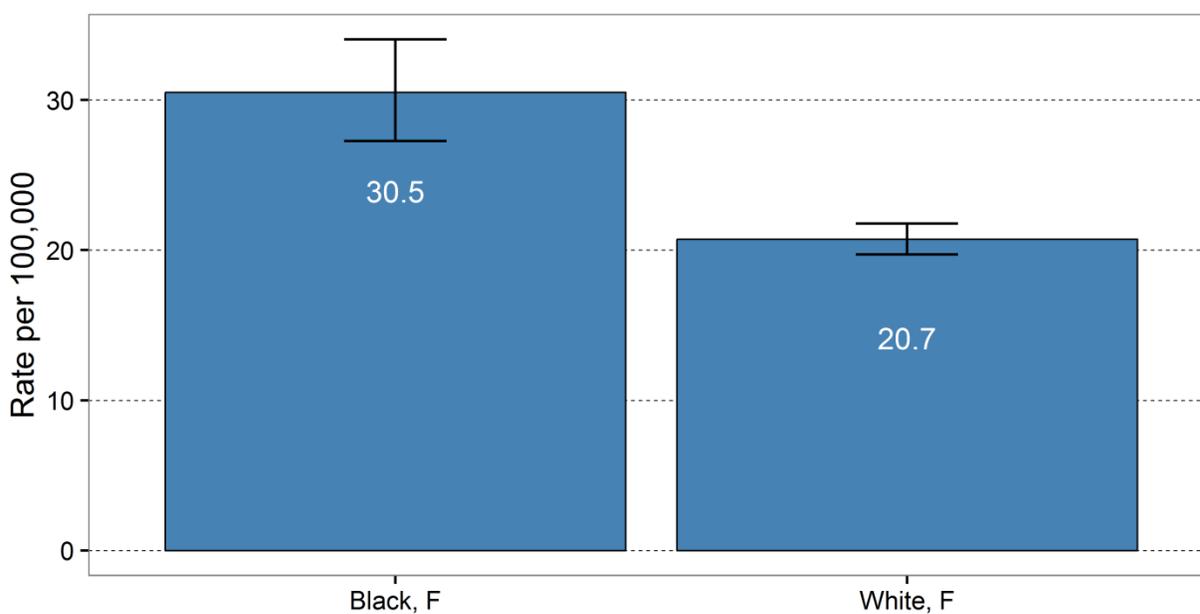
- During 1999 through 2013, both Arkansas and the United States demonstrated a modest decrease.
- The 2013 age-standardized breast cancer mortality rates for Arkansas and the United States were 20.9 and 20.8 per 100,000, respectively.

Figures 3.2: Age-Standardized Female Breast Cancer Mortality Trends with 95 Percent Confidence Intervals by Race, Arkansas, 1999 – 2013



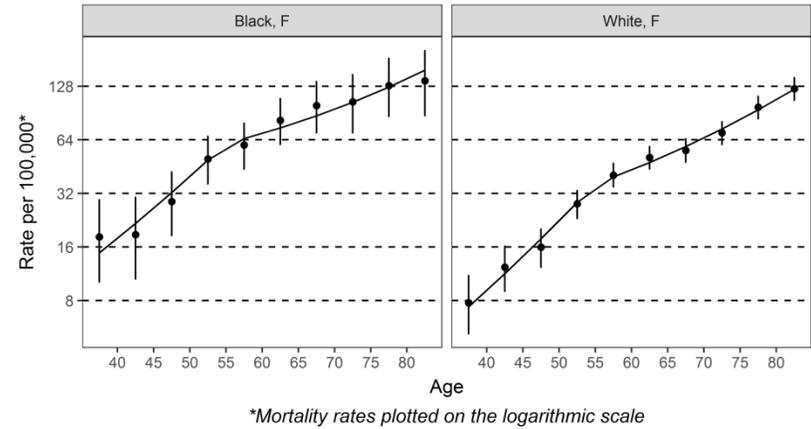
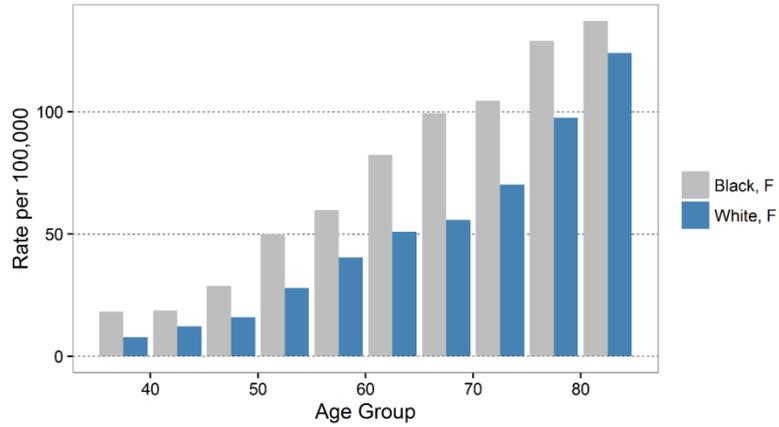
- Breast cancer mortality rates among both Black and White females have declined over time ($p = 0.01$).
- Black female breast cancer mortality rates were higher than that of White female breast cancer mortality rates during 1999 through 2013.
 - In 2013, Black females had a rate of 27.2 deaths per 100,000.
 - In 2013, White females had a rate of 20.6 deaths per 100,000.
- Although Black females had higher breast cancer mortality rates, they had lower incidence rates than White females (see Figures 3.7).

Figure 3.3: Age-Standardized Female Breast Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



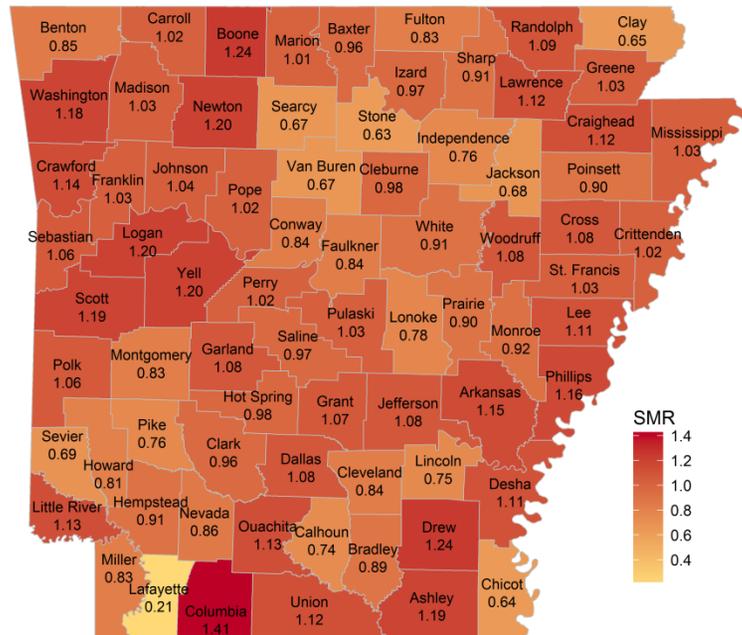
- The 5-year (2009 – 2013) average breast cancer mortality rate for Black females was 30.5 per 100,000 compared to 20.7 per 100,000 for White females. The difference was statistically significant.

Figures 3.4: Age-Specific Female Breast Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- The median age at death from breast cancer from 2009 through 2013 was 69 years.
- Black females had higher mortality rates than White females across age groups.
- Breast cancer mortality rates increased along with age for both races.

Figures 3.5: Female Breast Cancer Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.

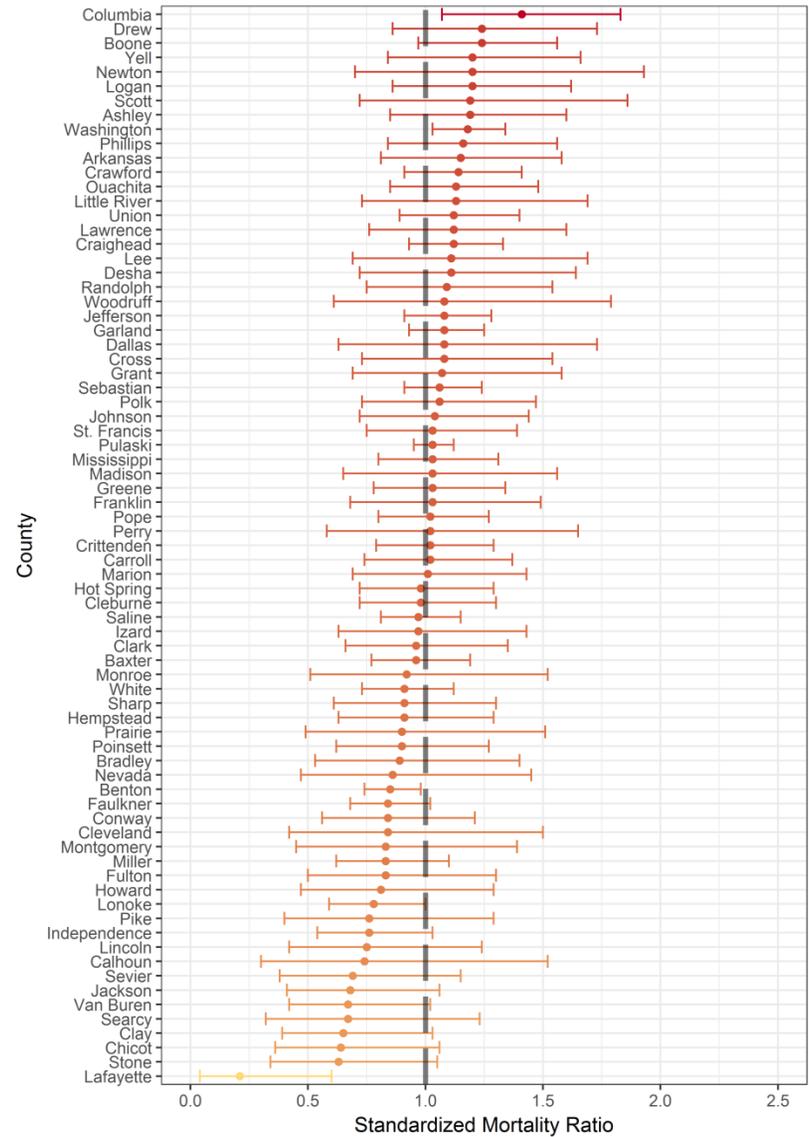
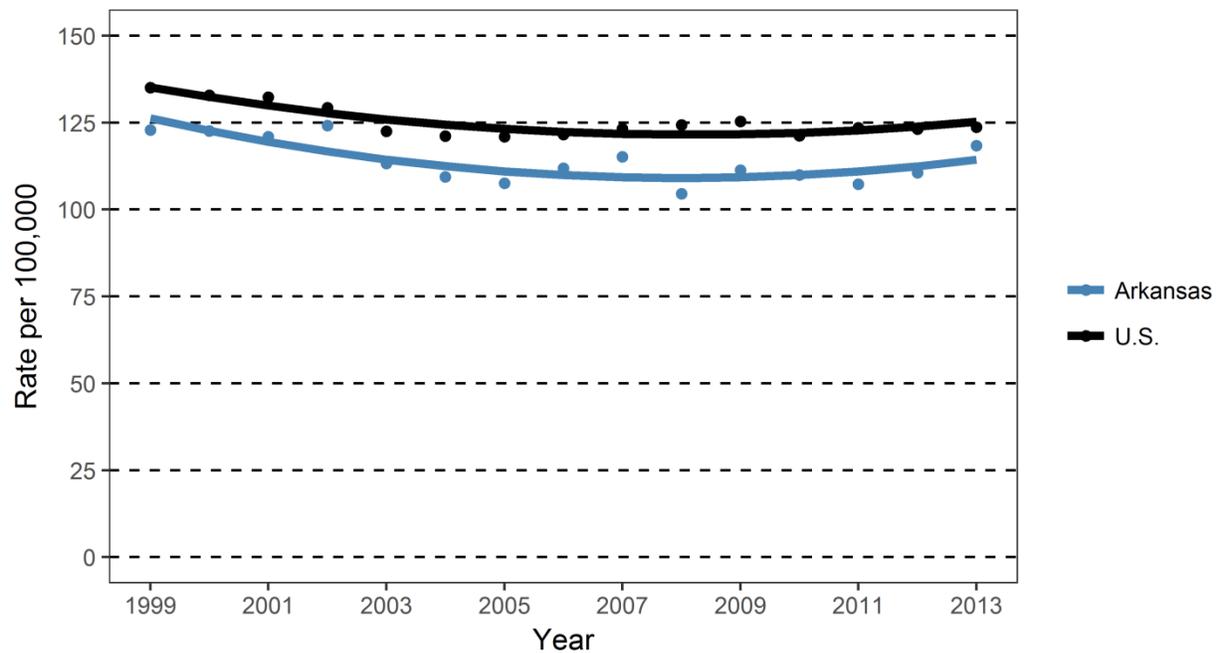
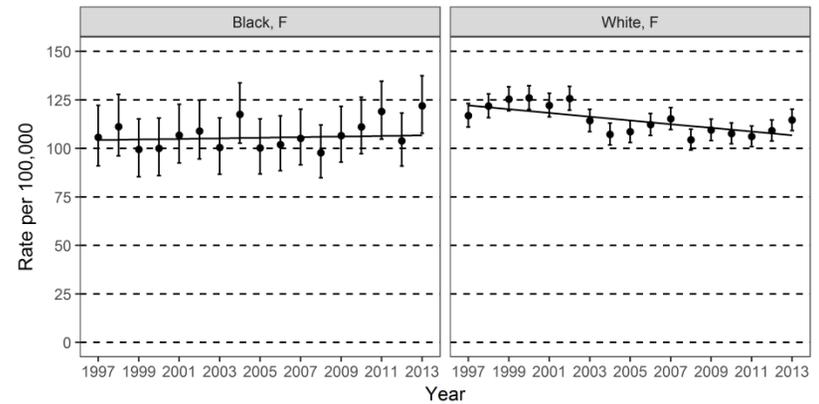
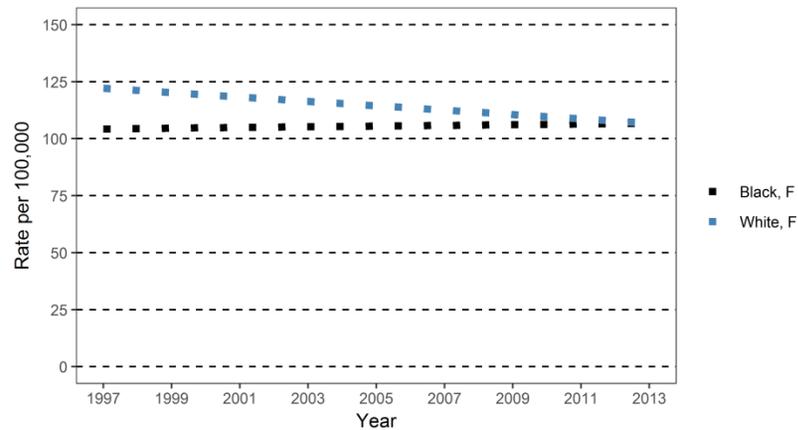


Figure 3.6: Age-Standardized Invasive Female Breast Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



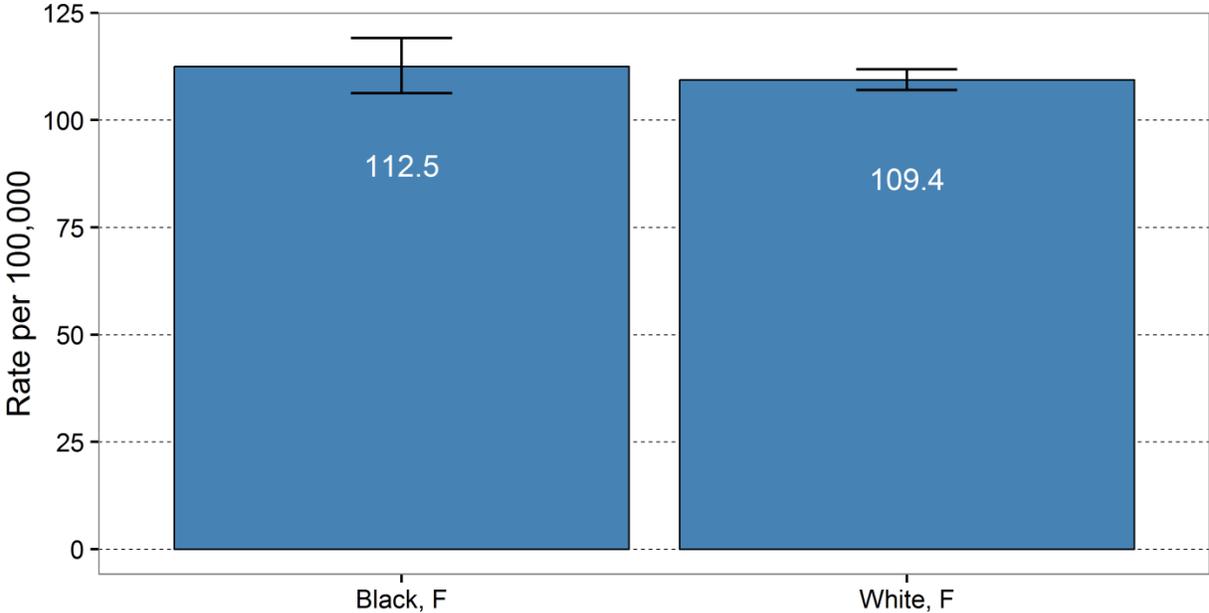
- The age-standardized invasive breast cancer incidence rates for Arkansas were lower than that of the United States, by an average of over 10 cases per 100,000.
 - In 2013, the incidence rate in Arkansas was 118.3 per 100,000.
 - In 2013, the incidence rate in the United States was 123.7 per 100,000.
- The age-standardized trend in incidence rates of female breast cancer for Arkansas and the United States gradually increased after 2008.

Figures 3.7: Age-Standardized Invasive Female Breast Cancer Incidence Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1997 – 2013



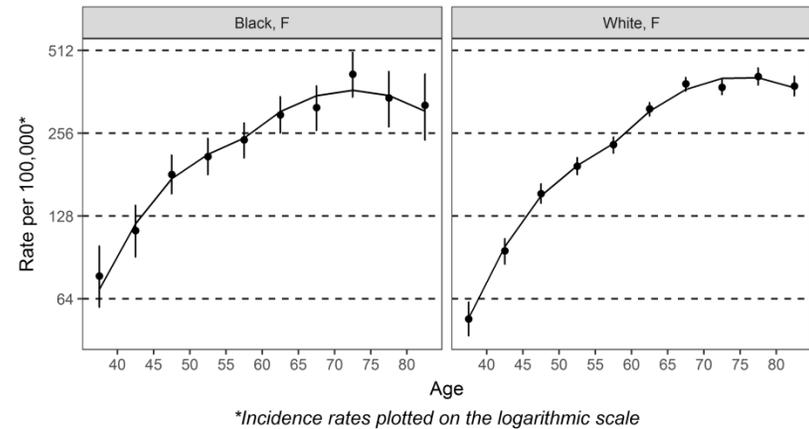
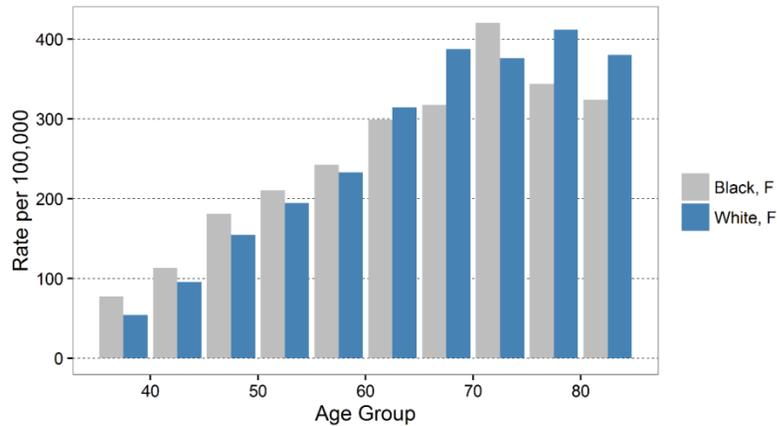
- In 2013, the age-standardized invasive breast cancer incidence rate for Black females was 121.9 per 100,000.
- White females had an annual decline of 1.0 cases per 100,000 over the entire period to a modeled (trend line) rate of 114.6 cases per 100,000 in 2013.
- The invasive breast cancer incidence rates decreased for White females from 1997 through 2013.

Figure 3.8: Age-Standardized Invasive Female Breast Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



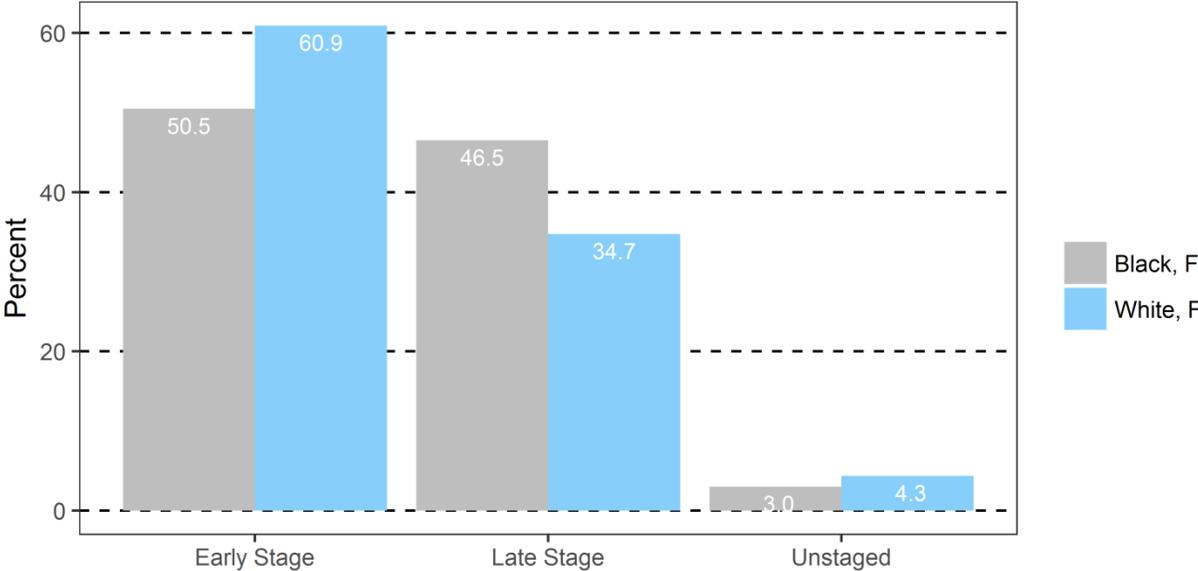
- The difference between Black and White female invasive breast cancer incidence rates, 3.1 per 100,000, over a 5-year period was not statistically significant.

Figures 3.9: Age-Specific Invasive Female Breast Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- The median age at diagnosis for breast cancer from 2009 through 2013 was 63 years.
- Data indicate disease patterns at younger ages were somewhat different from patterns at older ages. At ages under 60, Black females had higher incidence rates than White females. However, White females had higher rates after 60 years of age.

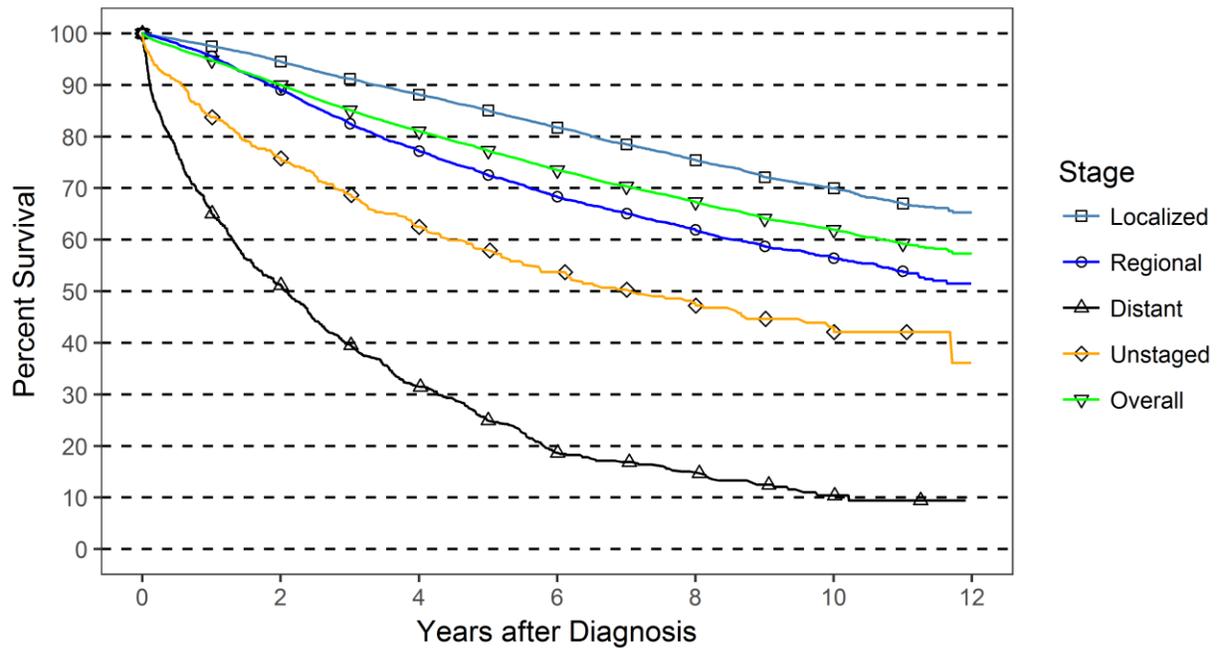
Figure 3.11: Invasive Female Breast Cancer, SEER 2000 Stage at Diagnosis, by Race, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease.

- Black females were diagnosed at later stages of breast cancer than White females.

Figure 3.12: Invasive Female Breast Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	98	96	65	83	95
2	95	89	51	76	90
3	91	83	30	69	85
4	88	77	31	62	81
5	85	73	25	58	77
6	82	68	19	53	74
7	79	65	17	50	70
8	75	62	15	37	67
9	72	59	12	35	64
10	70	56	10	32	62

- Figure 3.12 indicates that survival rates favor early stage.
- Breast cancer 5-year survival rates depend on stage at diagnosis. The more localized the cancer was at diagnosis, the better the survival.
 - Localized = 85 percent
 - Regional = 73 percent
 - Distant = 25 percent
 - Unstaged = 58 percent
 - Overall = 77 percent

Chapter 4: Colon and Rectum (Colorectal) Cancer

In 2013, a total of 1,512 men and women in Arkansas were diagnosed with colorectal cancer (CRC), and 611 died of colorectal cancer.

Signs and Symptoms ^{1,2}

The median age at diagnosis for colorectal cancer in Arkansas from 2009 through 2013 was 67 years of age. Early stages of colorectal cancer do not cause any obvious symptoms, but as the cancer progresses, common symptoms include:

- Rectal bleeding or blood in the stool;
- Change in bowel habits (diarrhea or constipation for more than two-weeks);
- Persistent cramping pain in the lower abdomen; and
- Unexplained weight loss and fatigue.

Risk Factors ^{1,2}

The risk of developing colorectal cancer increases with age. Most colorectal cancer is identified in persons over the age of 50 years. Other common risk factors include obesity, physical inactivity, diet high in fat and low in fiber, heavy alcohol consumption, cigarette smoking, the presence of colorectal polyps, ulcerative colitis or Crohn's disease, and a family history of colorectal cancer.

Prevention and Early Detection ⁴

The U.S. Preventive Services Task Force (USPSTF) recommends screening for colorectal cancer beginning at age 50 years and continuing until age 75 years. There are numerous screening tests to detect early-stage colorectal cancer, including stool-based tests (gFOBT, FIT, and FIT-DNA), direct visualization tests (flexible sigmoidoscopy alone or combined with FIT; colonoscopy; and CT colonography), and serology tests (*SEPT9* DNA test). The USPSTF found no head-to-head studies demonstrating that any of these screening strategies are more effective than others, although they have varying levels of evidence supporting their effectiveness, as well as different strengths and limitations. Screening detects and leads to subsequent removal of colorectal polyps before they become cancerous, and this markedly reduces incidence and mortality.

Treatment ^{1,2}

Surgery is the most common treatment for tumors that have not spread, and removal can be curative. Other therapies include chemotherapy and radiation.

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

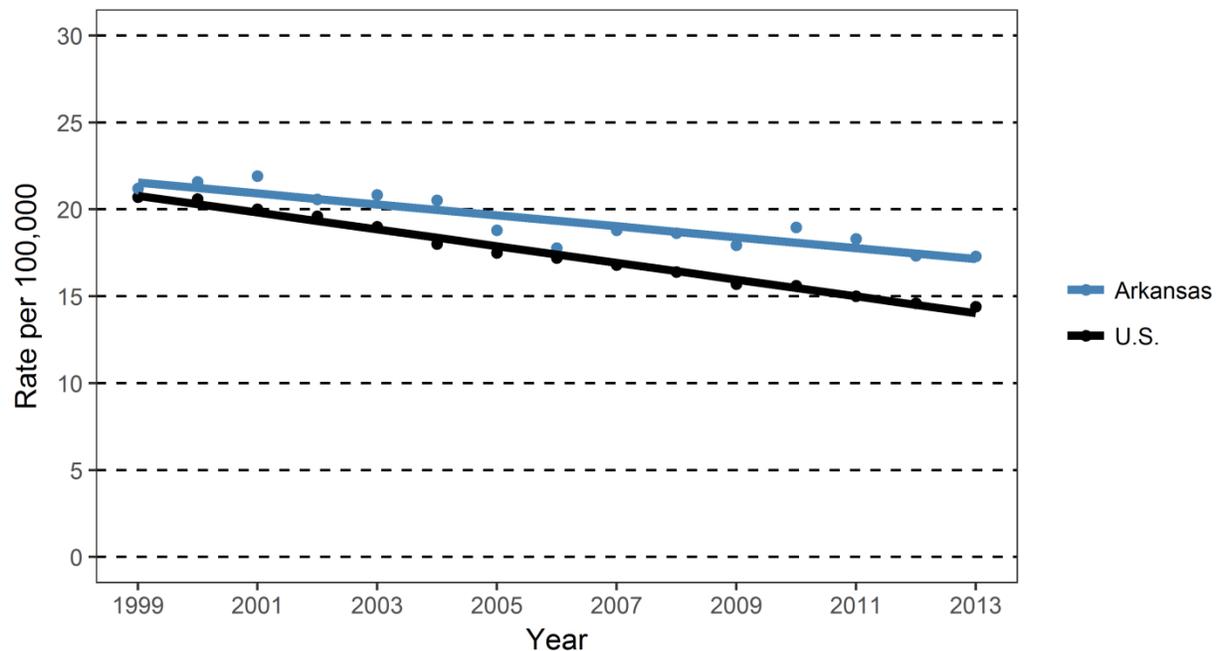
Prevention, Control Goals, and Strategies ^{3, 5, 6, 7}

	Goal/Objective	Baseline	Arkansas Healthy People 2020 Target
Goal	Decrease deaths from CRC	17.6 per 100,000 (2013)	15.8 per 100,000
Objective 1	Increase the proportion of adults who receive CRC guidelines-based screening	61.5 percent (2012)	67.7 percent
Objective 2	Decrease the incidence of invasive CRC	41.5 per 100,000 (2011)	37.4 per 100,000

Proposed Strategies:

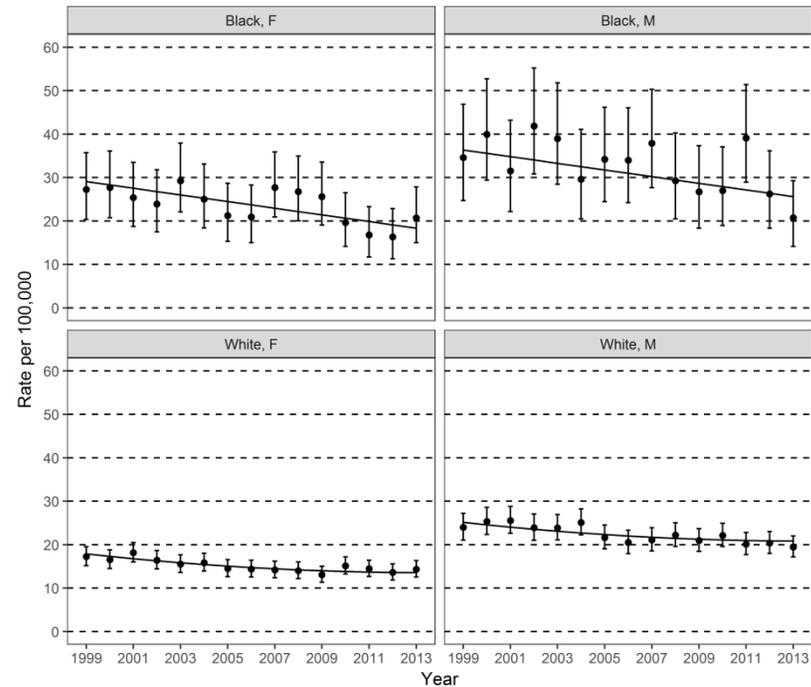
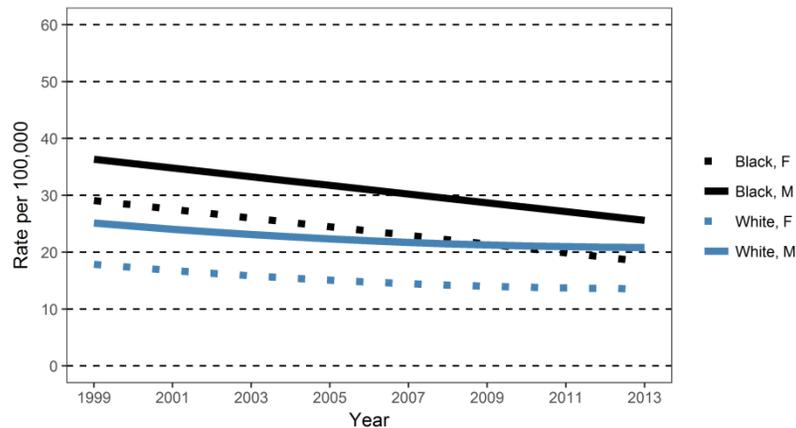
- Increase public awareness of CRC risk and screening through educational interventions.
- Collaborate with partner organizations to increase CRC screening among at-risk, underserved and disparate populations.
- Promote targeted interventions for CRC screening.
- Educate and increase trained healthcare personnel to perform quality CRC screenings.
- Increase patient navigator programs for CRC care coordination.

Figure 4.1: Age-Standardized Colorectal Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



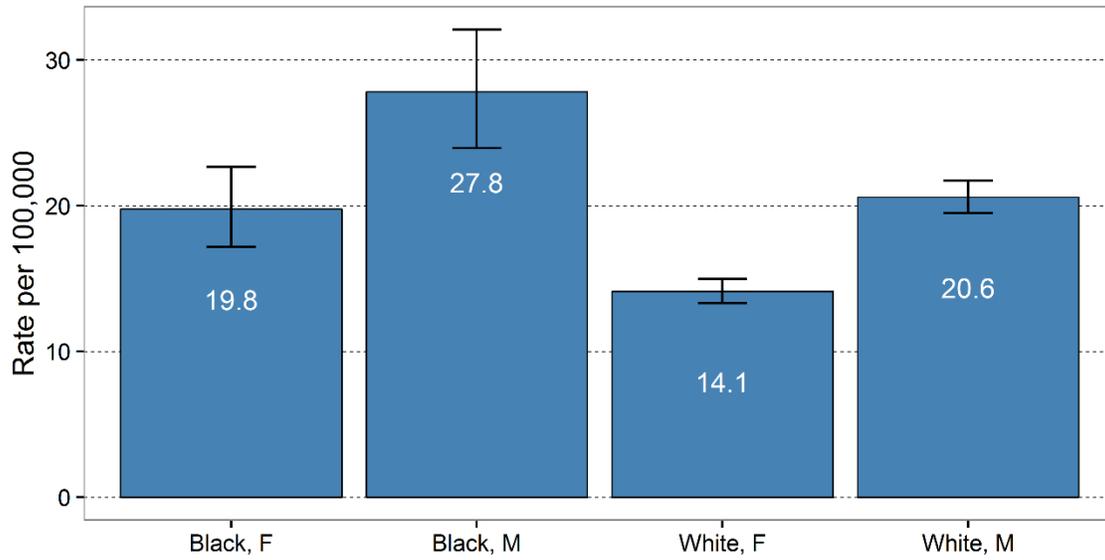
- During 1999 through 2013, age-standardized mortality rates in Arkansas were higher than the rates in the United States.
 - In 2013, the United States had 14.4 deaths per 100,000.
 - In 2013, Arkansas had 17.3 deaths per 100,000.
- The decline in the age-standardized colorectal cancer mortality rates over time in Arkansas was significant ($p < 0.01$).
 - Arkansas and the United States rates had steadily declined during the period illustrated above. However, the annual decline in Arkansas (0.31 per 100,000) was slower than the United States decline (0.48 per 100,000).

Figures 4.2: Age-Standardized Colorectal Cancer Mortality Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1999 – 2013



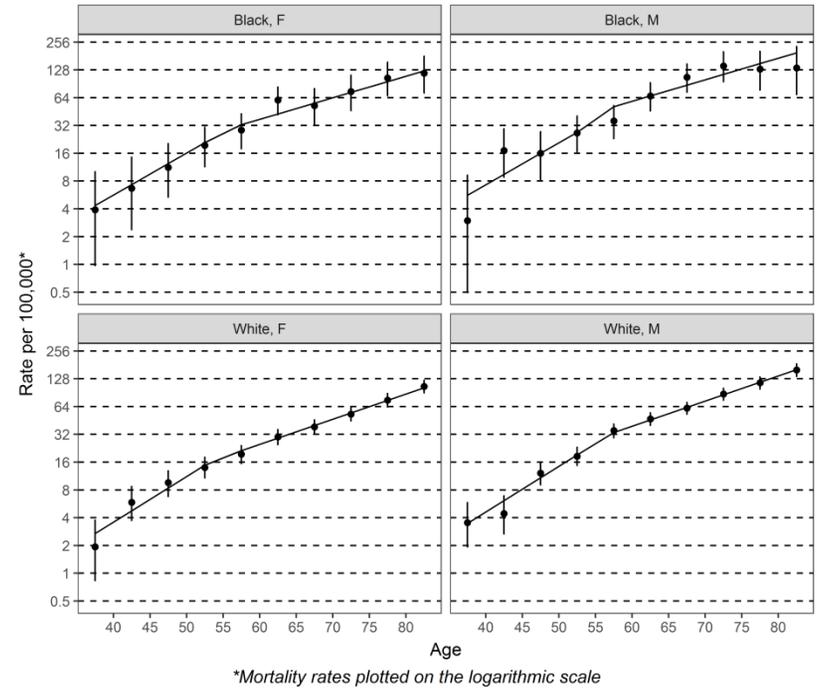
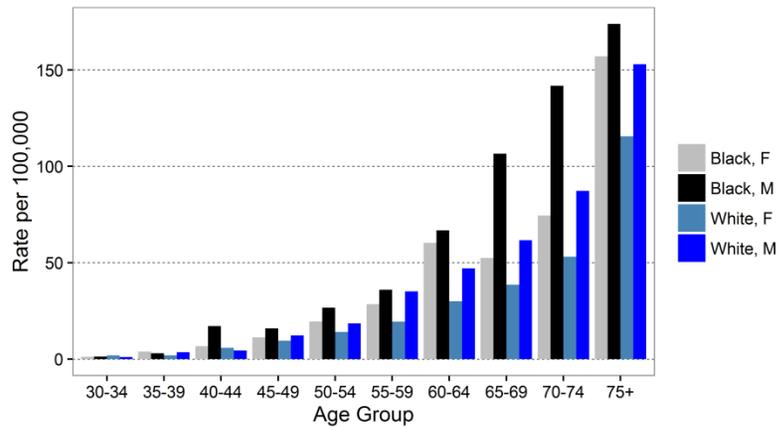
- In 2013, the age-standardized colorectal cancer mortality rates were: White males 19.5, Black males 20.8, White females 14.4, and Black females 20.7.
- Females had lower rates of colorectal cancer than males. The average rate difference between males and females was 7.2 cases per 100,000.
- Colorectal cancer mortality rates for Blacks and Whites had a noticeable decline from 1999 through 2013.
- Rates of colorectal cancer in Black males and females declined steadily by an average of 0.77 cases per 100,000. However, the decline in the rates for White males and females slowed down in recent years.

Figure 4.3: Age-Standardized Colorectal Cancer Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



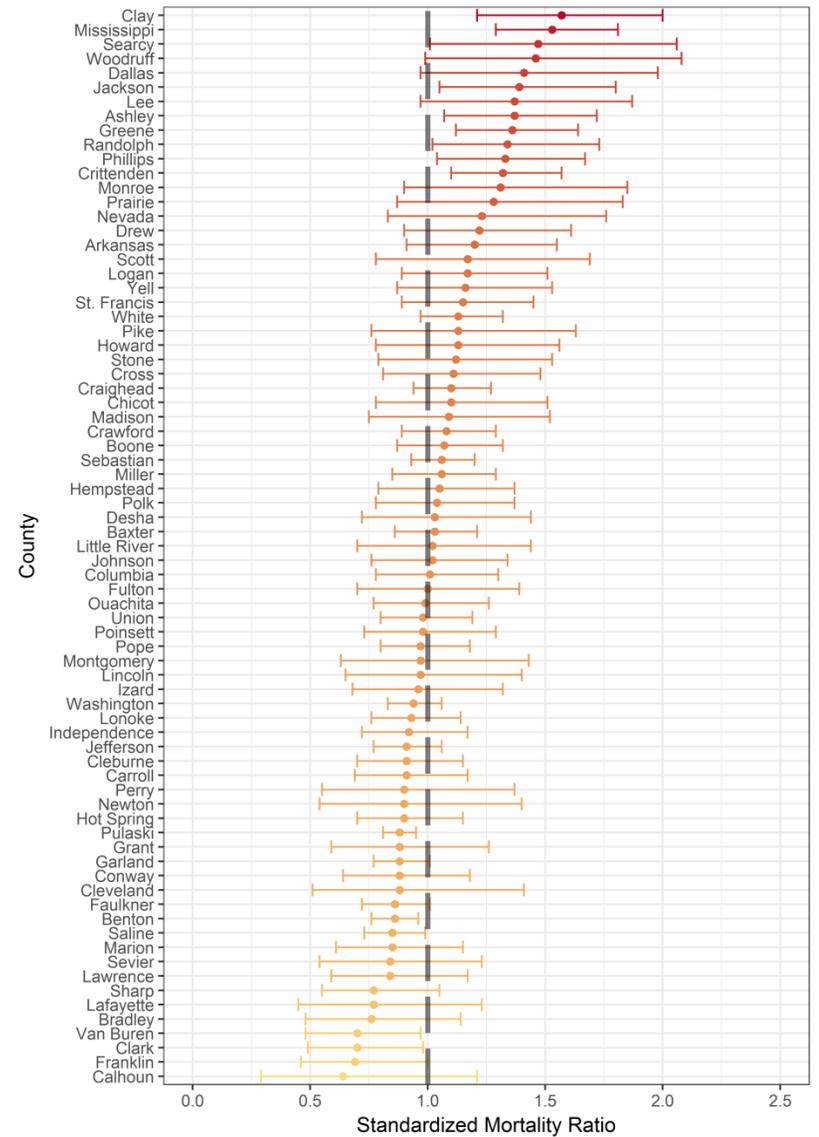
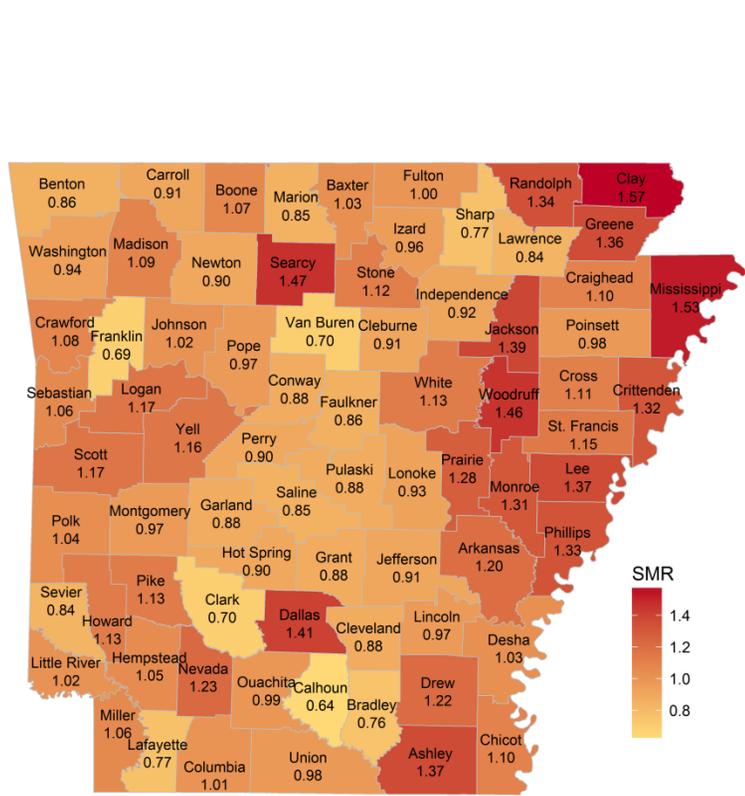
- White males and females had significantly lower rates compared to their Black counterparts ($p < 0.01$).

Figures 4.4: Age-Specific Colorectal Cancer Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



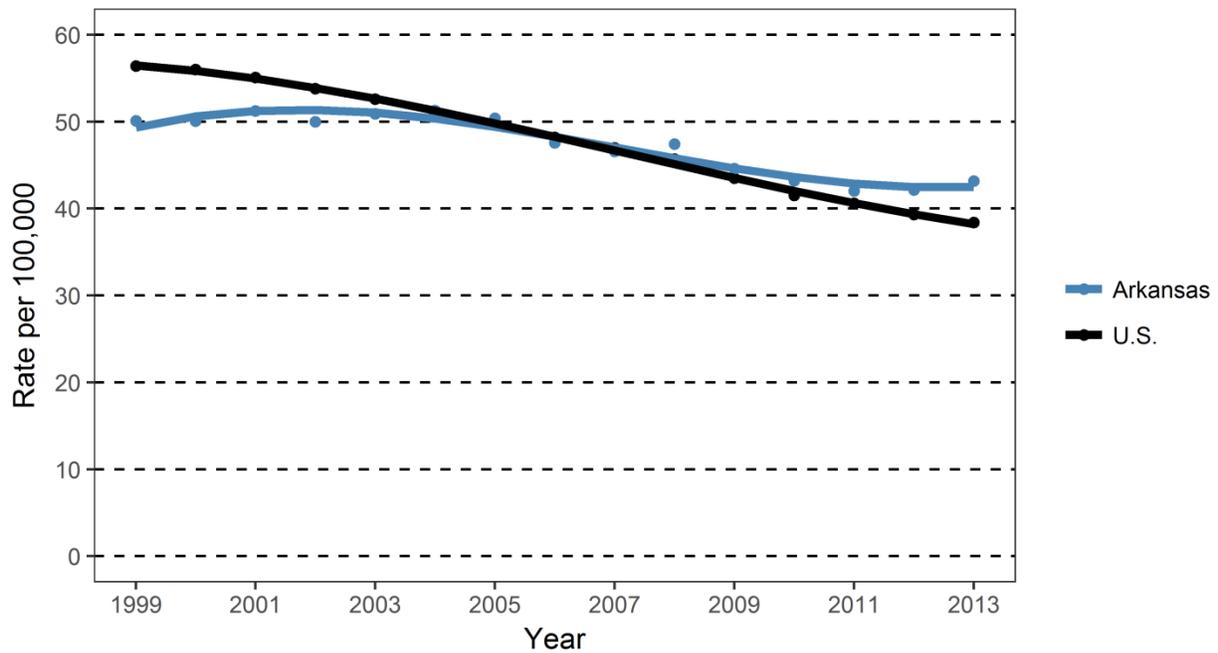
- The median age at death from colorectal cancer from 2009 through 2013 was 71 years of age.
 - Colorectal cancer mortality rate increased with age.
- Among all age groups, Black males had higher mortality rates when compared to all other sex and race groups.

Figures 4.5: Colorectal Cancer Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



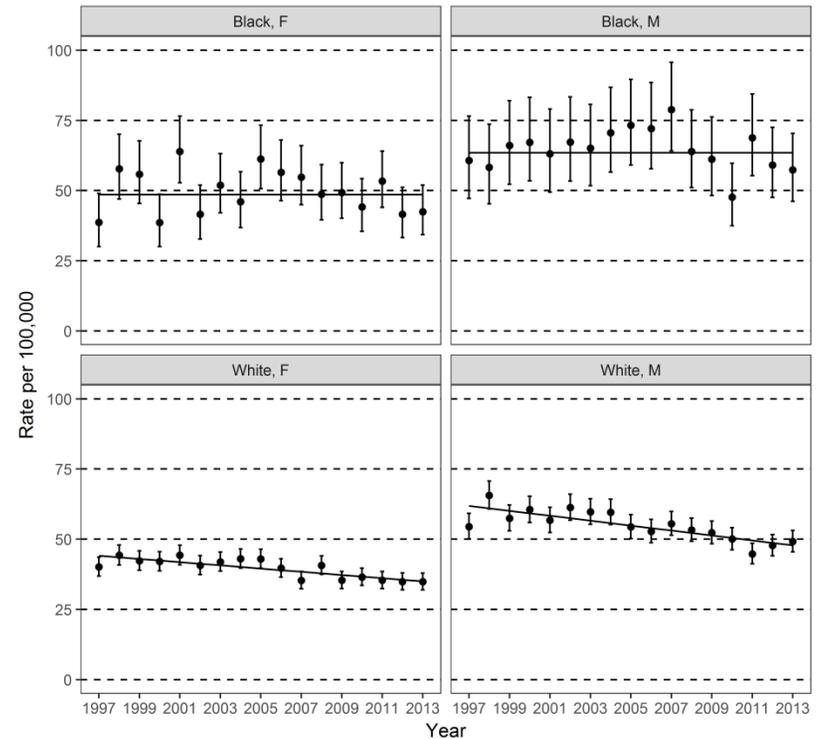
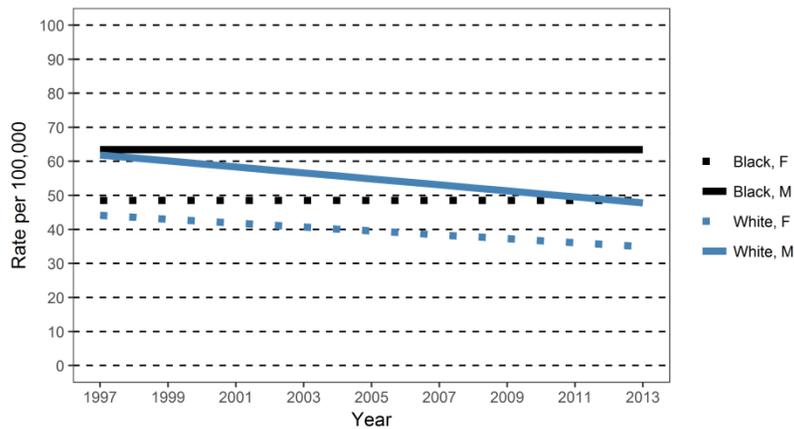
- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.
- The counties with standardized mortality ratios over 10 percent higher than the state ratio (SMR ≥ 1.10) were predominately in the eastern part of the state.

Figure 4.6: Age-Standardized Colorectal Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



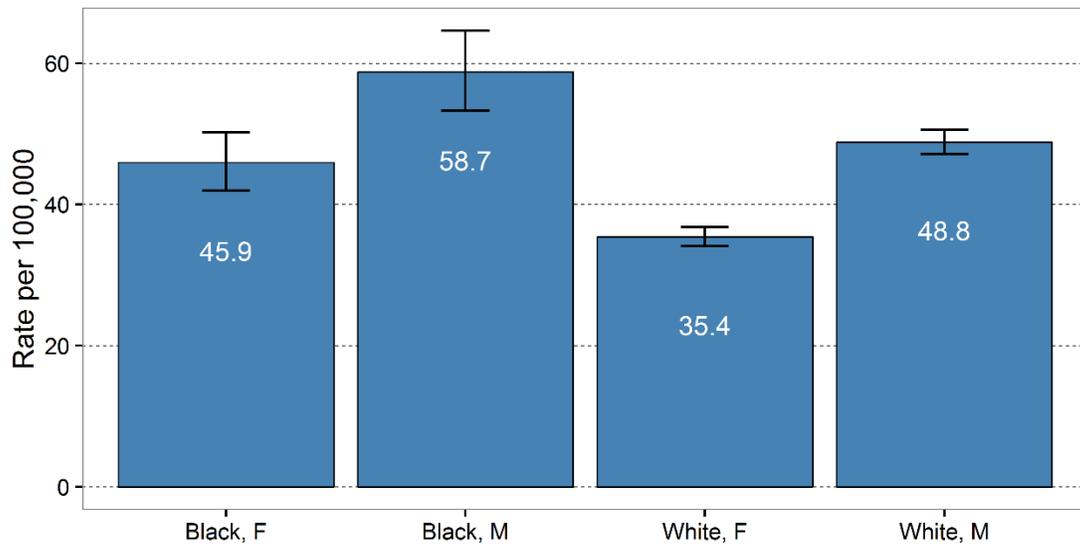
- The Arkansas age-standardized colorectal cancer incidence rate in 2013 was 43.2 per 100,000. Both Arkansas and the United States declined and converged during 2005 through 2007.
 - For the past several years, Arkansas age-standardized incidence rates of colorectal cancer were higher than the rates in the United States. Arkansas saw approximately 5 more cases per 100,000 per year than the United States.
- The decrease in rates in Arkansas over time from 1999 through 2013 was significant ($p < 0.01$).

Figures 4.7: Age-Standardized Colorectal Cancer Incidence Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1997 – 2013



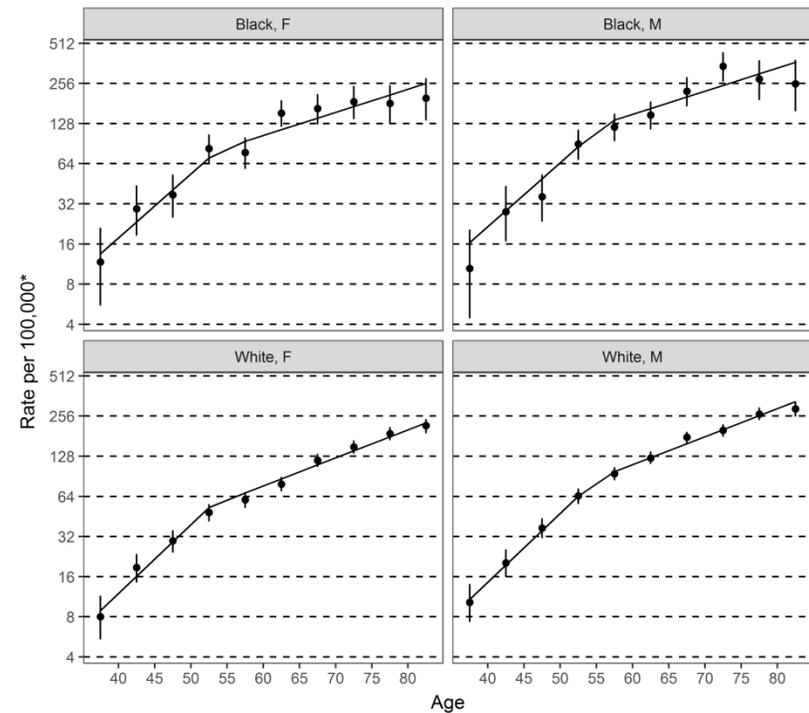
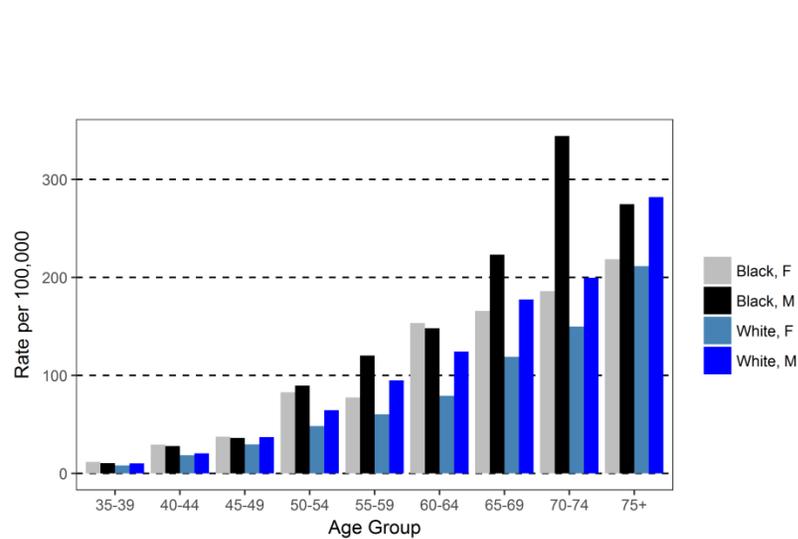
- Overall, males had higher incidence rates than females. Black males and females had higher colorectal cancer incidence rates than their White counterparts.
- There was no change in colorectal cancer incidence among Black males and females over the period (trend: $p > 0.4$).
 - Average incidence rate for Black males was 63.4 per 100,000.
 - Average incidence rate for Black females was 48.5 per 100,000.
- The rates for colorectal cancer among White males and females decreased significantly over the period (trend: $p < 0.01$).
 - White males decreased at 0.87 cases per year from 54.5 per 100,000 in 1997 to 49.2 per 100,000 in 2013.
 - White females decreased at 0.57 cases per year from 40.1 per 100,000 in 1997 to 34.9 per 100,000 in 2013.

Figure 4.8: Age-Standardized Colorectal Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- White males and females had significantly lower rates than their Black counterparts ($p < 0.01$).
- Males had significantly higher rates than females ($p < 0.01$).

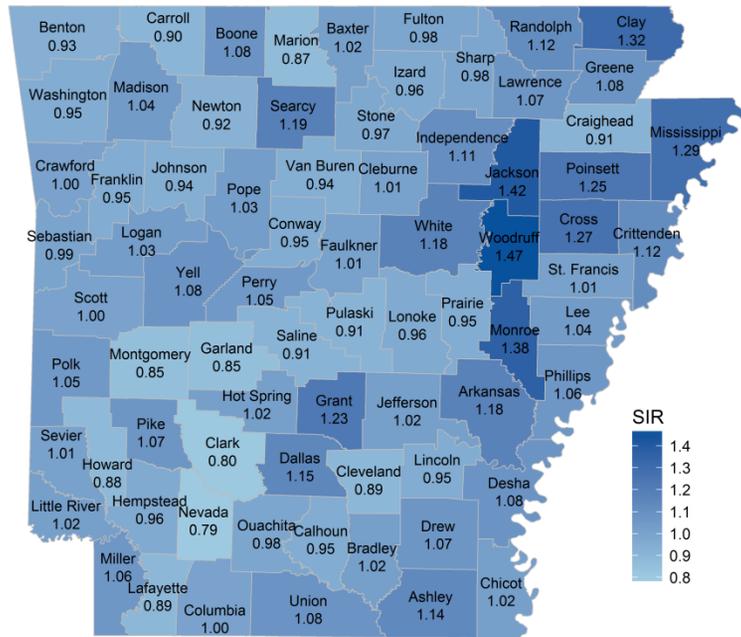
Figures 4.9: Age-Specific Colorectal Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

- The median age at diagnosis for colorectal cancer from 2009 through 2013 was 67 years of age.
- The incidence rates of colorectal cancer increased with age.
- Incidence rates for those under age 55 double approximately every six years in Arkansas.
- Incidence rates for those over age 55 double approximately every 14 years among the White population, and every 17 years for the Black population in Arkansas.

Figures 4.10: Colorectal Cancer Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.

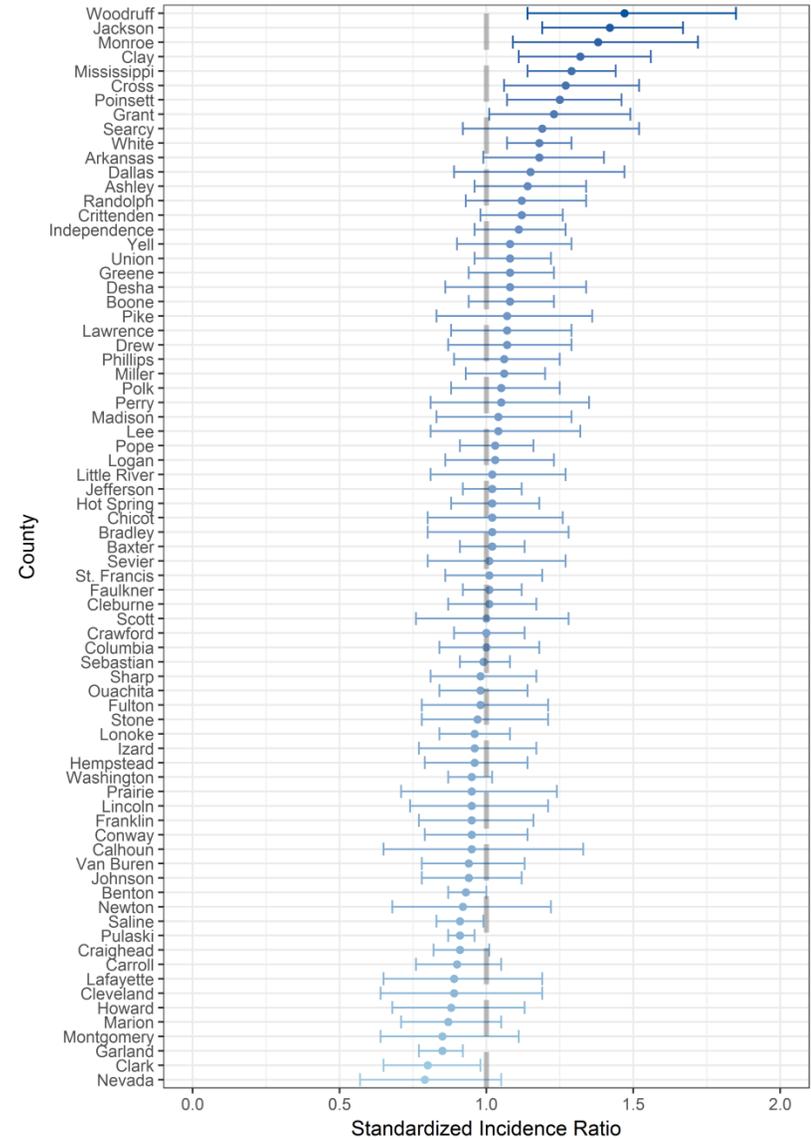
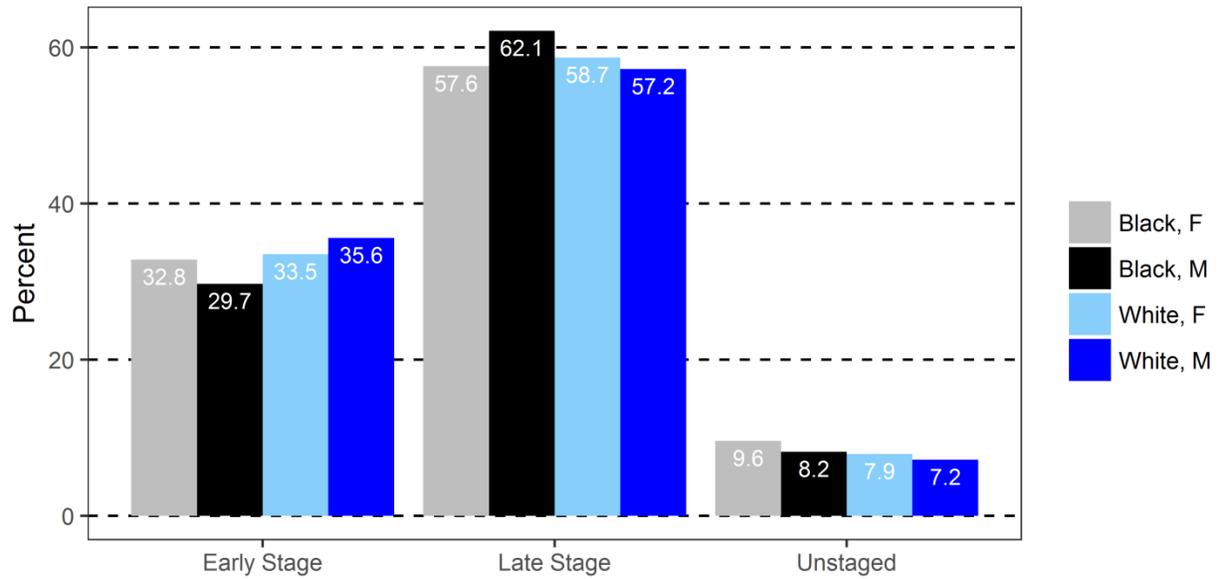


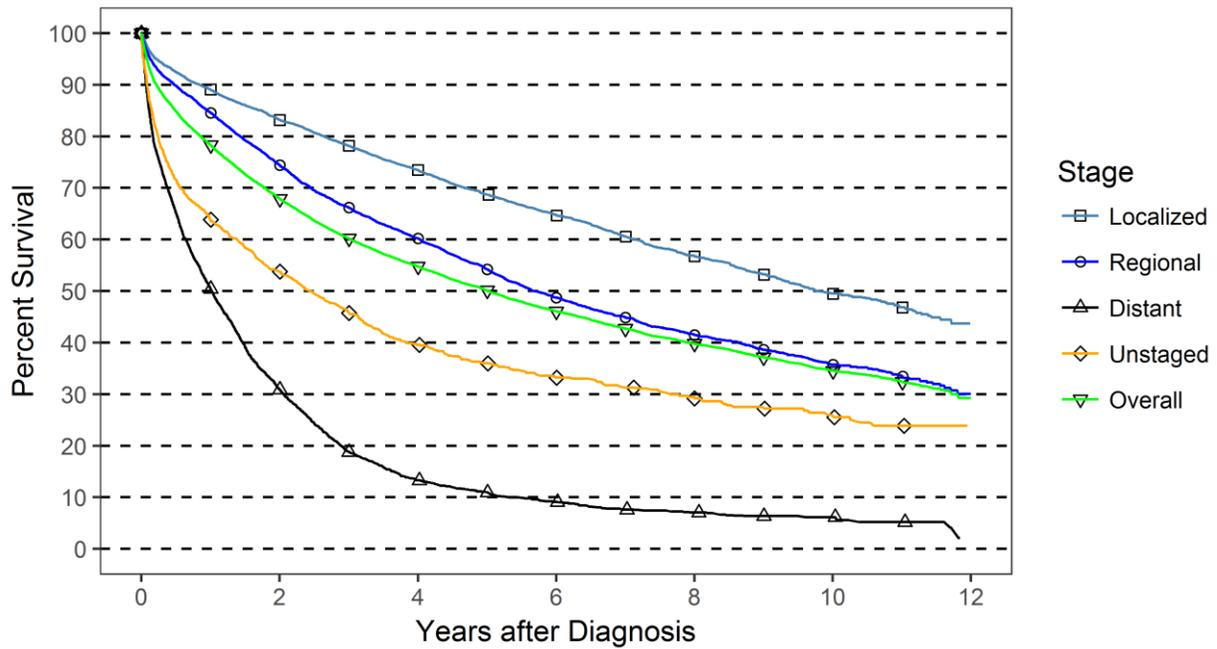
Figure 4.11: Colorectal Cancer, SEER 2000 Stage at Diagnosis, by Race and Sex, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease

- Black males were diagnosed at later stages of disease than White males.

Figure 4.12: Colorectal Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	89	85	51	65	78
2	83	75	31	54	68
3	78	66	19	46	60
4	74	60	14	40	55
5	69	55	11	37	50
6	65	49	9	34	46
7	61	45	8	32	43
8	57	42	7	30	40
9	54	39	6	29	37
10	50	37	6	27	35

- Figure 4.12 indicates that the trend has been toward earlier diagnosis.
- Colorectal cancer 5-year survival rates depend on stage at diagnosis.
 - Localized = 69 percent
 - Regional = 55 percent
 - Distant = 11 percent
 - Unstaged = 37 percent
 - Overall = 50 percent

Chapter 5: Lung and Bronchus Cancer

In 2013, a total of 2,854 men and women in Arkansas were diagnosed with lung cancer, and 2,116 died of lung cancer. The median age at diagnosis for lung cancer in Arkansas from 2009 through 2013 was 69 years.

Signs and Symptoms ^{1, 2}

Lung cancer is asymptomatic at the earliest stages. As the cancer progresses, common signs and symptoms are:

- Persistent cough;
- Sputum streaked with blood;
- Chest pain;
- Voice changes; and
- Recurrent pneumonia or bronchitis.

Risk Factors ^{1, 2, 8}

Cigarette smoking is the most common risk factor associated with lung cancer. People who smoke cigarettes are 15 to 30 times more likely to be diagnosed and die from lung cancer than people who do not smoke. Additional risk factors include occupational or environmental exposures to secondhand smoke, radon gas (radioactive breakdown of uranium rock found in soil and rock), asbestos, certain metals (chromium, cadmium, arsenic), history of tuberculosis, and a family history of lung cancer.

Prevention and Early Detection ⁴

The U.S. Preventive Service Task Force (USPSTF) recommends annual screening for lung cancer with Low-Dose Computed Tomography (LDCT) in adults aged 55 to 80 years who have a 30 pack-year smoking history and currently smoke or have quit within the past 15 years. USPSTF also recommends that screening should be discontinued once a person has not smoked for 15 years or develops a health problem that substantially limits life expectancy or the ability or willingness to have curative lung surgery.

Treatment ^{1, 2}

Most common treatment methods are surgery, radiation therapy, chemotherapy, immunotherapy, and targeted therapy.

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

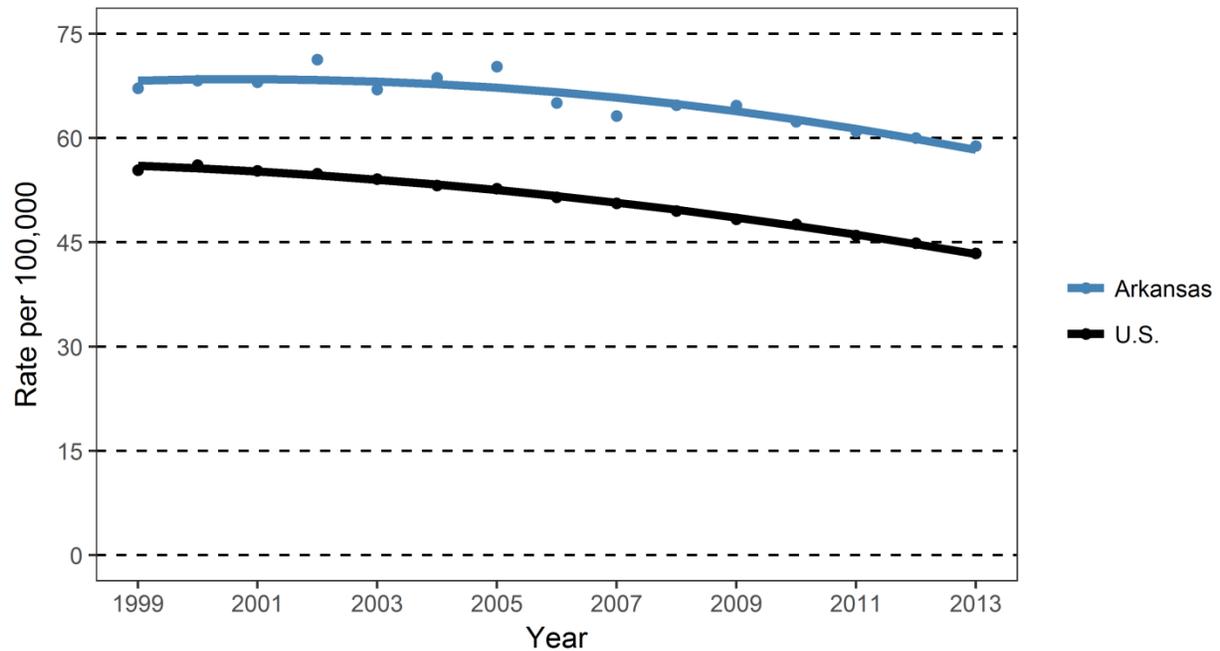
Prevention, Control Goals, and Strategies ^{3, 5, 7, 9}

	Goal/Objective	Baseline	Arkansas Healthy People 2020 Target
Goal	Reduce lung cancer death rates	58.9 per 100,000 (2013)	53.0 per 100,000
Objective 1	Reduce tobacco use by adults:		
	1.1 Cigarette smoking	25.9 percent (2013)	23.3 percent
	1.2 Smokeless tobacco	6.9 percent (2013)	6.2 percent
Objective 2	Reduce tobacco use by adolescents:		
	2.1 Current cigarette, cigar, or smokeless tobacco use	32.0 percent (2013)	28.8 percent
	2.2 Current cigarette use	19.1 percent (2013)	17.2 percent
	2.3 Current smokeless tobacco use	14.8 percent (2013)	13.3 percent
	2.4 Current cigar use	17.1 percent (2013)	15.4 percent

Proposed Strategies:

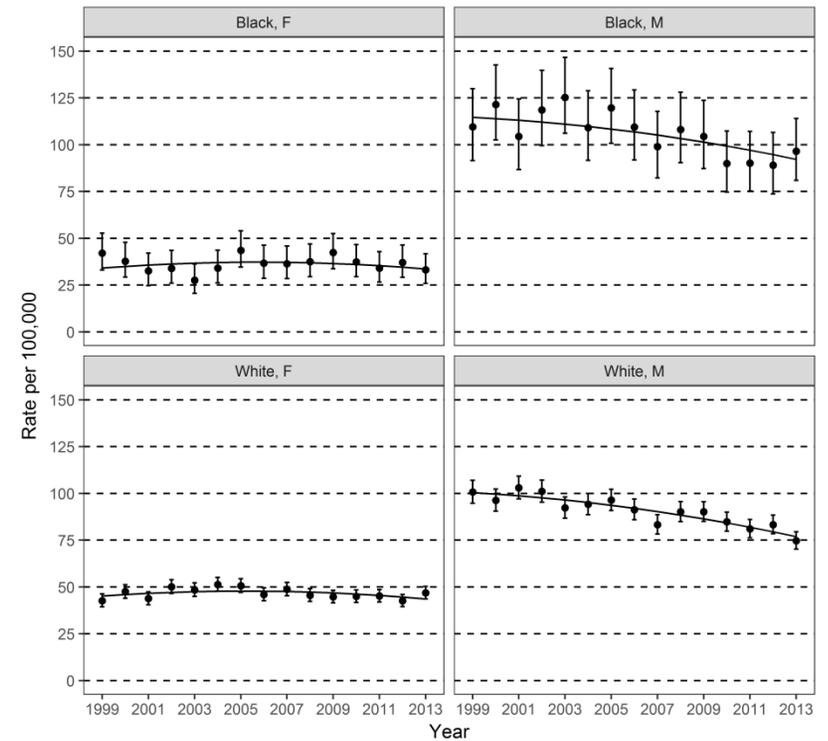
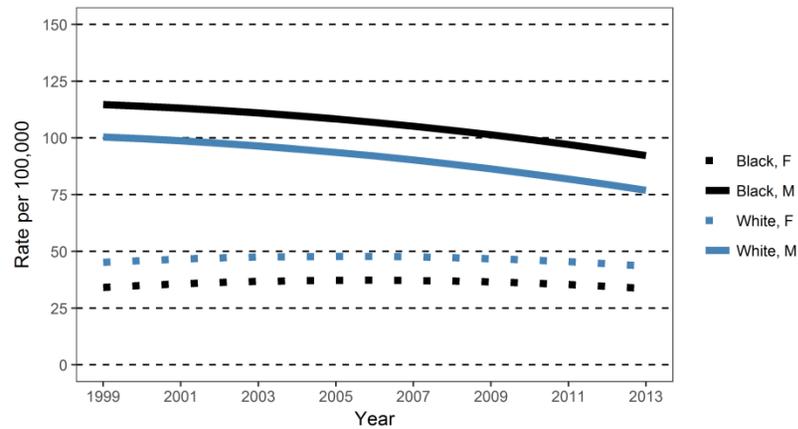
- Ensure all lung cancer patients in Arkansas have access to mutual and excellent quality of care.
- Encourage and facilitate all opportunities for clinical trials in lung cancer.
- Provide coverage with premium and cost-sharing assistance through the Health Insurance Marketplace for people who cannot afford to purchase insurance on their own.
- Work with the Arkansas Legislature, Department of Health, and Department of Human Services to expand Medicaid coverage for more low-income Arkansans.
- Reduce the prescription drug coverage gap (the “donut hole”) for those receiving the Medicare Prescription Drug benefit.
- Advocate for adoption of and compliance with smoke-free policies and include electronic smoking device (ESD) in those policies.
- Promote quitting nicotine and other tobacco-related products, including smokeless products, through multimedia communications and environmental and system changes.
- Reduce tobacco/ESD use and associated disease burden by changing systems to incorporate clinical practice guidelines for treating tobacco use and dependence.
- Increase the number of practitioners who receive nationally accredited training on tobacco treatment.
- Integrate Clinical Practice Guidelines for Treating Tobacco Use and Dependence and ensure that Brief Tobacco Interventions are implemented at all existing medical, dental, mental health, and substance abuse facilities.
- Integrate standardized evidence-based cessation curricula at all colleges and universities including medical, nursing, dental, mental health, substance abuse, and allied health programs to address tobacco/ESD use.
- Increase barriers to youth and young adult access to tobacco products and ESD, and promote tobacco abstinence.
- Advocate for significant tobacco tax increases and significant increases in retail permit fees for all tobacco products, including ESDs.
- Advocate for increasing the legal age to purchase nicotine products (Tobacco 21).

Figure 5.1: Age-Standardized Lung Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



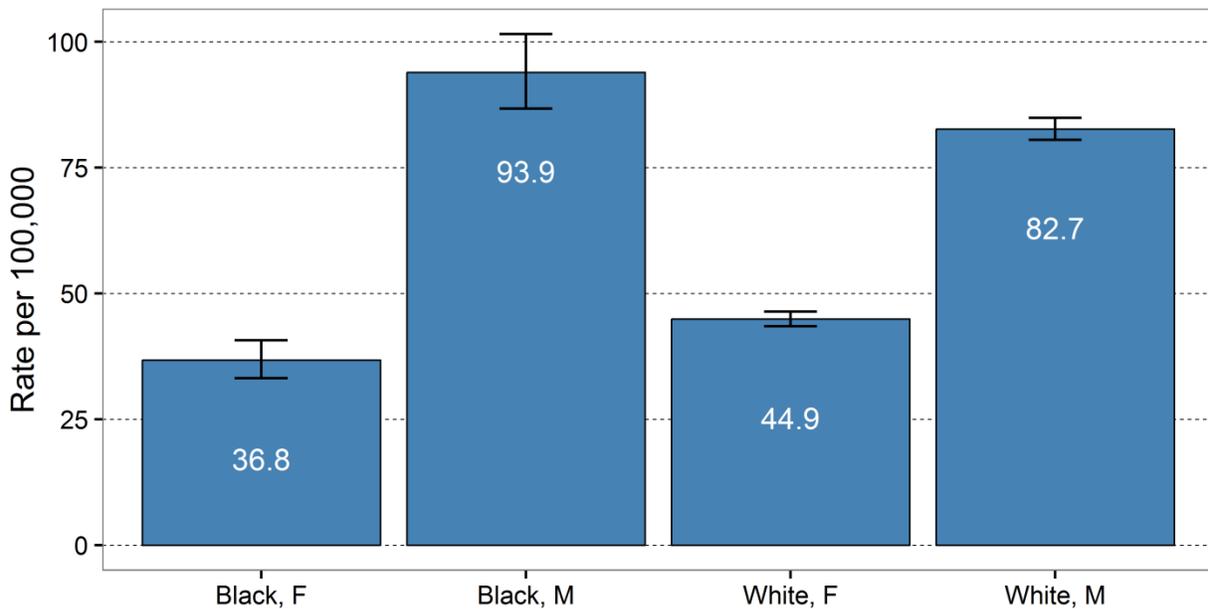
- The age-standardized lung cancer mortality rates for Arkansas from 1999 through 2013 were higher than the rates in the United States.
 - In 2013, the United States had 43.4 deaths per 100,000.
 - In 2013, Arkansas had 58.9 deaths per 100,000.
- The observed decline in age-standardized mortality rates over time in Arkansas were significant ($p < 0.001$).
 - The average age-standardized lung cancer mortality rate for the 15-year period in Arkansas was 63.9 per 100,000.

Figures 5.2: Age-Standardized Lung Cancer Mortality Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1999 – 2013



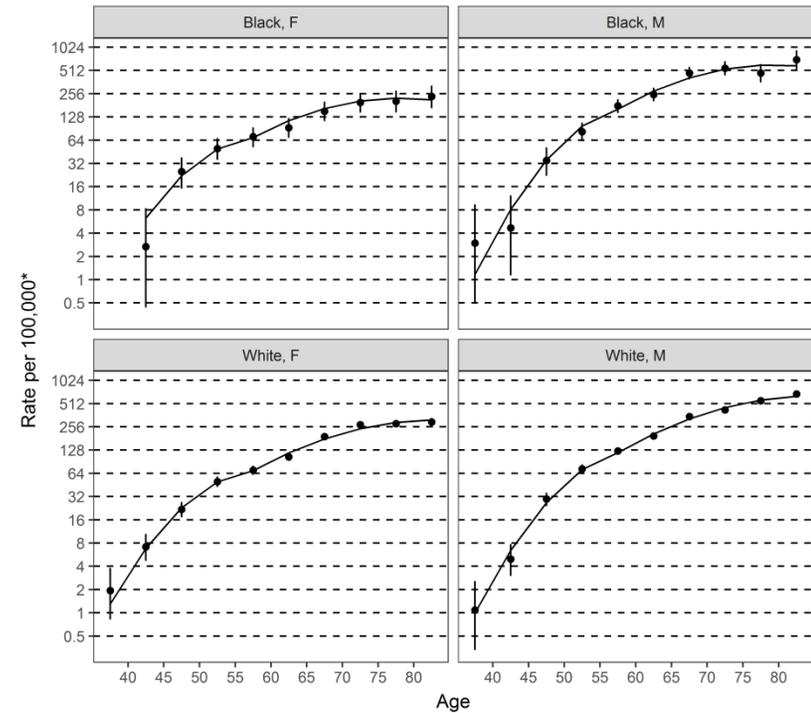
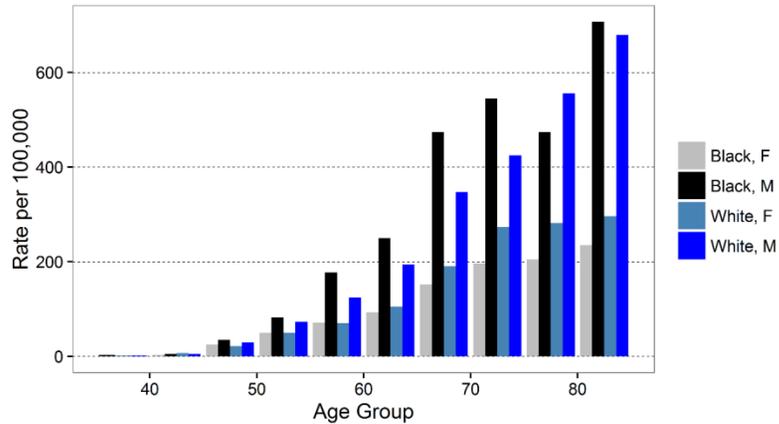
- In 2013, the age-standardized lung cancer mortality rates were: White males 74.7, Black males 96.5, White females 46.9, Black females 33.2.
- As modeled (trend line) in the figures above, males had a decreasing trend in lung cancer mortality ($p < 0.01$).
 - Over the period, Black males averaged 15.3 more deaths per 100,000 than White males.
 - Over the period, Black females averaged 9.9 fewer deaths per 100,000 than White females.
- Lung cancer rates among Black and White females have remained stable over the same period.
- Age-standardized mortality rates differed substantially between males and females.
 - Males were more likely to die from lung cancer than females.

Figure 5.3: Age-Standardized Lung Cancer Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Age-standardized lung cancer mortality rates in males were significantly higher than the rates in females ($p < 0.01$).

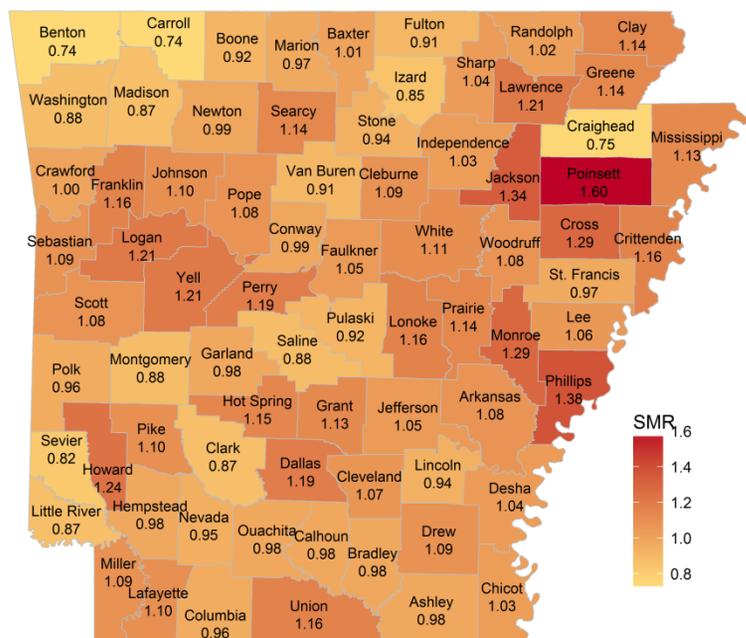
Figures 5.4: Age-Specific Lung Cancer Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



*Mortality rates plotted on the logarithmic scale

- The median age at death from lung cancer from 2009 through 2013 was 70 years.
- Lung cancer mortality rates increased with age.
- Black males had higher mortality rates for all age groups except 75 to 79.
- Black females had similar mortality rates at younger ages (< 60 years old) and lower mortality rates at older ages (> 60 years old), when compared to White females.

Figures 5.5: Lung Cancer Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.

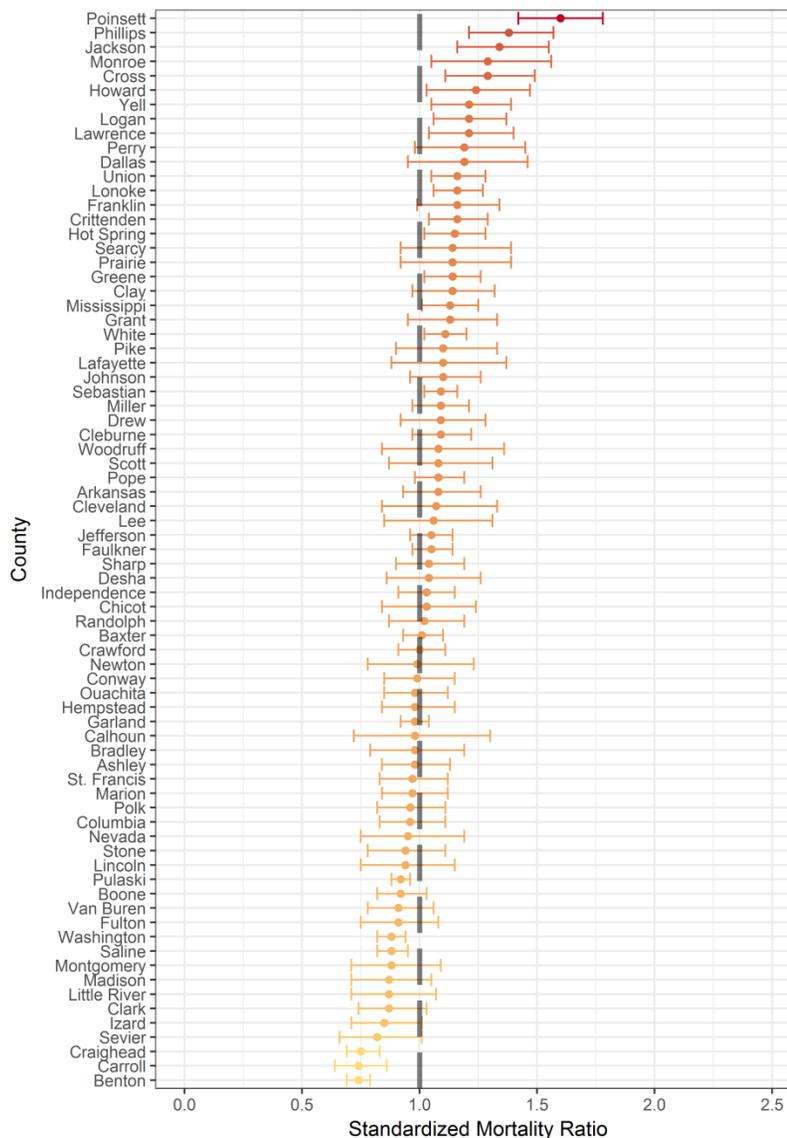
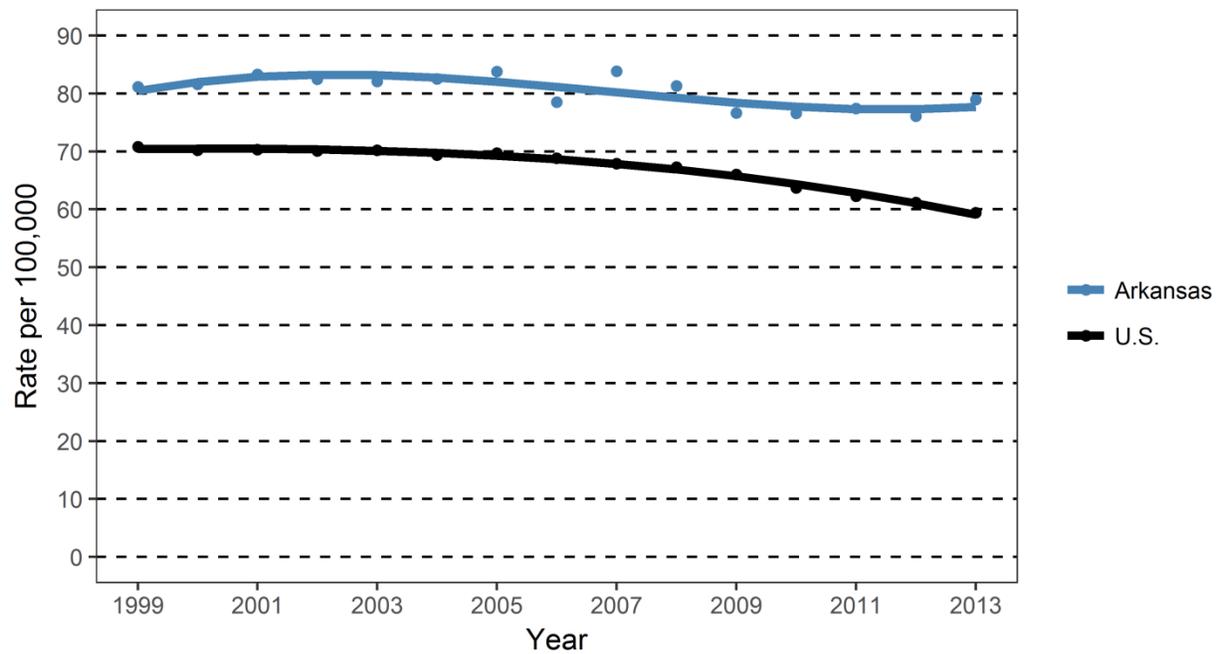
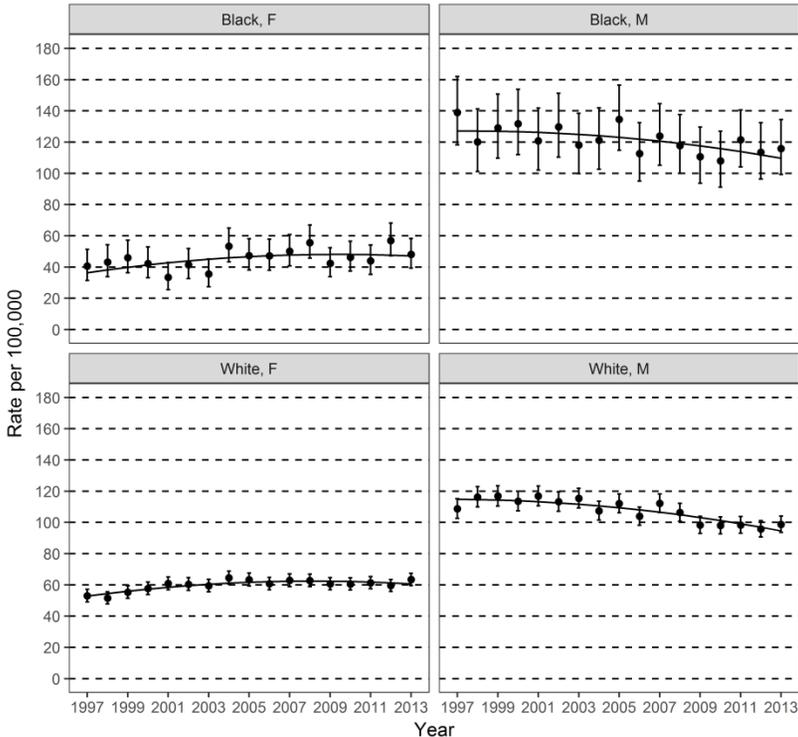
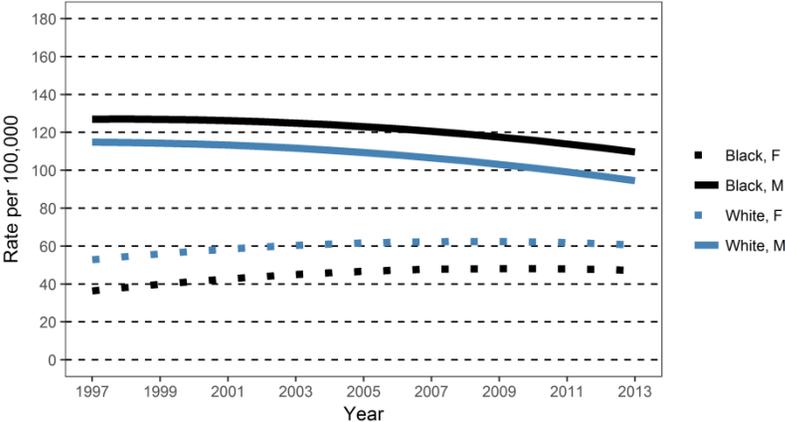


Figure 5.6: Age-Standardized Lung Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



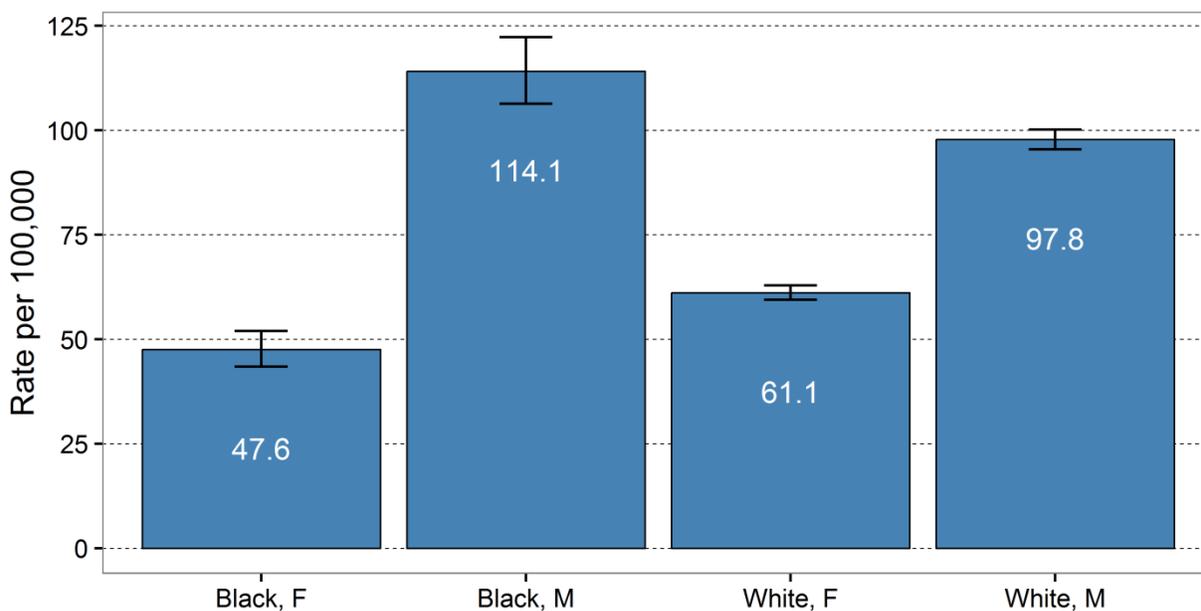
- Arkansas age-standardized lung cancer incidence rates were higher than the rates for the United States.

Figures 5.7: Age-Standardized Lung Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1997 – 2013



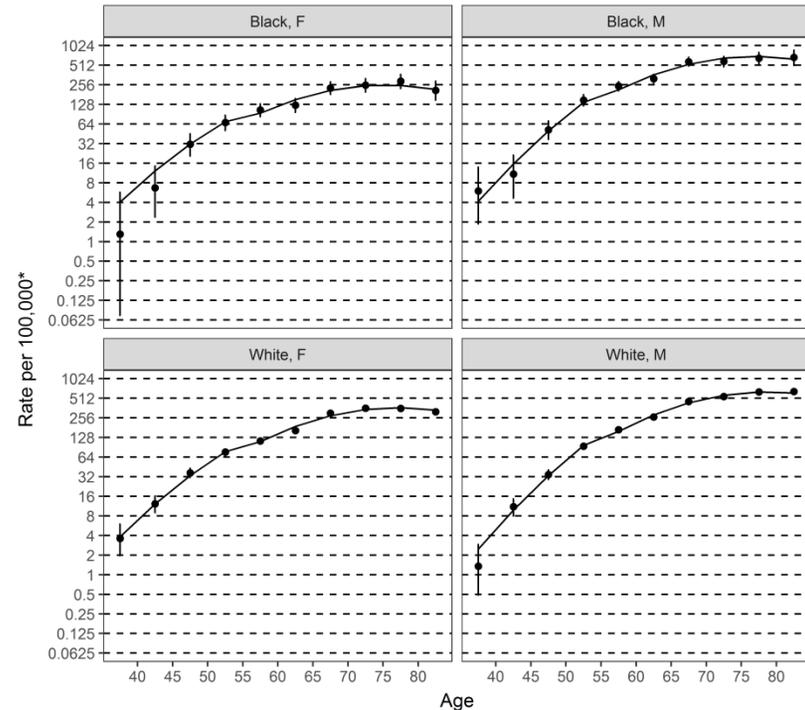
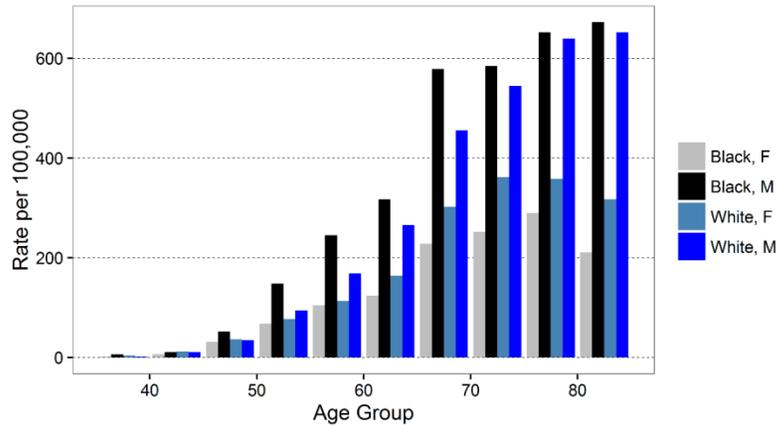
- In 2013, the age-standardized lung cancer incidence rates were: White males 98.7, Black males 115.9, White females 63.4, and Black females 48.1.
- During 1997 through 2013, males had an annual decline of 1.71 lung cancer cases per 100,000.
- Black males had an average of 13.9 cases per 100,000 more than White males from 1997 through 2013.
- During 1997 through 2008, the rates for lung cancer for females had an annual increase of 0.95 cases per 100,000. Since 2008, their rates have not increased.

Figure 5.8: Age-Standardized Lung Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Males had higher incidence rates of lung cancer than females over the 5-year period ($p < 0.01$).
- Incidence rates for Black males were significantly higher than White males.

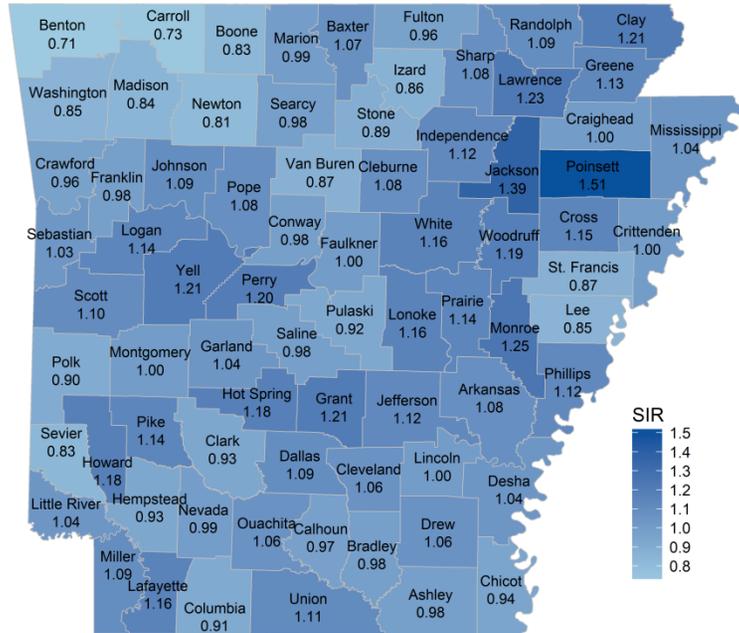
Figures 5.9: Age-Specific Lung Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

- The median age at diagnosis for lung cancer from 2009 through 2013 was 69 years of age.
- The disease patterns at younger ages were different from patterns at older ages. In the younger age groups, Black males had a higher incidence rate than White males, but in those 70 and older, the incidence rates were nearly equal.
- The higher rate among Black males was largely driven by the differences in rates at younger ages.
 - While rates for Black males from ages 40 to 64 were higher than that of White males, Black males 75 and older tended to have similar lung cancer rates as White males.
- The pattern among Black and White females was largely driven by the differences in rates at older ages.
 - White females had higher rates of lung cancer than Black females at older ages, but there is little difference in rates between the races among younger females.

Figures 5.10: Lung Cancer Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.

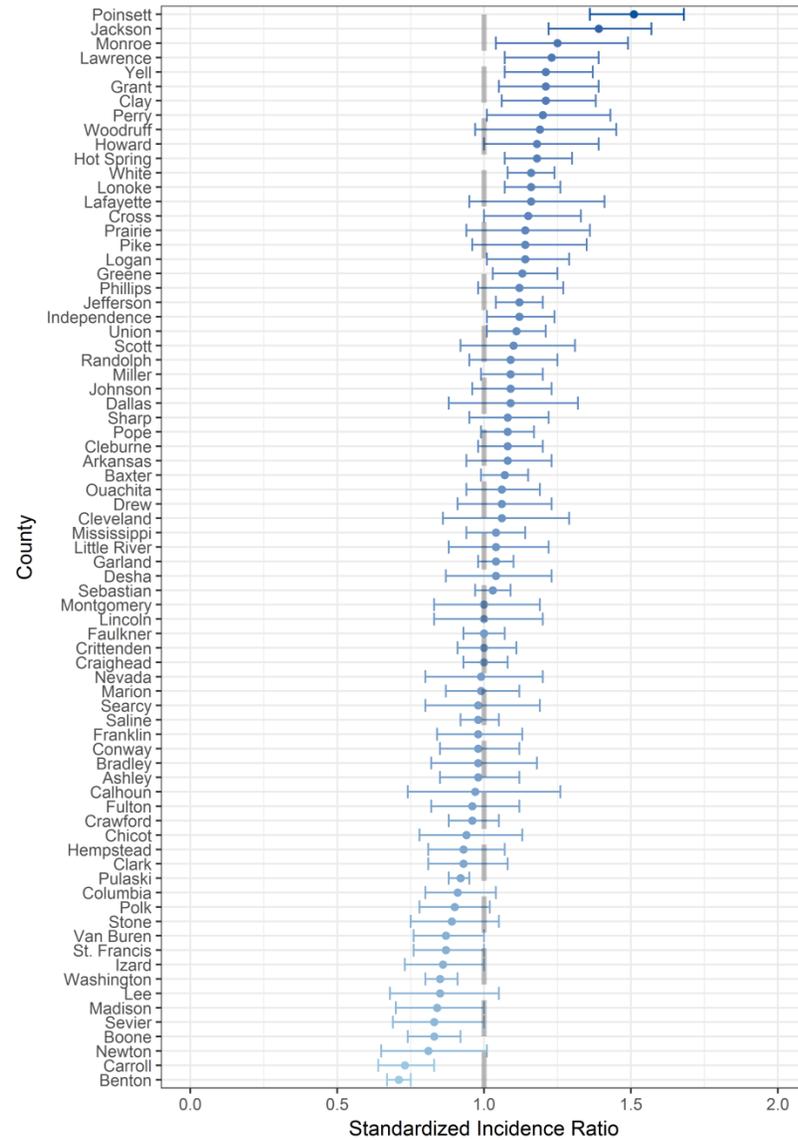
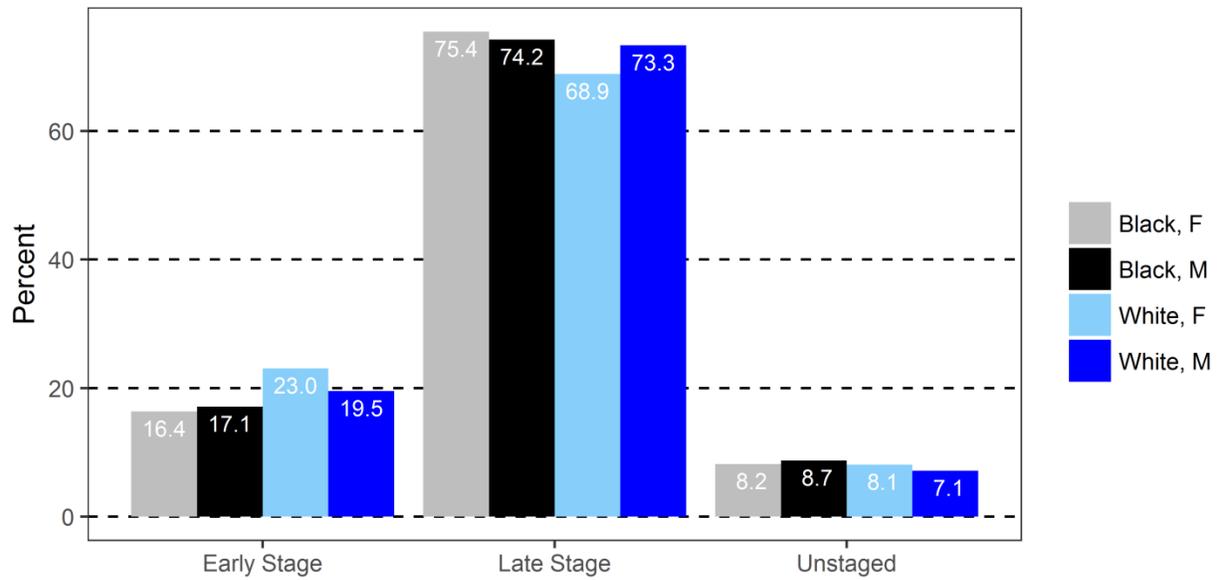


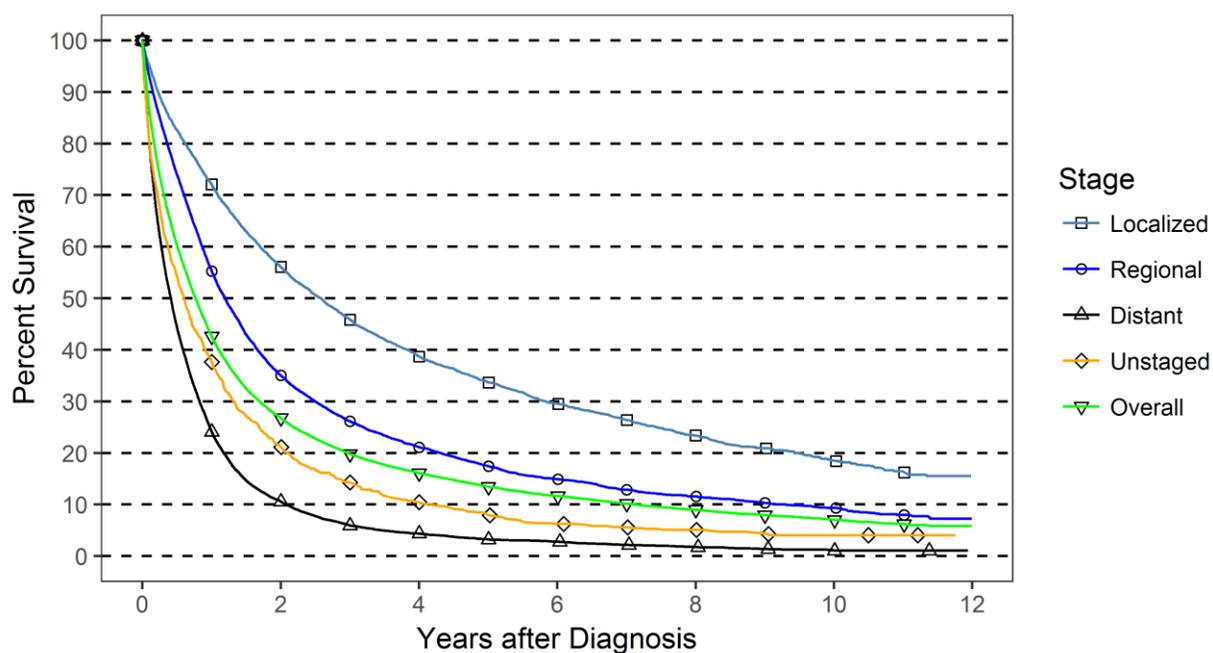
Figure 5.11: Lung Cancer, SEER 2000 Stage at Diagnosis, by Race and Sex, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease

- The stage at diagnosis was not significantly different by race.

Figure 5.12: Lung Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	72	55	24	38	43
2	56	35	11	21	27
3	46	26	6	14	20
4	39	21	4	10	16
5	34	17	3	8	13
6	30	15	3	6	12
7	26	13	2	6	10
8	23	12	2	5	9
9	21	10	1	4	8
10	18	9	1	4	7

- Lung cancer 5-year survival rates depend on stage at diagnosis.
 - Localized = 34 percent
 - Regional = 17 percent
 - Distant = 3 percent
 - Unstaged = 8 percent
 - Overall = 13 percent

Chapter 6: Lymphoma

In 2013, a total of 703 men and women in Arkansas were diagnosed with lymphoma, including 617 cases of Non-Hodgkin Lymphoma and 86 cases of Hodgkin's lymphoma. For the same year, 213 deaths occurred from lymphoma, including 199 deaths from Non-Hodgkin Lymphoma and only 14 deaths from Hodgkin's lymphoma. The median age at diagnosis for Non-Hodgkin Lymphoma in Arkansas from 2009 through 2013 was 68 years.

Signs and Symptoms ^{2, 10}

Non-Hodgkin Lymphoma comprises a large group of cancers of the white blood cells (lymphocytes), and there are various types of lymphatic cancers. Non-Hodgkin Lymphoma is usually divided into two categories: aggressive (fast-growing) and indolent (slow-growing). The most common symptoms of the disease include:

- Enlarged lymph nodes;
- Itching skin;
- Night sweats;
- Fatigue; and
- Unexplained weight loss and sporadic fever.

Detection ^{2, 10}

Non-Hodgkin Lymphoma is diagnosed using blood tests to check white blood cell levels, and a chest x-ray to check for enlarged lymph nodes. A lymph node biopsy is performed for final determination.

Risk Factors ^{2, 10}

The risk of developing Non-Hodgkin Lymphoma increases with age. Being male and White are also factors associated with the disease. Causes of lymphoma are largely unknown; however, immune system abnormalities have been identified as a risk factor for Non-Hodgkin Lymphoma. Persons at higher risk include those with severe autoimmune disorders and those diagnosed with human immunodeficiency virus (HIV), human T-cell leukemia virus type I (HTLV-I), Epstein Barr virus (EBV), and Helicobacter pylori (H.pylori) infection. Persons taking immunosuppressant drugs after an organ transplant are also at increased risk.

Treatment ^{2, 10}

Non-Hodgkin Lymphoma is usually treated with chemotherapy and radiation. High dose chemotherapy with stem cell transplantation is used in recurrent disease or when Non-Hodgkin Lymphoma is persistent.

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

Other Cancers^{6,7}

There are three main types of hematology/oncology cancers—leukemia, lymphoma, and myeloma. Within these selected hematology/oncology cancers, some types are more common than others. Mortality and incidence rates for these cancers in 2013 for the state of Arkansas and the United States are presented below. Because Non-Hodgkin Lymphoma is the most prevalent among the hematology/oncology cancers, it is covered in detail in this chapter.

Table 6.1 Age-Standardized Mortality Rates of Common Hematology/Oncology Cancers with 95 Percent Confidence Intervals for Arkansas and the United States, 2013

Type of Cancer	Death Count	AR	AR Rate (95 Percent CI)	U.S. Rate (95 Percent CI)
Leukemia	279	8.2	(7.3, 9.3)	6.7 (6.7, 6.8)
Lymphoma	224	6.5	(5.6, 7.4)	6.0 (5.9, 6.1)
Myeloma	118	3.3	(2.8, 4.0)	3.3 (3.3, 3.4)

Table 6.2 Age-Standardized Incidence Rates of Common Hematology/Oncology Cancers with 95 Percent Confidence Intervals for Arkansas and the United States, 2013

Type of Cancer	Case Count	AR	AR Rate (95 Percent CI)	U.S. Rate (95 Percent CI)
Leukemia	436	12.8	(11.7, 14.1)	13.2 (13.1, 13.3)
Lymphoma	703	20.9	(19.3, 22.5)	21.1 (20.9, 21.2)
Myeloma	211	6.0	(5.2, 6.9)	6.3 (6.2, 6.4)

Figure 6.1: Percentage of Cases in Arkansas for Hematology/Oncology Cancers, 2013

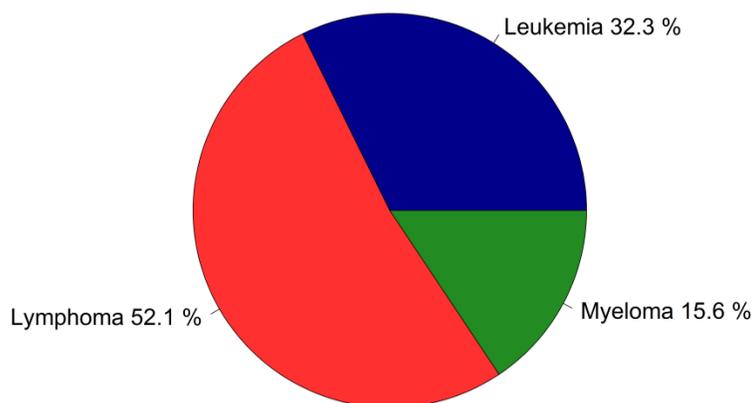
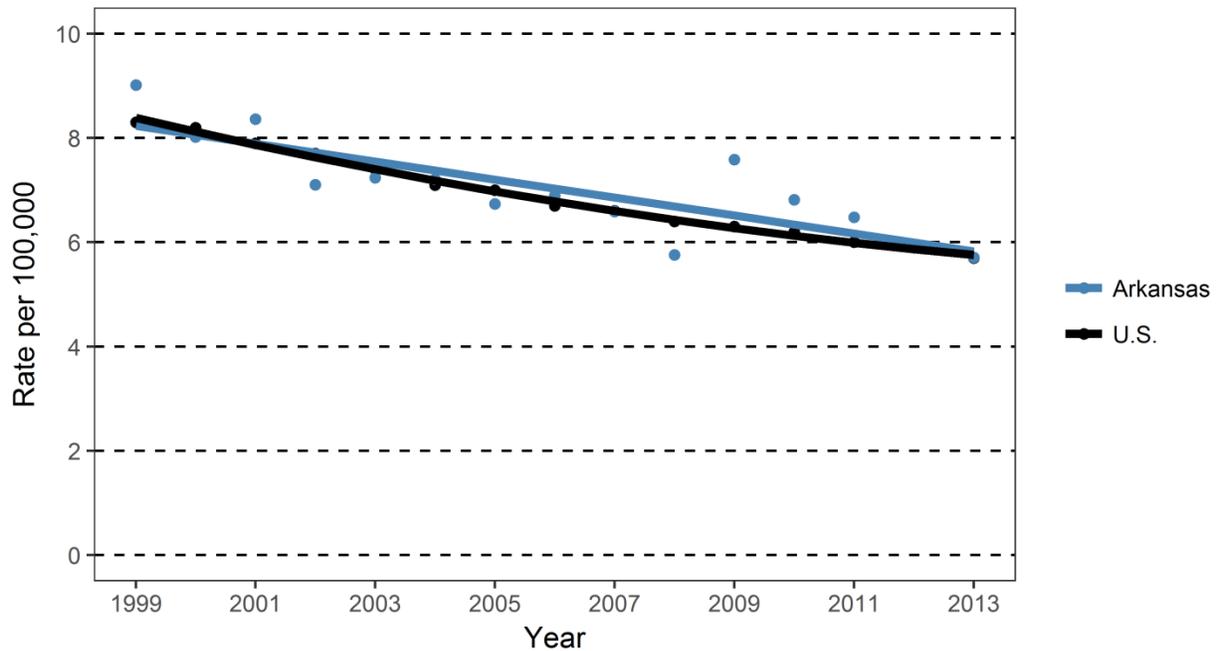
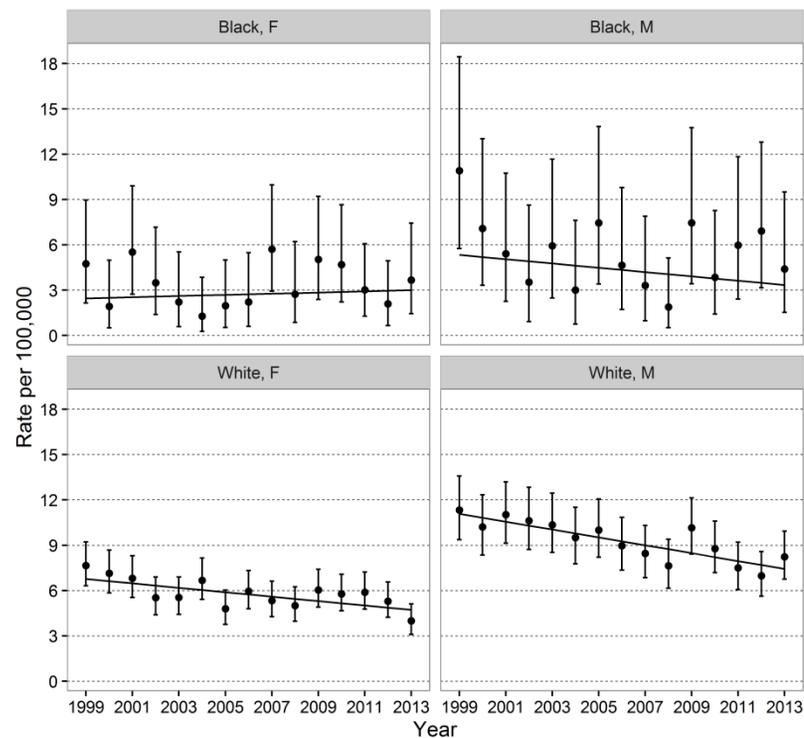
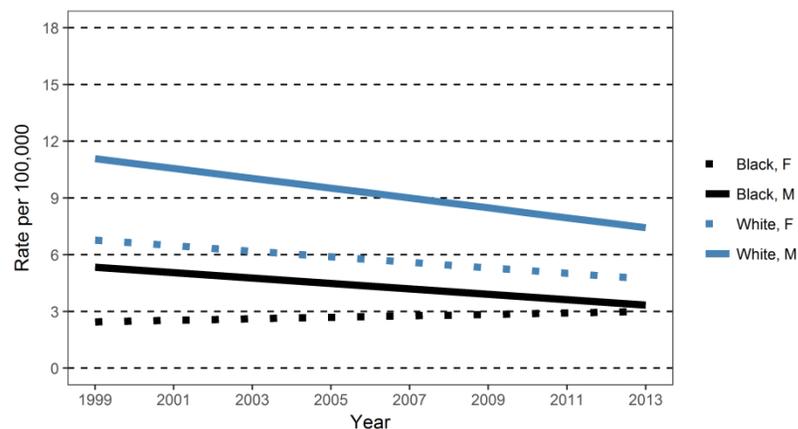


Figure 6.2: Age-Standardized Non-Hodgkin Lymphoma Mortality Trends, Arkansas and United States, 1999 – 2013



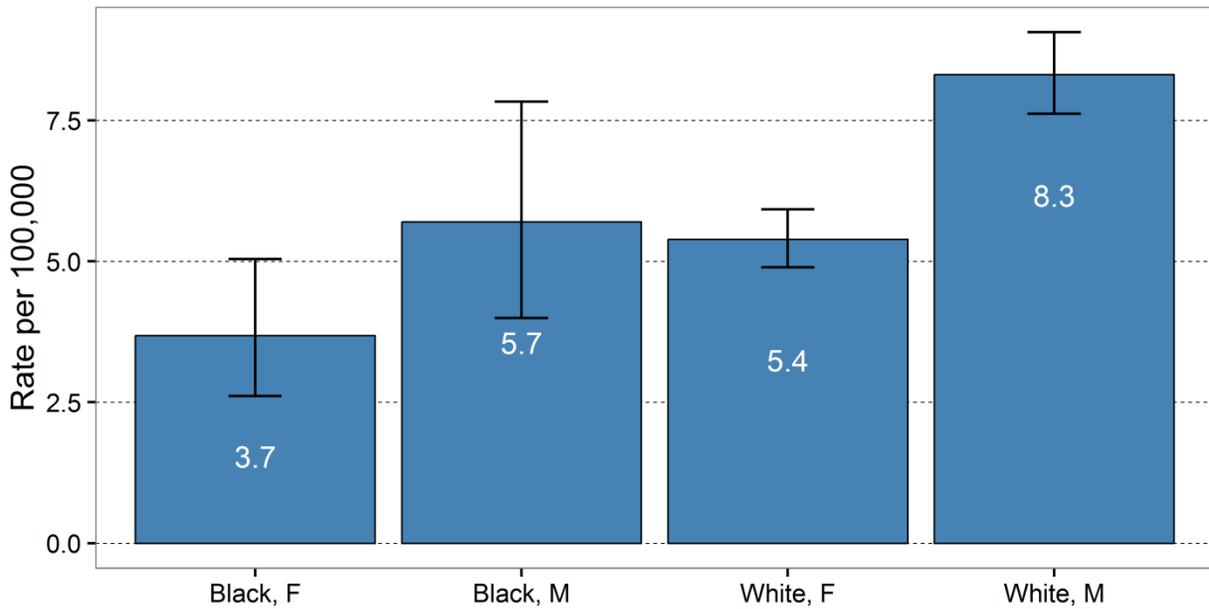
- Age-standardized mortality rates for Non-Hodgkin Lymphoma for Arkansas and the United States were not significantly different.
 - Arkansas and the United States had equal mortality rates (5.7 deaths per 100,000) in 2013.
- Arkansas rates have declined over the period ($p < 0.01$) at an annual rate of 0.17 deaths per 100,000 population.

Figures 6.3: Age-Standardized Non-Hodgkin Lymphoma Mortality Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1999 – 2013



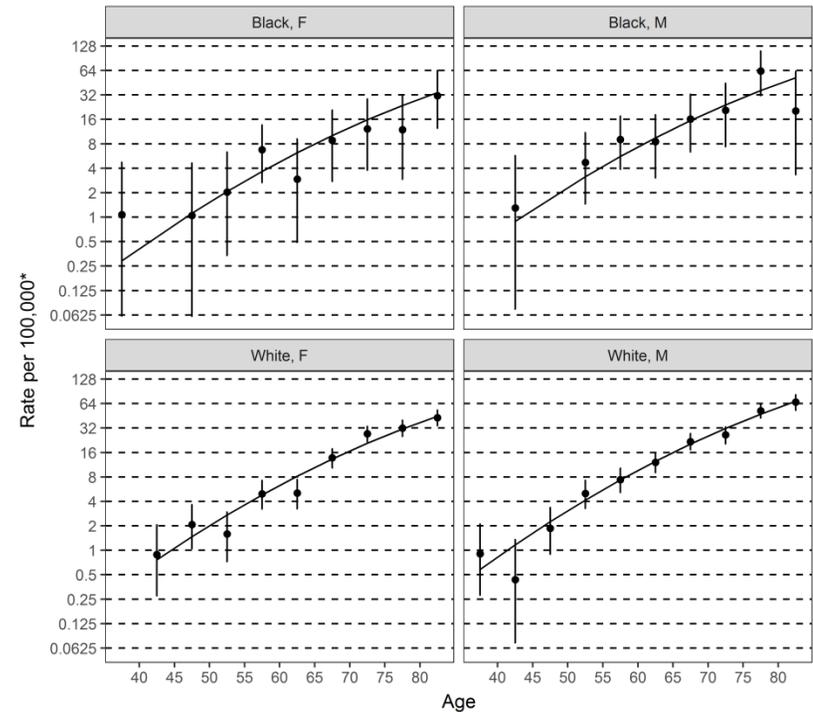
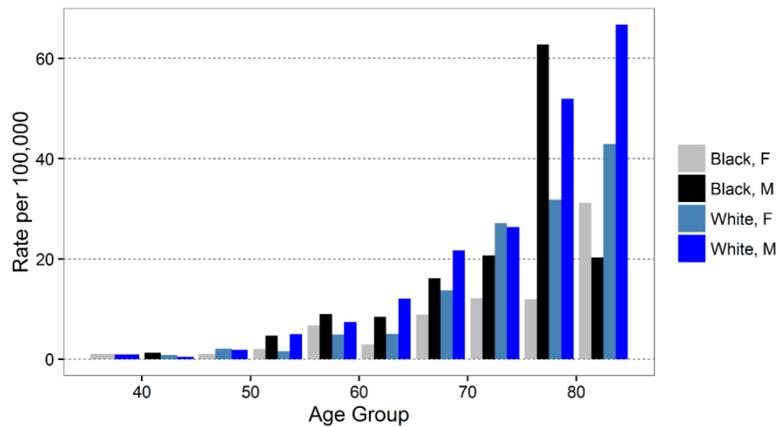
- Non-Hodgkin Lymphoma mortality rates declined significantly in all groups, except for Black females with a mortality rate of 3.7 deaths per 100,000 in 2013.
- White males had the highest mortality rates with 8.2 deaths per 100,000 in 2013. White males also had the fastest decline in mortality, with an annually decline of 0.27 deaths per 100,000.
- White females had higher mortality rates than Black males. The annual declining rates (0.14 deaths per 100,000) were similar for White females and Black males.
 - The mortality rate for White females was 4.0 per 100,000 in 2013.
 - The mortality rate for Black males was 4.4 per 100,000 in 2013.

Figure 6.4: Age-Standardized Non-Hodgkin Lymphoma Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Mortality rates among White males and females were significantly higher compared to their White counterparts ($p < 0.01$).
- Mortality rates for White males were significantly higher than all other race and sex groups ($p < 0.01$).

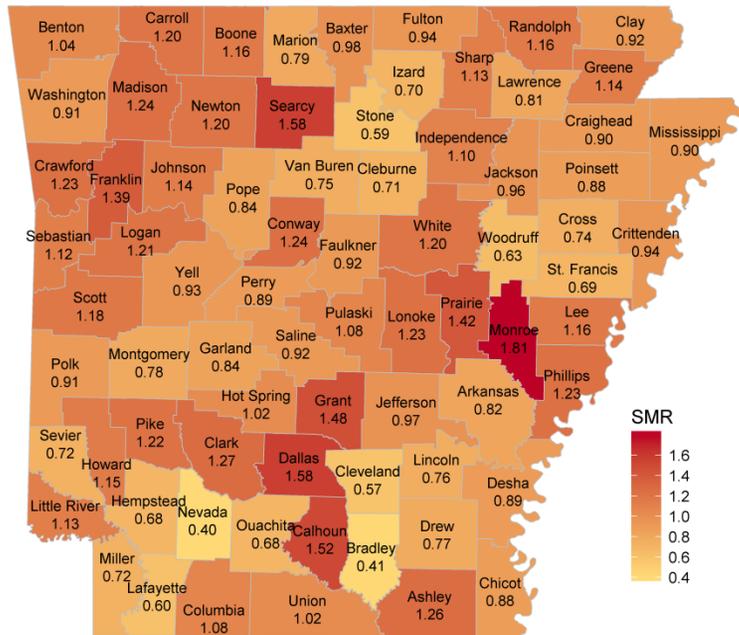
Figures 6.5: Age-Specific Non-Hodgkin Lymphoma Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



*Mortality rates plotted on the logarithmic scale

- The median age at death from Non-Hodgkin Lymphoma from 1999 through 2013 was 74 years.
- Non-Hodgkin Lymphoma mortality rates increased with age.
- White males had higher rates beginning in the 60 to 64 age group and continuing for all older age groups, except in the 75 to 80 age group.

Figures 6.6: Non-Hodgkin Lymphoma Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.

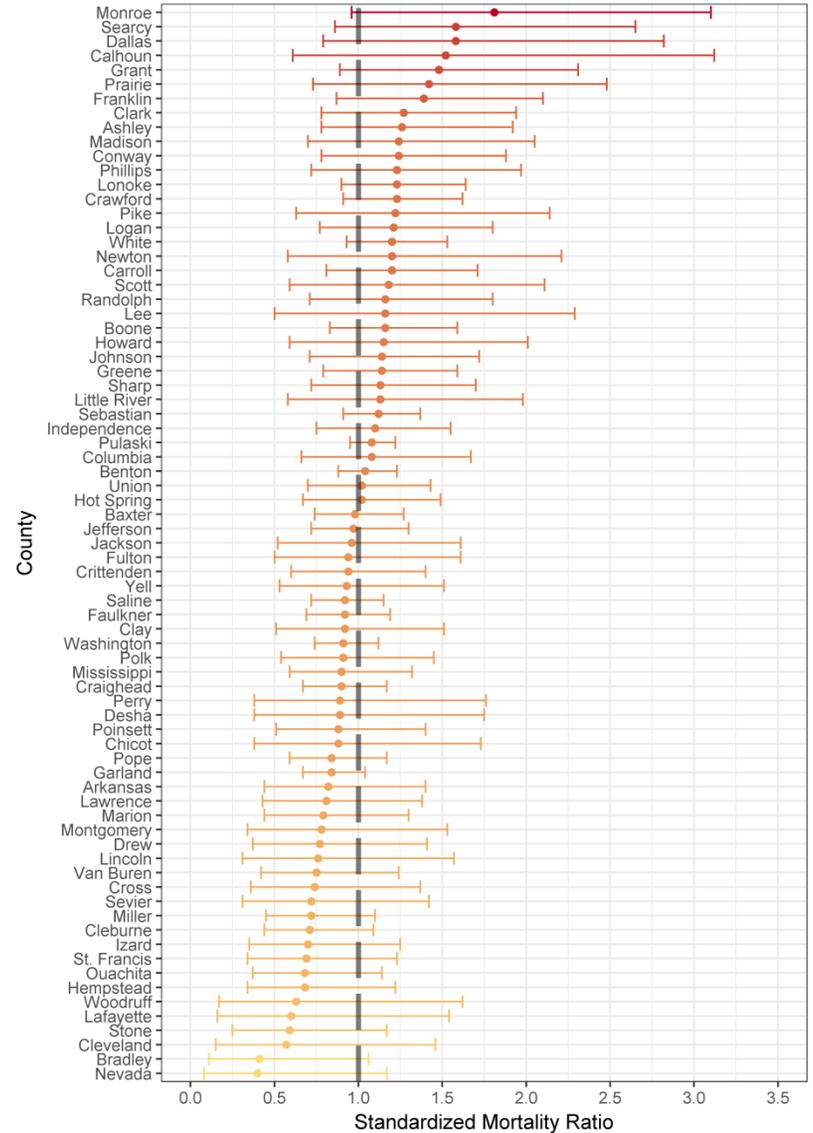
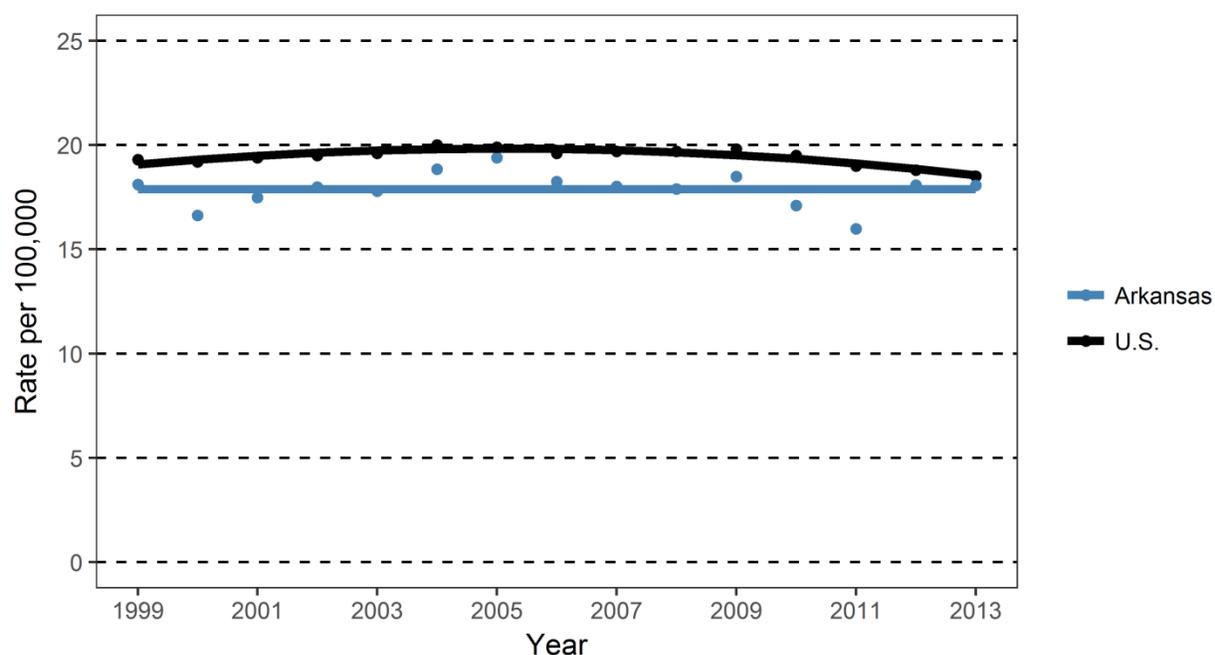
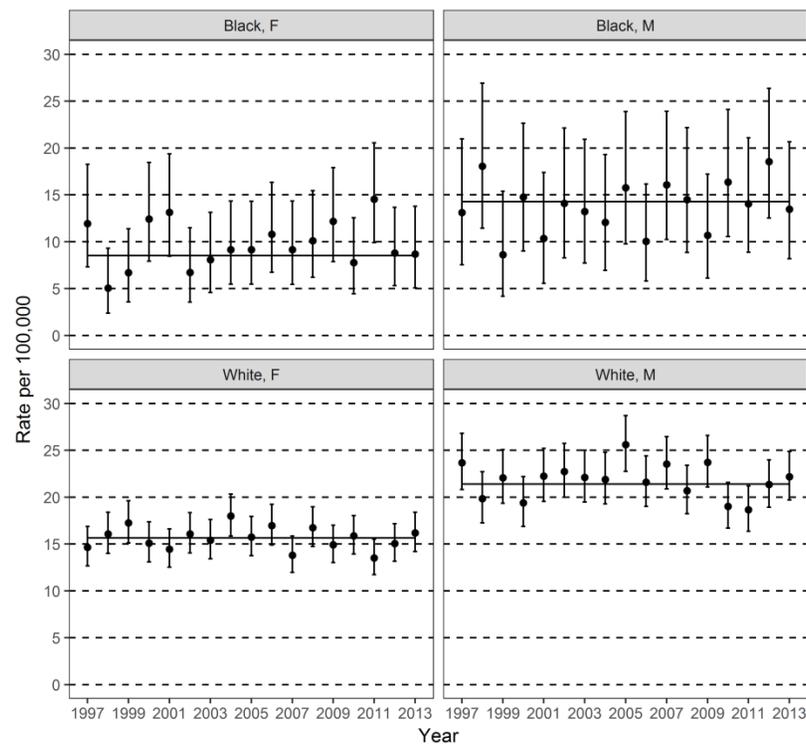
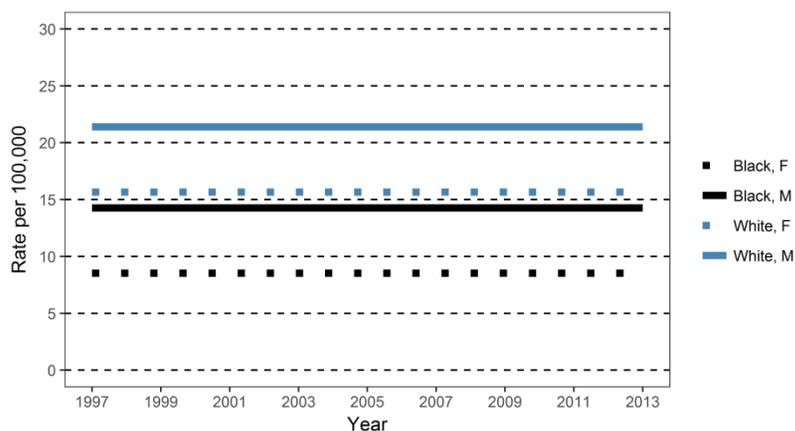


Figure 6.7: Age-Standardized Non-Hodgkin Lymphoma Incidence Trends, Arkansas and United States, 1999 – 2013



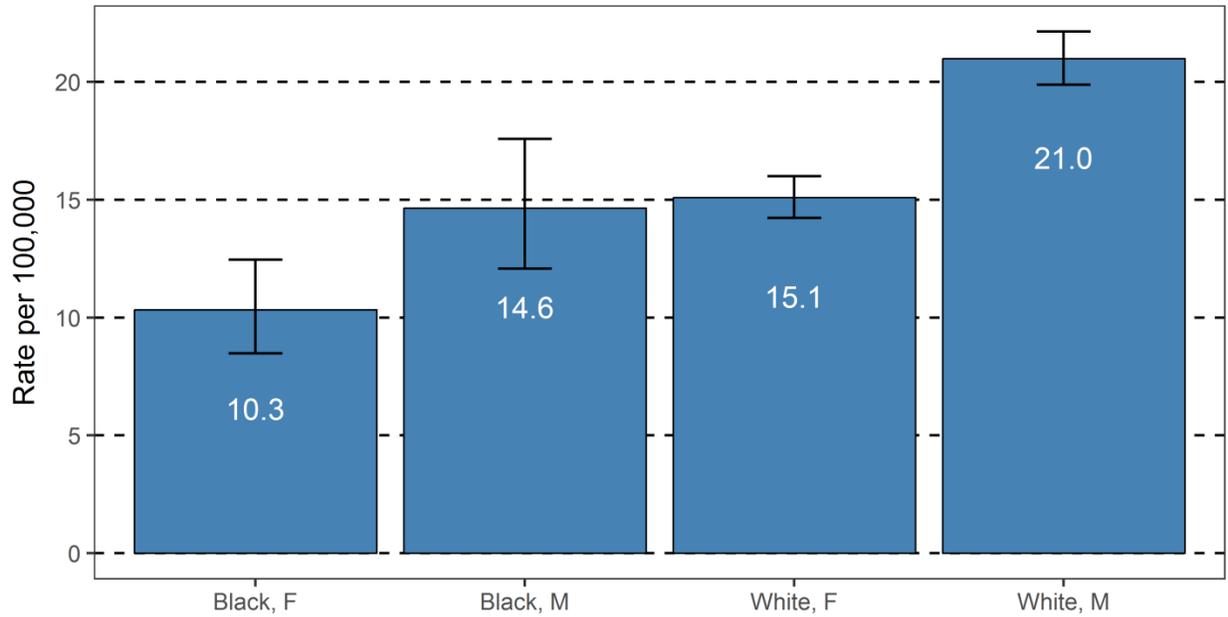
- The age-standardized Non-Hodgkin Lymphoma incidence rates for Arkansas were lower than the incidence rates for the United States.
 - The rate in Arkansas in 2013 was 18.1 per 100,000.
 - The rate in the United States in 2013 was 18.5 per 100,000.
- In Arkansas, changes over time were relatively constant.

Figures 6.8: Age-Standardized Non-Hodgkin Lymphoma Incidence Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1997 – 2013



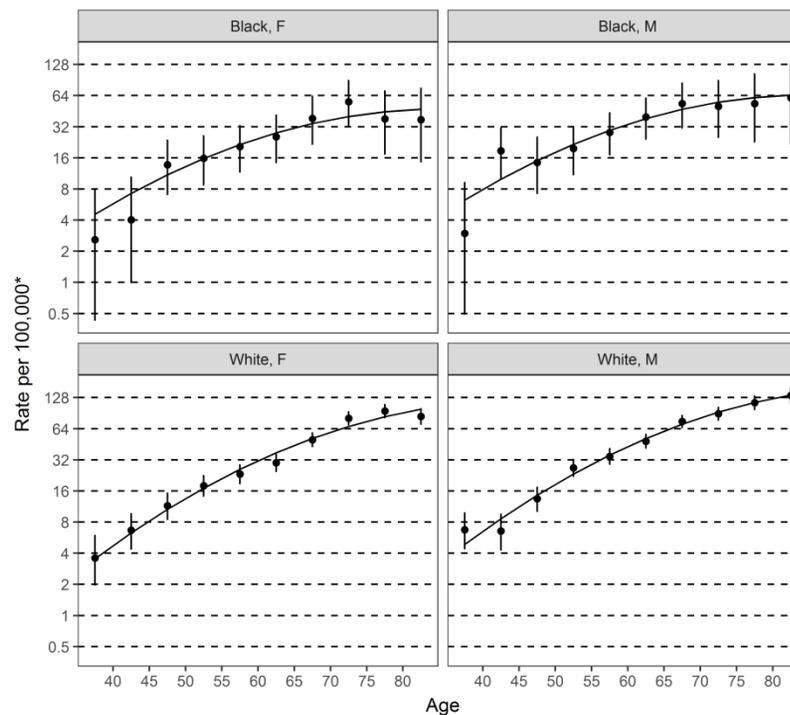
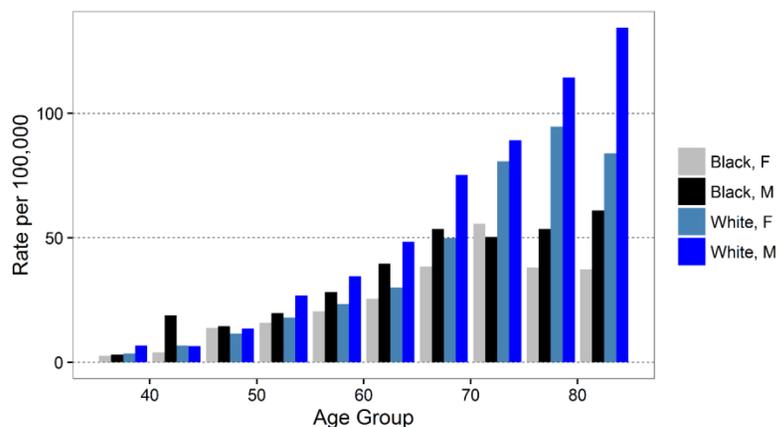
- Non-Hodgkin Lymphoma incidence rates were relatively constant across groups during 1997 through 2013.
- Whites had higher incidence rates than Blacks. Males also had higher rates than females within the same race.
 - White males had an incidence of 22.2 cases per 100,000 in 2013. The rate for White females was 16.2 cases per 100,000.
 - Black males had an incidence of 13.5 cases per 100,000 in 2013. The rate for Black females was 8.7 cases per 100,000.

Figure 6.9: Age-Standardized Non-Hodgkin Lymphoma Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- White male rates were significantly higher than all other race and sex groups.

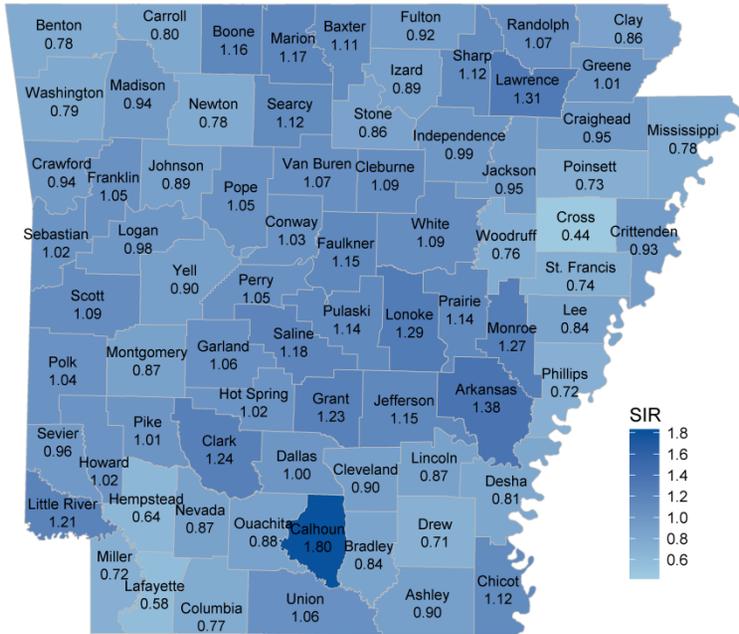
Figures 6.10: Age-Specific Non-Hodgkin Lymphoma Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

- The median age at diagnosis for Non-Hodgkin Lymphoma from 2009 through 2013 was 68 years.
- The overall higher rate among White males was attributable to substantially higher age-specific rates beginning in the 50 to 54 year age group and continuing and increasing with each older age group.
- Incidence rates increased with age.
- Black males and females had more variation in Non-Hodgkin Lymphoma incidence rates from 2009 through 2013 than White males and females due to small number of cases.

Figures 6.11: Non-Hodgkin Lymphoma Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.

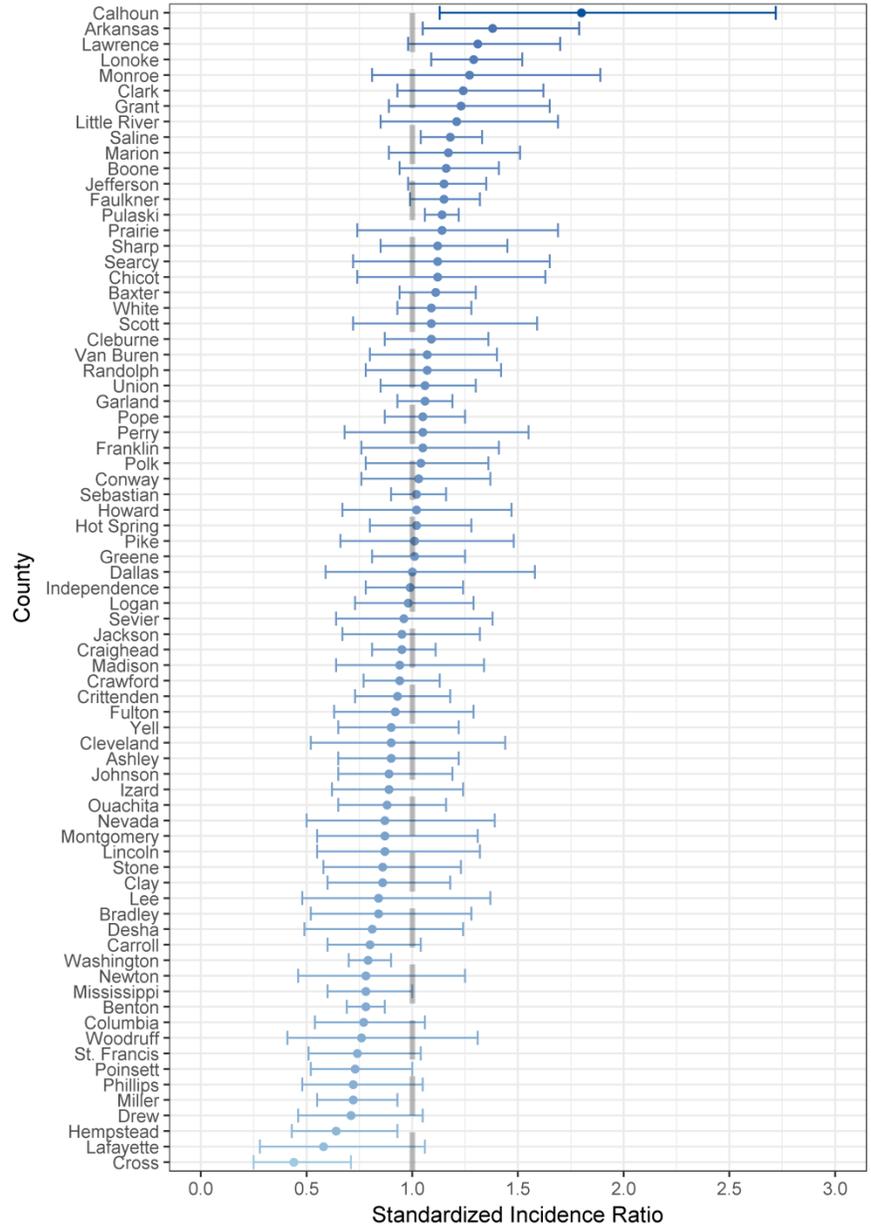
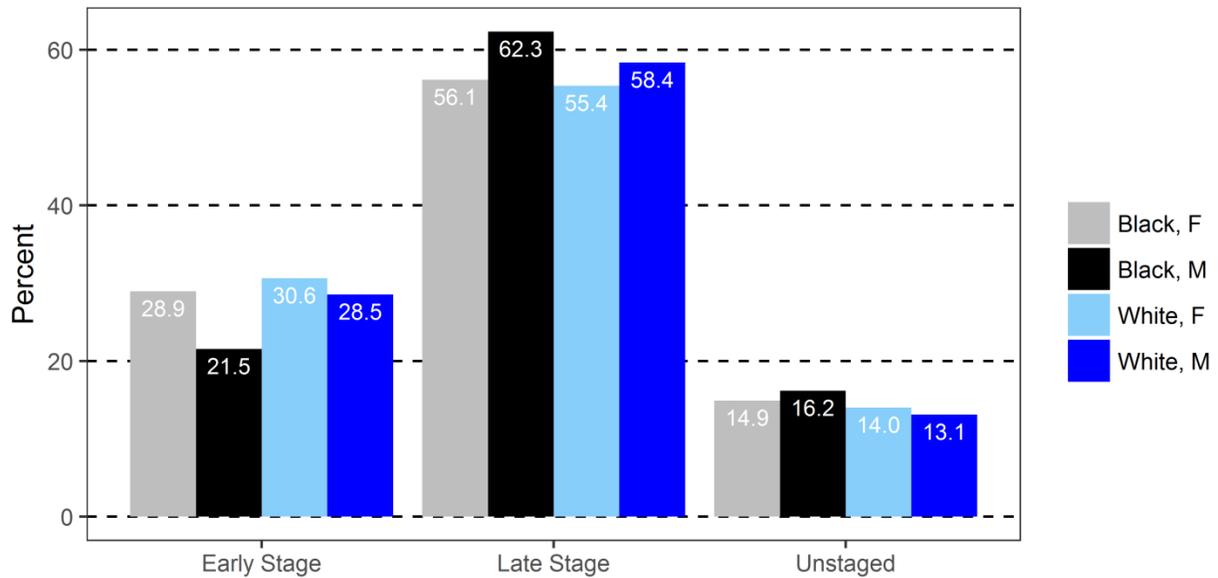


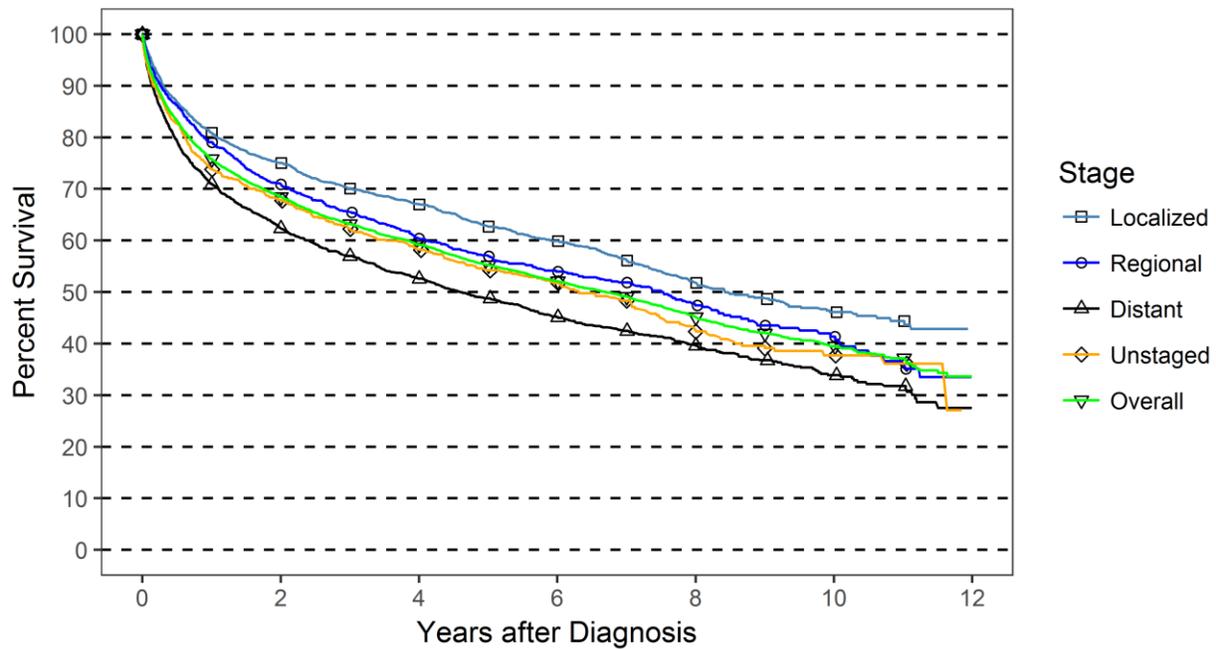
Figure 6.12: Non-Hodgkin Lymphoma, SEER 2000 Stage at Diagnosis, by Race and Sex, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease

- Approximately 30 percent of the cases were diagnosed at early stages, while nearly 60 percent were diagnosed at late stage.
- Black males and females were more likely to be diagnosed at a late stage than their White counterparts.

Figure 6.13: Non-Hodgkin Lymphoma Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	81	79	71	74	76
2	75	71	62	68	68
3	70	65	57	62	63
4	67	60	53	58	59
5	63	57	49	54	55
6	60	54	45	52	52
7	56	52	42	48	49
8	52	47	40	42	45
9	49	44	37	39	42
10	46	41	34	38	39

- Non-Hodgkin Lymphoma 5-year survival rates depend on stage at diagnosis.
 - Localized = 63 percent
 - Regional = 57 percent
 - Distant = 49 percent
 - Unstaged = 54 percent
 - Overall = 55 percent

Chapter 7: Melanoma of the Skin

In 2013, a total of 665 men and women in Arkansas were diagnosed with melanoma, and 89 died of melanoma. The median age at diagnosis for melanoma in Arkansas from 2009 through 2013 was 66 years. The occurrence of melanoma in the Black population was very low; only 56 cases have been recorded since 1997 compared to 6,982 cases reported in the White population. Therefore, the case counts among the Black population were too small to analyze in this report.

Signs and Symptoms ^{2, 11}

Melanoma is a cancer of the melanocyte cells which are responsible for producing the melanin pigment in the skin. Melanoma usually occurs on the trunk of the body in men (head, neck, shoulders to hips), and on the legs and arms in women. It usually begins as small mole-like growths. Warning signs of melanoma include:

- Asymmetry (one half of the mole does not match the other half);
- Border irregularity (the edges are ragged, notched, or blurred);
- Change in color (variability in tan, brown, or black color of a mole);
- Diameter is greater than 6 millimeters (size of a pencil eraser);
- Oozes, bleeds, tingles, or is ulcerated (a hole forms in the skin when the top layer of cells breaks down and the tissue below shows through); and
- Evolution (change in mole's appearance over time).

Risk Factors ²

The risks for melanoma include a personal or family history of disease, occurrence of more than 50 moles, occurrence of atypical moles, history of excessive sun exposure or ultraviolet (UV) radiation exposure from tanning booths, and a suppressed immune system from other diseases.

Prevention and Early Detection ²

Protecting the skin from sun exposure is the best way to prevent melanoma. Wearing sunscreen with sun protective factor (SPF) of 30 or higher; avoiding tanning salons and sunbathing; and wearing protective clothing such as hats or long sleeves to cover the skin to protect against UV radiation exposures are suggested protective measures.

Examining the skin for changes to moles, new growths, or unusual skin appearances is the best way to detect skin cancer. Any noticeable changes should be promptly examined by a physician.

Treatment ²

Malignant melanoma usually requires the removal of the primary site and surrounding tissue. A biopsy of the sentinel lymph node to detect the stage of melanoma may be needed. Melanoma that has spread to lymph nodes usually requires additional surgery, immunotherapy, chemotherapy, and/or radiation therapy.

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

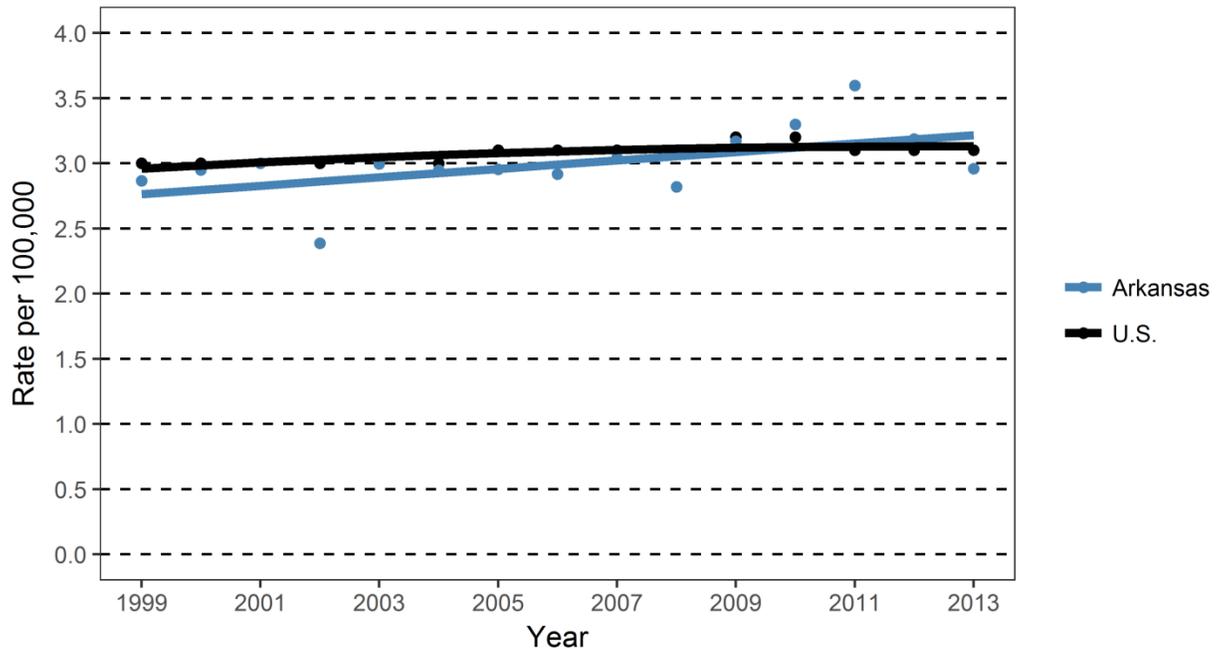
Prevention, Control Goals, and Strategies ^{3, 5, 7}

	Goal/Objective	Baseline	Arkansas Healthy People 2020 Target
Goal	Reduce melanoma cancer death rates	2.96 per 100,000 (2013)	2.1 per 100,000
Objective 1	Reduce the proportion of adults ≥ 18 years who report sunburn	34.7 percent (2013)	33.0 percent
Objective 2	Reduce the proportion of adults ≥ 18 years who report using artificial sources of ultraviolet light for tanning	6.6 percent (2013)	6.3 percent
Objective 3	Increase the proportion of adults ≥ 18 years who follow protective measures that may reduce the risk of skin cancer	26.3 percent (2013)	27.6 percent

Proposed Strategies:

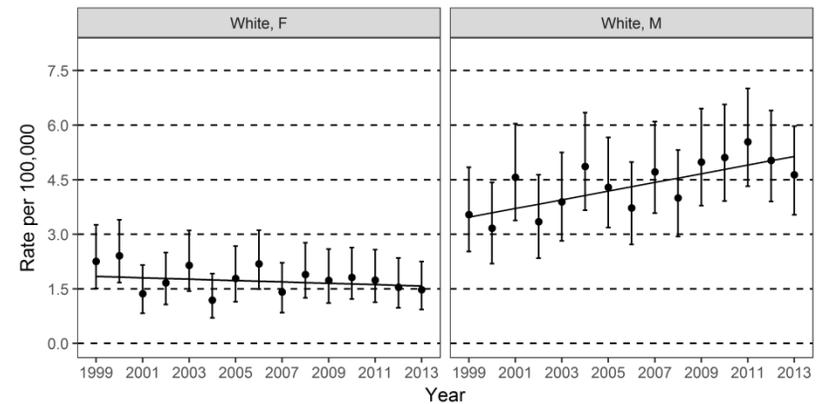
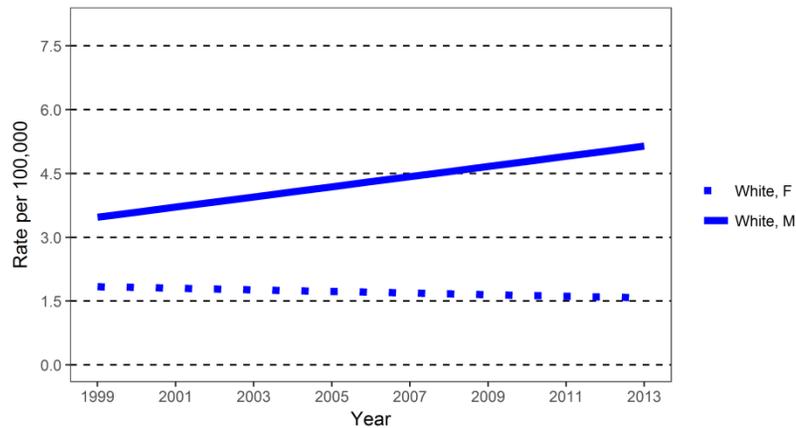
- Promote awareness of skin cancer through distribution and use of sun safety materials.
- Assess existing sun/UV safety programs in schools and communities.
- Identify partnerships with sun safety product manufacturers to address sun safety measures.
- Partner with local civic groups and organizations to include policies on sun safety measures.
- Work with organizations that provide programs on sun safety measures.
- Encourage clinicians and other providers to promote skin cancer prevention, screening and education.

Figure 7.1: Age-Standardized Melanoma Mortality Trends among the White Population, Arkansas and United States, 1999 – 2013



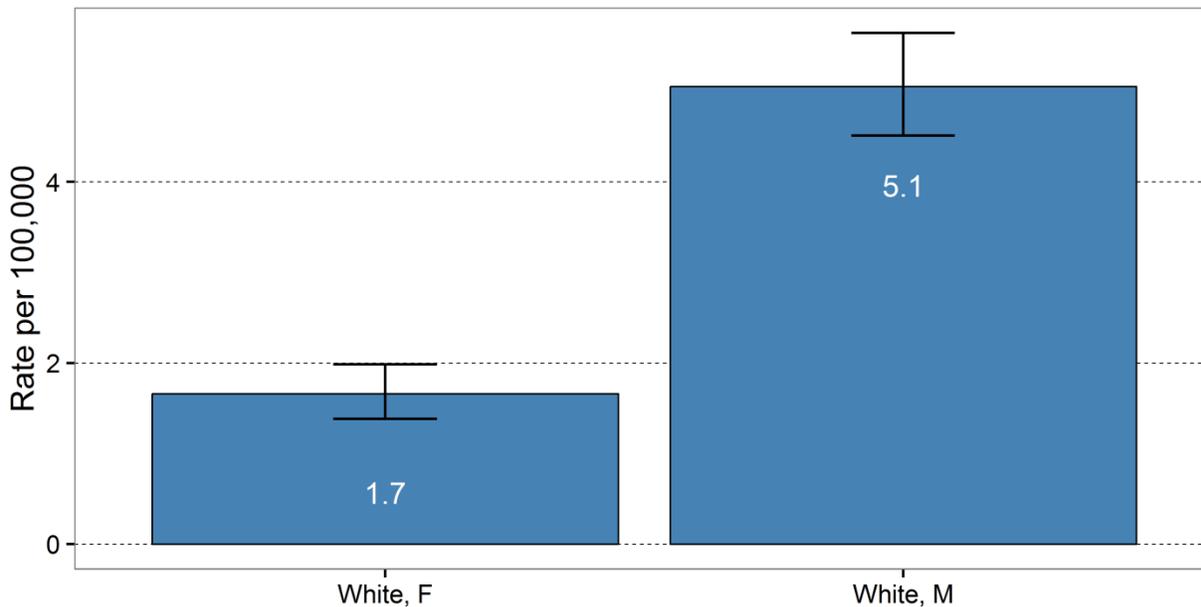
- Arkansas had increasing melanoma mortality rates during 1999 through 2013.
- Arkansas had similar mortality rates as the United States since 2009.
 - United States had 3.10 deaths per 100,000 in 2013.
 - Arkansas had 2.96 deaths per 100,000 in 2013.
- In Arkansas, the increase in age-standardized mortality rates over time were significant ($p = 0.03$).
 - The average age-standardized melanoma mortality rate during this period was 3.01 per 100,000.

Figures 7.2: Age-Standardized Melanoma Mortality Trends among the White Population with 95 Percent Confidence Intervals by Sex, Arkansas, 1999 – 2013



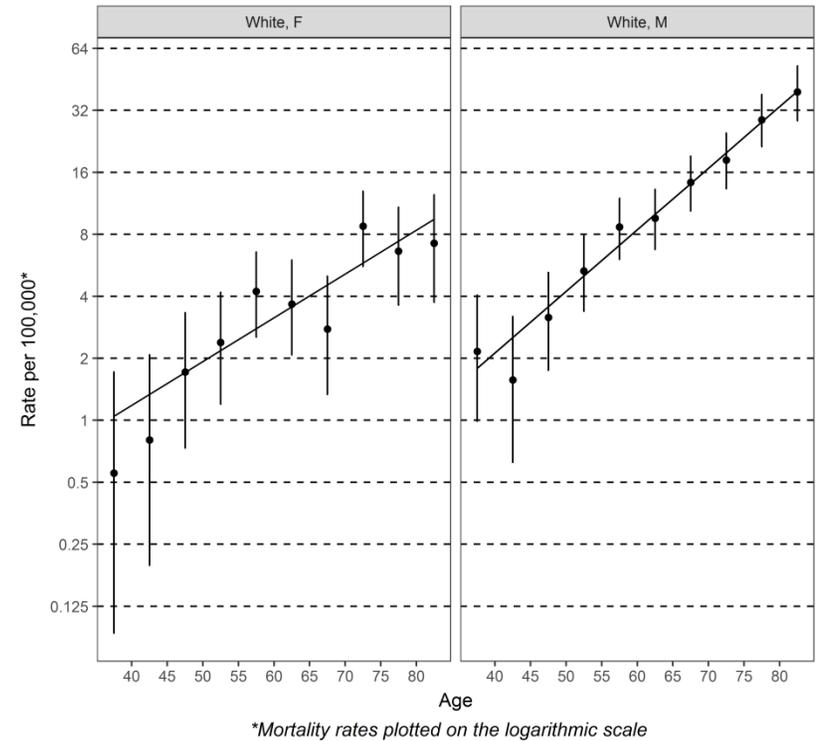
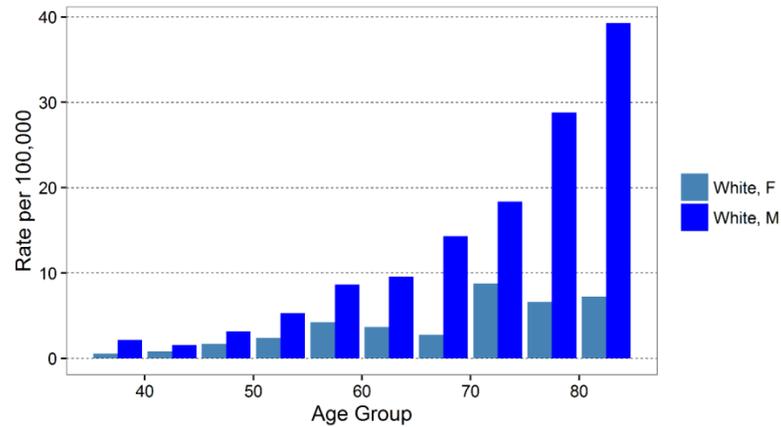
- During 1999 through 2013, White females averaged 1.8 deaths per 100,000. Melanoma mortality rates remained stable over time ($p = 0.34$).
- During 1999 through 2013, White males averaged 4.4 deaths per 100,000. The melanoma mortality rates for White males increased over the period ($p < 0.01$).

Figure 7.3: Age-Standardized Melanoma Mortality Rates among the White Population with 95 Percent Confidence Intervals by Sex, Arkansas, 2009 – 2013



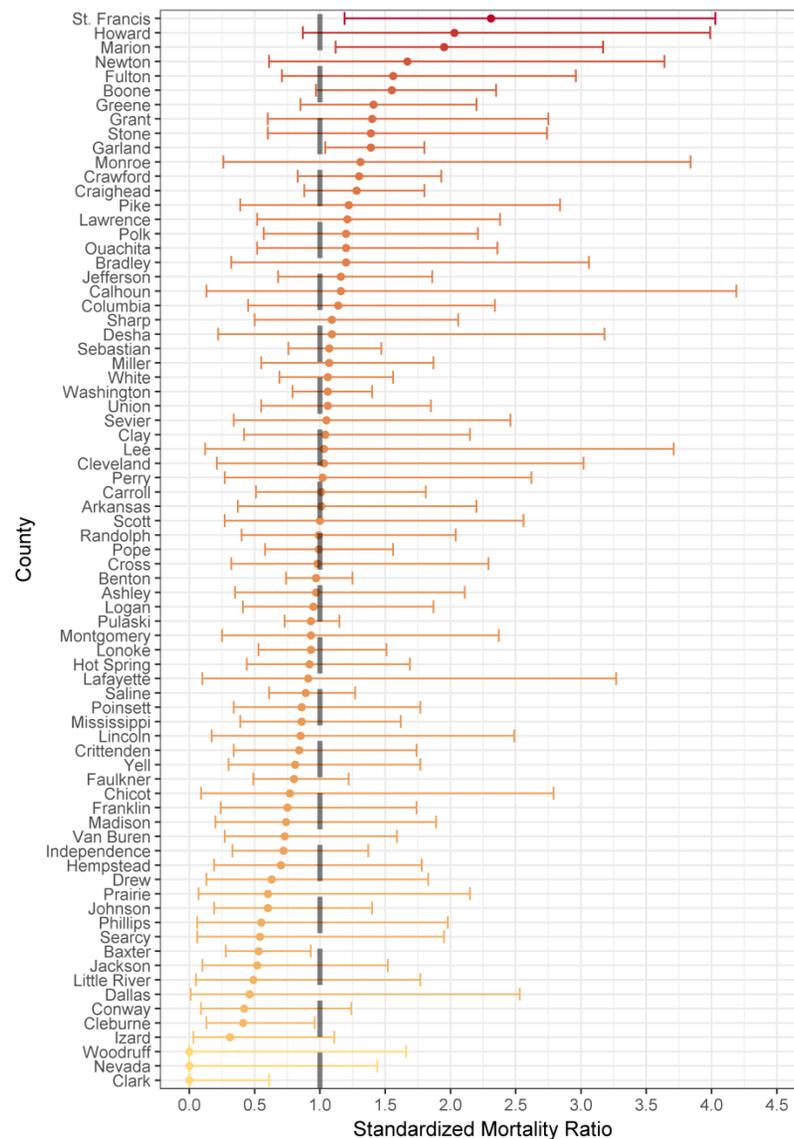
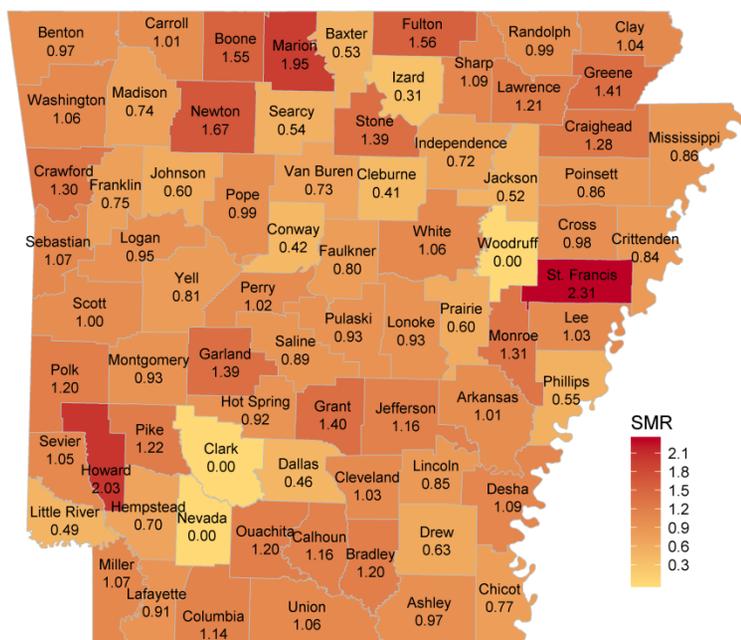
- Males average 5.1 deaths per 100,000 over a 5-year period (2009 – 2013) versus 1.7 deaths among females over the same period.

Figures 7.4: Age-Specific Melanoma Mortality Rates among the White Population with 95 Percent Confidence Intervals by Sex, Arkansas, 2009 – 2013



- The median age at death from melanoma from 2009 through 2013 was 70 years.
- White males had higher rates than White females at all ages.
- Melanoma mortality rates increased with age.

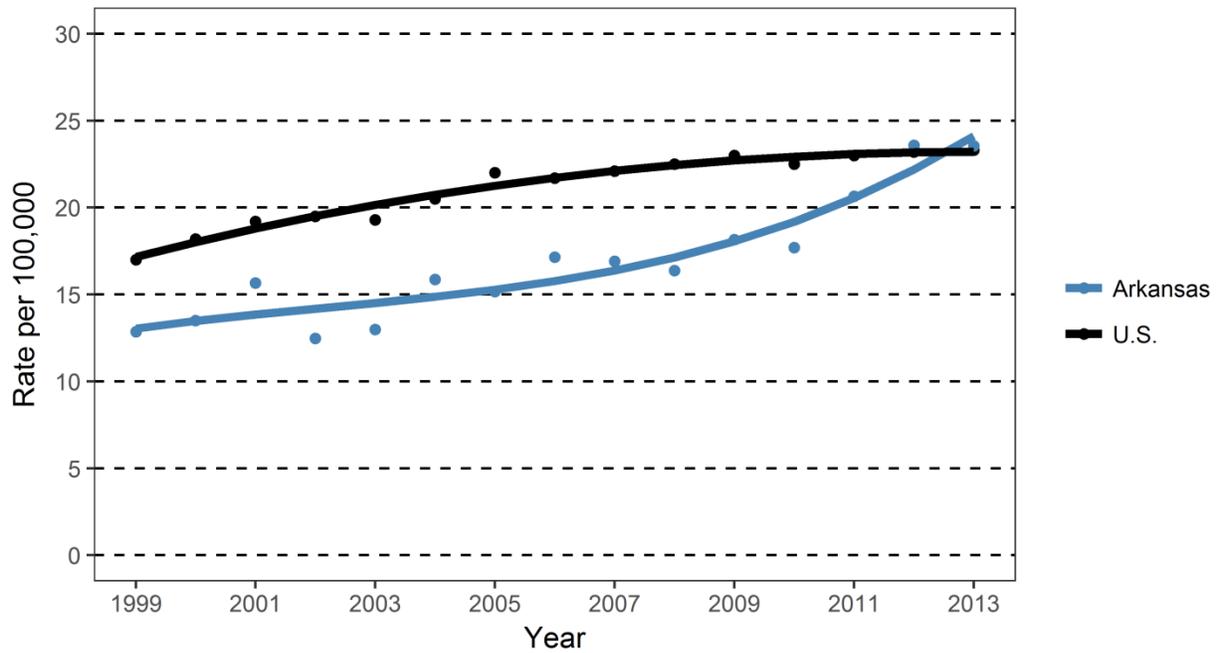
Figures 7.5: Melanoma Standardized Mortality Ratios (SMR) among the White Population with 95 Percent Confidence Intervals by County, Arkansas 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.

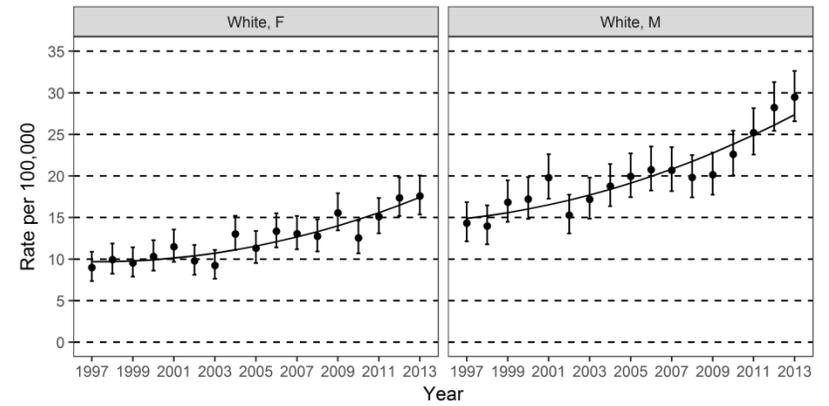
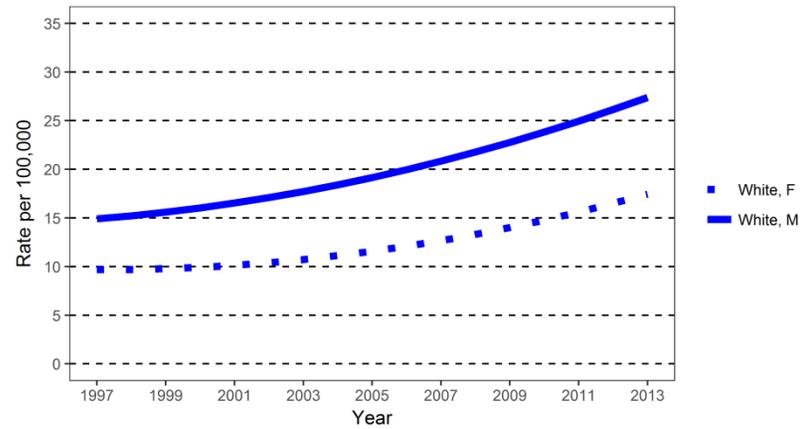
(Note: No cases of melanoma were observed for Clark, Nevada, and Woodruff counties. This is likely due to the small population in the counties.)

Figure 7.6: Age-Standardized Melanoma Incidence Trends among the White Population, Arkansas and United States, 1999 – 2013



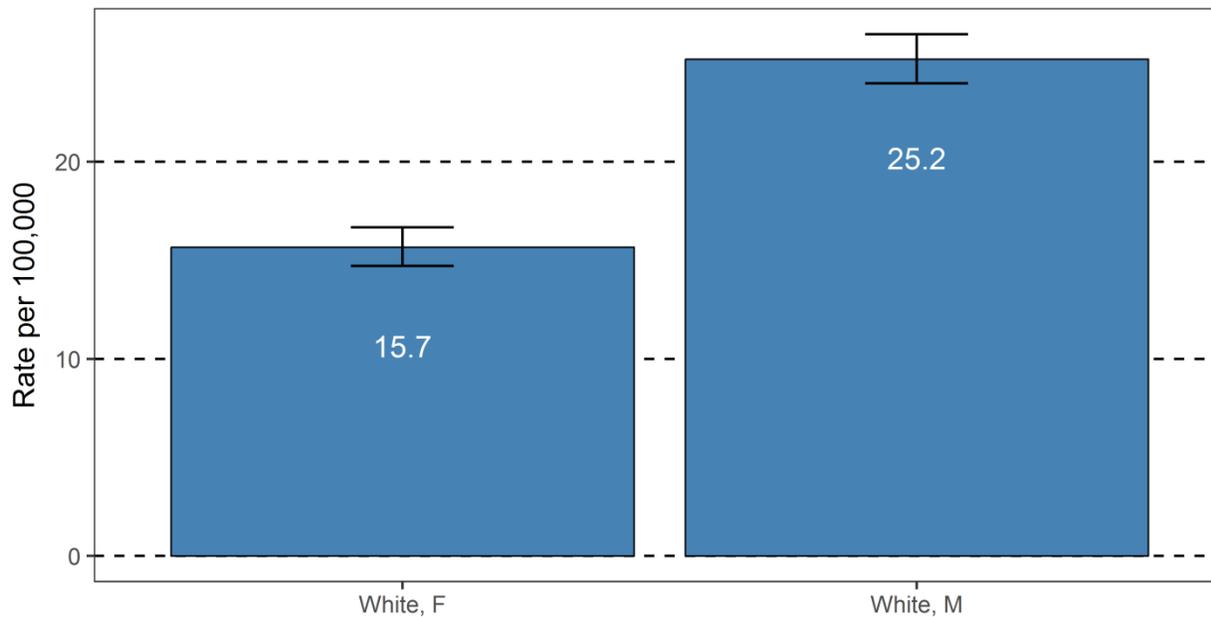
- During 1999 through 2013, the age-standardized melanoma incidence rates for Arkansas were lower than the rates for the United States. However, in 2013, the incidence rates converged.
 - The rate in Arkansas in 2013 was 23.6 per 100,000.
 - The rate in the United States in 2013 was 23.3 per 100,000.
- In Arkansas, the increase in incidence rates from 1999 through 2013 was significant ($p < 0.01$).

Figures 7.7: Age-Standardized Melanoma Incidence Trends among the White Population with 95 Percent Confidence Intervals by Sex, Arkansas, 1997 – 2013



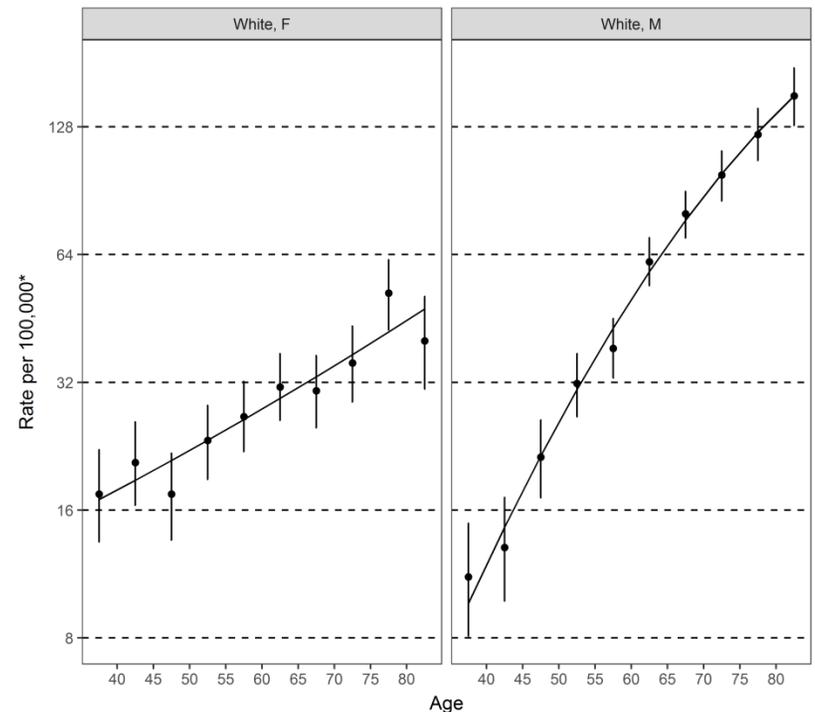
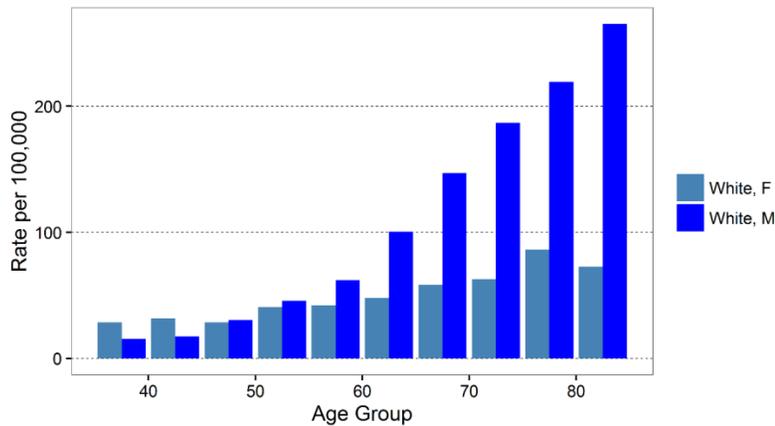
- The modeled trend demonstrated an increase incidence for both sex groups.

Figure 7.8: Age-Standardized Melanoma Incidence Rates among the White Population with 95 Percent Confidence Intervals by Sex, Arkansas, 2009 – 2013



- White males had significantly higher incidence rates of melanoma than White females from 2009 through 2013 ($p < 0.01$).

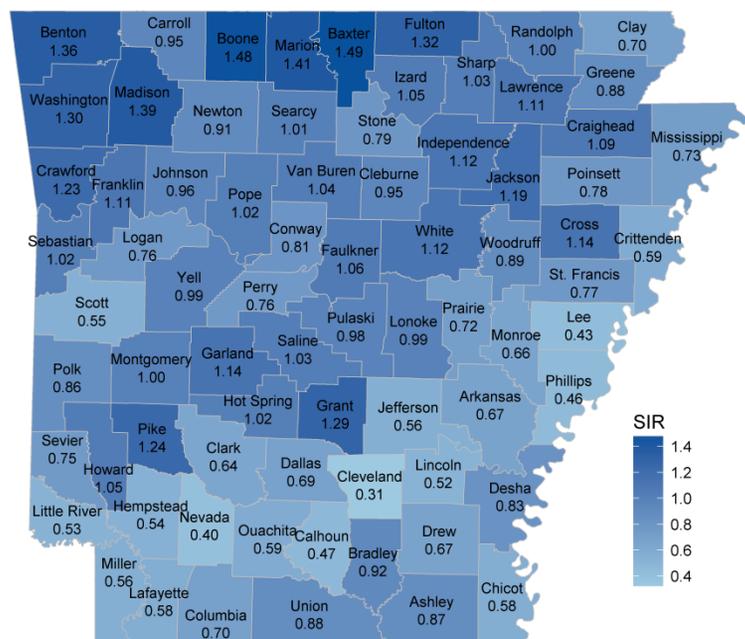
Figures 7.9: Age-Specific Melanoma Incidence Rates among the White Population with 95 Percent Confidence Intervals by Sex, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

- The median age at diagnosis for melanoma from 2009 through 2013 was 66 years.
- Disease patterns at younger ages were somewhat different from patterns at older ages.
 - At ages under 45, females had higher incidence rates than males.
 - Melanoma incidence rates slightly for females increased with age.
- Melanoma incidence rates increased with age.
- The incidence rates increased faster in males than those in females.

Figures 7.10: Melanoma Standardized Incidence Ratios (SIR) among the White Population with 95 Percent Confidence Intervals by County, Arkansas 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.
- Counties with elevated melanoma standardized incidence ratios were concentrated in the northwestern part of the state.

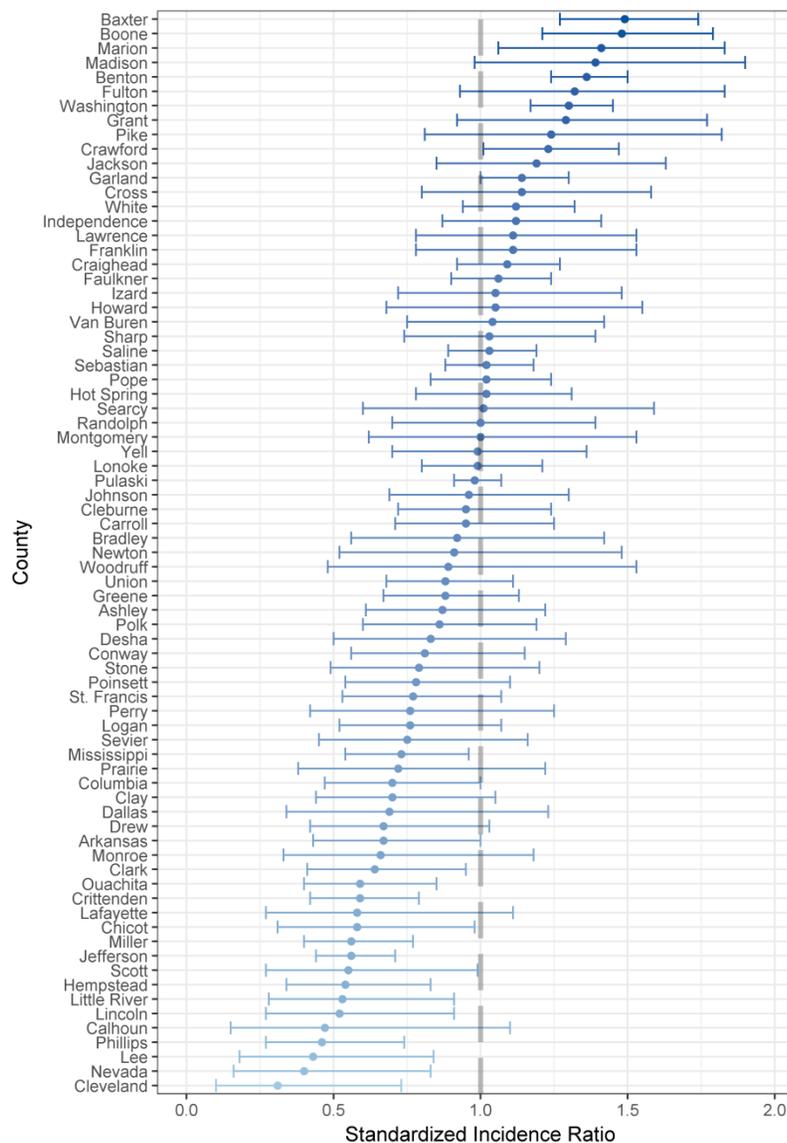
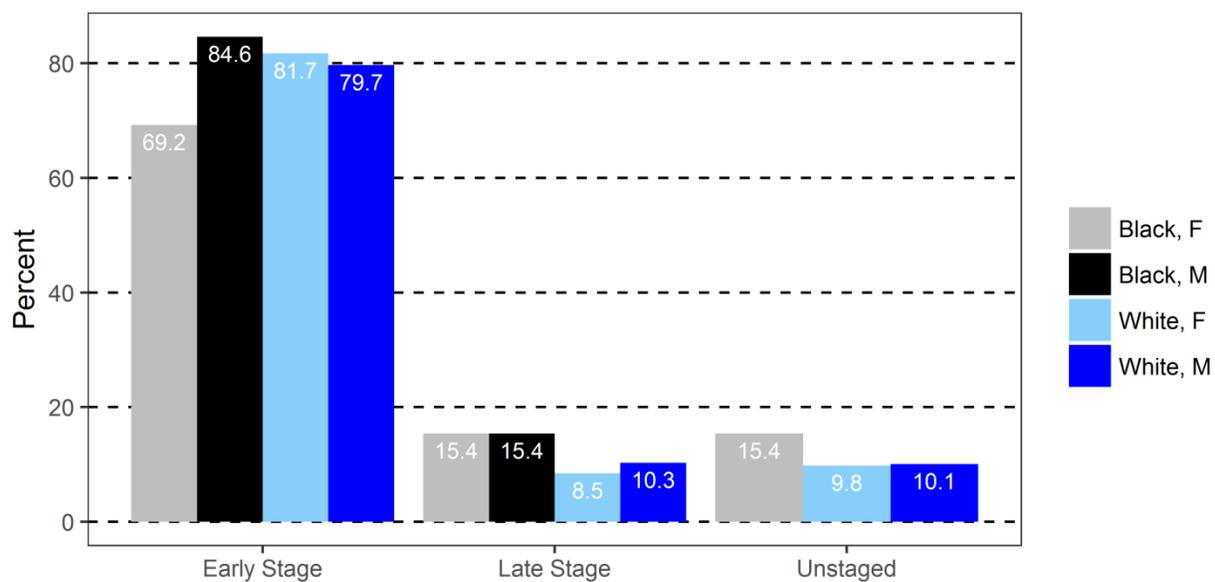


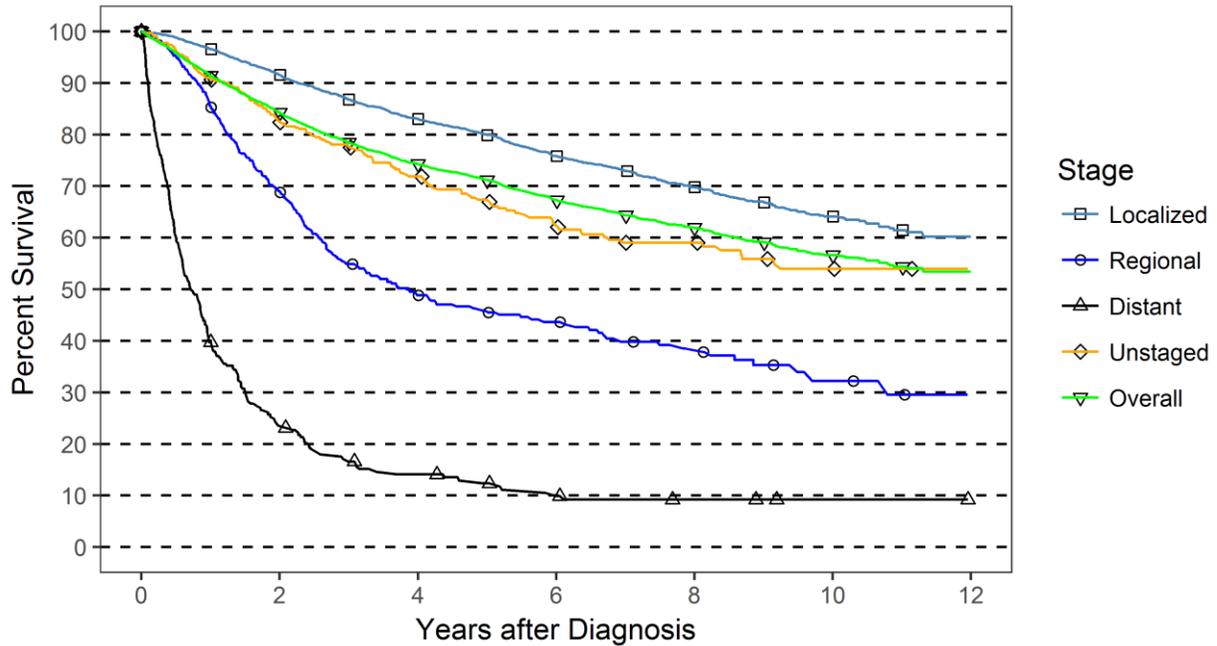
Figure 7.11: Melanoma, SEER 2000 Stage at Diagnosis, by Sex, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease

- Melanoma was generally diagnosed at early stages of disease.

Figure 7.12: Melanoma Survival by Stage at Diagnosis among the White Population, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	97	85	40	91	91
2	92	69	23	82	84
3	87	55	17	78	78
4	83	49	14	72	74
5	80	45	13	67	71
6	76	44	10	62	67
7	73	40	9	59	64
8	70	38	9	59	62
9	67	35	9	56	59
10	64	32	9	54	57

- Most melanoma cases were diagnosed at early stages such as localized. For these cases survival rates were high over the next 5 years.
- Melanoma 5-year survival rates depend on stage-at-diagnosis.
 - Localized = 80 percent
 - Regional = 45 percent
 - Distant = 13 percent
 - Unstaged = 67 percent
 - Overall = 71 percent

Chapter 8: Ovarian Cancer (Ovary)

In 2013, a total of 212 women in Arkansas were diagnosed with ovarian cancer, and 148 died of ovarian cancer. The median age at diagnosis for ovarian cancer in Arkansas from 2009 through 2013 was 65 years.

Signs and Symptoms^{1, 2}

Early stages of ovarian cancer do not cause any symptoms, but as the cancer progresses, common symptoms include:

- Persistent bloating, pelvic or abdominal pain;
- Difficulty eating or feeling full quickly; and
- Urinary urgency or frequency.

Women who experience these symptoms daily for more than a few weeks should consult a physician. The most common sign of ovarian cancer is an enlarged abdomen caused by the accumulation of fluid. Abnormal vaginal bleeding is rarely a symptom of ovarian cancer.

Risk Factors^{1, 2}

The most common risk factor is a strong family history of breast or ovarian cancer. Women who have had breast cancer or test positive for the BRCA1 or BRCA2 genes are at increased risk. Those who use estrogen alone (without progesterone) and estrogen combined with progesterone for postmenopausal hormone therapy are at increased risk. Pregnancy, long-term use of oral contraceptives, and tubal ligation reduce the risk of developing ovarian cancer.

Prevention and Early Detection^{2, 4}

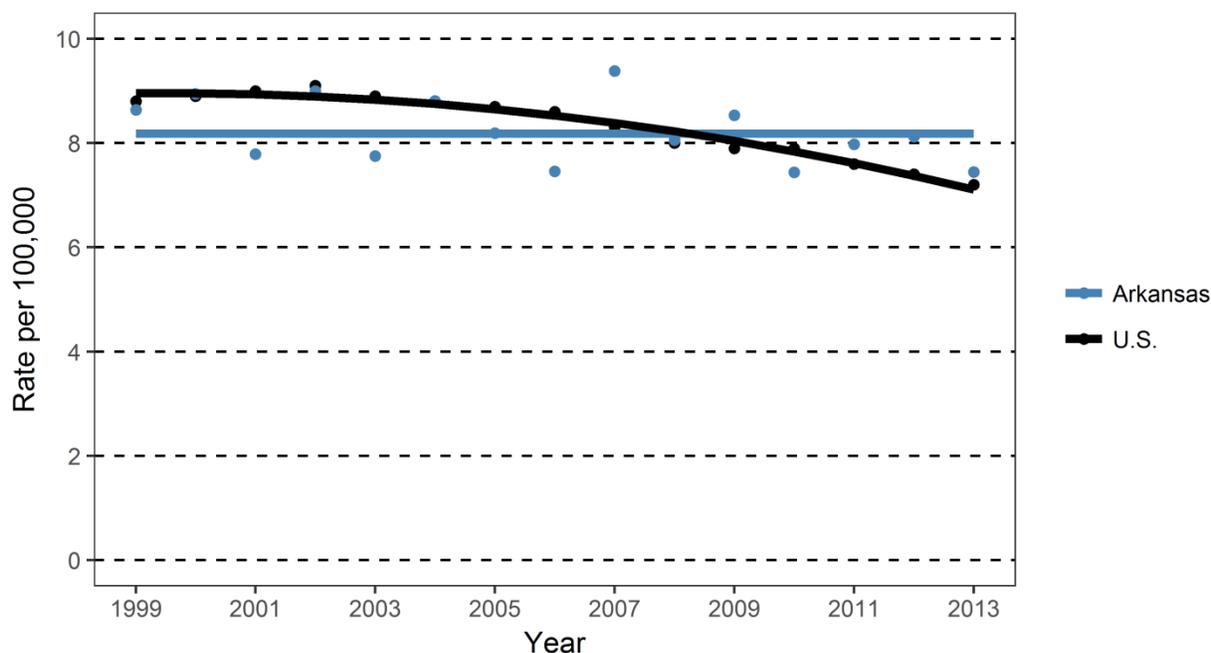
The U.S. Preventive Services Task Force (USPSTF) recommends against screening for ovarian cancer. The combination of a thorough pelvic exam, transvaginal ultrasound, and a blood test for the tumor marker CA125 may be offered to women who are at high risk of ovarian cancer.

Treatment^{1, 2}

Most common treatment methods are surgery and usually chemotherapy. Surgery involves removing both ovaries and fallopian tubes (bilateral salpingo-oophorectomy) and the uterus (hysterectomy).

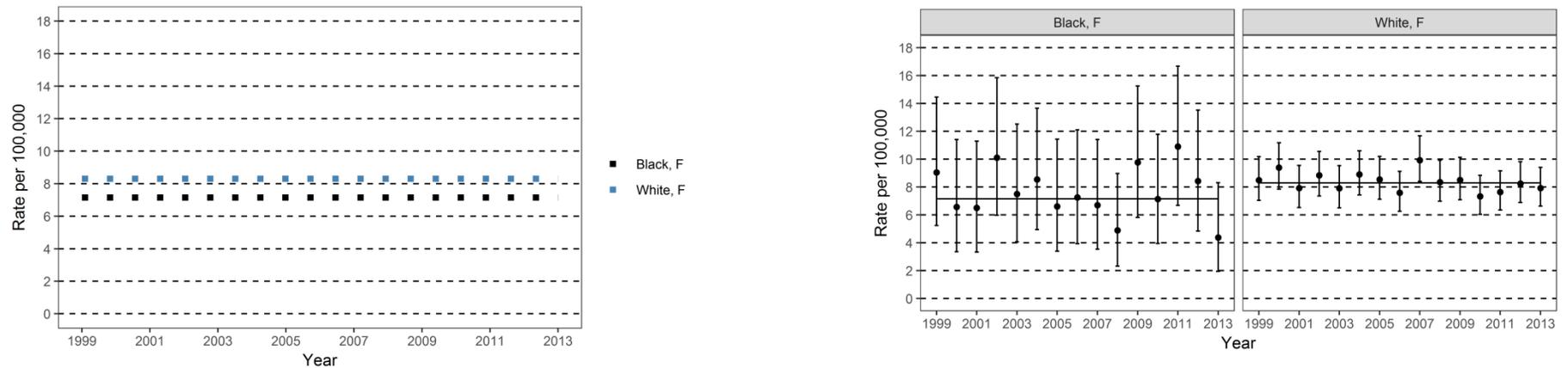
(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

Figure 8.1: Age-Standardized Ovarian Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



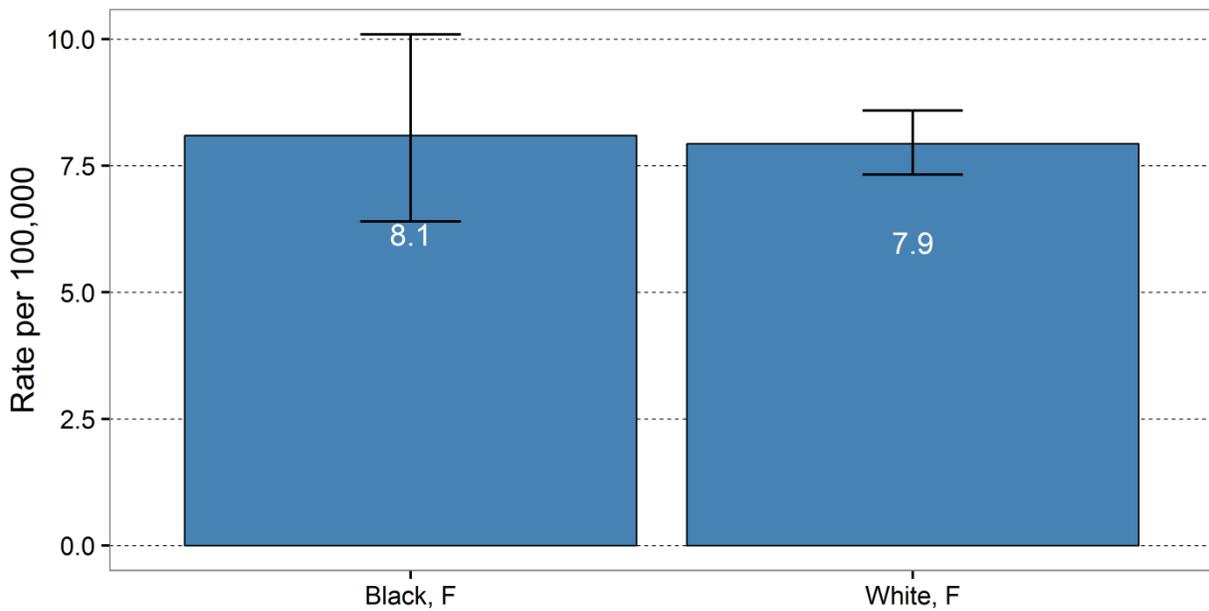
- During 1999 through 2007, the age-standardized mortality rates for ovarian cancer for Arkansas averaged slightly lower than rates in the United States. The Arkansas rate in 2007 was high, likely due to a random fluctuation. From 2008 to 2013, the trend in Arkansas was higher than the United States.
 - United States had 7.2 deaths per 100,000 in 2013.
 - Arkansas had 7.4 deaths per 100,000 in 2013.
- In Arkansas, the changes in age-standardized mortality rates over time were not significant ($p = 0.63$).
 - The average age-standardized ovarian cancer mortality rate in Arkansas from 1999 through 2013 was 8.2 per 100,000.
 - The average age-standardized ovarian cancer mortality rate in the United States from 1999 through 2013 was 8.3 per 100,000.

Figures 8.2: Age-Standardized Ovarian Cancer Mortality Trends with 95 Percent Confidence Intervals by Race, Arkansas, 1999 – 2013



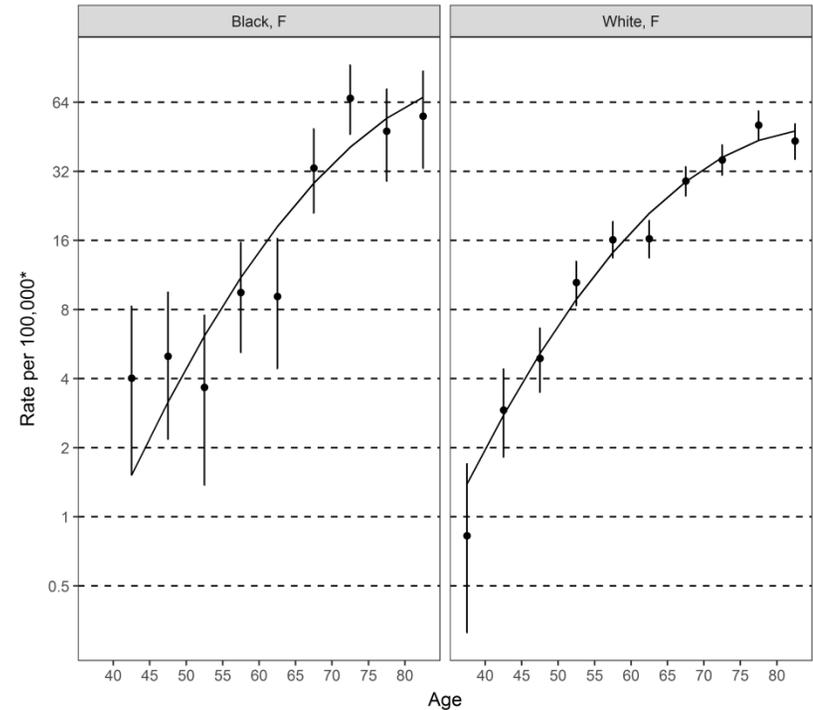
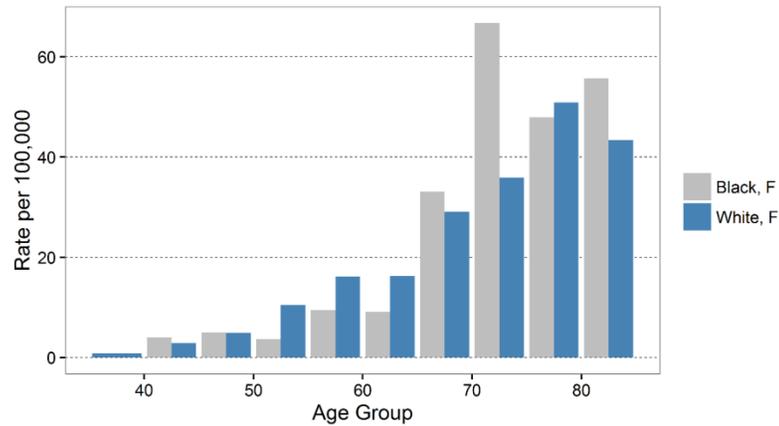
- The ovarian cancer mortality trend for White females was higher than Black females from 1999 through 2013.
- Black and White females had stable ovarian cancer mortality from 1999 through 2013.
- The average of ovarian cancer mortality rates for Black females was 7.6 deaths per 100,000 from 1999 through 2013. For White females, it was 8.4 deaths per 100,000.
- The ovarian cancer mortality rates had more variation in Black females over the period, when compared to White females.

Figure 8.3: Age-Standardized Ovarian Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- Black females had higher mortality than White females, although the difference was not statistically significant.

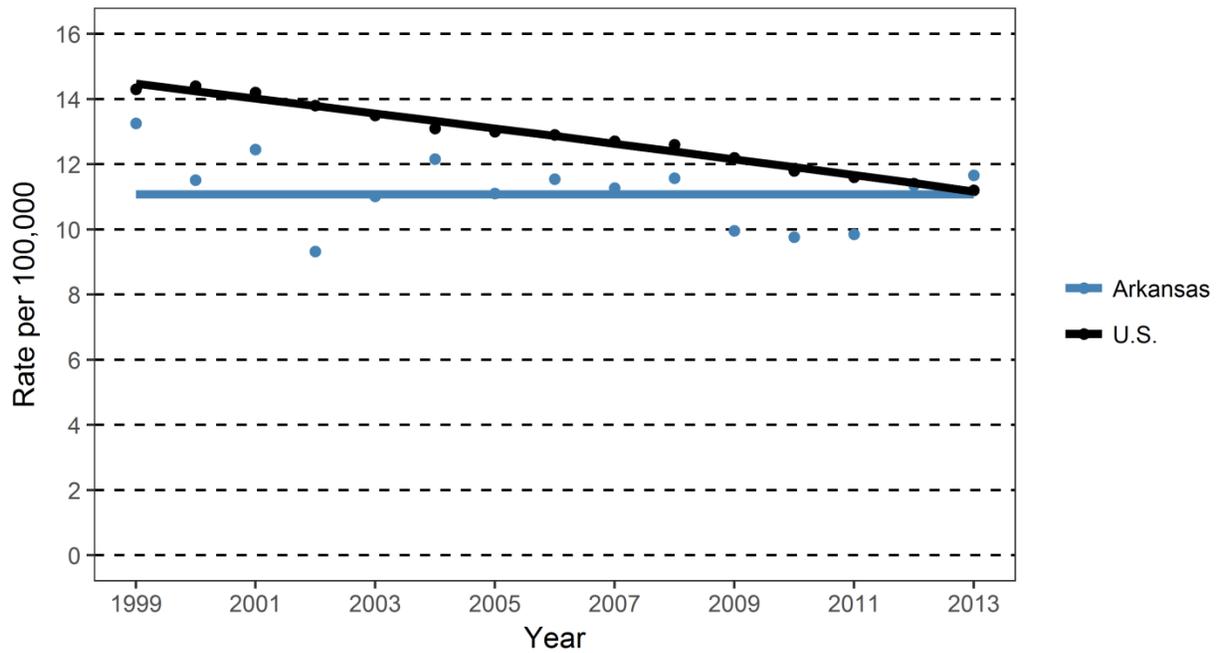
Figures 8.4: Age-Specific Ovarian Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



*Mortality rates plotted on the logarithmic scale

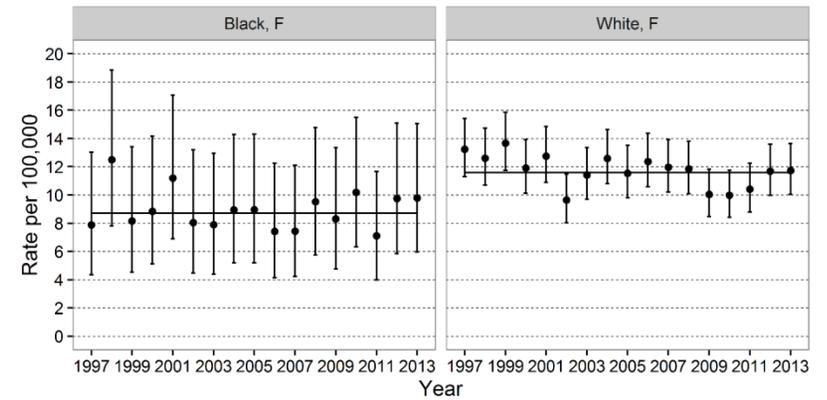
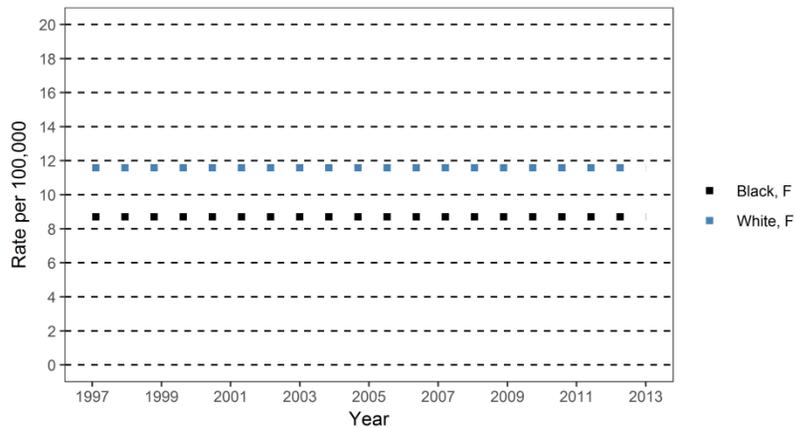
- The median age at death from ovarian cancer from 2009 through 2013 was 71 years.
- Mortality rates in White females were generally higher than rates in Black females. (Note: Rates for Black females were based on a small numbers of cases.)
- Ovarian cancer mortality rates increased with age.
- White females had higher mortality rates than Black females at younger age (< 65 years old). For older females (> 65 years old), Black females had higher mortality rates than White females.

Figure 8.6: Age-Standardized Ovarian Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



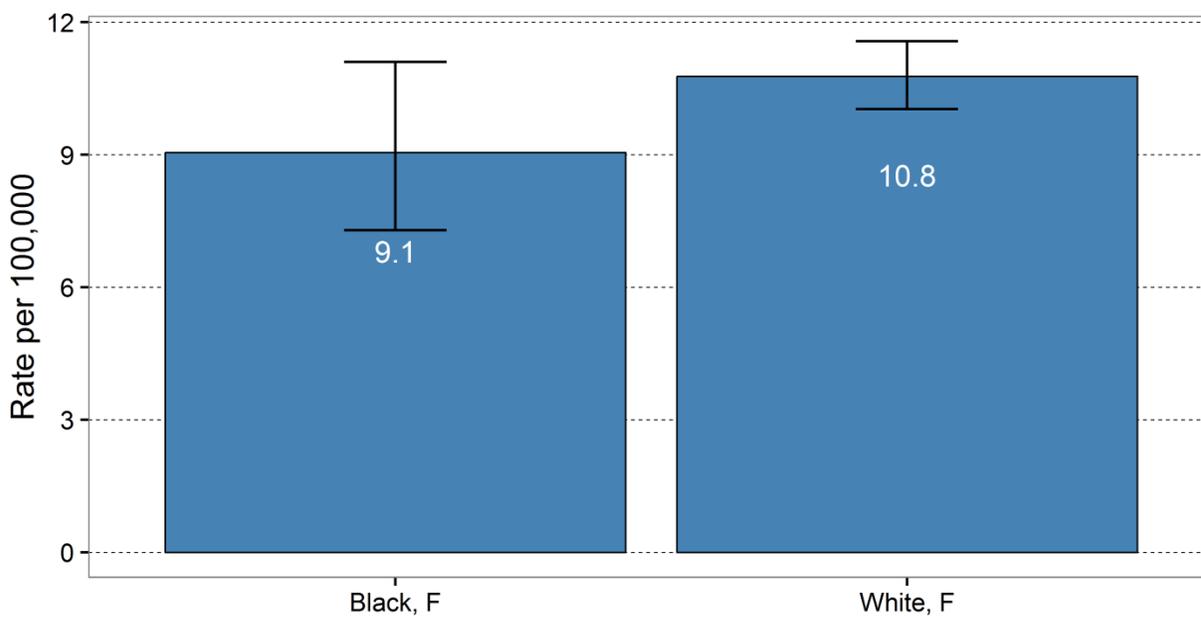
- The modeled Arkansas age-standardized ovarian cancer incidence rates were lower than the rates in the United States. The ovarian cancer incidence rates in Arkansas were stable from 1999 through 2013.
 - The ovarian cancer incidence rates in Arkansas from 1999 through 2013 remained relatively constant at a rate of 11.2 per 100,000.
 - In 2013, Arkansas had 11.7 cases per 100,000 population.

Figures 8.7: Age-Standardized Ovarian Cancer Incidence Trends with 95 Percent Confidence Intervals by Race, Arkansas, 1997 – 2013

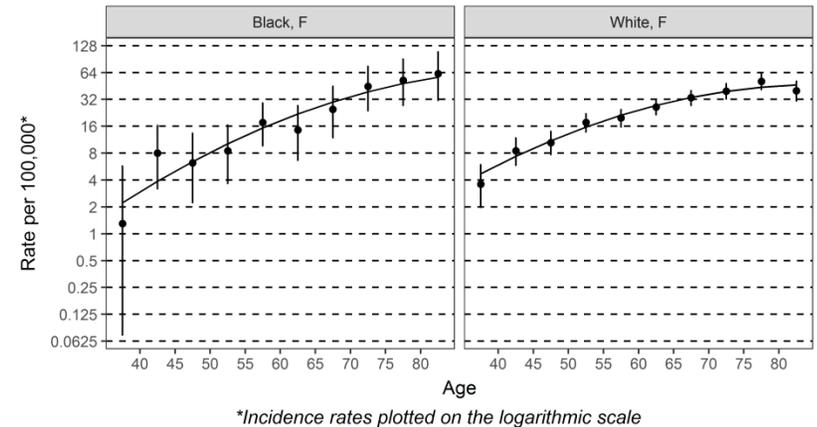
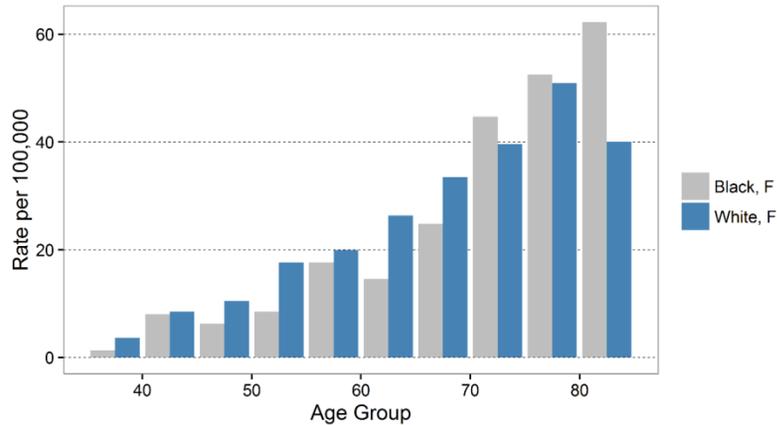


- Black and White females had stable ovarian cancer incidence from 1999 through 2013.
- White females had higher ovarian cancer incidence than Black females over the period.
- The average ovarian cancer incidence rate for Black females was 8.9 cases per 100,000 from 1999 through 2013. White females had an average ovarian cancer incidence of 11.7 cases per 100,000.

Figure 8.8: Age-Standardized Ovarian Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013

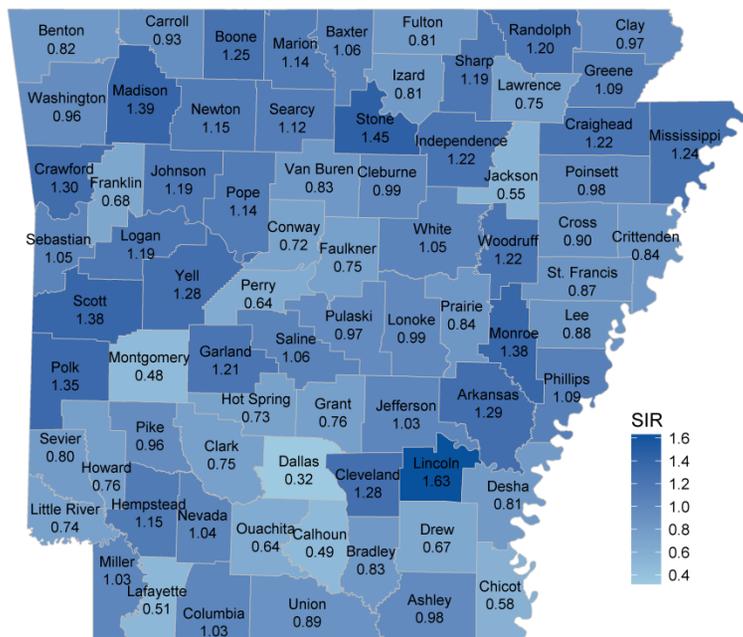


Figures 8.9: Age-Specific Ovarian Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- The median age at diagnosis for ovarian cancer from 2009 through 2013 was 65 years.
- Rates for White females were generally higher than rates for Black females.
(Note: Rates for Black females were based on a small numbers of cases.)
- Ovarian cancer incidence rates increased with age.
- White females had higher rates at age groups from 30 to 70 years; for age over 70 years, Black females had higher rates.

Figures 8.10: Ovarian Cancer Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.

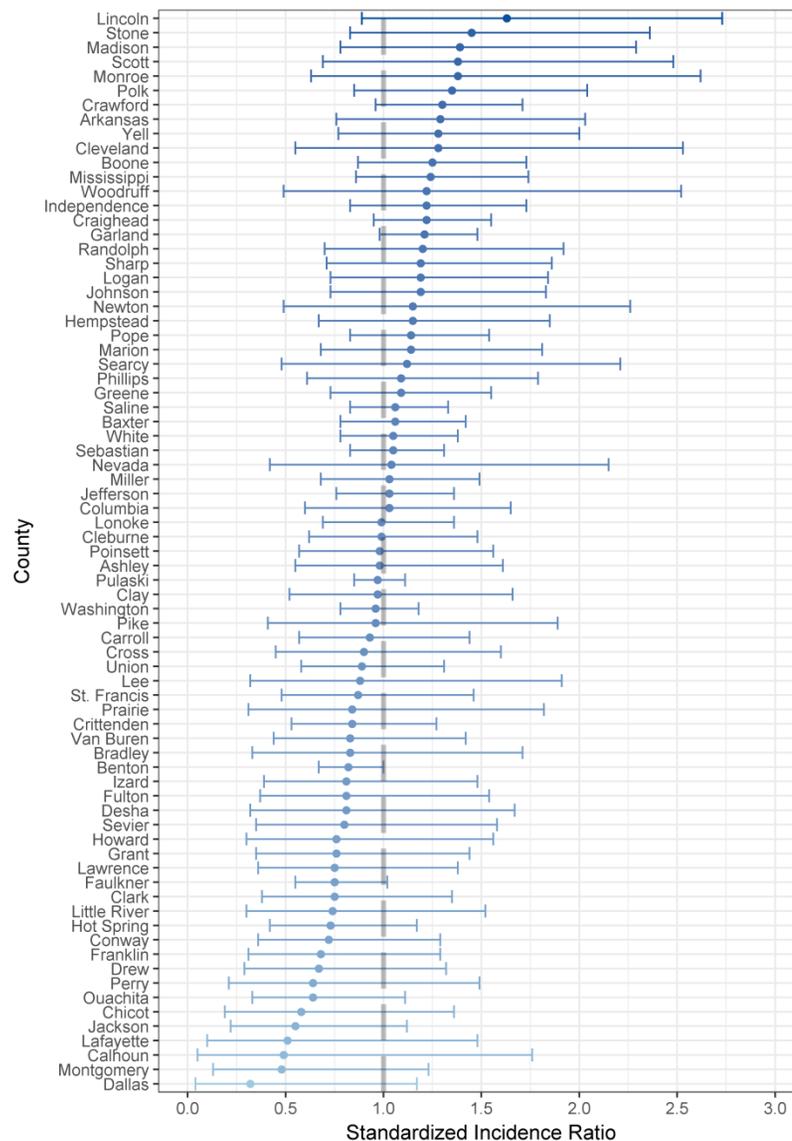
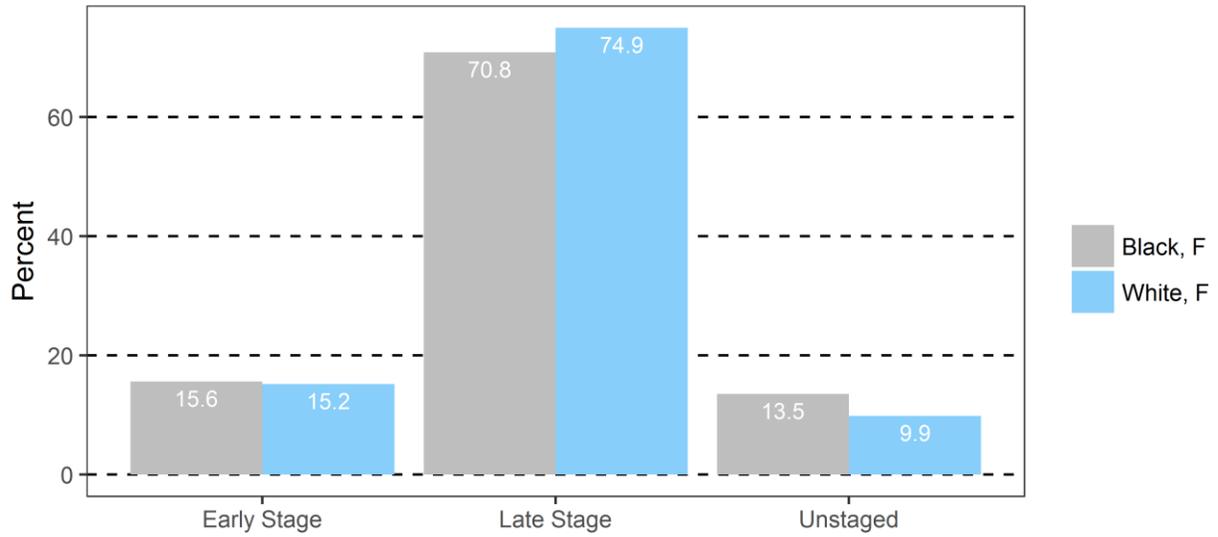
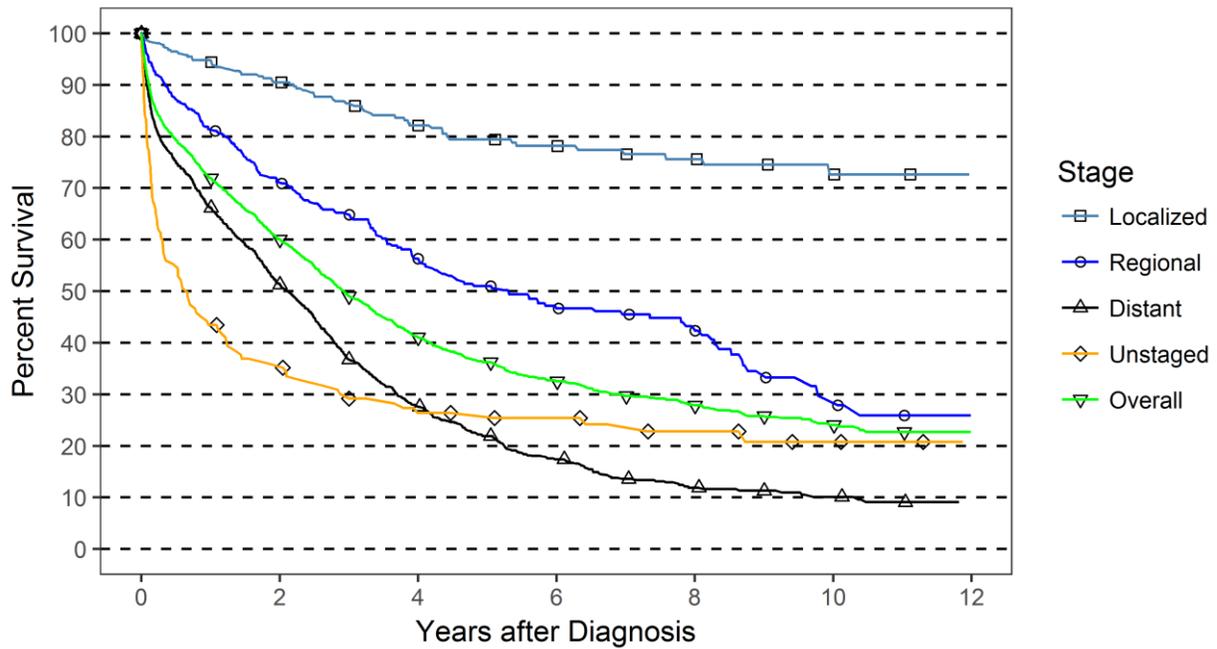


Figure 8.11: Ovarian Cancer, SEER 2000 Stage at Diagnosis, by Race, Arkansas, 2009 – 2013



*Notes: Percentages for Black females were based on a small number of cases.
Late stage includes regional and distant tumor spread.*

Figure 8.12: Ovarian Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	94	81	66	43	72
2	91	71	51	35	60
3	86	65	37	29	49
4	82	56	28	26	41
5	79	51	22	25	36
6	78	47	17	25	33
7	77	45	14	23	30
8	76	42	12	23	28
9	75	33	11	21	26
10	73	28	10	21	24

- Ovarian cancer 5-year survival rates depend on stage at diagnosis.
 - Localized = 79 percent
 - Regional = 51 percent
 - Distant = 22 percent
 - Unstaged = 25 percent
 - Overall = 36 percent

Chapter 9: Pancreatic Cancer

In 2013, a total of 463 Arkansans were diagnosed with pancreatic cancer, and 383 died of pancreatic cancer. The median age at diagnosis for pancreatic cancer in Arkansas from 2009 through 2013 was 70 years.

Signs and Symptoms^{2, 12}

Detecting pancreatic cancer in early stages is difficult because symptoms typically do not appear until the disease has progressed. As the disease progresses, common signs and symptoms include:

- Weight loss;
- Dark urine;
- Light-colored stools;
- Abdominal pain that may radiate to the back; and
- Tumors that develop near the common bile duct that can lead to jaundice (yellowing of the skin and whites of the eyes).

Risk Factors^{2, 12}

Cigarette smoking is a risk factor associated with pancreatic cancer. Cigarette smokers are about two times more likely to be at risk of developing pancreatic cancer than people who do not smoke. In addition, the use of smokeless tobacco increases the risk of pancreatic cancer. Other common risk factors include family history of pancreatic cancer, history of chronic pancreatitis or diabetes, obesity, and excessive alcohol consumption.

Prevention and Early Detection⁴

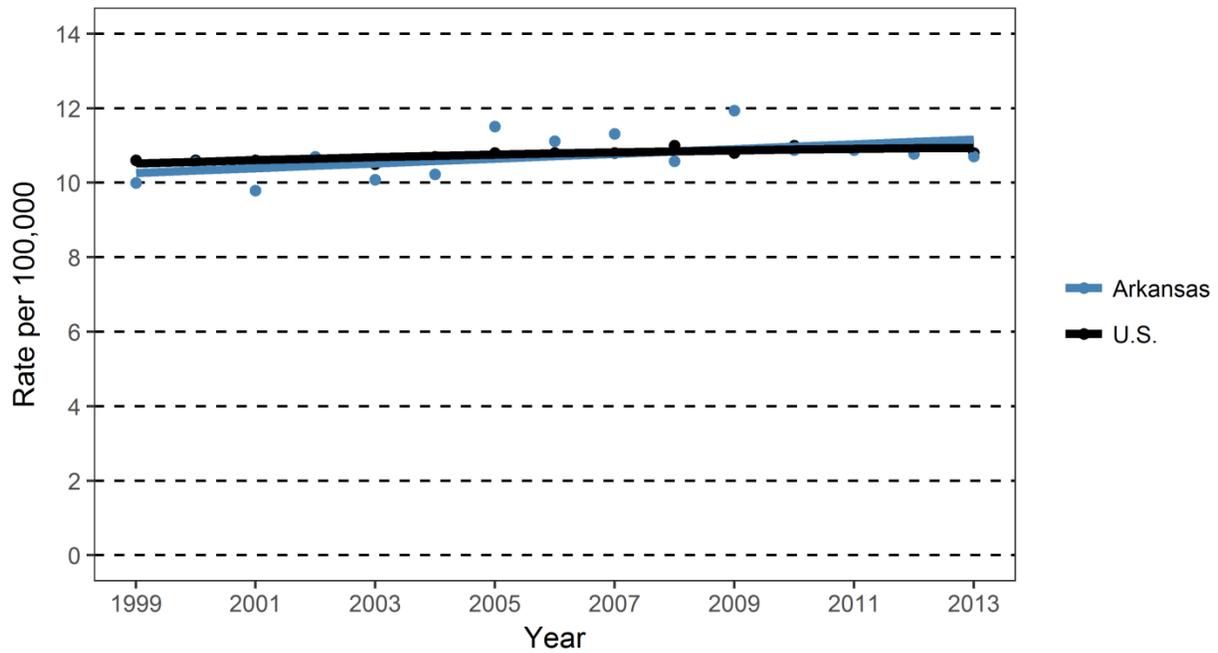
The U.S. Preventive Services Task Force recommends against screening for pancreatic cancer in asymptomatic adults including the use of ultrasonography or search for serologic markers.

Treatment²

Common treatment options that may extend survival and/or relieve symptoms include surgery, radiation therapy, and chemotherapy. Because pancreatic cancer is typically detected after it has spread beyond the pancreas, less than 20 percent of patients qualify for surgery. For patients with advanced disease, chemotherapy may lengthen survival.

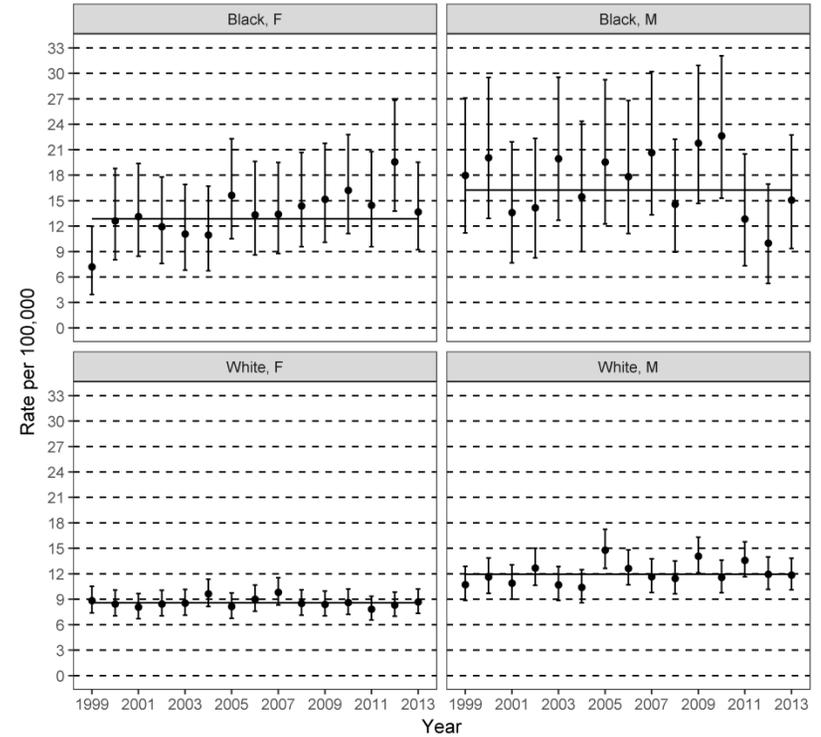
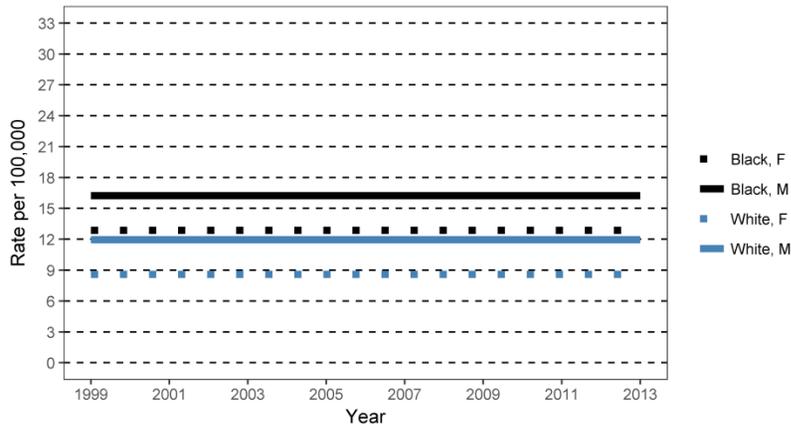
(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

Figure 9.1: Age-Standardized Pancreatic Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



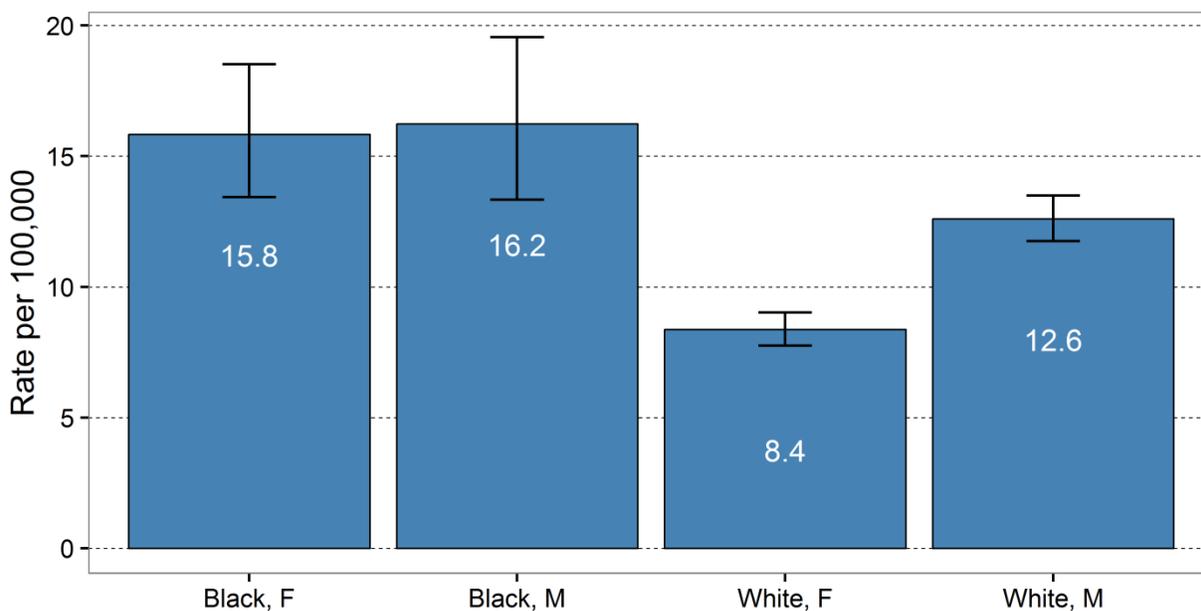
- Arkansas age-standardized mortality rates were close to the rates in the United States from 1999 through 2013.
 - In 2013, the pancreatic cancer mortality rate for Arkansas was 10.7 deaths per 100,000.
 - In 2013, the pancreatic cancer mortality rate for the United States was 10.8 deaths per 100,000.
- Arkansas had a non-significant increase in pancreatic cancer mortality rates over the period.

Figures 9.2: Age-Standardized Pancreatic Cancer Mortality Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1999 – 2013



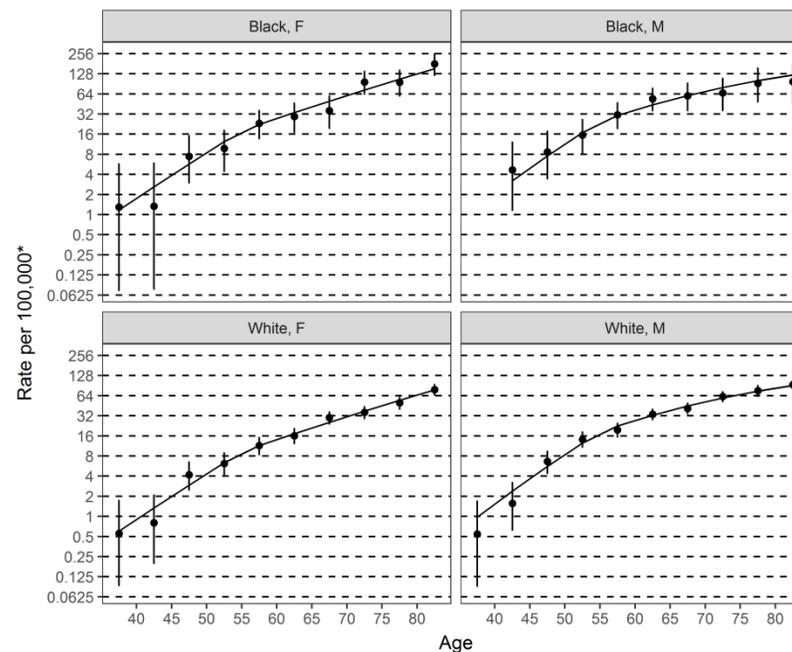
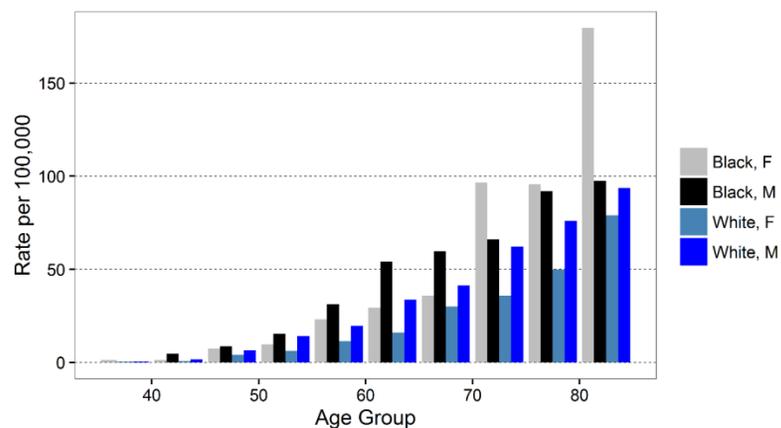
- On average, from 1999 through 2013, the age-standardized pancreatic cancer mortality rates were: White males 12.0, Black males 16.3, White females 8.6, and Black females 12.9.
- Overall, the mortality rates for males differed by 3.4 deaths per 100,000 compared to females.
- Overall, the mortality rates for Black males and females differed by 4.3 deaths per 100,000 compared to their White counterparts.

Figure 9.3: Age-Standardized Pancreatic Cancer Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Black males and females had significantly higher mortality rates than their White counterparts ($p < 0.01$).

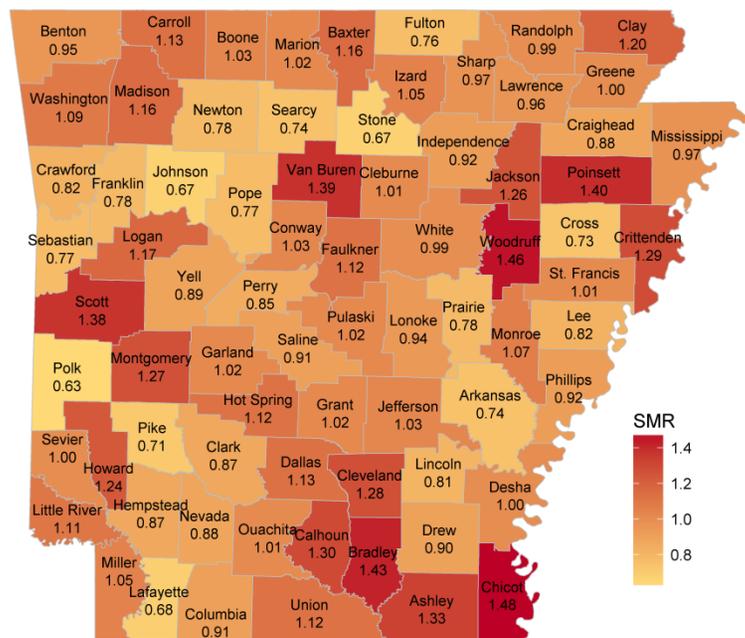
Figures 9.4: Age-Specific Pancreatic Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



*Mortality rates plotted on the logarithmic scale

- Black males had significantly higher mortality rates at age 40 to 69 across groups.
- Black females had elevated mortality rates at older ages, especially for females who were older than 80 years old ($p < 0.0001$).
- Pancreatic cancer mortality rates increased with age.

Figures 9.5: Pancreatic Cancer Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.
- County standardized mortality ratios were distributed throughout the state with no distinctive clustering.

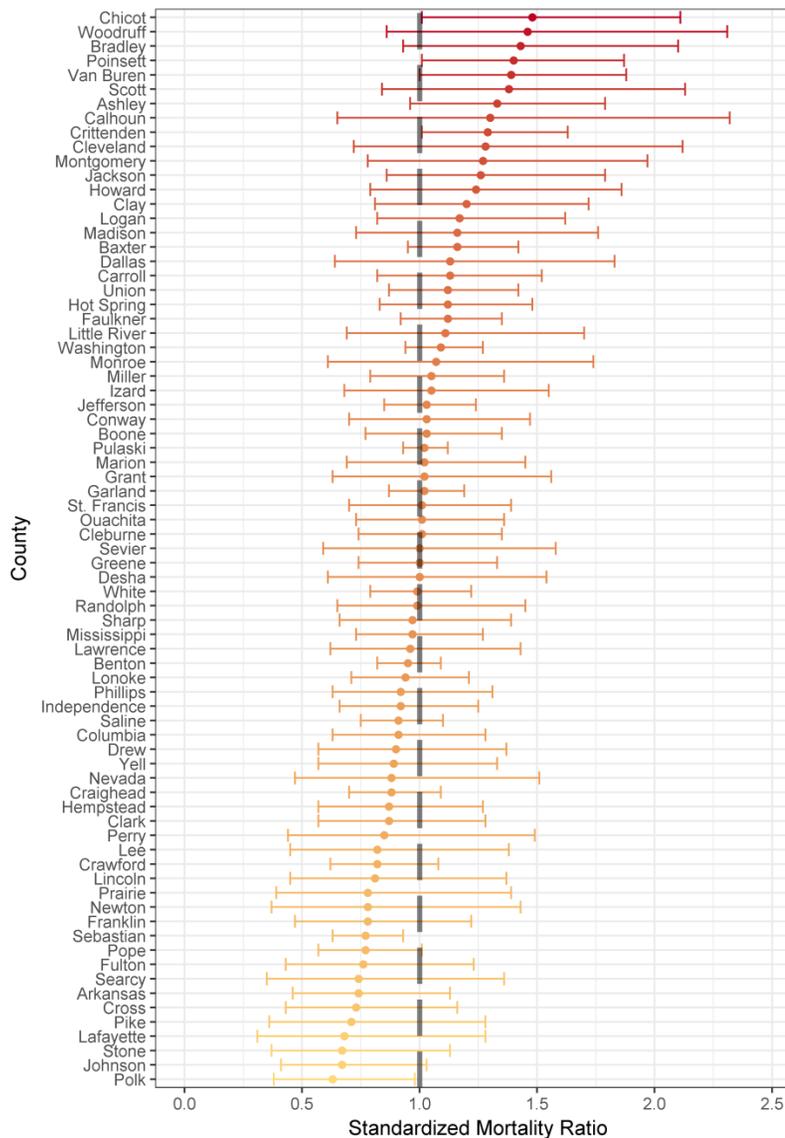
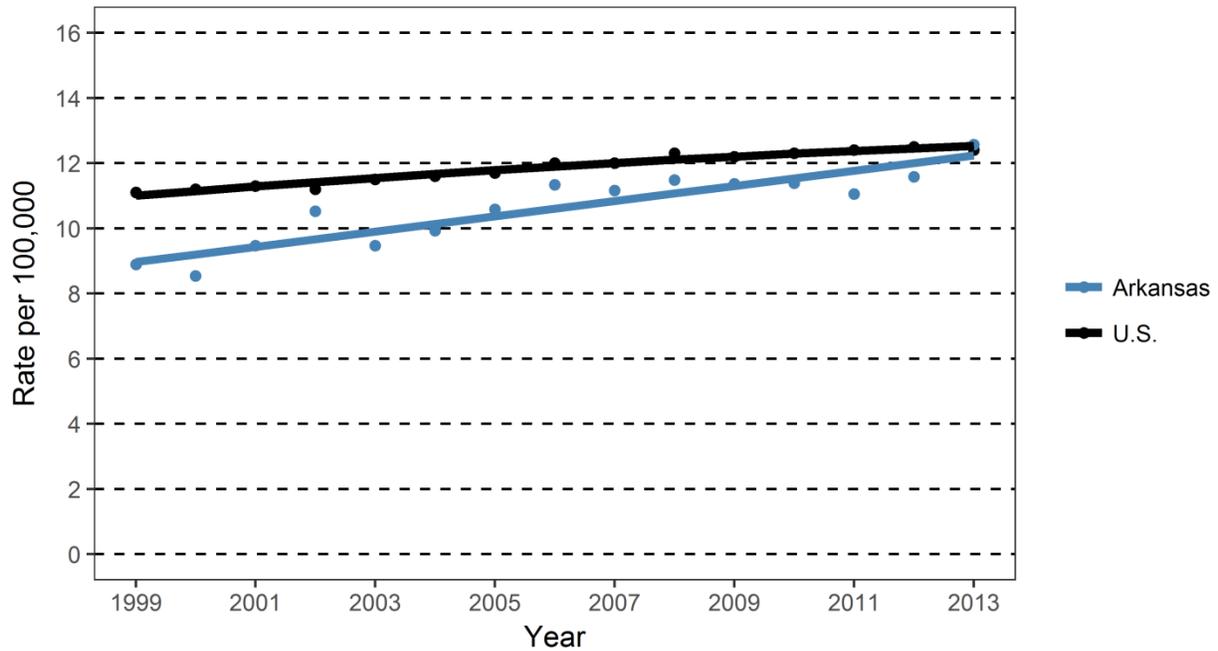
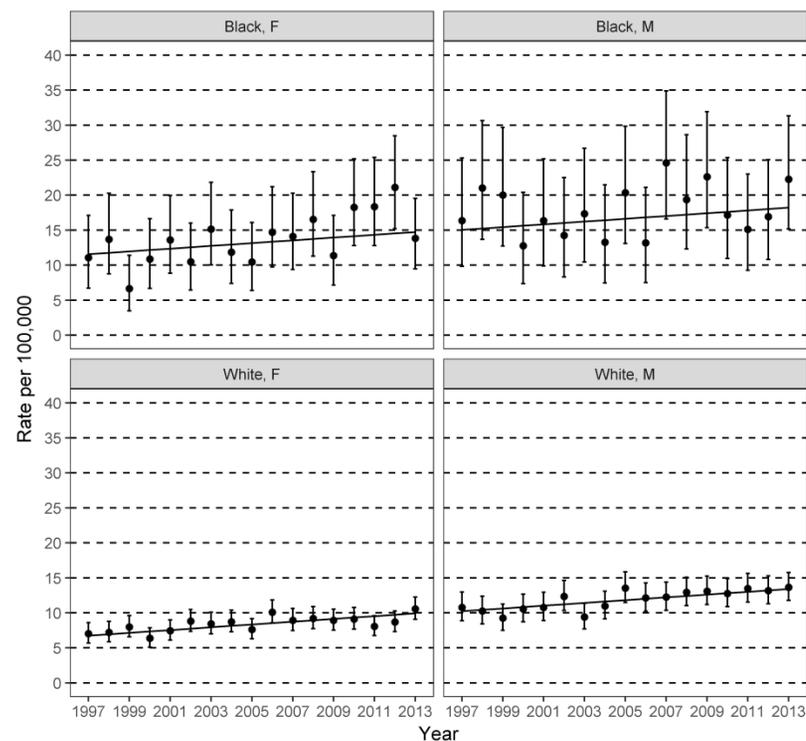
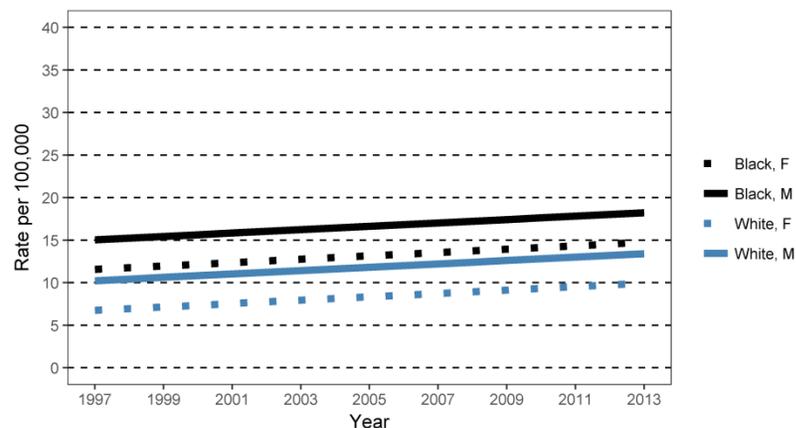


Figure 9.6: Age-Standardized Pancreatic Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



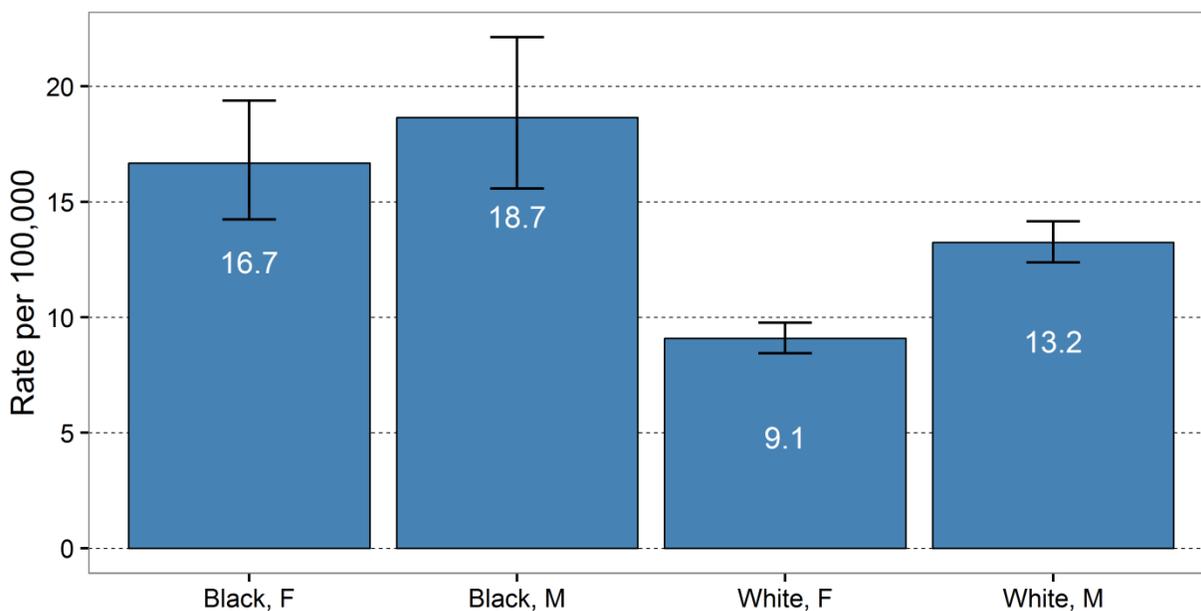
- Arkansas and the United States had an increasing trend of pancreatic cancer incidence rates from 1999 through 2013.
- The rate increase in Arkansas was faster than that in the United States.
 - In Arkansas, the pancreatic cancer incidence rate was 12.6 cases per 100,000 in 2013.
 - In the United States, the rate was 12.4 cases per 100,000 in 2013.
- Arkansas had lower pancreatic cancer incidence rates than the United States before 2013.

Figures 9.7: Age-Standardized Pancreatic Cancer Incidence Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1997 – 2013



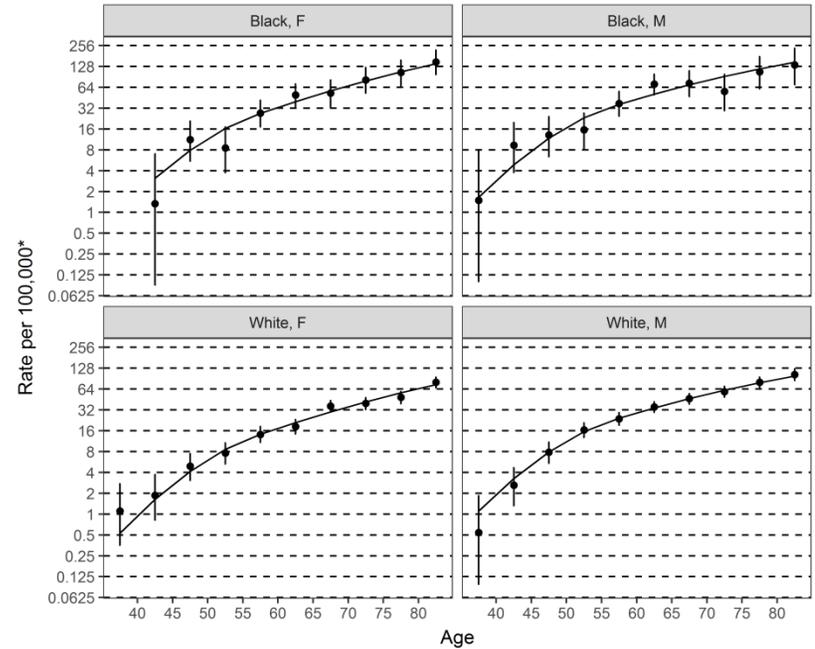
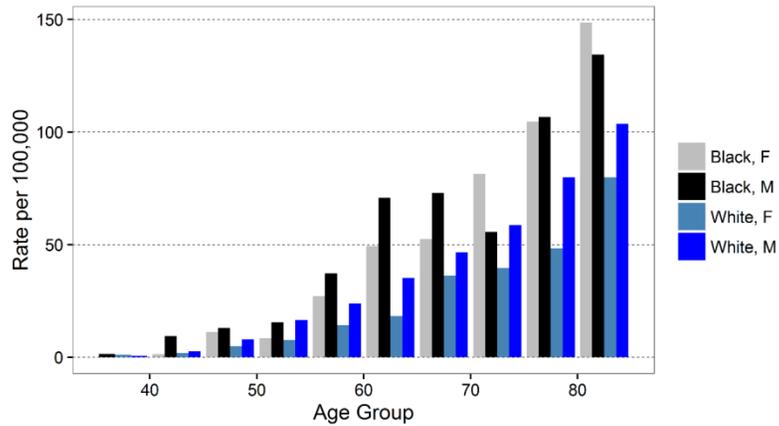
- All race and sex groups had an increasing trend of pancreatic cancer incidence rates during 1997 from 2013 of 0.2 cases per 100,000.
- Overall, the incidence rates for males differed by 3.5 cases per 100,000 compared to females.
- Overall, the incidence rates for Black males and females differed by 4.8 cases per 100,000 compared to their White counterparts.

Figure 9.8: Age-Standardized Pancreatic Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Black males and females had higher incidence rates than their White counterparts, and the differences were statistically significant, ($p < 0.01$).

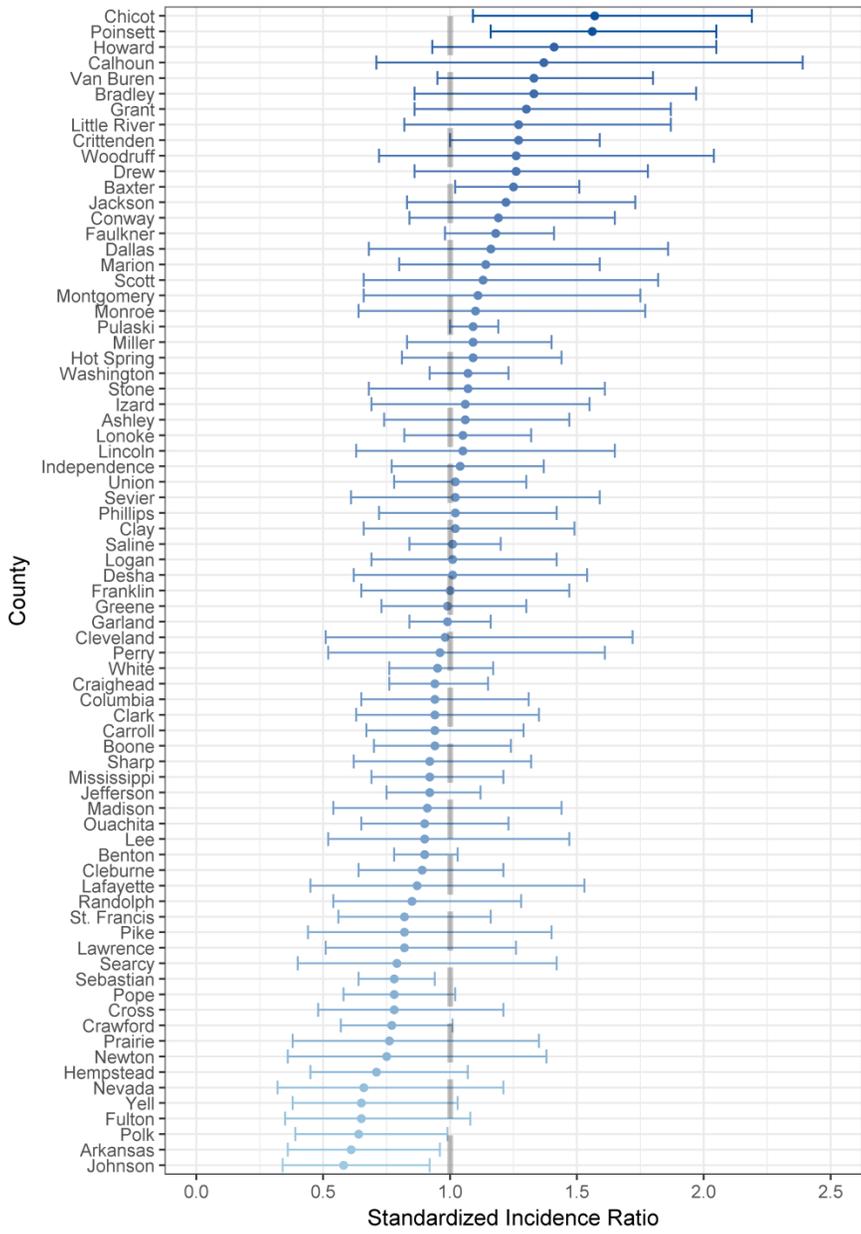
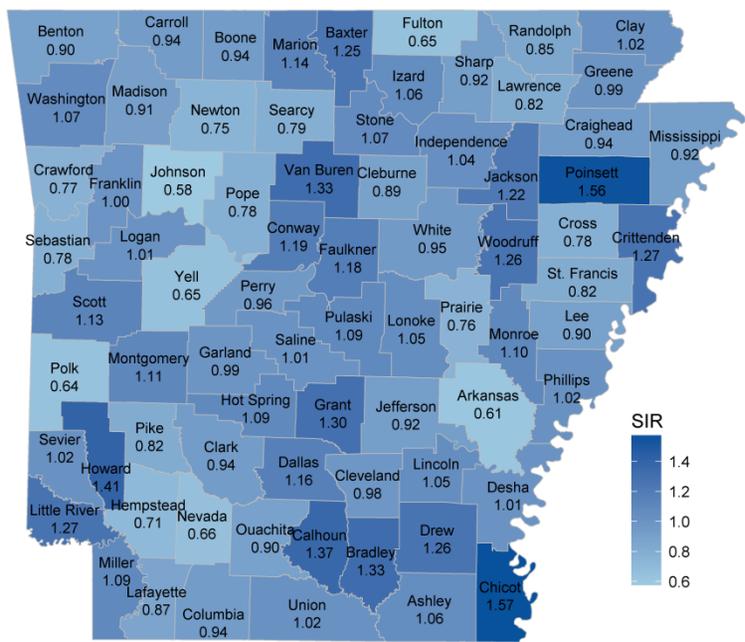
Figures 9.9: Age-Specific Pancreatic Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

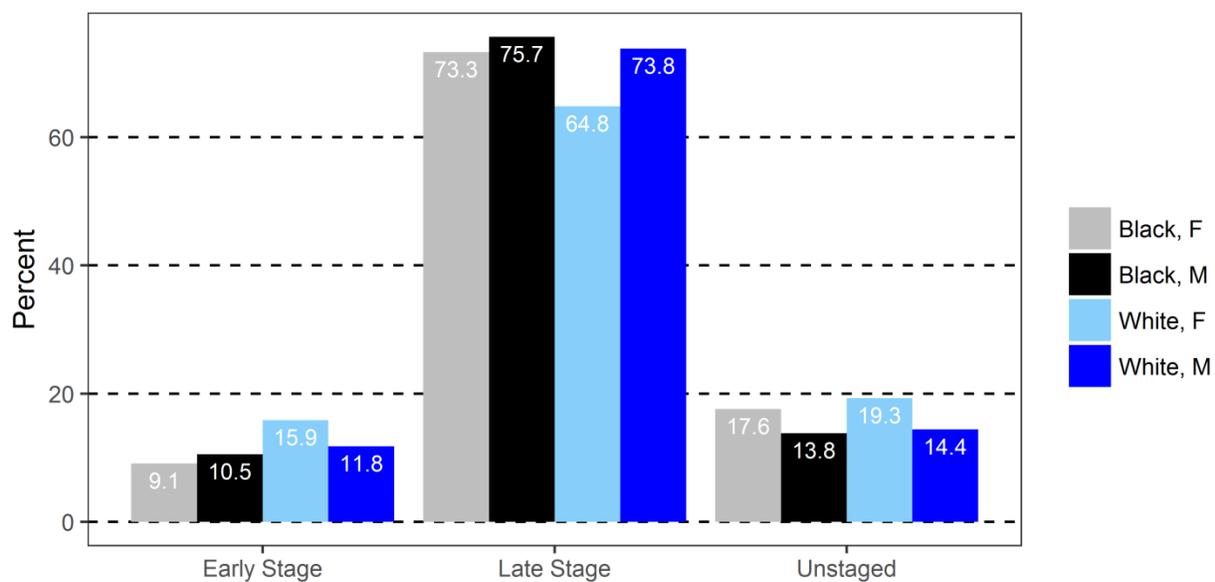
- Black males had the highest incidence rates among age groups ≤ 70 years.
- Pancreatic cancer incidence rates increased with age.

Figures 9.10: Pancreatic Cancer Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.
- County standardized incidence ratios were distributed throughout the state with no distinctive clustering.

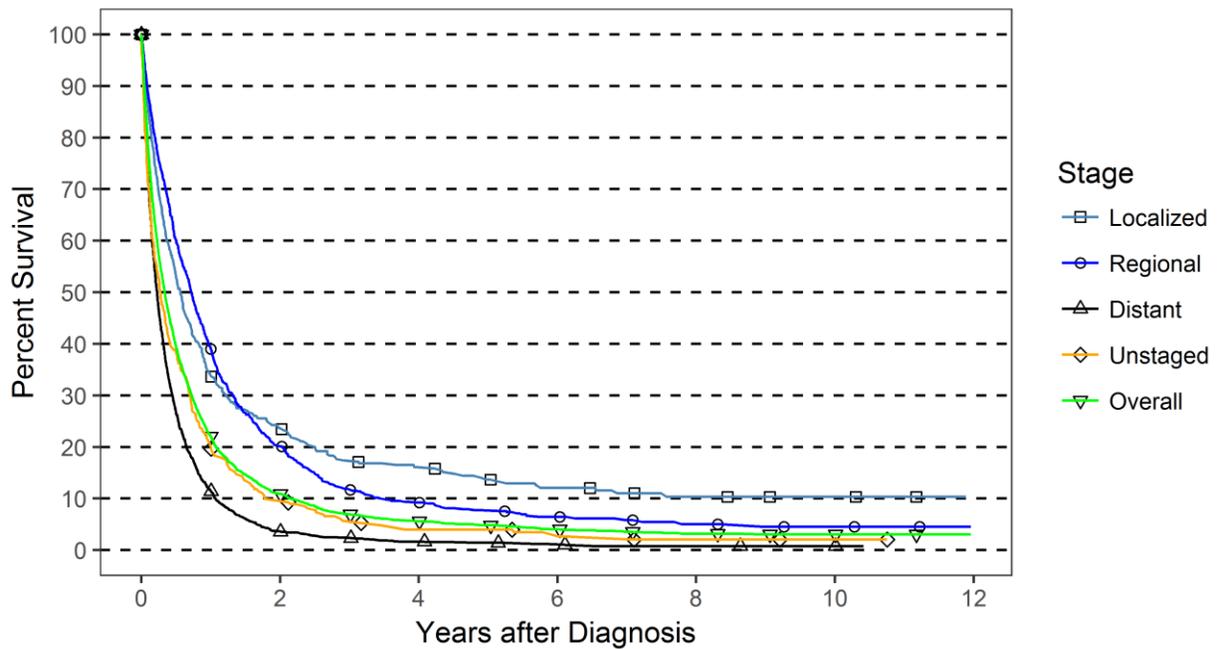
Figure 9.11: Pancreatic Cancer, SEER 2000 Stage at Diagnosis, by Race and Sex, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease.

- Around 70 percent of pancreatic cancer cases were diagnosed in late stage.

Figure 9.12: Pancreatic Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	34	39	11	20	22
2	23	20	4	9	11
3	17	12	2	5	7
4	16	9	2	5	6
5	14	8	1	4	5
6	12	6	1	4	4
7	11	6	1	2	4
8	10	5	1	2	3
9	10	5	1	2	3
10	10	5	1	2	3

- Pancreatic cancer 5-year survival rates depend on stage at diagnosis.
 - Localized = 14 percent
 - Regional = 8 percent
 - Distant = 1 percent
 - Unstaged = 4 percent
 - Overall = 5 percent

Chapter 10: Prostate Cancer

In 2013, a total of 1,763 men in Arkansas were diagnosed with prostate cancer, and 268 died of prostate cancer. The median age at diagnosis for prostate cancer among men in Arkansas from 2009 through 2013 was 67 years.

Signs and Symptoms^{1,2}

Early stages of prostate cancer do not cause any obvious symptoms, but as the cancer progresses, common symptoms include:

- Weak or interrupted urine flow;
- Inability to urinate or difficulty starting or stopping urine flow;
- Need to urinate frequently, particularly at night;
- Blood in urine; and
- Pain or burning with urination.

These symptoms also occur in non-cancerous events, such as an enlarged prostate or infection. Distant stage prostate cancer often spreads to the bones and can cause pain in the hips, spine, ribs, and other areas.

Risk Factors^{1,2}

The risk of developing prostate cancer increases with age. Most prostate cancer is identified in men age 65 years or older. Black men are at increased risk of developing prostate cancer compared to other race groups. Other common risk factors include family history, genetic factors, obesity, physical inactivity, sexually transmitted infection, and hormonal factors.

Prevention and Early Detection^{2,4}

The U.S. Preventive Services Task Force (USPSTF) recommends individualized decision making about screening for prostate cancer after a discussion with a clinician. USPSTF suggests men ages 55 to 69 should discuss the potential benefits and harms of prostate-specific antigen (PSA)-based screening of prostate cancer with their physician. Screening for prostate cancer among men ages 70 and older is not recommended.

Treatment^{1,2}

Most common treatment methods are active surveillance (monitoring course of disease with the intent to intervene if the cancer progresses), radical prostatectomy, radiation therapy, brachytherapy (small radioactive pellets implanted in prostate tissue), and androgen deprivation therapy (ADT).

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

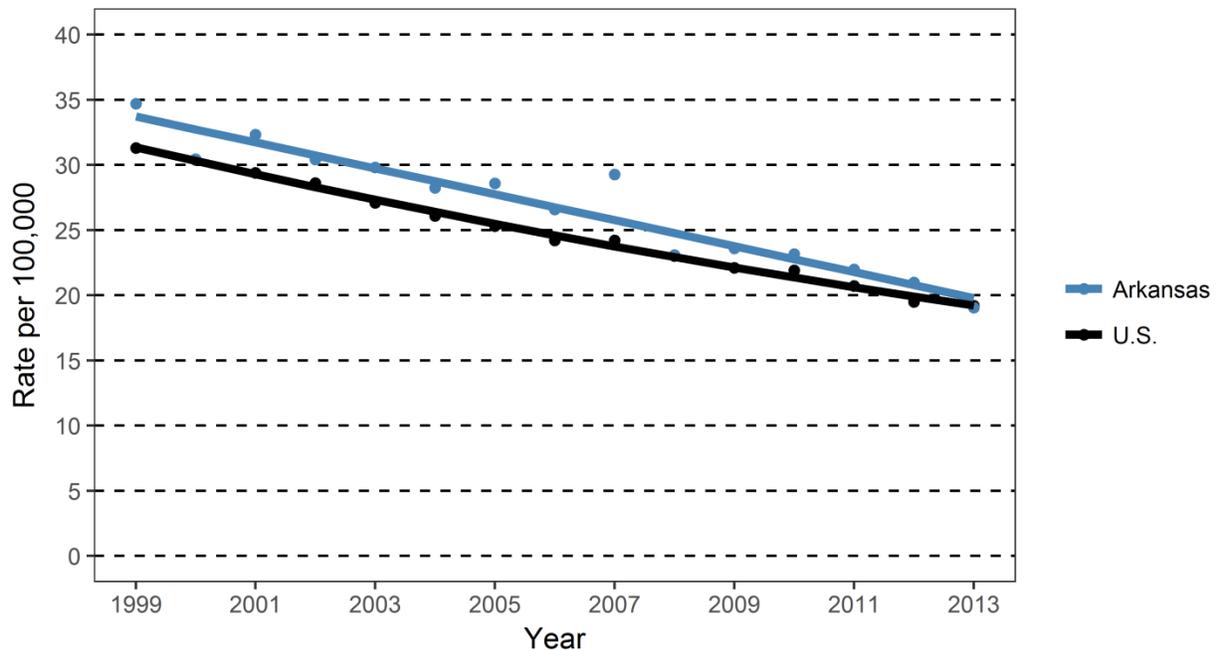
Prevention, Control Goals, and Strategies ^{3, 5, 7, 13}

	Goal/Objective	Baseline	Arkansas Healthy People 2020 Target
Goal	Decrease prostate cancer death rates	21.8 per 100,000 (2011)	19.7 per 100,000
Objective 1	Increase the proportion of men who have discussed with a health-care provider whether or not to have a prostate-specific antigen (PSA) test to be screened for prostate cancer	Advantages of PSA Discussed: 55.6 percent, Yes Disadvantages of PSA Discussed: 20.5 percent, Yes	Advantages of PSA Discussed: 61.1 percent, Yes Disadvantages of PSA Discussed: 22.5 percent, Yes
Objective 2	Increase the utilization of prostate cancer-specific support services to enhance survivorship such as risk assessment, diagnosis, treatment, and recovery	398 men navigated by the Arkansas Prostate Cancer Foundation (2014)	5 percent annual increase in number of men navigated

Proposed Strategies:

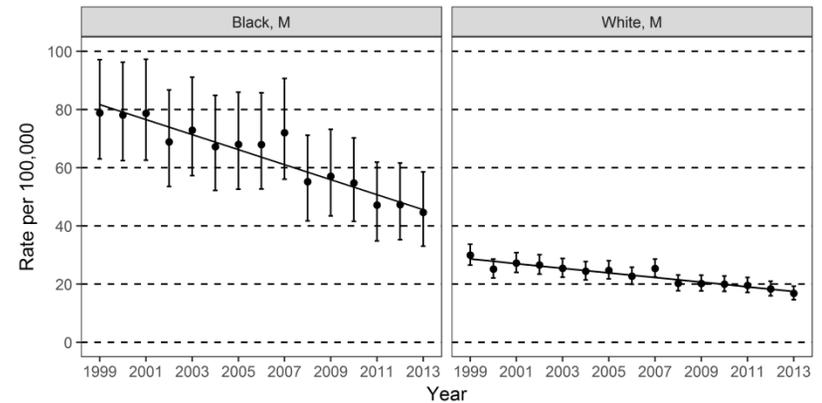
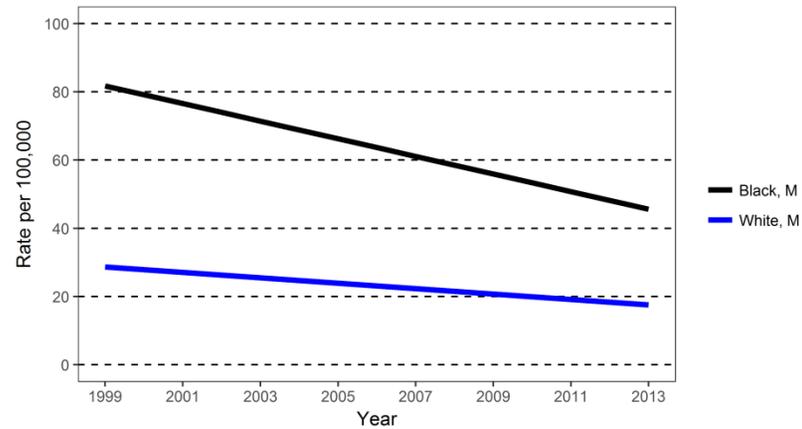
- Develop initiatives to raise awareness of prostate cancer risk factors and symptoms of prostate cancer.
- Collaborate with key stakeholders to provide public education about prostate cancer within communities across the state, especially in underserved populations.
- Disseminate emerging information on prostate cancer detection, diagnosis, treatment, and survivorship, including new biomarkers that may improve detection of aggressive disease.
- Outline the benefits and risks of prostate cancer screening to healthcare professionals, the general public, men who consider screening, and community leaders for individualized screening decisions based on USPSTF guidelines.
- Provide prostate cancer-specific patient navigation to facilitate timely and appropriate follow-up for men with abnormal PSA or digital rectal exam results; educate men diagnosed with prostate cancer about treatment options and after effects; identify and mitigate patient and systems barriers; monitor prostate cancer survivorship.
- Refer men and their families for assistance with enrolling in health insurance under the Affordable Care Act (ACA).
- Raise awareness about clinical trials and community-based participatory research where appropriate.
- Disseminate information about quality-of-life resources and services, support groups, and other resources for men diagnosed with prostate cancer and their loved ones.

Figure 10.1: Age-Standardized Prostate Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



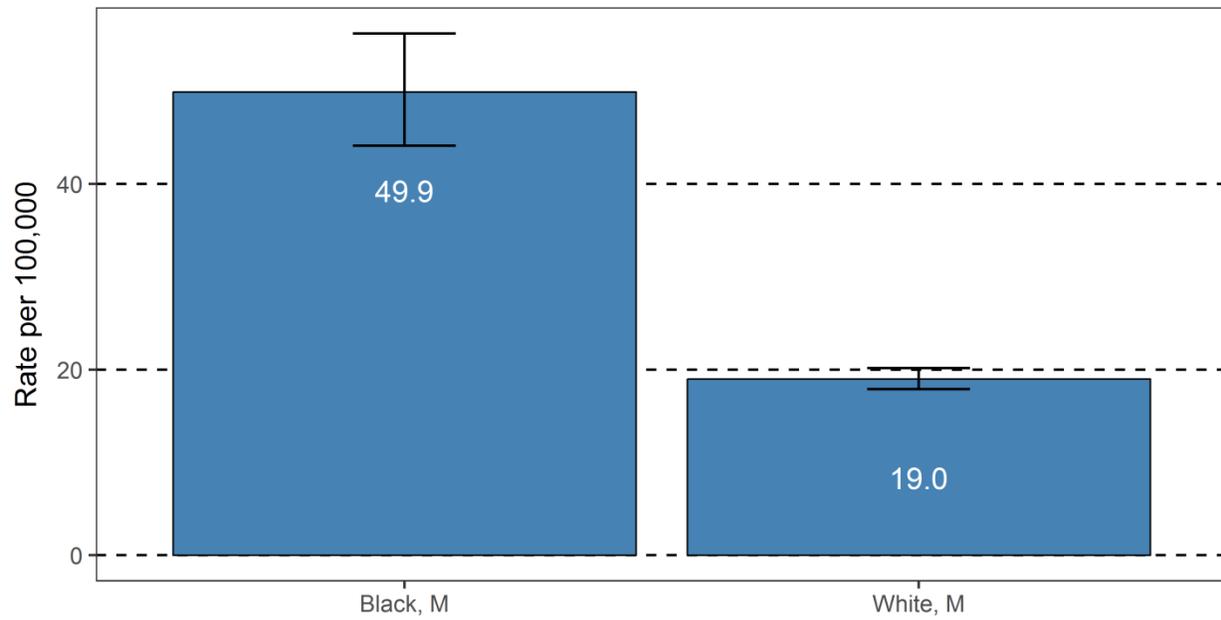
- During 1999 through 2013, Arkansas age-standardized mortality rates were slightly higher than rates in the United States.
 - The United States had 19.2 deaths per 100,000 in 2013.
 - Arkansas had 19.0 deaths per 100,000 in 2013.
- Changes in age-standardized mortality rates in Arkansas over time were significant ($p < 0.01$).
 - The age-standardized prostate cancer mortality rate declined at an annual average of 0.81 cases per 100,000, which was essentially the same as the decline in the United States.

Figures 10.2: Age-Standardized Prostate Cancer Mortality Trends with 95 Percent Confidence Intervals by Race, Arkansas, 1999 – 2013



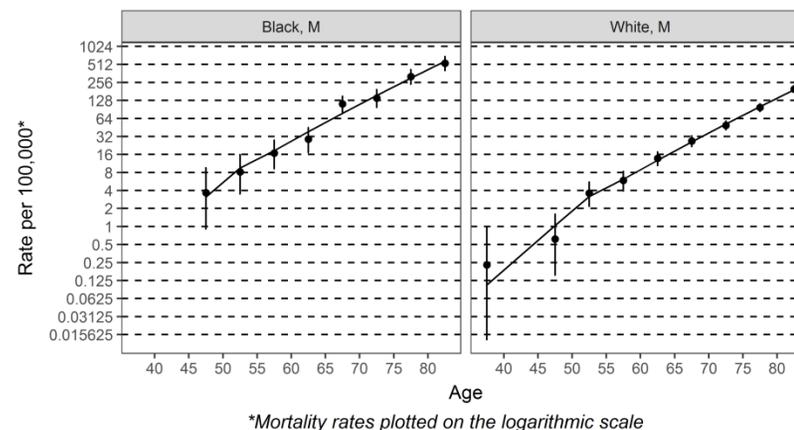
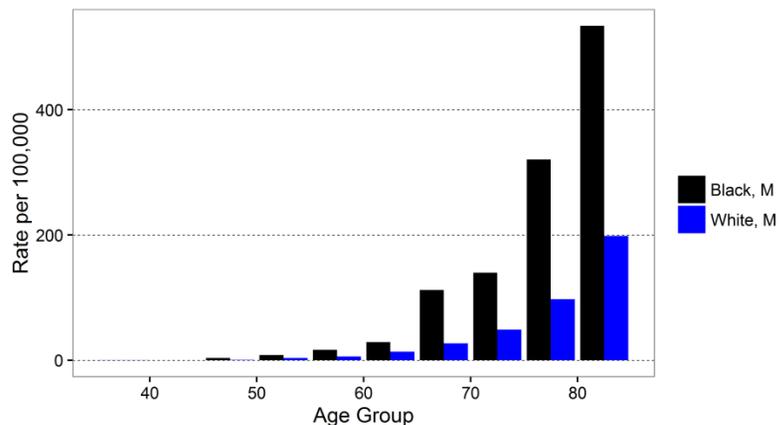
- Prostate cancer death rates have declined over the period ($p < 0.01$).
 - In 2013, Black males had an annual decline of 2.6 deaths per 100,000 with a rate of 44.6 deaths per 100,000.
 - In 2013, White males had an annual decline of 0.8 deaths per 100,000 with a rate of 16.9 deaths per 100,000.
- Prostate cancer mortality rates had more variation in Black males than White males.
- The average prostate cancer mortality rate for Black males was 63.9 deaths per 100,000 from 1999 through 2013.
- The average prostate cancer mortality rate for White males was 23.2 deaths per 100,000 from 1999 through 2013.

Figure 10.3: Age-Standardized Prostate Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



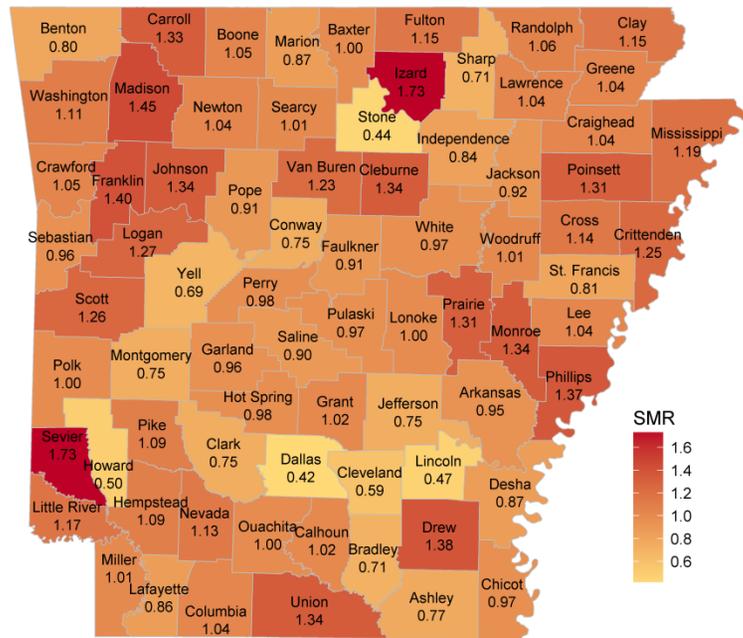
- Black males were 2.6 times more likely to die from prostate cancer than White males.

Figures 10.4: Age-Specific Prostate Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- The median age at death from prostate cancer from 2009 through 2013 was 80 years.
- During 2009 through 2013, there were 1,449 deaths from prostate cancer.
- Black males had higher mortality rates than White males, especially at older ages.
- Prostate cancer mortality rates increased with age.

Figures 10.5: Prostate Cancer Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.
- Counties with elevated standardized mortality ratios were distributed widely throughout the state.

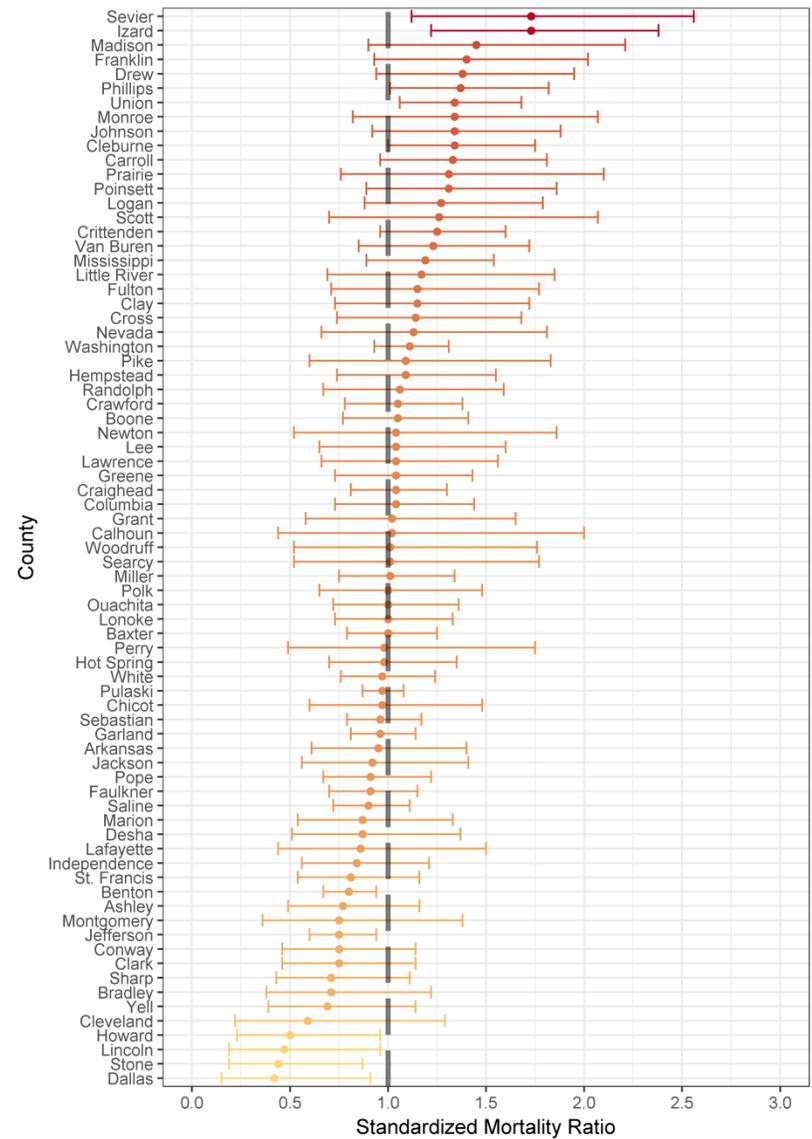
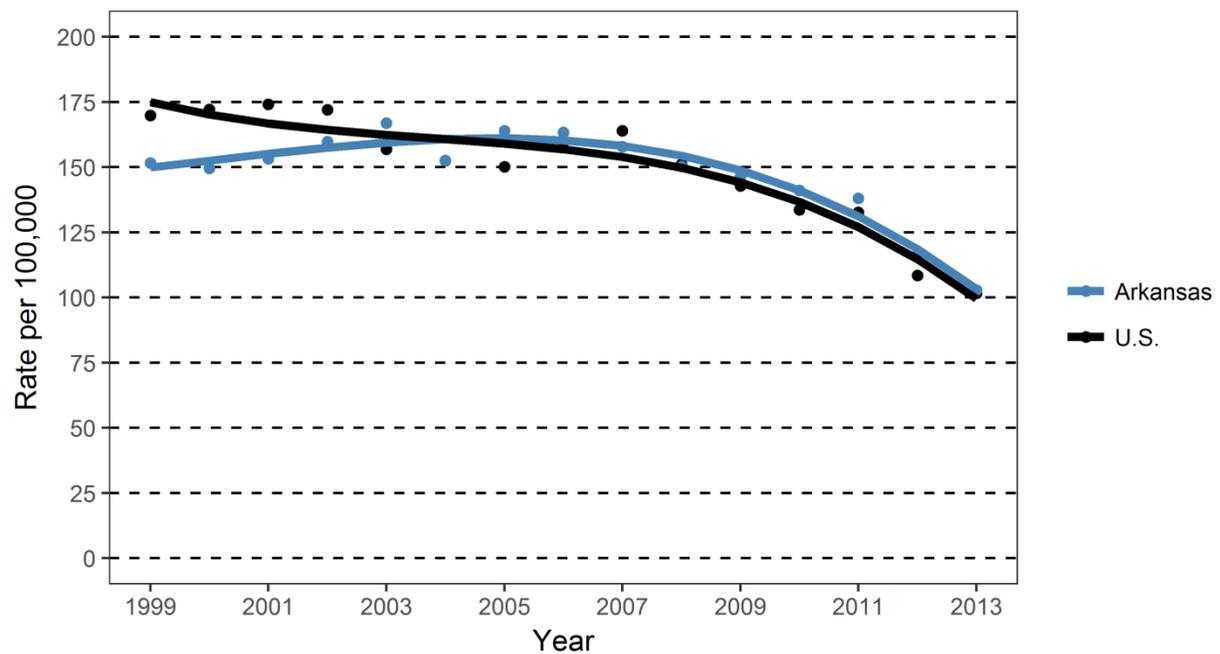
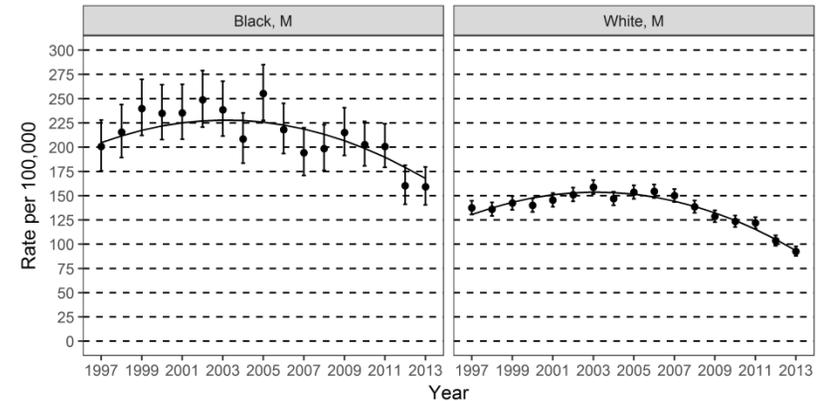
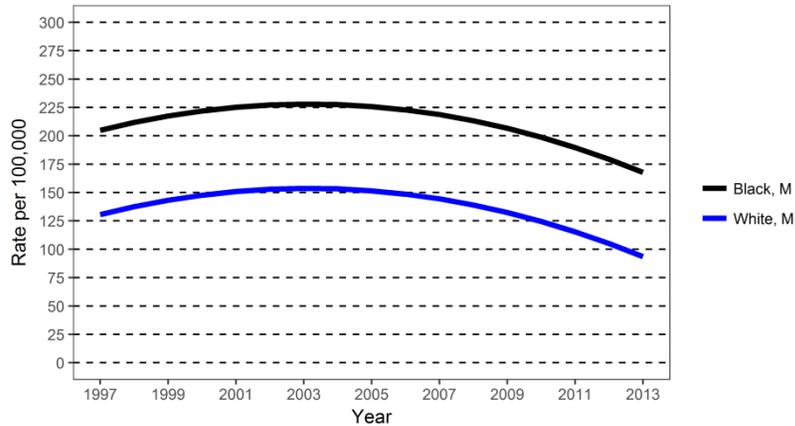


Figure 10.6: Age-Standardized Prostate Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



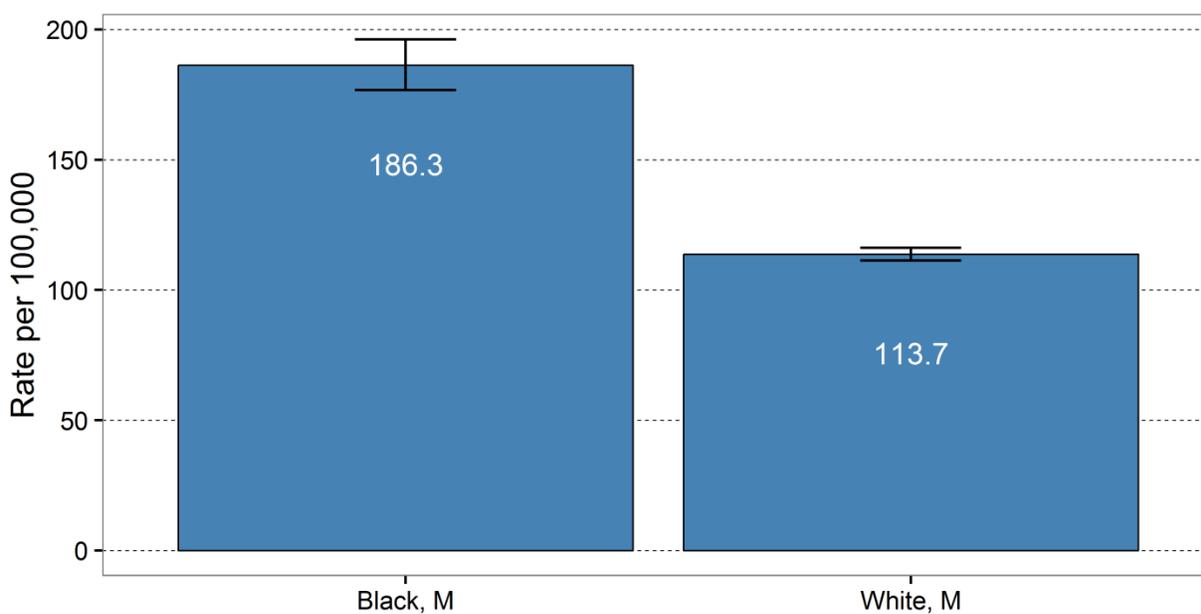
- The 2013 age-standardized prostate cancer incidence rates for Arkansas and the United States were 102.8 and 101.6 per 100,000, respectively.
- In Arkansas, changes in incidence rates over the period, 1999 through 2013, were significant ($p < 0.01$) and suggest that rates may have begun to decline in 2003 after an increasing trend from 1999 through 2002.

Figures 10.7: Age-Standardized Prostate Cancer Incidence Trends with 95 Percent Confidence Intervals by Race, Arkansas, 1997 – 2013



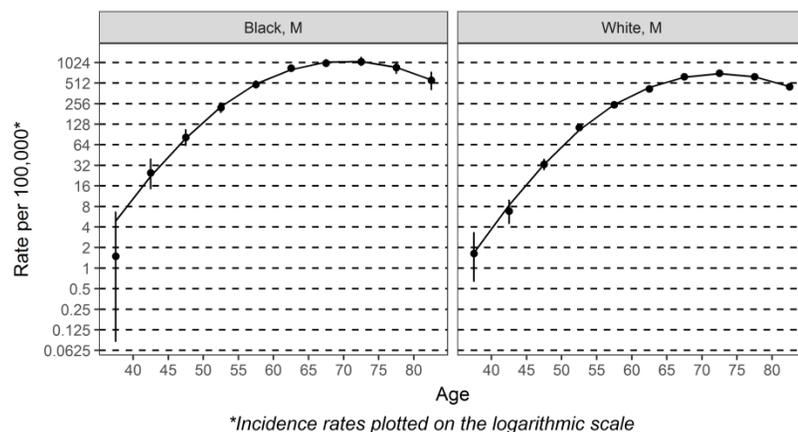
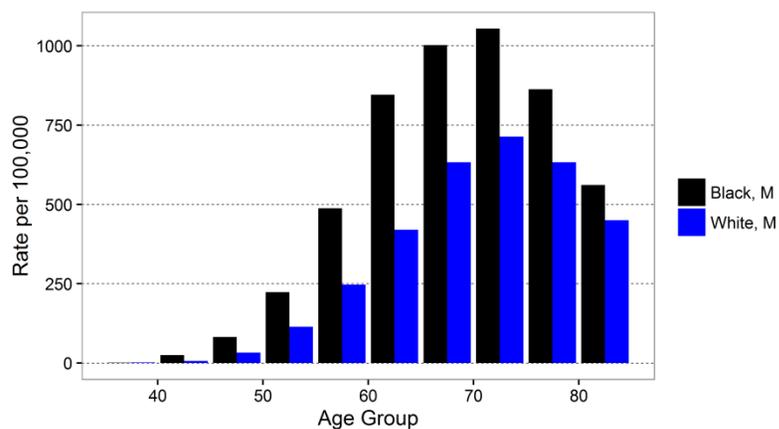
- In 2013, the prostate cancer incidence rate among Black males was 159.2 cases per 100,000. The rate among White males for the same year was 92.6 cases per 100,000.
 - Black males averaged 76.5 cases per 100,000 more than White males over the period from 1997 through 2013.
 - The relative risk of prostate cancer in Black males is 1.72 times higher than in White males.
- Both races showed a significant declining trend ($p < 0.01$) in recent years.

Figure 10.8: Age-Standardized Prostate Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



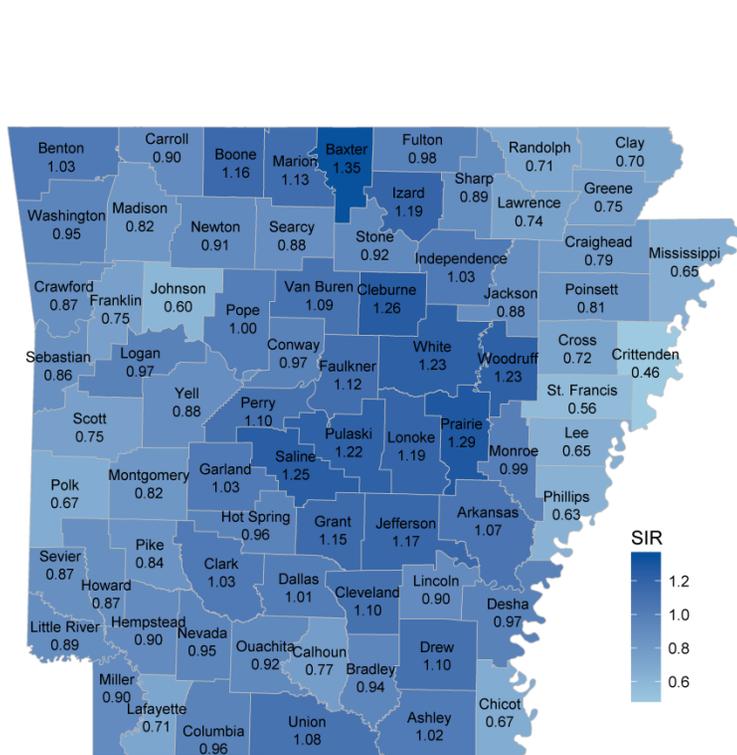
- Black males were 1.6 times more likely to have prostate cancer than White males.

Figures 10.9: Age-Specific Prostate Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- The median age at diagnosis for prostate cancer from 2009 through 2013 was 67 years.
- The rate of prostate cancer diagnoses declined after age 75.

Figures 10.10: Prostate Cancer Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.
- Counties with elevated prostate cancer standardized incidence ratios were clustered in the central part of the state.

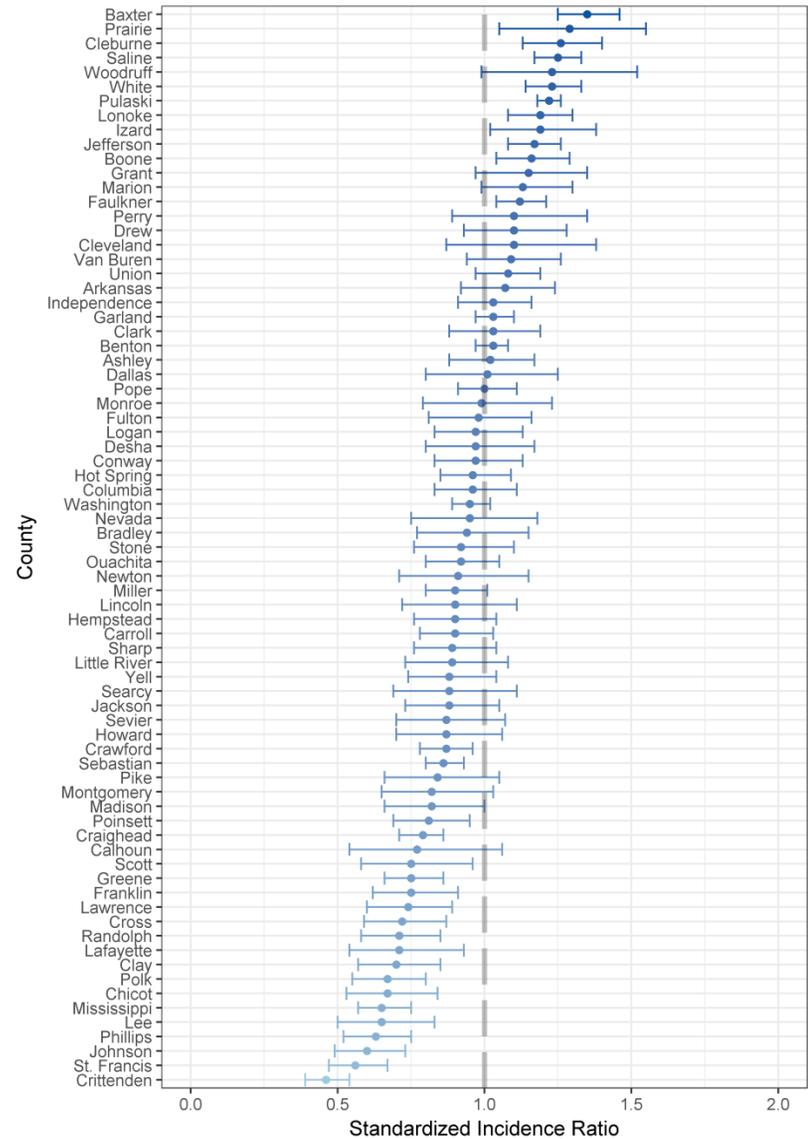
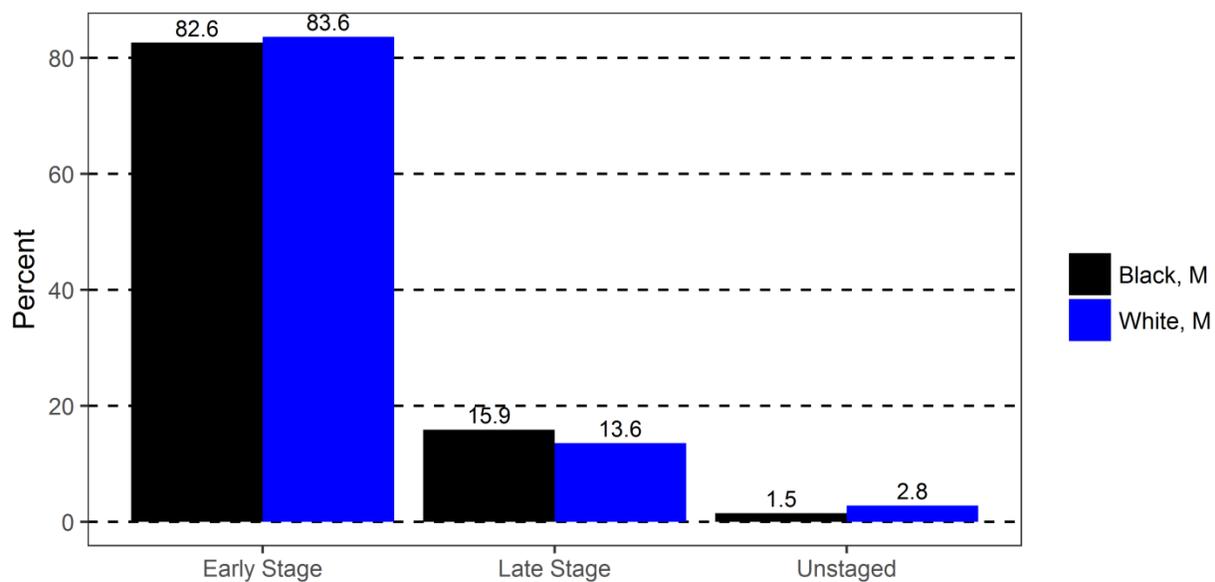


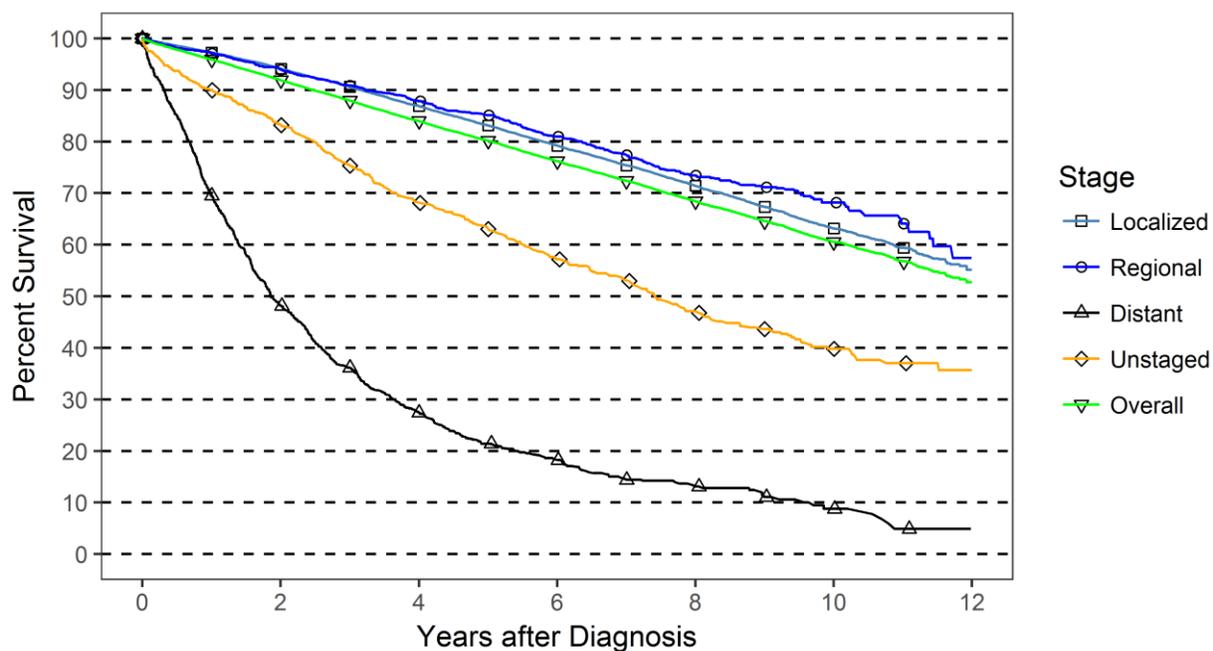
Figure 10.11: Prostate Cancer, SEER 2000 Stage at Diagnosis, by Race, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease.

- Most men were diagnosed with prostate cancer at earlier stages of disease.
- Black males had a higher percentage of tumors diagnosed at a later stage than White males.

Figure 10.12: Prostate Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	97	97	69	90	96
2	94	94	48	83	92
3	91	91	36	75	88
4	87	88	27	68	84
5	83	85	21	63	80
6	79	81	18	57	76
7	75	77	14	53	72
8	71	73	13	47	68
9	67	71	11	44	65
10	63	68	9	40	61

- Prostate cancer 5-year survival rates depend on stage at diagnosis.
 - Localized = 83 percent
 - Regional = 85 percent
 - Distant = 21 percent
 - Unstaged = 63 percent
 - Overall = 80 percent

Chapter 11: Urinary Bladder Cancer

In 2013, a total of 692 men and women in Arkansas were diagnosed with urinary bladder cancer, and 157 died of urinary bladder cancer. The median age at diagnosis for urinary bladder cancer in Arkansas from 2009 through 2013 was 72 years.

Signs and Symptoms^{1, 2}

The most common symptom is blood in the urine. Other symptoms include:

- Frequency or urgency of urination; and
- Pain or irritation during urination.

Risk Factors^{1, 2, 14}

Cigarette smoking is the most common risk factor associated with urinary bladder cancer. Smokers are twice as likely to develop bladder cancer than non-smokers. Workers in the dye, leather, aluminum, or rubber industries are at greater risk. Also, drinking water with high levels of arsenic or long-term use of catheters increases risks. Drinking plenty of fluids and eating vegetables may reduce risks of developing bladder cancer.

Prevention and Early Detection^{2, 4}

The U.S. Preventive Services Task Force (USPSTF) does not recommend routine screening for asymptomatic individuals. The following methods are used to detect bladder cancer in high risk individuals or those experiencing symptoms:

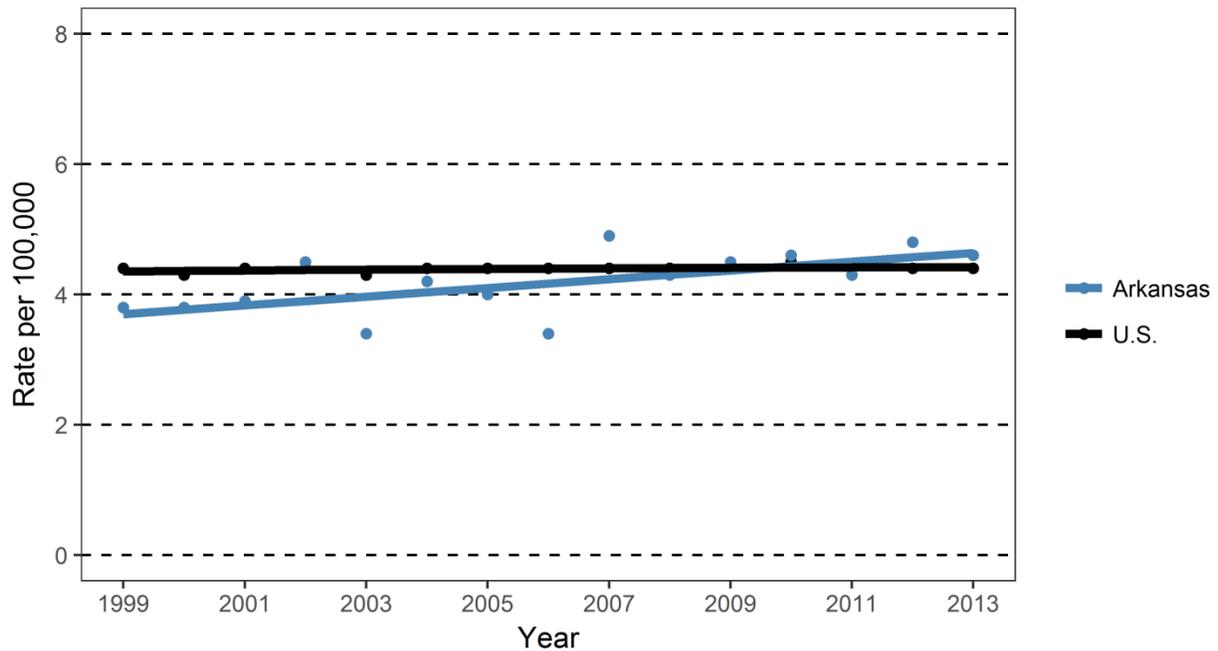
- Cystoscopy - a long thin lighted tube is inserted via the urethra into the urinary bladder to detect abnormal cells;
- Urine Cytology - examination of abnormal cells in urine.

Treatment^{1, 2}

Most common treatment methods include surgery, immunotherapy, and chemotherapy.

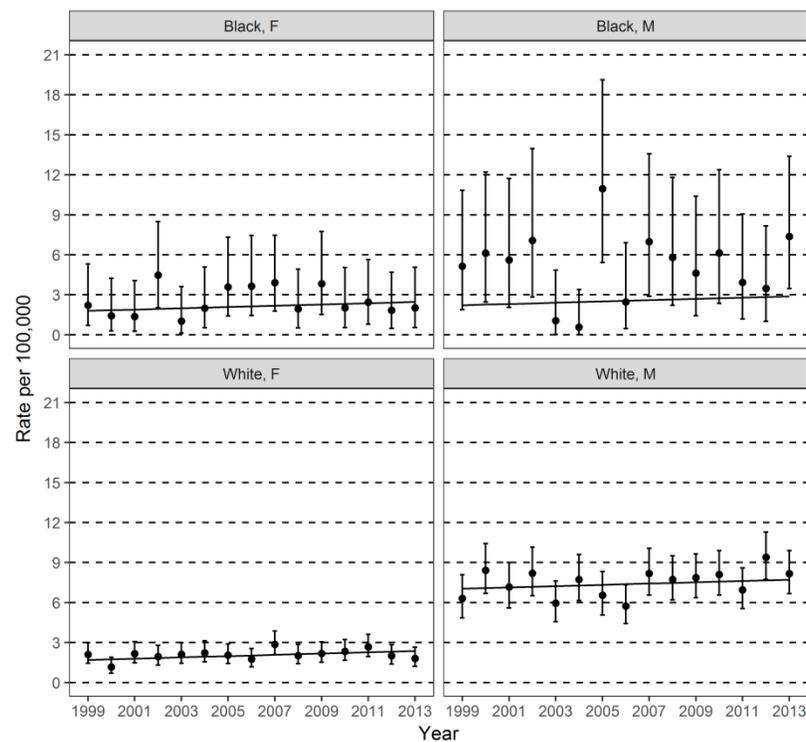
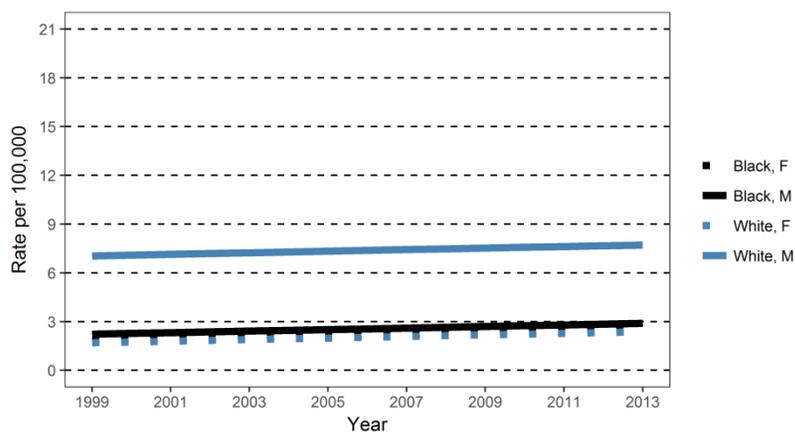
(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

Figure 11.1: Age-Standardized Urinary Bladder Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



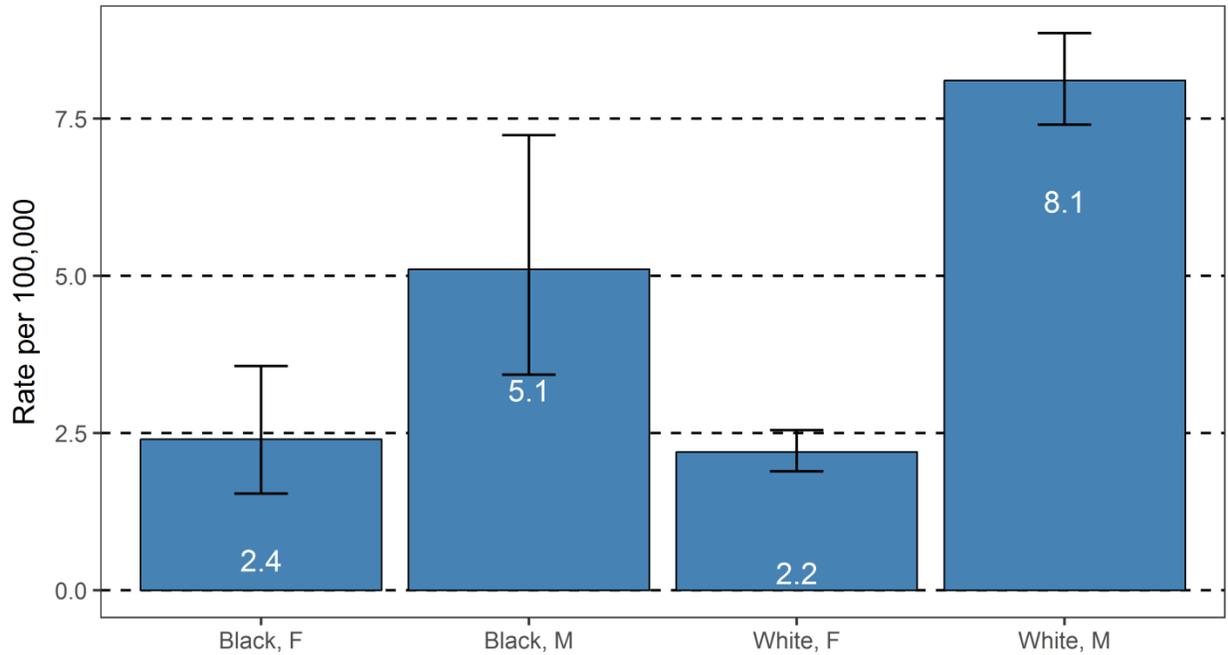
- During 1999 through 2013, Arkansas mortality rates averaged 4.2 per 100,000, which were slightly less than the corresponding United States rate of 4.4 per 100,000.
 - The United States had 4.4 deaths per 100,000 in 2013.
 - Arkansas had 4.6 deaths per 100,000 in 2013.
- Rates were stable over the period in the United States; In Arkansas, a slight but non-significant ($p = 0.35$) increase in bladder cancer mortality was observed.

Figures 11.2: Age-Standardized Urinary Bladder Cancer Mortality Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1999 – 2013



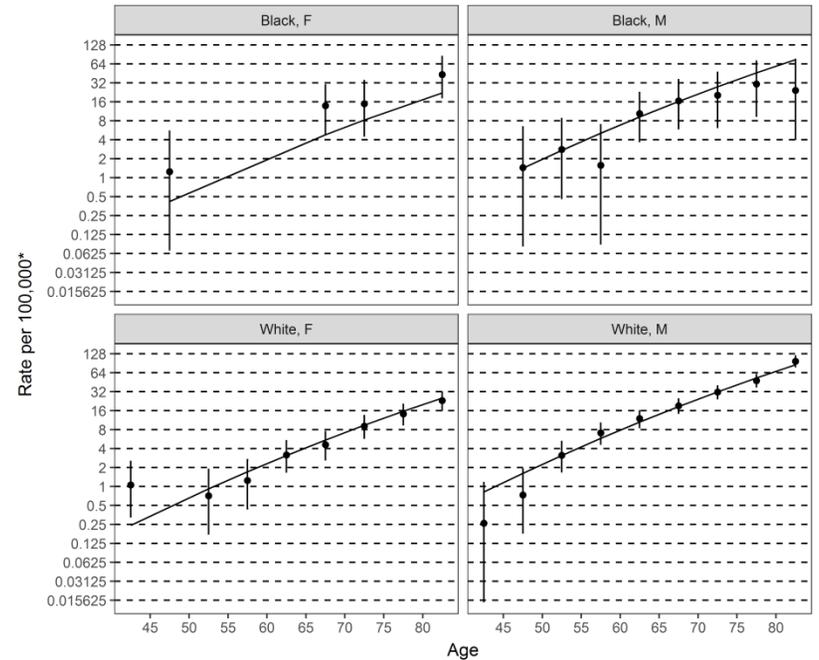
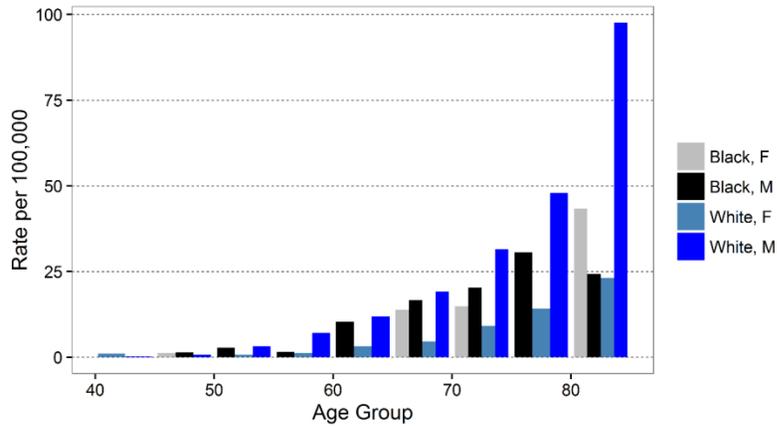
- White males had the highest bladder cancer mortality rates from 1999 through 2013 than all other race and sex groups. The rate was 8.2 deaths per 100,000 in 2013.
- White and Black females had similar rates from 1999 through 2013. The rates were 1.8 and 2.0 deaths per 100,000 for White and Black females, respectively.

Figure 11.3: Age-Standardized Urinary Bladder Cancer Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Males had significantly higher rates of bladder cancer than females ($p < 0.01$).

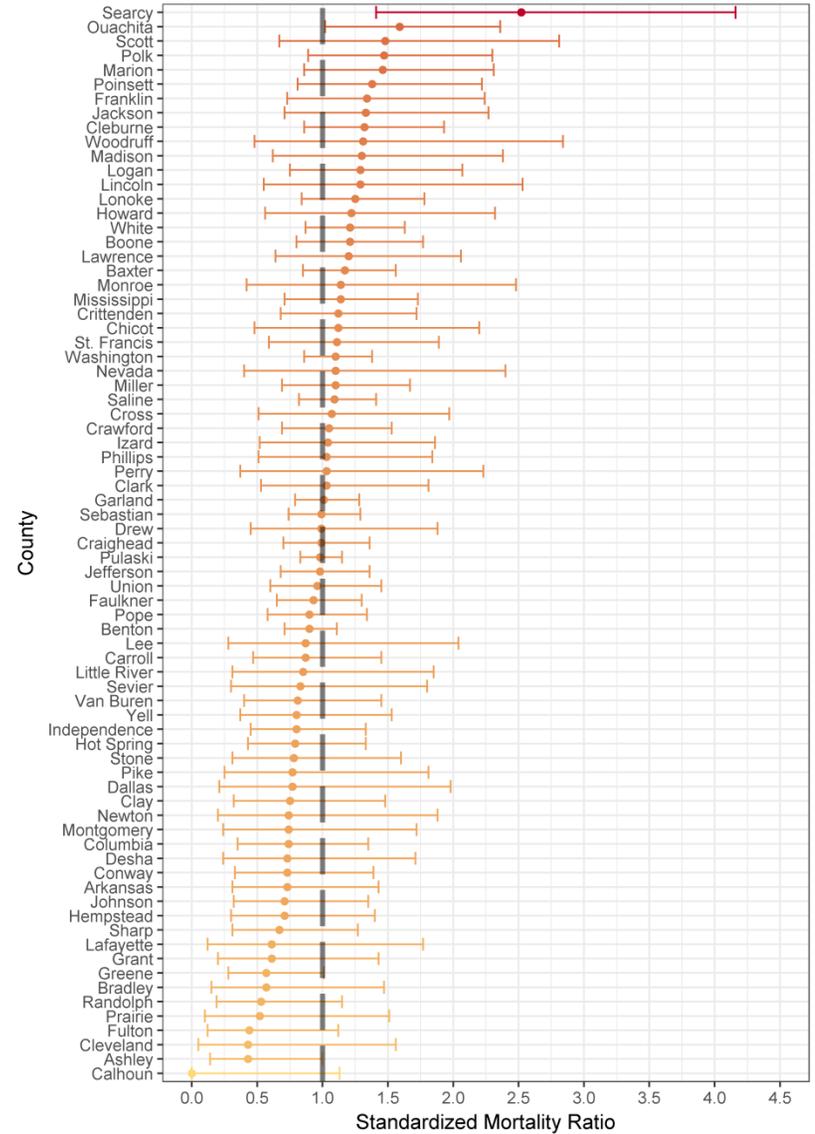
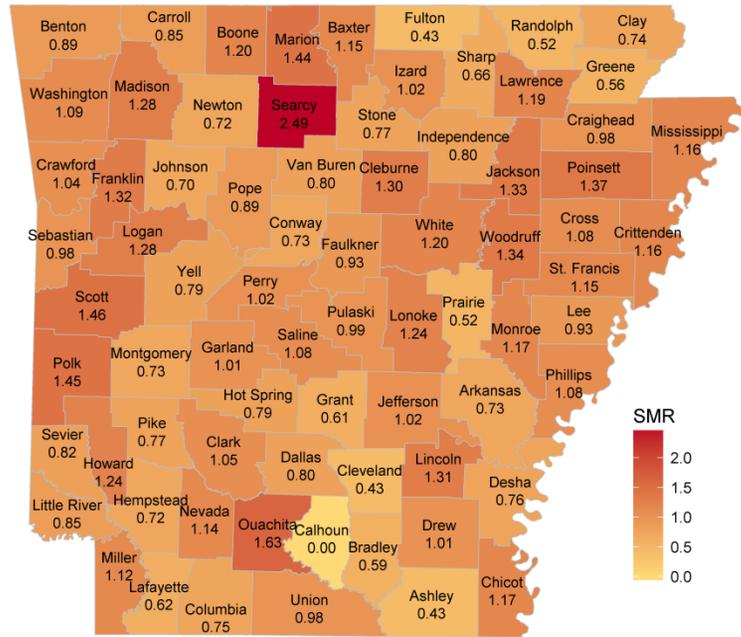
Figures 11.4: Age-Specific Urinary Bladder Cancer Mortality Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



*Mortality rates plotted on the logarithmic scale

- The median age at death from urinary bladder cancer from 2009 through 2013 was 78 years.
- The mortality rates of urinary bladder cancer increased with age.

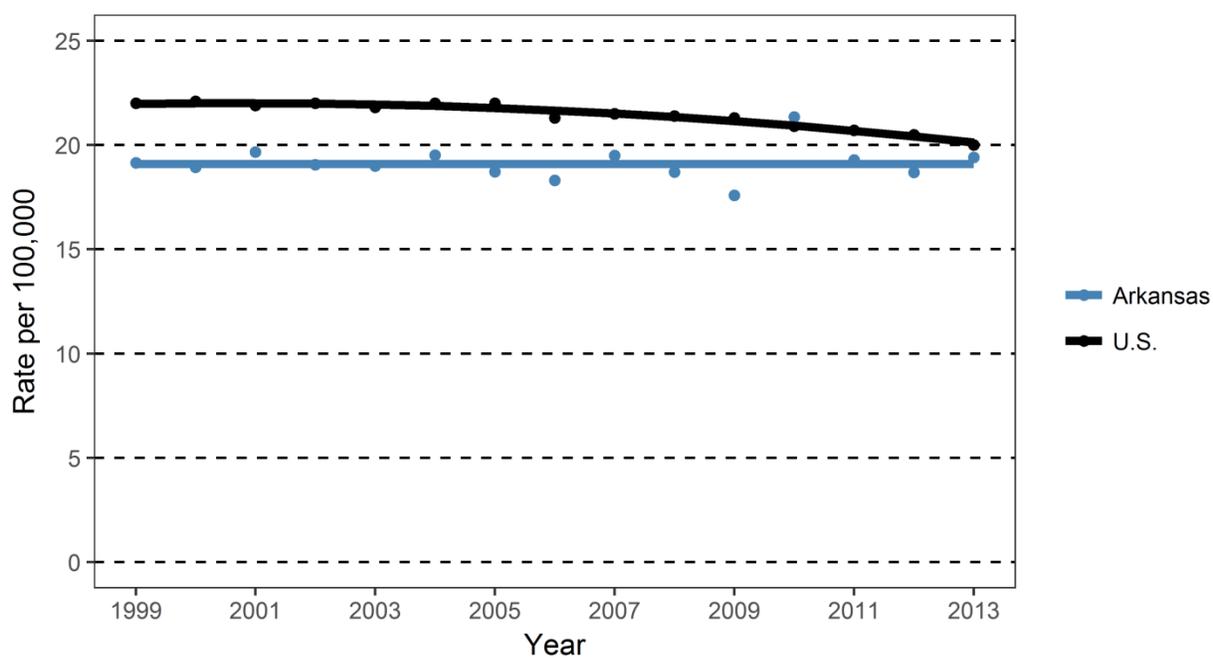
Figures 11.5: Urinary Bladder Cancer Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized mortality ratio (SMR) greater than 1.00 exceed the statewide mortality rate.
- County standardized mortality ratios were distributed throughout the state with no distinctive clustering.

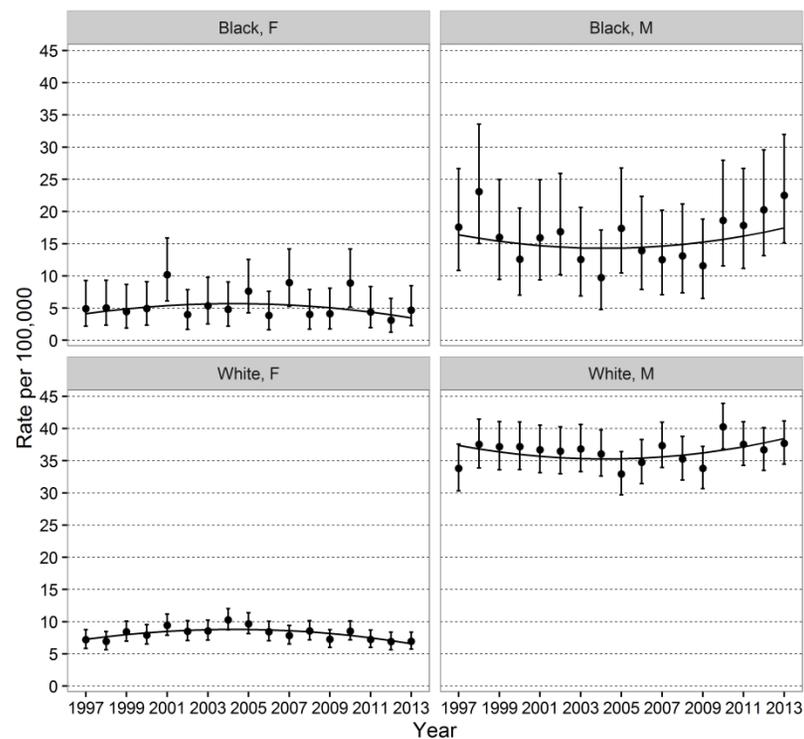
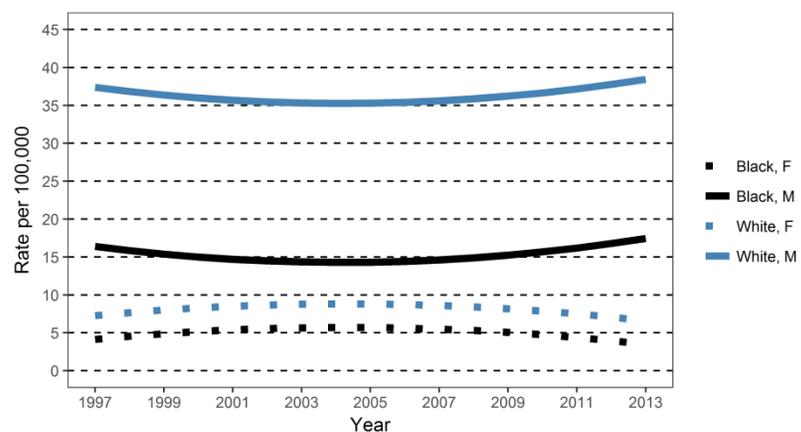
(Note: Calhoun County observed no cases over the period, which was likely due to the small population in the county.)

Figure 11.6: Age-Standardized Urinary Bladder Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



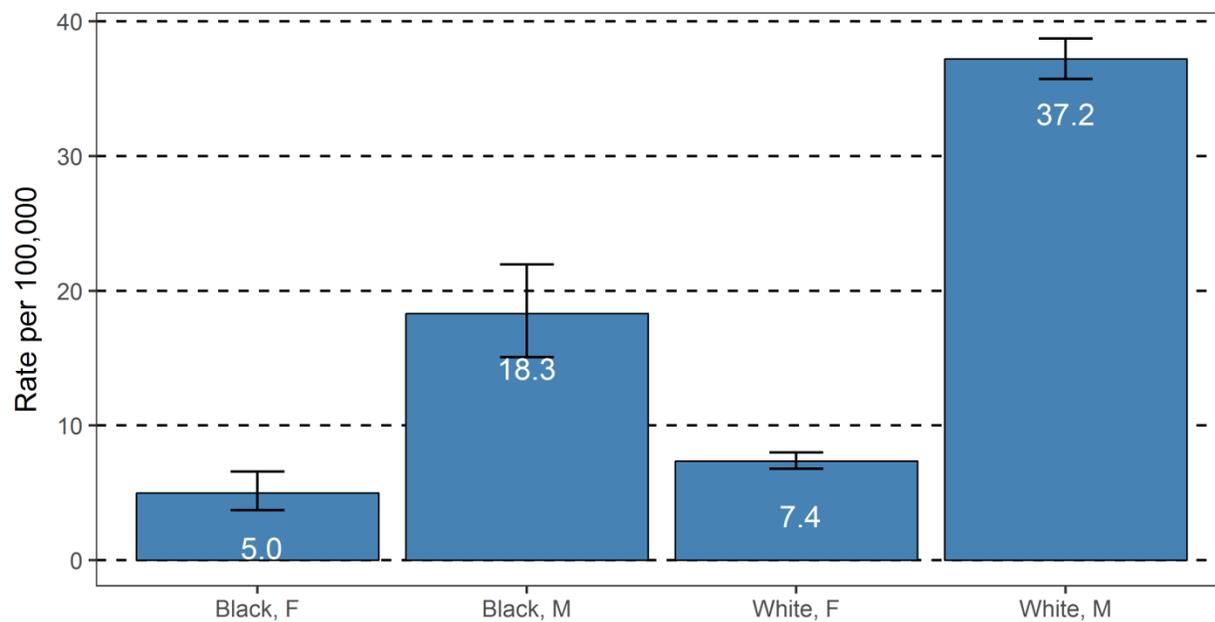
- During 1999 through 2013, the age-standardized incidence rates of urinary bladder cancer in Arkansas were lower than rates in the United States.
 - The United States had 20.0 cases per 100,000 in 2013.
 - Arkansas had 19.4 cases per 100,000 in 2013.
- In Arkansas, the incidence trend over time was constant.

Figures 11.7: Age-Standardized Urinary Bladder Cancer Incidence Trends with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 1997 – 2013



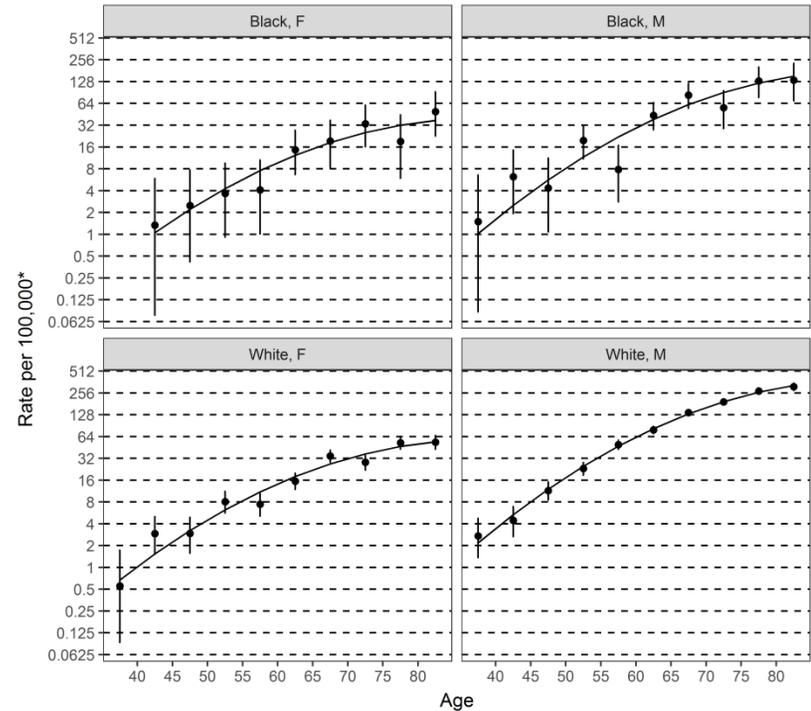
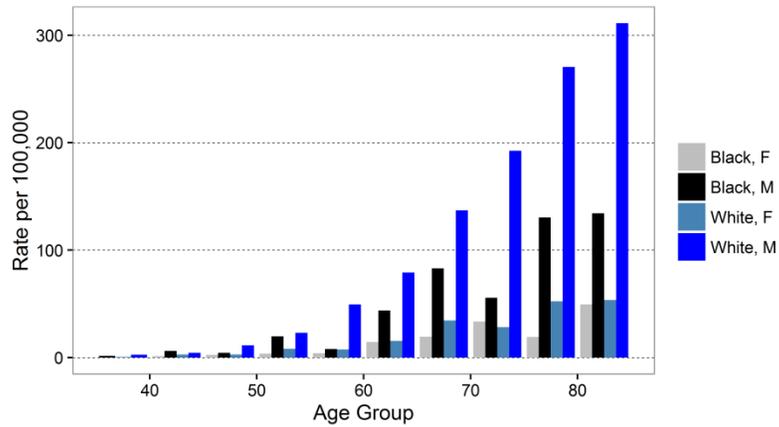
- Overall, White males and females had higher incidence rates than their Black counterparts.
- Males had higher incidence rates than females.

Figure 11.8: Age-Standardized Urinary Bladder Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



- Males had higher rates of urinary bladder cancer than females.

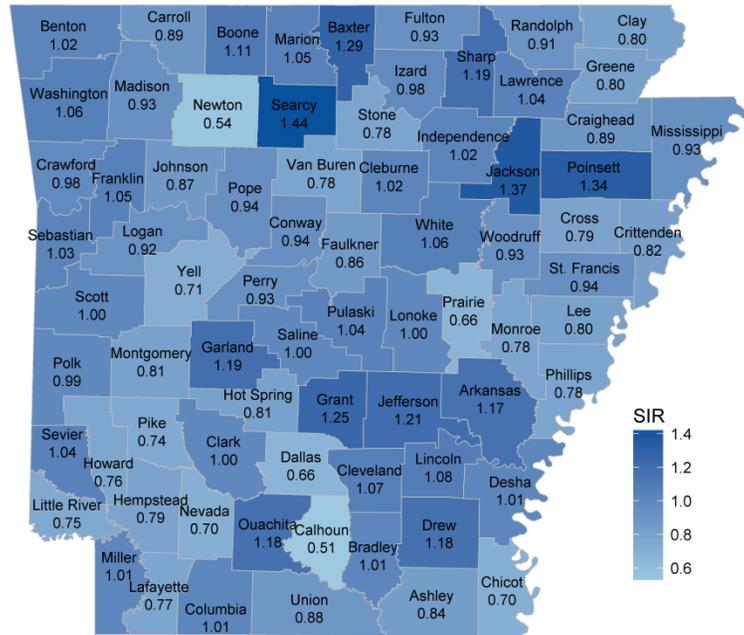
Figures 11.9: Age-Specific Urinary Bladder Cancer Incidence Rates with 95 Percent Confidence Intervals by Race and Sex, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

- The median age at diagnosis for urinary bladder cancer from 2009 through 2013 was 72 years.
- White males had higher rates than all other race and sex groups across all age groups.
- Bladder cancer incidence rates increased with age.

Figures 11.10: Urinary Bladder Cancer Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.

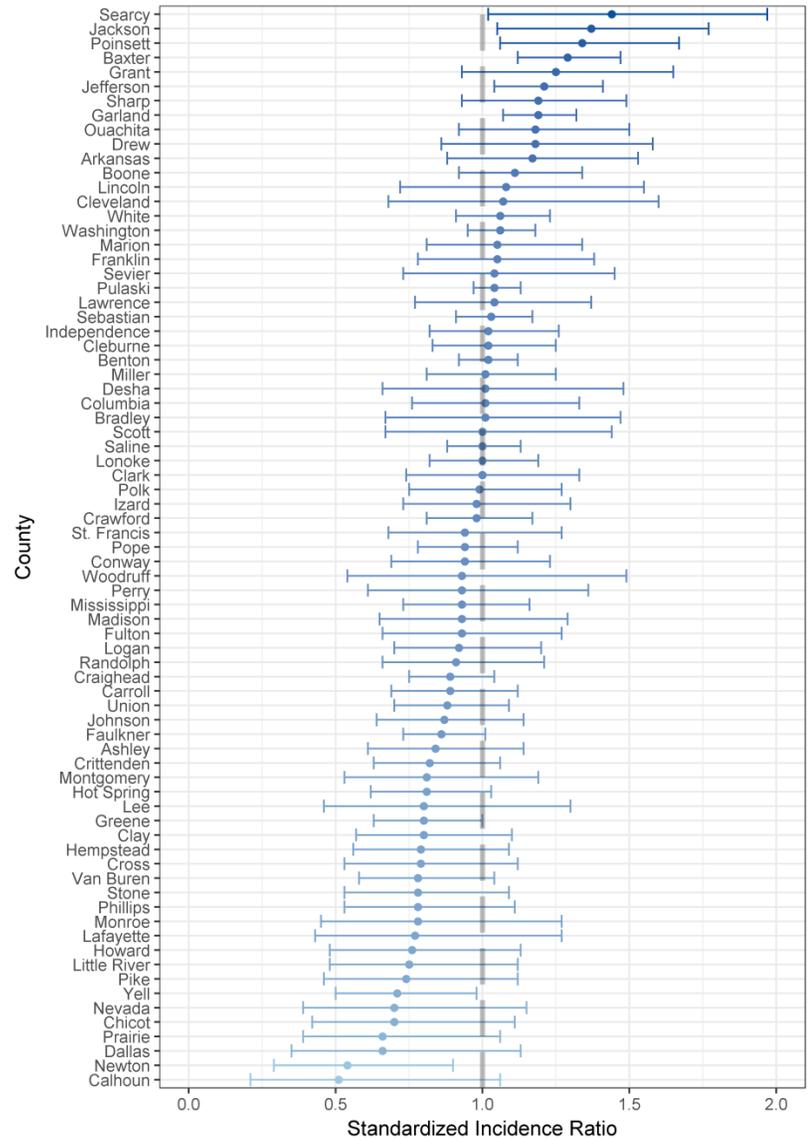
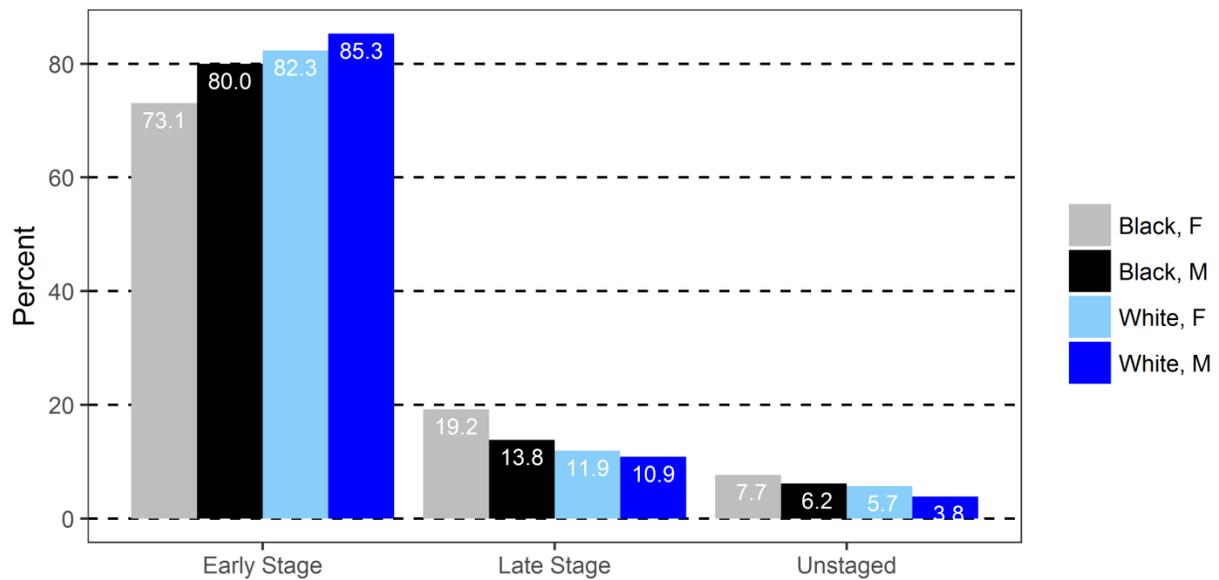


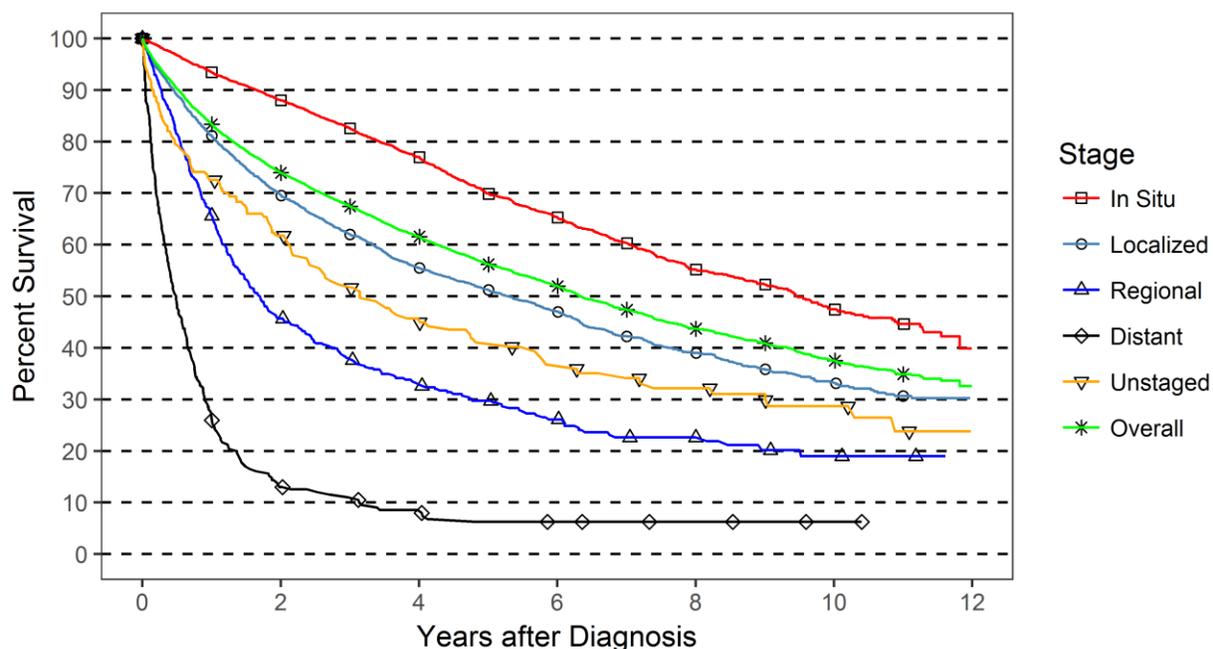
Figure 11.11: Urinary Bladder Cancer, SEER 2000 Stage at Diagnosis, by Race and Sex, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease.

- Majority of urinary bladder cancer cases were diagnosed at early stages.

Figure 11.12: Urinary Bladder Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis					
	In Situ	Localized	Regional	Distant	Unstaged	Overall
1	93	81	66	26	73	83
2	88	70	46	13	62	74
3	83	62	38	11	52	67
4	77	55	33	8	45	62
5	70	51	30	6	40	56
6	65	47	26	6	36	52
7	60	42	23	6	34	47
8	55	39	23	6	32	44
9	52	36	20	6	30	41
10	47	33	19	6	29	38

- Urinary bladder cancer 5-year survival rates depend on stage at diagnosis.
 - In Situ = 70 percent
 - Localized = 51 percent
 - Regional = 30 percent
 - Distant = 6 percent
 - Unstaged = 40 percent
 - Overall = 56 percent

Chapter 12: Uterine Cervix (Cervical)

In 2013, a total of 163 women in Arkansas were diagnosed with cancer of the uterine cervix (cervical) and 54 women died from cervical cancer. The median age at diagnosis cervical cancer in Arkansas from 2009 through 2013 was 48 years.

Signs and Symptoms^{1,2}

Symptoms of cervical cancer usually do not present until the cancer invades surrounding tissue. The most common symptoms are:

- Abnormal vaginal bleeding;
- Bleeding after menopause; and
- Increased vaginal discharge.

Risk Factors^{1,2}

The primary cause of cervical cancer is infection with certain types of human papillomavirus (HPV). Females at highest risk of infection with HPV are those who begin having sex at an early age, or those who have had many sexual partners. HPV infections are prevalent in healthy women, and only rarely does HPV progress to cervical cancer. Persistent infections with HPV along with other risk factors (e.g. long-term use of birth control pills, having many children, immunosuppression, and cigarette smoking) can increase risk of cervical cancer.

Prevention and Early Detection^{2,4,15}

The best way to prevent the HPV infections that cause cervical cancer is through vaccination. The vaccine protects against infection of the most common HPV types that cause cervical cancer. The vaccine cannot protect against an HPV type once infection with that type has already occurred. There are other less common HPV types which cause cervical cancer that the vaccine does not protect against. There is one FDA-approved HPV vaccine available in the United States. Routine vaccination with Gardasil9 is recommended by the Advisory Committee on Immunization Practices (ACIP) for females aged 9 through 26 years and males aged 9 through 21 years.

The U.S. Preventive Services Task Force (USPSTF) recommends screening for cervical cancer in women age 21 to 65 years with cytology (Pap smear) every 3 years. For women age 30 to 65 years who want to lengthen the screening interval, the USPSTF recommends screening with a combination of cytology and human papillomavirus (HPV) testing every 5 years.

Treatment^{1,2}

Cervical cancer that has not invaded nearby tissue can be treated using loop electrosurgical excision procedure (removes abnormal tissue with a wire loop heated by electric current), cryotherapy (destroys cells using extreme cold), laser ablation (destroys abnormal tissue using a laser beam), or surgery. Advanced cervical cancer is treated with surgery, radiation, and chemotherapy.

(Note: Please refer to Appendices B and C for technical notes and definitions of terms.)

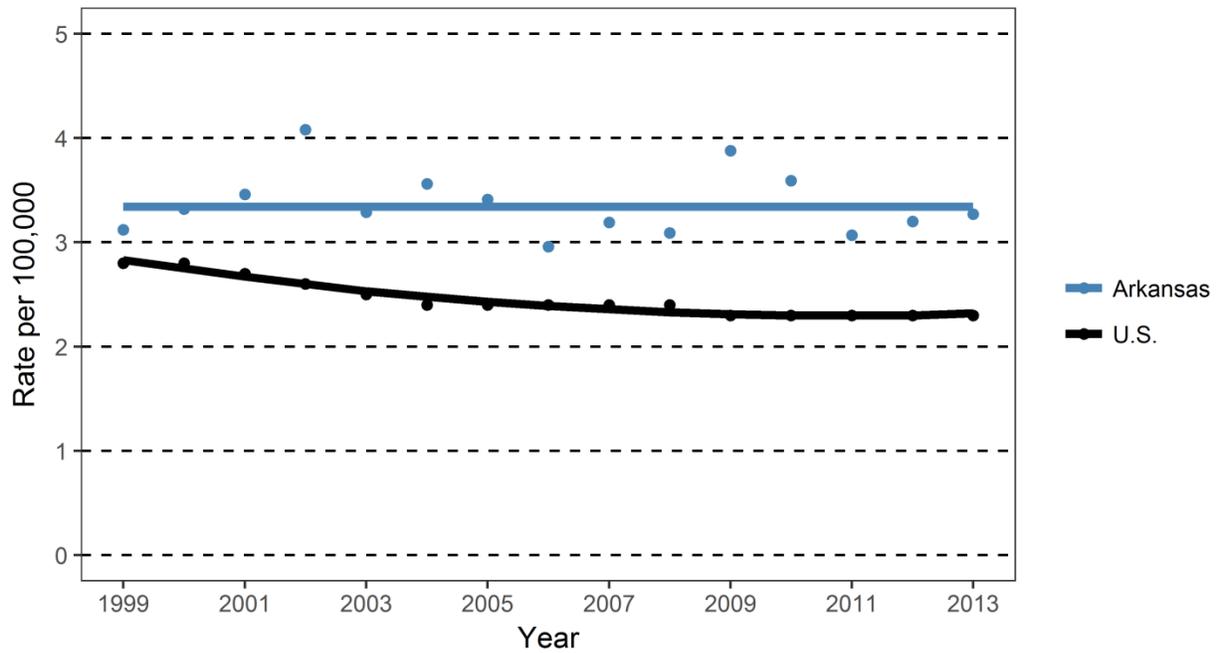
Prevention, Control Goals, and Strategies ^{3, 5, 7, 16, 17}

	Goal/Objective	Baseline	Arkansas Healthy People 2020 Target
Goal	Decrease cervical cancer death rates	3.3 per 100,000 (2013)	2.8 per 100,000
Objective 1	Decrease the incidence of cervical cancer	8.0 per 100,000 (2011)	7.5 per 100,000
Objective 2	Increase the proportion of teens completing the human papilloma virus (HPV) immunization series	Girls: 23.4 percent (2014) Boys: 11.4 percent (2014)	Girls: 80.0 percent Boys: 80.0 percent
Objective 3	Increase the proportion of women who receive recommended cervical cancer screening every 3 years	74.8 percent (2010)	83.0 percent

Proposed Strategies:

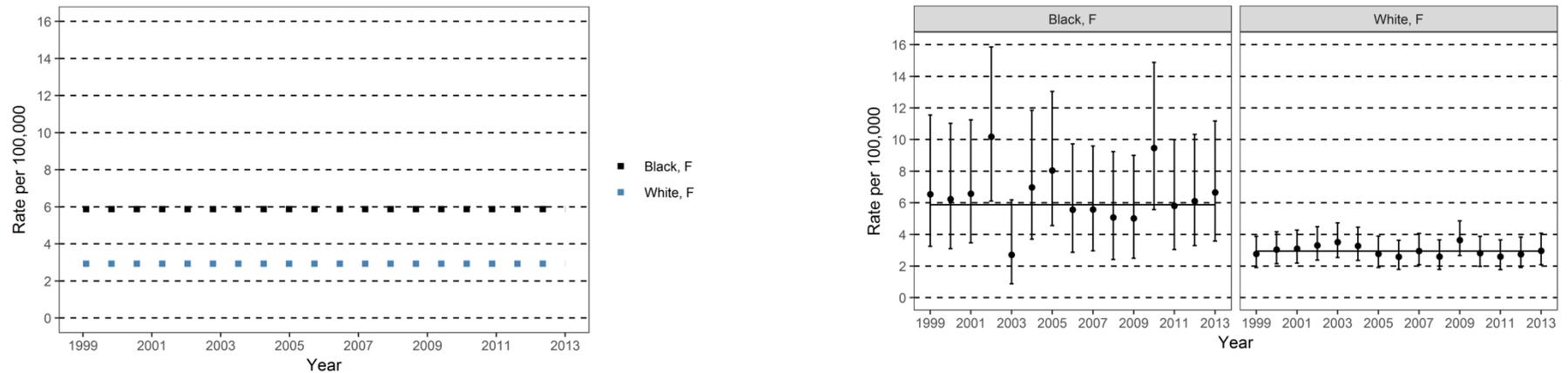
- Establishment of the Cervical Cancer Task Force according to Arkansas Statute 20-9-1103.
- Educate health-care professionals and patients about cervical cancer screening recommendations.
- Work with health-benefit providers and wellness educators to educate clients on available services including payments provided by the Affordable Care Act.
- Collaborate with community organizations to promote public awareness of cervical cancer screening.
- Educate health-care professionals about the Advisory Committee on Immunization Practices (ACIP) recommendation for HPV vaccination.
- Educate parents about HPV infection and the availability of the vaccine for male and female children and young adults ages 11 to 26 years.
- Provide HPV prevention tool kits for schools and community outreach groups as educational resources.
- Promote patient navigation for patients needing diagnostic and therapeutic services for pre-invasive and invasive lesions of the cervix.
- Work with payers to help ensure that recommended diagnostic and therapeutic treatments are reimbursed.

Figure 12.1: Age-Standardized Uterine Cervical Cancer Mortality Trends, Arkansas and United States, 1999 – 2013



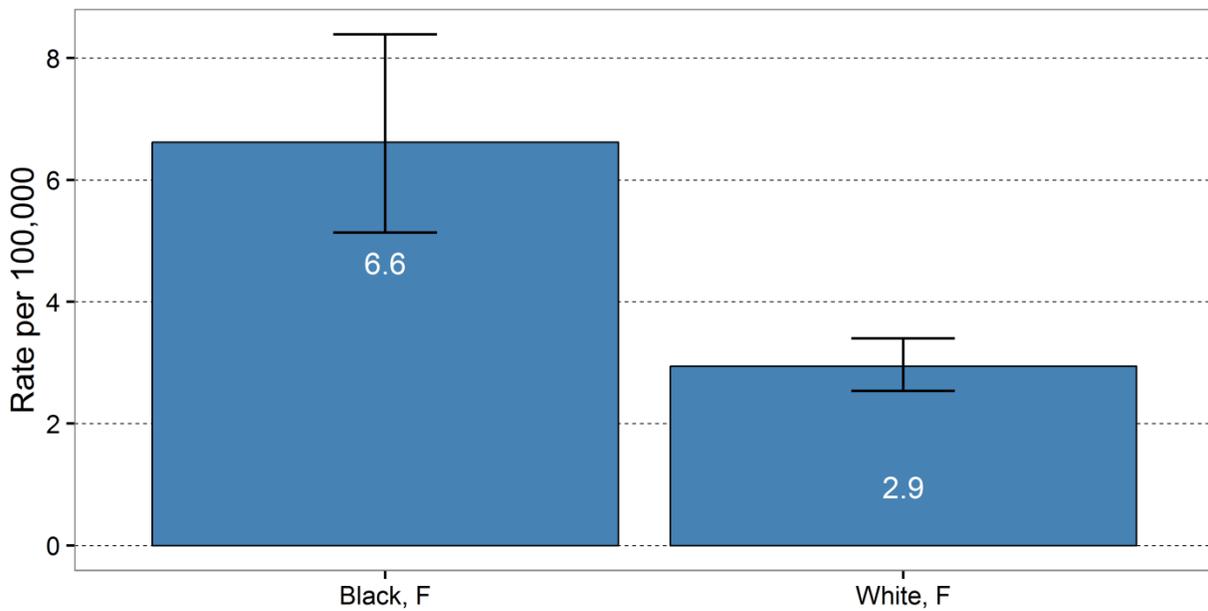
- During 1999 through 2013, Arkansas age-standardized mortality rates for uterine cervical cancer were higher than rates in the United States.
 - United States had 2.3 deaths per 100,000 in 2013.
 - Arkansas had 3.3 deaths per 100,000 in 2013.
- In Arkansas, the changes in age-standardized mortality rate over time did not change ($p = 0.32$).
 - The average age-standardized uterine cervical cancer mortality rate from 1999 through 2013 was 3.4 per 100,000.

Figures 12.2: Age-Standardized Uterine Cervical Cancer Mortality Trends with 95 Percent Confidence Intervals by Race, Arkansas, 1999 – 2013



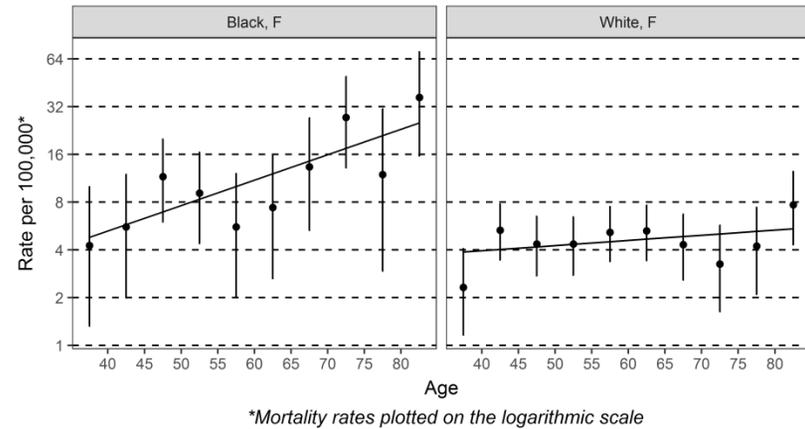
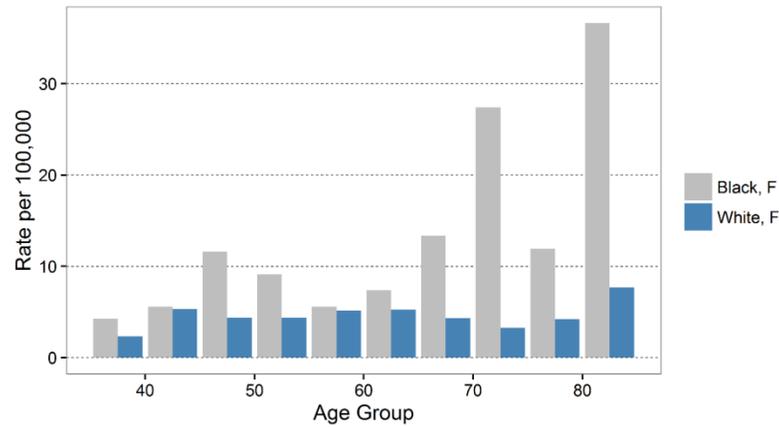
- Black females had higher mortality rates than White females from 1999 through 2013.
- Mortality rates for cervical cancer remained constant over the period.
 - Black females had an estimated average rate of 5.88 deaths per 100,000 from 1999 through 2013.
 - White females had an estimated average rate of 2.94 deaths per 100,000 from 1999 through 2013.
- Black females had more variation in cervical cancer mortality rates when compared to White females due to a small number of cases.

Figure 12.3: Age-Standardized Uterine Cervical Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- The median age at death from uterine cervical cancer from 1999 through 2013 was 56.5 years.
- Black females had much higher mortality than White females.

Figures 12.4: Age-Specific Uterine Cervical Cancer Mortality Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- Black females had higher cervical cancer mortality rates across all age groups than White females.
- Cervical cancer mortality rates increased with age.
- Black females had more variation in cervical cancer mortality rates than White females due to a small number of cases.

Figures 12.5: Uterine Cervical Cancer Standardized Mortality Ratios (SMR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013

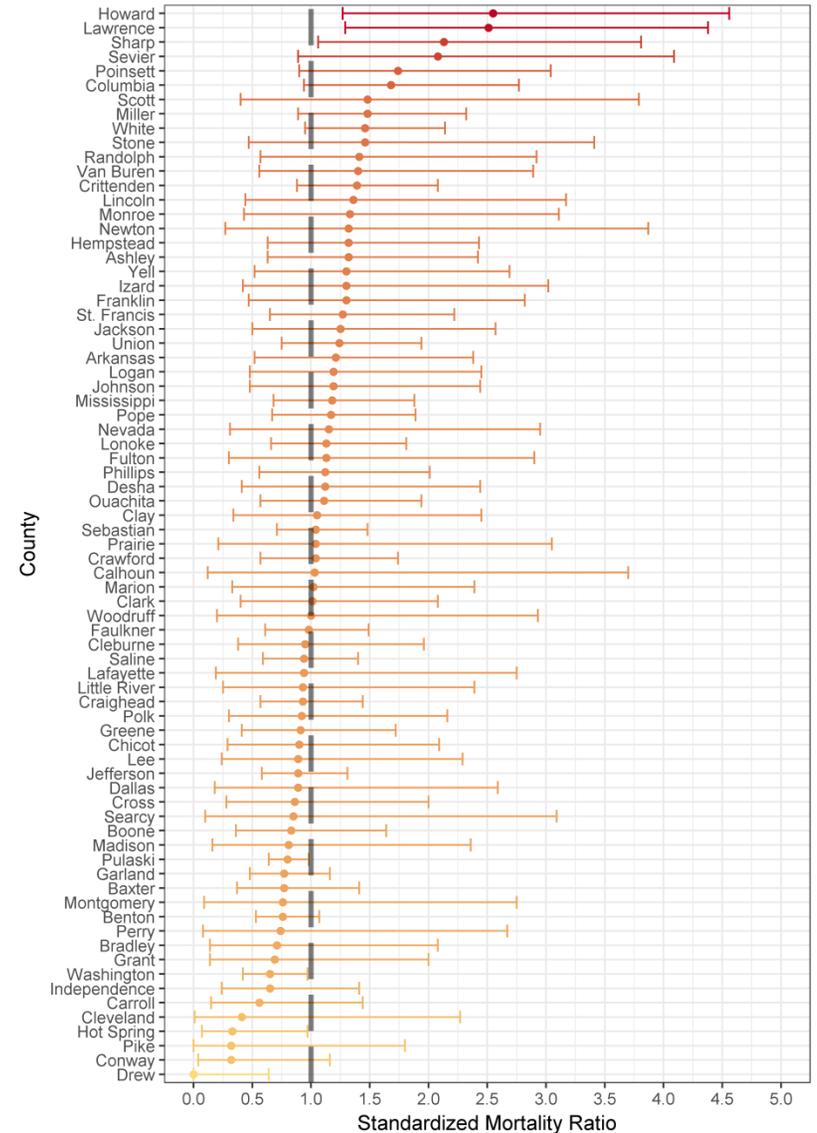
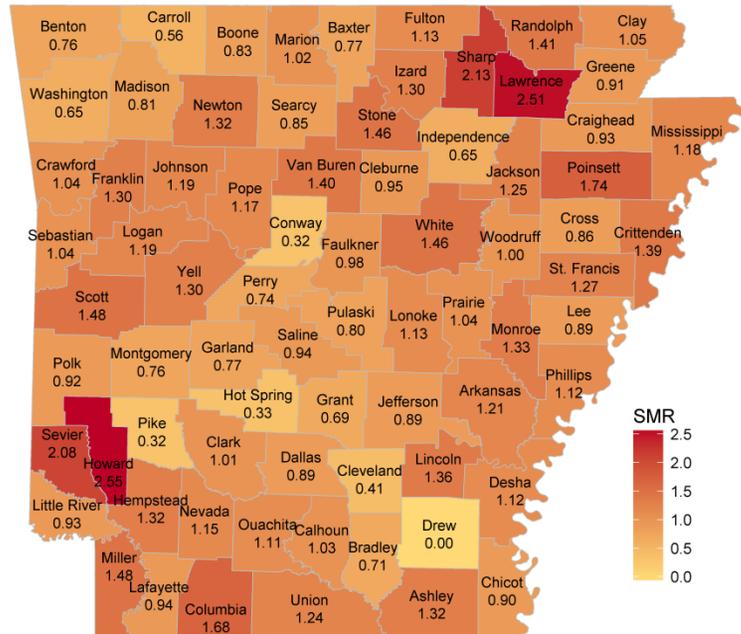
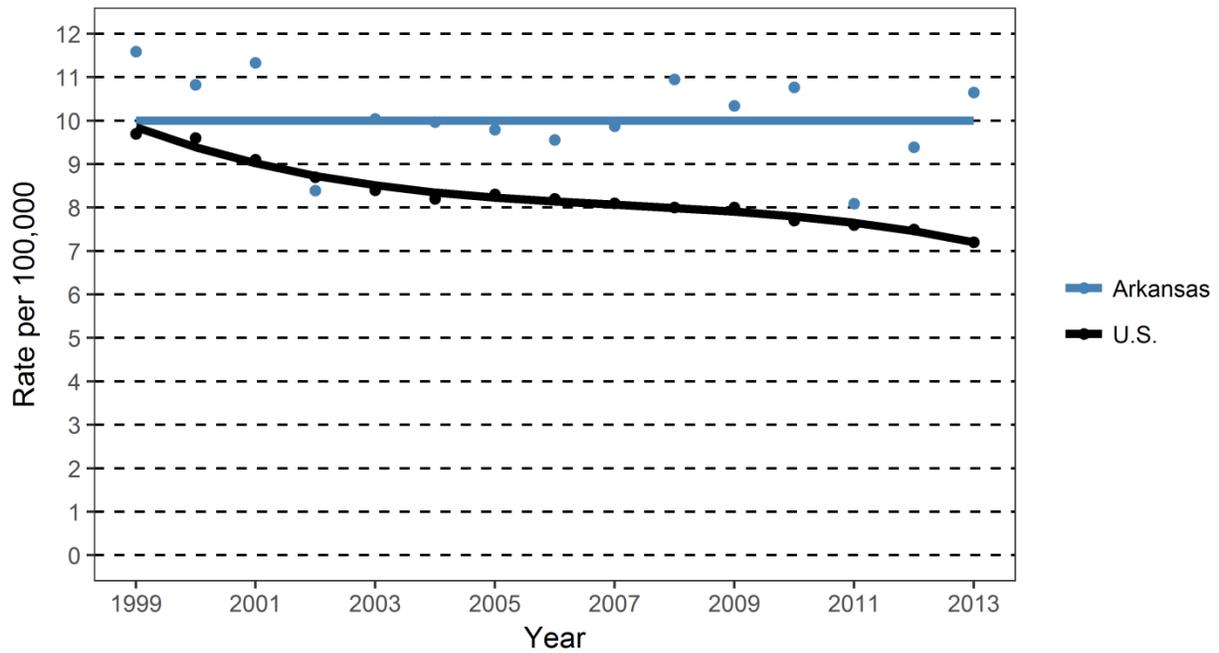
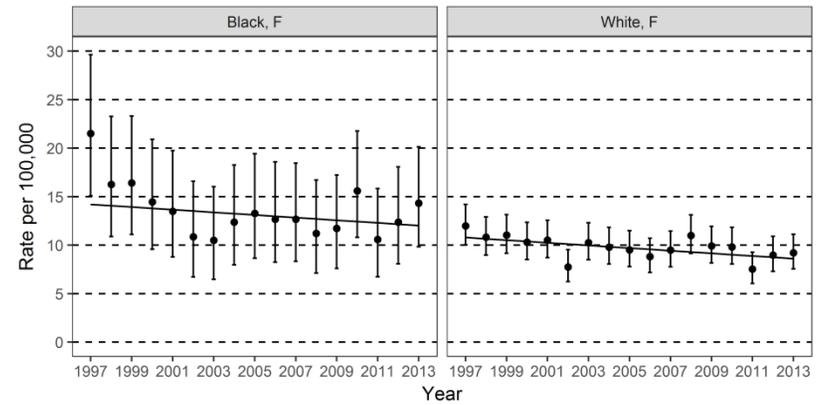
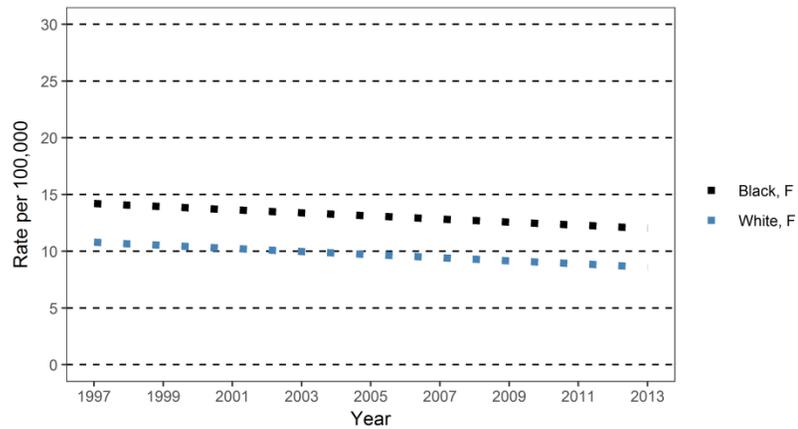


Figure 12.6: Age-Standardized Uterine Cervical Cancer Incidence Trends, Arkansas and United States, 1999 – 2013



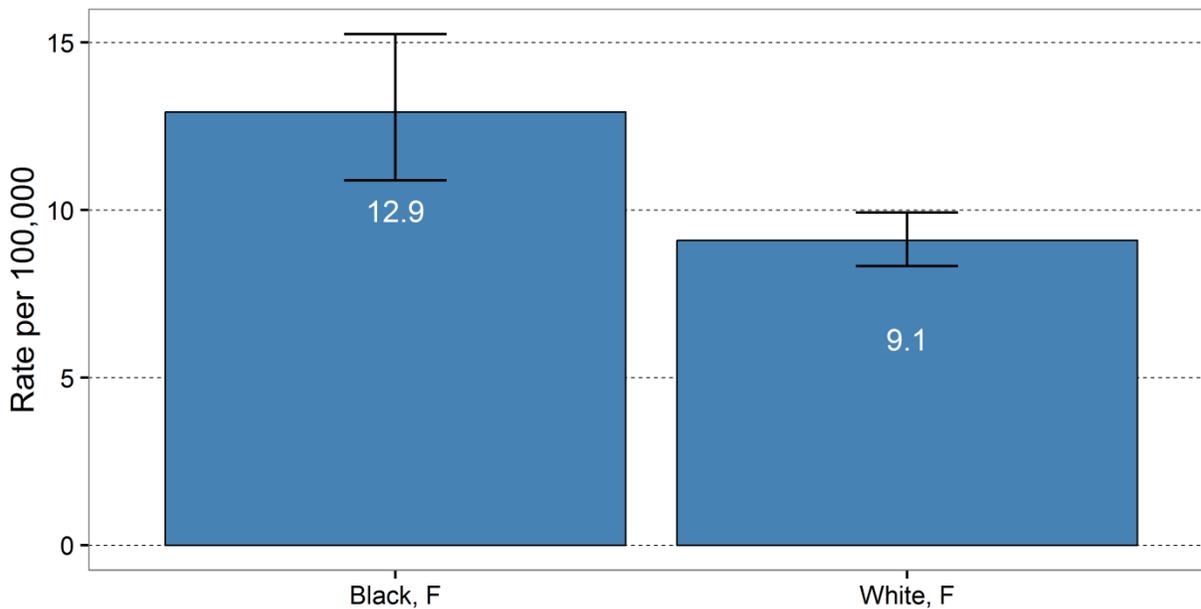
- Arkansas age-standardized uterine cervical cancer incidence rates were higher than the rates for the United States.
 - The rate in Arkansas in 2013 was 10.7 per 100,000.
 - The rate in the United States in 2013 was 7.2 per 100,000.

Figures 12.7: Age-Standardized Uterine Cervical Cancer Incidence Trends with 95 Percent Confidence Intervals by Race, Arkansas, 1997 – 2013



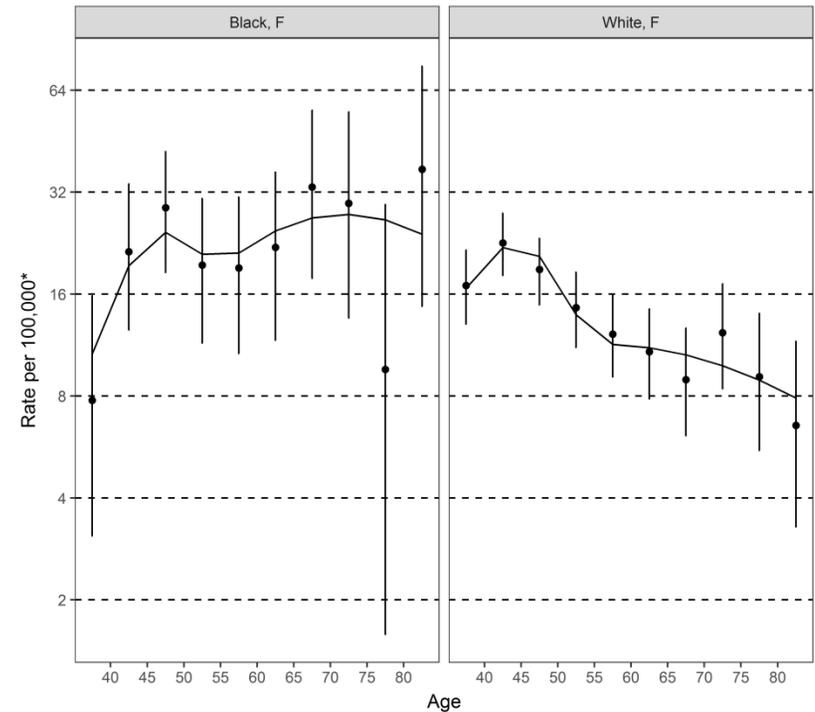
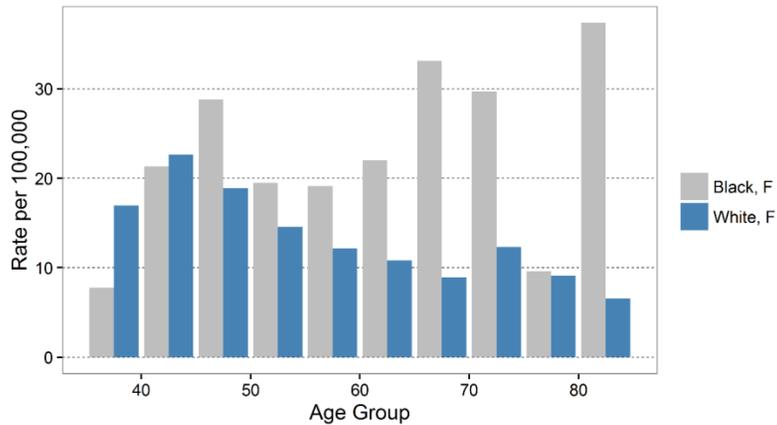
- Cervical cancer incidence rates declined from 1997 through 2013 in both races.
- Black females always had higher incidence rates than White females.
- Cervical cancer incidence rates had more variation in Black females from 1999 through 2013.

Figure 12.8: Age-Standardized Uterine Cervical Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



- Black females had higher incidence rates than White females.

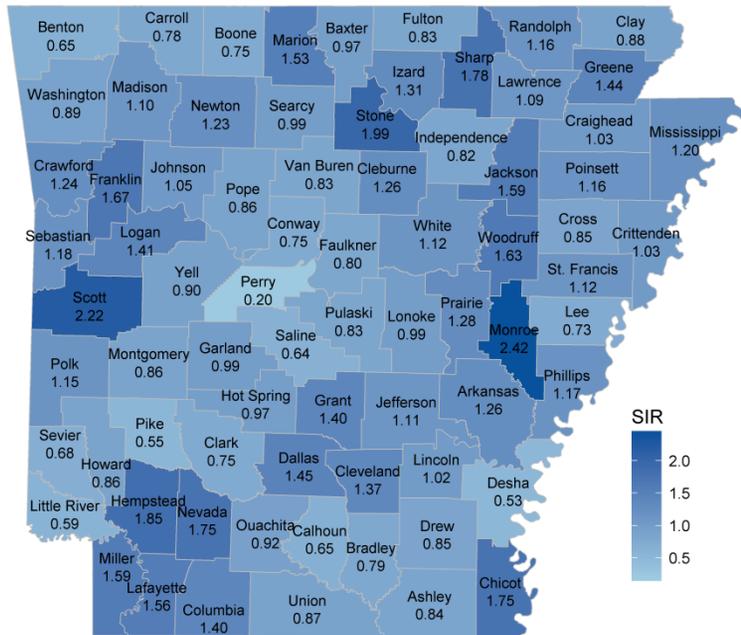
Figures 12.9: Age-Specific Uterine Cervical Cancer Incidence Rates with 95 Percent Confidence Intervals by Race, Arkansas, 2009 – 2013



**Incidence rates plotted on the logarithmic scale*

- The median age at diagnosis for cervical cancer from 2009 through 2013 was 48 years.
- Age-specific incidence rates were very different for Black and White females.
 - White females had higher rates at younger ages with the highest rates from ages 35 to 44.
 - Black females had higher rates at older ages with the highest rates at ages over 65.
- In Black females, cervical cancer incidence rates increased with age.
- In White females, cervical cancer incidence rates decreased with age.

Figures 12.10: Uterine Cervical Cancer Standardized Incidence Ratios (SIR) with 95 Percent Confidence Intervals by County, Arkansas, 2004 – 2013



- Counties with a standardized incidence ratio (SIR) greater than 1.00 exceed the statewide incidence rate.

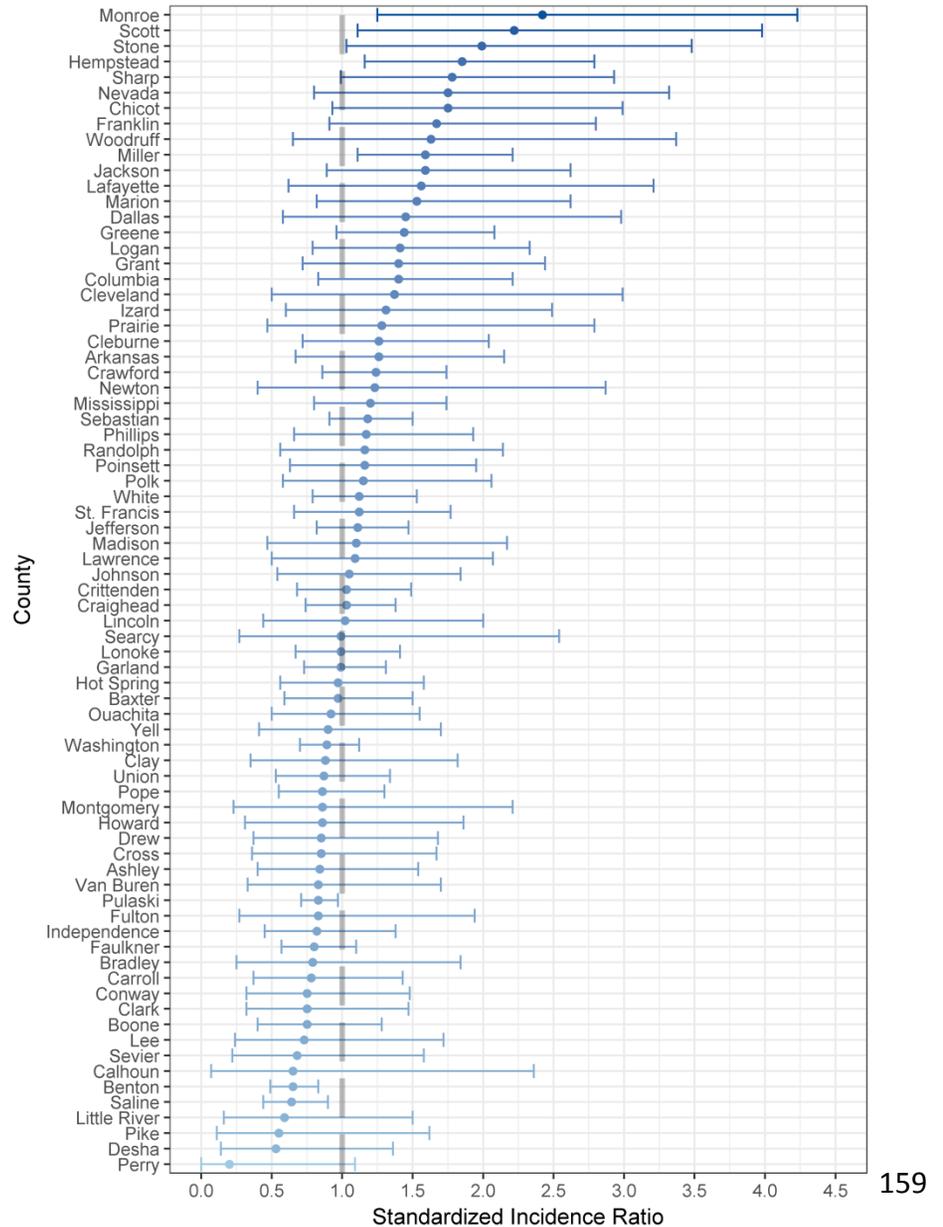
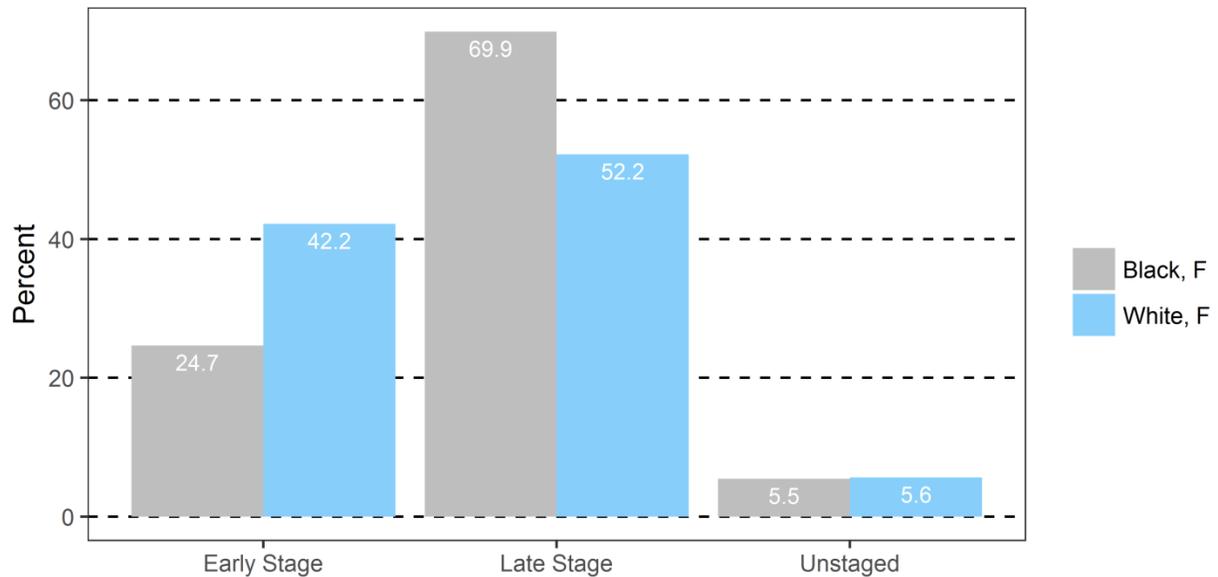


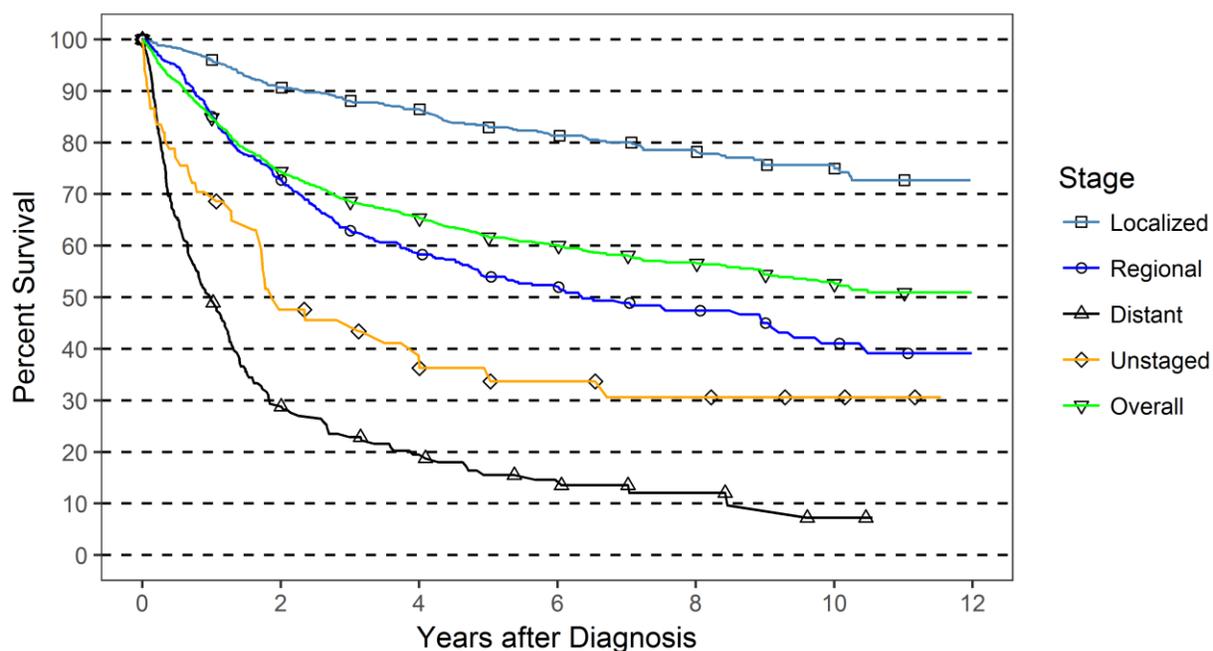
Figure 12.11: Uterine Cervical Cancer, SEER 2000 Stage at Diagnosis, by Race, Arkansas, 2009 – 2013



Note: Late stage includes regional and distant stages of disease.

- More than half of uterine cervical cancer cases were diagnosed at late stage.
- Black females were 1.3 times more likely to be diagnosed at late stage, when compared to White females.

Figure 12.12: Uterine Cervical Cancer Survival by Stage at Diagnosis, Arkansas, 2001 – 2013



Years after Diagnosis	Percent Survival by Stage at Diagnosis				
	Localized	Regional	Distant	Unstaged	Overall
1	96	85	49	69	85
2	91	73	29	48	74
3	88	63	23	43	69
4	86	58	19	36	65
5	83	54	16	34	62
6	81	52	14	34	60
7	80	49	14	31	58
8	78	47	12	31	57
9	76	45	7	31	54
10	75	41	7	31	53

- Uterine cervical cancer 5-year survival rates depend on stage at diagnosis.
 - Localized = 83 percent
 - Regional = 54 percent
 - Distant = 16 percent
 - Unstaged = 34 percent
 - Overall = 62 percent

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Appendix A: County Rates

Table A.1: Age-Standardized Mortality Rates & Counts by Cancer Site & County, Arkansas, 2009 – 2013.

County	All Sites Combined		Female Invasive Breast		Colon and Rectum		Lung and Bronchus		Non-Hodgkin Lymphoma	
	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate
Arkansas	253	203.3	19	27.5	28	22	83	67.8	~	~
Ashley	299	212.6	27	38.1	36	26	85	58.4	13	9.6
Baxter	781	196.5	39	20.9	61	15.3	271	65.2	25	5.8
Benton	1874	166.2	122	19.7	166	14.7	530	47	79	7
Boone	510	198.5	34	25.1	57	22.5	163	62.4	19	7.5
Bradley	163	213	11	28.6	14	18.1	54	68.6	~	~
Calhoun	75	201.5	~	~	~	~	26	69.7	~	~
Carroll	331	168.3	29	28.4	26	13.9	98	47.7	16	7.5
Chicot	189	230.4	~	~	19	21.8	58	70.4	~	~
Clark	230	172.7	15	21.4	20	14.5	73	54.4	14	10.9
Clay	272	230	10	14.3	33	28.8	98	81.4	11	9.2
Cleburne	414	190.5	24	20.4	33	16.6	159	71	15	6.6
Cleveland	90	162.7	~	~	~	~	36	66.6	~	~
Columbia	310	211.6	29	36.6	34	23.5	94	63.4	~	~
Conway	235	166	12	16.1	25	17	80	55.1	10	6.8
Craighead	934	191.7	54	19.3	99	20.5	242	49.4	32	6.6
Crawford	668	195.5	50	27.4	66	18.8	217	62.3	25	7.8
Crittenden	584	242.3	36	26.8	73	30.2	178	71.7	12	5.4
Cross	256	232.9	17	28.2	27	24.6	87	77.2	~	~
Dallas	139	250.3	~	~	18	31.7	44	74.1	~	~
Desha	156	188.9	13	30.2	13	14	53	63.7	~	~
Drew	209	191.8	14	24.4	24	22.5	74	67.3	~	~
Faulkner	867	174.3	45	16	79	15.9	307	61.3	30	6.4
Franklin	240	201.3	11	16.6	12	9	83	69.4	~	~
Fulton	175	177.2	~	~	25	24.4	55	53.2	~	~
Garland	1459	198.2	99	25.3	109	15.3	477	63.3	44	5.7
Grant	197	190.5	~	~	16	15.5	70	66.8	~	~
Greene	469	194.7	30	23.7	51	21.4	172	69.5	15	6.1
Hempstead	250	185.3	15	20.3	29	21.4	78	55.7	~	~
Hot Spring	415	201.2	26	23	33	15.7	160	75.8	13	6.4
Howard	183	220.6	11	23.2	16	19.4	69	82.6	~	~
Independence	386	169.5	17	14.6	29	12.5	134	59	14	6.5
Izard	210	185.1	12	22.6	22	19.5	57	48.6	~	~
Jackson	261	234.3	~	~	28	25.7	95	84.5	~	~
Jefferson	874	204.1	67	27.8	72	16.7	288	66.9	26	5.7
Johnson	261	176	19	23.7	28	18.4	101	67.3	~	~
Lafayette	109	195.2	~	~	10	19	44	76.6	~	~
Lawrence	256	215	11	17	24	20.1	99	81.9	~	~
Lee	143	217.4	~	~	18	27.5	40	62.3	~	~
Lincoln	144	194.7	~	~	14	18.4	44	59	~	~
Little River	178	205.9	14	29.1	14	17.4	53	57.2	~	~
Logan	331	220.5	20	24.3	27	18.4	109	70	~	~
Lonoke	675	204.6	30	16	55	16.6	244	72.3	25	8.1
Madison	195	196.6	13	24.6	15	14.5	58	59	~	~
Marion	303	214.7	10	14.5	22	15.8	108	72.3	~	~
Miller	520	213	26	19.3	45	18.4	179	73	15	6.4
Mississippi	558	236.2	29	21.9	77	33.2	172	70.6	14	5.8
Monroe	139	230.3	~	~	12	19	44	71.3	~	~
Montgomery	120	147.5	~	~	14	16.7	41	50.4	~	~
Nevada	127	210.9	~	~	15	25.2	49	77.2	~	~
Newton	121	204.4	~	~	10	18.4	45	66.7	~	~
Ouachita	346	199.4	31	32.3	32	17.8	100	56.4	~	~
Perry	143	210.6	~	~	11	16.5	55	78.9	~	~
Phillips	312	249.1	25	32.8	35	28.5	117	91.7	~	~
Pike	137	185.4	~	~	15	20.2	48	63.5	~	~
Poinsett	378	247.7	18	23.1	24	16	163	103.9	~	~
Polk	283	187.5	23	31	29	18.4	92	58.5	11	8
Pope	690	207.5	36	19.9	55	16.8	247	72.5	23	7
Prairie	123	197.5	~	~	11	18.6	46	72.8	~	~
Pulaski	3696	183.5	275	23.7	327	16.1	1113	54.9	115	6
Randolph	270	212.7	14	20.2	32	24.3	88	69.3	13	10
Saline	1091	168.8	75	22.6	98	15.4	347	51.8	40	6
Scott	152	210	~	~	14	21.3	50	64.4	~	~
Searcy	144	221.2	~	~	20	30.1	44	66.8	~	~
Sebastian	1290	187.4	77	20.4	126	18.6	424	61.7	51	7.7
Sevier	157	180.2	~	~	17	19.5	52	60.1	~	~
Sharp	280	190.9	14	18	21	16.3	103	68.9	12	8.8
St. Francis	293	202.8	23	30.7	33	22.9	81	54.5	~	~
Stone	180	171.1	~	~	26	24.4	61	57.3	~	~
Union	581	220.4	36	23.2	51	19.6	191	72.5	10	3.8
Van Buren	257	180	12	16	21	18.2	86	57.8	~	~
Washington	1514	172.9	121	24.8	123	13.9	457	52.8	59	7
White	868	201.9	41	18	90	21.3	307	69.9	38	8.9
Woodruff	110	214.7	10	33.2	11	20.1	34	64.9	~	~
Yell	280	208.2	18	24.3	29	21.7	104	76.3	12	9.2

Table A.1: Age-Standardized Mortality Rates & Counts by Cancer Site & County, Arkansas, 2009 – 2013, continued.

County	Melanoma of the Skin		Ovary		Pancreatic		Prostate		Urinary Bladder		Cervical	
	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate	Deaths	Rate
Arkansas	~	~	~	~	12	9.3	15	30.4	~	~	~	~
Ashley	~	~	~	~	27	18.8	~	~	~	~	~	~
Baxter	~	~	14	7.3	56	14	48	24.7	18	4	~	~
Benton	32	2.9	54	8.7	122	10.8	69	14.9	53	4.8	16	2.8
Boone	10	3.8	~	~	21	7.9	30	28.3	14	5.3	~	~
Bradley	~	~	~	~	15	19.3	~	~	~	~	~	~
Calhoun	~	~	~	~	~	~	~	~	~	~	~	~
Carroll	~	~	~	~	21	11.4	23	25.4	~	~	~	~
Chicot	~	~	~	~	17	20.8	10	29.9	~	~	~	~
Clark	~	~	~	~	16	11.7	15	27.3	~	~	~	~
Clay	~	~	~	~	15	12.2	14	28.7	~	~	~	~
Cleburne	~	~	10	7.9	22	11.2	27	27.1	15	7.2	~	~
Cleveland	~	~	~	~	~	~	~	~	~	~	~	~
Columbia	~	~	~	~	17	10.5	18	29.6	~	~	~	~
Conway	~	~	~	~	16	10.8	10	16.7	~	~	~	~
Craighead	15	3.5	31	11.2	46	9.4	46	25.9	16	3.3	~	~
Crawford	12	3.7	12	6.3	32	9.5	25	19.4	12	3.8	~	~
Crittenden	~	~	10	7.2	40	16.8	33	41.5	10	4.5	12	9.3
Cross	~	~	~	~	~	~	15	36.6	~	~	~	~
Dallas	~	~	~	~	10	17.4	~	~	~	~	~	~
Desha	~	~	~	~	11	13.5	~	~	~	~	~	~
Drew	~	~	~	~	11	10	17	38.5	~	~	~	~
Faulkner	11	2.3	18	6.3	66	13.5	33	19.1	16	3.6	10	3.5
Franklin	~	~	~	~	13	11.4	18	33.9	~	~	~	~
Fulton	~	~	~	~	~	~	12	28.1	~	~	~	~
Garland	36	6	44	11.2	74	9.5	54	16.7	40	5.2	13	5
Grant	~	~	~	~	13	11.9	11	25.2	~	~	~	~
Greene	~	~	15	11.4	26	10.7	19	21.3	~	~	~	~
Hempstead	~	~	~	~	12	8.7	16	33	~	~	~	~
Hot Spring	~	~	~	~	20	9.8	22	23.6	~	~	~	~
Howard	~	~	10	22.8	11	13	~	~	~	~	~	~
Independence	~	~	15	12.6	19	8.3	~	~	10	4.1	~	~
Izard	~	~	~	~	15	11.9	14	26.8	~	~	~	~
Jackson	~	~	~	~	21	17.9	~	~	~	~	~	~
Jefferson	11	4.4	19	8.4	64	15	33	21	18	4.2	~	~
Johnson	~	~	~	~	~	~	12	20.3	~	~	~	~
Lafayette	~	~	~	~	~	~	~	~	~	~	~	~
Lawrence	~	~	~	~	12	10.1	12	24.5	~	~	~	~
Lee	~	~	~	~	11	15.7	15	55.7	~	~	~	~
Lincoln	~	~	~	~	10	13	~	~	~	~	~	~
Little River	~	~	~	~	12	13.8	~	~	~	~	~	~
Logan	~	~	~	~	22	14.7	17	26.7	10	6.6	~	~
Lonoke	11	3.6	13	7	28	8.8	27	25.2	22	6.8	~	~
Madison	~	~	~	~	12	11.2	~	~	~	~	~	~
Marion	~	~	~	~	14	10	12	21.2	~	~	~	~
Miller	~	~	16	12.7	38	15.3	20	20.8	~	~	10	8.1
Mississippi	~	~	16	12.1	35	14.8	30	34.6	10	4.4	~	~
Monroe	~	~	~	~	11	18.1	~	~	~	~	~	~
Montgomery	~	~	~	~	~	~	~	~	~	~	~	~
Nevada	~	~	~	~	10	17.7	~	~	~	~	~	~
Newton	~	~	~	~	~	~	~	~	~	~	~	~
Ouachita	~	~	~	~	16	8.4	19	29.1	12	6.6	~	~
Perry	~	~	~	~	~	~	~	~	~	~	~	~
Phillips	~	~	~	~	15	11.9	18	40.7	~	~	~	~
Pike	~	~	~	~	~	~	~	~	~	~	~	~
Poinsett	~	~	~	~	20	13.2	13	22.2	12	8.2	~	~
Polk	~	~	~	~	~	~	11	17.4	11	7.3	~	~
Pope	10	3.1	20	11.3	35	10.4	21	15.5	16	5.2	~	~
Prairie	~	~	~	~	~	~	~	~	~	~	~	~
Pulaski	51	3.4	81	6.9	231	11.5	174	24	80	4.1	24	2.2
Randolph	~	~	~	~	14	10.6	13	25.4	~	~	~	~
Saline	17	2.6	19	5.3	64	9.7	42	16.5	38	6.1	~	~
Scott	~	~	~	~	13	19.3	~	~	~	~	~	~
Searcy	~	~	~	~	~	~	~	~	10	13.8	~	~
Sebastian	21	3.4	35	9	60	8.6	43	15.5	28	4.2	13	3.6
Sevier	~	~	~	~	~	~	13	41.4	~	~	~	~
Sharp	~	~	~	~	17	10.7	~	~	~	~	~	~
St. Francis	~	~	~	~	22	15.3	16	30.1	~	~	~	~
Stone	~	~	~	~	~	~	~	~	~	~	~	~
Union	~	~	~	~	30	11	37	37.1	10	3.9	~	~
Van Buren	~	~	~	~	23	16	15	22.2	~	~	~	~
Washington	31	3.6	35	7	96	11.1	60	19.3	41	4.9	10	2.1
White	12	2.9	22	9.7	49	11.6	35	20.1	20	4.7	~	~
Woodruff	~	~	~	~	~	~	~	~	~	~	~	~
Yell	~	~	~	~	11	8.1	~	~	~	~	~	~

Note: All rates are per 100,000. Rates are age-standardized to the 2000 U.S. Standard Million Population. Rates are based on deaths from malignant tumors.

~ Counts and rates are suppressed if fewer than 11 deaths were reported in the specified category, which can lead to unstable age-standardized rates.

Source: CDC Wonder Compressed Mortality: <https://wonder.cdc.gov/mortSQL.html>.

Based on data released December 2016.

Table A.2: Age-Standardized Incidence Rates & Counts by Cancer Site & County, Arkansas, 2009 – 2013.

County	All Sites Combined		Female Invasive Breast		Colon and Rectum		Lung and Bronchus		Non-Hodgkin Lymphoma	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Arkansas	581	472.3	60	89.2	66	54.2	108	86.8	33	27.2
Ashley	655	464.5	72	102.2	87	62.4	113	76.3	19	13.6
Baxter	1834	487.1	235	116	147	38.6	353	85.6	77	22.5
Benton	4828	422.2	698	115.9	458	40.5	647	56.6	166	14.9
Boone	1075	434.4	123	95.2	114	45	177	67.6	47	19.8
Bradley	367	486.1	45	117.4	44	56.7	65	86.3	~	~
Calhoun	161	428.4	17	87.2	13	34.2	32	82.5	~	~
Carroll	750	382.2	118	113.7	71	37.8	124	59.6	31	16.6
Chicot	314	399.7	34	90.3	42	51.1	63	77.7	17	21.1
Clark	533	416.2	62	96.8	40	29.8	97	72.4	26	20.7
Clay	517	457.9	61	101.8	60	49.9	130	108.7	22	20.2
Cleburne	978	470.4	113	113	92	43	192	83.6	36	16.6
Cleveland	245	435	28	97.7	22	38.5	47	79.2	11	21.9
Columbia	608	419.5	77	100.8	62	43.5	107	72	19	12.1
Conway	605	440.1	80	116.2	54	37.8	107	75	23	18.5
Craighead	2016	407.9	262	99	193	39.9	371	74.6	85	17.3
Crawford	1604	464.5	219	119.7	156	46.5	281	79.1	61	18
Crittenden	978	397.7	129	95.4	109	44.6	186	75.6	42	17.3
Cross	484	446.2	53	95.4	75	69.5	90	78.3	12	11.5
Dallas	279	498.3	33	112.4	32	53.2	47	82.2	~	~
Desha	373	464.8	47	116.4	46	56.7	67	79.2	12	15.6
Drew	482	441.9	65	113.8	59	55.1	87	77.3	13	11.7
Faulkner	2400	460.7	324	118	212	41.6	389	75.9	99	19.5
Franklin	474	402.1	51	86.3	42	34.4	93	76.3	21	17.8
Fulton	417	416.1	39	85.5	47	46.7	71	68	12	11.2
Garland	3355	469.6	441	116.1	255	35.3	609	81	122	17.3
Grant	565	526.1	61	112.7	68	62.5	103	96.1	20	19.3
Greene	1025	425	125	99.8	100	42.2	224	89.2	37	15.8
Hempstead	504	372.2	65	94.6	54	39.4	86	60.6	~	~
Hot Spring	921	437.2	102	92.9	96	44.6	204	94.2	35	17.5
Howard	350	423.9	49	111.4	35	42.5	81	96.2	11	14.8
Independence	1036	455.3	112	92.9	101	44.3	198	84.6	41	18.9
Izard	473	423.7	65	126.2	46	40.9	68	56.5	19	16.3
Jackson	570	506.8	55	91.3	68	61.2	122	104.4	14	13.9
Jefferson	2225	514.1	275	119.1	183	42.4	420	97	80	18.2
Johnson	615	411.3	84	106.6	57	38	147	97.2	23	14.4
Lafayette	212	387.1	26	103.5	23	42	58	98.1	~	~
Lawrence	498	431.6	59	96.3	58	48.8	122	100.4	22	20
Lee	251	389.4	32	101.9	37	58.1	38	57	~	~
Lincoln	299	391.8	33	88.3	38	49.1	48	63.4	16	21.3
Little River	350	404.3	44	103.6	37	45.5	72	79.5	20	23.7
Logan	639	430.6	69	90	54	36.9	137	87	21	15.1
Lonoke	1727	501.1	215	115	146	42.2	312	91.9	80	24.5
Madison	382	383.6	40	87	38	38.9	70	67.8	19	20.4
Marion	681	473.6	85	118.7	46	30.7	129	82.2	29	19.7
Miller	1064	431.5	135	104.5	114	47.6	204	81.2	30	12.2
Mississippi	1006	416.4	120	91.6	145	60	182	73.6	30	12.4
Monroe	283	489.7	36	109.3	32	51.2	55	89.5	11	18.2
Montgomery	286	388.7	33	89.5	23	31.2	53	67.5	~	~
Nevada	238	396.2	24	76.2	20	32.5	45	69.2	~	~
Newton	238	387.9	24	76.3	27	47.2	45	64	~	~
Ouachita	760	436.1	113	120.5	71	40.3	151	84	26	15.3
Perry	329	485.2	39	115	22	33.4	71	98.8	11	16.2
Phillips	534	431.8	84	131.1	69	54.1	114	88.1	13	11
Pike	289	398.2	32	89.3	30	40.1	65	87.8	~	~
Poinsett	748	491.6	78	99.7	72	49	182	114	19	12.8
Polk	580	396.3	68	93.6	57	38.7	108	67.1	23	16.4
Pope	1592	477.4	187	107	145	43.8	296	86.3	65	19.8
Prairie	286	470.3	30	104.2	21	40.7	58	89	~	~
Pulaski	10010	486.5	1456	129.7	795	38.8	1385	67.9	390	19.5
Randolph	508	421.8	62	99.1	61	48.3	105	84.7	19	14.8
Saline	3110	471.9	402	118.2	245	37.6	501	74.1	144	22.2
Scott	315	431.7	31	92.6	28	39.3	73	91.5	13	17.1
Searcy	274	436.2	21	63.7	36	54	50	72.1	16	26.6
Sebastian	3091	448.1	414	111.6	295	42.8	540	78.3	134	19.8
Sevier	339	380.3	40	85.8	46	51.2	62	70.4	17	19.1
Sharp	670	486.4	84	126.8	69	47.4	128	86.1	30	20.9
St. Francis	543	357.2	62	76	69	45.6	99	64.7	13	8.8
Stone	416	413.4	46	90.7	50	50.1	70	66.5	15	14.6
Union	1267	490.7	162	121	118	46	232	89	41	16.3
Van Buren	608	449.4	79	127.1	51	37.4	96	65.1	30	24.5
Washington	3937	433.7	579	119.4	349	39.5	592	66.8	144	15.9
White	2132	490	245	107	227	52.4	406	91.2	77	18.1
Woodruff	264	533.9	29	118.1	30	59.8	54	108.5	~	~
Yell	612	460.7	70	102.6	67	48.5	120	88.1	16	12.2

Table A.2: Age-Standardized Incidence Rates & Counts by Cancer Site & County, Arkansas, 2009 – 2013, continued.

County	Melanoma of the Skin		Ovary		Pancreatic		Prostate		Urinary Bladder		Cervical	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
Arkansas	14	11.5	~	~	14	11.2	78	128.1	25	19.6	~	~
Ashley	17	12.3	~	~	26	17.8	102	144.7	24	16	~	~
Baxter	86	23.9	15	7.7	55	13.5	253	122.4	95	23.7	~	~
Benton	272	23.9	61	9.9	113	10.1	683	124.8	253	22.3	39	6.9
Boone	58	24.9	16	13.7	24	9.2	152	124.1	47	18.9	~	~
Bradley	14	18.3	~	~	16	20.6	56	154.2	20	25.6	~	~
Calhoun	~	~	~	~	~	~	24	130	~	~	0	0
Carroll	31	17.6	~	~	19	10.2	109	102.2	38	18.1	~	~
Chicot	~	~	~	~	19	22.9	31	82.8	~	~	~	~
Clark	12	9.7	~	~	20	15.4	84	134.1	30	23.1	~	~
Clay	11	11.7	~	~	15	12.4	41	74.9	24	20.3	~	~
Cleburne	29	16.8	~	~	19	9.1	160	148.4	29	12.4	~	~
Cleveland	~	~	~	~	~	~	43	153.4	12	21	~	~
Columbia	13	8.6	~	~	16	9.9	103	151.5	32	20.1	~	~
Conway	22	17	~	~	22	15.1	89	128	29	20.3	~	~
Craighead	80	16.7	26	9.2	50	10	193	85	80	16.2	26	10.6
Crawford	78	23.9	21	12.1	36	10.6	185	111.2	68	20.1	16	10.8
Crittenden	16	6.5	14	10.7	35	14.9	75	68.9	39	17.2	15	11.3
Cross	23	23.1	~	~	12	11.6	47	91.2	23	19.7	~	~
Dallas	~	~	~	~	12	20.8	38	134.1	~	~	~	~
Desha	11	16.1	~	~	12	13.4	58	150.7	15	18.6	~	~
Drew	13	12.1	~	~	15	13.1	74	140.6	24	22.7	~	~
Faulkner	88	16.8	17	6.3	75	15	351	143.5	81	15.8	18	6.8
Franklin	18	15.5	~	~	19	16.5	51	93	25	21.4	~	~
Fulton	19	18.8	~	~	~	~	64	116.2	23	20.2	~	~
Garland	128	19.7	52	14.3	80	10.8	485	135	189	24.6	29	10.7
Grant	22	19.7	~	~	17	15.5	73	136.7	29	26	~	~
Greene	28	12	14	10.8	25	10	99	90.2	40	16.7	20	17.7
Hempstead	14	10.3	~	~	12	9.4	75	112	20	14.9	13	20.1
Hot Spring	35	18.2	~	~	17	7.8	132	123.7	32	15.5	~	~
Howard	11	13	~	~	13	15.3	43	111.7	~	~	~	~
Independence	40	19.6	18	15	24	10.5	153	136.3	54	23.2	~	~
Izard	18	18.3	~	~	18	14.1	78	130.1	27	23.2	~	~
Jackson	22	21.5	~	~	17	14.8	70	127.5	35	29.6	~	~
Jefferson	50	12.1	29	12.3	65	14.8	378	182.3	99	23.2	21	11.7
Johnson	24	16.5	~	~	~	~	45	62.1	32	21.4	~	~
Lafayette	~	~	~	~	~	~	25	91.4	11	19.4	~	~
Lawrence	16	15.2	~	~	11	9.1	43	75.6	26	22	~	~
Lee	~	~	~	~	11	16.7	31	98.5	~	~	~	~
Lincoln	~	~	~	~	12	15.6	35	87.9	18	23.5	~	~
Little River	~	~	~	~	11	11.9	48	108.7	~	~	~	~
Logan	19	14.3	~	~	19	12.8	92	124.8	30	19.8	~	~
Lonoke	63	18.6	27	13.7	35	10.1	256	159.3	59	17.9	~	~
Madison	20	21.4	~	~	11	10.6	51	97.6	15	14.6	~	~
Marion	33	28.5	13	22.6	18	12.2	108	132.1	30	22	~	~
Miller	31	12.5	11	8.5	35	13.8	119	97.3	55	22.4	24	22.8
Mississippi	29	12.2	19	14.8	31	13	101	93.1	44	18.2	14	11.6
Monroe	~	~	~	~	~	~	41	143.9	~	~	~	~
Montgomery	11	16.8	~	~	~	~	42	109.2	13	15.3	~	~
Nevada	~	~	~	~	~	~	37	116	~	~	~	~
Newton	~	~	~	~	~	~	33	98.9	~	~	0	0
Ouachita	13	8.7	~	~	19	9.5	98	119.9	35	20.8	~	~
Perry	11	17.3	~	~	~	~	46	129.1	16	23.9	0	0
Phillips	~	~	~	~	19	14.8	58	96.9	11	8.5	~	~
Pike	20	26.3	~	~	~	~	41	114.2	~	~	~	~
Poinsett	18	12	~	~	23	14.9	61	84.2	45	29.2	11	16.2
Polk	18	14.8	12	14.8	~	~	57	74.6	35	23.5	~	~
Pope	56	16.9	21	12	29	9	213	134.2	72	22.2	12	8.9
Prairie	~	~	~	~	~	~	56	168.3	~	~	~	~
Pulaski	412	20.4	107	9.5	279	13.8	1678	173.2	360	18.1	88	8.5
Randolph	19	16.9	~	~	14	11.5	47	78.1	18	13.4	~	~
Saline	118	18.8	40	12.1	75	11.6	456	135.5	149	22.7	15	5.3
Scott	~	~	~	~	13	18.2	34	92.8	13	17.7	~	~
Searcy	~	~	~	~	~	~	38	114.6	16	22.8	~	~
Sebastian	124	18.5	43	11.6	60	8.5	381	115.1	139	20.6	37	12.1
Sevier	~	~	~	~	~	~	50	115.7	17	19.5	~	~
Sharp	20	17.9	~	~	18	12.1	76	98.9	37	23.2	~	~
St. Francis	14	9.3	~	~	18	12.1	60	82.2	19	12.9	~	~
Stone	15	15.1	~	~	16	14.3	60	103.7	18	17.7	~	~
Union	39	14.6	11	8.6	28	10.1	217	177.3	44	16.4	~	~
Van Buren	22	16.3	~	~	21	16.9	79	110.3	27	18.9	~	~
Washington	210	23.2	36	6.9	104	11.8	529	124.6	190	21.7	51	10.7
White	77	18.2	28	12.3	51	11.8	307	145.3	86	19.6	16	8.2
Woodruff	~	~	~	~	~	~	42	162	~	~	~	~
Yell	25	19.2	14	21.9	11	8	80	121.2	18	13.6	~	~

Note: All rates are per 100,000. Rates are age-standardized to the 2000 U.S. Standard Million Population. Rates are based on number of invasive cancers, except for urinary bladder.

~ Counts and rates are suppressed if fewer than 11 deaths were reported in the specified category, which can lead to unstable age-standardized rates.

Source: Arkansas Central Cancer Registry Query System: <http://cancer-rates.info/ar/>.

Based on data released August 2016.

Appendix B: Technical Notes

Age-standardized rates are calculated in a manner that allows for the comparisons of populations with different age distributions. They are usually calculated per unit of the population (100,000). For example, a county with a large proportion of persons over the age of 55 would have higher counts of cancer compared to other counties with younger populations. By using an age-adjusted calculation, we can adjust for this age-difference and compare the burden across different population groups.

The rates are based on case counts and population estimates. Cancer case counts change over time because new cases are discovered or other revisions. The Census Bureau estimates of population also change over time. Consequently, estimates reported here will differ slightly from previous reports and likely will differ from future reports.

Age-standardized rates were computed from age-specific rates for 19 age groups; <1, 1-4, 5-9,..., 80-84, and 85+. The age-adjusted rate is weighted by the US 2000 Standard Million average of these age-specific rates. Confidence intervals are computed using a method given in Tiwari et al.¹

Trends in age-adjusted rates were estimated by weighted polynomial regression; the inverse variance of the age-adjusted rate was the weight.¹

Standard mortality/incidence ratio (SMR OR SIR) for a county is the ratio of observed cases in the county during a period of time (SMR: 2004 through 2013, SIR: 2004 through 2013) to the expected cases. Expected cases are computed by applying the corresponding county population estimates to age-race-sex-year-specific rates for Arkansas. Confidence intervals for SMR or SIR are computed by Byar's approximation.²

Counties with an (*) and SMR >1 or SIR > 1 may have a population prevalence for risk factor(s) that exceeds the state prevalence. This booklet identifies the known risk factors for each cancer site. It should be noted that it usually takes years for most types of cancers to develop so the relevant exposure(s) likely occurred years ago and possibly elsewhere.

The survival estimates (Kaplan-Meier estimates)³ are based on passive follow-up of mortality from all causes among incident cases using death certificates from ADH and linkage results from the National Death Index (NDI).

A note about the data presented in the report:

Incident cancer cases were obtained from the Arkansas Central Cancer Registry database on October 26, 2016. Cancer mortality cases were obtained from the Arkansas Vital Statistics, Death Certificates on August 12, 2016. Cancer incident cases from the United States were obtained from CDC Wonder Cancer Incidence Files web site, <https://wonder.cdc.gov/>, for 1999-2013, September 2, 2016. United States mortality data were obtained from CDC Wonder Cancer Mortality Files web site, <https://wonder.cdc.gov/>, for 1999-2013, September 2, 2016.

Population estimates were downloaded from SEER web site, <https://seer.cancer.gov/popdata/>, December 12, 2016.

- Cancer incidence data are based on primary site ICD-O-3 (International Classification of Diseases for Oncology, 3rd Edition) codes: 1997-2013.
 - Cancer mortality data are based on underlying cause of death ICD-10 (International Classification of Diseases, 10th Revision) codes: 1997-2013.
 - Cancer staging (survival by stage) was derived from using the SEER Summary Stage 2000 staging standard: 2001-2013.
-
1. Tiwari RC, Clegg LX, Zou Z: Efficient interval estimation for age-adjusted (standardized) cancer rates. *Statistical Method in Medical Research*, 2006, 15: 547-569.
 2. Breslow NE, Day NE: *Statistical Methods in Cancer Research: Volume II: The Design and Analysis of Cohort Studies*. Lyon, France: International Agency for Research on Cancer, 1987.
 3. Cox DR, Oakes D: *Analysis of Survival Data*. London: Chapman & Hall, 1984.

Appendix C: Glossary of Terms

Age-adjusted rates: A rate calculated in a manner that allows for the comparison of populations with different age distributions.

Age-specific rates: The incidence or mortality rate of a specific age group, calculated per 100,000 people.

Confidence interval: A range of values that describes the uncertainty surrounding an estimate.

Incidence rate: The incidence rate is calculated by taking the number of new cases within a specified time period divided by the size of the population at risk.

In situ cancer: A noninvasive cancer in which abnormal cancer cells are found in the lining of the organ in which the cancer developed, but which have not spread to other tissues.

Invasive cancer: The abnormal cancer cells have spread to other tissues.

Median: The number in the middle of a distribution: half the values are above the median and half are below the median.

Mortality rate: The death rate is calculated by taking the number of deaths within a specified time period divided by the size of the population during that time period.

Primary cancer site: The place in the body where the cancer originates.

Risk factor: A characteristic or behavior that is consistently associated with increased probability of a disease or event.

Stage at diagnosis (SEER 2000): Stage provides a measure of disease progression, detailing the degree to which the cancer has advanced.

- **Localized:** Cancer that is limited to the organ in which it began, without evidence of spread.
- **Regional:** Cancer that has spread beyond the original (primary) site to nearby lymph nodes or organs and tissues.
- **Distant:** Cancer that has spread from the primary site to distant organs or distant lymph nodes.
- **Unstaged:** Cancer for which there is not enough information to indicate a stage.

Standardized Incidence Ratio (SIR): The ratio of the observed to the expected new cases of cancer.

Standardized Mortality Ratio (SMR): The ratio of the observed to the expected deaths due to cancer.

Survival (5-year Survival): The proportion of patients alive at a specified point in time after the diagnosis of their cancer.

Appendix D: Arkansas Demographics

Some general information about Arkansas:

The following facts were obtained from the 2015 American Community Survey:

Total Population	2,978,204
Females	50.9 percent
Males	49.1 percent
Age Distribution	
Persons under 20 years	26.5 percent
Persons 20 – 44 years	31.9 percent
Persons 45 – 64 years	25.5 percent
Persons 65 years and over	16.1 percent
Racial/Ethnic distribution	
Whites	77.5 percent
Blacks or African Americans	15.8 percent
Hispanic or Latino (of any race)	7.0 percent
Asian	1.4 percent
American Indian/Native American	0.7 percent
Other/ more than one race	2.2 percent
Median household income	\$41, 371
Persons below the poverty level as defined by the U.S. Census	19.1 percent