

STATE OF CANCER IN ARIZONA

ARIZONA CANCER REGISTRY
2016-2020



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Health and Wellness for all Arizonans

Katie Hobbs, Governor
State of Arizona

Jennie Cunico, Acting Director
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MISSION

Health and Wellness for all Arizonans

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ACKNOWLEDGEMENTS:

The Arizona Cancer Registry would like to acknowledge hospitals, clinics, physicians, nurse practitioners, physician assistants, and pathology laboratories. The hospitals account for most of the reportable cases, providing complete identification and registration of each person with a diagnosis of cancer. We would like to acknowledge the Arizona Melanoma Task Force for the work they have done to identify barriers and develop strategies to improve melanoma reporting by physicians in Arizona. We would also like to recognize our partnership with the Arizona Well Woman HealthCheck Program and the Arizona Cancer Control Program.

The Registry would like to recognize the New Mexico Tumor Registry (NMTR) for collecting cancer cases in the Indian Health Services (IHS) facilities. Through our agreement with NMTR and IHS, we are able to include American Indian cases in the state. In our work to capture all cancer cases in Arizona we have signed agreements to receive cases from the Southern Arizona VA Health Care System and the Phoenix VA Health Care System.

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Please note that Arizona Cancer Registry data changes frequently and may not be comparable to earlier reports as cases may have been added, removed or changed.



ARIZONA DEPARTMENT
OF HEALTH SERVICES

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Executive Summary

The Arizona Cancer Registry is a population-based surveillance system that collects, manages, and analyzes information on the incidence and survival of Arizona residents diagnosed with cancer. The data is captured from a variety of sources and is used to support research and assists in guiding decisions in early detection, quality treatment, and ultimately the effective prevention of cancer. This report describes the cancer burden among Arizonans. On a monthly basis during the last five years an average of 1,016 Arizonans lost their lives to cancer and 2,856 Arizonans were diagnosed with a new cancer.

WHAT IS IN THE REPORT:

- Cancer incidence (new cases) and mortality (cancer deaths) among Arizona residents
- Cancer mortality data of deaths in Arizona from 2016-2020
- Cancer incidence of Arizonans diagnosed with cancer from 2016-2020
- County specific information on top cancer sites and diagnostic stage
- Arizona maps showing county specific incidence and mortality rates
- Cancer incidence and mortality data is provided in counts and age-adjusted rates. Rate=Age-Adjusted Rate per 100,000 persons (See technical notes)

DATA SUMMARY

MORTALITY, 2016-2020

AN AVERAGE OF **12,194** ARIZONANS DIED FROM CANCER EACH YEAR AT A RATE OF **131.8** DEATHS PER 100,000 PERSONS



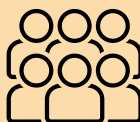
THE DEATH RATE OF CANCER HAS DECREASED 7.3% FROM 2016 TO 2020

THE MEDIAN AGE AT DEATH FOR CANCER IS 73 YEARS OLD



MORE MALES (54.4%) THAN FEMALES (45.6%) DIED FROM CANCER EACH YEAR

BLACK PEOPLE HAVE THE HIGHEST MORTALITY RATE FOR CANCER (146.1 DEATHS PER 100,000 PERSONS)



ASIAN/PACIFIC ISLANDERS HAVE THE LOWEST MORTALITY RATE FOR CANCER (86.0 DEATHS PER 100,000 PERSONS)



LUNG & BRONCHUS CANCER IS THE LEADING CAUSE OF CANCER DEATH FOR 2016-2020 (25.2 DEATHS PER 100,000 PERSONS)

INCIDENCE, 2016-2020

AN AVERAGE OF **34,274** INVASIVE CANCER CASES ARE DIAGNOSED EACH YEAR IN ARIZONA AT A RATE OF **382** CASES PER 100,000 PERSONS



THE INCIDENCE RATE OF CANCER HAS DECREASED 11% FROM 2016 TO 2020



EARLY STAGE DIAGNOSIS IS MORE COMMON FOR MELANOMA, FEMALE BREAST CANCER AND PROSTATE CANCER

LATE STAGE DIAGNOSIS IS MORE COMMON FOR LUNG & BRONCHUS AND COLORECTAL CANCER

MORE MALES (51.3%) THAN FEMALES (48.7%) ARE DIAGNOSED WITH CANCER EACH YEAR



MEDIAN AGE OF DIAGNOSIS IS 68 YEARS OLD



WHITE NON-HISPANICS HAVE THE HIGHEST RATE OF CANCER DIAGNOSES (420.3 CASES PER 100,000 PERSONS)

ASIAN/PACIFIC ISLANDERS HAVE THE LOWEST RATE OF CANCER DIAGNOSES (218.1 CASES PER 100,000 PERSONS)

ARIZONA CANCER REGISTRY GOALS

- ✓ To collect complete and accurate cancer incidence information and to monitor incidence patterns
- ✓ To improve and maintain high standards in the quality of the information collected and reported
- ✓ To promote and assist hospital cancer registries
- ✓ To identify population subgroups at high risk for cancer
- ✓ To assist in the identification of geographic regions of the state for targeted cancer intervention and prevention programs
- ✓ To perform cancer studies
- ✓ To provide biostatistics and epidemiologic information to the medical community about the cancer burden

ARIZONA CANCER REGISTRY DATA DASHBOARD NOW AVAILABLE

The Arizona Cancer Registry is pleased to announce that the new cancer registry data dashboard is now available. The dashboard contains Arizona cancer data from 1995 through 2020 with the ability to search for counts and age-adjusted rates by diagnosis year, cancer site, age, gender, race/ethnicity and county.

**TAKE A LOOK AT
THE DASHBOARD**



Cancer Mortality 2016-2020

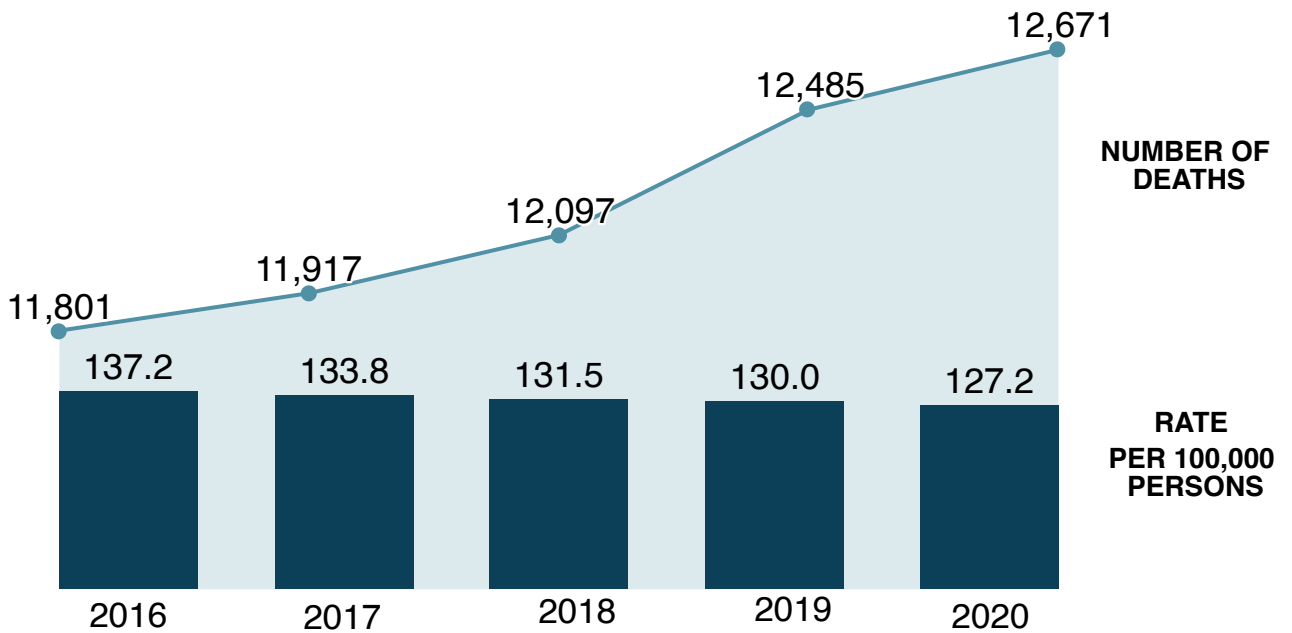
TOP 5 2020 CANCER SITES FOR ARIZONA MORTALITY

CANCER SITE	MEDIAN AGE AT DEATH	AGE-ADJUSTED RATE PER 100,000 PERSONS
All Cancers	74	127.2
Lung & Bronchus Cancer	74	25.2
Colorectal Cancer	72	11.7
Pancreatic Cancer	73	9.8
Female Breast Cancer	71	17.6
Prostate Cancer	79	17.3

Arizona Department of Health Services, Arizona Vital Statistics, 2023. Retrieved May 30, 2023 from Bureau of Public Health Statistics internal data.

Mortality by Year of Death

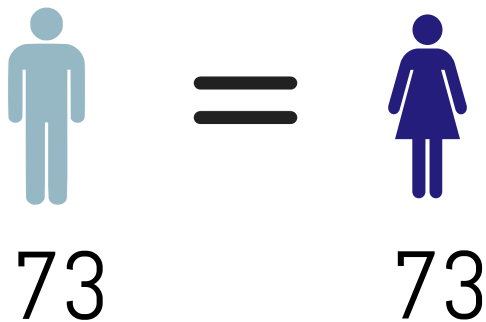
Annual Rate & Number of Deaths: 2016-2020



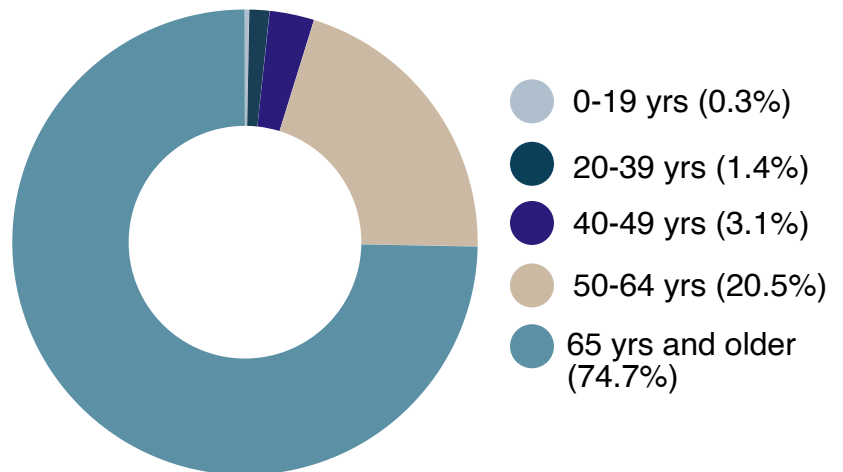
On average from 2016-2020, 12,194 Arizonans died from cancer each year at an age-adjusted rate of 131.8 deaths per 100,000 persons

Mortality by Age

Median Age of Cancer Death by Gender: 2016-2020

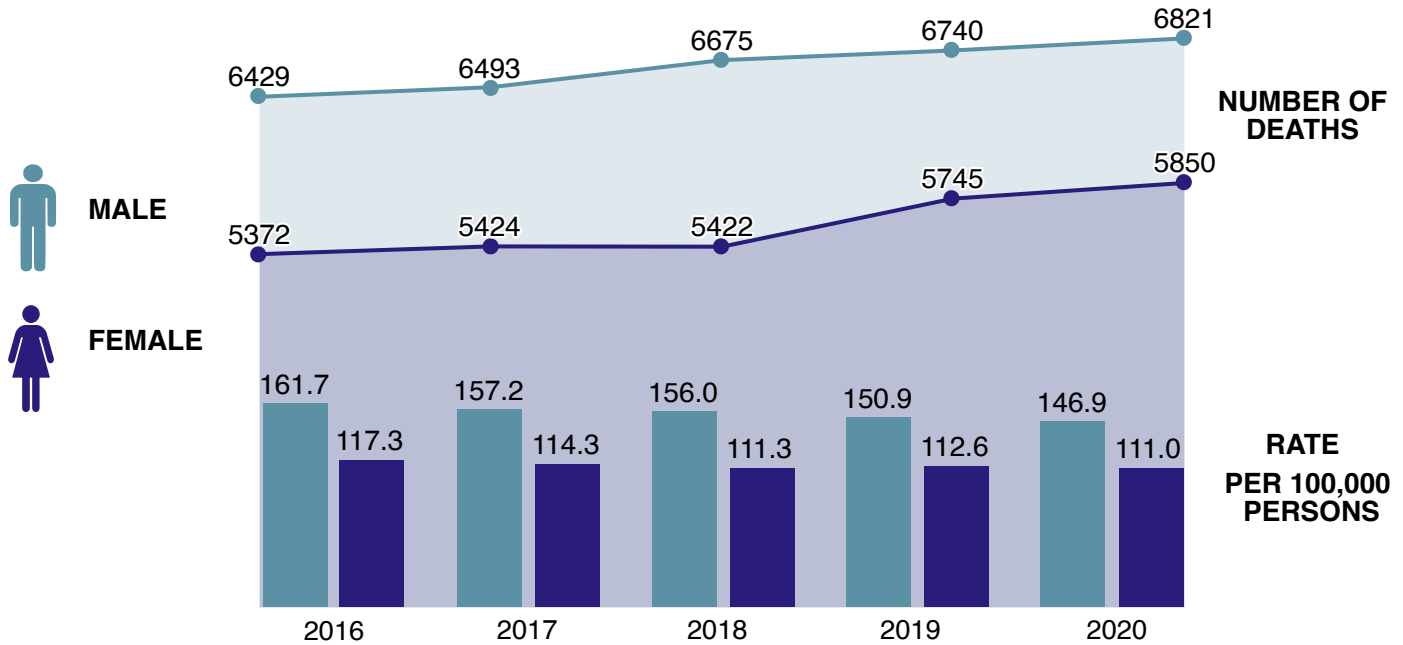


Percentage of Deaths by Age Group: 2016-2020



Mortality by Gender

Number and Rate of Deaths by Year and Gender: 2016-2020

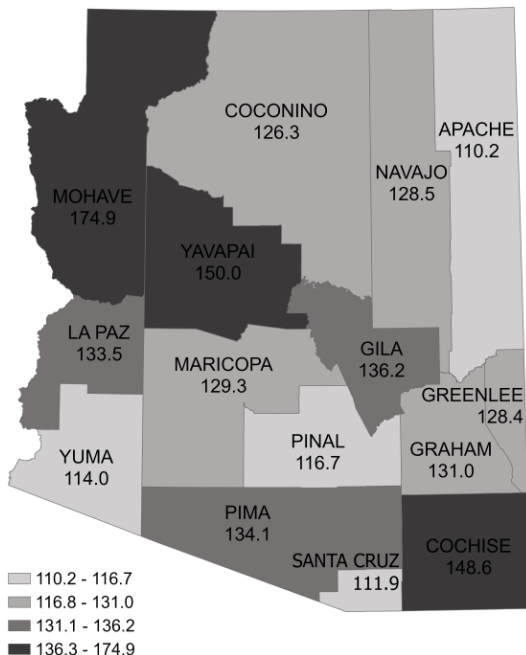


On average in 2016-2020,

- 6,632 male Arizonans (54.4%) and 5,563 female Arizonans (45.6%) died from cancer
- Males died at an age-adjusted rate of 154.5 deaths per 100,000 persons
- Females died at an age-adjusted rate of 113.3 deaths per 100,000 persons

Mortality by County

Mortality Rate of Cancer by County: 2016-2020



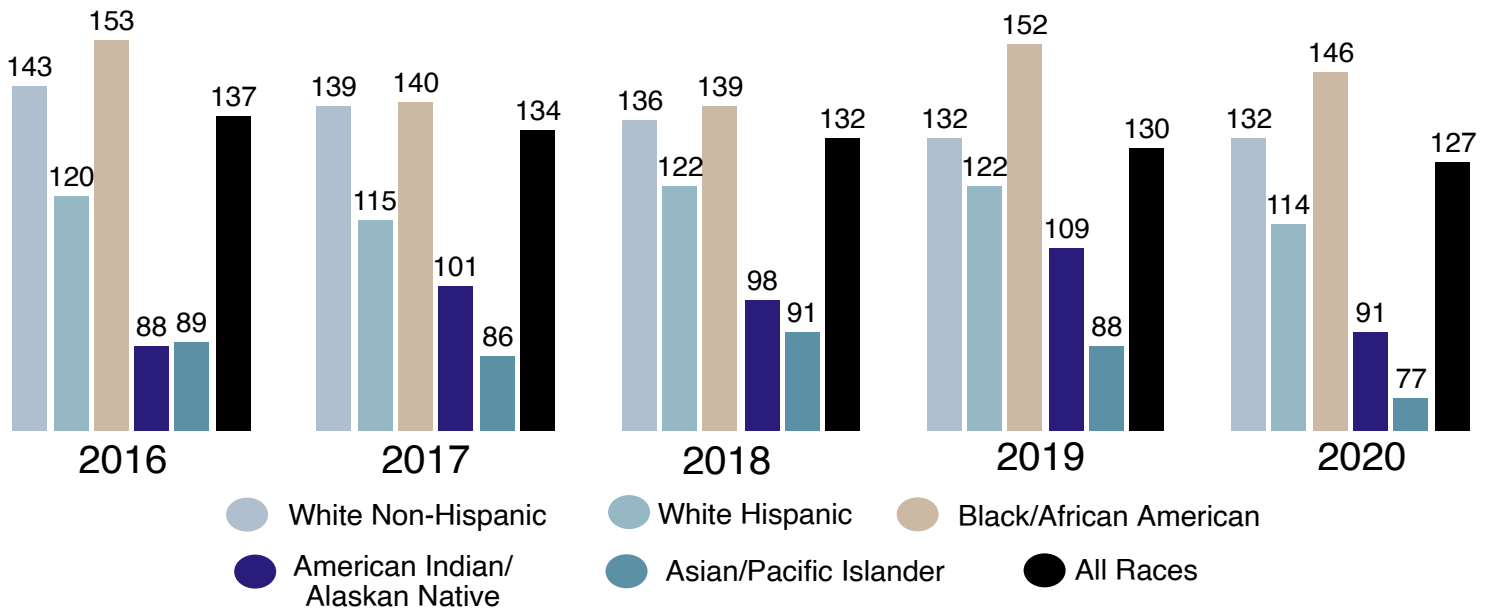
Mohave, Yavapai and Cochise counties reported the highest mortality rates of from cancer.

Apache, Santa Cruz and Yuma counties had the lowest cancer mortality rates from 2016-2020.

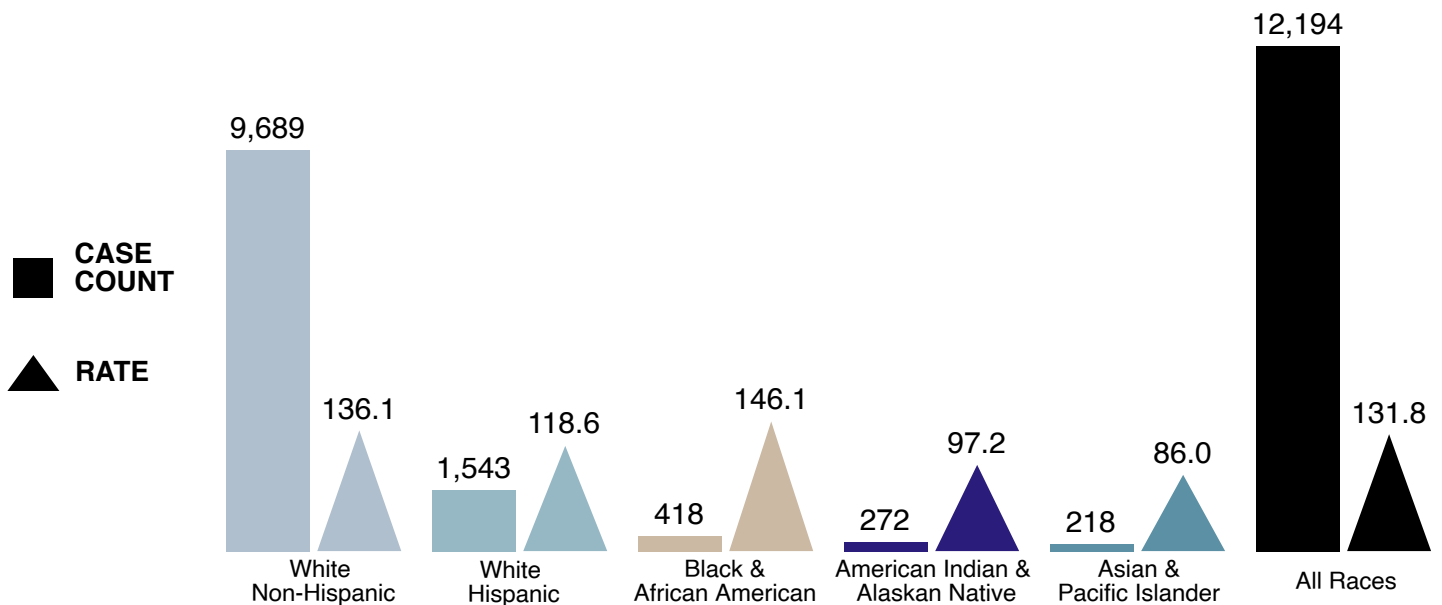
A total of 132 cancer deaths had an unknown county from 2016-2020

Mortality by Race/Ethnicity

Age-Adjusted Rate by Race/Ethnicity & Year of Death: 2016-2020



Average Annual Mortality Counts and Rates by Race/Ethnicity: 2016-2020



On average for 2016-2020,

- **White Non-Hispanics had the highest average count at 9,689 deaths per year**
- **Asian and Pacific Islanders had the lowest average count at 218 deaths**
- **Black and African Americans had the highest average age-adjusted rate at 146.1 deaths per 100,000 persons**
- **Asian and Pacific Islanders had the lowest average age-adjusted rate at 86.0 deaths per 100,000 persons**

Note: Unknown race/ethnicity case count is 269 cases for the mortality years 2017-2020. Year 2016 had no Unknown race/ethnicity cases. The average annual count for Unknown race/ethnicity is 67 and these cases are included in the All Races category.

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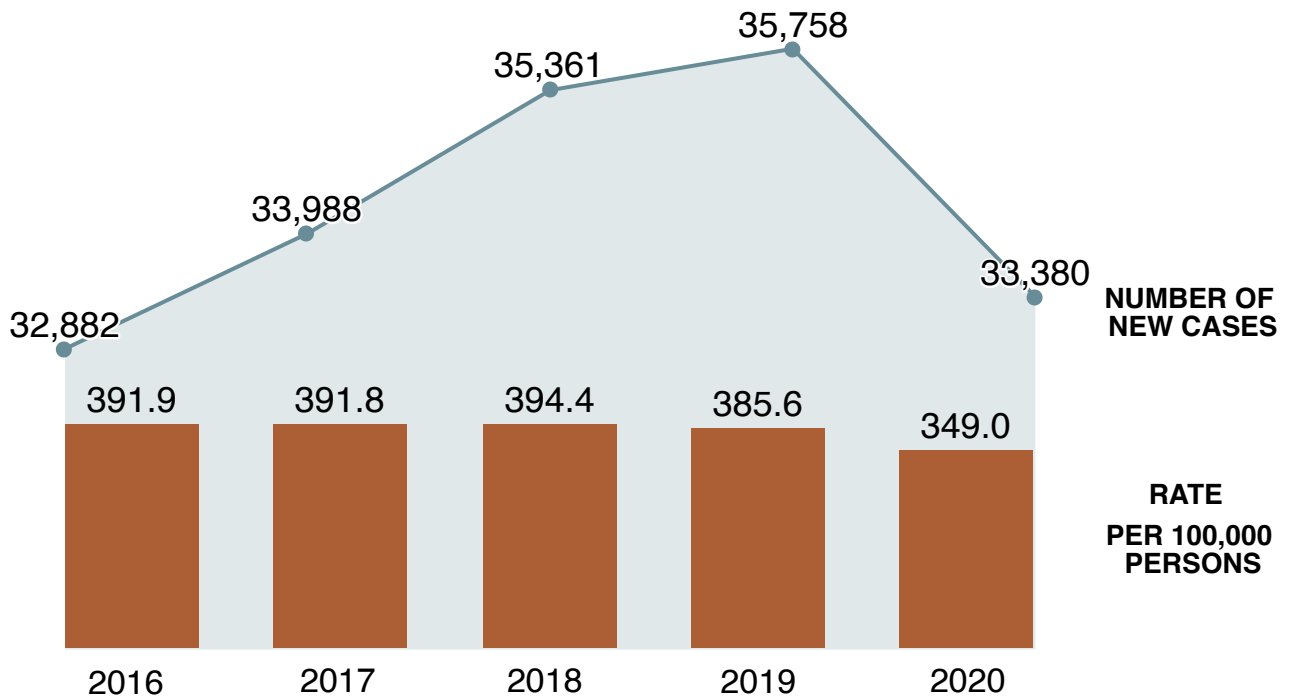
Cancer Incidence 2016-2020

TOP 5 2020 CANCER SITES FOR ARIZONA INCIDENCE

CANCER SITE	MEDIAN AGE AT DIAGNOSIS	AZ CASE COUNT FOR 2020	AGE-ADJUSTED RATE PER 100,000 PERSONS
All Cancers	68	34,274	382.0
Female Breast Cancer	65	5,011	104.8
Lung & Bronchus Cancer	72	3,848	37.3
Prostate Cancer	68	3,333	67.4
Melanoma	69	2,655	28.2
Colorectal Cancer	67	2,637	28.4

Incidence by Diagnosis Year

Annual Rate & Number of New Cases by Diagnosis Year: 2016-2020



On average from 2016-2020, 34,274 Arizonans were diagnosed with cancer each year at an age-adjusted rate of 382 new cases per 100,000 persons

Incidence by Age

Median Age of Cancer Diagnosis:
2016-2020

68

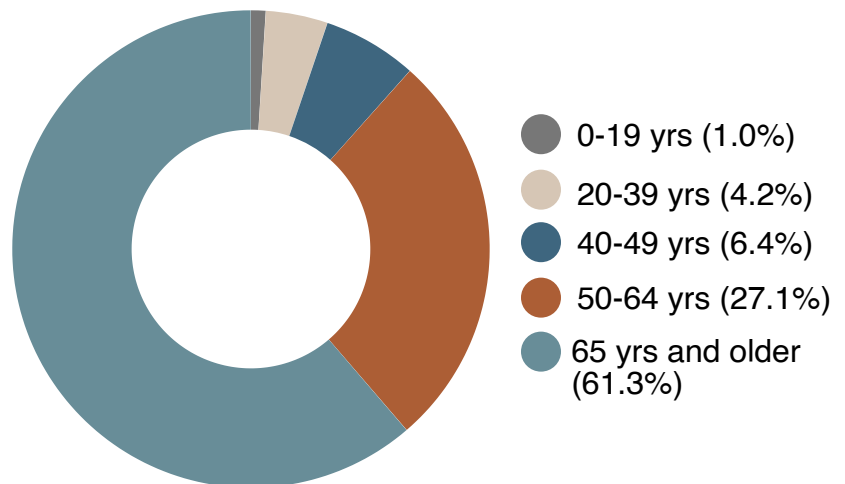
Median Age of Cancer Diagnosis
by Gender: 2016-2020



69

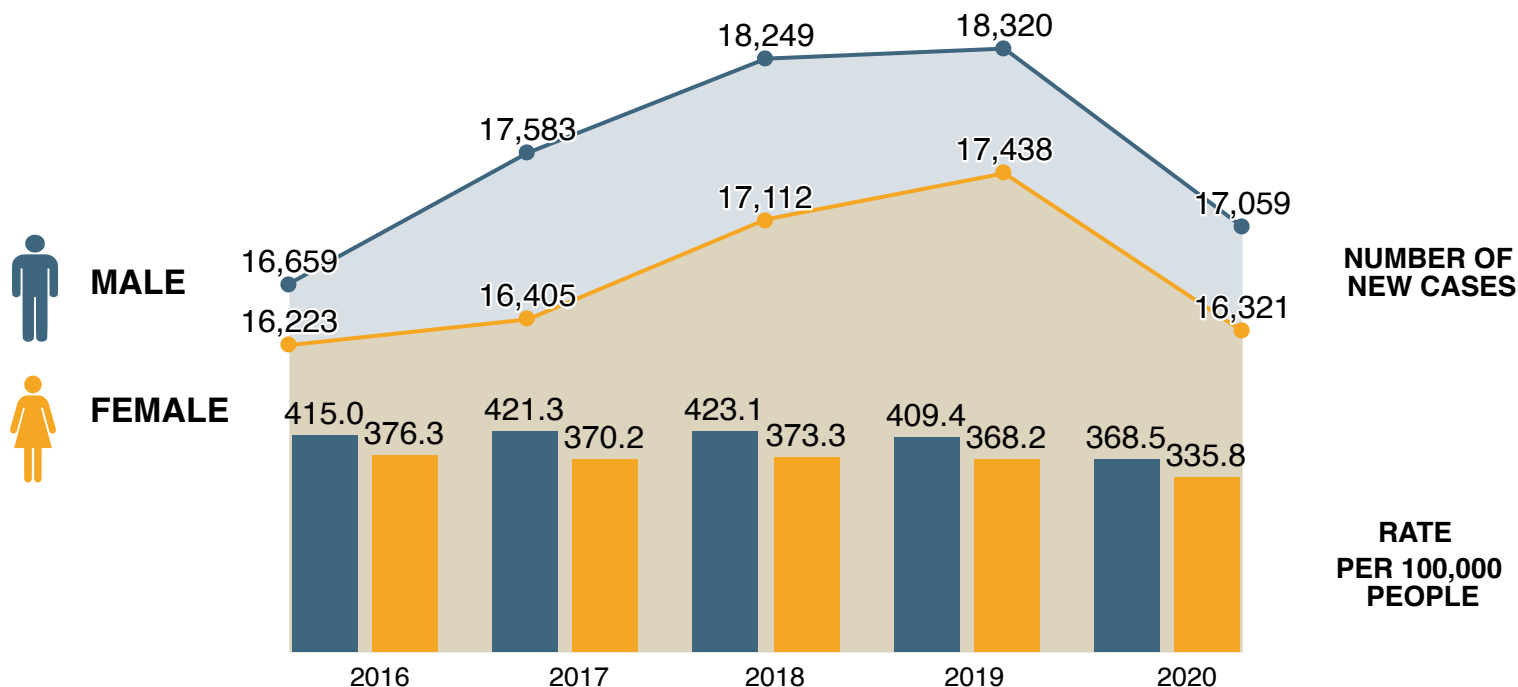
67

Percentage of New Cases
by Age Group: 2016-2020



Incidence by Gender

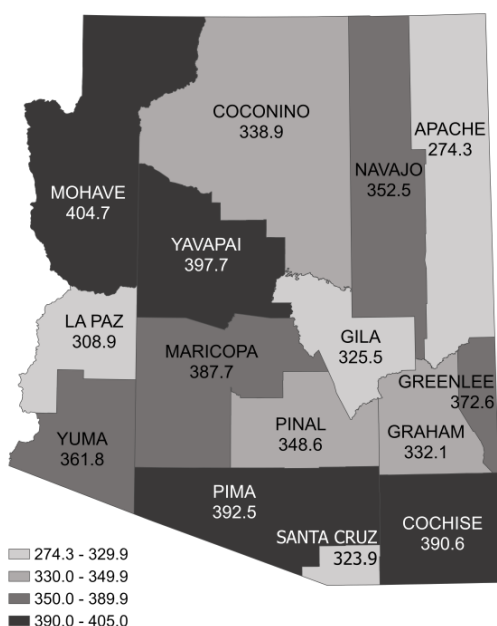
Number and Rate of New Cases by Diagnosis Year and Gender: 2016-2020



On average in 2016-2020,

- 17,574 male Arizonans (51.3%) and 16,700 female Arizonans (48.7%) were diagnosed with invasive cancer
- Males were diagnosed at an age-adjusted rate of 406.8 cases per 100,000 persons
- Females were diagnosed at an age-adjusted rate of 364.2 cases per 100,000 persons

Incidence by County



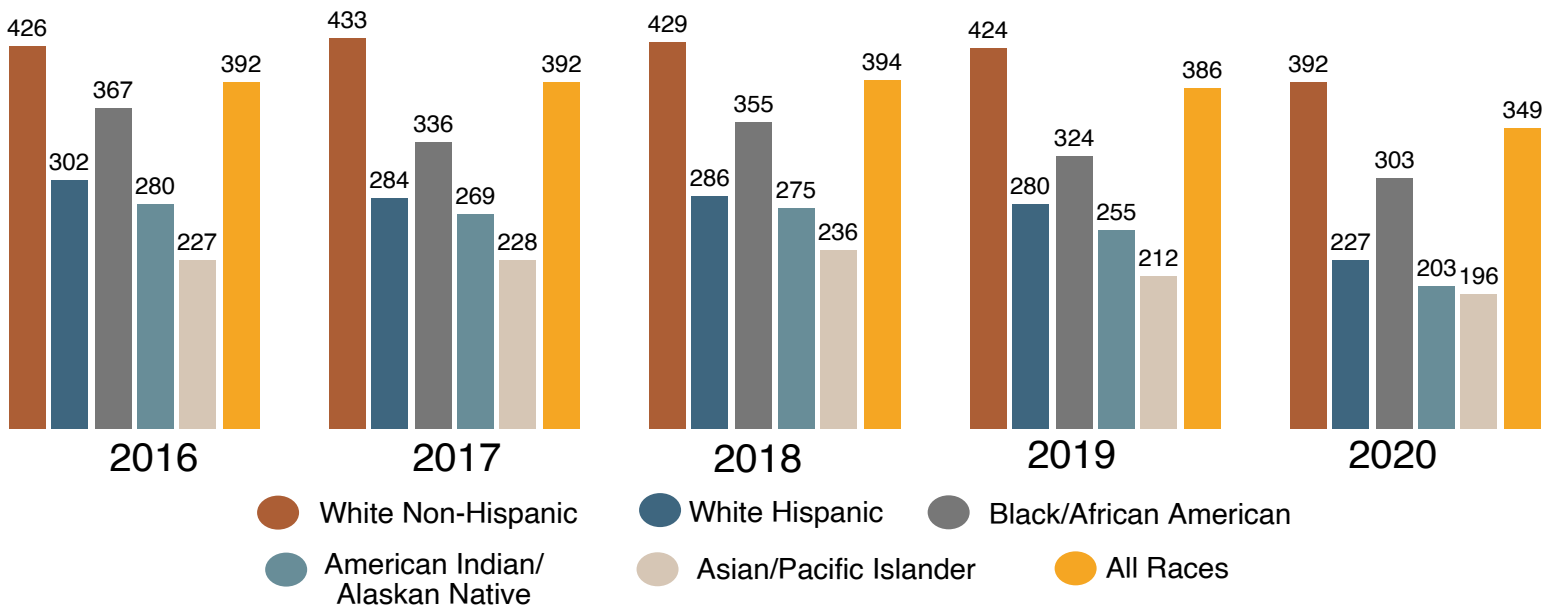
Mohave, Yavapai, Pima and Cochise counties reported the highest cancer incidence rates.

Apache, La Paz, Santa Cruz and Gila counties had the lowest cancer incidence rates from 2016-2020.

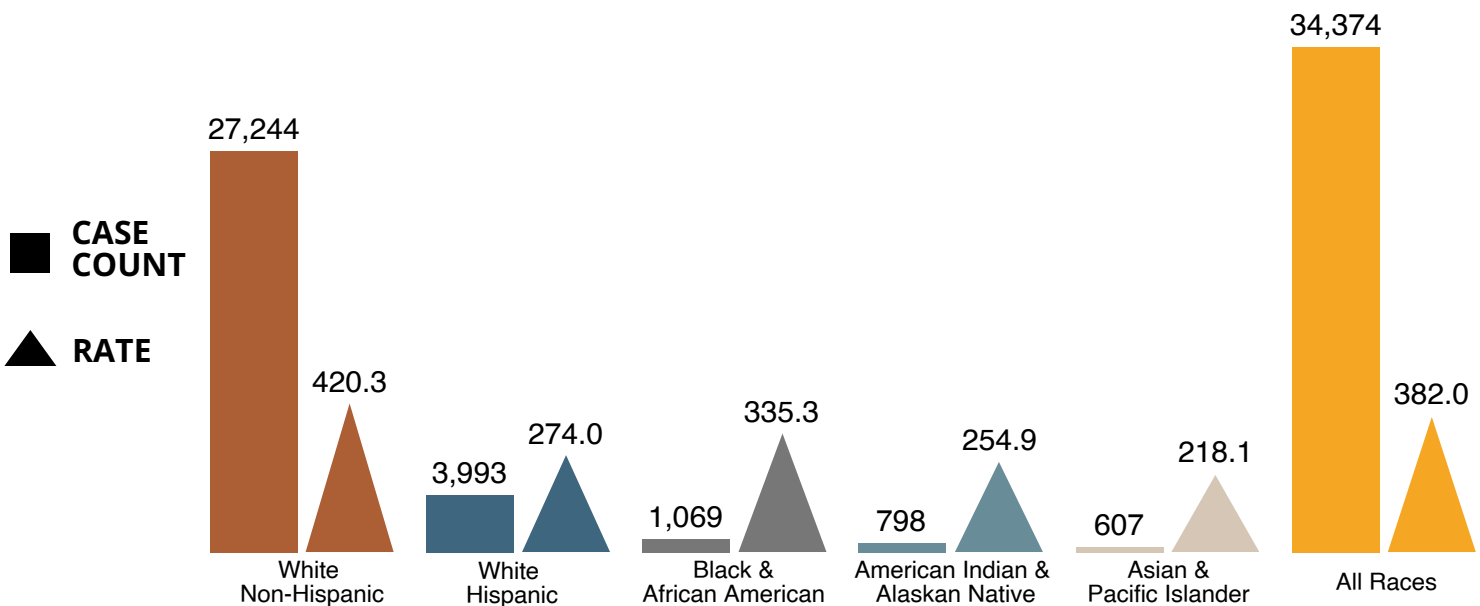
A total of 233 cancer cases had an unknown county from 2016-2020

Incidence by Race/Ethnicity

Age-Adjusted Rate by Race/Ethnicity & Diagnosis Year: 2016-2020



Average Annual Incidence Counts and Rates by Race/Ethnicity: 2016-2020



On average for 2016-2020,

- **White Non-Hispanics had the highest average count at 27,244 new cases per year**
- **Asian and Pacific Islanders had the lowest average count at 607 new cases per year**
- **White Non-Hispanics had the highest average age-adjusted rate at 420.3 new cases per 100,000 persons**
- **Asian and Pacific Islanders had the lowest average age-adjusted rate at 218.1 new cases per 100,000 persons**

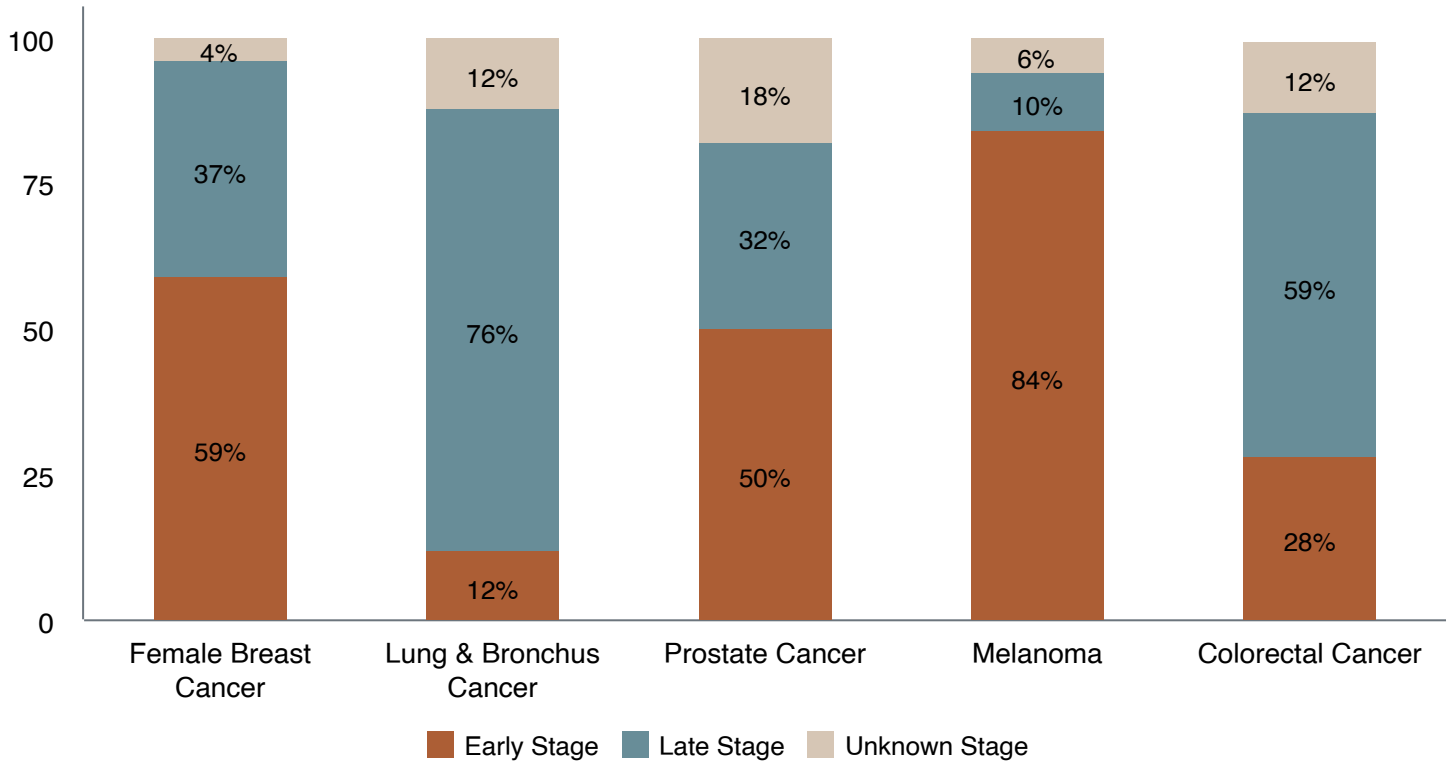
Note: Unknown race/ethnicity case count is 2,814 cases for the diagnosis years 2016-2020. The average annual count for Unknown race/ethnicity is 563 and these cases are included in the All Races category.

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**Cancer by Stage
at Diagnosis &
County
2016-2020**

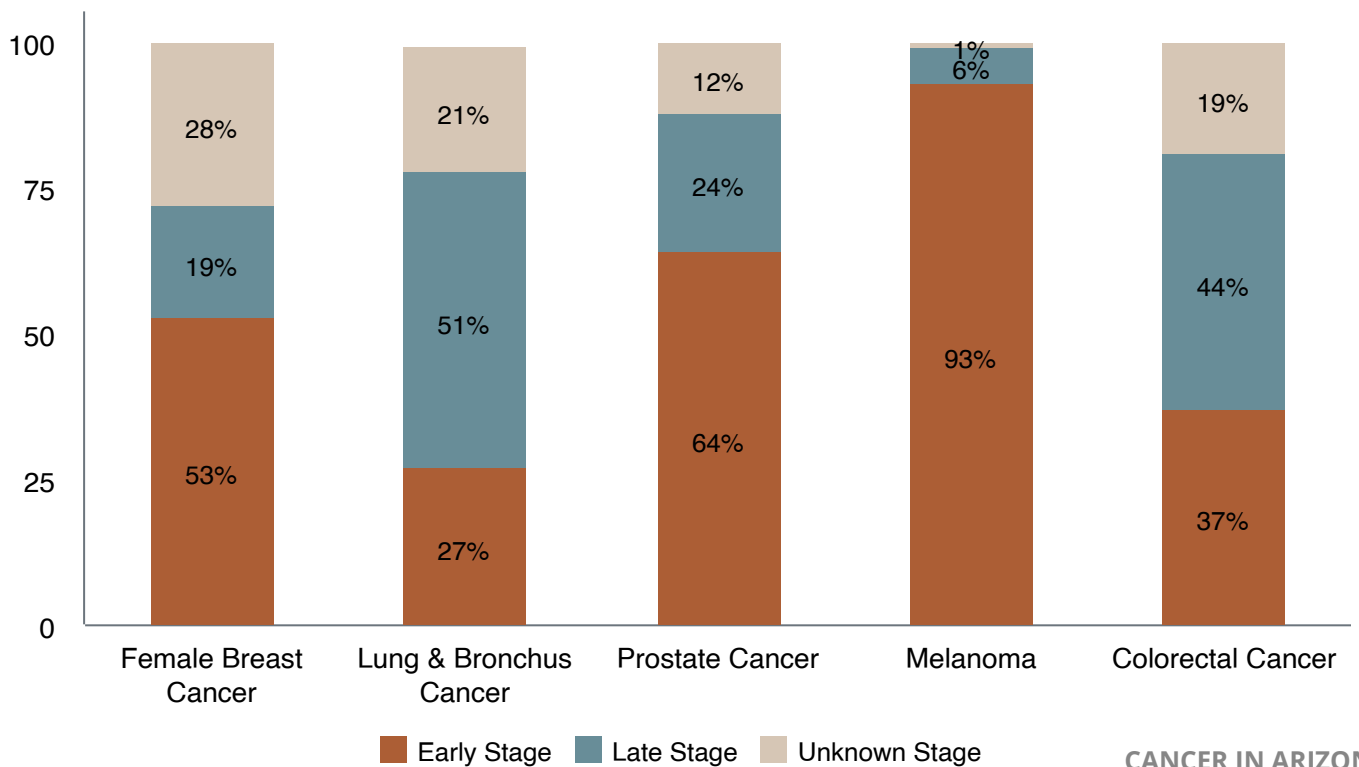
Apache County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Cochise County

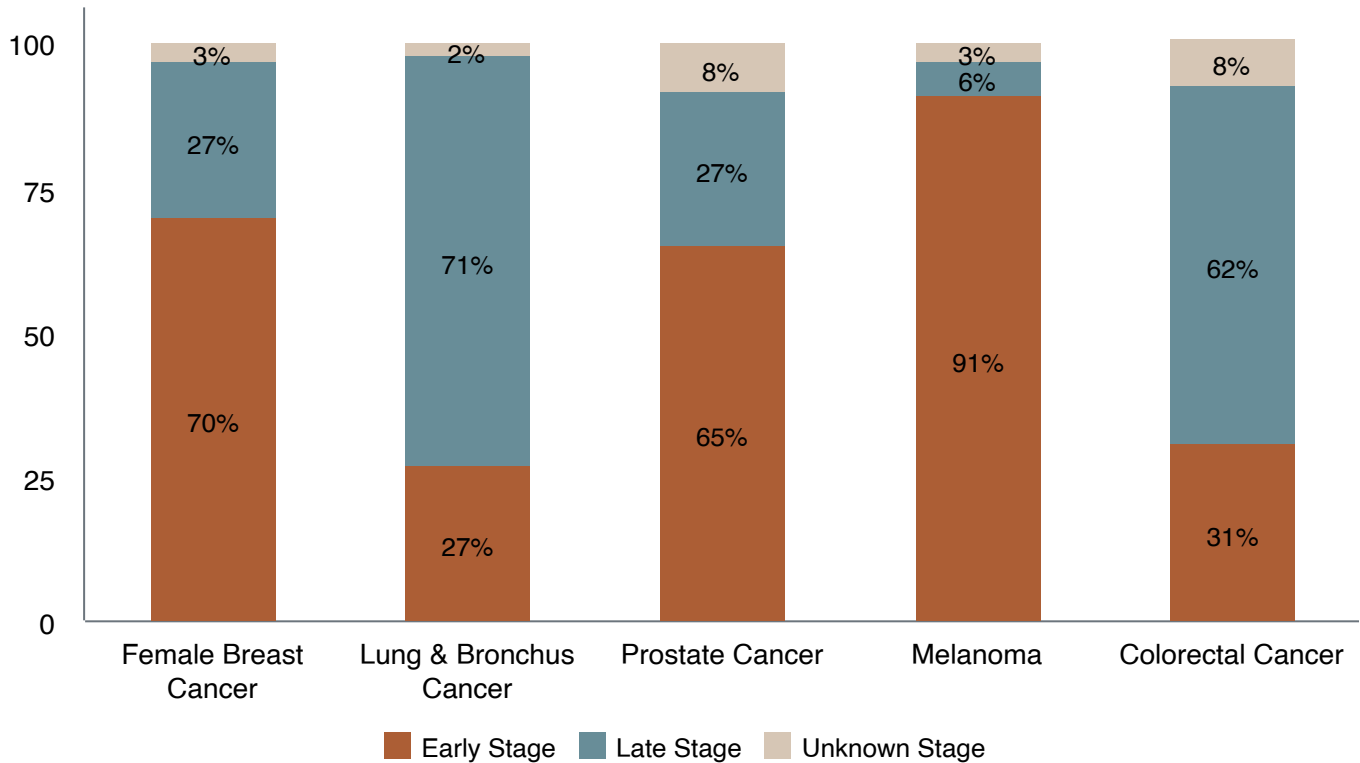
Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

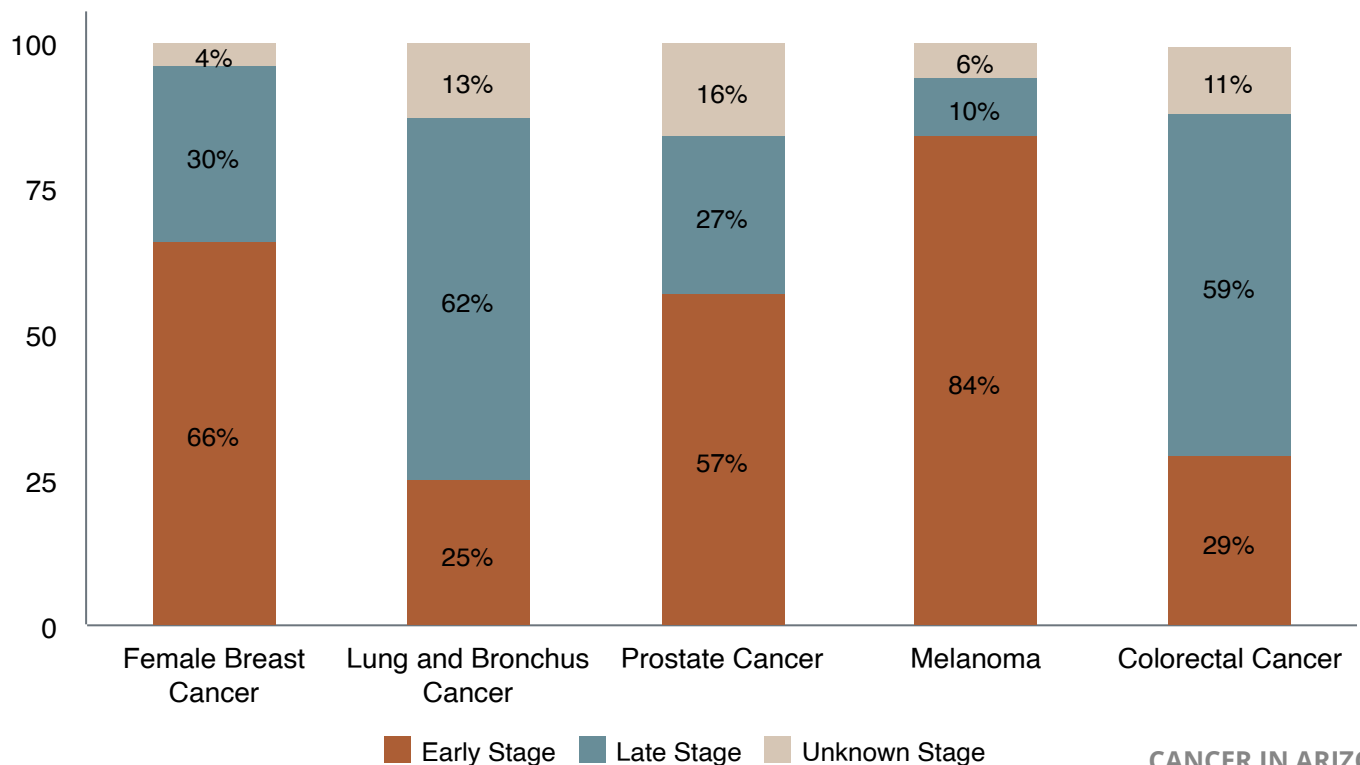
Coconino County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Gila County

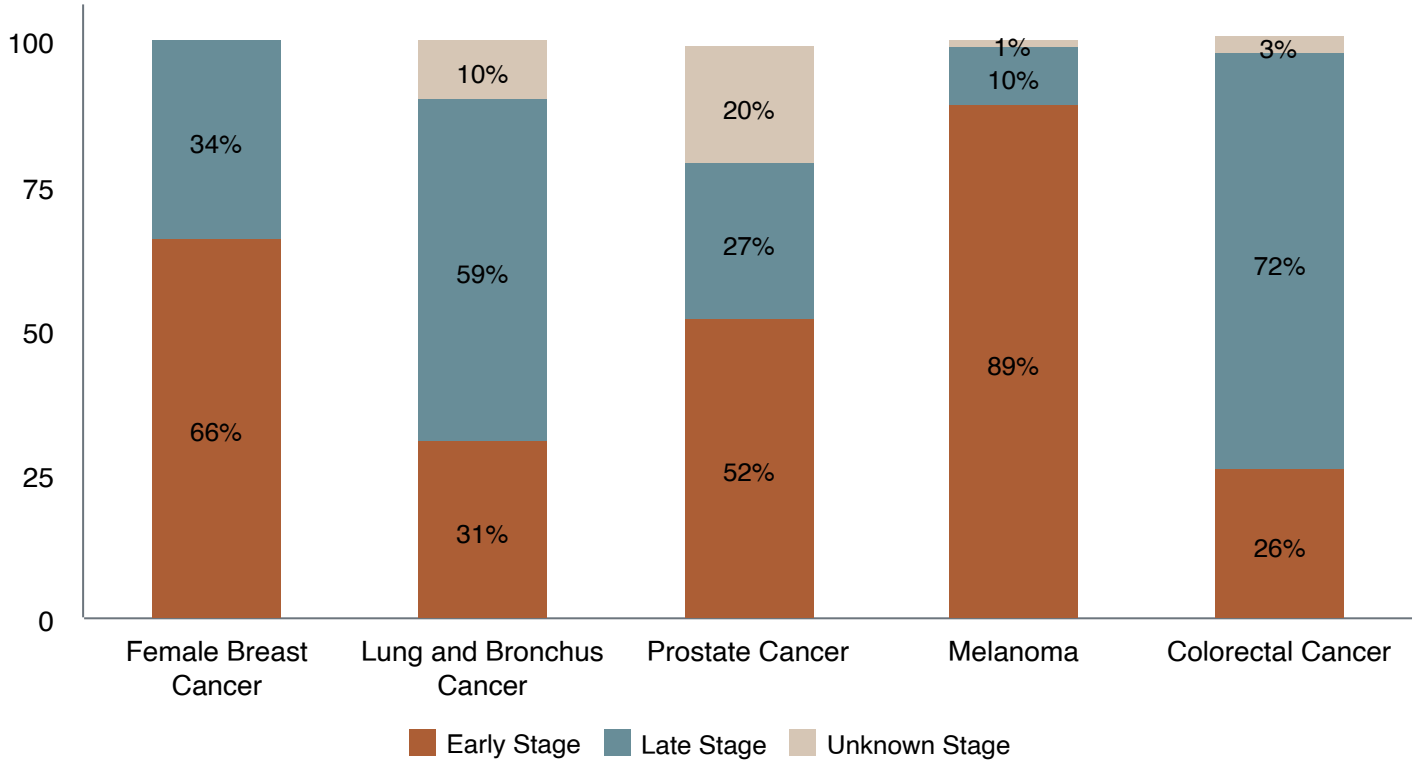
Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

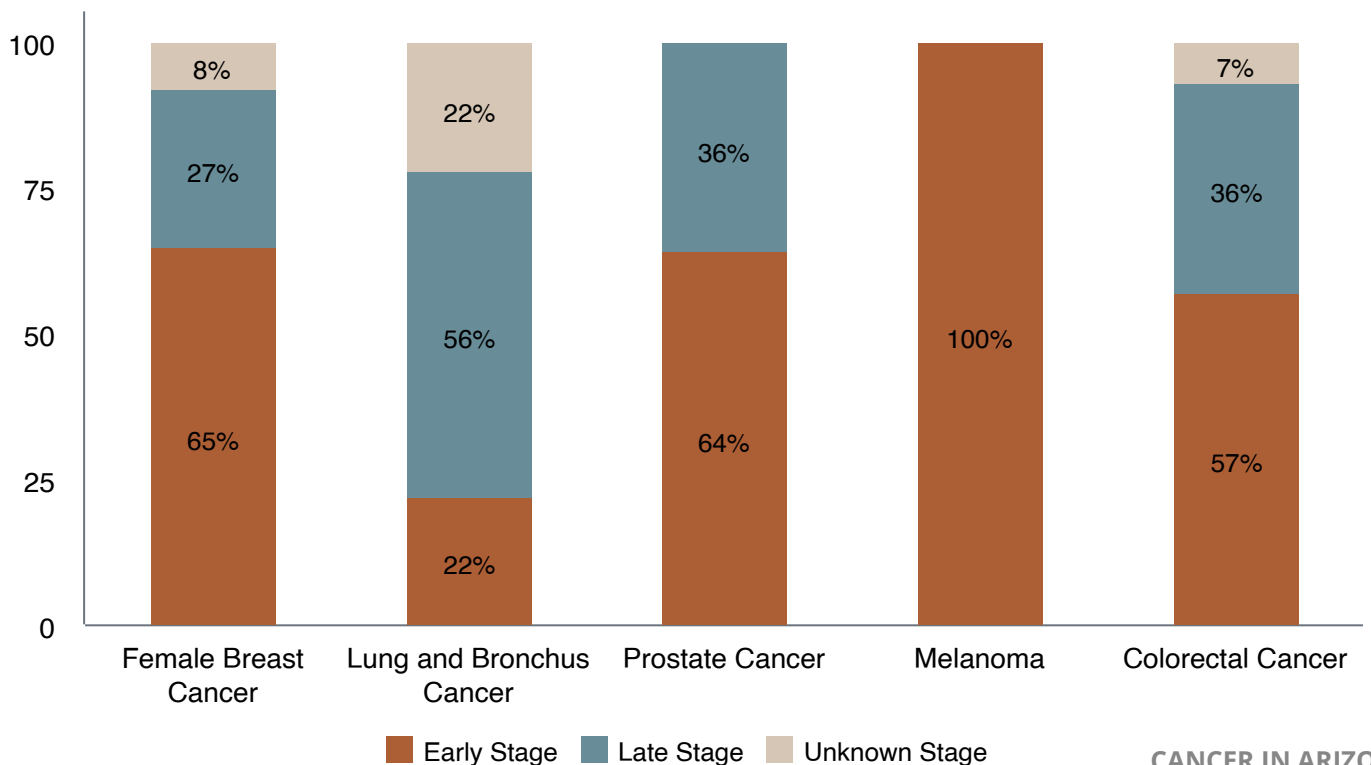
Graham County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Greenlee County

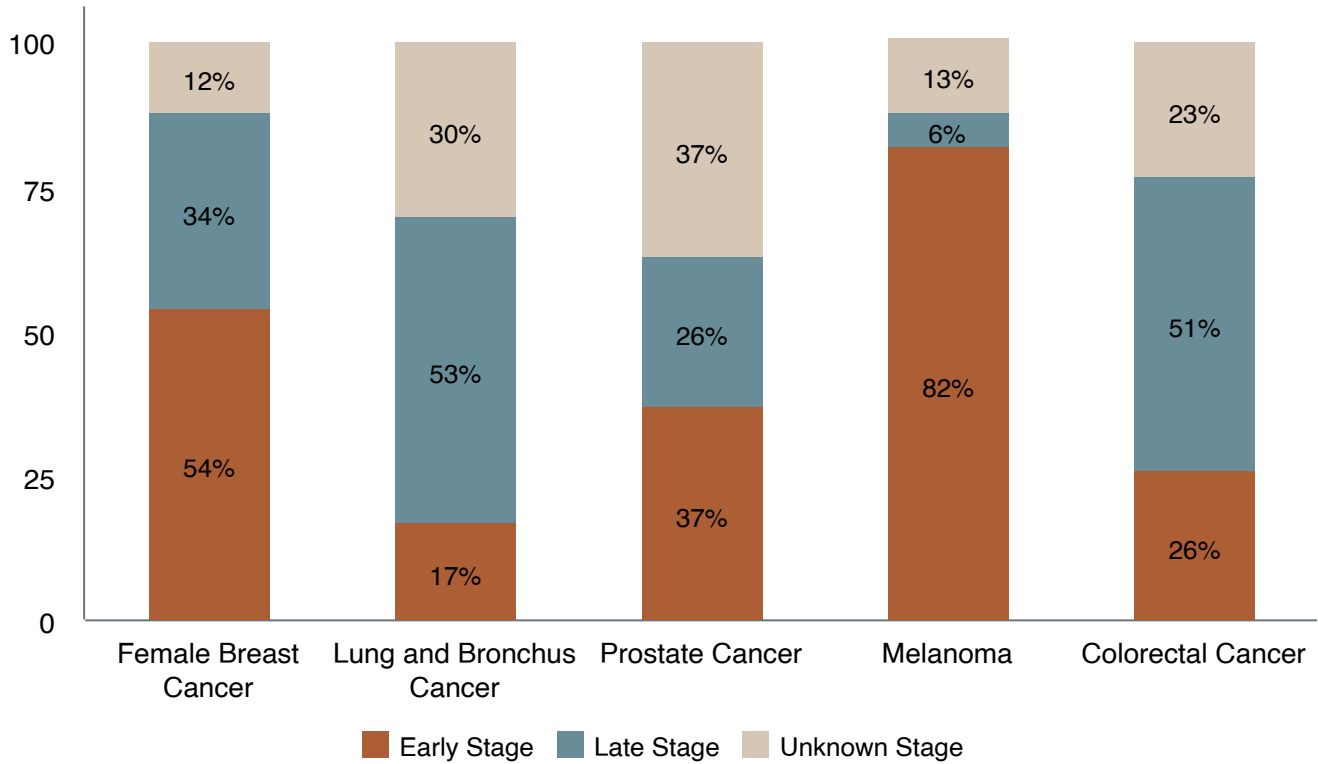
Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

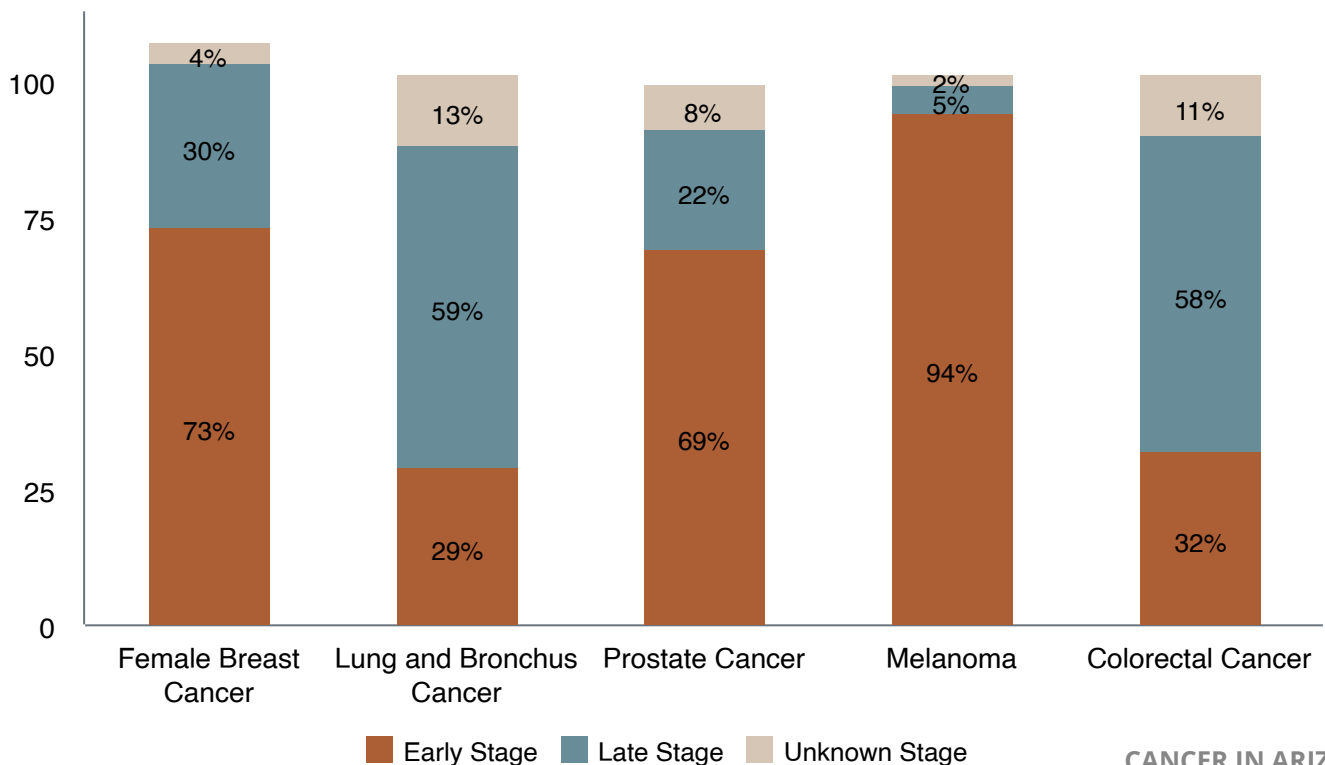
La Paz County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Maricopa County

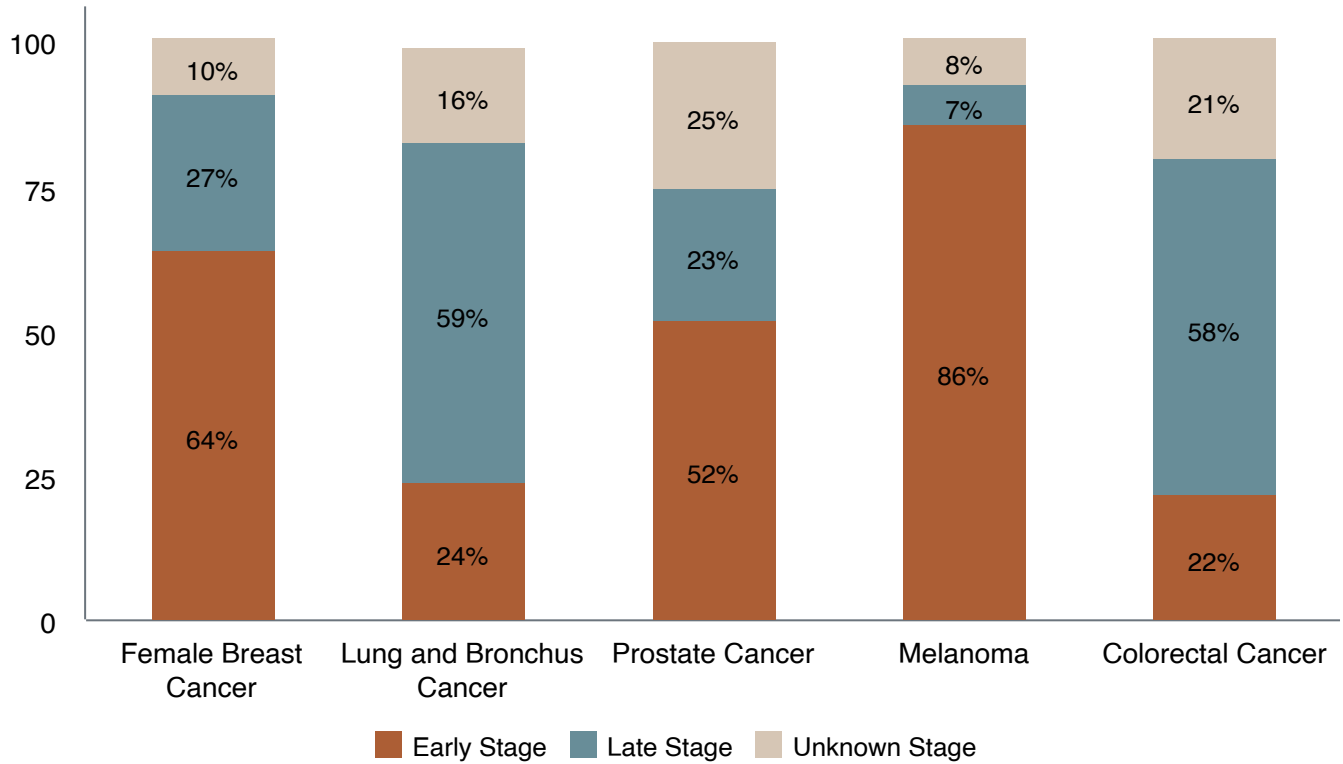
Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

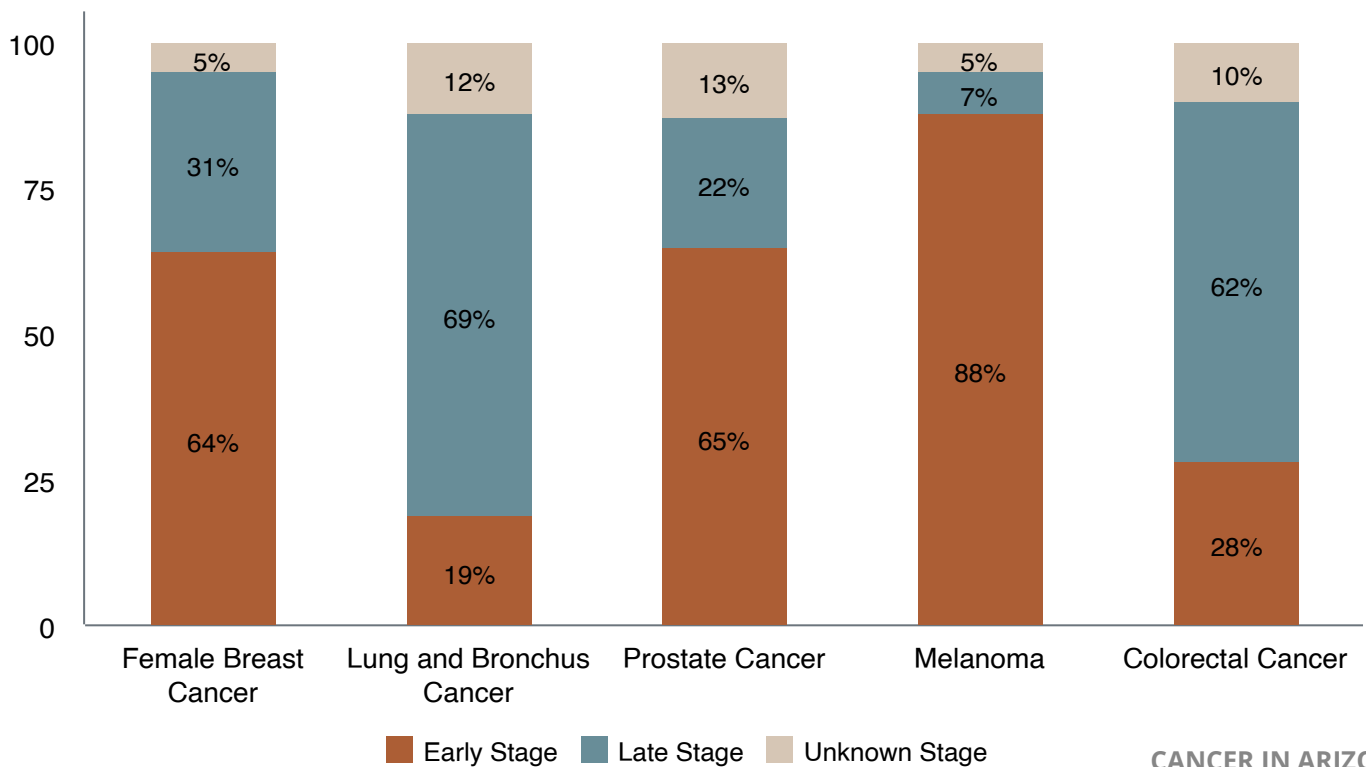
Mohave County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Navajo County

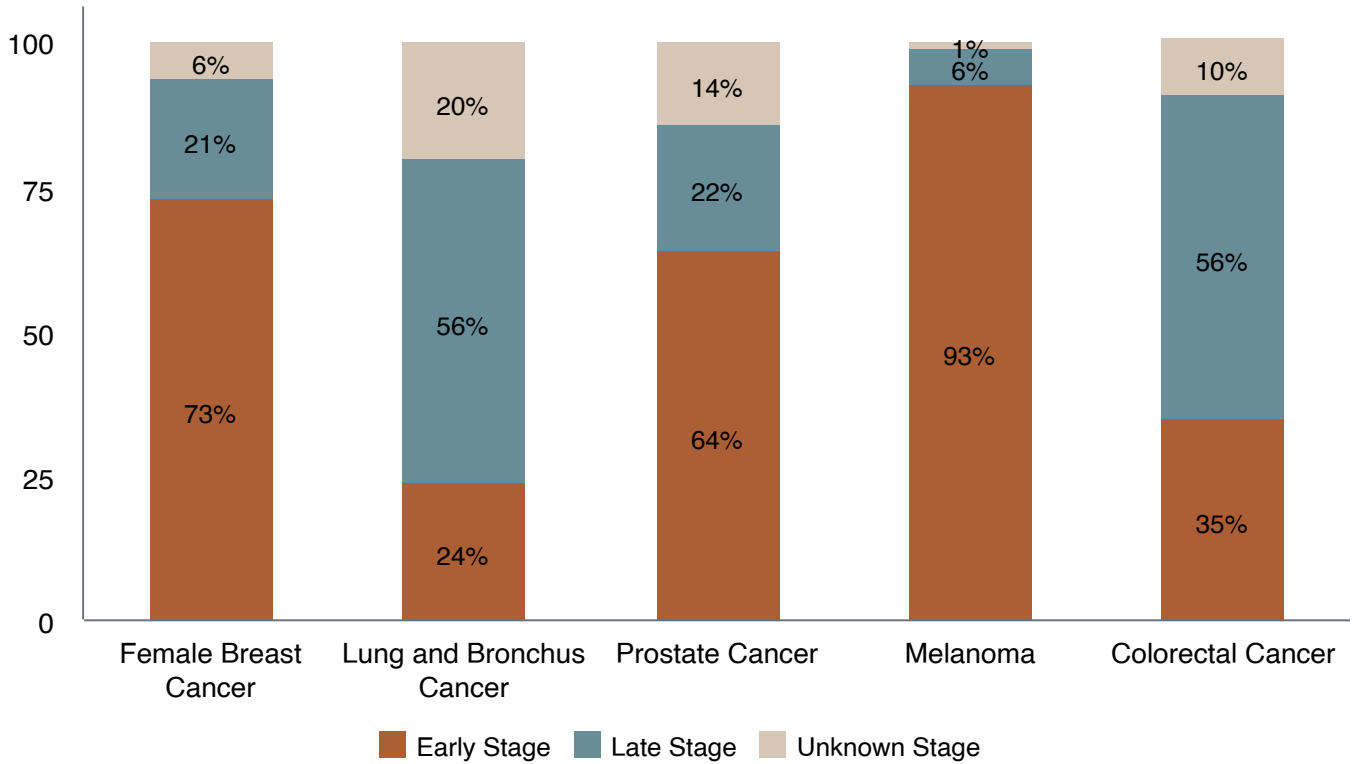
Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

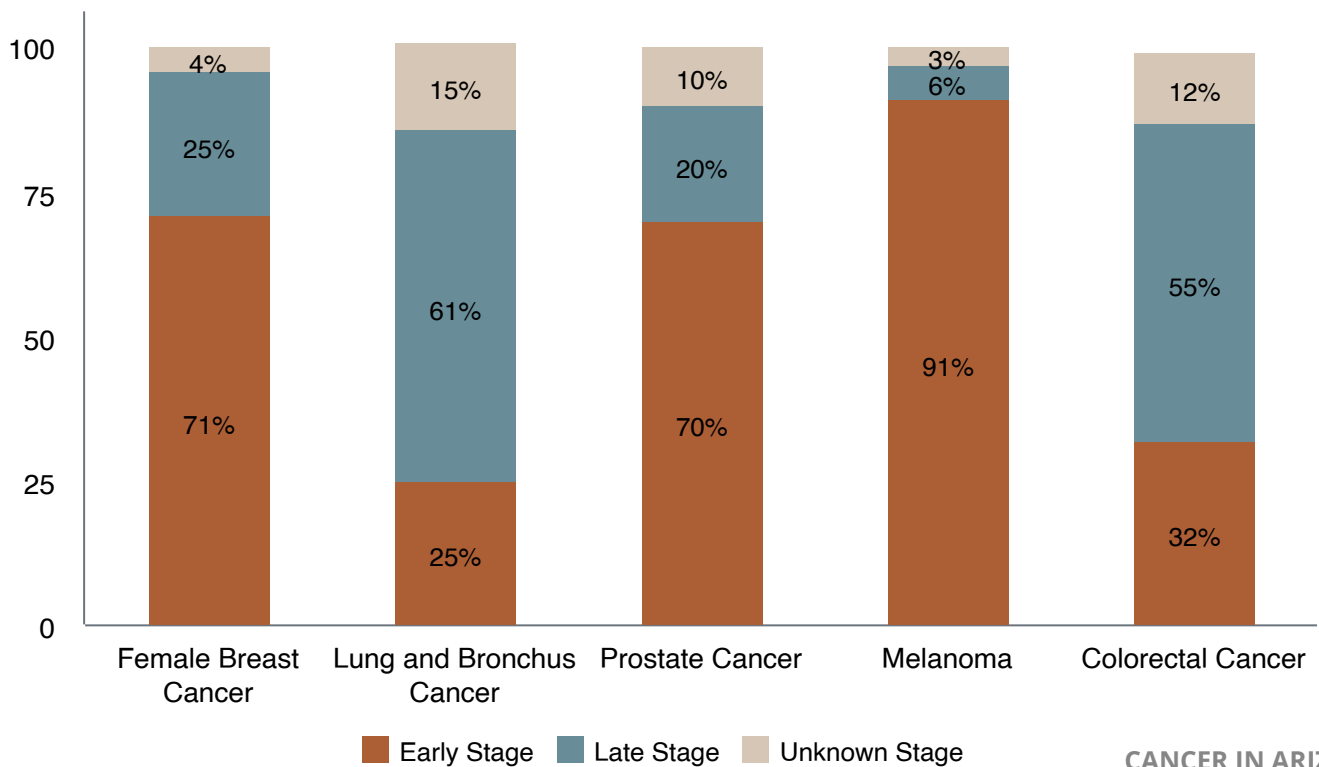
Pima County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Pinal County

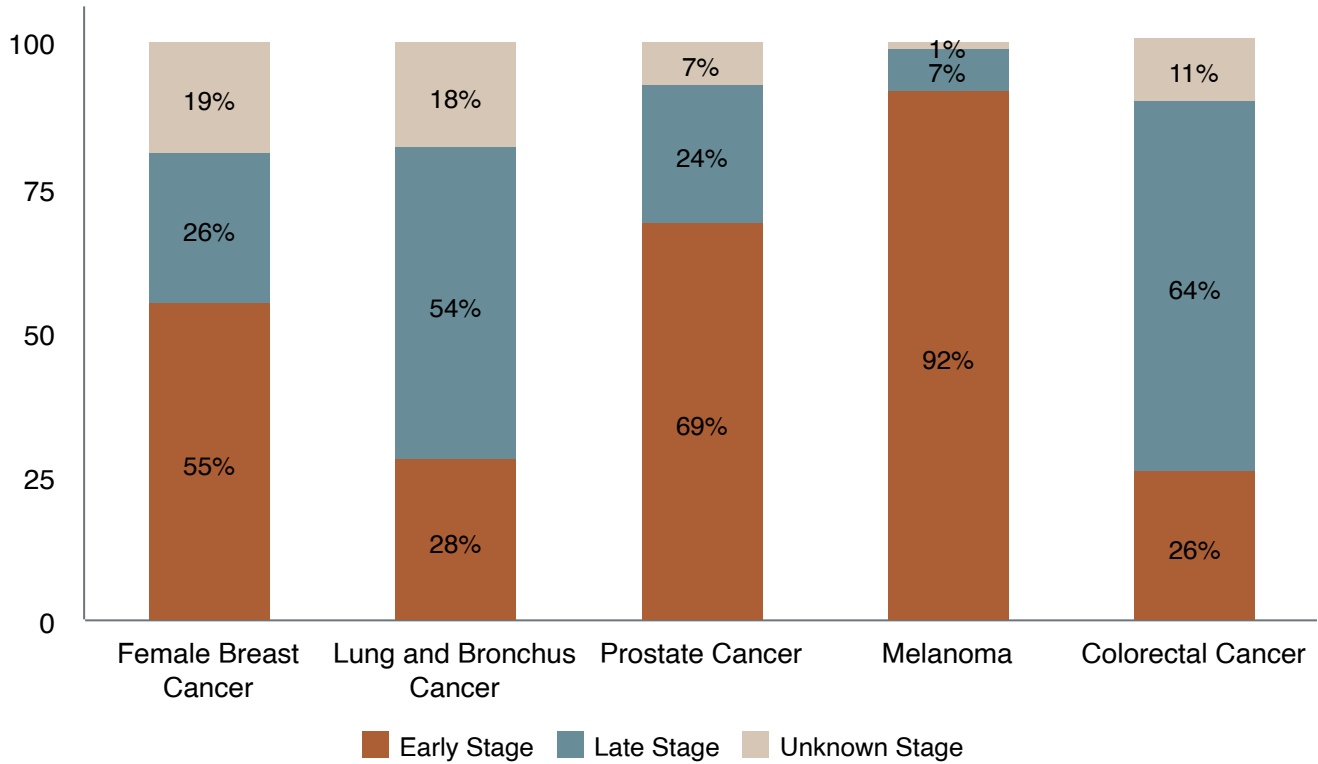
Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

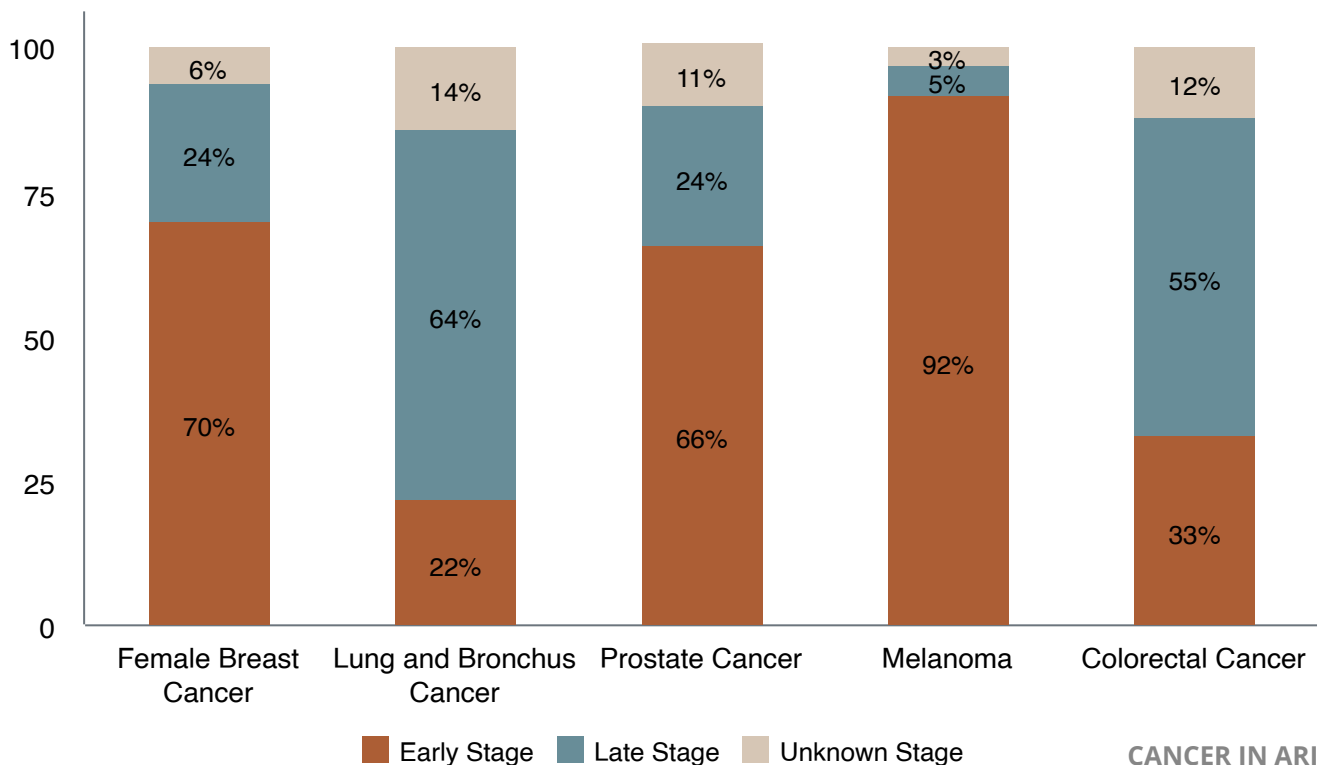
Santa Cruz County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Yavapai County

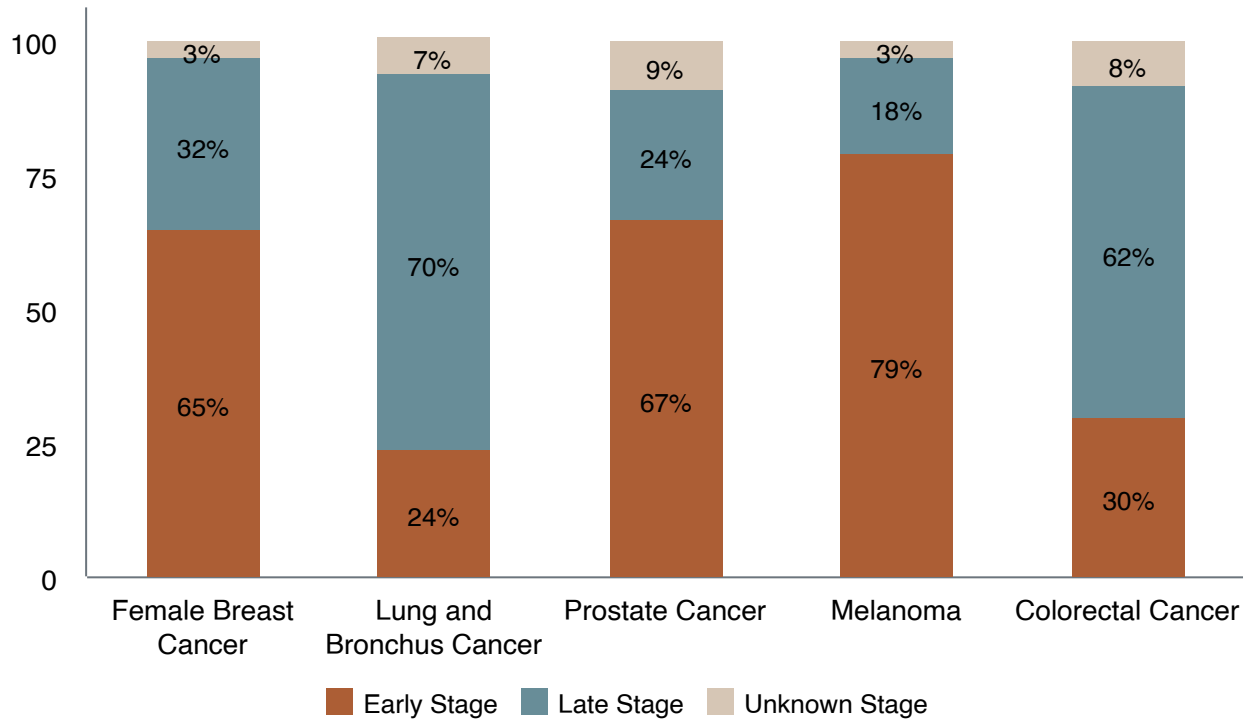
Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

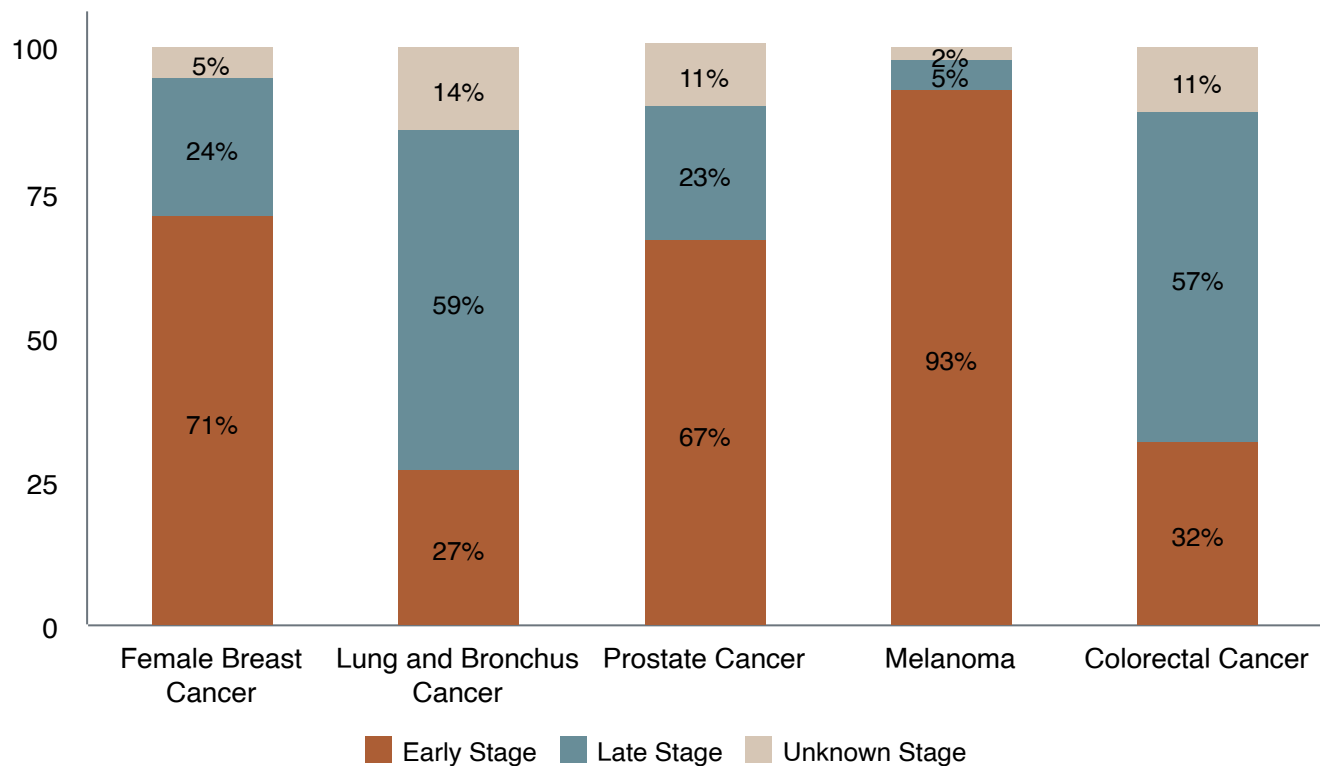
Yuma County

Percentage of Cases at Stage of Diagnosis: 2016-2020



Arizona

Percentage of Cases at Stage of Diagnosis: 2016-2020



Note: The percent of each stage combined may not equal 100 due to rounding.

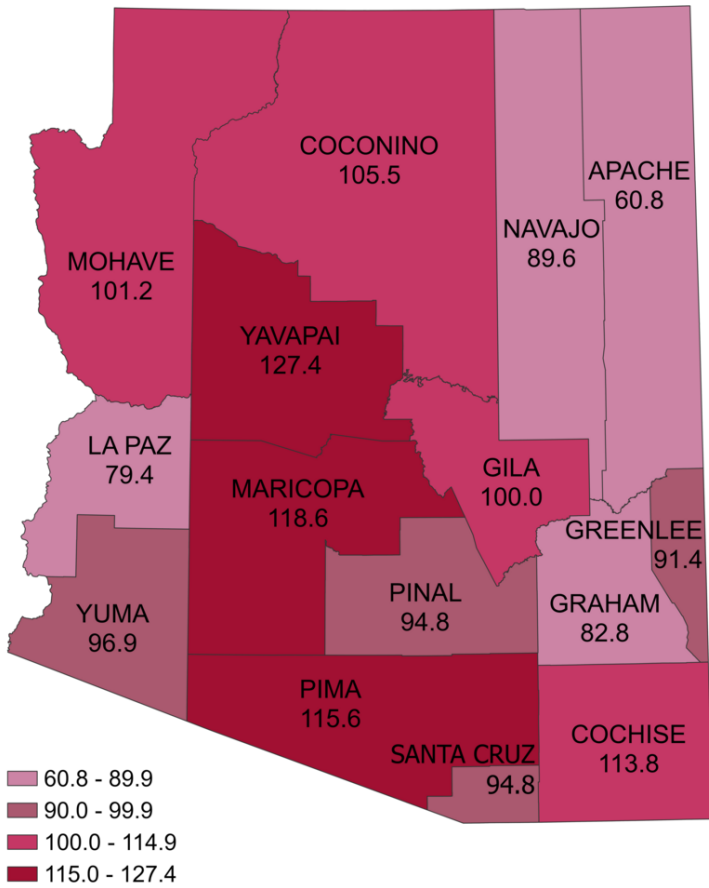
A total of 95 cases of female breast, lung and bronchus, prostate, melanoma, and colorectal cancer had an unknown county.

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**Incidence &
Mortality
County Maps by
Cancer Type
2016-2020**

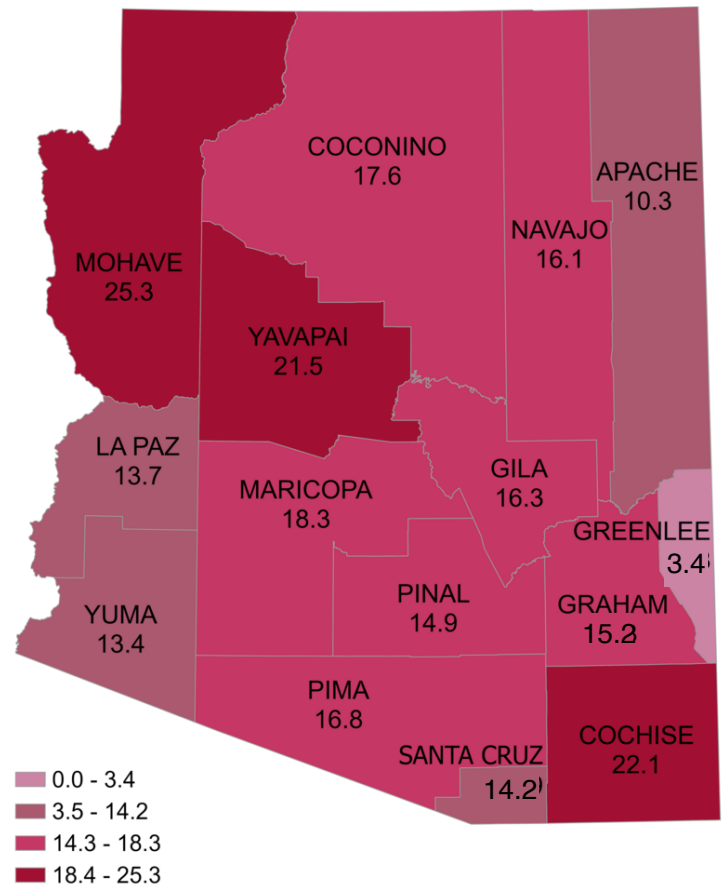
Arizona Age-Adjusted Rates for Female Breast Cancer

Incidence 2016-2020



Note: In 2016-2020, 15 invasive female breast cancer cases were reported with an unknown county

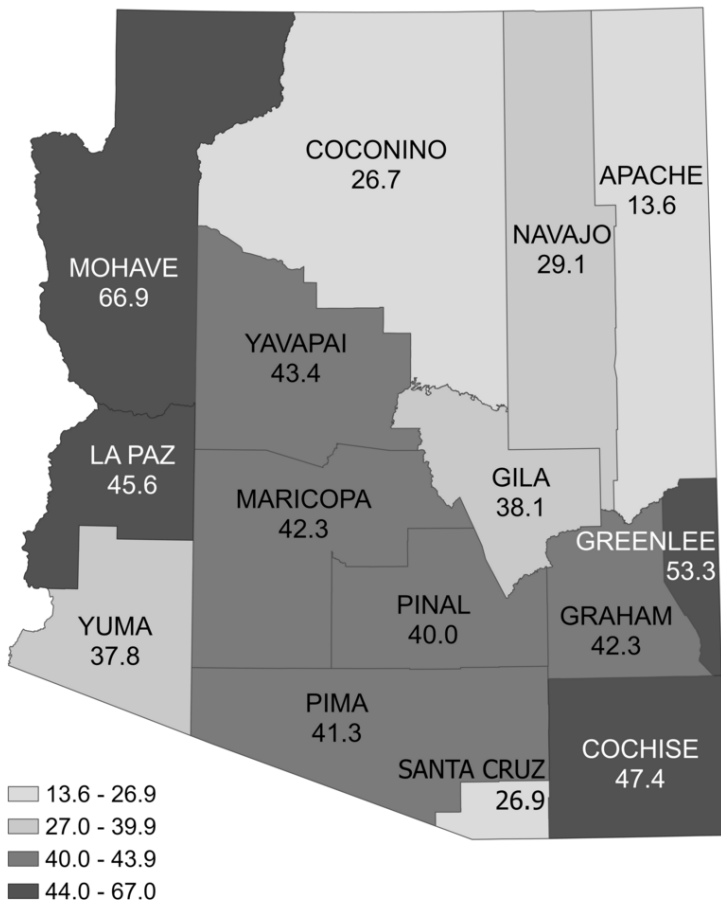
Mortality 2016-2020



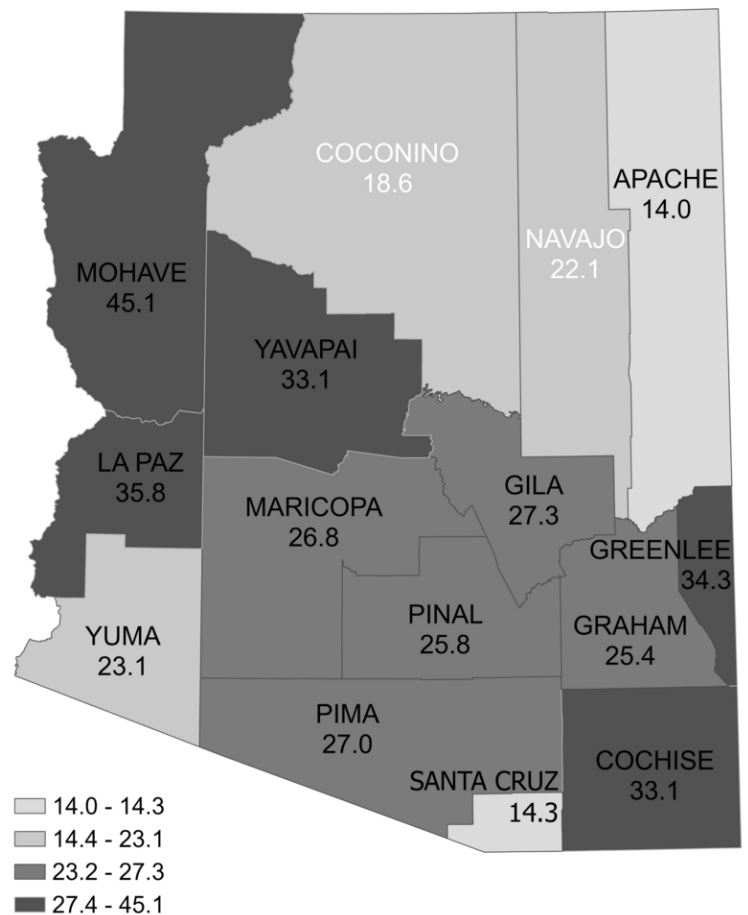
Note: In 2016-2020, 5 female breast cancer deaths were reported with an unknown county

Arizona Age-Adjusted Rates for Lung & Bronchus Cancer

Incidence 2016-2020



Mortality 2016-2020

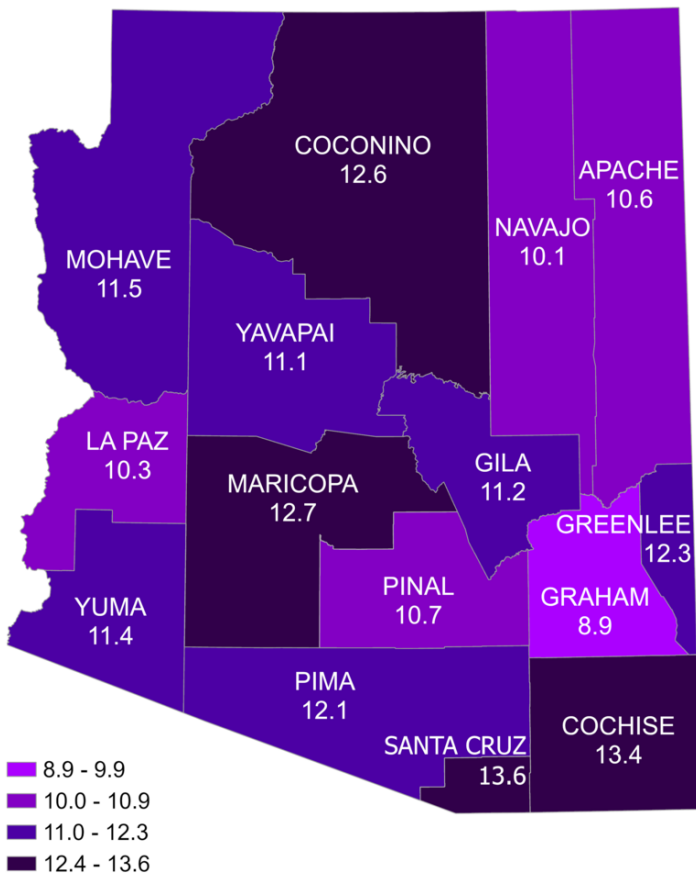


Note: In 2016-2020, 15 invasive lung and bronchus cancer cases were reported with an unknown county

Note: In 2016-2020, 37 lung and bronchus cancer deaths were reported with an unknown county

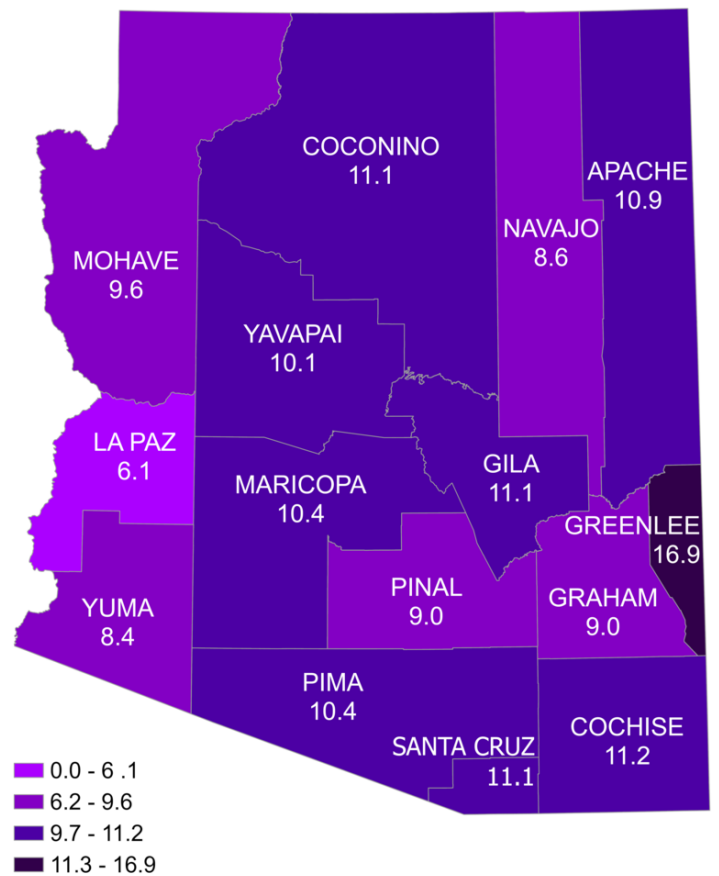
Arizona Age-Adjusted Rates for Pancreatic Cancer

Incidence
2016-2020



Note: In 2016-2020, 7 invasive pancreatic cancer cases were reported with an unknown county

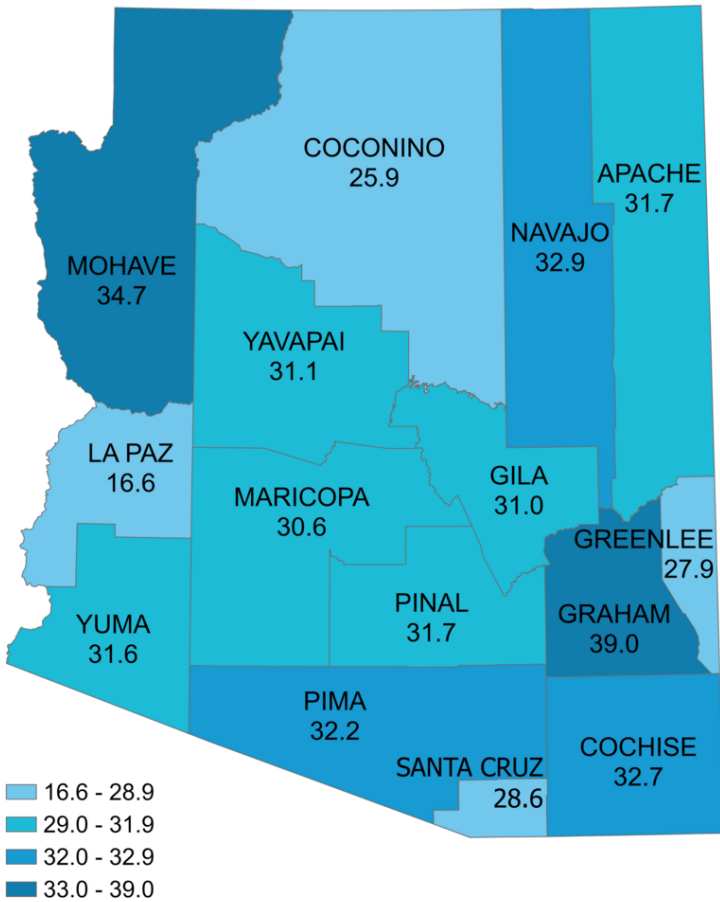
Mortality
2016-2020



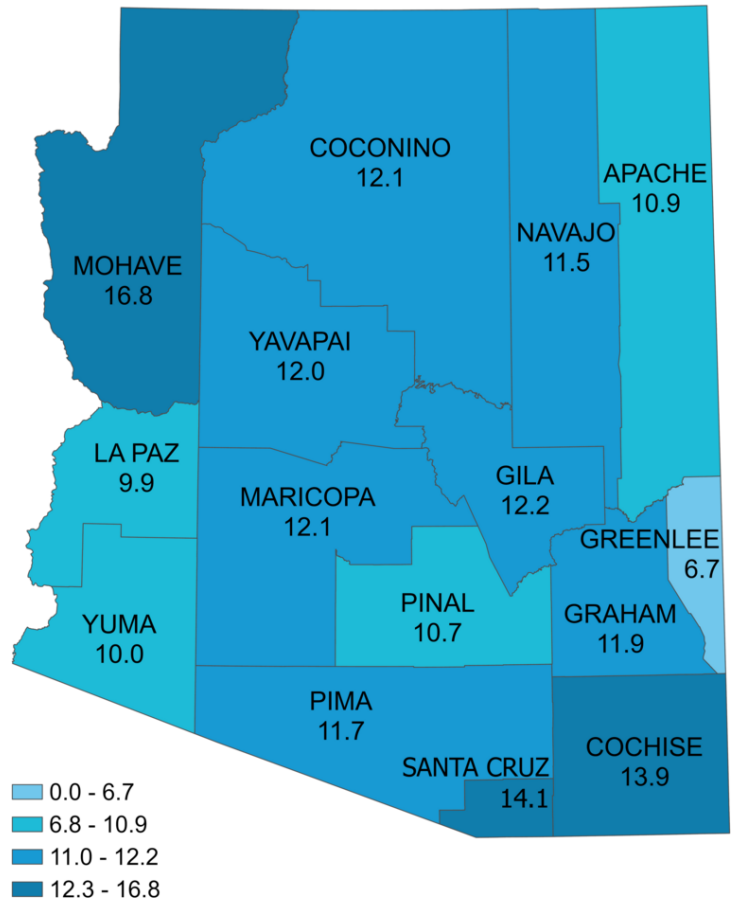
Note: In 2016-2020, 12 pancreatic cancer deaths were reported with an unknown county

Arizona Age-Adjusted Rates for Colorectal Cancer

Incidence 2016-2020



Mortality 2016-2020

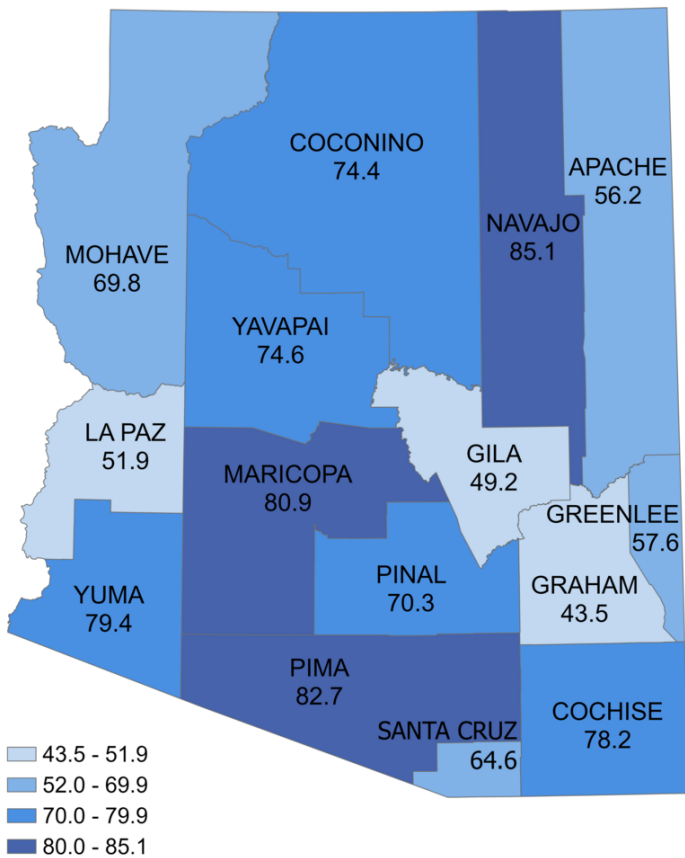


Note: In 2016-2020, 16 invasive colorectal cancer cases were reported with an unknown county

Note: In 2016-2020, 12 pancreatic cancer deaths were reported with an unknown county

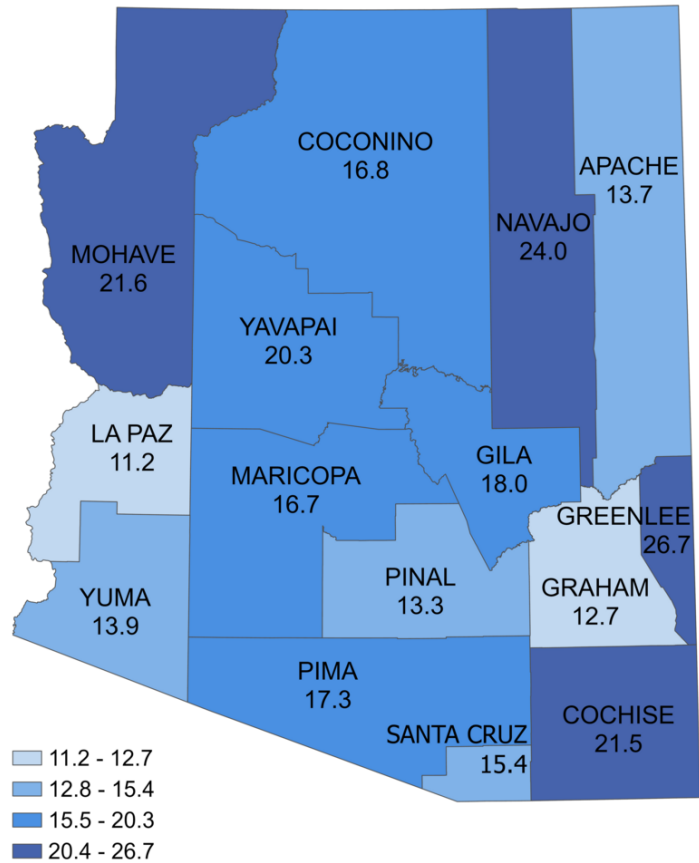
Arizona Age-Adjusted Rates for Prostate Cancer

Incidence 2016-2020



Note: In 2016-2020, 36 invasive prostate cancer cases were reported with an unknown county

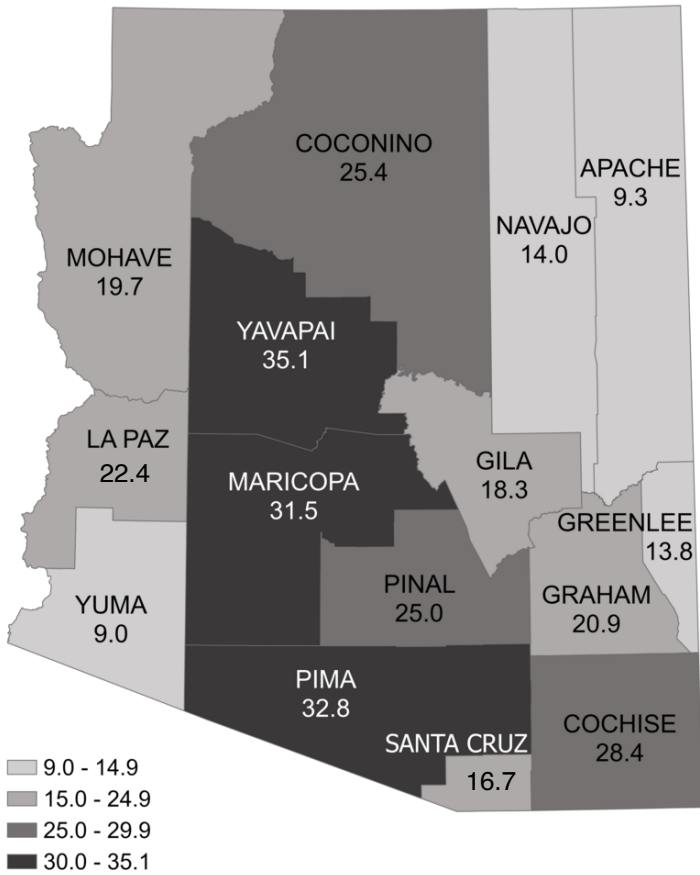
Mortality 2016-2020



Note: In 2016-2020, 5 prostate cancer deaths were reported with an unknown county

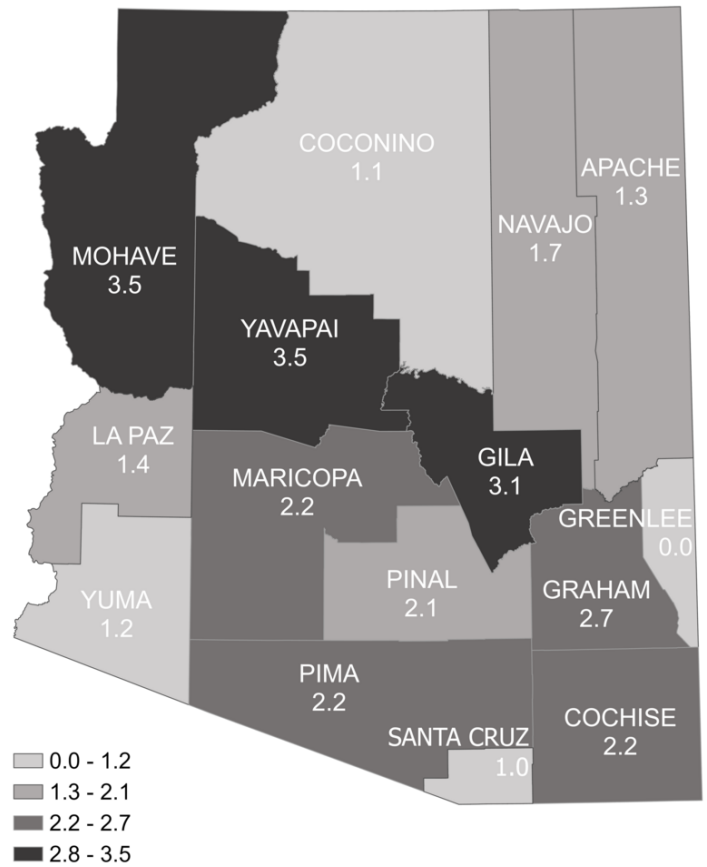
Arizona Age-Adjusted Rates for Melanoma Cancer

Incidence 2016-2020



Note: In 2016-2020, 13 invasive melanoma cancer cases were reported with an unknown county

Mortality 2016-2020



Note: In 2016-2020, 3 melanoma cancer deaths were reported with an unknown county

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Appendices

Technical Notes

Age-Adjusted Incidence and Mortality Rates

Age adjustment is a process used to compare incidence and mortality rates between populations with different age distributions. Since most disease rates increase with age, the older you get the more likely you are to have health complications, age-adjustment uses a standard population distribution to eliminate the confounding effect of age on rates. The age-adjusted rates represent rates for the population of interest, if the population of interest had the same age distribution as the standard population. Beginning with the 1999 data year, federal agencies and the Arizona Cancer Registry have adopted the year 2000 projected U.S. population as the new standard for age-adjusting incidence. All incidence rates were adjusted using the 2000 U.S. standard population by the direct method, and were presented as **number of cancers per 100,000 persons**.

Average Counts

This report contains figures that average five years of data to produce an average annual count for incidence of cancer and mortality. Each averaged number is calculated separately, and rounded to a whole number. Due to rounding in various figures the total may not equal 100%.

Behavior (In Situ and Invasive)

Behavior code: The fifth digit of the morphology code that indicates the growth pattern of a tumor, and whether or not it is invasive.

- **In situ:** No penetration of the basement membrane of the tissue of origin.
- **Invasive:** A malignant tumor that has invaded the basement membrane of the tissue of origin.

COVID-19 Impact

The impact of the COVID-19 Pandemic on patients with cancers and cancer data reporting is reflected in the data available for 2020. Fluctuations in cancer incidence and mortality rates may be due to delays in diagnosis, lack of screening, disruption of patient treatment and follow-up care, and unforeseen health complications due to contracting COVID-19. On a national scale, our standard setters, North American Association of Central Cancer Registries (NAACCR) and Centers for Disease Control and Prevention National Program of Cancer Registries (CDC NPCR), will be implementing a “self-correcting” adjustment for the diagnosis year 2020 due to the pandemic.

Early/Late Stage

Early/Late Stage uses **SEER Summary Stage 2000/2018** (in situ, local, regional, and distant) to reclassify stage into three groups:

- **Early Stage:** in situ and local stage combined; cancer is confined to the site from which it started and has not spread to surrounding tissue or other organs in the body.
- **Late Stage:** regional and distant stage combined; cancer has spread to the lymph nodes or other places in the body.
- **Unknown Stage**

Gender

Report includes cases identified as male and female only. Excluded from the incidence section for years 2016-2020 are: 9 Intersex people, 24 Transgender people and 2 people of Unknown gender. The mortality section had no cases with an Unknown gender.

Incidence Counts

Incidence counts are the number of new cases diagnosed within a certain timeframe. This report include the number of new cases of cancer diagnosed between 2016-2020. More than one cancer case may be reported for an individual. This “one-to-many” relationship results in a higher number of cancer cases than individual persons recorded in the registry. Certain demographic variables may be unknown for some cases. Therefore comparing total numbers between different figures and tables may not yield equal numbers. Additionally, the totals for all categories within a figure or table may not equal the state total.

Technical Notes, cont.

Mortality Data Criteria

Cancer mortality rates were calculated on counts of cancer deaths that meet all of the following criteria:

- The cancer death occurs to an Arizona resident
- The primary cause of death is coded C00 to C97 using ICD-10
- The case is reported to the Arizona Office of Vital Records
- The primary cause of death is classified according to the International Classification of Diseases, Injuries and Causes of Death, Tenth Revision, 1992
- Date of Death from years 2016-2020

Population Denominators

The population numbers used for analysis in this report were taken from United States Census Bureau and modified by SEER. The SEER program applied a race/ethnicity bridge to the population numbers previous to the year 2000 to more accurately estimate the number of minorities in years previous to the 2000 census. New intercensal estimates were developed to reflect the actual yearly changes in populations based on the 2010 census. The Arizona Cancer Registry chose to use these population numbers for calculating age-adjusted rates in order to be comparable with other state and national cancer data.

To ensure accuracy and consistency the Arizona Cancer Registry produces age-adjusted rates using the Surveillance, Epidemiology, and End Results Program (SEER) population denominators based on the most current Census data. Due to delays in the 2020 Census and the release of 2021 SEER population denominators, we are unable to publish 2021 mortality data at this time.

Primary Site

Primary sites were classified according to the International Classification of Diseases for Oncology, Third Edition (a.k.a. ICD-O3).

Race/Ethnicity

Race/Ethnicity is generally identified from the physician's notations in the medical record. Death Records is another source used to identify race. American Indian race is also identified through linkage with Indian Health Service (IHS) data. This IHS linkage identifies cases that may be misclassified as another race. Race/Ethnicity definitions used in this report are; White Non-Hispanic, White Hispanic, Black/African American, American Indian/Alaskan Native, and Asian & Pacific Islander. Incidence rates were divided into two ethnicity categories: Hispanic and Non-Hispanic Whites. Hispanics that have identified as another race group (Black/African American, American Indian/Alaskan Native, Asian & Pacific Islander) are included in that race group only. For this report, all cases with an unknown ethnicity were considered Non-Hispanic.

Residence at Diagnosis

The residency of cases at the time of diagnosis was grouped by county and by Arizona residents. Non-Arizona residents were excluded in the analysis.

Data Source

Mortality data is from the Arizona Department of Health Services, Arizona Health Statistics and Vital Statistics Mortality Data.

Cancer incidence data is from the Arizona Department of Health Services Arizona Cancer Registry. Data is from hospitals, physicians, clinics, nurse practitioners, physician assistants, pathology laboratories, death certificates and state data exchanges.

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