

CANCER IN ARIZONA



**CANCER INCIDENCE AND MORTALITY
1999-2001**



Cancer in Arizona

Cancer Incidence and Mortality 1999-2001

Arizona Cancer Registry
Office of Health Registries
Bureau of Public Health Statistics
150 North 18th Avenue Suite 550
Phoenix, Arizona 85007
(602) 542-7320



Janet Napolitano, Governor

State of Arizona

Susan Gerard, Director
Arizona Department of Health Services

Permission to quote from or reproduce materials from this publication is granted when due acknowledgement is made.

Cancer Incidence and Mortality in Arizona

The 1999-2001 Annual Report for The Arizona Cancer Registry

Co-Authors:

Allison Bernstein, M.S.
Cancer Data Section Manager
Arizona Cancer Registry

Georgia Armenta Yee, B.S.W., C.T.R.
Office Chief
Office of Health Registries

Chris Newton, M.P.A.
Epidemiologist
Arizona Cancer Registry

Special thanks to Richard Porter for his assistance with SAS programming and to Christopher Mrela for providing the mortality statistics. Thank you also to Amy Stoll and Dina Hudson who contributed tremendously to this report.

We acknowledge the Centers for Disease Control and Prevention for its support of the staff and the print and distribution of the Arizona State Annual Report under cooperative agreement U55/CCU921934 awarded to the Arizona Cancer Registry. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Centers for Disease Control and Prevention.

Notice: The Arizona Department of Health Services does not discriminate on the basis of disability in the administration of its programs and services as prescribed by Title II of the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973.

If you need this publication in an alternative format, please contact the ADHS Arizona Cancer Registry at (602) 542-7320.

Bureau of Public Health Statistics
150 N 18th Avenue, Suite 550
Phoenix, Arizona 85007

BUREAU CHIEF Richard S. Porter, M.S.

MEDICAL DIRECTOR Timothy J. Flood, M.D.

OFFICE OF HEALTH REGISTRIES

OFFICE CHIEF Georgia Armenta Yee, B.S.W., C.T.R.

ADMINISTRATIVE SUPPORT Katherine Ponce

SENIOR DATA ANALYST Keith Laubham, M.S.

ARIZONA CANCER REGISTRY

Data Analysis Section

MANAGER: Allison Bernstein, M.S.
EPIDEMIOLOGIST: Chris Newton, M.P.A.
PROJECTS SPECIALIST: Kathleen Lynch

Operations Section

MANAGER: Brenda Smith, B.G.S., C.T.R.
PROJECTS SPECIALISTS: Iris Castro
Antoinette Granata
Kate Quintero
Melody Trieu

ADMINISTRATIVE SUPPORT Fatima Benitez

Table of Contents

<i>Table of Figures</i>	<i>iv</i>
<i>List of Tables</i>	<i>vii</i>
<i>List of Maps</i>	<i>viii</i>
EXECUTIVE SUMMARY	1
<i>Arizona Cancer Registry (ACR) Overview</i>	2
<i>Accomplishments and Activities</i>	3
<i>Confidentiality Definition and Procedures</i>	5
<i>Introduction to the Annual Report</i>	6
<i>Methods and Technical Notes</i>	6
Data Quality and Completeness Standards	7
Analysis Criteria	8
Incidence -Counts	9
Age-Adjusted Rates—Incidence and Mortality	9
Average Counts and Rates	10
Population Denominators.....	10
Caution in Using Small Numbers	10
CHAPTER 1: CANCER INCIDENCE	11
CHAPTER 2: CANCER MORTALITY	31
CHAPTER 3: INCIDENCE AND MORTALITY OF SELECT CANCERS	36
<i>Female Breast Cancer in Arizona</i>	37
<i>Colorectal Cancer in Arizona</i>	42
<i>Lung Cancer in Arizona</i>	47
<i>Melanoma in Arizona</i>	52
<i>Prostate Cancer in Arizona</i>	57
APPENDIX	62

Table of Figures

Figure 1: Ten Leading Sites* of Invasive Cancer Cases by Site and Gender, Average Annual Count, 1999-2001	13
Figure 2: Invasive Case Distribution By Site Based on Average Annual Count, Arizona, 1999-2001	14
Figure 3: Residency of Invasive Average Annual Cancer Cases in Arizona, 1999-2001	15
Figure 4: Invasive Cancer Cases By Race/Ethnicity in Arizona, Average Annual Count, 1999-2001	15
Figure 5: Invasive Cancer Cases By Age and Gender in Arizona, Average Annual Count, 1999-2001.....	16
Figure 6: Age-Adjusted Incidence Rates Among Arizona Males All Sites, 1995-2001.....	23
Figure 7: Age-Adjusted Incidence Rates Among Arizona Females All Sites, 1995-2001	23
Figure 8: Ten Leading* Sites of Cancer Deaths by Site and Gender, Average Annual Count, 1999-2001.....	33
Figure 9: Age-Adjusted Cancer Mortality Rates for All Cancers by Gender and Year, Arizona, 1991-2001.....	34
Figure 10: Cancer Mortality by Age in Arizona, Average Annual Count, 1999-2001.....	34
Figure 11: Age-Adjusted Mortality Rates of Invasive Cancer Cases by Race/Ethnicity, 1999-2001	35
Figure 12: Average Annual Age-Adjusted Mortality Rates For Select Cancers by Race/Ethnicity, Arizona, 1999 - 2001.....	35
Figure 13: U.S.* and Arizona Female Breast Cancer Age-Adjusted Incidence Rates, 1999-2001	37
Figure 14: Counts of Invasive and <i>In Situ</i> Female Breast Cancer in Arizona, 1999-2001	37
Figure 15: Percentage of Female Breast Cancer Cases by SEER Summary Stage, 1999-2001	38
Figure 16: Five-Year Percent Relative Female Breast Cancer Survival, 1993-1998.....	38
Figure 17: Age-Adjusted Incidence and Mortality Rates for Female Breast Cancer in Arizona, 1995-2001	39

Figure 18: Average Annual Age-Adjusted Incidence and Mortality Rates for Female Breast Cancer By County, 1999-2001	40
Figure 19: Average Annual Age-adjusted Incidence and Mortality Rates for Female Breast Cancer by Race/Ethnicity, 1999-2001	41
Figure 20: U.S.* and Arizona Age-Adjusted Incidence Rates of Colorectal Cancer by Gender, 1999-2001	42
Figure 21: Percentage of Colorectal Cancer Cases by SEER Summary Stage, 1999-2001	43
Figure 22: Five-Year Percent Relative Colorectal Cancer Survival, 1993-1998.....	43
Figure 23: Age-Adjusted Incidence and Mortality Rates of Colorectal Cancer in Arizona, 1995-2001	44
Figure 24: Average Annual Age-Adjusted Incidence and Mortality Rates of Colorectal Cancer By County, 1999-2001	45
Figure 25: Average Annual Age-Adjusted Incidence and Mortality Rates of Colorectal Cancer by Race/Ethnicity, 1999-2001	46
Figure 26: U.S.* and Arizona Age-Adjusted Incidence Rates of Lung Cancer by Gender, 1999-2001	47
Figure 27: Percentage of Lung Cancer Cases by SEER Summary Stage, 1999-2001.....	48
Figure 28: Five-Year Percent Relative Lung Cancer Survival, 1993-1998.....	48
Figure 29: Age-Adjusted Incidence and Mortality Rates for Lung Cancer in Arizona, 1995-2001	49
Figure 30: Average Annual Age-Adjusted Incidence and Mortality Rates for Lung Cancer By County, 1999-2001	50
Figure 31: Age-Adjusted Incidence and Mortality Rates for Lung Cancer by Race/Ethnicity, 1999-2001	51
Figure 32: U.S.* and Arizona Age-Adjusted Incidence Rates of Melanoma Cancer by Gender, 1999-2001	52
Figure 33: Percentage of Melanoma Cases by SEER Summary Stage, 1999-2001.....	53
Figure 34: Five-Year Percent Relative Melanoma Survival, 1993-1998	53
Figure 35: Age-Adjusted Incidence and Mortality Rates for Melanoma in Arizona, 1995-2001	54
Figure 36: Average Annual Age-Adjusted Incidence and Mortality Rates for Melanoma by County, 1999-2001	55
Figure 37: Age-adjusted Incidence and Mortality Rates for Melanoma by Race/Ethnicity, 1999-2001	56

Figure 38: U.S. and Arizona Prostate Cancer Age-Adjusted Incidence and Mortality Rates, 1999-2001	57
Figure 39: Percentage of Prostate Cancer Cases by SEER Summary Stage, 1999-2001	58
Figure 40: Five-Year Percent Relative Prostate Cancer Survival, 1993-1998	58
Figure 41: Age-Adjusted Incidence and Mortality Rates for Prostate Cancer in Arizona, 1995-2001	59
Figure 42: Average Annual Age-Adjusted Incidence and Mortality Rates for Prostate Cancer by County, 1999-2001	60
Figure 43: Age-adjusted Incidence and Mortality for Prostate Cancer by Race/Ethnicity, 1999-2001	61

List of Tables

Table 1: Cancer Cases by Primary Site and Behavior, Average Annual Count, 1999-2001	17
Table 2: Invasive Cancer Cases by Primary Site and Gender, 1999-2001	19
Table 3: Age-Adjusted Incidence Rates of Invasive Cancer Cases by Primary Site and Gender, 1999-2001	24
Table 4: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender, All Races, in Arizona, 1999-2001	28
Table 5: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for White, Non-Hispanics in Arizona, 1999-2001	28
Table 6: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for White, Hispanics in Arizona, 1999-2001	29
Table 7: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for Blacks in Arizona, 1999-2001	29
Table 8: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for American Indians in Arizona, 1999-2001	30
Table 9: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for Asians/Pacific Islanders in Arizona, 1999-2001	30

List of Maps

Incidence of Invasive Cancer in Arizona.....	12
Cancer Mortality in Arizona	32

Executive Summary

The Arizona Cancer Registry (ACR) is a population-based surveillance system funded by the state of Arizona with assistance from the Centers for Disease Control and Prevention (CDC). It is designed to collect, manage and analyze information on incidence and survival for Arizona residents having been diagnosed with cancer. Highlights of the findings for Arizona in 1999-2001 include:

Cancer Incidence in Arizona, 1999-2001

- An average of 23158 cases of cancer were diagnosed and reported per year in the state with an average annual age-adjusted rate of 419.2 per 100,000.
- Mohave County had the highest average annual age-adjusted incidence rate (445.3 per 100,000) and Maricopa County had the highest average annual number of cases (12,425). Apache County had both the lowest average annual age-adjusted incidence rate (187.4 per 100,000) and average annual number of cases (96).
- The most common types of cancer diagnosed was prostate cancer in males, and breast cancer in females. Lung cancer and colorectal cancer were the second and third most commonly diagnosed cancers in both sexes. These four cancers accounted for 56% of all cancer cases.
- 87% of cancers were diagnosed in White, non-Hispanics. Hispanics accounted for 7.2% of cancer cases.
- The largest number of cases was diagnosed in the 70-79 year old age group. About 70% of all cancer cases were among people ages 60 and older.
- Trends of cancer incidence rates in Arizona have mimicked the increases and decreases in nationwide rates. Arizona rates have consistently been slightly lower than national rates.
- Females have lower rates of cancer than males in Arizona (352 per 100,000 versus 422 per 100,000 in 2001).

Cancer Mortality in Arizona, 1999-2001

- An average of 8,920 cancer deaths were reported per year in the state giving an average annual age-adjusted rate of 172.4 per 100,000.
- Gila County had the highest average annual age-adjusted cancer mortality rate (209.8 per 100,000) and Maricopa County had the highest average annual number of cancer deaths (5,012). La Paz County had both the lowest average annual age-adjusted mortality rate (103.5 per 100,000) and Greenlee County had the lowest average annual number of cancer deaths (14).
- Lung cancer caused the greatest number of cancer deaths between both sexes. Prostate cancer in males and breast cancer in female caused the second highest number of cancer deaths, followed by colorectal cancer in both sexes. This trend is consistent among different races and ethnicities.
- Both males and females have seen a slight decrease in cancer death rates between 1995 and 2001, though the decrease is slightly greater in males than females. Males have a higher age-adjusted rate of cancer mortality (199.8 per 100,000 in 2001) than females (147.5 per 100,000 in 2001).

- The greatest number of cancer deaths occurred in persons between the ages of 65 and 74 years old.
- Blacks have the highest age-adjusted rate of cancer deaths (211.9 per 100,000) and Asians have the lowest rate (110.2 per 100,000).

Arizona Cancer Registry (ACR) Overview

Historical Perspective: The ACR began operating in 1980 and started collecting information in 1981. Initially, the registry was a voluntary hospital-based reporting system. Mandatory reporting of all Arizona cases became effective in January 1, 1992. The rules require hospitals, clinics and physicians to report cases.

Funding: The ACR receives its funding from state legislature appropriations to the Arizona Department of Health Services. An enhancement fund to support and improve the registry is provided through the National Program of Cancer Registries (NPCR) from a CDC cooperative agreement (U55/CCU921934).

Goals of the ACR:

- To collect complete and accurate incidence information and monitor incidence patterns
- To improve and maintain high standards in the quality of information collected
- 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 this state that need intervention programs or epidemiological research, detection and prevention
- To perform studies
- To provide biostatistic and epidemiologic information to the medical community

The services provided to reporting facilities include: exchange of follow-up information, consultation and assistance, statistical support, response to data requests, response to coding and abstracting questions (technical support), training workshops, support of cancer registry software, and provision of all forms and manuals.

The quality assurance program is a comprehensive program that includes: reviewing data to ensure completeness and accuracy, visual editing, immediate and batch edits utilizing the Rocky Mountain Cancer Data System (RMCDS) software program and the CDC/North American Association of Central Cancer Registries (NAACCR) EDITS, additional RMCDS reports reviewed for accuracy, duplicate report checking, on-site case ascertainment reviews to determine the completeness of reporting at hospitals, on-site reabstracting studies to ascertain the validity of the data submitted, internal review, and a timeliness and completeness monitoring program.

Annual Report: This annual report represents persons diagnosed with cancer in 1999-2001 who reside in Arizona. 2001 marks the seventh complete year of population-based incidence reporting for Arizona. The registry collects information on all invasive and *in*

situ cancers with the exception of cervix *in situ*. The registry also collects cases of benign brain tumors and only regional and distant staged skin cancers (basal and squamous cell carcinomas).

We hope that this document can provide useful information to assist with cancer control activities and provide information for intervention and prevention programs.

Acknowledgments: We would like to acknowledge all participating hospitals, clinics, physicians, and pathology laboratories (freestanding and hospital-based). The hospitals account for most of the reportable cases, providing complete identification and registration of each person with a diagnosis of cancer. Without their cooperation this report would not be possible.

We would like to recognize the New Mexico Tumor Registry (NMTR), which travels into Arizona to collect information in the Indian Health Services (IHS) facilities. Through our agreement with NMTR and IHS, we are able to have complete reporting from Native Americans in the state.

Accomplishments and Activities

Case Reporting:

- A total of 83 hospitals report to the ACR, either directly or indirectly. This report includes data from all USPHS Indian Hospitals reporting through the New Mexico Tumor Registry, all non-federal hospitals and five of six federal facilities (VA and military). In addition, the ACR receives cases from outpatient freestanding clinics and physician offices.
- Of the 83, the ACR travels to 13 hospitals (less than 50 beds) to perform data collection of cancer cases. The remaining hospitals submit their reports to the ACR electronically.
- The ACR also performs casefinding at 34 freestanding and hospital pathology laboratories in order to capture unreported cases. Most cases that were only identified at pathology laboratories were prostate and melanoma.
- To collect the cases of Arizona residents traveling to other states for diagnosis and/or treatment, the ACR has several interstate data exchange agreements. Data is exchanged with all neighboring states. ACR receives Arizona resident cases from 18 states across the U.S.
- All information collected, abstracted and coded is done so in a format consistent with national standards. The Arizona Coding Handbook includes the standards of the American College of Surgeons Commission on Cancer.

Data Submission To National/Government Organizations:

- The ACR is a member of the North American Association of Central Cancer Registries (NAACCR), an organization for cancer registries, governmental agencies, professional associations, and private groups in North America interested in enhancing the quality and use of cancer registry data. ACR participates in a Call for

Data every year. This organization publishes *Cancer in North America*, which addresses both incidence and mortality.

- The ACR submits data to Central Brain Tumor Registry of the United States (CBTRUS). This is the largest population-based database of primary brain tumors.
- The ACR submits data to the CDC, NPCR-CSS (National Program of Cancer Registries -Cancer Surveillance System). The CDC and National Cancer Institute (NCI) publish the *United States Cancer Statistics*. Thus is the official federal statistics on cancer incidence from registries with high quality data.

Data Submission To State Organizations:

- The ACR provides cancer staging information on female breast cancer to the Well Woman Healthcheck Program.
- The ACR contributes statistical information to the Arizona Comprehensive Cancer Coalition Planning Committee, which is currently in the process of creating a 5-year comprehensive state cancer plan.

Data Quality, Timeliness and Completeness:

- NAACCR established a certification process for central cancer registries. Data for 2000 and 2001 was submitted for evaluation and feedback regarding our achievement in the areas of case ascertainment, completeness of information on critical variables, data accuracy and timeliness.
- The ACR was recognized for achieving the Silver Standard, the second highest standard possible.
- Death certificate clearance procedures were performed on 2000 and 2001 data. The percentage of *death certificate only* cases after clearance was 1.81% for 2000 and 2.3% for 2001. The NAACCR “gold standard” is <3%. The ACR met the gold standard.
- From 1999-2001, ACR completed an average of 75 requests per year for data and special analysis.
- The ACR maintains a monitoring system that tracks the timeliness and completeness of hospital reporting.
- An assessment of completeness, timeliness, and quality was performed on the ACR by the CDC. The Technical Assistance and Audit was performed in 2003. The audit included cases diagnosed in 2000 among Arizona residents. CDC’s national standard for central cancer registry completeness states “ninety-five percent of unduplicated, expected, malignant cases of reportable cancer occurring in State residents should be reported within 24 months of the close of each diagnosis year.” ACR’s overall estimated case completeness of 97.5% surpassed the NPCR standard for the cancer sites audited. ACR’s overall data accuracy rate for the four cancer sites audited was 93.4%.

Analysis and Special Studies:

- The Arizona Cancer Registry is involved with research studies in Arizona. The ADHS Human Subjects Review Committee has approved the studies. The registry's role in the first three studies mentioned below include identifying incident cancer

cases from the registry that are eligible for the study, subject recruitment, and technical assistance.

Southwest Hormone, Insulin, Nutrition and Exercise Study (S.H.I.N.E.)

- The Arizona Cancer Center conducted a population-based case-control breast cancer study that examined risk factors among Hispanic, American Indian, and non-Hispanic whites.

Arizona Family Registry for Colorectal Cancer Studies

- The Arizona Cancer Center is conducting a study that is part of a larger international effort to develop a Colorectal Cancer Family Registry for future genetic and epidemiologic studies. The primary purpose of the registry is to facilitate large, informative studies about what causes colorectal cancer and how this cancer might be prevented.

American Cancer Society Study of Cancer Survivors II (SCS-II)

- The American Cancer Society conducted this population-based sample study of 2, 5, and 10-year cancer survivors that focused on quality of life, psychosocial functioning, and needs assessment. The study focused on survivors of breast, prostate, colorectal, urinary bladder, skin melanoma, and uterine cancer.

Geographic-Based Research in Cancer Control & Epidemiology

- This project was conducted by the Arizona Cancer Center. The purpose of the study was to analyze the ability of county level distributions of cancer to reflect the cancer risk in smaller geographic units. The registry analyzed cancer data for all cancers and five specific cancer sites to identify the rates of cancer at the census tract and county level for cases diagnosed from 1995-2000.

Education and Training:

- Newsletters were published about three times per year. The newsletters include information on cancer data, educational opportunities, quality assurance and procedural information.
- The ACR has held workshops for reporting facilities in the goal of collecting quality information. Types of workshops conducted include Introductory Abstracting Workshop, and advanced training on new reporting requirements (i.e. collaborative staging).

Confidentiality Definition and Procedures

Confidentiality: All information identifying a specific individual is considered “medical information” as defined in the Arizona Administrative Code, A.A.C., Title 9, Chapter 1, Article 3, R9-1-311 through R9-1-312: Disclosure of Medical Records. Case reports were treated as confidential medical data.

As per A.R.S. §36-133 C. information collected on individuals by the surveillance system that can identify an individual is confidential.

In addition, the ACR had established policies and procedures for the management and disclosure of confidential information to further protect privacy. All patient information is maintained in a confidential manner, consistent with the law, between the ACR and the reporting source. Policies do allow releasing aggregate data to anyone on request.

Copies and information: Additional information can be obtained by contacting the Arizona Cancer Registry at (602) 542-7320 or at www.hs.state.az.us/phs/phstats/acr. Copies of this report are available on the website.

Introduction to the Annual Report

The 1999-2001 Cancer Incidence and Mortality in Arizona Annual Report contains three chapters that report information on the status of cancer incidence and mortality in Arizona for the years 1999-2001. The first chapter contains information on cancer incidence in Arizona and had been presented by demographics and primary site. The second chapter contains information on cancer mortality. This chapter presents cancer data that has been averaged over the three-year period covered in this report. For year-specific data on cancer mortality refer to the Arizona Health Status and Vital Statistics Report which is available online at <http://www.azdhs.gov/plan/report/ahs/index.htm>. The third and final chapter contains in depth statistics on select cancers including female breast, colorectal, lung, melanoma, and prostate.

The format of the chapters of this report was chosen so that information about cancer in Arizona would be easy to understand and meaningful in its presentation. Tables with a large number of incidence rates that were suppressed because of small numerators (case counts) were not included. Similarly, some incidence rates in the provided tables were also suppressed in instances where the numbers of cases were less than 10.

The user of this report should take care to review the methods of collecting and presenting the data, and all footnotes attached to the tables, and graphs before interpreting the information.

Methods and Technical Notes

This annual report includes cases diagnosed in 1999, 2000 and 2001, and trend data dating back to 1995. This report focuses on invasive cancer cases with the exception of localized basal and squamous cell skin cancer cases, which were not reportable to the ACR. *In situ* cases were included in Table 1, Cancer Cases by Primary Site and Behavior, Average Annual Count, 1999-2001. *In situ* urinary bladder cases were also combined with invasive urinary bladder cases in many of the tables and graphs depicting invasive cancer cases. This approach was used to create data comparable to the Surveillance,

Epidemiology, and End Results (SEER) program reports. This report used the SEER definitions of the cases by cancer type, and this is presented in the tables in the Appendix.

Data Quality and Completeness Standards

All case reports were rigorously reviewed for errors. These errors were corrected before inclusion into the data set used in this report. These error checks included:

- 1999, 2000 and 2001 North American Association of Central Cancer Registries (NAACCR) edits
- A manual visual editing of all cases seen at multiple facilities
- A validity check of codes in all fields used in the report analysis
- Random and targeted visual editing on unduplicated cases
- Duplicate error checking of all cases

The data used in this report for diagnosis years 2000 and 2001, achieved the “Silver” standard set by NAACCR. (The ACR did not participate in data certification for diagnosis year 1999.) Individual elements measured for certification were as follows:

1) ACR achievement for the % of cases that were “Death Certificate Only”:	<u>2000</u>	<u>2001</u>	NAACCR <u>Gold Standard</u>
	1.81%	2.3%	<3%

2) Completeness of case ascertainment of the expected number of cases as estimated by the SEER U.S. incidence to mortality ratio:	<u>2000</u>	<u>2001</u>	NAACCR <u>Gold Standard</u>
	91.47%,	92.8%	95 %.

3) The completeness of information recorded achieved the “Gold” standard for the rated fields of:	<u>Percent Missing</u>	
	<u>2000</u>	<u>2001</u>
<u>Field Name:</u>		
Age at Diagnosis	.01%	0.0%
Sex	.03%	0.0%
Race	1.35%	1.2%
State/County	.03%	0.0%

The following elements also achieved the “Gold” standard in 2000 and 2001:

- 100 percent of the cases passed the “EDITS” data quality program
- Duplicates for primary cases were less than 1 per 1000 cases
- The data was timely. All data were received within 24 months of the close of the diagnosis year

Note: the VA Medical Centers in Tucson and Prescott are not included in this report because they are not required to report these cases to the state. The results of this report must be interpreted with these exclusions in mind.

Analysis Criteria

Cases were classified by primary site and/or histologic type, behavior, race and ethnicity, age at diagnosis, sex and county of residence at diagnosis.

Primary Site and Histologic Type

Primary site and histologic type were classified according to the International Classification of Diseases for Oncology, Second and Third Editions (a.k.a. ICD-O-2 and ICD-O-3 editions). Cases diagnosed in 1999 and 2000 were coded using ICD-O-2 and cases diagnosed in 2001 were coded using ICD-O-3. According to the ICD-O-3, “There is no change in topography (primary site) between the Second and Third Editions of ICD-O, and the major changes in the morphology (histology) section were in the leukemias and lymphomas.”

Behavior

The definitions of behavior code, which defines *in situ* and invasive neoplasms, did not change from the second to the third edition. However, behavior codes for certain cancers were changed resulting in the cancer no longer being reportable.

Behavior code: The 5th digit of the morphology code that indicates the growth pattern of a tumor, and whether or not it is invasive.

- Invasive: A malignant tumor that has invaded the basement membrane of the tissue of origin
- *In situ*: Non-infiltrating, non-invasive intraepithelial tumor cells that have not penetrated the basement membrane or extended beyond the epithelial tissue

Race/Ethnicity

A hospital registrar upon reviewing the physician’s notations and the medical record admission information generally obtains information concerning a person’s race and ethnicity. Race/Ethnicity definitions used in this report are; White non-Hispanic, White Hispanic, Black, American Indian, and Asian/Pacific Islander. Cases having an unknown race diagnosed with a primary site of melanoma of the skin were coded as White non-Hispanic.

Incidence rates were divided into two ethnicity categories: Hispanic and non-Hispanic. Hispanic ethnicity may be assigned to cases with unknown ethnicities that have a Spanish last name. This type of designation is based on the New Mexico Tumor Registry’s “Hispanic Surname Checking Program.” For this report, all cases with an unknown ethnicity were considered non-Hispanic.

Age at Diagnosis

Age groups were divided into nine 10-year age groups for incidence counts for ages 0-79 and for all cases age 80 and above. Mortality counts were divided into eight 10-year age groups from ages 5-84, a <1 year age group, a 1-4 year age group, and an 85+ age group.

Residence at Diagnosis

The residency of cases at the time of diagnosis was grouped by county and by Arizona versus non-Arizona resident.

Incidence Counts

Incidence counts were the number of cases diagnosed with a reportable cancer in 1999-2001 by diagnosis year. A cancer case can either be a tumor originating in one primary site or may be a systemic cancer of a specific histologic type. More than one cancer case may be reported for an individual. This 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.

Age-Adjusted Incidence and Mortality Rates

Age-adjustment is a process used to compare incidence and mortality rates over time or among geographic areas or populations that have different age distributions. Because most disease rates increase with increasing age, age-adjustment eliminates the confounding effect of age when comparing rates.

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 and mortality rates. Until this year, epidemiologists used a projection of the standard populations from 1970 or even the 1940's to standardize the numbers.

Since our statistics were adjusted for the 2000 population, a few things will appear to occur:

- The age-adjusted incidence and death rates from all cancers combined will increase by about 20%, even though the actual risk of being diagnosed with or dying from cancer will not change at any given age
- The new approach will increase the age-adjusted rate of cancers that occur at older ages, and decrease the rate of childhood cancers
- Some major improvements in cancer, which have occurred in young and middle-aged people, will be diluted
- Racial and ethnic differences will be amplified in some cases and diminished in others

All 1999-2001 incidence and mortality 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.

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 140.0 through 208.9 if using ICD-9* and C00 to C96 if 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, Ninth Revision, 1975, for diagnosis year 1999, and International Classification of Diseases, Injuries and Causes of Death, Tenth Revision, 1992, for diagnosis years 2000 and 2001.

Average Counts and Rates

This report contains several figures and tables that average three years of data to produce an average annual count. When doing so, each averaged number is calculated separately, and rounded to a whole number. Due to rounding the *total* rounded value may not equal the total of two individually calculated numbers in that category.

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. The ACR chose to use these population numbers for calculating age-adjusted rates in order to be comparable with other state and national cancer data.

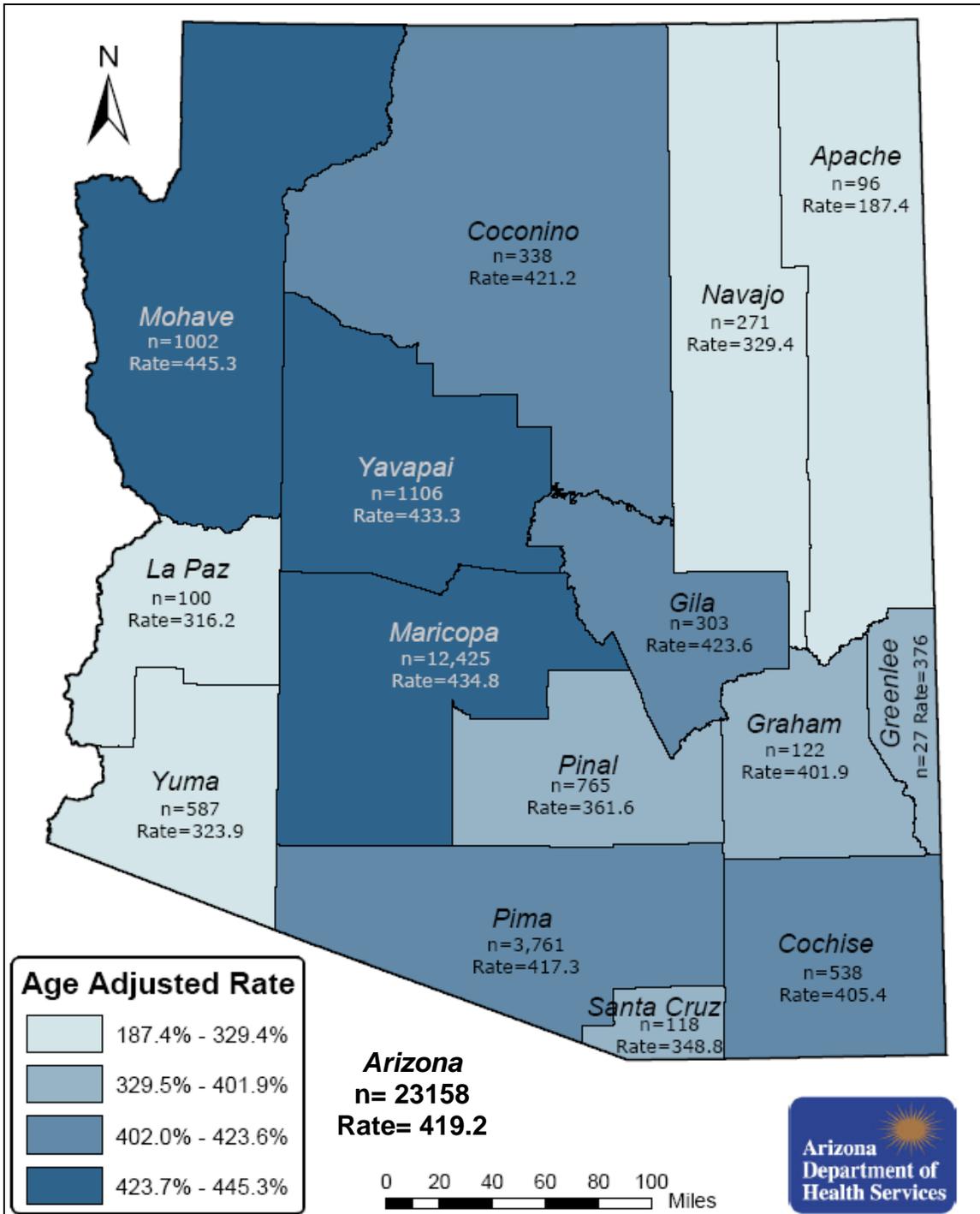
Caution in Using Small Numbers

The intent of these data is to provide the reader with useful information on cancer in Arizona. However, it is important not to mislead the data users on the meaning of this data. Rates or other analysis based on fewer than 10 cases were not considered statistically reliable and were excluded from this report. When a rate is excluded for this reason, it is denoted by a '---' in the rate tables.

CHAPTER 1

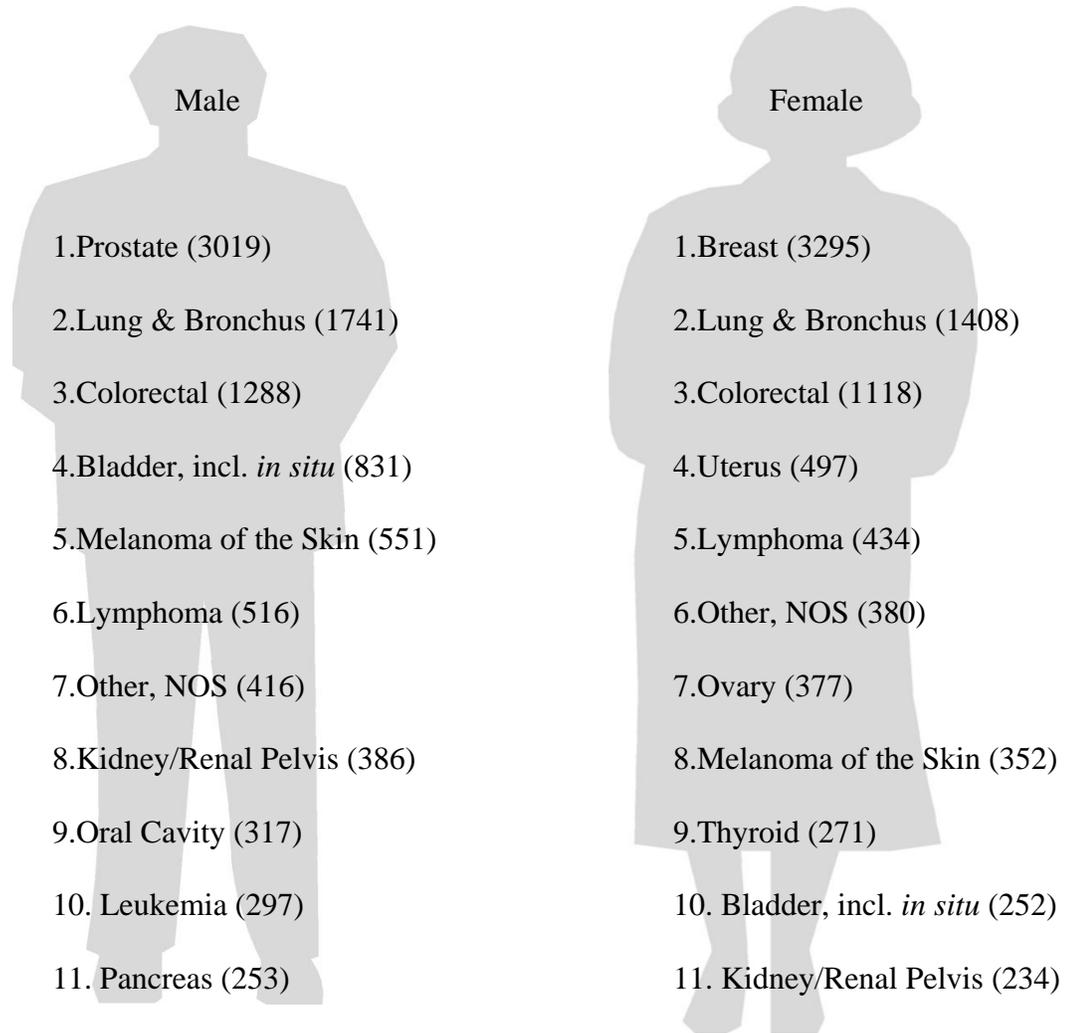
Cancer Incidence 1999-2001

Incidence of Invasive Cancer in Arizona
Average Annual Counts and Age-Adjusted Rates by County
1999-2001



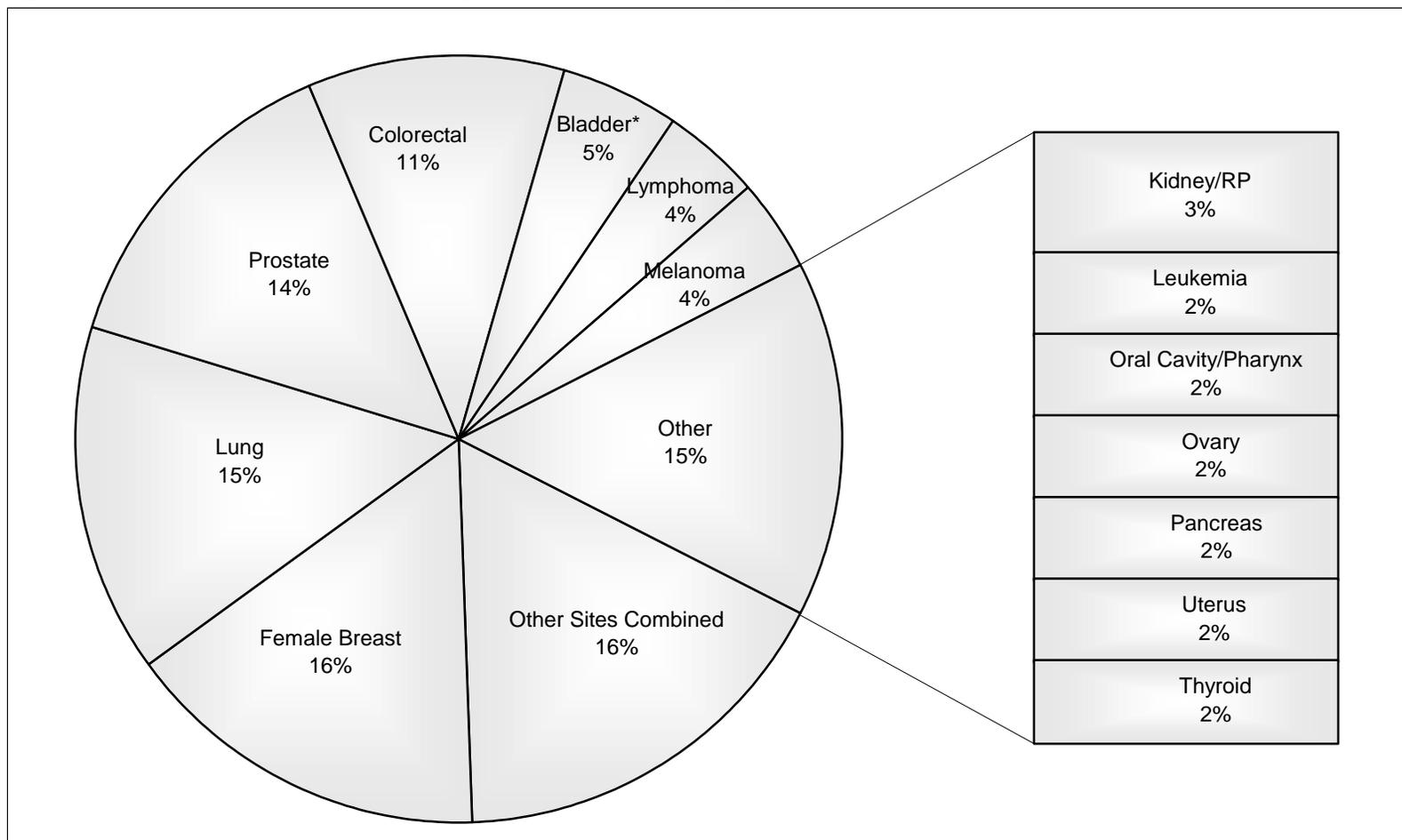
Note: County of residence for some cases is unknown. The sum of the cases per county does not equal the state total listed in this map.

Figure 1: Ten Leading Sites* of Invasive Cancer Cases by Site and Gender, Average Annual Count, 1999-2001



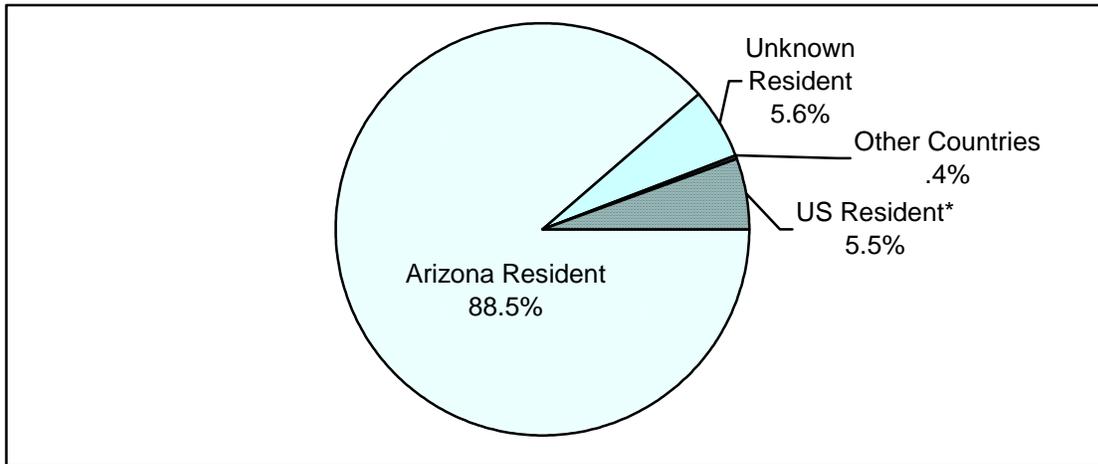
*Note: Ten Leading Sites in addition to 'Other, NOS';
Other, NOS=Ill-defined site or site not otherwise specified

Figure 2: Invasive Case Distribution By Site Based on Average Annual Count, Arizona, 1999-2001



Note: Percentage of bladder cases includes invasive and *in situ* cases. Bladder cases include 420 *in situ* cases.

Figure 3: Residency of Invasive Average Annual Cancer Cases in Arizona, 1999-2001



*All U.S. States, Territories, and Possessions except Arizona

Figure 4: Invasive Cancer Cases By Race/Ethnicity in Arizona, Average Annual Count, 1999-2001

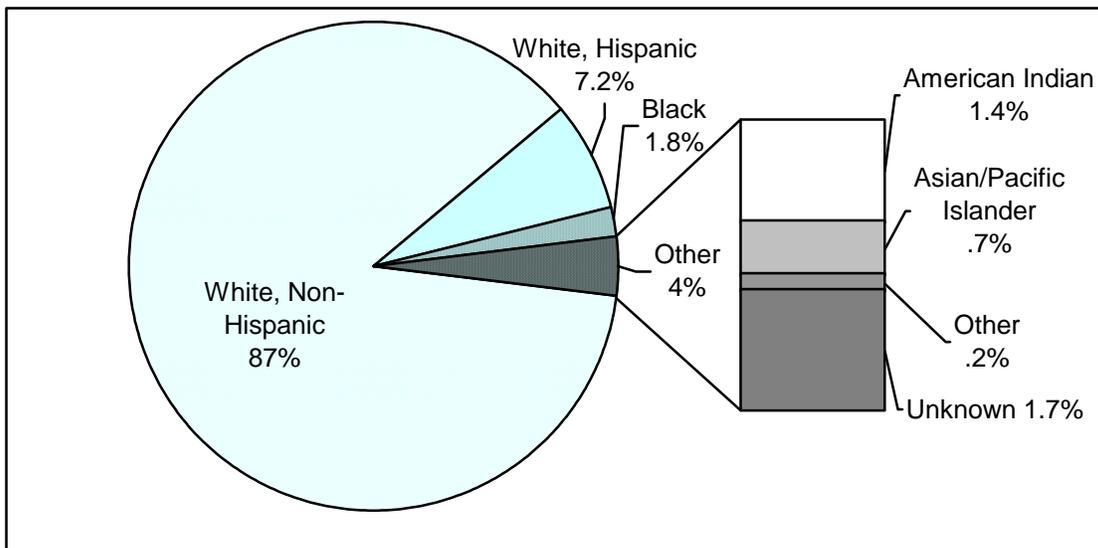
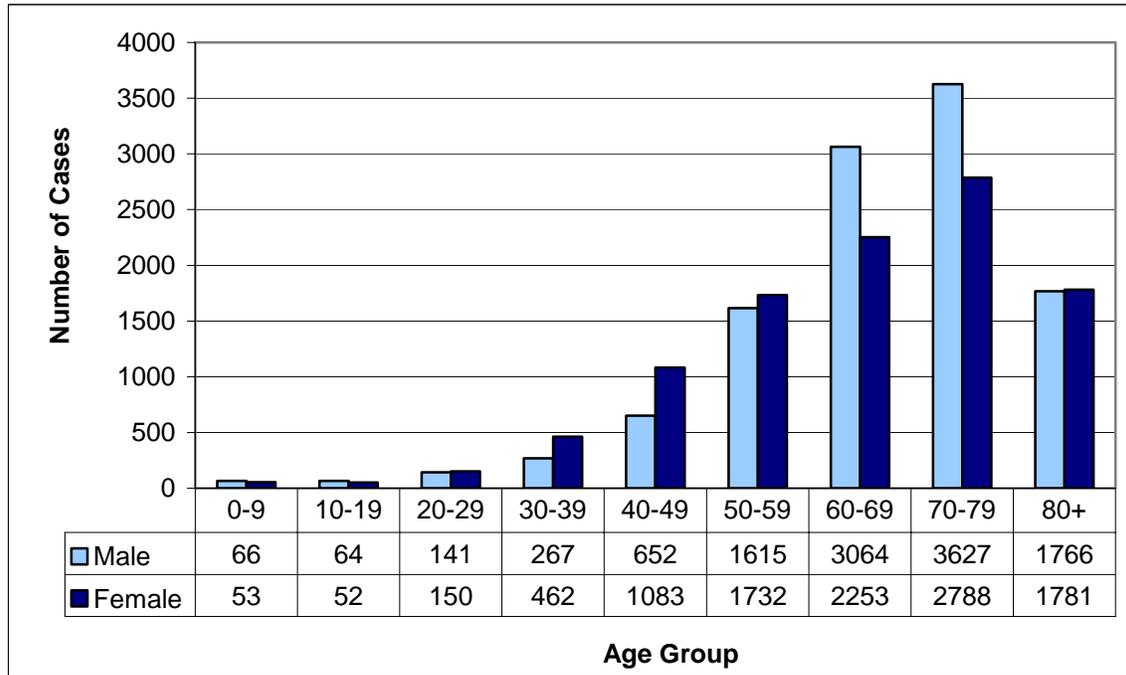


Figure 5: Invasive Cancer Cases By Age and Gender in Arizona, Average Annual Count, 1999-2001



Note: Distribution by age and gender at diagnosis excludes an average of 1 case with an unknown age at diagnosis, and an average of 4 cases with unknown sex per diagnosis year.

Table 1: Cancer Cases by Primary Site and Behavior, Average Annual Count, 1999-2001

Primary Site	Behavior		
	<i>In Situ</i>	Invasive	Total
Total, All Sites	1965	21190	23158
Oral Cavity and Pharynx	15	458	473
Lip	5	33	38
Tongue	5	120	125
Salivary Gland	1	57	58
Floor of Mouth	1	36	37
Gum and Other Mouth	1	65	66
Nasopharynx	0	22	22
Tonsil	1	57	58
Oropharynx	0	16	16
Hypopharynx	1	35	36
Other Oral Cavity and Pharynx	0	16	16
Digestive System	167	3935	4102
Esophagus	4	208	212
Stomach	3	295	298
Small Intestine	0	72	72
Colorectal	147	2407	2554
Colon excluding Rectum	101	1741	1842
Rectum Rectosigmoid	46	666	712
Anus	9	68	77
Liver and Intrahepatic Bile Duct	0	224	224
Liver	0	194	194
Intrahepatic Bile Duct	0	30	30
Gallbladder	4	57	61
Other Biliary	0	60	60
Pancreas	0	486	486
Retroperitoneum, Peritoneum, Omentum, Mesentery	0	41	41
Other Digestive Organs	0	18	18
Respiratory System	17	3420	3437
Nose, Nasal Cavity, Middle Ear	1	31	32
Larynx	14	190	204
Lung and Bronchus	1	3149	3150
Pleura	0	42	42
Trachea, Mediastinum and Other Respiratory Organs	0	8	8
Bones and Joints	0	53	53
Soft Tissue Including Heart	0	144	144
Skin Excluding Basal and Squamous	517	973	1490
Melanoma	517	903	1420
Other Skin	0	70	70
Breast	676	3345	4021

Table 1: Cancer Cases by Primary Site and Behavior, Average Annual Count, 1999-2001			
Primary Site	Behavior		
	<i>In Situ</i>	Invasive	Total
Female Genital System	93	1148	1241
Cervix	0	191	191
Corpus Uteri	11	475	486
Uterus NOS	0	22	22
Ovary	2	377	379
Vagina	9	16	25
Vulva	69	49	118
Other Female Genital Organs	1	19	20
Male Genital System	16	3178	3194
Prostate	4	3019	3023
Testis	0	136	136
Penis	12	16	28
Other Male Genital Organs	1	7	8
Urinary System	458	1313	1774
Urinary Bladder	431	653	1084
Kidney and Renal Pelvis	10	620	630
Ureter	10	31	41
Other Urinary Organs	7	9	16
Eye and Orbit	5	36	41
Brain and Other Nervous System	0	326	326
Brain	0	308	308
Cranial Nerves and Other Nervous System	0	18	18
Endocrine System	1	403	404
Thyroid	0	366	366
Other Endocrine including Thymus	0	37	37
Lymphoma	0	951	951
Hodgkin's Lymphoma	0	112	112
Non-Hodgkin's Lymphoma	0	838	838
Multiple Myeloma	0	188	188
Leukemia	0	523	523
Lymphocytic Leukemia	0	215	215
Myeloid Leukemia	0	152	152
Monocytic Leukemia	0	6	6
Myeloid and Monocytic Leukemia	0	87	87
Other Leukemia	0	63	63
Ill Defined and Unspecified	0	796	796

Note: Counts were a three-year average for diagnosis years 1999-2001.
Due to rounding the *total* rounded value may not equal the total of two individually calculated numbers in that category.

Table 2: Invasive Cancer Cases by Primary Site and Gender, 1999-2001

Primary Site	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total, All Sites	10981	9970	20957	11157	10356	21516	11649	10737	22390
Oral Cavity and Pharynx	290	150	440	359	149	508	302	123	426
Lip	21	5	26	30	4	34	31	9	40
Tongue	78	38	116	105	40	145	66	34	100
Salivary Gland	30	26	56	33	28	61	37	17	54
Floor of Mouth	22	14	36	36	10	46	19	8	27
Gum and Other Mouth	36	32	68	35	32	67	35	25	60
Nasopharynx	19	4	23	20	7	27	8	8	16
Tonsil	40	14	54	52	10	62	47	7	54
Oropharynx	7	8	15	11	6	17	10	5	15
Hypopharynx	34	4	38	26	8	34	27	6	34
Other Oral Cavity and Pharynx	3	5	8	11	4	15	22	4	27
Digestive System	2061	1672	3734	2238	1757	3997	2225	1847	4074
Esophagus	152	42	194	148	52	200	178	53	231
Stomach	203	104	307	184	100	284	189	104	293
Small Intestine	33	31	64	39	44	83	31	37	68
Colorectal	1229	1075	2305	1347	1121	2469	1288	1157	2447
Colon excluding Rectum	878	814	1692	934	838	1772	896	862	1758
Rectum and Rectosigmoid Junction	351	261	613	413	283	697	392	295	687
Anus	18	43	61	24	44	68	33	43	76
Liver and Intrahepatic Bile Duct	136	59	195	159	73	232	165	79	244
Liver	119	42	161	136	56	192	152	76	228
Intrahepatic Bile Duct	17	17	34	23	17	40	13	3	16
Gallbladder	22	31	53	17	36	53	16	49	65

Table 2: Invasive Cancer Cases by Primary Site and Gender, 1999-2001

Primary Site	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Other Biliary	25	30	55	35	28	64	34	26	60
Pancreas	222	224	446	265	221	486	271	255	526
Retroperitoneum, Peritoneum, Omentum and Mesentery	18	22	40	10	27	37	11	34	45
Other Digestive Organs	3	11	14	10	11	21	9	10	19
Respiratory System	1926	1351	3277	1924	1515	3439	2002	1543	3545
Nose, Nasal Cavity and Middle Ear	12	11	23	22	17	39	18	12	30
Larynx	136	41	177	159	34	193	165	36	201
Lung and Bronchus	1737	1291	3028	1702	1450	3152	1785	1483	3268
Pleura	32	7	39	38	9	47	31	8	39
Trachea, Mediastinum and Other Respiratory Organs	9	1	10	3	5	8	3	4	7
Bones and Joints	33	25	58	24	23	47	29	24	53
Soft Tissue including Heart	58	60	118	95	65	160	79	74	153
Skin excluding Basal and Squamous	572	388	961	588	339	927	623	407	1030
Melanoma	531	363	895	543	308	851	579	384	963
Other Skin	41	25	66	45	31	76	44	23	67
Breast	51	3225	3276	44	3321	3367	55	3339	3394
Female Genital System	NA	1110	1110	NA	1178	1178	NA	1157	1157
Cervix	NA	196	196	NA	176	176	NA	200	200
Corpus Uteri	NA	454	454	NA	496	496	NA	474	474
Uterus NOS	NA	19	19	NA	24	24	NA	24	24
Ovary	NA	366	366	NA	396	396	NA	368	368
Vagina	NA	14	14	NA	14	14	NA	19	19
Vulva	NA	45	45	NA	57	57	NA	45	45
Other Female Genital Organs	NA	16	16	NA	15	15	NA	27	27

Table 2: Invasive Cancer Cases by Primary Site and Gender, 1999-2001

Primary Site	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Male Genital System	3183	NA	3184	3091	NA	3091	3259	NA	3259
Prostate	3028	NA	3029	2923	NA	2923	3106	NA	3106
Testis	133	NA	133	147	NA	147	128	NA	128
Penis	17	NA	17	14	NA	14	16	NA	16
Other Male Genital Organs	5	NA	5	7	NA	7	9	NA	9
Urinary System	1245	472	1717	1222	515	1737	1263	515	1778
Urinary Bladder (includes <i>in situ</i>)	871	253	1124	815	271	1086	808	233	1041
Kidney and Renal Pelvis	346	207	553	384	228	612	427	268	695
Ureter	22	10	32	16	13	29	21	12	33
Other Urinary	6	2	8	7	3	10	7	2	9
Eye and Orbit	26	19	45	20	11	31	15	17	32
Brain and Other Nervous System	180	163	343	176	137	313	170	152	322
Brain	174	148	322	167	127	294	164	144	308
Cranial Nerves and Other Nervous System	6	15	21	9	10	19	6	8	14
Endocrine System	106	248	354	118	254	372	126	356	482
Thyroid	88	235	323	95	240	335	103	337	440
Other Endocrine including Thymus	18	13	31	23	14	37	23	19	42
Lymphoma	499	408	909	525	455	980	525	438	963
Hodgkin's Lymphoma	53	51	104	64	45	109	71	53	124
Non-Hodgkin's Lymphoma	446	357	805	461	410	871	454	385	839
Multiple Myeloma	106	93	199	83	69	152	133	81	214
Leukemia	269	234	504	301	217	518	320	227	548
Lymphocytic Leukemia	116	89	205	128	80	208	140	92	233
Myeloid Leukemia	117	112	229	130	97	227	NA	NA	NA
Monocytic Leukemia	1	3	4	5	9	14	NA	NA	NA

Table 2: Invasive Cancer Cases by Primary Site and Gender, 1999-2001									
	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Primary Site									
Myeloid and Monocytic Leukemia	NA	NA	NA	NA	NA	NA	152	109	261
Other Leukemia	35	30	67	38	31	69	28	26	54
Ill Defined and Unspecified	376	352	728	349	351	700	523	437	960

Note: NA = Not applicable.

Total, all sites, 1999, includes six cases of other or unknown sex. Total, all sites, 2000, includes three cases of other or unknown sex. Total, all sites, 2001, includes four cases of other or unknown sex. Due to rounding the *total* rounded value may not equal the total of two individually calculated numbers in that category.

Figure 6: Age-Adjusted Incidence Rates Among Arizona Males All Sites, 1995-2001

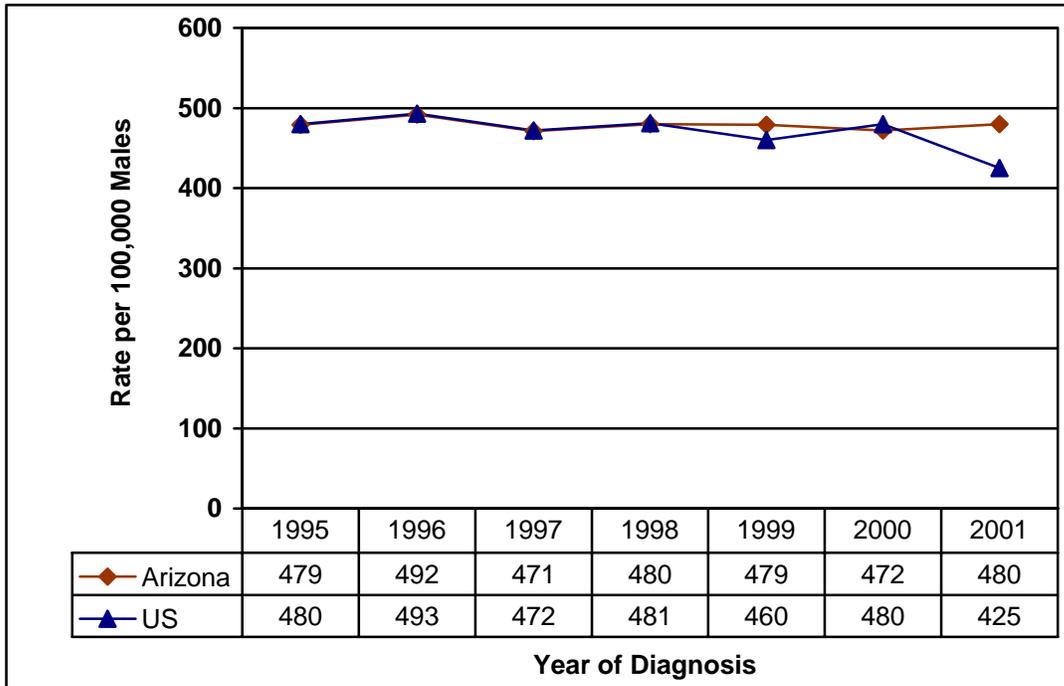
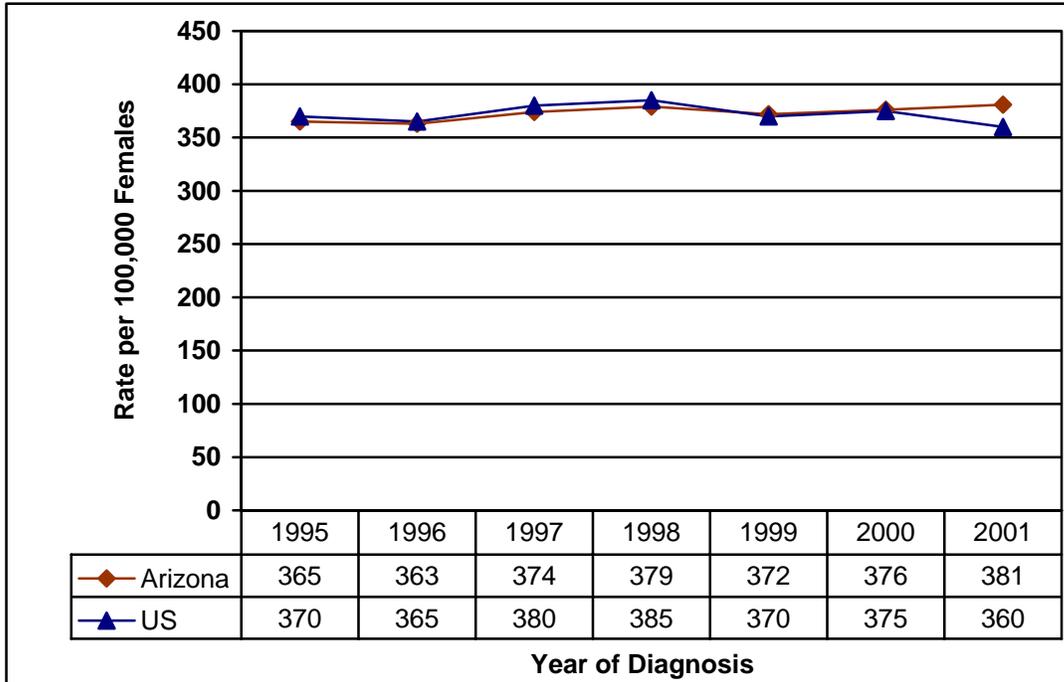


Figure 7: Age-Adjusted Incidence Rates Among Arizona Females All Sites, 1995-2001



Primary Site	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total, All Sites	478.5	372.2	416.7	472.1	376.2	417.0	479.7	381.4	423.4
Oral Cavity and Pharynx	13.0	5.8	9.1	15.3	5.5	10.1	13.0	4.6	8.5
Lip	1.0	---	0.6	1.3	---	0.7	1.6	---	0.9
Tongue	3.5	1.5	2.4	4.4	1.5	2.9	2.9	1.3	2.1
Salivary Gland	1.3	1.0	1.1	1.4	1.0	1.2	1.5	0.6	1.0
Floor of Mouth	1.0	0.5	0.8	1.6	0.4	1.0	0.8	---	0.5
Gum and Other Mouth	1.6	1.2	1.4	1.5	1.1	1.3	1.5	0.8	1.2
Nasopharynx	0.8	---	0.5	0.8	---	0.5	---	---	0.3
Tonsil	1.8	0.6	1.2	2.2	0.4	1.2	1.9	---	1.1
Oropharynx	---	---	0.3	0.5	---	0.3	0.4	---	0.3
Hypopharynx	1.5	---	0.8	1.1	---	0.7	1.1	---	0.6
Other Oral Cavity and Pharynx	---	---	---	0.4	---	0.3	0.9	---	0.5
Digestive System	95.3	63.2	77.7	101.3	64.6	81.1	96.5	65.7	79.8
Esophagus	6.8	1.5	3.9	6.4	1.8	3.9	7.6	1.8	4.4
Stomach	8.0	3.8	6.1	8.0	3.6	5.6	8.0	3.7	5.6
Small Intestine	1.4	1.2	1.3	1.7	1.6	1.6	1.3	1.3	1.3
Colorectal	54.7	38.8	46.0	58.9	39.4	47.9	54.0	39.7	46.2
Colon excluding Rectum	41.7	31.0	35.7	44.1	31.0	36.6	40.3	30.4	34.9
Rectum and Rectosigmoid Junction	16.8	10.3	13.2	18.9	10.8	14.5	16.9	11.0	13.7
Anus	1.1	1.7	1.4	1.2	1.7	1.5	1.5	1.7	1.6
Liver and Intrahepatic Bile Duct	6.0	2.2	3.9	6.7	2.6	4.5	6.6	---	4.6
Liver	5.2	1.5	3.2	5.7	2.0	3.8	6.1	2.7	4.3
Intrahepatic Bile Duct	0.8	0.6	0.7	0.9	0.6	0.8	0.5	0.1	0.3
Gallbladder	1.0	9.1	1.2	0.8	9.5	1.1	0.7	8.0	1.3
Other Biliary	1.1	1.1	1.1	1.6	1.0	1.2	1.5	0.9	1.2
Pancreas	9.7	8.0	8.8	11.2	7.7	9.4	11.3	8.7	9.9

Table 3: Age-Adjusted Incidence Rates of Invasive Cancer Cases by Primary Site and Gender, 1999-2001									
Primary Site	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Retroperitoneum	0.5	0.3	0.4	0.4	0.3	0.4	0.3	0.3	0.3
Peritoneum, Omentum and Mesentery	0.3	0.6	0.4	0.0	0.7	0.4	0.1	0.9	0.5
Other Digestive Organs	---	0.4	0.3	0.4	0.4	0.4	---	0.4	0.4
Respiratory System	84.4	48.8	64.5	81.3	53.3	65.9	83.2	53.1	66.6
Nose, Nasal Cavity and Middle Ear	0.5	0.4	0.5	0.9	0.6	0.8	0.7	0.4	0.6
Larynx	6.3	1.7	3.8	7.1	1.3	4.0	7.2	1.3	4.1
Lung and Bronchus	75.6	46.4	59.3	71.5	51.0	60.1	73.7	50.9	61.1
Pleura	1.5	---	0.8	1.6	---	0.9	1.3	---	0.7
Trachea, Mediastinum and Other Respiratory Organs	---	---	0.2	---	---	---	---	---	---
Bones and Joints	1.3	1.0	1.1	0.9	0.9	0.9	1.1	0.9	1.0
Soft Tissue including Heart	2.5	2.3	2.4	3.9	2.4	3.1	3.2	2.7	2.9
Skin excluding Basal and Squamous	38.0	22.1	29.0	37.6	19.6	27.5	40.7	23.5	31.1
Melanoma	23.3	14.1	18.1	23.0	11.7	16.7	23.9	14.3	18.5
Other Skin	1.9	0.9	1.3	2.0	1.2	1.5	1.8	0.8	1.3
Breast	2.5	122.5	79.2	2.1	122.9	79.5	2.6	120.8	79.2
Female Genital System	NA	45.9	NA	NA	47.1	NA	NA	45.9	NA
Cervix	NA	7.9	NA	NA	6.8	NA	NA	7.8	NA
Corpus Uteri	NA	17.4	NA	NA	18.7	NA	NA	17.5	NA
Uterus NOS	NA	0.7	NA	NA	0.9	NA	NA	0.9	NA
Ovary	NA	14.0	NA	NA	14.8	NA	NA	13.2	NA
Vagina	NA	0.5	NA	NA	0.5	NA	NA	0.7	NA
Vulva	NA	1.6	NA	NA	2.1	NA	NA	1.6	NA
Other Female Genital Organs	NA	0.6	NA	NA	0.6	NA	NA	1.1	NA
Male Genital System	136.3	NA	NA	129.3	NA	NA	132.5	NA	NA
Prostate	129.5	NA	NA	122.1	NA	NA	126.4	NA	NA

Primary Site	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Testis	5.3	NA	NA	5.6	NA	NA	4.8	NA	NA
Penis	1.4	NA	NA	1.2	NA	NA	1.0	NA	NA
Other Male Genital Organs	---	NA	NA	---	NA	NA	---	NA	NA
Urinary System	56.8	17.5	34.7	53.5	18.7	34.1	53.6	18.2	34.0
Urinary Bladder (includes <i>in situ</i>)	39.4	9.1	22.3	35.5	9.5	20.9	34.1	8.0	19.5
Kidney and Renal Pelvis	15.4	7.9	11.3	16.6	8.5	12.1	17.6	9.6	13.3
Ureter	1.4	0.4	0.8	0.8	0.5	0.7	1.3	0.6	0.9
Other Urinary	0.5	0.1	0.3	0.6	0.1	0.3	0.5	0.1	0.3
Eye and Orbit	---	---	---	---	---	0.7	---	---	---
Brain and Other Nervous System	7.5	6.2	6.8	7.1	5.1	6.0	6.7	5.5	6.1
Brain	7.2	5.7	6.4	6.7	4.7	5.7	6.4	5.2	5.9
Cranial Nerves and Other Nervous System	---	0.6	0.4	---	0.4	0.4	---	---	0.3
Endocrine System	4.5	10.0	7.2	4.9	10.0	7.4	5.0	13.8	9.4
Thyroid	3.8	9.5	6.6	3.9	9.5	6.7	4.1	13.1	8.6
Other Endocrine including Thymus	0.8	0.5	0.6	0.9	0.5	0.7	0.9	0.7	0.8
Lymphoma	21.6	15.2	18.1	22.2	16.5	19.1	21.6	15.5	18.3
Hodgkin's Lymphoma	2.1	2.0	2.1	2.5	1.7	2.1	2.7	2.0	2.4
Non-Hodgkin's Lymphoma	19.5	13.2	16.0	19.7	14.8	17.0	18.9	13.6	15.9
Multiple Myeloma	4.9	3.4	4.0	3.6	2.5	2.9	5.6	2.8	4.0
Leukemia	11.7	8.7	10.0	12.6	7.8	10.0	13.1	8.0	10.3
Lymphocytic Leukemia	5.1	3.3	4.1	5.3	2.9	4.0	5.6	3.3	4.3
Myeloid Leukemia	5.0	4.3	4.6	5.4	3.5	4.4	NA	NA	NA
Monocytic Leukemia	---	---	---	---	---	0.3	NA	NA	NA
Myeloid and Monocytic Leukemia	NA	NA	NA	NA	NA	NA	6.3	3.8	4.9

Table 3: Age-Adjusted Incidence Rates of Invasive Cancer Cases by Primary Site and Gender, 1999-2001									
	Gender								
	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Primary Site									
Other Leukemia	1.6	1.1	1.3	1.6	1.1	1.4	1.2	0.9	1.0
Ill Defined and Unspecified	16.9	12.7	14.6	15.5	12.2	13.7	22.3	14.9	18.2

--- = Fewer than 10 cases reported. The rate is considered unstable, and is therefore has not been specified.

Table 4: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender, All Races, in Arizona, 1999-2001

County	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Apache	242.2	191.1	214.9	219.1	189.5	199.9	127.2	165.6	148.4
Cochise	521.7	341.3	424.2	389.3	353.5	368.0	463.8	392.9	424.4
Coconino	411.5	357.4	379.3	490.7	367.8	423.7	513.2	413.1	457.7
Gila	484.7	368.4	419.0	451.2	405.1	424.9	519.2	349.7	425.7
Graham	496.2	328.7	396.4	496.6	366.8	412.3	450.0	351.3	397.3
Greenlee	426.0	262.9	340.1	620.6	413.9	514.1	350.1	---	279.5
La Paz	347.0	290.5	304.6	362.3	219.2	293.8	414.7	280.1	346.8
Maricopa	491.4	381.2	426.1	495.8	384.1	431.4	512.5	398.7	446.4
Mohave	487.2	346.1	412.2	503.5	389.7	443.4	570.8	396.9	477.8
Navajo	388.4	275.6	329.0	331.8	300.1	315.8	392.7	299.2	343.0
Pima	482.4	381.0	422.2	448.7	393.8	414.9	457.5	386.3	415.4
Pinal	442.0	367.7	400.4	433.2	335.4	381.1	336.3	280.1	306.0
Santa Cruz	393.7	299.5	340.9	448.2	334.4	382.1	321.3	324.0	321.8
Yavapai	488.9	408.7	445.1	509.4	383.0	440.1	475.8	362.8	415.7
Yuma	387.2	299.3	340.9	382.0	294.2	334.5	333.8	267.7	298.0
ARIZONA	478.5	372.2	416.9	472.1	376.2	417.0	479.7	381.4	423.4

--- = Fewer than 10 cases reported. The rate is considered unstable, and is therefore has not been specified.

Table 5: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for White, Non-Hispanics in Arizona, 1999-2001

County	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Apache	462.9	370.2	407.2	276.7	343.1	309.3	206.8	233.6	226.9
Cochise	528.9	372.3	445.3	391.2	354.9	370.2	460.4	442.7	447.9
Coconino	436.5	415.0	420.4	548.7	452.6	499.8	614.5	539.1	574.8
Gila	475.2	417.7	441.2	477.7	451.4	462.9	527.7	377.4	445.1
Graham	562.0	371.5	453.3	547.9	366.8	439.5	447.4	432.1	440.1
Greenlee	---	---	334.9	491.7	530.5	519.9	---	---	409.7
La Paz	339.7	266.1	305.2	357.5	216.3	290.8	413.0	348.3	380.0
Maricopa	507.5	406.5	447.5	517.0	409.5	455.1	536.6	426.0	472.4
Mohave	504.0	361.0	426.8	515.3	413.7	461.3	570.4	412.5	486.0
Navajo	497.5	350.7	422.7	421.1	403.5	410.2	527.1	424.8	474.9
Pima	495.4	406.9	442.6	453.2	423.2	433.0	469.9	423.8	442.4
Pinal	474.2	383.2	425.6	463.6	358.6	408.9	347.8	305.3	324.2
Santa Cruz	374.4	261.5	317.5	608.2	328.5	479.6	496.5	458.9	475.1
Yavapai	493.4	421.4	453.9	506.0	398.9	447.5	446.5	366.3	403.6
Yuma	426.2	356.8	388.0	396.2	306.5	346.6	378.2	316.5	343.6
ARIZONA	498.6	400.8	441.7	493.3	405.2	442.8	503.2	414.6	452.6

--- = Fewer than 10 cases reported. The rate is considered unstable, and therefore has not been specified.

Table 6: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for White, Hispanics in Arizona, 1999-2001

County	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Apache	---	---	---	---	---	---	0.0	---	---
Cochise	435.1	262.5	335.5	305.3	325.7	315.2	350.8	226.0	282.3
Coconino	376.0	453.5	420.0	467.2	---	328.5	461.7	288.5	360.7
Gila	532.4	240.3	376.3	460.3	264.6	342.8	393.7	---	291.0
Graham	---	---	235.9	---	344.4	286.7	477.4	---	322.9
Greenlee	---	---	355.4	779.3	---	511.0	---	---	---
La Paz	---	---	---	---	---	---	---	---	---
Maricopa	348.7	216.5	268.6	306.3	230.2	260.8	313.8	221.7	259.7
Mohave	---	---	181.3	---	---	---	262.0	---	136.3
Navajo	---	---	239.8	465.3	---	277.3	---	---	220.1
Pima	365.5	261.0	303.3	369.8	266.6	308.0	416.1	226.5	299.1
Pinal	298.4	310.1	295.1	318.6	199.8	254.5	274.3	199.2	230.8
Santa Cruz	384.1	304.5	337.2	335.3	318.9	316.3	219.2	258.1	238.2
Yavapai	---	---	176.1	412.2	---	275.9	360.7	339.0	352.2
Yuma	238.8	181.1	209.9	339.7	314.7	327.5	238.0	198.9	207.5
ARIZONA	338.1	239.5	279.8	332.3	245.6	280.7	334.7	222.7	267.9

--- = Fewer than 10 cases reported. The rate is considered unstable, and therefore has not been specified.

Table 7: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for Blacks in Arizona, 1999-2001

County	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Apache	0.0	0.0	0.0	0.0	---	---	0.0	0.0	0.0
Cochise	---	---	---	---	---	547.3	686.9	---	507.4
Coconino	0.0	---	---	---	---	914.1	---	---	---
Gila	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Graham	0.0	---	---	---	---	---	0.0	0.0	0.0
Greenlee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
La Paz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maricopa	474.7	285.6	361.6	398.8	259.3	321.2	470.2	322.8	383.9
Mohave	---	---	---	---	---	1251.0	---	---	---
Navajo	---	---	---	---	---	---	0.0	---	---
Pima	684.8	333.9	495.0	471.5	261.5	354.9	483.8	315.8	381.3
Pinal	594.2	---	510.7	---	---	496.0	574.0	---	351.2
Santa Cruz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	---	---
Yavapai	---	0.0	---	---	0.0	---	---	---	---
Yuma	---	---	595.5	---	---	---	---	---	---
ARIZONA	548.3	297.2	402.0	444.0	278.5	353.5	469.7	312.1	379.7

--- = Fewer than 10 cases reported. The rate is considered unstable, and therefore has not been specified.

Table 8: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for American Indians in Arizona, 1999-2001

County	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Apache	166.7	130.9	147.2	160.7	130.6	142.1	97.5	137.2	119.0
Cochise	---	---	---	0.0	---	---	---	---	---
Coconino	248.7	220.0	228.3	205.2	186.3	190.7	137.3	140.6	138.8
Gila	---	---	379.0	---	---	---	---	---	285.0
Graham	---	---	---	---	---	---	---	---	---
Greenlee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
La Paz	---	---	---	---	---	---	---	---	---
Maricopa	227.9	261.5	249.4	272.7	278.9	275.9	256.6	278.4	269.2
Mohave	---	---	---	---	---	---	---	---	315.4
Navajo	177.0	171.5	174.2	122.2	163.2	144.5	186.7	99.1	135.3
Pima	185.1	205.8	193.8	403.4	187.1	274.5	297.3	204.7	246.0
Pinal	---	---	194.8	---	229.0	209.3	---	---	177.0
Santa Cruz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yavapai	0.0	---	---	---	0.0	---	---	---	---
Yuma	---	---	---	---	---	---	0.0	0.0	0.0
ARIZONA	205.7	194.5	---	216.3	180.3	193.8	202.4	181.2	190.8

--- = Fewer than 10 cases reported. The rate is considered unstable, and therefore has not been specified.

Table 9: Age-Adjusted Incidence Rates of Invasive Cancer Cases by County and Gender for Asians/Pacific Islanders in Arizona, 1999-2001

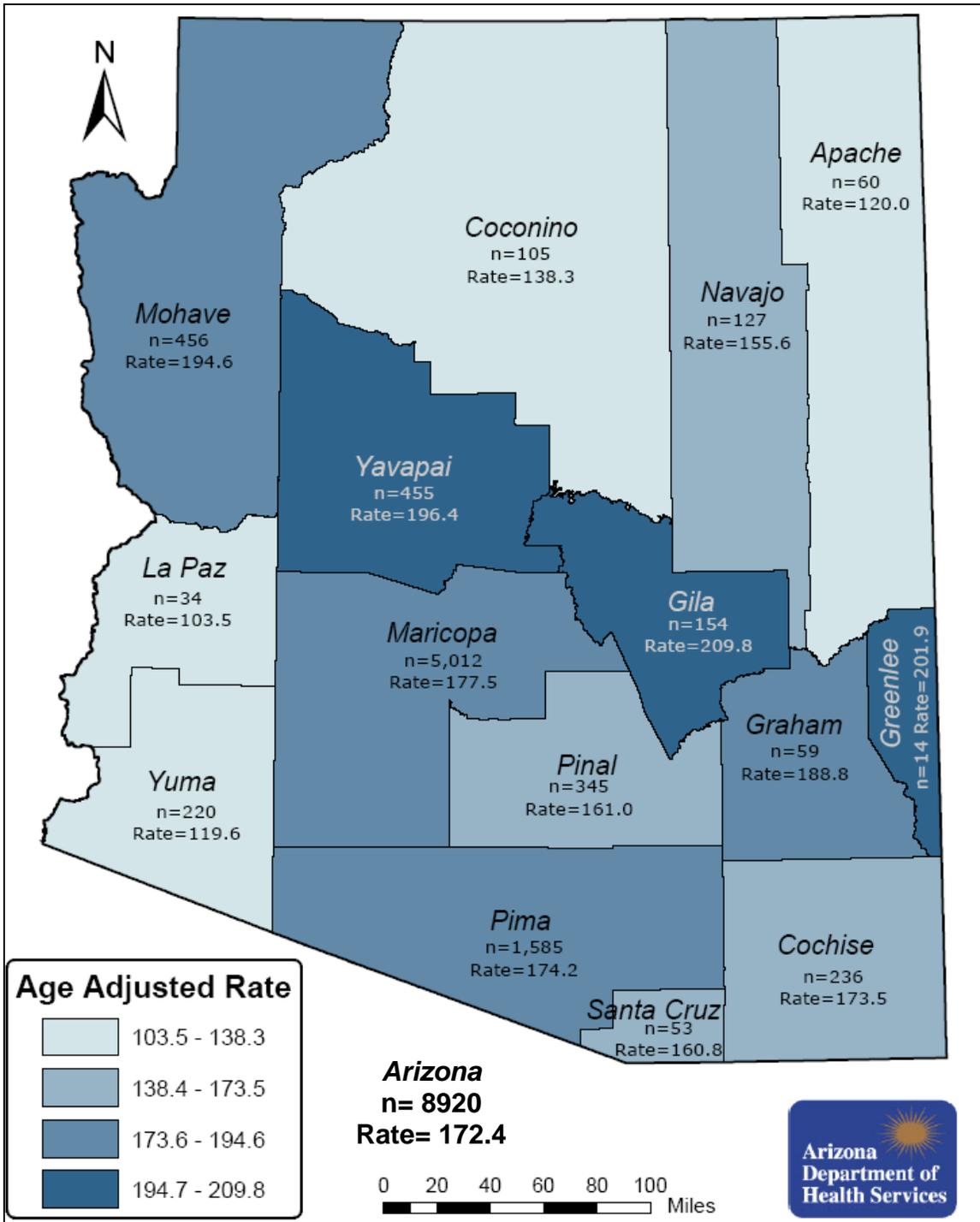
County	1999			2000			2001		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Apache	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cochise	---	---	---	---	---	---	---	---	---
Coconino	---	---	---	---	---	---	---	0.0	---
Gila	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Graham	---	0.0	---	0.0	0.0	0.0	0.0	0.0	0.0
Greenlee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
La Paz	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maricopa	178.5	181.7	178.6	270.8	174.3	212.4	193.0	260.5	231.2
Mohave	---	0.0	---	---	---	---	---	---	---
Navajo	0.0	0.0	0.0	---	0.0	---	0.0	0.0	0.0
Pima	---	175.5	149.6	246.6	174.6	205.6	---	306.4	211.1
Pinal	---	0.0	---	0.0	---	---	0.0	---	---
Santa Cruz	0.0	0.0	0.0	0.0	---	---	0.0	0.0	0.0
Yavapai	---	0.0	---	---	0.0	---	---	0.0	---
Yuma	0.0	---	---	0.0	0.0	0.0	---	---	---
ARIZONA	168.9	164.5	166.1	265.5	177.0	212.2	187.7	267.2	233.3

--- = Fewer than 10 cases reported. The rate is considered unstable, and therefore has not been specified.

CHAPTER 2

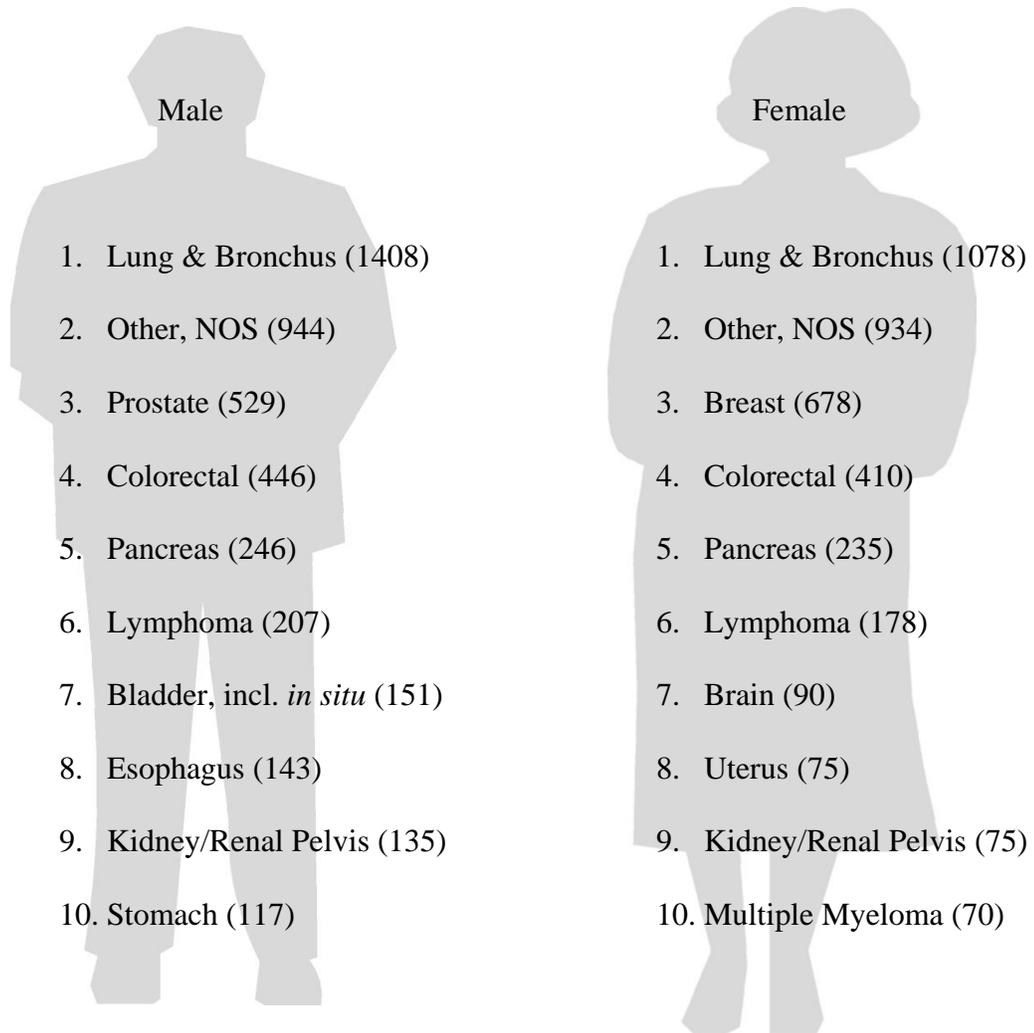
Cancer Mortality

Cancer Mortality in Arizona
Average Annual Counts and Age-Adjusted Rates by County
1999-2001



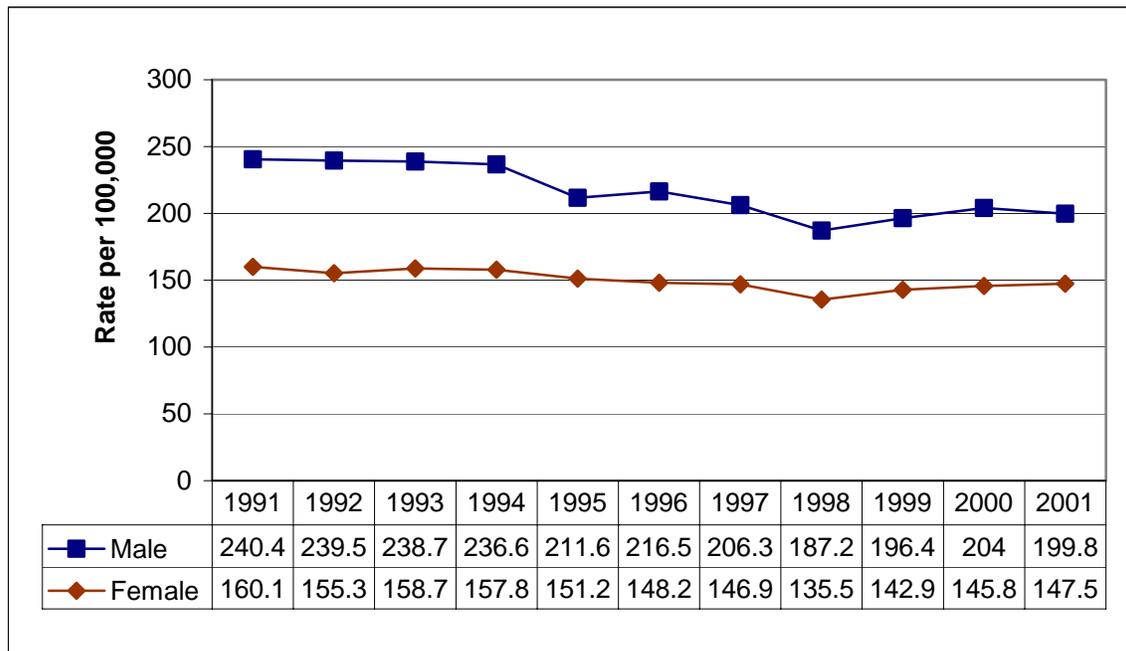
Note: County of residence for some cases is unknown. The sum of the cases per county does not equal the state total listed in this map.

Figure 8: Ten Leading* Sites of Cancer Deaths by Site and Gender, Average Annual Count, 1999-2001



*Other, NOS=Ill-defined or site not otherwise specified.

Figure 9: Age-Adjusted Cancer Mortality Rates for All Cancers by Gender and Year, Arizona, 1991-2001



Number of deaths per 100,000 population age-adjusted to the 2000 U.S. standard

Figure 10: Cancer Mortality by Age in Arizona, Average Annual Count, 1999-2001

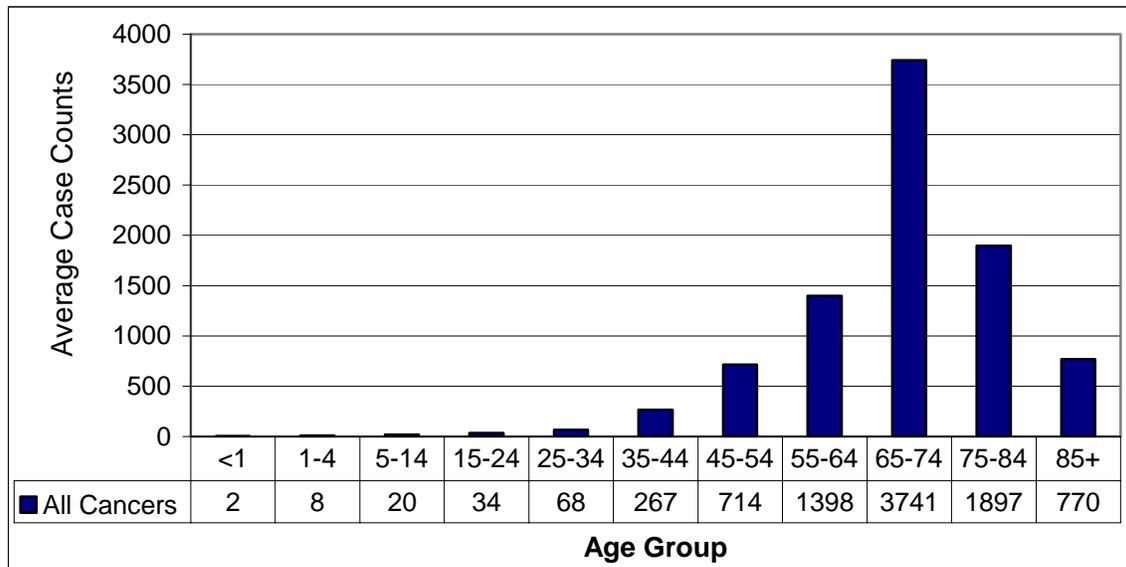


Figure 11: Age-Adjusted Mortality Rates of Invasive Cancer Cases by Race/Ethnicity, 1999-2001

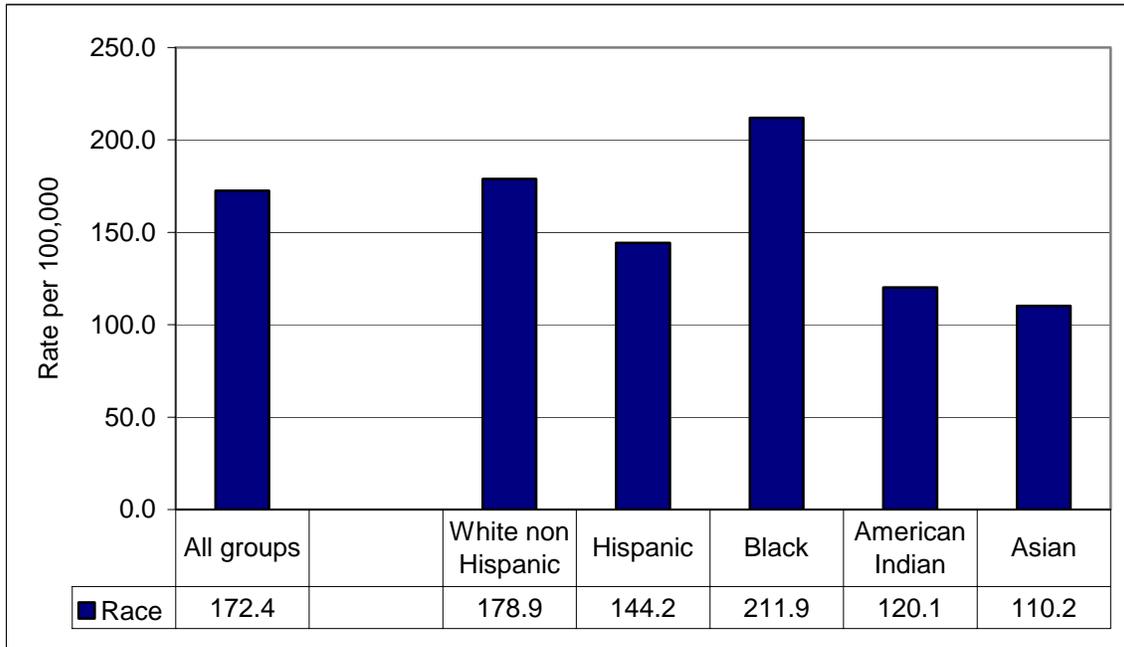
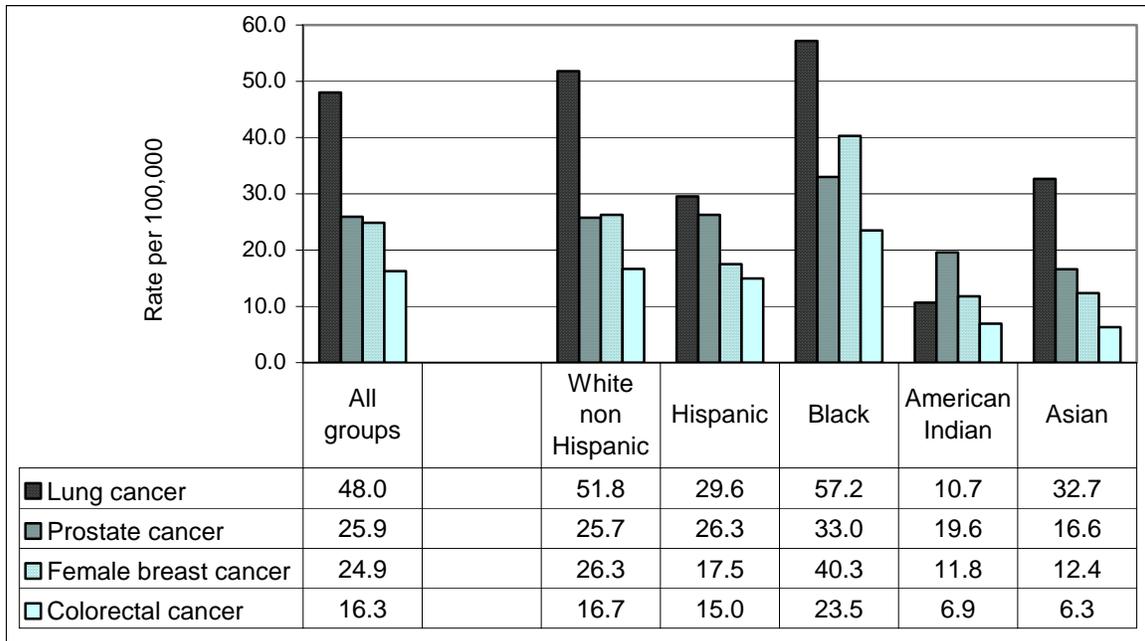


Figure 12: Average Annual Age-Adjusted Mortality Rates For Select Cancers by Race/Ethnicity, Arizona, 1999 - 2001



Adjusted to the 2000 standard U.S. population. The rates were per 100,000 persons in specified group per year. The rates for prostate cancer were per 100,000 males. The rates for breast cancer were per 100,000 females.

CHAPTER 3

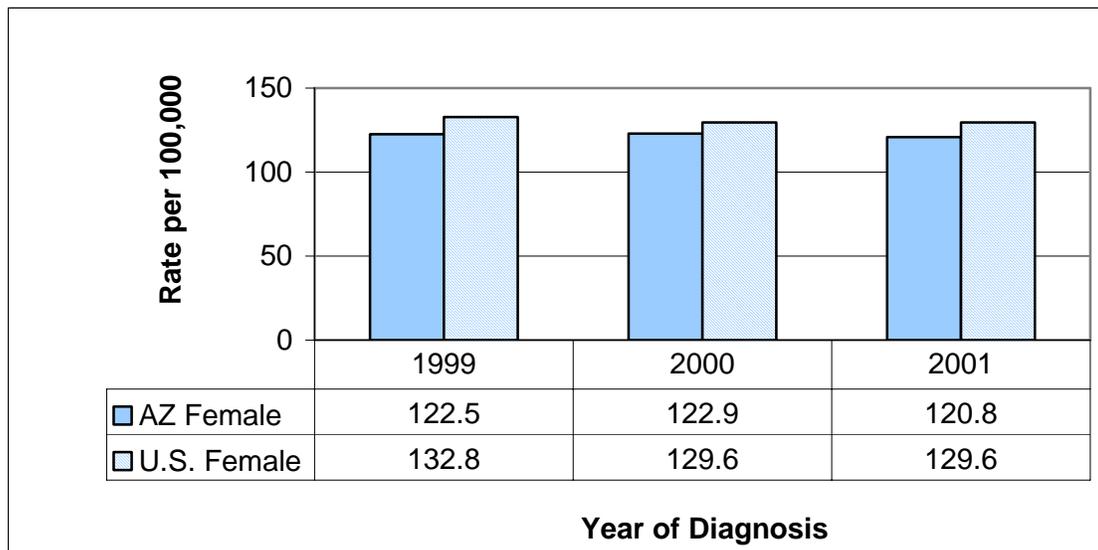
Incidence and Mortality of Select Cancers

Female Breast Cancer
Colorectal Cancer
Lung and Bronchus Cancer
Melanoma
Prostate Cancer

Female Breast Cancer in Arizona

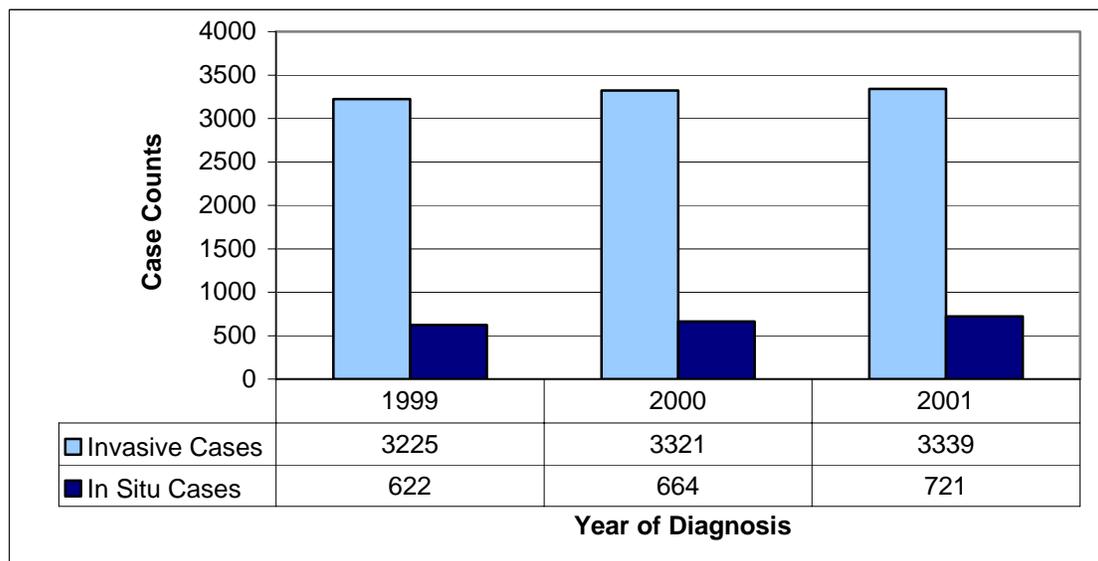
Breast cancer was the third most frequently diagnosed cancer and the second most common cancer death identified among women in Arizona during 1999-2001. This cancer also continues to be the most common type diagnosed among women in the US. In 1999-2001, an average of 3295 new invasive and 669 *in situ* cases of female breast cancer were diagnosed per year in Arizona. (See figures 13 and 14.)

Figure 13: U.S.* and Arizona Female Breast Cancer Age-Adjusted Incidence Rates, 1999-2001



*CDC National Program of Cancer Registries

Figure 14: Counts of Invasive and *In Situ* Female Breast Cancer in Arizona, 1999-2001



Just over half of female breast cancer cases were diagnosed with local stage of disease, and nearly one quarter was diagnosed with regional stage (See Figure 15). While just 15% of cases were diagnosed *in situ* stage, only 3% of female breast cancer cases were diagnosed with distant stage. This indicates that breast cancer is being diagnosed in earlier stages, which will contribute to successful treatments, and better prognoses.

Figure 15: Percentage of Female Breast Cancer Cases by SEER Summary Stage, 1999-2001

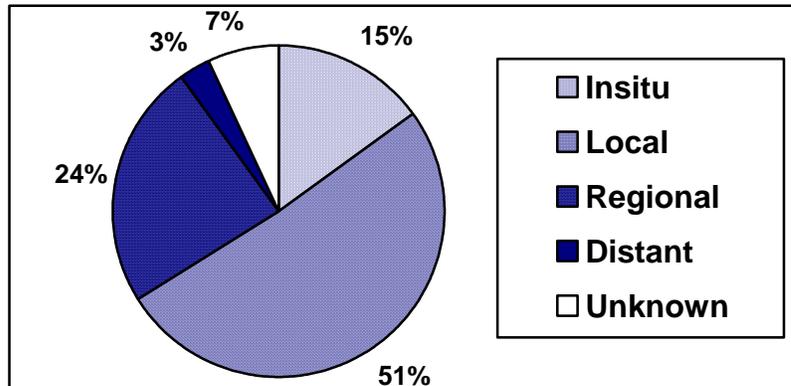
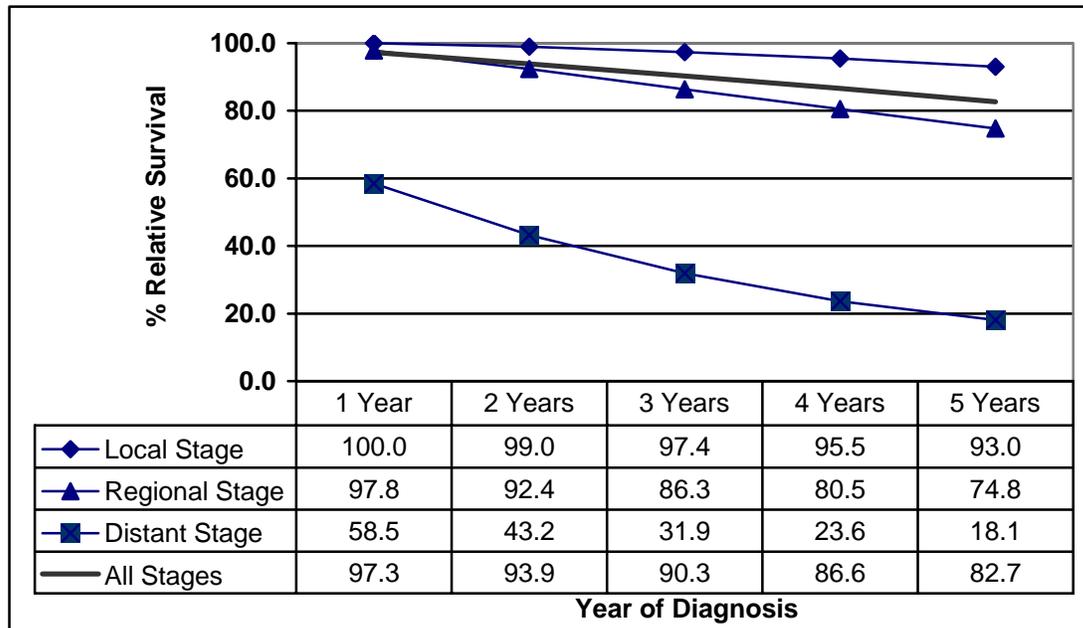
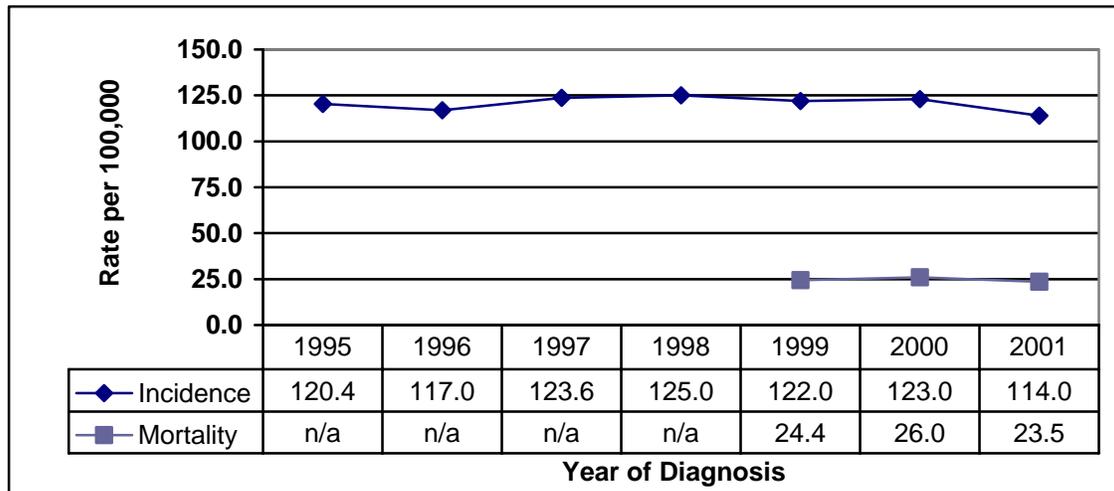


Figure 16: Five-Year Percent Relative Female Breast Cancer Survival, 1993-1998



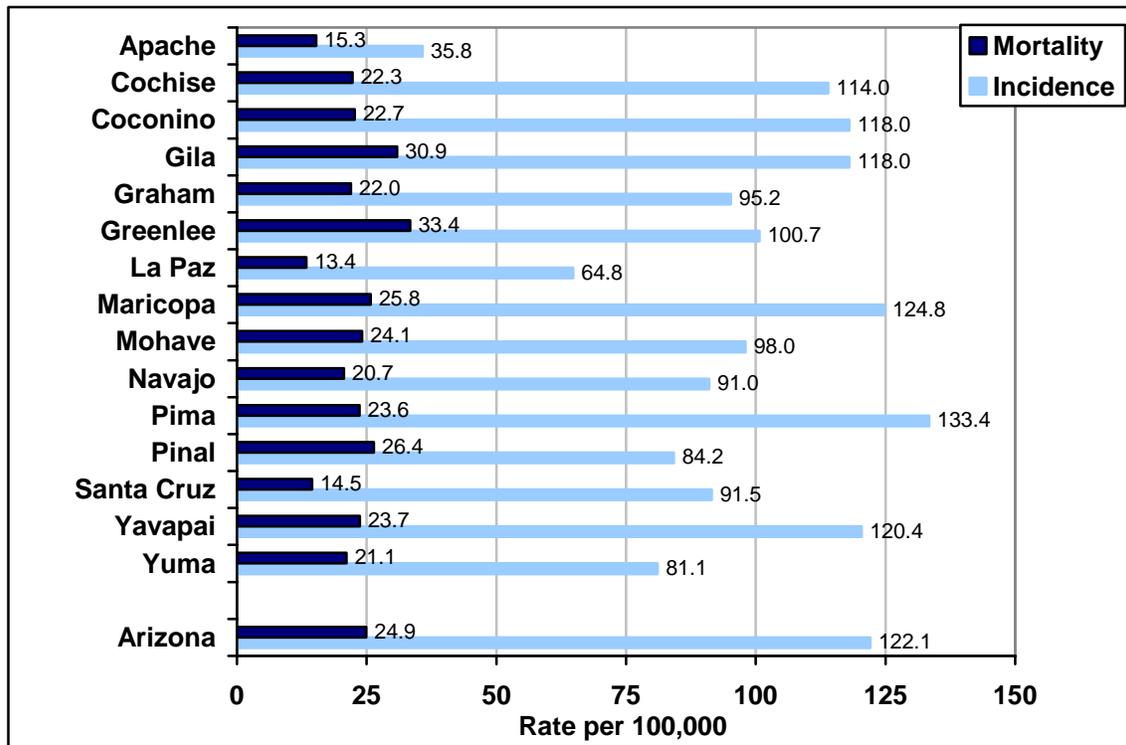
During this time period, the age-adjusted incidence rate for breast cancer had remained constant (see Figure 17). The age-adjusted mortality rate for female breast cancer had also remained constant. Female breast cancer diagnoses occur over four times more frequently than do deaths caused by the same cancer.

Figure 17: Age-Adjusted Incidence and Mortality Rates for Female Breast Cancer in Arizona, 1995-2001



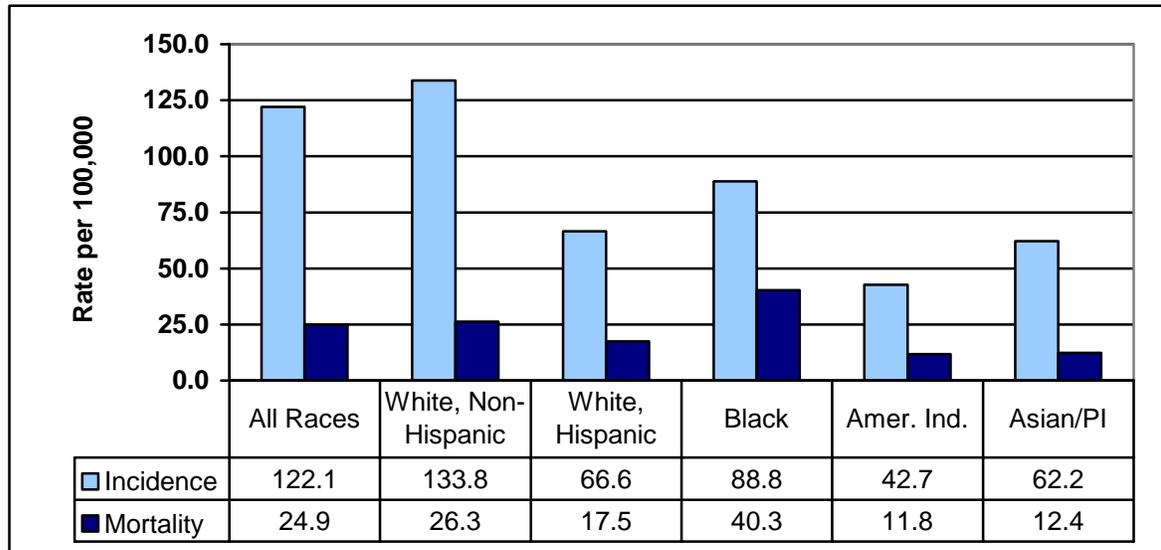
In 1999-2001, Pima County had the highest incidence rate, and Greenlee County had the highest mortality rates for female breast cancer (133.4 and 33.4 per 100,000, respectively). When compared to the state rate in 1999-2001, 13 counties have lower average incidence rates, and two counties had higher average incidence rates than the state. (See Figure 18).

Figure 18: Average Annual Age-Adjusted Incidence and Mortality Rates for Female Breast Cancer By County, 1999-2001



When analyzed by race and ethnicity, the female breast cancer incidence rates were highest among White, non-Hispanics (133.8 per 100,000) in Arizona, and the mortality rate was highest among Blacks (40.3 per 100,000) (see Figure 19). American Indians have both the lowest female breast cancer incidence and mortality rates among all the races (42.7 and 11.8 per 100,000, respectively), but breast cancer was still the most common cancer diagnosed among American Indian females in Arizona.

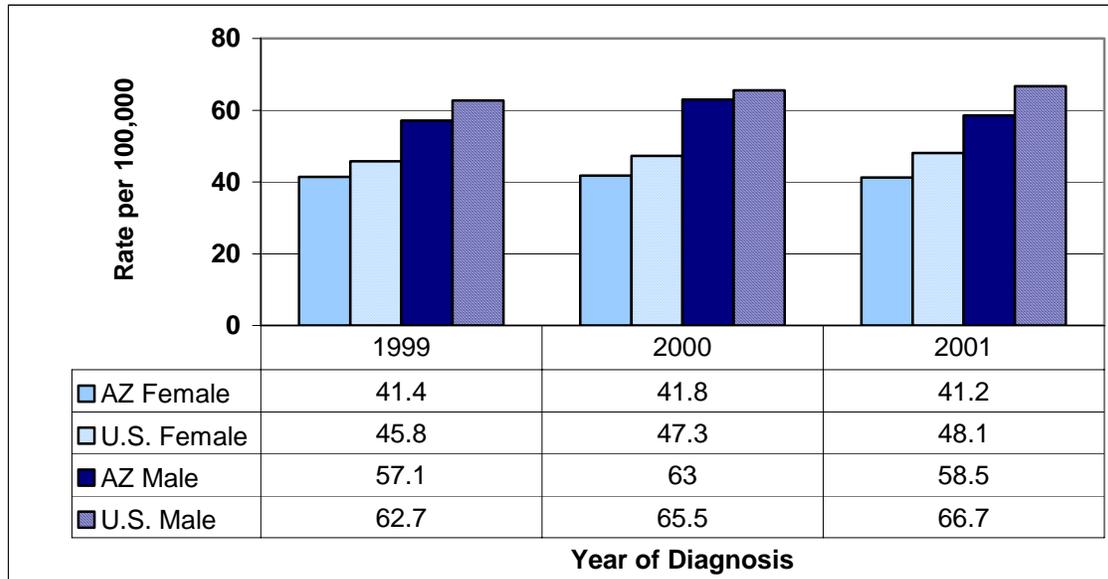
Figure 19: Average Annual Age-adjusted Incidence and Mortality Rates for Female Breast Cancer by Race/Ethnicity, 1999-2001



Colorectal Cancer in Arizona

Colorectal cancer was the fourth most frequently diagnosed cancer among Arizonans in 1999-2001 and was ranked as the fourth most common cancer in the U.S. (see Figure 20). A total of 1228 and 1118 cases of invasive Colorectal Cancer occurred in men and woman, respectively, on average during this time period.

Figure 20: U.S.* and Arizona Age-Adjusted Incidence Rates of Colorectal Cancer by Gender, 1999-2001



*CDC National Program of Cancer Registries

When analyzed by stage, colorectal cancer cases had approximately equal portion of cases diagnosed in local stage as in regional stage, and those stages combined accounted for nearly three-quarters of all diagnosed cases (See Figure 21). Approximately 37% of cases were diagnosed in regional stage and 16% were diagnosed in distant stage. Information about the importance of colorectal screenings will help educate the public about the benefits of early detection of colorectal cancer. The goal is to increase the number of screenings performed, thereby decreasing the number of colorectal cases diagnosed in later stages and increasing treatment options and chances of survival.

Figure 21: Percentage of Colorectal Cancer Cases by SEER Summary Stage, 1999-2001

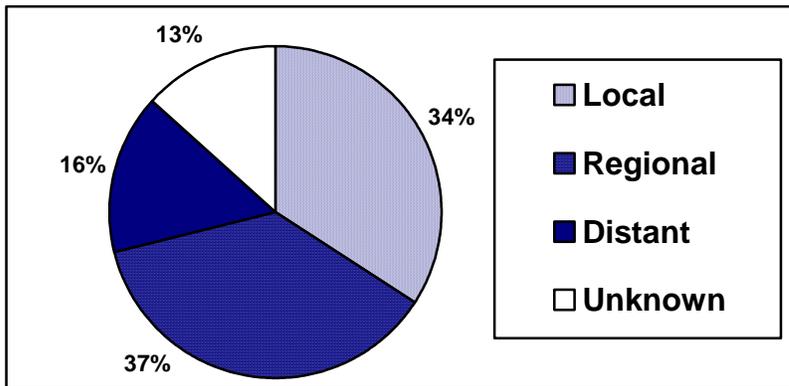
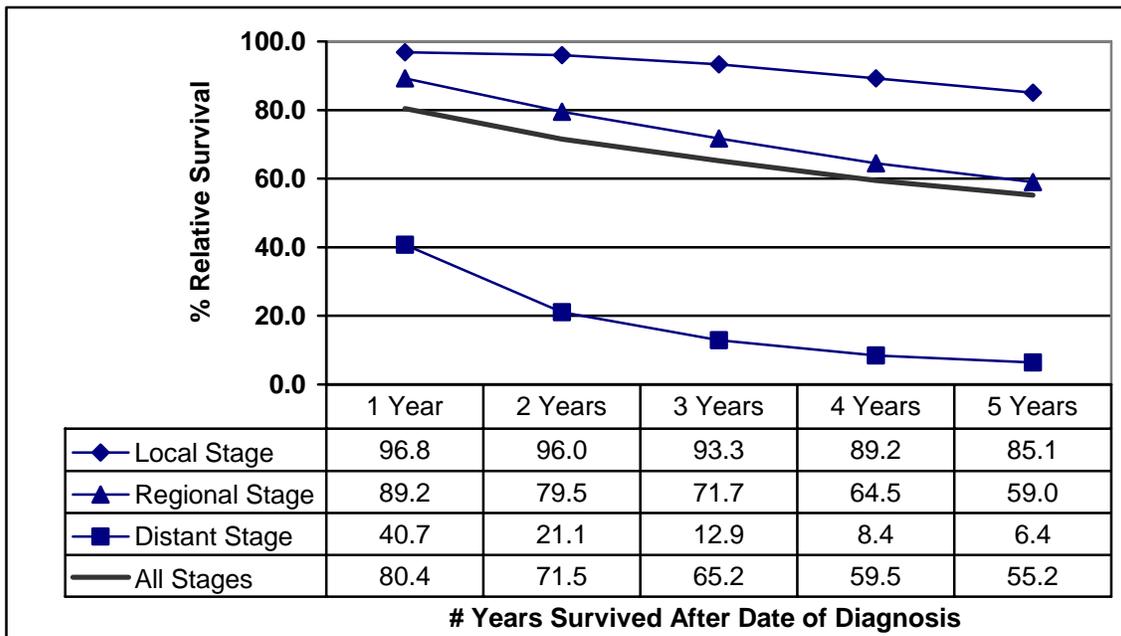
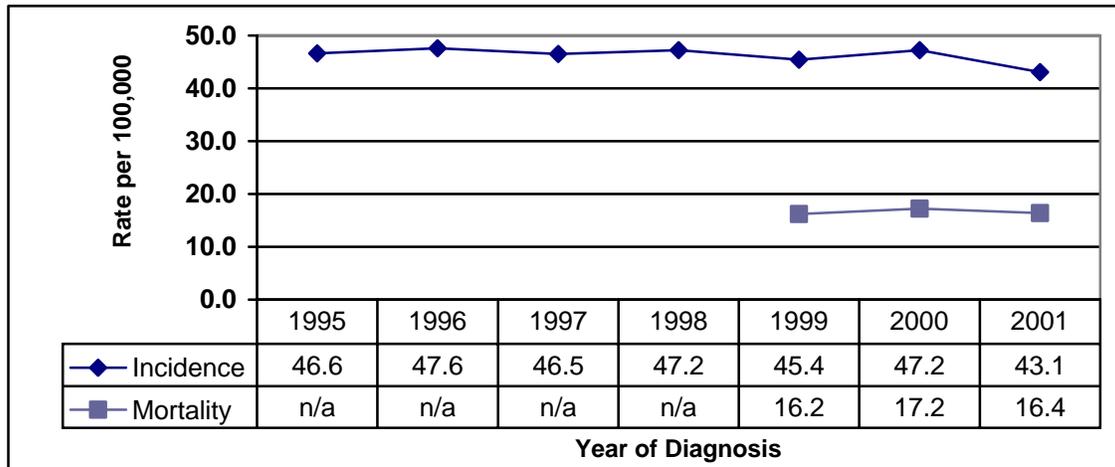


Figure 22: Five-Year Percent Relative Colorectal Cancer Survival, 1993-1998



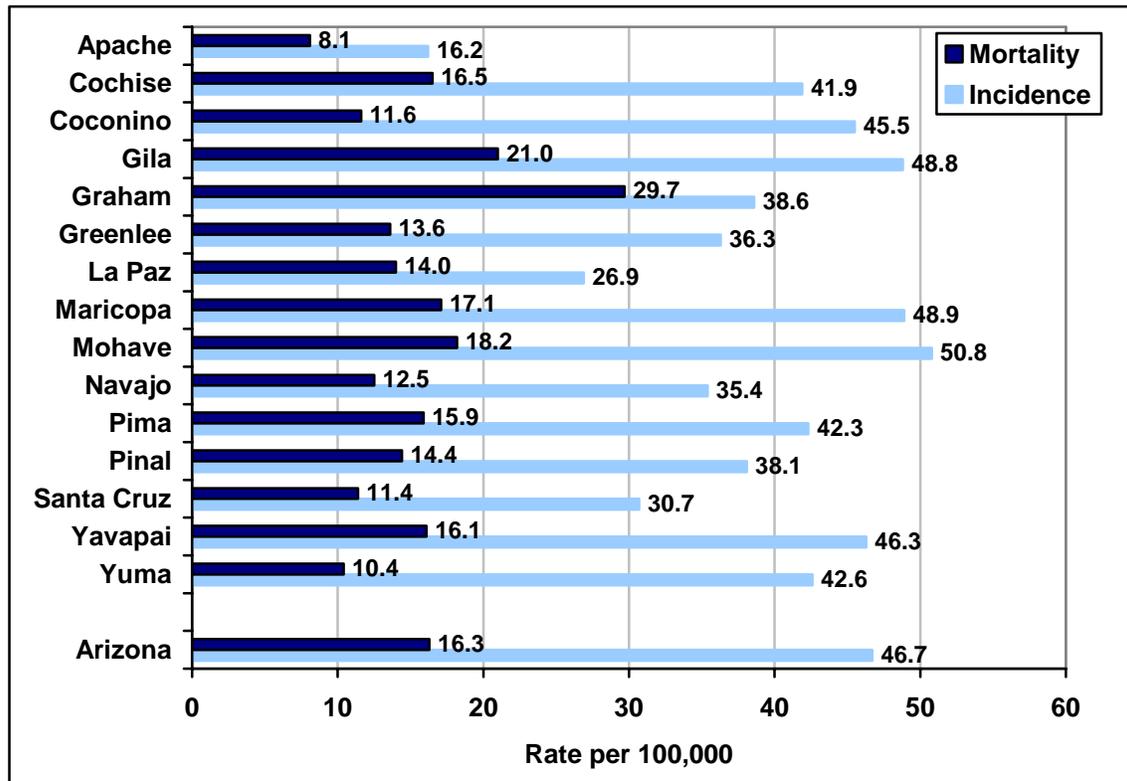
During this time period, the age-adjusted incidence rate and mortality rate in Arizona for colorectal cancer had remained constant, with a slight decrease in incidence in 2001 (see Figure 23).

Figure 23: Age-Adjusted Incidence and Mortality Rates of Colorectal Cancer in Arizona, 1995-2001



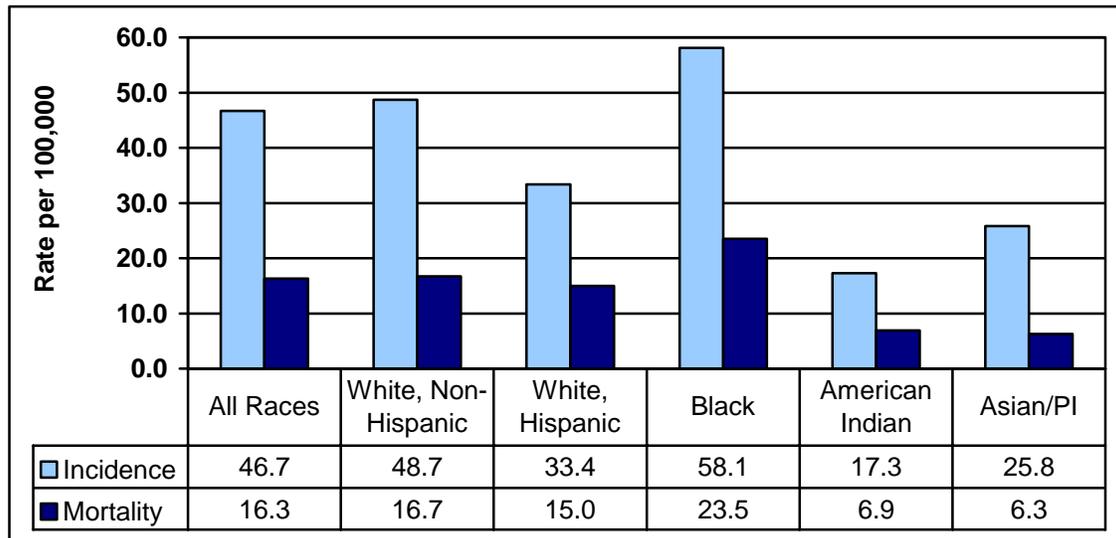
When analyzed by county in 1999-2001, Mohave County had the highest colorectal cancer incidence rate, and Graham County had the highest mortality rate (50.8 and 29.7 per 100,000, respectively). When compared to the state rate in 1999-2001, 12 counties have lower incidence rates, and three counties have higher incidence rates than the state.

Figure 24: Average Annual Age-Adjusted Incidence and Mortality Rates of Colorectal Cancer By County, 1999-2001



When analyzed by race and ethnicity, Blacks have the highest rates in both colorectal cancer incidence and mortality in Arizona (58.1 and 23.5 per 100,000, respectively) (see Figure 25). American Indians have both the lowest colorectal cancer incidence rates and mortality rates for colorectal cancer (25.8 and 6.3 per 100,000, respectively).

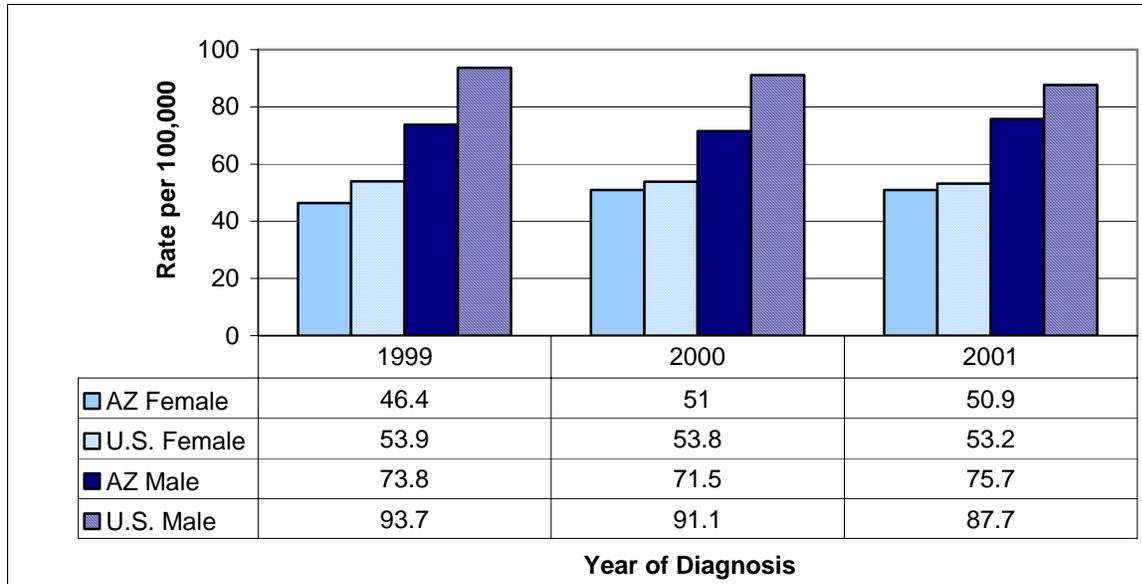
Figure 25: Average Annual Age-Adjusted Incidence and Mortality Rates of Colorectal Cancer by Race/Ethnicity, 1999-2001



Lung Cancer in Arizona

Lung Cancer was the second most common cancer diagnosed among Arizonans in 1999-2001 (see Figure 26). An average of 1741 and 1408 cases occurred per year among males and females, respectively, during this time period.

Figure 26: U.S.* and Arizona Age-Adjusted Incidence Rates of Lung Cancer by Gender, 1999-2001



*CDC National Program of Cancer Registries

When analyzed by stage, more lung cancer cases were diagnosed in distant stage (approximately 40%) than any other stage. This was largely because there was no effective screening method for this cancer, and consequently this cancer was often found once it had progressed later stage (See Figure 27). The percentage of cases diagnosed in local and regional stage *combined* was only 34%. Because there was no effective screening method, and since it was known that smoking causes lung cancer, reducing the number of smokers will lower the total number of lung cancers diagnosed at any stage, and will ultimately diminish the number of deaths due to lung cancer.

Figure 27: Percentage of Lung Cancer Cases by SEER Summary Stage, 1999-2001

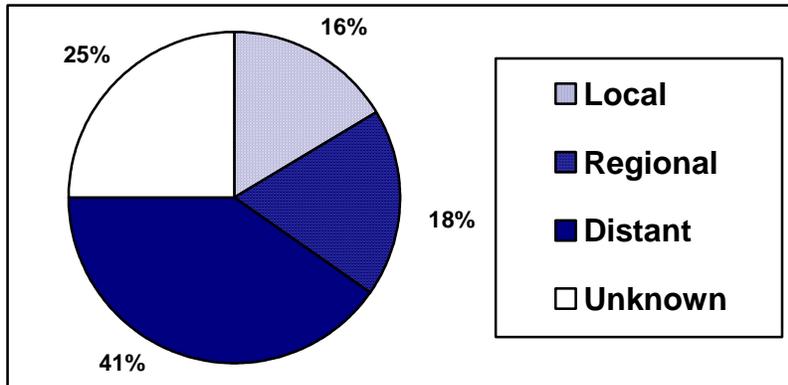
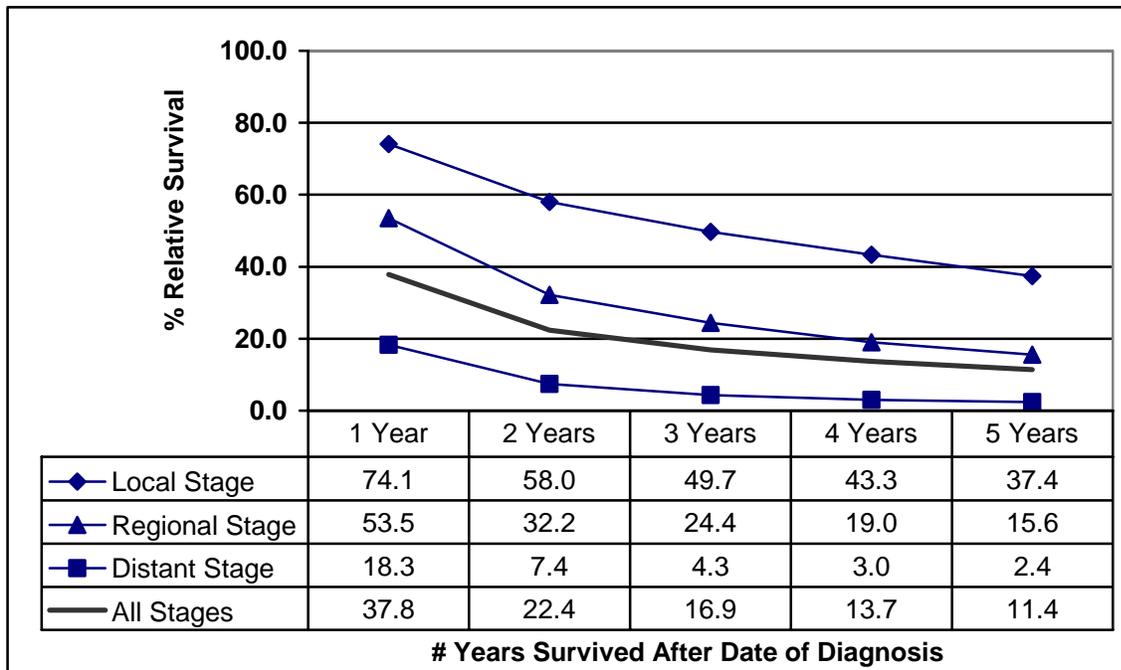
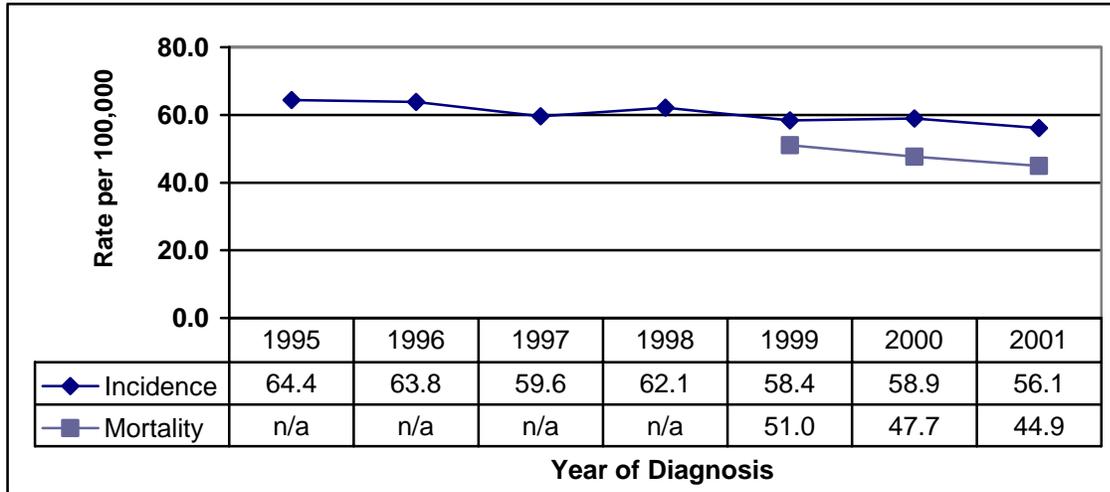


Figure 28: Five-Year Percent Relative Lung Cancer Survival, 1993-1998



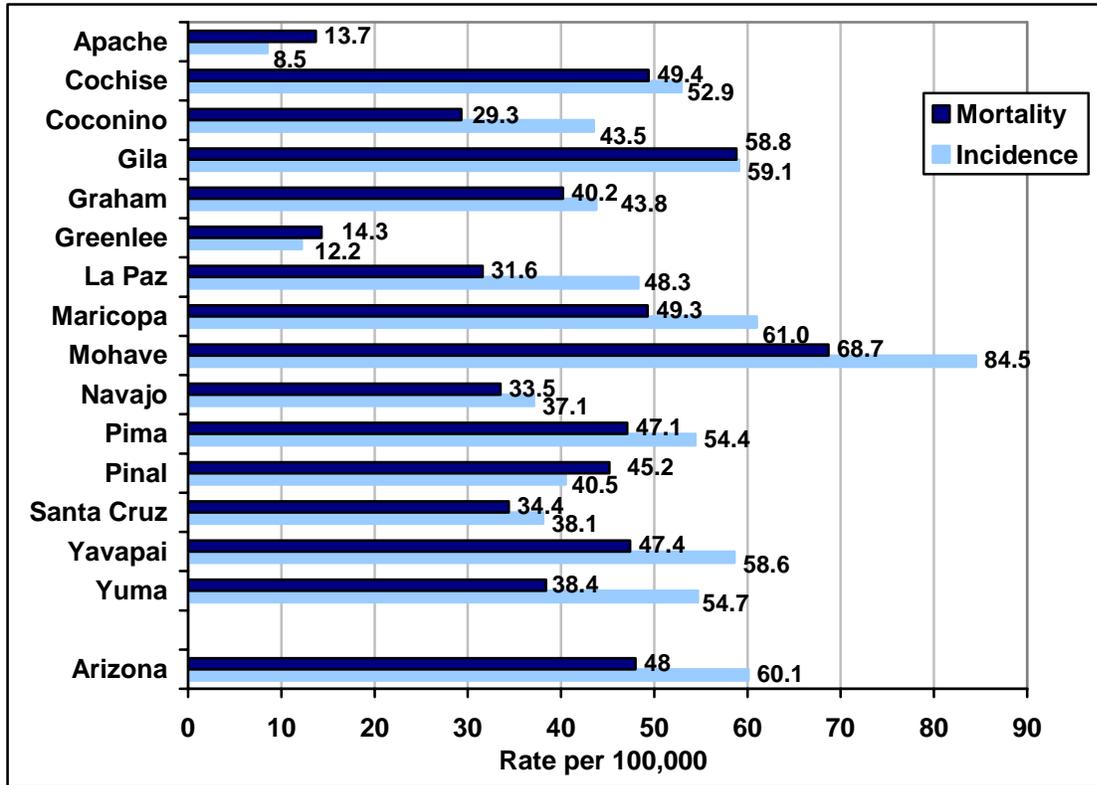
Lung cancer continues to be a deadly cancer, with almost as many deaths per year as were cases diagnosed in Arizona (see Figure 29). For Arizona men and women, lung cancer was the most common type of cancer death in 1999-2001 despite the slight decrease in both incidence and mortality rates during this time period.

Figure 29: Age-Adjusted Incidence and Mortality Rates for Lung Cancer in Arizona, 1995-2001



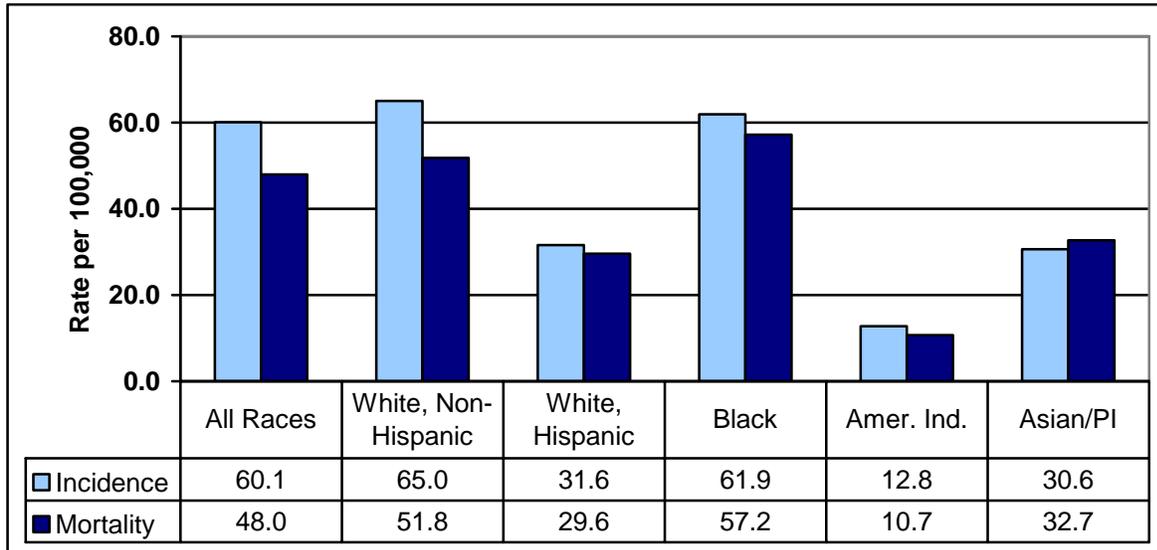
In 1999-2001, Mohave County had both the highest lung cancer incidence and mortality rates in the State of Arizona (84.5 and 68.7 per 100,000, respectively). (See Figure 30).

Figure 30: Average Annual Age-Adjusted Incidence and Mortality Rates for Lung Cancer By County, 1999-2001



When analyzed by race and ethnicity, the lung cancer incidence rates were highest among White Non-Hispanics (65.0 per 100,000) in Arizona, and the mortality rate was highest among Blacks (57.2 per 100,000) (See Figure 31). American Indians had the lowest rates for both lung cancer incidence and mortality (12.8 per 100,000 and 10.7 per 100,000, respectively).

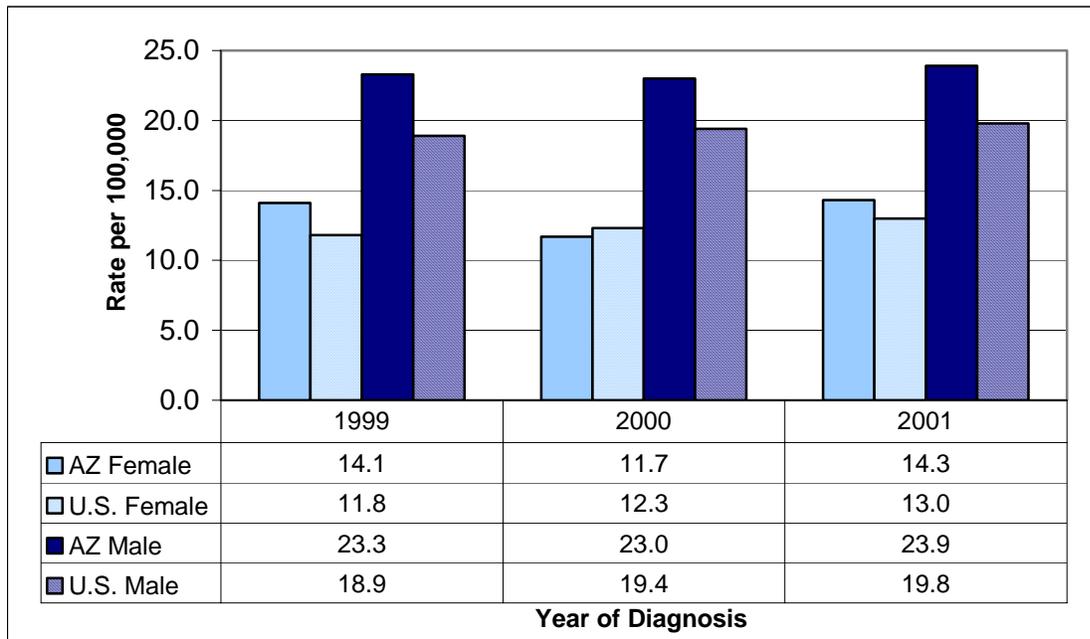
Figure 31: Age-Adjusted Incidence and Mortality Rates for Lung Cancer by Race/Ethnicity, 1999-2001



Melanoma in Arizona

Historically, melanoma had typically been among the five most common types of cancer diagnosed among men, and among the ten most common types of cancer diagnosed among women in Arizona. Compared to U.S. rates, the incidence of melanoma cancer in Arizona was slightly higher than the national rate (see Figure 32). The Arizona Cancer Registry does not collect data on basal and squamous cell carcinomas, which is the most common type of skin cancer.

Figure 32: U.S.* and Arizona Age-Adjusted Incidence Rates of Melanoma Cancer by Gender, 1999-2001



*CDC National Program of Cancer Registries

When analyzed by stage, melanoma cancer cases were most often diagnosed in local stage, followed by regional stage and least often in distant stage (See Figure 33). Sun protection practices and health education about sun shade for children and adults can help reduce the number of melanoma cases diagnosed and the number of melanoma deaths.

Figure 33: Percentage of Melanoma Cases by SEER Summary Stage, 1999-2001

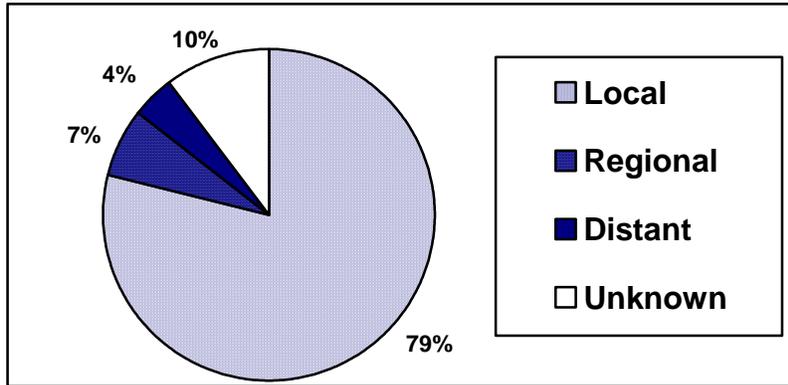
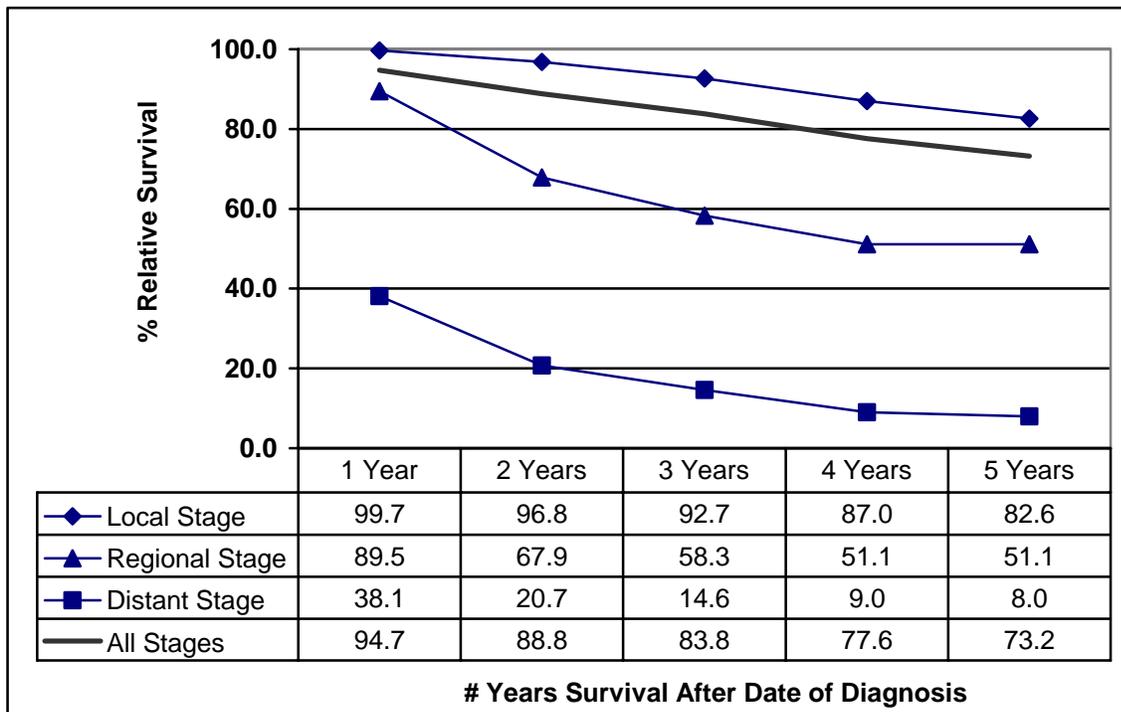
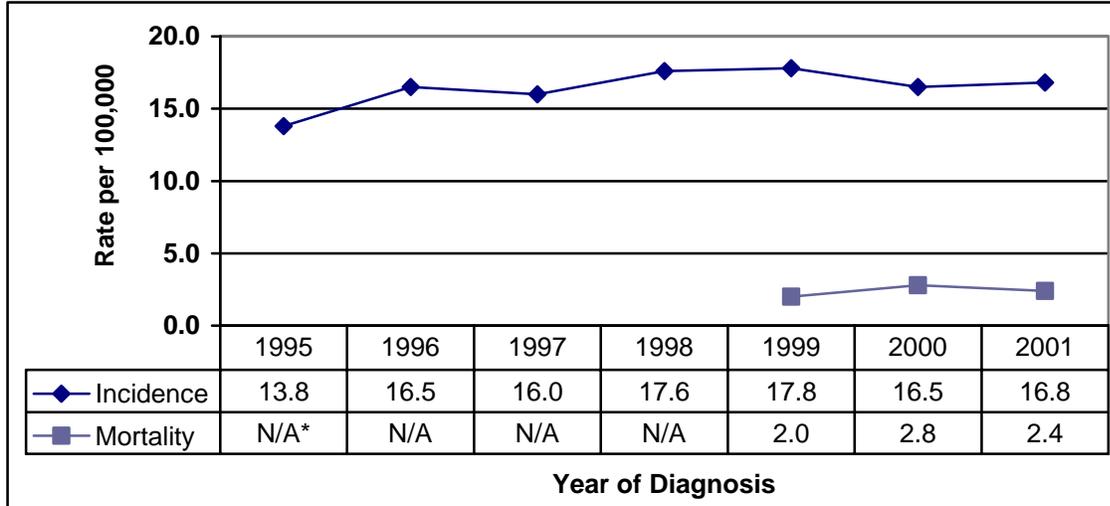


Figure 34: Five-Year Percent Relative Melanoma Survival, 1993-1998



During 1999-2001 time period, the age-adjusted incidence rate and mortality rate for melanoma had remained constant (see Figure 35).

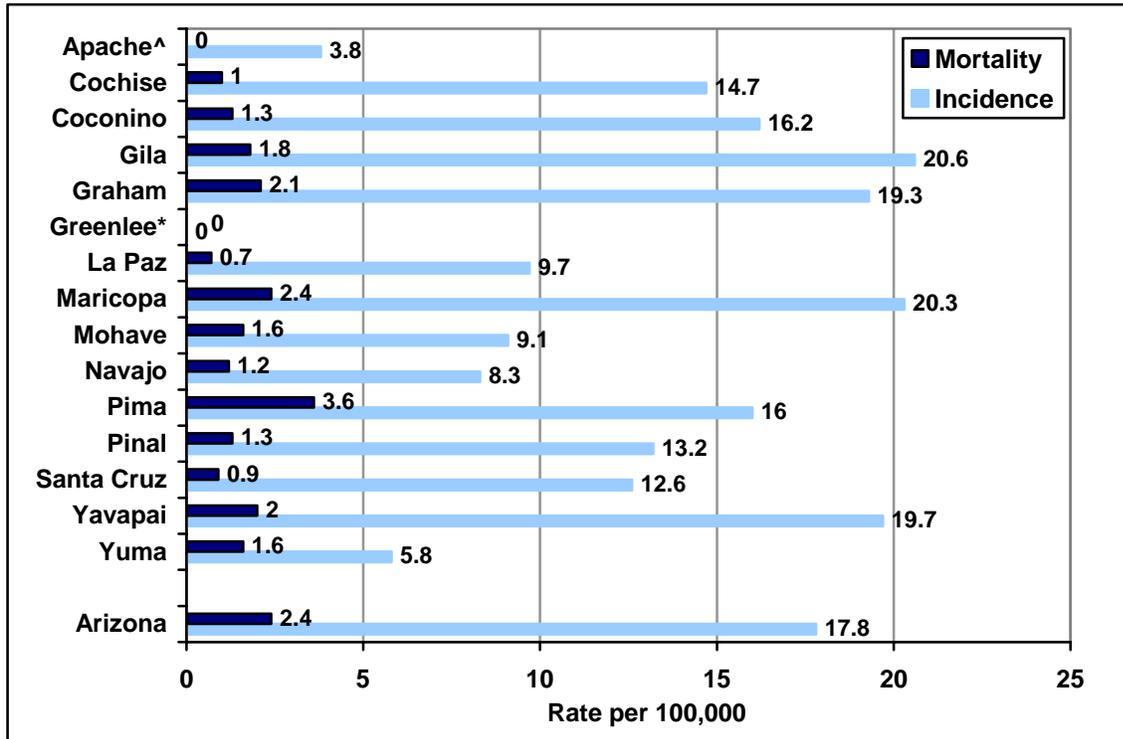
Figure 35: Age-Adjusted Incidence and Mortality Rates for Melanoma in Arizona, 1995-2001



* Data not available.

In 1999-2001, Gila County had the highest melanoma incidence rate (20.6 per 100,000), and Pima County had the highest mortality rate (3.6 per 100,000) for female breast cancer. When compared to the state rate, 11 counties have lower incidence rates, and four counties have higher incidence rates than the state (see Figure 36).

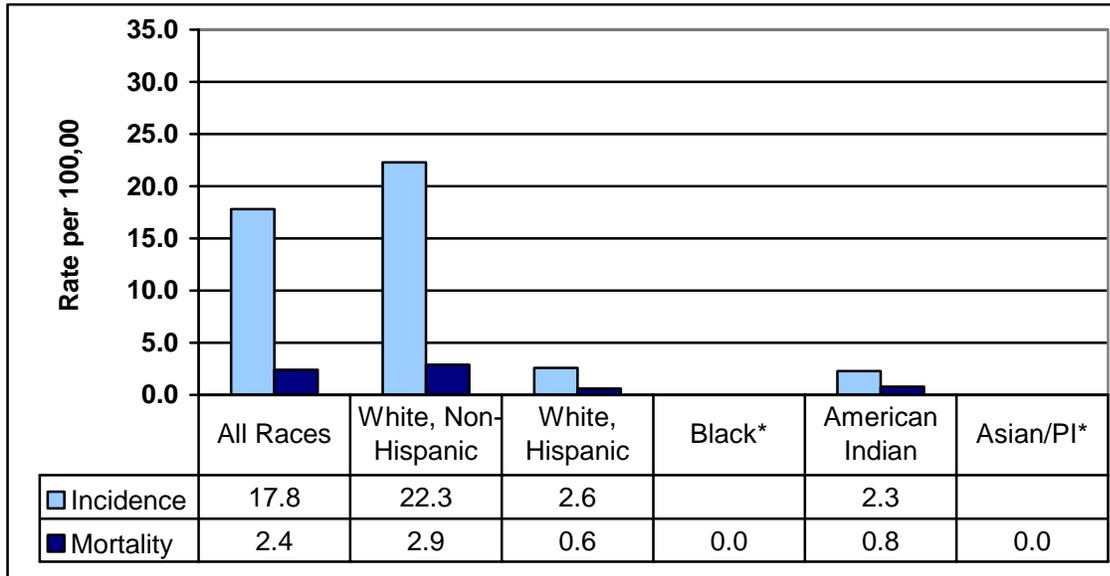
Figure 36: Average Annual Age-Adjusted Incidence and Mortality Rates for Melanoma by County, 1999-2001



[^]Zero deaths for this county. ^{*}Zero cases and deaths for this county.

When analyzed by race and ethnicity, Melanoma cases were typically compared between White, non-Hispanics and White, Hispanics in Arizona. The overall melanoma rates largely reflect the rates among White, non-Hispanics since approximately 98% of melanoma cases were diagnosed among this racial group.

Figure 37: Age-adjusted Incidence and Mortality Rates for Melanoma by Race/Ethnicity, 1999-2001

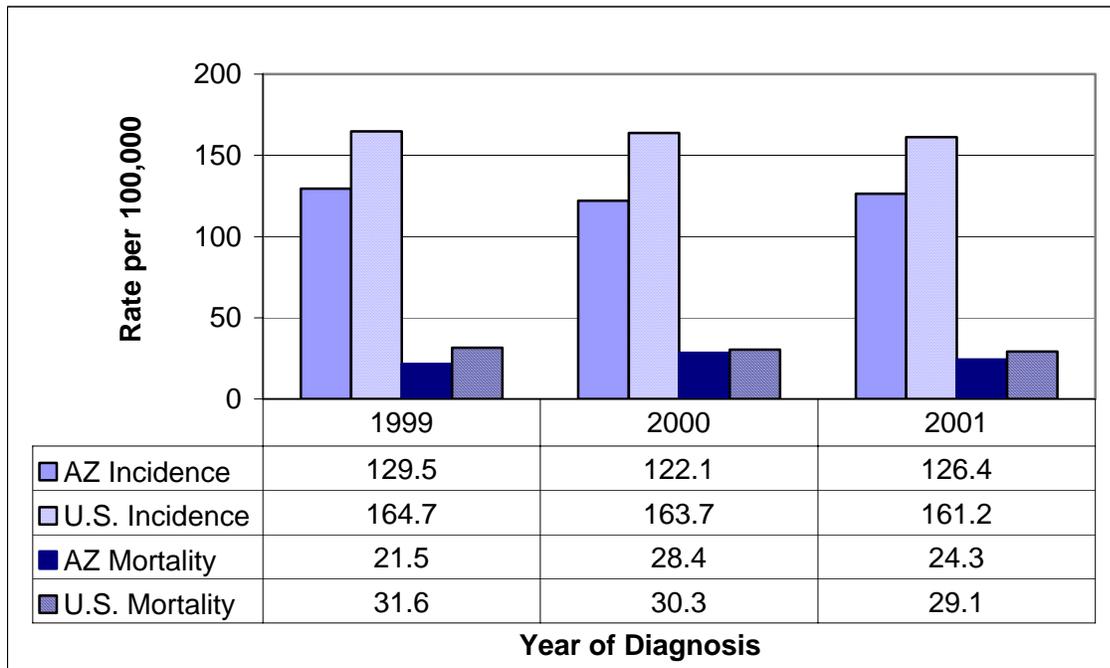


* Fewer than 10 cases reported. The rate is considered unstable, and therefore has not been specified. Zero deaths for these races for this site.

Prostate Cancer in Arizona

Prostate Cancer was the most frequently diagnosed cancer among Arizona men in 1999-2001. This cancer continues to be the most common type of cancer diagnosed among men in the US, as well. Prostate cancer was the second most common cancer death among men in Arizona during 1999-2001, with an average of 529 deaths per year. Arizona state rates were consistently lower than national rates during this time period (see Figure 38).

Figure 38: U.S. and Arizona Prostate Cancer Age-Adjusted Incidence and Mortality Rates, 1999-2001



U.S. Data: CDC National Program of Cancer Registries

When analyzed by stage, prostate cancer cases in Arizona were most commonly diagnosed in local stage (63%), followed by regional stage (11%) then distant stage (4%) (See Figure 29). In Arizona, nearly one quarter of prostate cases were reported to the ACR with an unknown stage, which makes it difficult to accurately report the number of cases by stage.

Figure 39: Percentage of Prostate Cancer Cases by SEER Summary Stage, 1999-2001

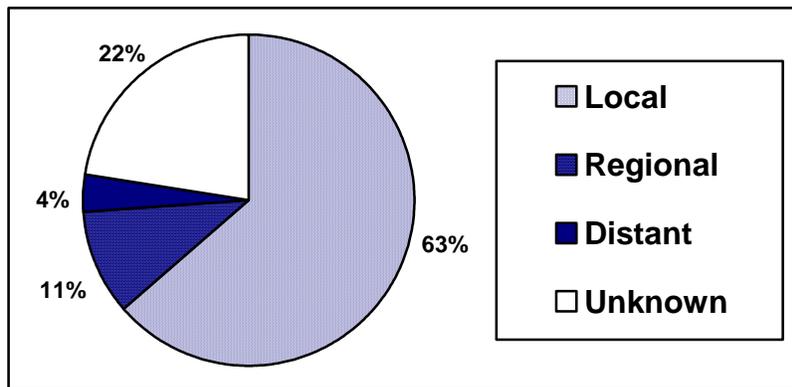
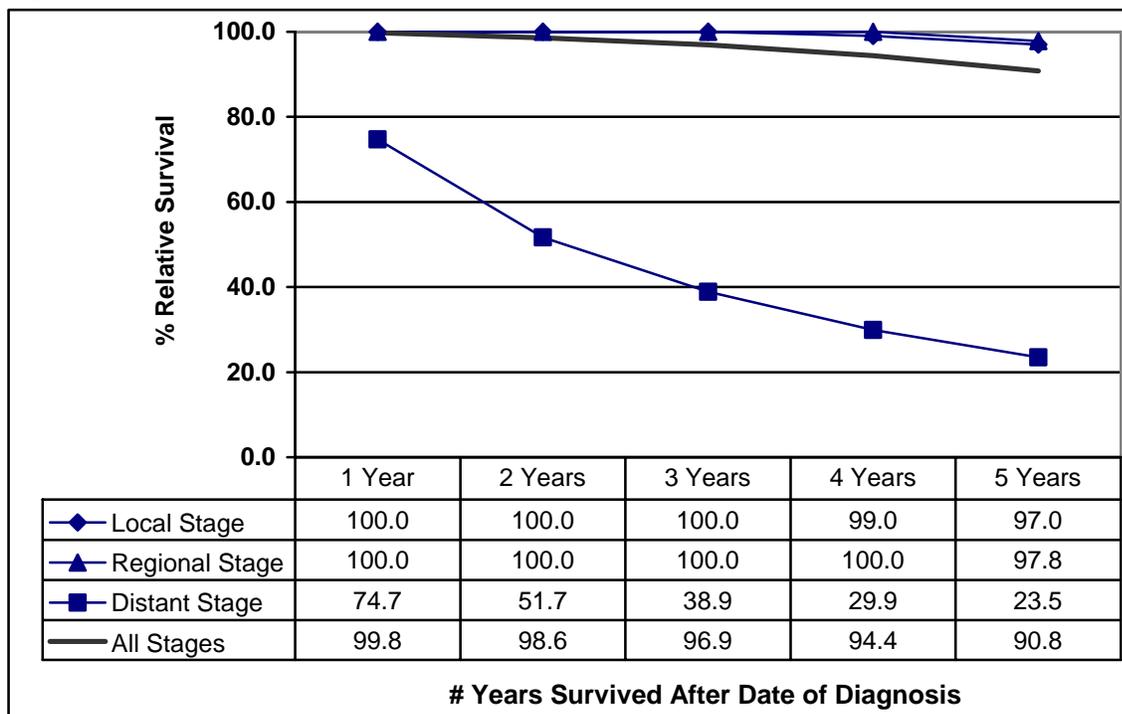
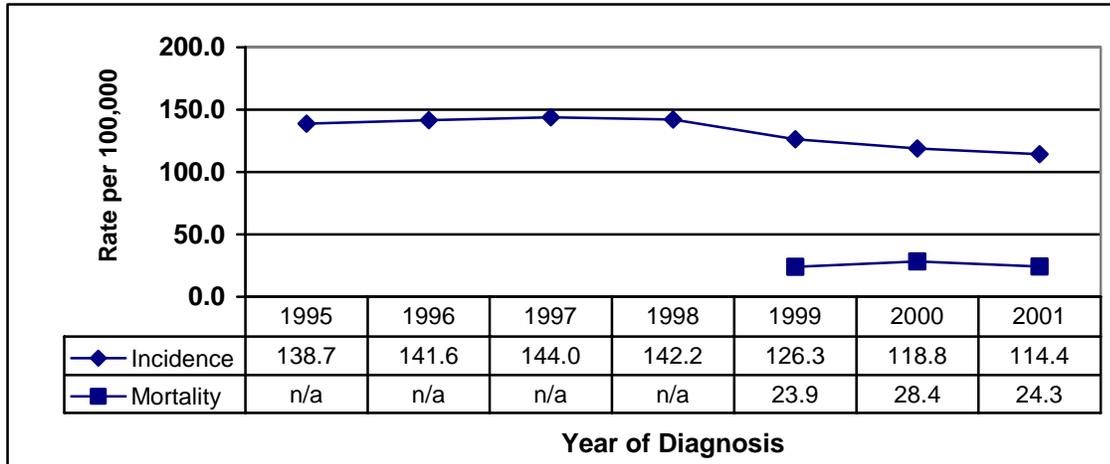


Figure 40: Five-Year Percent Relative Prostate Cancer Survival, 1993-1998



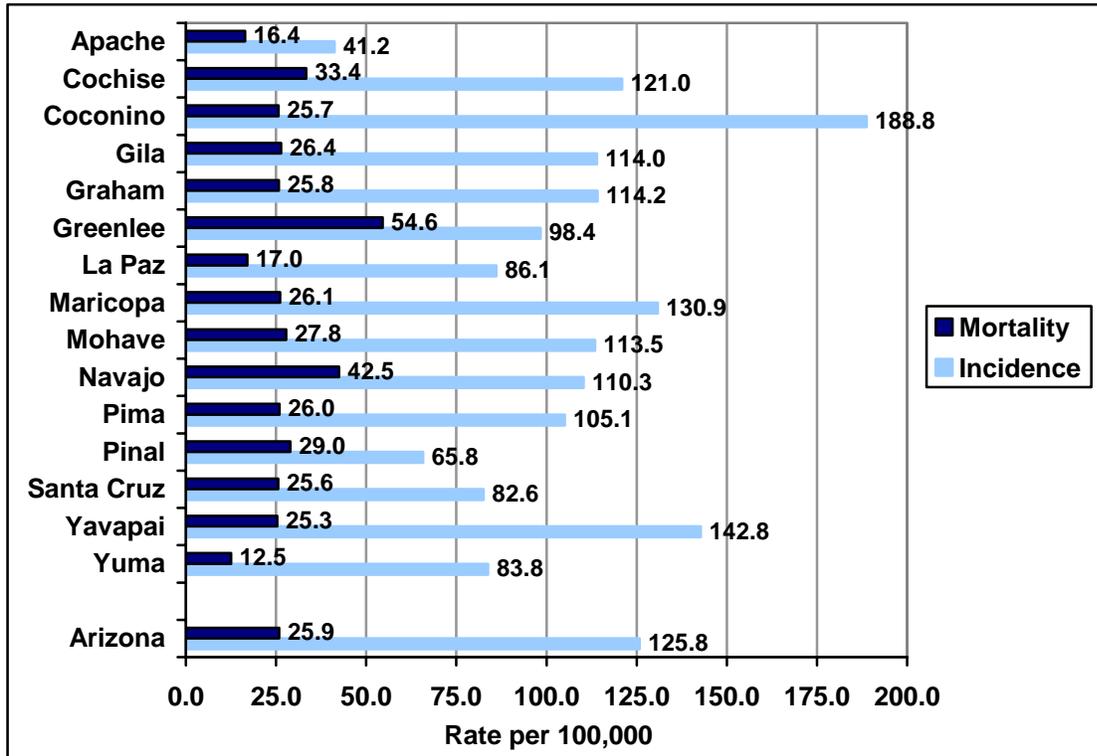
During 1999-2001, the age-adjusted incidence rates decrease after 1998, and the mortality rates for prostate cancer had remained constant (see Figure 41).

Figure 41: Age-Adjusted Incidence and Mortality Rates for Prostate Cancer in Arizona, 1995-2001



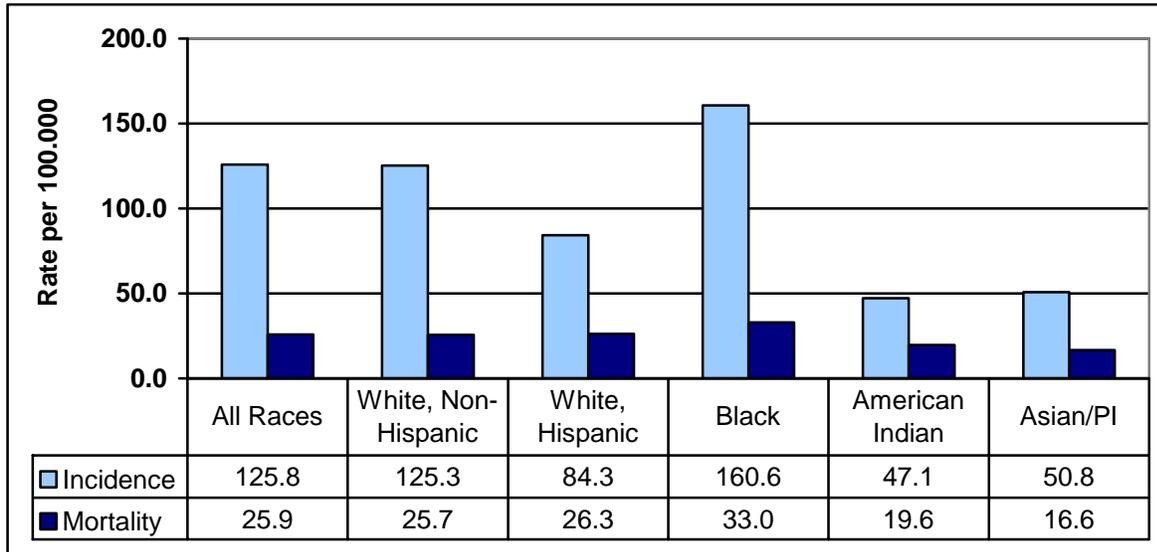
In 1999-2001, Coconino County had the highest incidence rate (188.8 per 100,000), and Greenlee County had the highest mortality rate (54.6 per 100,000) for prostate cancer. When compared to the state rate, twelve counties had lower prostate cancer incidence rates, and three counties have higher prostate cancer incidence rates than the state.

Figure 42: Average Annual Age-Adjusted Incidence and Mortality Rates for Prostate Cancer by County, 1999-2001



When analyzed by race and ethnicity, both prostate cancer incidence and mortality rates were highest among Blacks (160.6 per 100,000 and 33.0 per 100,000, respectively) in Arizona (see Figure 43). The lowest prostate cancer incidence and mortality rates occur among American Indians (47.1 per 100,000) and Asians (16.6 per 100,000), respectively.

Figure 43: Age-adjusted Incidence and Mortality for Prostate Cancer by Race/Ethnicity, 1999-2001



APPENDIX

Primary Site based on ICD-O-2		
Primary site	Site/Type	Excluding Type
Buccal cavity and pharynx		
Lip	C000 : C009	M-9590 : 9989
Tongue	C019 : C029	M-9590 : 9989
Salivary glands	C079 : C089	M-9590 : 9989
Floor of Mouth	C040 : C049	M-9590 : 9989
Gum and other mouth	C030 : C039, C050 : C059, C060 : C069	M-9590 : 9989
Nasopharynx	C110 : C119	M-9590 : 9989
Tonsil	C090 : C099	M-9590 : 9989
Oropharynx	C100 : C109	M-9590 : 9989
Hypopharynx	C129, C130 : C139, C141	M-9590 : 9989
Other oral cavity and pharynx	C140, C142 : C148	M-9590 : 9989
Digestive System		
Esophagus	C150 : C159	M-9590 : 9989
Stomach	C160 : C169	M-9590 : 9989
Small Intestine	C170 : C179	M-9590 : 9989
Colon excluding rectum	C180 : C189, C260	M-9590 : 9989
Rectum and recto sigmoid	C199 : C209	M-9590 : 9989
Anus, anal canal and anorectum	C210 : C212, C218	M-9590 : 9989
Liver	C220	M-9590 : 9989
Intra hepatic bile duct	C221	M-9590 : 9989
Gall bladder	C239	M-9590 : 9989
Other biliary	C240 : C249	M-9590 : 9989
Pancreas	C250 : C259	M-9590 : 9989
Retro peritoneum	C480	M-9590 : 9989
Peritoneum, momentum and mesentery	C481 : C482	M-9590 : 9989
Other digestive organs	C268 : C269, C488	M-9590 : 9989

Primary Site based on ICD-O-2		
Primary site	Site/Type	Excluding Type
Respiratory system		
Nasal Cavity, middle ear and accessory sinuses	C300 : C301, C310 : C319	M-9590 : 9989
Larynx	C320 : C329	M-9590 : 9989
Lung and bronchus	C340 : C349	M-9590 : 9989
Pleura	C384	M-9590 : 9989
Trachea, mediastinum and other respiratory organs	C339, C381 : C383, C388, C390, C398, C399	M-9590 : 9989
Bones and joints	C400 : C419	M-9590 : 9989
Soft tissue (including heart)	C380, C470 : C479, C490 : C499	M-9590 : 9989
Skin (excluding basal and squamous)		
Melanomas - - - skin	C440 : C449 (types 872 : 879)	
Other non-epithelial skin	C440 : C449	M-8000 : 8004, M-8010 : 8012, M-8070 : 8076, M-8090 : 8096, M-8720 : 8790, M-9590 : 9989,
Breast	C500 : C509	M-9590 : 9989
Female genital system		
Cervix	C530 : C539	M-9590 : 9989
Corpus	C540 : C549	M-9590 : 9989
Uterus, NOS	C559	M-9590 : 9989
Ovary	C569	M-9590 : 9989
Vagina	C529	M-9590 : 9989
Vulva	C510 : C519	M-9590 : 9989
Other female genital organs	C570 : C589	M-9590 : 9989
Male genital system		
Prostate	C619	M-9590 : 9989
Testis	C620 : C629	M-9590 : 9989
Penis	C600 : C609	M-9590 : 9989
Other male urinary organs	C630 : C639	M-9590 : 9989

Primary Site based on ICD-O-2		
Primary site	Site/Type	Excluding Type
Urinary system		
Urinary bladder	C670 : C679	M-9590 : 9989
Kidney and renal pelvis	C649, C659	M-9590 : 9989
Ureter	C669	M-9590 : 9989
Other urinary organs	C680 : C689	M-9590 : 9989
Eye and Orbit	C690 : C699	M-9590 : 9989
Brain and other nervous system		
Brain	C710 : C719	M-9530 : 9939, M-9590 : 9989
Other nervous system	C710 : C719 (type 953) C700 : C709, C720 : C729	M-9590 : 9989
Endocrine system		
Thyroid	C739	M-9590 : 9989
Other endocrine (including thymus)	C379, C740 : C749, C750 : C759	M-9590 : 9989
Lymphomas		
Hodgkin's disease	types 9650 : 9667	
Non-Hodgkin's lymphoma	types 9590 : 9595, 9670 : 9714	
Multiple Myeloma	types 9731 : 9732	
Leukemias		
Lymphocytic	types 9820, 9821, 9822, 9823, 9825, 9826	
Granulocytic (myeloid)	types 9860, 9861, 9862, 9863, 9864, 9866, 9867, 9868	
Monocytic	types 9890, 9891, 9892, 9893, 9894	
Other	types 9800, 9801, 9802, 9803, 9804, 9827, 9830, 9840, 9841, 9842, 9850, 9870, 9880, 9900, 9910, 9930 : 9941	
Ill-defined and unspecified sites	types 9720 : 9723, 9740, 9741, 9760 : 9764, 9950 : 9989, C760 : C768, C809 (types 8000: 9589) C420 : C424 (types 8000 : 9589) C770 : C779 (types 8000 : 9589)	

Primary Site based on ICD-O-2		
Primary site	Site/Type	Excluding Type
Invalid site	Site or histology code not within valid range or site code not found in this table	

Site Group	ICD-O-3 Site	ICD-O-3 Histology (Type)
Oral Cavity and Pharynx		
Lip	C000-C009	
Tongue	C019-C029	
Salivary Gland	C079-C089	
Floor of Mouth	C040-C049	
Gum and Other Mouth	C030-C039, C050-C059, C060-C069	
Nasopharynx	C110-C119	
Tonsil	C090-C099	
Oropharynx	C100-C109	
Hypopharynx	C129, C130-C139	
Other Oral Cavity and Pharynx	C140, C142-C148	
Digestive System		
Esophagus	C150-C159	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Stomach	C160-C169	
Small Intestine	C170-C179	
Colon and Rectum		
Colon excluding Rectum		
Cecum	C180	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Appendix	C181	
Ascending Colon	C182	
Hepatic Flexure	C183	
Transverse Colon	C184	
Splenic Flexure	C185	
Descending Colon	C186	
Sigmoid Colon	C187	
Large Intestine, NOS	C188-C189, C260	
Rectum and Rectosigmoid Junction		
Rectosigmoid Junction	C199	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Rectum	C209	
Anus, Anal Canal and Anorectum	C210-C212, C218	
Liver and Intrahepatic Bile Duct		
Liver	C220	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Intrahepatic Bile Duct	C221	
Gallbladder	C239	
Other Biliary	C240-C249	

Pancreas	C250-C259	
Retroperitoneum	C480	
Peritoneum, Omentum and Mesentery	C481-C482	
Other Digestive Organs	C268-C269, C488	
Respiratory System		
Nose, Nasal Cavity and Middle Ear	C300-C301, C310-C319	
Larynx	C320-C329	
Lung and Bronchus	C340-C349	
Pleura	C384	
Trachea, Mediastinum and Other Respiratory Organs	C339, C381-C383, C388, C390, C398, C399	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Bones and Joints	C400-C419	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Soft Tissue including Heart	C380, C470-C479, C490-C499	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Skin excluding Basal and Squamous		
Melanoma of the Skin	C440-C449	8720-8790
Other Non-Epithelial Skin	C440-C449	<u>excluding 8000-8005, 8010-8045, 8050-8084, 8090-8110, 8720-8790, 9590-9989, and sometimes 9050-9055, 9140+</u>
Breast	C500-C509	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Female Genital System		
Cervix Uteri	C530-C539	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Corpus and Uterus, NOS		
Corpus Uteri	C540-C549	
Uterus, NOS	C559	
Ovary	C569	
Vagina	C529	
Vulva	C510-C519	
Other Female Genital Organs	C570-C589	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Male Genital System		
Prostate	C619	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>
Testis	C620-C629	<u>excluding 9590-9989, and sometimes 9050-9055, 9140+</u>

Penis	C600-C609	
Other Male Genital Organs	C630-C639	
Urinary System		
Urinary Bladder	C670-C679	
Kidney and Renal Pelvis	C649, C659	
Ureter	C669	excluding 9590-9989, and sometimes 9050-9055, 9140+
Other Urinary Organs	C680-C689	excluding 9590-9989, and sometimes 9050-9055, 9140+
Eye and Orbit	C690-C699	excluding 9590-9989, and sometimes 9050-9055, 9140+
Brain and Other Nervous System		
Brain	C710-C719	excluding 9530-9539, 9590-9989, and sometimes 9050-9055, 9140+
Cranial Nerves Other Nervous System	C710-C719	9530-9539
	C700-C709, C720-C729	excluding 9590-9989, and sometimes 9050-9055, 9140+
Endocrine System		
Thyroid	C739	
Other Endocrine including Thymus	C379, C740-C749, C750-C759	excluding 9590-9989, and sometimes 9050-9055, 9140+
Lymphoma		
Hodgkin Lymphoma		
Hodgkin - Nodal	C024, C098-C099, C111, C142, C379, C422, C770-C779	
Hodgkin - Extranodal	All other sites	9650-9667
Non-Hodgkin Lymphoma		
NHL - Nodal	C024, C098,C099, C111,C142, C379,C422, C770-C779	9590-9596, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9714-9719, 9727-9729, 9823, 9827
NHL - Extranodal	All sites except C024, C098-C099, C111, C142, C379, C422, C770- C779	9590-9596, 9670-9671, 9673, 9675, 9678-9680, 9684, 9687, 9689-9691, 9695, 9698-9702, 9705, 9708-9709, 9714-9719, 9727-9729
	All sites except C024, C098-C099, C111, C142, C379, C420-C422, C424, C770-C779	9823, 9827

Myeloma		9731-9732, 9734
Leukemia		
Lymphocytic Leukemia		
Acute Lymphocytic Leukemia		9826,9835-9837
Chronic Lymphocytic Leukemia	C420, C421, C424	9823
Other Lymphocytic Leukemia		9820, 9832-9834, 9940
Myeloid and Monocytic Leukemia		
Acute Myeloid Leukemia		9840, 9861, 9866, 9867, 9871-9874, 9895-9897, 9910, 9920
Acute Monocytic Leukemia		9891
Chronic Myeloid Leukemia		9863, 9875, 9876, 9945, 9946
Other Myeloid/Monocytic Leukemia		9860, 9930
Other Leukemia		
Other Acute Leukemia		9801, 9805, 9931
Aleukemic, subleukemic and NOS		9733, 9742, 9800, 9831, 9870, 9948, 9963, 9964
	C420, C421, C424	9827
<u>Mesothelioma +</u>		9050-9055
<u>Kaposi Sarcoma +</u>		9140
Miscellaneous		9740-9741, 9750-9758, 9760-9769, 9950, 9960-9962, 9970, 9975, 9980, 9982-9987, 9989
	C760-C768, C809	
	C420-C424	excluding 9590-9989, and
	C770-C779	sometimes 9050-9055, 9140+
Invalid	Site or histology code not within valid range or site code not found in this table.	

+ The Site Recode variable can be created with or without Mesothelioma (9050-9055) and Kaposi Sarcoma (9140) as separate groupings. The table above documents both possibilities.

*Available from http://seer.cancer.gov/siterecode/icdo3_d01272003/ [Accessed May 2, 2005].

(This page intentionally left Blank)

NOTES

(This page intentionally left Blank)



**Arizona Cancer Registry
Office of Health Registries
Bureau of Public Health Statistics**

**150 North 18th Avenue, Suite 505
Phoenix, Arizona 85007
Phone: (602) 542-7320**