



**CANCER  
IN  
ARIZONA**

**CANCER INCIDENCE  
AND MORTALITY  
IN 1998**

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**CANCER IN ARIZONA  
CANCER INCIDENCE AND MORTALITY  
IN 1998**

**THE ANNUAL REPORT FOR  
THE ARIZONA CANCER REGISTRY**

**ARIZONA DEPARTMENT OF HEALTH SERVICES  
BUREAU OF PUBLIC HEALTH STATISTICS**

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## Executive Summary

The Arizona Cancer Registry (ACR) is a population-based surveillance system funded by the state of Arizona with assistance from the Center for Disease Control and Prevention. It is designed to collect, manage, and analyze information on incidence and survival for Arizona residents having been diagnosed with and/or treated for cancer. Highlights of the findings for Arizona in 1998 include:

### Cancer Incidence in Arizona, 1998

- ❖ In 1998, there were 20,282 new invasive cancer cases diagnosed and recorded among Arizona residents.
- ❖ Ninety four percent (94%) of the diagnosed cases of cancer in 1998 were among the white population, which comprises 89% of the state's population.
- ❖ The other races comprising of Native Americans, African Americans, and Asians, experienced 4.0% of the cancer cases diagnosed in 1998. The remaining 1.6% of cancer cases diagnosed was among persons of unknown race.
- ❖ Approximately 23% of Arizona's population in 1998 was Hispanic, and 7.3% of all cancer cases diagnosed were among Hispanics. The age-adjusted incidence rate for Hispanics was 222 per 100,000 persons, which was lower than for non-Hispanics.
- ❖ The four most common types of cancer diagnosed, female breast, prostate, colorectal and lung & bronchus comprised 57.7% of all cancer cases diagnosed in 1998.
- ❖ The age-adjusted incidence rate of 354 per 100,000 persons among Arizona residents was lower than the national age-adjusted incidence rate of 395 per 100,000 persons in 1998.
- ❖ When analyzed by gender, the age-adjusted incidence rates in Arizona were lower among females (320 per 100,000 females) than males (397 per 100,000 males).
- ❖ The ten most common types of cancer diagnosed among Arizona males in 1998 were prostate, lung & bronchus, colorectal, bladder, skin melanoma, lymphoma, kidney and renal pelvis, oral cavity and pharynx, leukemia, and pancreas.
- ❖ The ten most common types of cancer diagnosed among Arizona females in 1998 were breast, lung & bronchus, colorectal, corpus uteri, ovarian, skin melanoma, bladder, thyroid gland, and pancreas.

### Cancer Mortality in Arizona, 1998

- ❖ There were 8503 deaths due to cancer recorded among Arizona residents in 1998.
- ❖ The 1998 age-adjusted mortality rate in Arizona was 113 per 100,000 persons which was the lowest rate during the 12-year period from 1987 to 1998.
- ❖ Cancer deaths were more common among Arizona males than females with age-adjusted mortality rates of 132 and 100 per 100,000 persons, respectively.
- ❖ The age-adjusted mortality rate among non-Hispanics in 1998 was 118 per 100,000 persons, and among Hispanics was 85 per 100,000 persons.
- ❖ Lung cancer deaths were the most common type of cancer death in Arizona in 1998 with an age-adjusted mortality rate of 32 per 100,000 persons, followed by female breast cancer (18 per 100,000 females), prostate cancer (13 per 100,000 males), and colorectal cancer (11 per 100,000 persons).

## ARIZONA CANCER REGISTRY

**Historical Perspective:** The ACR began operating in 1980 and started collecting information in 1981. Initially, the registry was a voluntary hospital-based reporting system. In 1988, Arizona Revised Statute §36-133 was amended mandating the reporting of cancer cases. Rules to ensure reporting of all cases became effective January 1, 1992. These 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. Enhancement funding to support and improve the registry is provided through the National Program of Cancer Registries (NPCR) from the Centers for Disease Control and Prevention (CDC) cooperative agreement (U75/CCU910679).

**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 and in-house training, 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 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 1998 who reside in Arizona. This is the fourth 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.

## ***Activities:***

### **Case Reporting:**

- A total of 75 hospitals are reporting 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 four of six federal facilities (VA and military). In addition, the ACR receives cases from outpatient freestanding clinics and physician offices.
- The ACR travels to 12 hospitals (less than 50 beds) to perform data collection of cancer cases.
- The ACR also performs casefinding at 35 freestanding and hospital pathology laboratories in order to capture unreported cases. Most cases that are identified at pathology laboratories are prostate and melanoma.
- Most hospitals report electronically. A BBS (Bulletin Board System) electronic reporting system has been developed.
- 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 17 states across the United States.
- 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, Volume I and II and the Arizona Cancer Registry Supplement.

### **Data Submission To National Organizations:**

- The ACR is a member of NAACCR. NAACCR is 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 CBTRUS (Central Brain Tumor Registry of the United States). This is the largest population-based database of primary brain tumors.

### **Data Quality, Timeliness and Completeness:**

- NAACCR established a certification process for central cancer registries. Data for 1997 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 Gold Standard, the highest standard possible.
- Death certificate clearance procedures were performed on 1998 data. The percentage of *death certificate only* cases after clearance was 1.4%. The SEER standard states that these cases “should not exceed 1.5 percent of all cancers registered in a given year after follow-back.”. The NAACCR “gold standard” is <3%. The ACR met both national standards.
- From January 2000 through June 2001 the ACR completed 104 requests for data and special analysis.
- The ACR maintains a monitoring system that tracks the timeliness and completeness of hospital reporting.

### Analysis and Special Studies:

- The ACR supported a study of the incidence of colorectal cancer in Arizona performed by the Arizona Family Registry for Colorectal Cancer Studies from the Arizona Cancer Center at the University of Arizona. The ACR provided incidence data of colorectal cancer cases diagnosed from 1997 to 1999.
- During 2000 and 2001 the ACR entered into discussions with the Arizona Cancer Center and the American Cancer Society to assist them with special studies of persons with cancer. The ACR is planning to use registry data to contact patients in order to facilitate their enrollment in the studies. The use of ACR for these studies is permissible under Arizona Statute and ADHS policy.

### Education and Training:

- Newsletters are published on a quarterly basis. The newsletter includes 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 were: Introductory Abstracting Workshop, Intermediate Abstracting Workshop, ICD-O-3 and Staging Workshop and many satellite teleconferences.

**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 of Native Americans in the state.

**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 R9-1-315: Disclosure of Information and Records. Case reports are 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 has 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 copies or information can be obtained by contacting the Arizona Cancer Registry at (602)542-7320 or by going to the website at [www.hs.state.az.us/phs/phstats/acr](http://www.hs.state.az.us/phs/phstats/acr).

## Introduction

The 1998 Cancer Incidence and Mortality in Arizona Annual Report contains five chapters that report information on the status of cancer incidence and mortality in Arizona for the year 1998. The first four chapters contain information on cancer incidence in Arizona, Maricopa County, Pima County and all other Arizona counties combined labeled “Arizona Rural Counties”. Data for the “Arizona Rural Counties” (Part IV) includes: Apache County, Cochise County, Coconino County, Gila County, Graham County, Greenlee County, La Paz County, Mohave County, Navajo County, Pinal County, Santa Cruz County, Yavapai County, and Yuma County. These counties were combined so that a sufficient number of cases could be generated for an analysis. The fifth chapter of this report contains information on the number of cancer deaths and cancer mortality rates in Arizona in 1998. Data for the analysis of deaths were provided by the ADHS Office of Vital Records.

The format for the five parts 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 were not included. 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, graphs, and maps in this publication before interpreting this information.

### Part I: Cancer Incidence in Arizona

In 1998, there were 20,282 invasive cancer cases diagnosed and recorded among Arizona residents. The demographic distribution of Arizona cancer cases indicated the greatest percentage are among Whites (94.4%) and non-Hispanics (92.7%). Of the most common cancer types, prostate, breast, and lung & bronchus collectively account for 46.4% of all cancers diagnosed in Arizona residents in 1998.

The “all sites” age-adjusted cancer rate of 354 per 100,000 persons among Arizona residents was lower than the national age-adjusted cancer incidence rate of 395 per 100,000 persons<sup>1</sup> and slightly higher than the 1997 Arizona rate of 349 per 100,000 persons.<sup>2</sup> In addition, age-adjusted cancer rates were lowest among females (320 per 100,000 persons) and Hispanics (222 per 100,000 persons). Analysis of “all sites” by county showed, for both sexes combined, a range of age-adjusted cancer rates from 249 to 395 per 100,000. The age-adjusted cancer rates by race in Table I-I show that Whites had a slightly higher overall incidence rate than Blacks. This is inconsistent with the national age-adjusted cancer rate for Blacks which is higher than that of Whites (Table I-I). This rate does not necessarily indicate that Black persons in Arizona have a truly lower cancer incidence since only approximately 3% of the state population is African American. Further detailed analysis should be done to determine whether the incidence rate for Blacks is truly lower than the incidence rate for Whites by looking at specific details such as the population distribution, the type of cancer under discussion, and data consistency in previous years.

Age-specific cancer incidence rates indicated that invasive cancer is highest among individuals age 70-79 years with an overall rate of 1978 per 100,000 persons. When analyzed by sex and ethnicity, the highest age-specific cancer rate for non-Hispanics was in the 70-79 age group.

Males, females, and Hispanics had the highest age-specific cancer rate in the 80 years and older age group.

This year's report includes an additional graph depicting the percent distribution by SEER Summary Stage for the four most common types of cancer: female breast cancer, colorectal cancer, prostate cancer and lung & bronchus cancer. These four types of cancer have very different distributions by stage. Female breast cancer and prostate cancer have approximately the same stage distribution in Arizona, although not for the same reasons. The increased public awareness of the importance of breast self-exams, annual breast exams by a physician, and annual mammographies have increased the number of breast cancer cases (61%) diagnosed in local stage. Typically a large percentage (67%) of prostate cancer cases are diagnosed in local stage. The distribution of colorectal cancer cases by stage indicates that roughly the same percentage of cases are diagnosed in local or regional stage, comprising a total of approximately 75% of all colorectal cases diagnosed. The use of screening methods to detect pre-cancerous polyps such as sigmoidoscopy and colonoscopy, and the use of fecal occult blood testing can continue to decrease the number of colorectal cancer cases diagnosed in a distant stage. Lung cancer is more difficult to diagnose in earlier stages and therefore has a much lower chance of patient survival than these other types of cancer. In 1998 over 40% of all lung cancer cases in Arizona were diagnosed in distant stage. Encouraging people to quit smoking, and developing more effective ways to screen for lung cancer would help reduce the number of lung cancer cases diagnosed in late stage.

The next most common types of cancer for men and women differ slightly. For Arizona men, the most common types of cancer diagnosed in 1998 were prostate, lung & bronchus, colorectal, bladder, skin melanoma, lymphoma, kidney and renal pelvis, oral cavity and pharynx, leukemia, and pancreas. For Arizona women, the most common types of cancer diagnosed in 1998 were breast, lung & bronchus, colorectal, corpus uteri, lymphoma, ovarian, skin melanoma, bladder, thyroid gland, and pancreas.

## Part II: Cancer Incidence in Maricopa County

Among residents of Maricopa County there were 11,516 invasive cancer cases diagnosed in 1998. As with Arizona, the demographic distribution of Maricopa County showed 95% of cancer cases were among Whites and 94.5% were among non-Hispanic. Prostate, breast, and lung & bronchus accounted for 46.5% of all cancers diagnosed in Maricopa County residents. The "all sites" age-adjusted rate of 358 per 100,000 persons among Maricopa County residents was slightly higher than the Arizona rate of 354 but lower than the national age-adjusted cancer rate of 395 per 100,000 persons<sup>1</sup> and higher than the 1997 Maricopa County rate of 348 per 100,000 persons.<sup>2</sup> As with Arizona's rates, Maricopa County age-adjusted rates were lowest among females (324 per 100,000 persons) and Hispanics (213 per 100,000 persons). Age-adjusted cancer rates by race indicated a higher rate of cancer for Blacks than for Whites or Other races. The age-adjusted cancer rate among Whites decreased from 357 per 100,000 persons in 1997 to 290 per 100,000 persons in 1998, and among Blacks, the age-adjusted cancer rates also decreased from 326 per 100,000 persons in 1997 to 309 per 100,000 persons in 1998.

When analyzed by sex and ethnicity, the age-specific incidence rates in Maricopa county were highest among persons age 80 years and older for males, females, and Hispanics. Non-Hispanics had the highest age-specific incidence rate among persons age 70-79 years old.

### Part III: Cancer Incidence in Pima County

Among Pima County residents, there were 3743 cancer cases diagnosed in 1998. Most cancer was diagnosed among Whites (94.5%) and non-Hispanics (89.7%). Prostate, breast, and lung & bronchus accounted for 47.0% of invasive cancer cases diagnosed in Pima County residents.

The Pima County “all sites” age-adjusted cancer rate of 354 per 100,000 persons was slightly lower than that of Maricopa County’s rate of 358 per 100,000 persons. The age-adjusted incidence rate for Pima county is consistent between years 1997 and 1998 with a rate of 353 in 1997. The Pima County age-adjusted incidence rate was identical to the Arizona age-adjusted rate of 354 per 100,000 persons in 1998. This rate is still well below the national age-adjusted incidence rate<sup>1</sup>.

As with Arizona and Maricopa County, age-adjusted cancer rates in Pima County were lowest among females (323 per 100,000 persons) and Hispanics (223 per 100,000 persons). Age-adjusted cancer rates by race in Pima County showed a higher rate of cancer for Whites. Among males, the age-adjusted cancer incidence rate for Blacks was higher than for Whites in Pima County, which is opposite of what was seen in Maricopa County and in Arizona as a whole. Among females, the age-adjusted cancer incidence rate for Black females was much lower than for White females in 1998.

The age-specific incidence rates in Pima County indicated that invasive cancer is most common among individuals 70-79 years old with an overall rate of 1977 per 100,000 persons. When analyzed by sex and ethnicity, the age-specific incidence rate was highest among persons age 70-79 years for males and non-Hispanics. Females and Hispanics had the highest age-specific incidence rates among persons age 80 years and older.

### Part IV: Cancer Incidence in Arizona Rural Counties

As stated above “Arizona Rural Counties” is a combination of Apache County, Cochise County, Coconino County, Gila County, Graham County, Greenlee County, La Paz County, Mohave County, Navajo County, Pinal County, Santa Cruz County, Yavapai County, and Yuma County. Among these counties there were 5023 cancer cases. Cases were mainly among Whites (93.3%) and non-Hispanics (90.8%). Most Native American cases were residents of these rural counties with 69% of all Native Americans cases in the rural counties, 18% residing in Maricopa County, and 13% residing in Pima County. Similar to Maricopa and Pima counties, prostate, breast, and lung & bronchus accounted for 46.2% of invasive cancer diagnosed in these counties.

The age-adjusted rate in the rural counties of 344 per 100,000 persons was lower than Arizona’s rate of 354 per 100,000 persons. This rate was also slightly lower than the 1997 rate for rural counties of 350 per 100,000 persons.<sup>2</sup> As with all of Arizona, Maricopa County and Pima County, age-adjusted cancer incidence rates were lowest among females (310 per 100,000

persons) and Hispanics (232 per 100,000 persons). In the rural counties, age-adjusted cancer rates by race showed that Black females had a higher incidence rate of invasive cancer in 1998 (297 per 100,000 females ) than White females (248 per 100,000 females). Conversely, black males had a lower age-adjusted incidence rate of 364 per 100,000 persons than White males (395 per 100,000 persons).

Age-specific incidence rates for rural counties indicated that invasive cancer is most common among persons age 80 years and older with an overall rate of 1913 per 100,000 persons. When analyzed by sex and ethnicity, the age-specific incidence rates among males, females, non-Hispanics and Hispanics in the rural counties were all highest in persons aged 80 years and older.

#### Part V: Cancer Mortality in Arizona

The 1998 cancer death rate of 113 per 100,000 persons was the lowest during the 12-year period from 1987 to 1998.<sup>4</sup> There were 8503 deaths due to cancer recorded in Arizona residents in 1998. Cancer deaths were more common among males than females with age-adjusted mortality rates of 132 and 100 per 100,000 persons, respectively. Age-adjusted mortality rates by race showed cancer deaths were most common among Blacks in Maricopa county, Pima county, and the rural counties. The overall age-adjusted mortality rates among Blacks in Arizona in 1998 was 136 per 100,000 persons. As with cancer morbidity, there was a higher rate of cancer mortality among non-Hispanics. This did not vary by county. The overall age-adjusted mortality rate among non-Hispanics in 1998 was 118 per 100,000 persons and among Hispanics was 85 per 100,000 persons.

Lung cancer deaths were the most common type of cancer death for Arizona in 1998 with an age-adjusted mortality rate of 32 per 100,000 persons, which was identical to the lung cancer mortality rate in 1997. Female breast cancer was the next most common type of cancer death at 18 per 100,000 females, and among males, the colorectal cancer death rate was identical to the prostate cancer death rate at 13 per 100,000 males. The overall colorectal death rate among all persons in Arizona was 11 per 100,000 persons.

Age-specific mortality rates indicated deaths due to cancer were highest among persons 80 years of age or older at 1333 per 100,000 persons. This did not vary by sex.

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## METHODS

This annual report includes cases diagnosed in 1998. These cases were reported to the Arizona Cancer Registry (ACR) prior to May 01, 2001. This report focused on invasive cancer cases with the exception of localized basal and squamous cell skin cancer, which are not reportable to the ACR. *In situ* cases are included in a table of cancer type by behavior code. This table excludes: 1) cervix *in situ* and 2) *in situ* and localized basal and squamous skin cancer. *In situ* urinary bladder cases are also combined with invasive urinary bladder cases in many of the invasive cancer tables and graphs. This approach was used to create charts comparable to the Surveillance, Epidemiology, and End Results program (SEER) reports. For a listing of the cancer and histologic site types used in this report, see the appendix.

### Data Quality 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:

- 1) 1998 North American Association of Central Cancer Registries (NAACCR) EDITS
- 2) Rocky Mountain Cancer Data System (RMCDS) error checks
- 3) A manual visual editing on all cases seen at multiple facilities
- 4) A validity check of codes in all fields used in the report analysis
  
- 5) Random and targeted visual editing on unduplicated cases
- 6) Duplicate error checking of all cases

The data used in this report met the existing “Data Quality Indicator Gold Standard”, set by NAACCR for:

- 1) The NAACCR standard for the percent of cases that are “Death Certificate Only”. The ACR percentage was 1.4 percent and the NAACCR Gold standard is 3.0 percent.
- 2) The completeness of cases ascertainment was over 100 percent of the expected number of cases as estimated by the SEER incidence to US mortality ratio. The accepted NAACCR Gold Standard is at least 95 percent.
- 3) The completeness of information recorded was greater than 98 percent for the rated fields of:

### Completeness of Data

Field Name	Pct. Missing
Age at Diagnosis	0.0
Sex	0.0
Race	1.8
State/County	0.7

- 4) 100 percent of the cases passed the “EDITS” data quality program.
- 5) Duplicates for Primary cases were less than 1 per 1000 cases.
- 6) The data was timely. All data was received within 24 months of the close of the diagnosis year.

### **Categories Used in Analysis**

Cases were classified by primary site or histologic type; race, ethnicity, age at diagnosis, and residence at diagnosis.

### **Primary Site & Histologic Type**

Primary site and histologic type were classified according to International *Classification of Diseases for Oncology, 2nd Edition*. (a.k.a.: ICDO2) See Appendix. The definition of behavior code, invasive, and *in situ* is as follows:

**Behavior code:** The 5th digit of the Morphology Code that indicates: 1) the growth pattern of a tumor, and 2) 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, intra epithelial tumor cells that have not penetrated the basement membrane or extended beyond the epithelial tissue.

### **Counts**

The counts are the number of cases diagnosed with a reportable cancer in 1998. 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 a person. This results in more cancer cases than persons recorded in the ACR.

### **Rates**

Crude rates were calculated by dividing the number of cases diagnosed in 1998 with a specific cancer site by the population. Each rate was multiplied by 100,000 persons. These crude rates for each ten-year age group are called the age-specific rate for that age group and are shown in the age-specific tables toward the end of each chapter. Age adjusted morbidity rates were subsequently multiplied by the proportion of the US 1970 population for each age group to standardize the rate. The rates from each age group are then added together to create the age adjusted rate. Mortality rates were age adjusted and standardized, using the US 1940 population, in the same manner as the morbidity rates.

### **Population Denominators**

Population denominators were taken from the February 1998 DES projections of the expected 1998 Arizona population. These county and state projections have been approved for use in analysis by the Arizona Department of Health Services. However, these projections were not divided by race and ethnicity. To derive race and ethnicity of Arizona populations by sex, the percentage of the July 1<sup>st</sup>, 1998 US Bureau of Census Estimates for these population subgroups were calculated and applied to the DES projections.

### **Mortality Rates**

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

- 1) The cancer death occurs to an Arizona resident

- 2) The “Primary Cause of Death” is coded to ICD9 codes 140.0 through 208.9
- 3) 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)*.

Age adjusted cancer mortality rates are standardized to the 1940 US population. This standardization method is used to create rates that are comparable over time and geographic region.

### **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 are excluded from this report. When a rate is excluded for this reason it is denoted by a dash in the rate tables.

### **Data Completeness**

It is estimated that the ACR has collected at least 95 percent of all reportable cancer cases in Arizona. However, the VA Medical Centers in Tucson and Prescott are not required to report cancer cases diagnosed and/or treated at their hospitals, and thus are not included in this report. The lack of inclusion of these cases may affect the results in this report.

### **Race**

Information concerning a person’s race is generally obtained by a hospital cancer registrar upon reviewing the physician’s notations and the medical record admission information. Race was grouped by categories of White, Black, and Other in the incidence rate tables. The “Other” category included Asians, Native Americans, and cases classified as “other race”. These categories were used to compare them to SEER racial categories. However, charts of case counts further divide the “other” category by separating Asian, Native American, and “other race” into their own groups. Cases having an unknown race diagnosed with a primary site of skin melanoma were coded as White. One hundred sixty-nine melanoma skin cases with an unknown race code were changed to a race of White.

### **Ethnicity**

Information concerning a person’s ethnicity is generally obtained by a hospital cancer registrar upon reviewing the physician’s notations and the medical record admission information. Ethnicity can be derived from self-identification, surname, or place of birth. Ethnicity incidence rates were divided into two groups: Hispanic and Non-Hispanic. Counts further divided the Hispanic group into classifications of Mexican, Puerto Rican, Cuban, South or Central American, Other Spanish, Spanish NOS ( Not Otherwise Specified), and Spanish Surname Only.

Hispanic ethnicity may be assigned to cases with an unknown ethnicity that have a Spanish last name. These cases have been placed in the “Spanish Surname Only” category. Their Hispanic designation is based on the New Mexico Tumor Registry’s “Hispanic Surname Checking Program”. An additional 95 invasive cases were categorized as Hispanic with this method. For the purpose of this report all remaining cases (1359 cases) with an unknown ethnicity are considered Non-Hispanic.

### **Age at Diagnosis**

Age groups were divided into: 1) eight 10-year age groupings for ages 0 through 79 years; and 2) one grouping for all cases with an age 80 years or above.

### **Residence at Diagnosis**

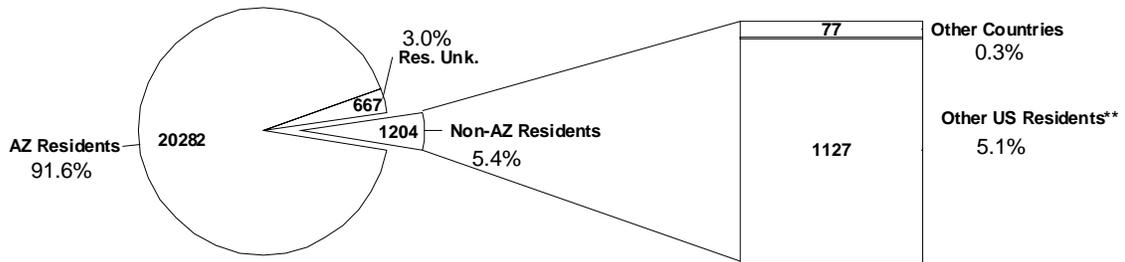
The place of residence of a case was grouped at a county or higher level. The charts showing place of residence divided cases by: 1) Arizona Resident (county or state); 2) Other US states; and 3) Other countries. Incidence rates focused on Arizona residence and divided cases into three geographic regions: 1) Maricopa County; 2) Pima County; and 3) the thirteen remaining “Rural” counties. The rural counties were grouped together to create larger counts sufficient in size to generate reliable rate tables. Of Arizona residents, there were 11 cases with no known county.

PART I

CANCER INCIDENCE IN  
ARIZONA  
1998

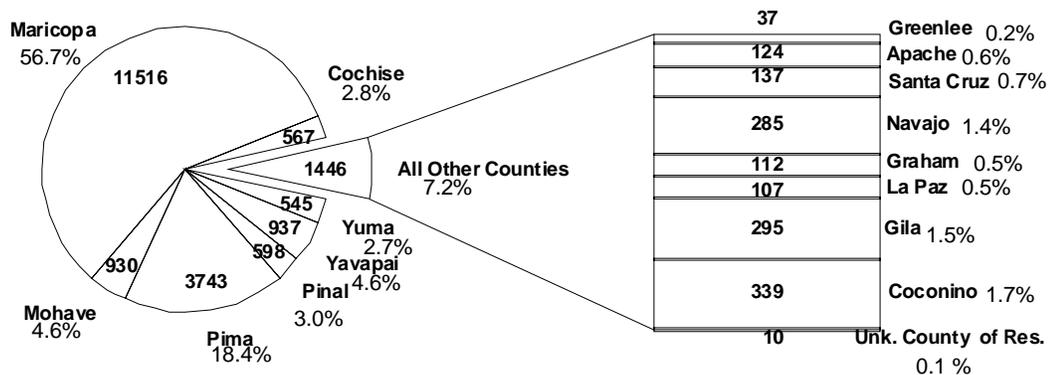
# CANCER IN ARIZONA: 1998

Figure I-A: Residency of All Invasive Cancer Cases Reported



U.S. states, Territories, and Possessions except Arizona.

Figure I-B: County of Residence of Arizona Invasive Cancer Cases



# CANCER IN ARIZONA: 1998

Figure I-C: Invasive Cancer Case Percent Distribution By Age\* (All Sites)

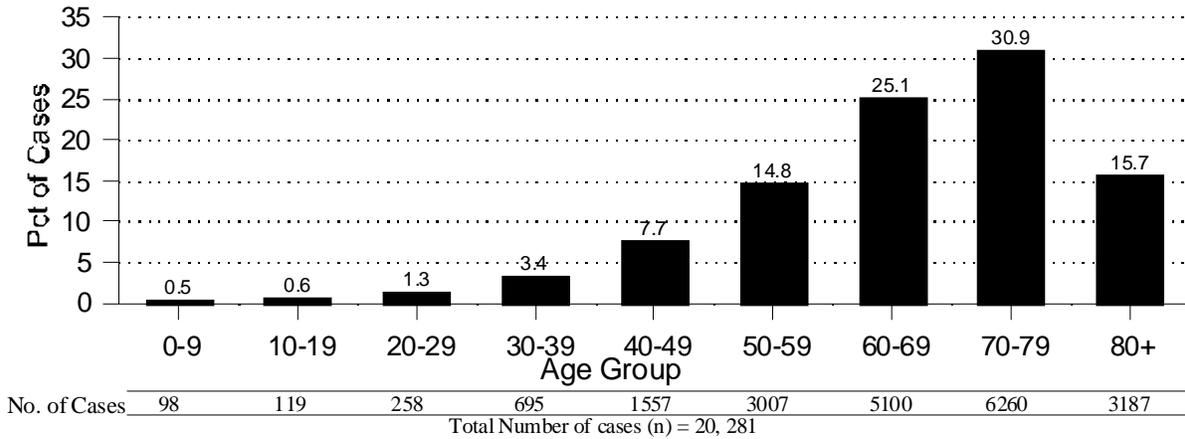
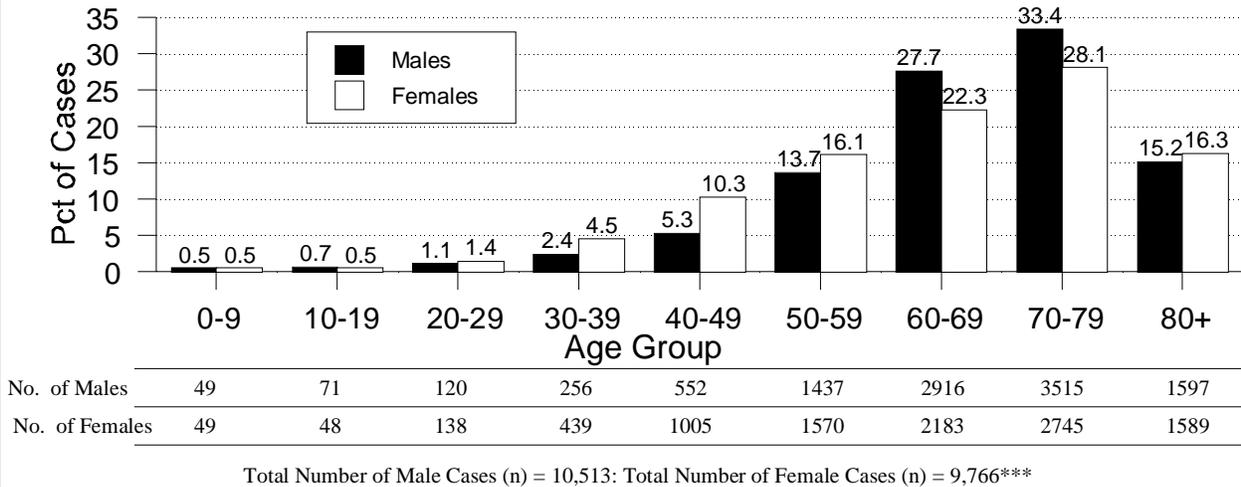


Figure I-D: Invasive Cancer Case Percent Distribution By Age and Sex\*\* (All Sites)



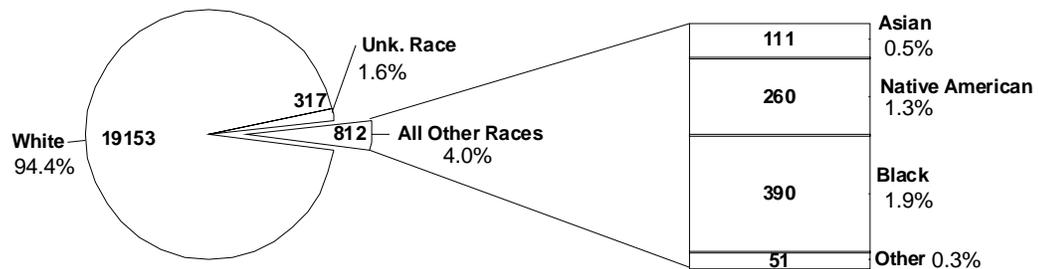
\* Distribution by age at diagnosis excludes 1 case with an unknown age at diagnosis.

\*\* Distribution by age at diagnosis and sex excludes 1 case with an unknown age and 2 cases with other sex.

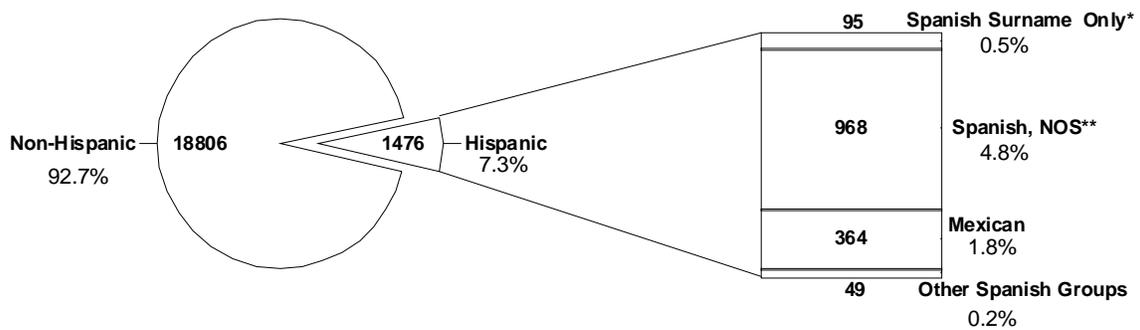
\*\*\* Male percentages are the percent of all **male** cases, and female percentages are the percent of all **female** cases.

# CANCER IN ARIZONA: 1998

**Figure I-E: Race Distribution of Invasive Cancer Cases (All Sites)**



**Figure I-F: Ethnic Distribution of Invasive Cancer Cases (All Sites)**



\* Spanish Surname Only: Ethnicity derived from Spanish last name with the use of a computer program.

\*\*Spanish NOS: Spanish, not otherwise specified.

**Arizona**  
**Table I-A. 1998 Frequency of Cancer Cases**  
**Primary Site by Behavior**

PRIMARY SITE	BEHAVIOR		
	IN SITU	INVASIVE	TOTAL
All Sites	1788	20282*	22070
Oral Cavity & Pharynx:	10	427	437
Lip	1	37	38
Tongue	3	114	117
Salivary gland	0	50	50
Floor of Mouth	2	29	31
Gum & other oral cavity	3	49	52
Nasopharynx	0	18	18
Tonsil	1	52	53
Oropharynx	0	17	17
Hypopharynx	0	43	43
Other oral cavity & pharynx	0	18	18
Digestive System:	162	3736	3898
Esophagus	6	200	206
Stomach	4	290	294
Small Intestine	0	84	84
Colon & Rectum	143	2282	2425
Colon	99	1612	1711
Rectum	44	670	714
Anus, anal canal & anorectum	6	60	66
Liver & Intrahepatic bile duct	0	186	186
Liver	0	156	156
Intrahepatic bile duct	0	30	30
Gallbladder	1	63	64
Other biliary	2	61	63
Pancreas	0	453	453
Retroperitoneum & peritoneum	0	34	34
Other digestive system	0	23	23

\* 68 "Other primary site" cases are listed in the "All Sites, Invasive" category of this table.

**Arizona**  
**Table I-A. 1998 Frequency of Cancer Cases (continued)**  
**Primary Site by Behavior**

PRIMARY SITE	BEHAVIOR		
	IN SITU	INVASIVE	TOTAL
Respiratory System:	24	3308	3332
Nose, nasal cavity & middle ear	0	33	33
Larynx	20	168	188
Lung & bronchus	4	3057	3061
Pleura	0	44	44
Trachea & other respiratory organs	0	6	6
Bone & joints	0	44	44
Soft tissue (including heart)	0	147	147
Skin (excluding basal & squamous):	498	897	1395
Melanomas of the skin	496	829	1325
Other non-epithelial skin	2	68	70
Breast	598	3202	3800
Female Genital System:	85	1105	1190
Cervix uteri	0	200	200
Corpus uteri	14	478	492
Uterus, NOS	1	10	11
Ovary	1	347	348
Vagina	7	10	17
Vulva	61	51	112
Other female genital system	1	9	10
Male Genital System:	19	3316	3335
Prostate	2	3164	3166
Testis	1	129	130
Penis	15	14	29
Other male genital system	1	9	10

**Arizona**  
**Table I-A. 1998 Frequency of Cancer Cases (continued)**  
**Primary Site by Behavior**

PRIMARY SITE	BEHAVIOR		
	IN SITU	INVASIVE	TOTAL
Urinary System:	385	1220	1605
Urinary bladder	362	647	1009
Kidney & renal pelvis	7	525	532
Ureter	13	32	45
Other urinary system	3	16	19
Eye & Orbit	7	38	45
Brain & Nervous System:	0	314	314
Brain	0	297	297
Cranial nerves & other nervous system	0	17	17
Endocrine System:	0	351	351
Thyroid	0	317	317
Other endocrine & thymus	0	34	34
Lymphomas:	0	819	819
Hodgkin's disease	0	89	89
Non-Hodgkin's lymphomas	0	730	730
Multiple Myeloma	0	203	203
Leukemias:	0	421	421
Lymphocytic	0	181	181
Myeloid	0	183	183
Monocytic	0	10	10
Other	0	47	47
Ill-defined & unspecified	0	666	666

**Arizona**  
**Table I-B. 1998 Frequency of Invasive Cancer Cases**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
All Sites*	10514	9766	20282
Oral Cavity & Pharynx:	294	133	427
Lip	27	10	37
Tongue	75	39	114
Salivary gland	32	18	50
Floor of Mouth	19	10	29
Gum & other oral cavity	30	19	49
Nasopharynx	13	5	18
Tonsil	40	12	52
Oropharynx	12	5	17
Hypopharynx	34	9	43
Other oral cavity & pharynx	12	6	18
Digestive System:	2042	1693	3735
Esophagus	153	47	200
Stomach	170	120	290
Small Intestine	44	40	84
Colon & Rectum	1225	1056	2281
Colon	838	773	1611
Rectum	387	283	670
Anus, anal canal & anorectum	29	31	60
Liver & Intrahepatic bile duct	126	60	186
Liver	109	47	156
Intrahepatic bile duct	17	13	30
Gallbladder	17	46	63
Other biliary	34	27	61
Pancreas	216	237	453
Retroperitoneum & peritoneum	18	16	34
Other digestive system	10	13	23

68 "Other primary site" cases are listed only in the "All Sites" category of this table. "All Sites" does not include bladder in situ cases. Included only in the "Total, All Sites" category are two "other sex" cases.

**Arizona**  
**Table I-B. 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
Respiratory System:	1883	1425	3308
Nose, nasal cavity & middle ear	20	13	33
Larynx	135	33	168
Lung & bronchus	1687	1370	3057
Pleura	38	6	44
Trachea & other respiratory organs	3	3	6
Bone & joints	25	19	44
Soft tissue (including heart)	83	64	147
Skin (excluding basal & squamous):	546	351	897
Melanomas of the skin	501	328	829
Other non-epithelial skin	45	23	68
Breast	38	3164	3202
Female Genital System:	NA	1105	1105
Cervix uteri	NA	200	200
Corpus uteri	NA	478	478
Uterus, NOS	NA	10	10
Ovary	NA	347	347
Vagina	NA	10	10
Vulva	NA	51	51
Other female genital system	NA	9	9
Male Genital System:	3316	NA	3316
Prostate	3164	NA	3164
Testis	129	NA	129
Penis	14	NA	14
Other male genital system	9	NA	9

NA = Not Applicable

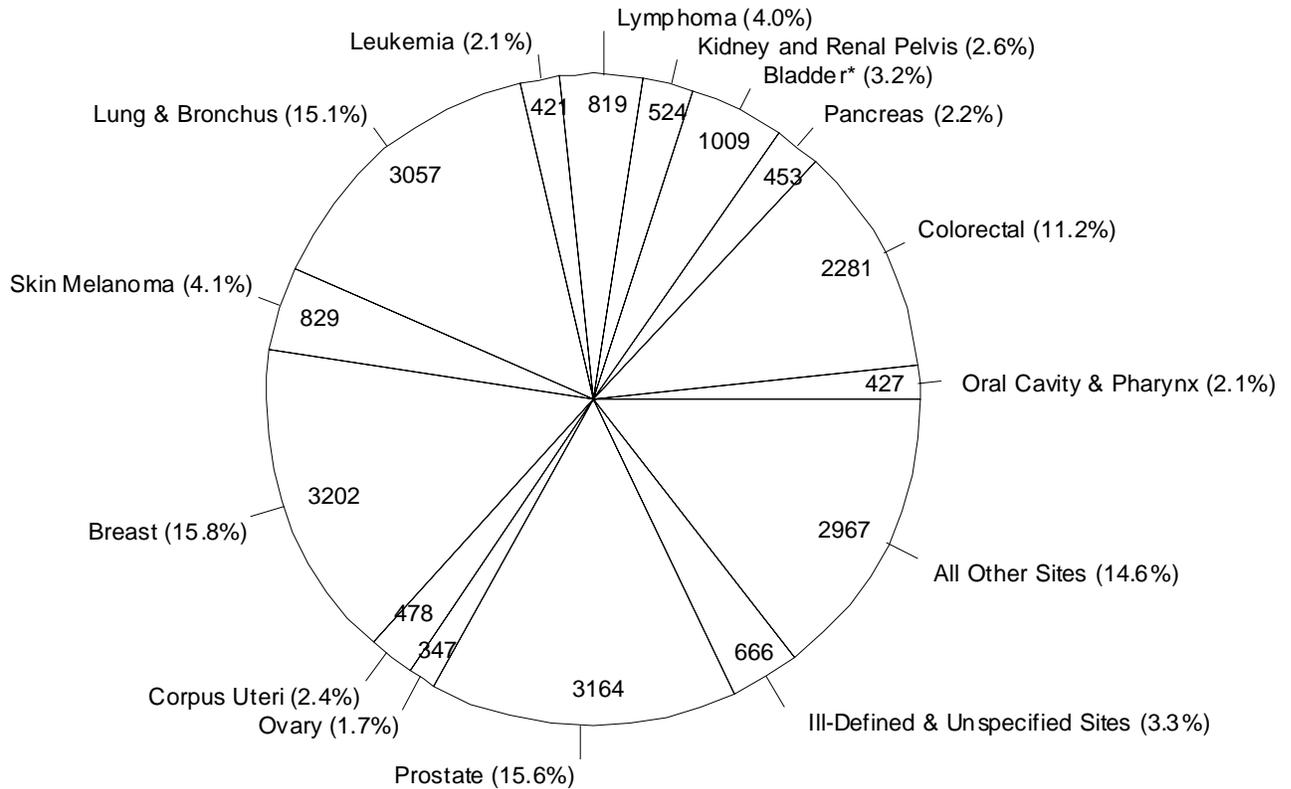
**Arizona**  
**Table I-B. 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
Urinary System*:	1107	474	1581
Urinary bladder*	755	254	1009
Kidney & renal pelvis	319	205	524
Ureter	20	12	32
Other urinary system	13	3	16
Eye & Orbit	20	18	38
Brain & Nervous System:	178	136	314
Brain	166	131	297
Cranial nerves & other nervous system	12	5	17
Endocrine System:	76	275	351
Thyroid	67	250	317
Other endocrine & thymus	9	25	34
Lymphomas:	446	373	819
Hodgkin's disease	56	33	89
Non-Hodgkin's lymphomas	390	340	730
Multiple Myeloma	115	88	203
Leukemias:	267	154	421
Lymphocytic	117	64	181
Myeloid	110	73	183
Monocytic	7	3	10
Other	33	14	47
Ill-defined & unspecified	320	346	666

\* = Includes invasive and in situ bladder cases.

# CANCER IN ARIZONA: 1998

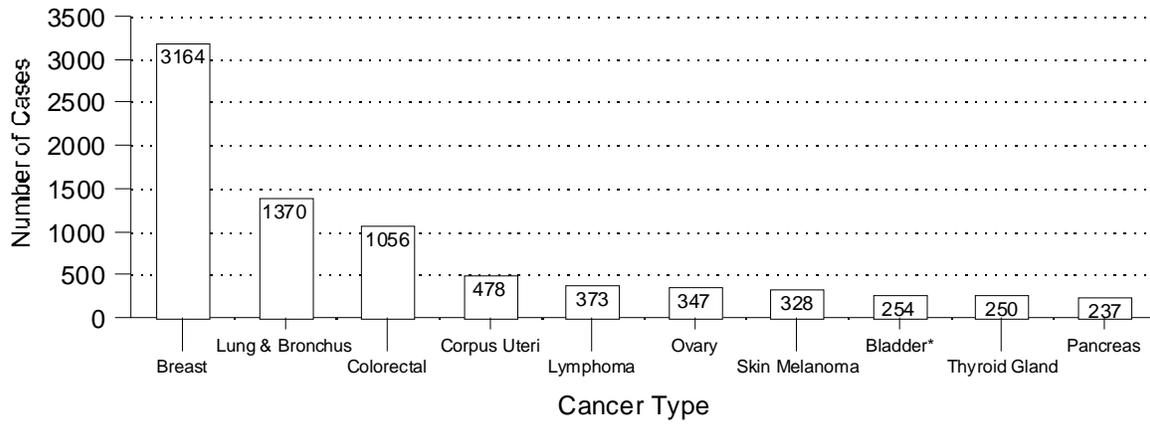
Figure I-G: Case Distribution by Invasive Cancer Type



\* Bladder cases include 362 in situ cases. Percentage of bladder cases is invasive cases only.

# CANCER IN ARIZONA: 1998

**Figure I-I: Ten Most Common Invasive Cancer Types Among Arizona Females**



- Bladder cases include 286 male in situ cases and 76 female in situ cases.

# CANCER INCIDENCE IN ARIZONA

Figure I K: Age Adjusted Rates by County  
1998



Arizona Age Adjusted Incidence Rate=353.87

Rates are per 100,000 and are adjusted to the 1970 US population

**Arizona**  
**Table I-C. 1998 Age-Adjusted Incidence Rates, All Sites**  
**County of Residence by Sex**

COUNTY	SEX		TOTAL
	MALE	FEMALE	
Apache	261.40	240.51	248.67
Cochise	378.45	393.51	383.33
Coconino	389.17	362.16	370.88
Gila	432.30	339.70	383.16
Graham	390.77	252.86	314.28
Greenlee	450.34	362.35	394.72
La Paz	379.24	282.81	335.00
Maricopa	405.00	323.57	358.45
Mohave	463.84	301.63	378.73
Navajo	450.60	254.57	340.59
Pima	398.15	323.18	354.45
Pinal	319.50	270.31	292.94
Santa Cruz	416.49	289.46	347.53
Yavapai	366.68	314.81	339.25
Yuma	366.59	303.87	334.29
Arizona	397.35	319.96	353.87

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. Invasive cancer cases only. Two "other sex" cases are included only in "Total" category.

**Arizona**  
**Table I-D. 1998 Age-Adjusted Incidence Rates, All Sites**  
**County of Residence by Ethnicity**

COUNTY	ETHNICITY		TOTAL
	NON-HISPANIC	HISPANIC	
Apache	246.68	--	248.67
Cochise	427.91	248.83	383.33
Coconino	395.12	166.68	370.88
Gila	396.81	313.50	383.16
Graham	352.83	185.74	314.28
Greenlee	550.96	--	394.72
La Paz	364.38	--	335.00
Maricopa	373.51	212.55	358.45
Mohave	390.56	--	378.73
Navajo	356.78	--	340.59
Pima	381.52	223.36	354.45
Pinal	318.41	201.58	292.94
Santa Cruz	459.01	291.84	347.53
Yavapai	345.10	212.22	339.25
Yuma	347.77	282.45	334.29
Arizona	372.00	222.38	353.87

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. - = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Arizona**  
**Table I-E. 1998 Age-Adjusted Incidence Rates**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
All Sites	397.35	319.96	353.87
Oral Cavity & Pharynx:	11.58	4.45	7.78
Lip	0.99	0.27	0.60
Tongue	3.01	1.24	2.08
Salivary gland	1.15	0.67	0.88
Floor of Mouth	0.79	0.32	0.54
Gum & other oral cavity	1.19	0.63	0.88
Nasopharynx	0.52	--	0.34
Tonsil	1.62	0.43	1.00
Oropharynx	0.47	--	0.32
Hypopharynx	1.36	--	0.80
Other oral cavity & pharynx	0.48	--	0.34
Digestive System:	75.37	50.69	61.96
Esophagus	5.94	1.52	3.55
Stomach	6.25	3.85	4.93
Small Intestine	1.54	1.30	1.39
Colon & Rectum	44.76	31.08	37.31
Colon	30.20	22.15	25.82
Rectum	14.56	8.93	11.49
Anus, anal canal & anorectum	1.15	1.10	1.12
Liver & Intrahepatic bile duct	4.85	1.74	3.20
Liver	4.24	1.38	2.72
Intrahepatic bile duct	0.61	0.36	0.48
Gallbladder	0.64	1.42	1.07
Other biliary	1.22	0.83	1.00
Pancreas	7.98	6.96	7.43
Retroperitoneum & peritoneum	0.70	0.53	0.60
Other digestive system	0.36	0.37	0.37

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 68 "Other primary site" cases are listed only in the "All Sites" category of this table. Two "other sex" cases are included only in the "Total" category. "All sites" does not include bladder in situ cases. Invasive cancer cases only. -- = insufficient cases for an adjusted rate calculation.

**Arizona**  
**Table I-E. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Respiratory System:	70.80	45.47	56.98
ear			
Nose, nasal cavity & middle	0.81	0.44	0.62
Larynx	5.51	1.05	3.14
Lung & bronchus	62.99	43.76	52.37
Pleura	1.30	--	0.67
Trachea & other respiratory	--	--	--
organs			
Bone & joints	1.11	0.75	0.92
Soft tissue (including heart)	3.22	2.10	2.63
Skin (excluding basal & squamous):	20.99	11.94	16.11
Melanomas of the skin	19.27	11.24	14.92
Other non-epithelial skin	1.72	0.70	1.19
Breast	1.50	107.48	57.73
Female Genital System:	NA	19.70	NA
Cervix uteri	NA	7.05	NA
Corpus uteri	NA	16.08	NA
Uterus, NOS	NA	0.36	NA
Ovary	NA	11.59	NA
Vagina	NA	0.29	NA
Vulva	NA	1.49	NA
Other female genital system	NA	--	NA
Male Genital System:	126.14	NA	NA
Prostate	120.43	NA	NA
Testis	4.82	NA	NA
Penis	0.54	NA	NA
Other male genital system	--	NA	NA

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population.  
-- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Arizona**  
**Table I-E. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Urinary System*:	41.08	14.94	26.88
Urinary bladder *	27.35	7.51	16.50
Kidney & renal pelvis	12.55	6.97	9.59
Ureter	0.71	0.35	0.52
Other urinary system	0.47	--	0.27
Eye & Orbit	0.80	0.62	0.71
Brain & Nervous System:	7.08	5.00	5.96
Brain	6.59	4.81	5.62
Cranial nerves & other nervous system	0.49	--	0.34
Endocrine System:	3.17	9.98	6.61
Thyroid	2.55	9.25	5.93
Other endocrine & thymus	0.62	0.73	0.68
Lymphomas:	17.30	12.24	14.66
Hodgkin's disease	2.39	1.22	1.81
Non-Hodgkin's lymphomas	14.91	11.02	12.85
Multiple Myeloma	4.28	2.75	3.45
Leukemias:	10.23	5.29	7.57
Lymphocytic	4.70	2.36	3.45
Myeloid	4.07	2.40	3.15
Monocytic	--	--	0.16
Other	1.23	0.42	0.80
Ill-defined & unspecified	11.70	10.36	10.96

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Arizona**  
**Table I-F. 1998 Age-Adjusted Incidence Rates**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
All Sites	372.00	222.38	353.87
Oral Cavity & Pharynx:	8.34	3.90	7.78
Lip	0.67	--	0.60
Tongue	2.20	--	2.08
Salivary gland	0.96	--	0.88
Floor of Mouth	0.62	--	0.54
Gum & other oral cavity	0.92	--	0.88
Nasopharynx	0.36	--	0.34
Tonsil	1.07	--	1.00
Oropharynx	0.35	--	0.32
Hypopharynx	0.82	--	0.80
Other oral cavity & pharynx	0.36	--	0.34
Digestive System:	63.16	52.34	61.96
Esophagus	3.66	2.78	3.55
Stomach	4.55	8.00	4.93
Small Intestine	1.48	--	1.39
Colon & Rectum	39.15	21.70	37.31
Colon	27.04	14.96	25.82
Rectum	12.10	6.73	11.49
Anus, anal canal & anorectum	1.10	--	1.12
Liver & Intrahepatic bile duct	2.94	5.54	3.20
Liver	2.44	5.18	2.72
Intrahepatic bile duct	0.49	--	0.48
Gallbladder	0.87	2.66	1.07
Other biliary	0.96	--	1.00
Pancreas	7.46	6.87	7.43
Retroperitoneum & peritoneum	0.62	--	0.60
Other digestive system	0.37	--	0.37

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 68 "Other primary site" cases are listed only in the "All Sites" category of this table. "All Sites" does not include bladder in situ cases. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Arizona**  
**Table I-F. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
Respiratory System:	61.18	23.86	56.98
Nose, nasal cavity & middle ear	0.64	--	0.62
Larynx	3.26	1.96	3.14
Lung & bronchus	56.43	21.26	52.38
Pleura	0.70	--	0.67
Trachea & other respiratory organs	--	--	--
Bone & joints	0.86	1.20	0.92
Soft tissue (including heart)	2.68	2.36	2.63
Skin (excluding basal & squamous):	18.49	2.56	16.11
Melanomas of the skin	17.16	2.04	14.92
Other non-epithelial skin	1.33	--	1.19
Breast	61.58	30.53	57.73
Breast (female)	114.88	56.09	107.48
Female Genital System:	38.39*	30.61	19.70
Cervix uteri	6.60	10.61	7.05
Corpus uteri	17.16	8.46	16.08
Uterus, NOS	--	--	0.36
Ovary	12.05	9.56	11.59
Vagina	--	--	0.29
Vulva	1.64	--	1.49
Other female genital system	--	--	--
Male Genital System:	132.16	77.92	126.14
Prostate	125.77	75.32	120.43
Testis	5.47	2.03	4.82
Penis	0.53	--	0.54
Other male genital system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. --- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Arizona**  
**Table I-F. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		TOTAL
	NON-HISPANIC	HISPANIC	
Urinary System*:	28.35	14.71	26.88
Urinary bladder *	17.66	6.28	16.50
Kidney & renal pelvis	9.81	8.27	9.59
Ureter	0.56	--	0.52
Other urinary system	0.32	--	0.27
Eye & Orbit	0.71	--	0.71
Brain & Nervous System:	5.80	6.19	5.96
Brain	5.48	5.82	5.62
Cranial nerves & other nervous system	0.32	--	0.34
Endocrine System:	6.94	5.76	6.61
Thyroid	6.20	5.04	5.93
Other endocrine & thymus	0.75	--	0.68
Lymphomas:	15.27	11.44	14.66
Hodgkin's disease	1.92	1.83	1.81
Non-Hodgkin's lymphomas	13.35	9.61	12.85
Multiple Myeloma	3.57	2.41	3.45
Leukemias:	7.73	5.45	7.57
Lymphocytic	3.42	2.67	3.45
Myeloid	3.27	2.29	3.15
Monocytic	--	--	0.16
Other	0.89	--	0.80
Ill-defined & unspecified	11.29	8.59	10.96

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Arizona**  
**Table I-G. 1998 Age-Specific Incidence Rates, All Sites**  
**Age Group by Sex**

AGE GROUP	SEX		TOTAL
	MALE	FEMALE	
0 - 9 Years	13.18	14.29	13.71
10 - 19 Years	20.05	15.14	17.73
20 - 29 Years	34.30	43.22	38.55
30 - 39 Years	70.44	122.51	96.29
40 - 49 Years	171.76	302.77	238.33
50 - 59 Years	656.38	666.21	661.48
60 - 69 Years	1732.22	1146.89	1421.88
70 - 79 Years	2453.72	1584.31	1977.80
80+ Years	2468.85	1627.69	1963.54

Rates are per 100,000 persons. Invasive cancer cases only. Not included is 1 case with unknown age group. Two "other sex" cases are included only in the "Total" category.

**Arizona**  
**Table I-H. 1998 Age-Specific Incidence Rates, All Sites**  
**Age Group by Ethnicity**

AGE GROUP	ETHNICITY		TOTAL
	NON-HISPANIC	HISPANIC	
0 - 9 Years	13.28	14.56	13.71
10 - 19 Years	18.54	15.78	17.73
20 - 29 Years	41.09	31.67	38.55
30 - 39 Years	107.74	57.63	96.29
40 - 49 Years	257.71	148.43	238.33
50 - 59 Years	710.73	360.13	661.48
60 - 69 Years	1490.35	901.51	1421.88
70 - 79 Years	2056.24	1145.05	1977.80
80+ Years	1995.65	1523.19	1963.54

Rates are per 100,000 persons. Invasive cancer cases only. Not included is 1 case with unknown age group.

**Arizona**  
**Table I-I. 1998 Age-Adjusted Incidence Rates, All Sites**  
**Sex by Race**

SEX	RACE			TOTAL
	WHITE	BLACK	*OTHER	
Male	396.93	379.36	190.19	397.35
Female	326.73	259.59	169.77	319.96
AZ Total	357.44	312.99	177.91	353.87
US Incidence Rate	396.6	421.4	N/A	395.3

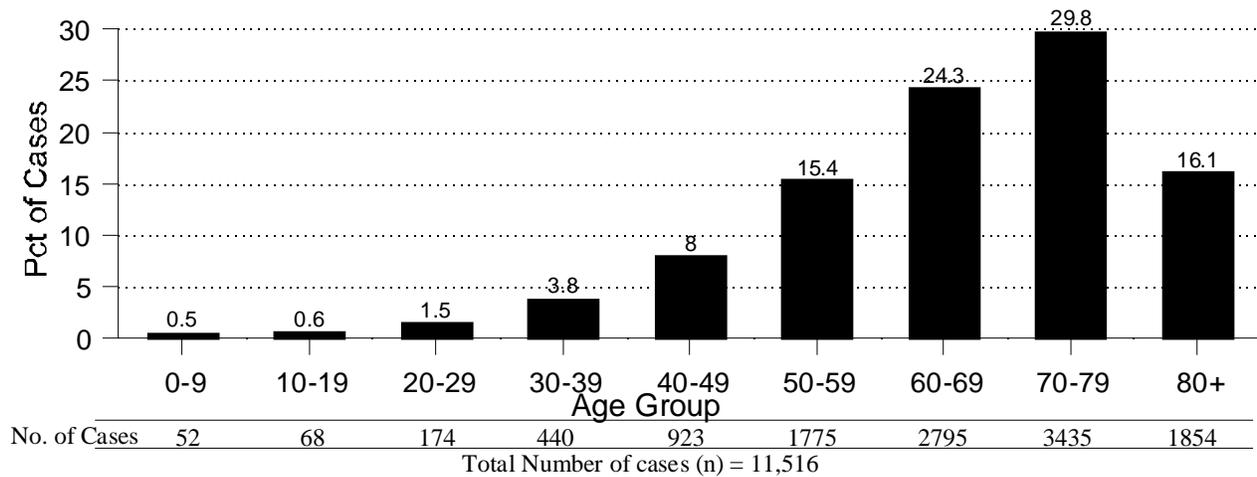
Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. Invasive cancer cases only. 317 unknown race cases are included in the "TOTAL" category only. Two "other sex" cases are included in the "Total" category only. \* Other race includes Native American, Chinese, Japanese, Filipino, Hawaiian, Korean, Asian Indian, Vietnamese, Kampuchan, Thai, Samoan, Melanesan, Other Asian, Pacific Islander and Other race. N/A = Not Available.

# PART II

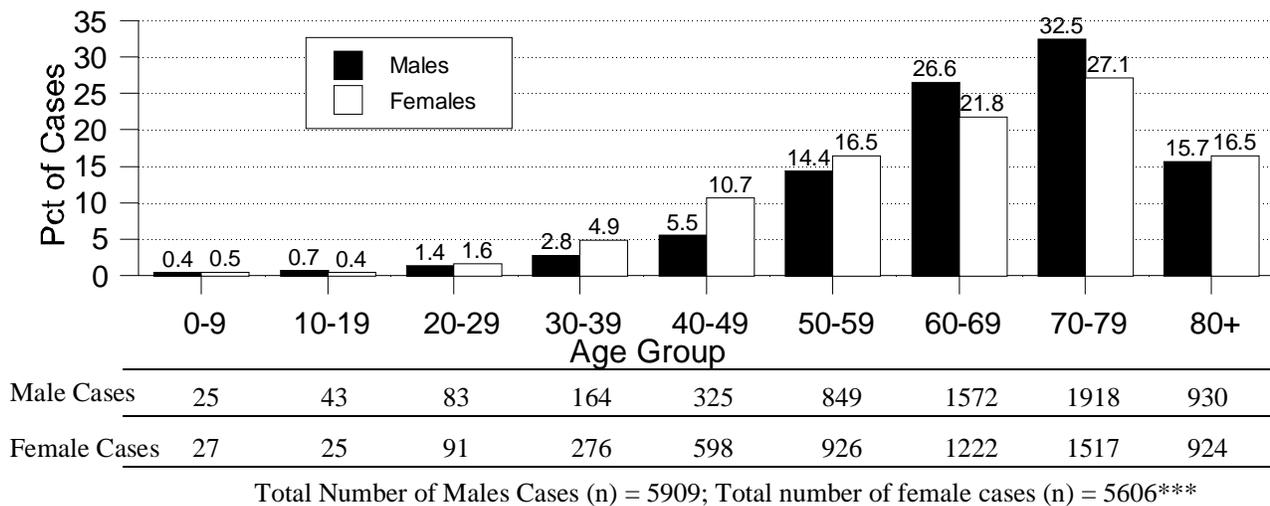
# CANCER INCIDENCE IN MARICOPA COUNTY 1998

# CANCER IN MARICOPA COUNTY: 1998

**Figure II-A: Invasive Cancer Case Percent Distribution  
By Age (All Sites)**



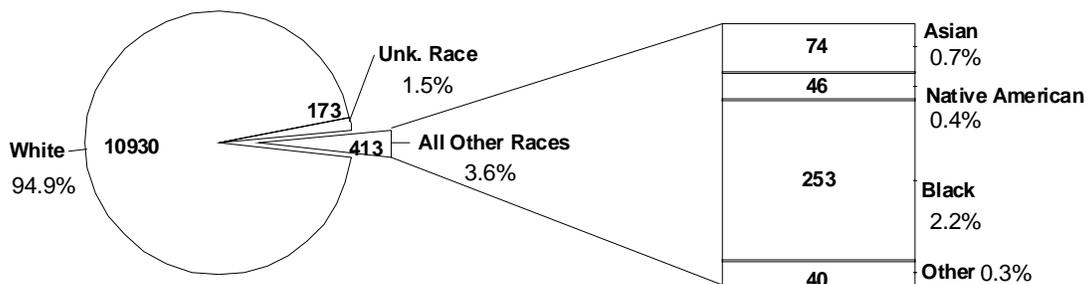
**Figure II-B: Invasive Cancer Case Percent Distribution  
By Age and Sex\*\* (All Sites)**



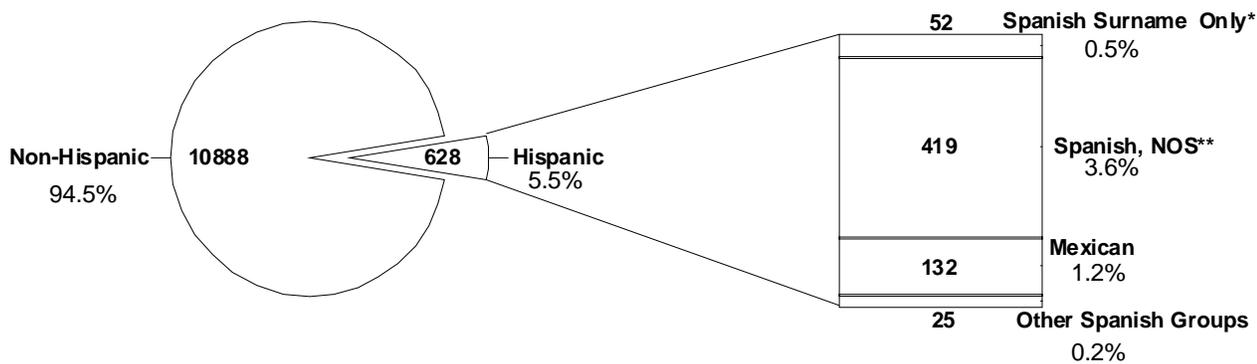
\*\*\* Male percentages are the percent of all male cases, and female percentages are the percent of all female cases.

# CANCER IN MARICOPA COUNTY: 1998

**Figure II-C: Race Distribution of Invasive Cancer Cases (All Sites)**



**Figure II-D: Ethnic Distribution of Invasive Cancer Cases (All Sites)**



\* Spanish Surname Only: Ethnicity derived from Spanish last name with the use of a computer program.

\*\*Spanish NOS: Spanish, not otherwise specified.

**Maricopa County**  
**Table II-A. 1998 Frequency of Invasive Cancer Cases**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
All Sites	5909	5606	11516
Oral Cavity & Pharynx:	168	81	249
Lip	14	8	22
Tongue	40	23	63
Salivary gland	23	10	33
Floor of Mouth	14	4	18
Gum & other oral cavity	15	14	29
Nasopharynx	8	3	11
Tonsil	26	9	35
Oropharynx	6	4	10
Hypopharynx	17	3	20
Other oral cavity & pharynx	5	3	8
Digestive System:	1121	1000	2121
Esophagus	78	30	108
Stomach	81	66	147
Small Intestine	26	27	53
Colon & Rectum	686	623	1309
Colon	487	471	958
Rectum	199	152	351
Anus, anal canal & anorectum	15	12	27
Liver & Intrahepatic bile duct	69	32	101
Liver	60	26	86
Intrahepatic bile duct	9	6	15
Gallbladder	9	24	33
Other biliary	20	14	34
Pancreas	122	157	279
Retroperitoneum & peritoneum	11	11	22
Other digestive system	4	4	8

42 "Other primary site" cases are listed only in the "All Sites" category of this table. "All Sites" does not include bladder in situ cases. Included only in the "Total" category is one "other sex" case.

**Maricopa County**  
**Table II-A. 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Respiratory System:	1030	801	1831
Nose, nasal cavity & middle ear	12	7	19
Larynx	73	23	96
Lung & bronchus	924	766	1690
Pleura	17	3	20
Trachea & other respiratory organs	4	2	6
Bone & joints	17	11	28
Soft tissue (including heart)	53	38	91
Skin (excluding basal & squamous):	323	203	526
Melanomas of the skin	296	193	489
Other non-epithelial skin	27	10	37
Breast	22	1847	1869
Female Genital System:	NA	627	627
Cervix uteri	NA	117	117
Corpus uteri	NA	269	269
Uterus, NOS	NA	6	6
Ovary	NA	196	196
Vagina	NA	7	7
Vulva	NA	27	27
Other female genital system	NA	5	5
Male Genital System:	1887	NA	1887
Prostate	1793	NA	1793
Testis	81	NA	81
Penis	10	NA	10
Other male genital system	3	NA	3

NA = not applicable.

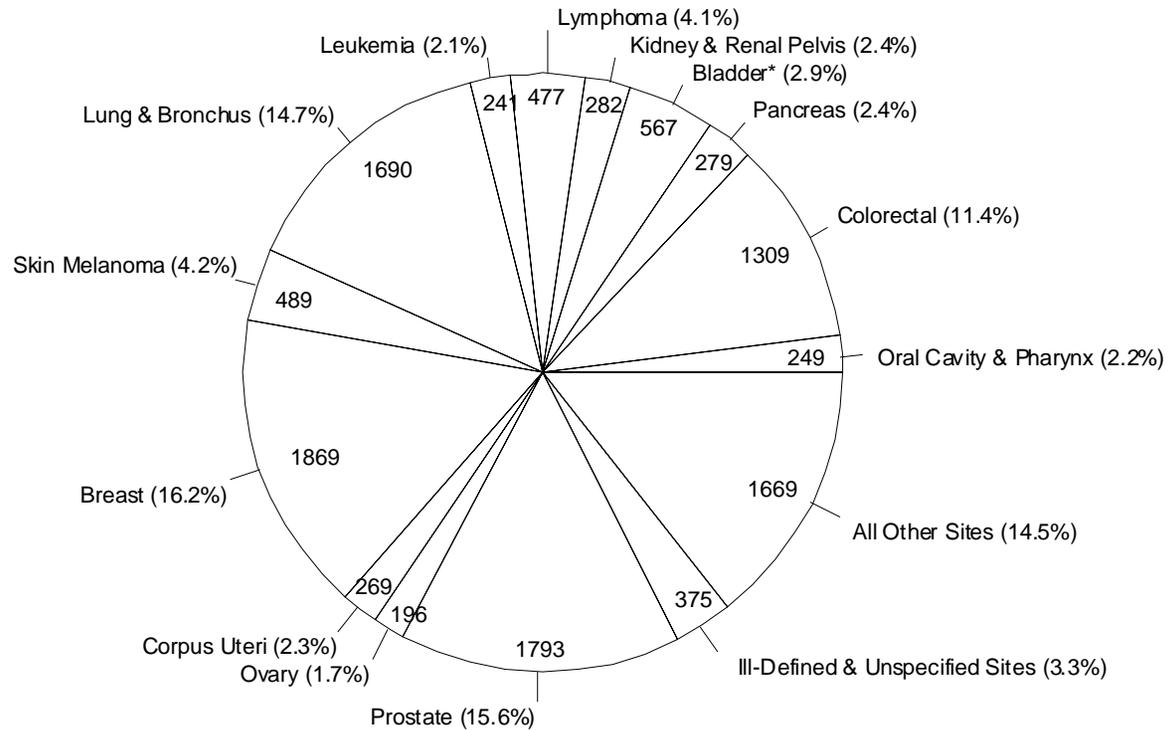
**Maricopa County**  
**Table II-A . 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
Urinary System*:	624	253	877
Urinary bladder*	429	138	567
Kidney & renal pelvis	176	106	282
Ureter	9	6	15
Other urinary system	10	3	13
Eye & Orbit	12	12	24
Brain & Nervous System:	106	82	188
Brain	97	81	178
Cranial nerves & other nervous system	9	1	10
Endocrine System:	56	135	191
Thyroid	43	128	171
Other endocrine & thymus	13	7	20
Lymphomas:	265	212	477
Hodgkin's disease	33	20	53
Non-Hodgkin's lymphomas	232	192	424
Multiple Myeloma	60	49	109
Leukemias:	157	84	241
Lymphocytic	70	29	99
Myeloid	63	47	110
Monocytic	3	3	6
Other	21	5	26
Ill-defined & unspecified	174	201	375

\* = Includes invasive and in situ bladder cases.

# CANCER IN MARICOPA COUNTY: 1998

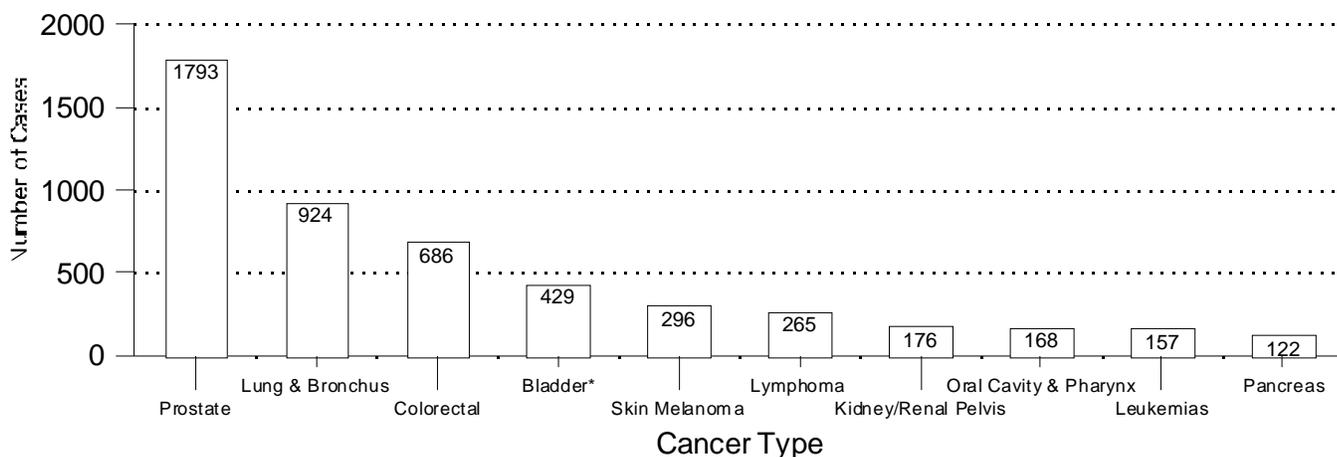
Figure II-E: Case Distribution by Invasive Cancer Type



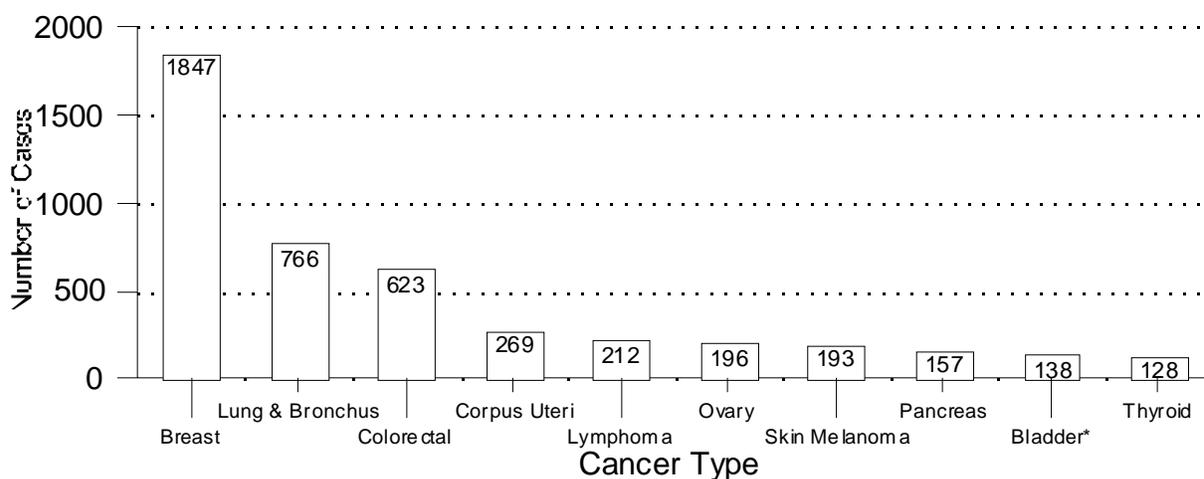
\* Bladder cases include 238 in situ cases. Percentage of bladder cases is invasive cases only.

# CANCER IN MARICOPA COUNTY: 1998

**Figure II-F: Ten Most Common Invasive Cancer Types  
Among Males in Maricopa County**



**Figure II-G: Ten Most Common Invasive Cancer Type  
Among Females in Maricopa County**



\* Bladder cases include 187 male in situ cases and 51 female in situ cases.

**Maricopa County**  
**Table II-B. 1998 Age-Adjusted Incidence Rates**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
All Sites	405.00	323.57	358.45
Oral Cavity & Pharynx:	11.76	4.64	7.97
Lip	0.95	--	0.63
Tongue	2.87	1.26	2.03
Salivary gland	1.45	0.62	0.98
Floor of Mouth	1.01	--	0.58
Gum & other oral cavity	1.06	0.80	0.92
Nasopharynx	--	--	0.35
Tonsil	1.86	--	1.19
Oropharynx	--	--	0.35
Hypopharynx	1.21	--	0.68
Other oral cavity & pharynx	--	--	--
Digestive System:	75.47	53.09	63.21
Esophagus	5.53	1.74	3.46
Stomach	5.41	3.84	4.53
<b>Small Intestine</b>	1.68	1.57	1.60
Colon & Rectum	45.85	32.29	38.40
Colon	32.05	23.83	27.51
Rectum	13.80	8.46	10.89
Anus, anal canal & anorectum	1.09	0.82	0.94
Liver & Intrahepatic bile duct	4.83	1.67	3.14
Liver	4.24	1.38	2.71
Intrahepatic bile duct	--	--	0.43
Gallbladder	--	1.33	1.03
Other biliary	1.29	0.77	0.99
Pancreas	8.15	8.18	8.19
Retroperitoneum & peritoneum	0.78	0.65	0.70
Other digestive system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 42 "Other primary site" cases are listed only in the "All Sites" category of this table. One "other sex" case is included only in the "Total" category. "All sites" does not include bladder in situ cases. Invasive cancer cases only. -- = Insufficient cases for an adjusted rate calculation.

**Maricopa County**  
**Table II-B. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Respiratory System:	70.61	45.97	56.89
Nose, nasal cavity & middle ear	0.84	--	0.59
Larynx	5.38	1.23	3.16
Lung & bronchus	63.03	44.11	52.38
Pleura	1.08	--	0.57
Trachea & other respiratory organs	--	--	--
Bone & joints	1.32	0.74	1.03
Soft tissue (including heart)	3.48	2.14	2.75
Skin (excluding basal & squamous):	21.91	11.93	16.48
Melanomas of the skin	20.17	11.44	15.40
Other non-epithelial skin	1.74	0.49	1.08
Breast	1.56	109.94	59.37
Female Genital System:	NA	37.21	NA
Cervix uteri	NA	6.91	NA
Corpus uteri	NA	16.05	NA
Uterus, NOS	NA	--	NA
Ovary	NA	11.82	NA
Vagina	NA	--	NA
Vulva	NA	1.34	NA
Other female genital system	NA	--	NA
Male Genital System:	131.81	NA	NA
Prostate	125.84	NA	NA
Testis	5.10	NA	NA
Penis	0.70	NA	NA
Other male genital system	--	NA	NA

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Maricopa County**  
**Table II-B. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Urinary System*:	29.86	11.62	19.84
Urinary bladder *	28.74	7.33	16.89
Kidney & renal pelvis	12.41	6.60	9.26
Ureter	--	--	0.41
Other urinary system	0.63	--	0.39
Eye & Orbit	0.88	0.74	0.81
Brain & Nervous System:	7.31	5.22	6.18
Brain	6.71	5.13	5.84
Cranial nerves & other nervous system	--	--	0.34
Endocrine System:	3.75	8.38	6.08
Thyroid	2.85	7.91	5.39
Other endocrine & thymus	0.90	--	0.69
Lymphomas:	18.02	12.00	14.86
Hodgkin's disease	2.30	1.18	1.74
Non-Hodgkin's lymphomas	15.72	10.82	13.12
Multiple Myeloma	3.91	2.74	3.26
Leukemias:	10.60	4.93	7.50
Lymphocytic	5.01	1.90	3.35
Myeloid	4.04	2.63	3.23
Monocytic	--	--	--
Other	1.38	--	0.77
Ill-defined & unspecified	11.40	11.16	11.17

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Maricopa County**  
**Table II-C. 1998 Age-Adjusted Incidence Rates**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
All Sites	373.51	212.55	358.45
Oral Cavity & Pharynx:	8.40	3.85	7.97
Lip	0.68	--	0.63
Tongue	2.09	--	2.03
Salivary gland	1.03	--	0.98
Floor of Mouth	0.65	--	0.58
Gum & other oral cavity	1.00	--	0.92
Nasopharynx	0.36	--	0.35
Tonsil	1.24	--	1.19
Oropharynx	0.38	--	0.35
Hypopharynx	0.68	--	0.68
Other oral cavity & pharynx	--	--	--
Digestive System:	63.83	55.93	63.21
Esophagus	3.52	--	3.46
Stomach	4.12	8.39	4.53
Small Intestine	1.69	--	1.60
Colon & Rectum	39.84	22.00	38.40
Colon	28.51	15.88	27.51
Rectum	11.33	6.12	10.89
Anus, anal canal & anorectum	0.89	--	0.94
Liver & Intrahepatic bile duct	2.81	6.72	3.14
Liver	2.41	5.82	2.71
Intrahepatic bile duct	0.40	--	0.43
Gallbladder	0.85	--	1.03
Other biliary	0.92	--	0.99
Pancreas	8.27	6.99	8.19
Retroperitoneum & peritoneum	0.66	--	0.70
Other digestive system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 42 "Other primary site" cases are listed only in the "All Sites" category of this table. "All Sites" does not include bladder in situ cases. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Maricopa County**  
**Table II-C. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
Respiratory System:	60.38	18.75	56.89
Nose, nasal cavity & middle ear	0.54	--	0.59
Larynx	3.22	--	3.16
Lung & bronchus	55.77	15.88	52.38
Pleura	0.611	--	0.57
Trachea & other respiratory organs	--	--	--
Bone & joints	0.91	--	1.03
Soft tissue (including heart)	2.75	2.55	2.75
Skin (excluding basal & squamous):	18.62	--	16.48
Melanomas of the skin	17.46	--	15.40
Other non-epithelial skin	1.16	--	1.08
Breast	62.46	28.39	59.37
Breast (female)	115.66	53.06	109.94
Female Genital System:	37.40	34.60	37.21
Cervix uteri	6.05	14.18	6.91
Corpus uteri	16.88	7.65	16.05
Uterus, NOS	--	--	--
Ovary	11.98	10.31	11.82
Vagina	--	--	--
Vulva	1.38	--	1.34
Other female genital system	--	--	--
Male Genital System:	138.31	63.67	131.81
Prostate	131.63	60.73	125.84
Testis	5.81	--	5.10
Penis	--	--	0.70
Other male genital system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. --- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Maricopa County**  
**Table II-C. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
Urinary System*:	27.81	16.57	26.86
Urinary bladder *	17.72	7.20	17.23
Kidney & renal pelvis	9.22	9.37	9.26
Ureter	0.44	--	0.41
Other urinary system	0.43	--	0.39
Eye & Orbit	0.81	--	0.81
Brain & Nervous System:	6.25	5.55	6.18
Brain	5.84	5.55	5.84
Cranial nerves & other nervous system	0.41	--	0.34
Endocrine System:	6.32	5.69	6.08
Thyroid	5.67	4.97	5.39
Other endocrine & thymus	0.65	--	0.69
Lymphomas:	15.73	9.86	14.86
Hodgkin's disease	1.93	--	1.74
Non-Hodgkin's lymphomas	13.80	8.51	13.12
Multiple Myeloma	3.32	--	3.26
Leukemias:	7.75	5.31	7.50
Lymphocytic	3.38	2.76	3.35
Myeloid	3.38	--	3.23
Monocytic	--	--	--
Other	0.84	--	0.77
Ill-defined & unspecified	11.45	7.89	11.17

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Maricopa County**  
**Table II-D. 1998 Age-Specific Incidence Rates, All Sites**  
**Age Group by Sex**

AGE GROUP	SEX		
	MALE	FEMALE	TOTAL
0 - 9 Years	11.25	13.43	12.28
10 - 19 Years	20.45	13.76	17.35
20 - 29 Years	38.71	46.84	42.57
30 - 39 Years	71.18	120.18	95.64
40 - 49 Years	168.33	296.06	233.63
50 - 59 Years	651.85	668.25	660.31
60 - 69 Years	1718.50	1176.24	1430.66
70 - 79 Years	2572.77	1619.46	2041.93
80+ Years	2639.72	1633.26	2019.50

Rates are per 100,000 persons. Invasive cancer cases only. One "other sex" case is included only in the "Total" category.

**Maricopa County**  
**Table II-E. 1998 Age-Specific Incidence Rates, All Sites**  
**Age Group by Ethnicity**

AGE GROUP	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
0 - 9 Years	12.78	11.20	12.28
10 - 19 Years	18.82	13.33	17.35
20 - 29 Years	45.90	32.51	42.57
30 - 39 Years	104.94	58.56	95.64
40 - 49 Years	248.27	150.49	233.63
50 - 59 Years	697.84	363.98	660.31
60 - 69 Years	1488.70	835.37	1430.66
70 - 79 Years	2105.70	1056.41	2041.93
80+ Years	2046.78	1444.01	2019.50

Rates are per 100,000 persons. Invasive cancer cases only.

**Maricopa County**  
**Table II-F. 1998 Age-Adjusted Incidence Rates, All Sites**  
**Sex by Race**

SEX	RACE			TOTAL
	WHITE	BLACK	*OTHER	
Male	398.74	369.63	263.00	405.00
Female	398.95	261.24	205.72	323.57
Total	290.69	308.75	230.50	358.45

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. Invasive cancer cases only. 173 unknown race cases are included in the "TOTAL" category only. One "other sex" case is included in the "Total" category only. \* Other race includes Native American, Chinese, Japanese, Filipino, Korean, Asian Indian, Vietnamese, Kampuchan, Thai, Samoan, Other Asian, Pacific Islander and Other race.

PART III

CANCER INCIDENCE IN  
PIMA COUNTY  
1998

# CANCER IN PIMA COUNTY: 1998

Figure III-A: Invasive Cancer Case Percent Distribution By Age (All Sites)

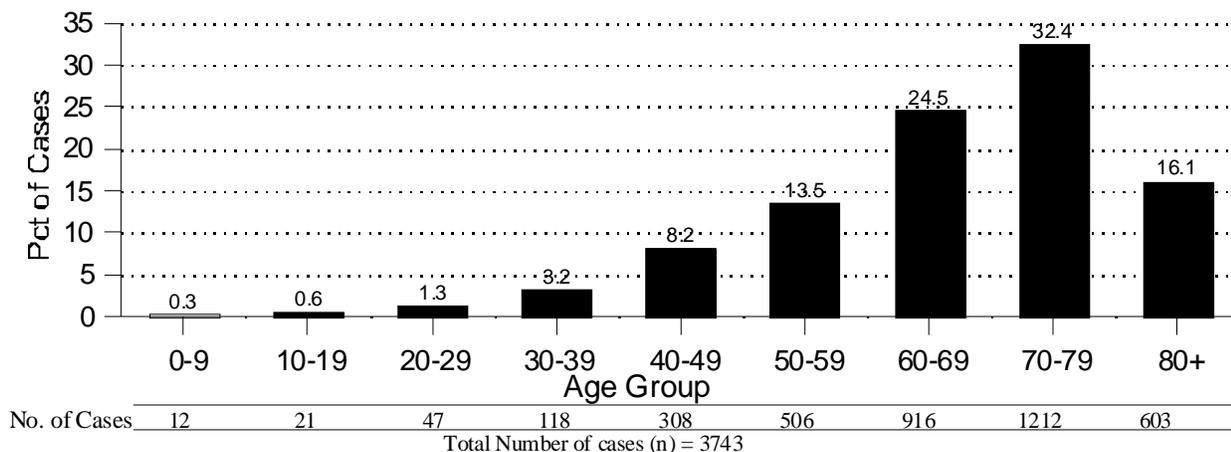
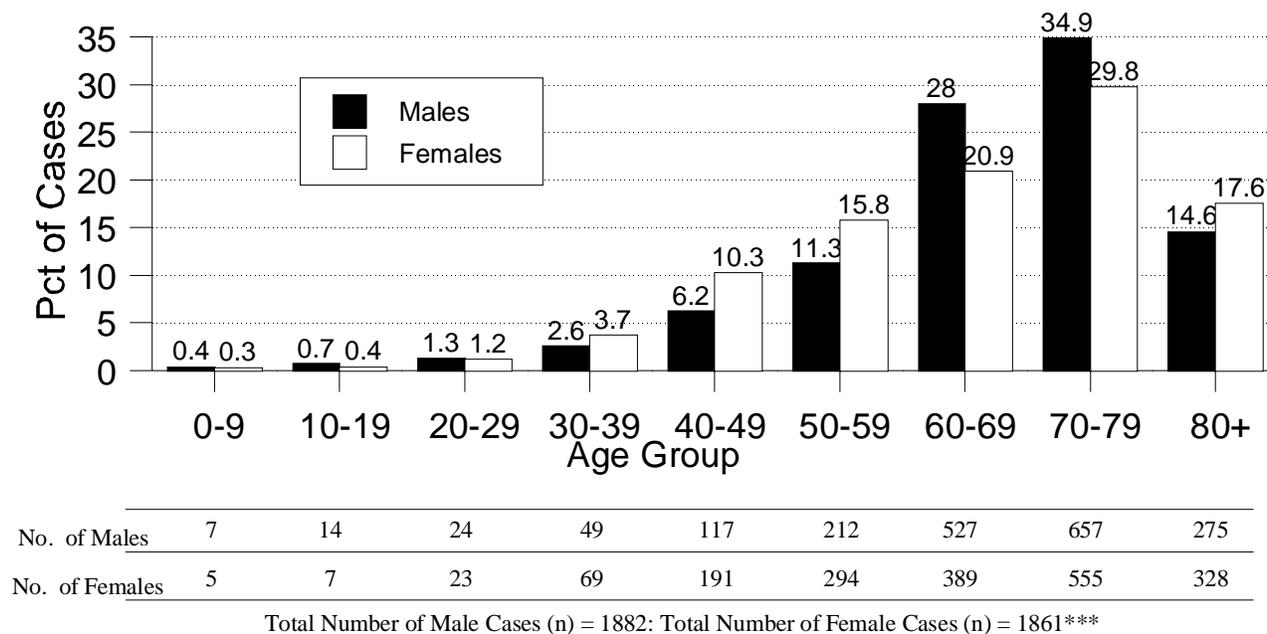


Figure III-B: Invasive Cancer Case Percent Distribution By Age and Sex (All Sites)



\*\*\* Male percentages are the percent of all **male** cases, and female percentages are the percent of all **female** cases.

# CANCER IN PIMA COUNTY: 1998

Figure III-C: Race Distribution of Invasive Cancer Cases (All Sites)

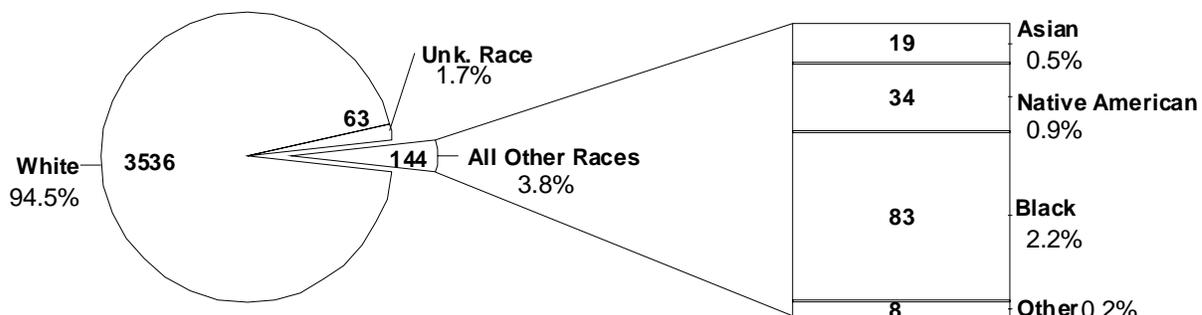
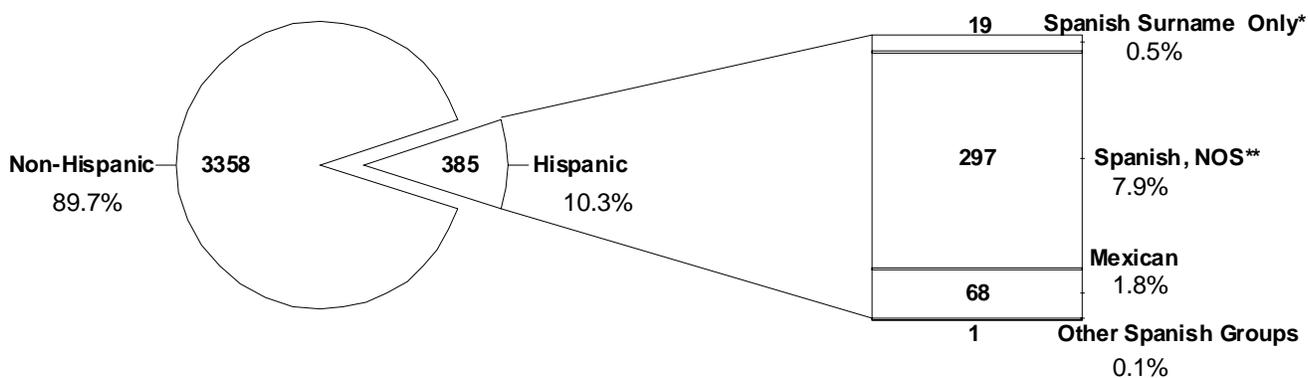


Figure III-D: Ethnic Distribution of Invasive Cancer Cases (All Sites)



\* Spanish Surname Only: Ethnicity derived from Spanish last name with the use of a computer program.

\*\*Spanish NOS: Spanish, not otherwise specified.

**Pima County**  
**Table III-A. 1998 Frequency of Invasive Cancer Cases**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
All Sites	1882	1861	3743
Oral Cavity & Pharynx:	52	26	78
Lip	1	0	1
Tongue	18	12	30
Salivary gland	5	5	10
Floor of Mouth	2	1	3
Gum & other oral cavity	7	3	10
Nasopharynx	3	1	4
Tonsil	4	2	6
Oropharynx	4	0	4
Hypopharynx	2	1	3
Other oral cavity & pharynx	6	1	7
Digestive System:	367	278	645
Esophagus	29	8	37
Stomach	31	22	53
Small Intestine	6	6	12
Colon & Rectum	220	172	392
Colon	143	126	269
Rectum	77	46	123
Anus, anal canal & anorectum	5	11	16
Liver & Intrahepatic bile duct	21	8	29
Liver	16	7	23
Intrahepatic bile duct	5	1	6
Gallbladder	2	10	12
Other biliary	4	4	8
Pancreas	43	29	72
Retroperitoneum & peritoneum	3	1	4
Other digestive system	3	7	10

13 "Other primary site" cases are listed only in the "All Sites" category of this table.  
 "All Sites" does not include bladder in situ cases.

**Pima County**  
**Table III-A. 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
Respiratory System:	303	271	574
Nose, nasal cavity & middle ear	3	2	5
Larynx	23	4	27
Lung & bronchus	267	263	530
Pleura	10	2	12
Trachea & other respiratory organs	0	0	0
Bone & joints	2	5	7
Soft tissue (including heart)	12	8	20
Skin (excluding basal & squamous):	101	66	167
Melanomas of the skin	93	59	152
Other non-epithelial skin	8	7	15
Breast	8	610	618
Female Genital System:	NA	229	229
Cervix uteri	NA	38	38
Corpus uteri	NA	99	99
Uterus, NOS	NA	1	1
Ovary	NA	79	79
Vagina	NA	2	2
Vulva	NA	8	8
Other female genital system	NA	2	2
Male Genital System:	641	NA	641
Prostate	610	NA	610
Testis	27	NA	27
Penis	2	NA	2
Other male genital system	2	NA	2

NA = not applicable.

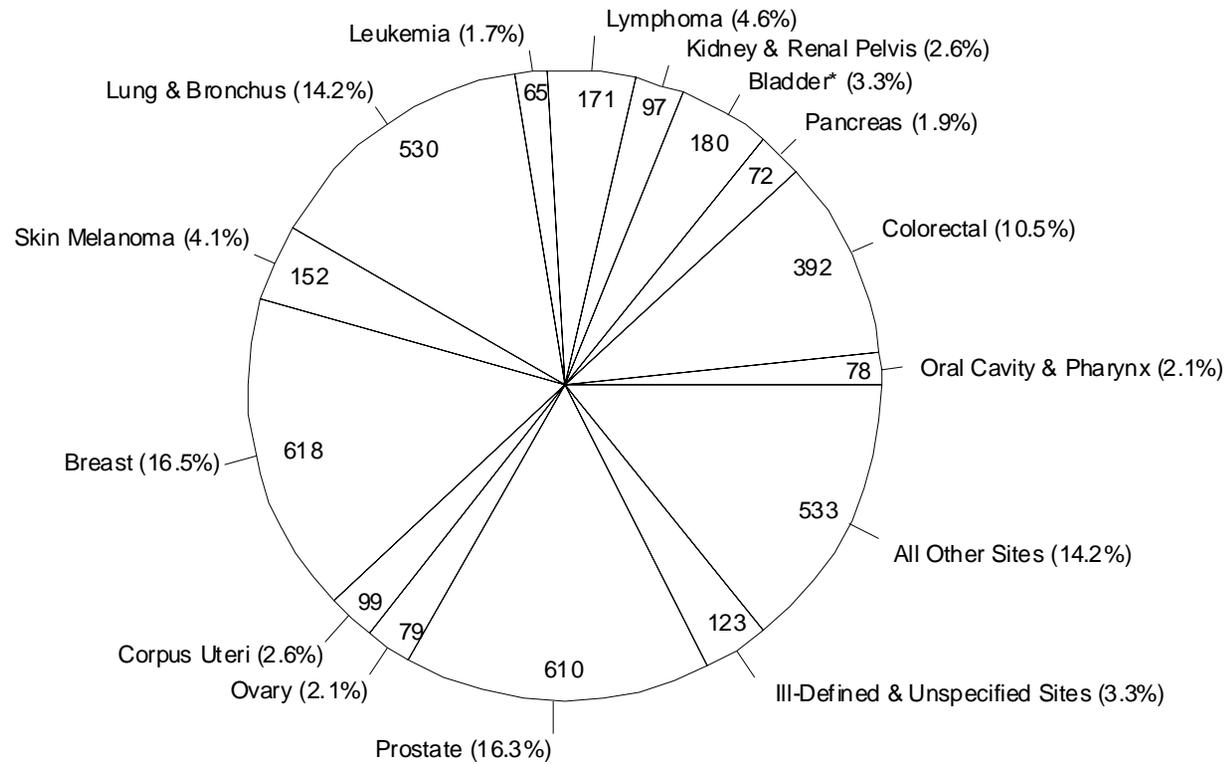
**Pima County**  
**Table III-A . 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
Urinary System*:	195	92	287
Urinary bladder*	131	49	180
Kidney & renal pelvis	59	38	97
Ureter	4	5	9
Other urinary system	1	0	1
Eye & Orbit	3	2	5
Brain & Nervous System:	29	25	54
Brain	29	22	51
Cranial nerves & other nervous system	0	3	3
Endocrine System:	9	64	73
Thyroid	9	60	69
Other endocrine & thymus	0	4	4
Lymphomas:	84	87	171
Hodgkin's disease	14	5	19
Non-Hodgkin's lymphomas	70	82	152
Multiple Myeloma	13	16	29
Leukemias:	39	26	65
Lymphocytic	15	11	26
Myeloid	20	12	32
Monocytic	1	0	1
Other	3	3	6
Ill-defined & unspecified	60	63	123

\* = Includes invasive and in situ bladder cases.

# CANCER IN PIMA COUNTY: 1998

Figure III-E: Case Distribution by Invasive Cancer Type



\* Bladder cases include 56 in situ cases. Percentage of bladder cases is invasive cases only.

# CANCER IN PIMA COUNTY: 1998

Figure III-F: Ten Most Common Invasive Cancer Types Among Males in Pima County

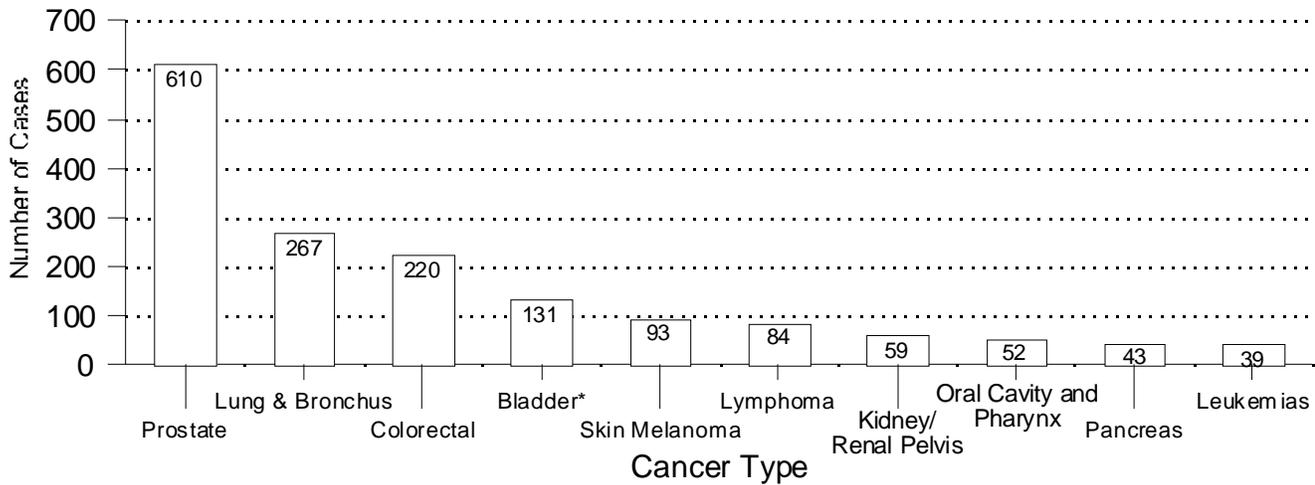
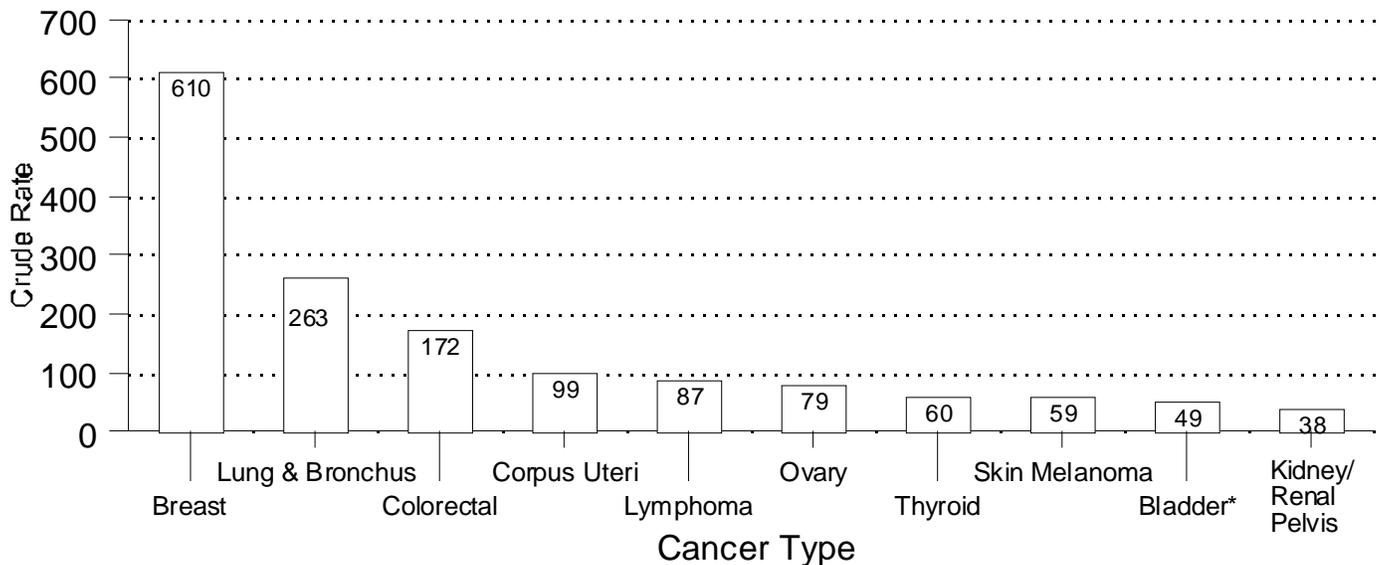


Figure III-G: Ten Most Common Invasive Cancer Types Among Females in Pima County



\*Bladder cases include 45 male in situ cases and 11 female in situ cases.

**Pima County**  
**Table III-B. 1998 Age-Adjusted Incidence Rates**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
All Sites	398.15	323.18	354.45
Oral Cavity & Pharynx:	12.17	4.75	8.13
Lip	--	--	--
Tongue	4.13	2.09	3.05
Salivary gland	--	--	1.06
Floor of Mouth	--	--	--
Gum & other oral cavity	--	--	1.03
Nasopharynx	--	--	--
Tonsil	--	--	--
Oropharynx	--	--	--
Hypopharynx	--	--	--
Other oral cavity & pharynx	--	--	--
Digestive System:	74.78	43.42	57.18
Esophagus	6.07	--	3.41
Stomach	6.08	3.62	4.71
Small Intestine	--	--	0.99
Colon & Rectum	45.40	26.63	34.93
Colon	29.27	19.07	23.59
Rectum	16.13	7.56	11.34
Anus, anal canal & anorectum	--	1.94	1.56
Liver & Intrahepatic bile duct	4.03	--	2.48
Liver	3.04	--	1.99
Intrahepatic bile duct	--	--	--
Gallbladder	--	1.65	1.09
Other biliary	--	--	--
Pancreas	8.65	4.34	6.23
Retroperitoneum & peritoneum	--	--	--
Other digestive system	--	--	0.84

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 13 "Other primary site" cases are listed only in the "All Sites" category of this table. "All sites" does not include bladder in situ cases. Invasive cancer cases only. -- = Insufficient cases for an adjusted rate calculation.

**Pima County**  
**Table III-B. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Respiratory System:	62.65	44.00	52.20
Nose, nasal cavity & middle ear	--	--	--
Larynx	5.53	--	2.88
Lung & bronchus	54.48	42.55	47.73
Pleura	1.88	--	0.95
Trachea & other respiratory organs	--	--	--
Bone & joints	--	--	--
Soft tissue (including heart)	2.76	--	2.07
Skin (excluding basal & squamous):	21.65	11.96	16.26
Melanomas of the skin	20.06	10.93	14.99
Other non-epithelial skin	--	--	1.27
Breast	--	112.09	61.63
Female Genital System:	NA	40.12	NA
Cervix uteri	NA	7.47	NA
Corpus uteri	NA	17.02	NA
Uterus, NOS	NA	--	NA
Ovary	NA	13.59	NA
Vagina	NA	--	NA
Vulva	NA	--	NA
Other female genital system	NA	--	NA
Male Genital System:	137.34	NA	NA
Prostate	130.98	NA	NA
Testis	5.61	NA	NA
Penis	--	NA	NA
Other male genital system	--	NA	NA

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Pima County**  
**Table III-B. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Urinary System*:	40.20	14.98	26.18
Urinary bladder *	25.96	7.22	15.43
Kidney & renal pelvis	13.13	6.89	9.78
Ureter	--	--	--
Other urinary system	--	--	--
Eye & Orbit	--	--	--
Brain & Nervous System:	6.56	4.88	5.68
Brain	6.56	4.38	5.42
Cranial nerves & other nervous system	--	--	--
Endocrine System:	--	13.72	7.87
Thyroid	--	12.66	7.34
Other endocrine & thymus	--	--	--
Lymphomas:	18.79	15.43	17.07
Hodgkin's disease	3.78	--	2.37
Non-Hodgkin's lymphomas	15.01	14.46	14.70
Multiple Myeloma	2.57	2.99	2.77
Leukemias:	8.72	4.16	6.32
Lymphocytic	3.37	1.74	2.50
Myeloid	4.56	1.94	3.19
Monocytic	--	--	--
Other	--	--	--
Ill-defined & unspecified	12.61	9.02	10.70

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Pima County**  
**Table III-C. 1998 Age-Adjusted Incidence Rates**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON- HISPANIC	HISPANIC	TOTAL
All Sites	381.52	223.36	354.45
Oral Cavity & Pharynx:	9.06	--	8.13
Lip	--	--	--
Tongue	3.55	--	3.05
Salivary gland	1.32	--	1.06
Floor of Mouth	--	--	--
Gum & other oral cavity	--	--	1.03
Nasopharynx	--	--	--
Tonsil	--	--	--
Oropharynx	--	--	--
Hypopharynx	--	--	--
Other oral cavity & pharynx	--	--	--
Digestive System:	60.14	39.54	57.18
Esophagus	3.48	--	3.41
Stomach	4.42	--	4.71
Small Intestine	1.10	--	0.99
Colon & Rectum	38.20	15.76	34.93
Colon	25.76	10.73	23.59
Rectum	12.44	--	11.34
Anus, anal canal & anorectum	1.65	--	1.56
Liver & Intrahepatic bile duct	2.36	--	2.48
Liver	1.78	--	1.99
Intrahepatic bile duct	--	--	--
Gallbladder	--	--	1.09
Other biliary	--	--	--
Pancreas	6.46	--	6.23
Retroperitoneum & peritoneum	--	--	--
Other digestive system	--	--	0.84

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 13 "Other primary site" cases are listed only in the "All Sites" category of this table. "All Sites" does not include bladder in situ cases.

-- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Pima County**  
**Table III-C. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		TOTAL
	NON-HISPANIC	HISPANIC	
Respiratory System:	57.59	23.66	52.20
Nose, nasal cavity & middle ear	--	--	--
Larynx	3.19	--	2.88
Lung & bronchus	52.63	21.35	47.73
Pleura	0.92	--	0.95
Trachea & other respiratory organs	--	--	--
Bone & joints	--	--	--
Soft tissue (including heart)	2.10	--	2.07
Skin (excluding basal & squamous):	19.44	--	16.26
Melanomas of the skin	18.00	--	14.99
Other non-epithelial skin	1.44	--	1.27
Breast	68.34	30.72	61.63
Breast (female)	125.08	54.10	112.09
Female Genital System:	41.58	34.83	40.12
Cervix uteri	6.37	12.10	7.47
Corpus uteri	18.45	--	17.02
Uterus, NOS	--	--	--
Ovary	14.57	11.35	13.59
Vagina	--	--	--
Vulva	--	--	--
Other female genital system	--	--	--
Male Genital System:	144.03	105.26	137.34
Prostate	136.93	100.55	130.98
Testis	6.38	--	5.61
Penis	--	--	--
Other male genital system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Pima County**  
**Table III-C. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		TOTAL
	NON- HISPANIC	HISPANIC	
Urinary System*:	28.92	10.95	26.18
Urinary bladder *	17.61	--	15.43
Kidney & renal pelvis	10.25	7.39	9.78
Ureter	--	--	--
Other urinary system	--	--	--
Eye & Orbit	--	--	--
Brain & Nervous System:	5.24	6.48	5.68
Brain	4.90	6.48	5.42
Cranial nerves & other nervous system	--	--	--
Endocrine System:	8.39	5.65	7.87
Thyroid	7.54	5.65	7.34
Other endocrine & thymus	--	--	--
Lymphomas:	17.74	14.65	17.07
Hodgkin's disease	2.37	--	2.37
Non-Hodgkin's lymphomas	15.37	11.38	14.70
Multiple Myeloma	2.56	--	2.77
Leukemias:	6.27	6.54	6.32
Lymphocytic	2.84	--	2.50
Myeloid	2.90	--	3.19
Monocytic	--	--	--
Other	--	--	--
Ill-defined & unspecified	11.39	8.24	10.70

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Pima County**  
**Table III-D. 1998 Age-Specific Incidence Rates, All Sites**  
**Age Group by Sex**

AGE GROUP	SEX		
	MALE	FEMALE	TOTAL
0 - 9 Years	11.91	8.79	10.38
10 - 19 Years	25.13	13.04	19.19
20 - 29 Years	37.96	38.20	38.08
30 - 39 Years	80.13	118.04	98.65
40 - 49 Years	208.20	322.50	266.85
50 - 59 Years	584.13	725.80	658.85
60 - 69 Years	1829.04	1108.29	1433.22
70 - 79 Years	2462.70	1602.15	1976.55
80+ Years	2230.33	1638.53	1864.10

Rates are per 100,000 persons. Invasive cancer cases only.

**Pima County**  
**Table III-E. 1998 Age-Specific Incidence Rates, All Sites**  
**Age Group by Ethnicity**

AGE GROUP	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
0 - 9 Years	12.22	7.98	10.38
10 - 19 Years	23.81	11.85	19.19
20 - 29 Years	35.25	43.73	38.08
30 - 39 Years	109.82	72.55	98.65
40 - 49 Years	294.88	180.43	266.85
50 - 59 Years	733.30	362.85	658.85
60 - 69 Years	1546.11	874.74	1433.22
70 - 79 Years	2099.29	1113.41	1976.55
80+ Years	1909.98	1444.13	1864.10

Rates are per 100,000 persons. Invasive cancer cases only.

**Pima County**  
**Table III-F. 1998 Age-Adjusted Incidence Rates, All Sites**  
**Sex by Race**

SEX	RACE			
	WHITE	BLACK	*OTHER	TOTAL
Male	397.12	411.07	141.72	398.15
Female	381.88	240.50	203.81	323.18
Total	385.28	314.78	177.40	354.45

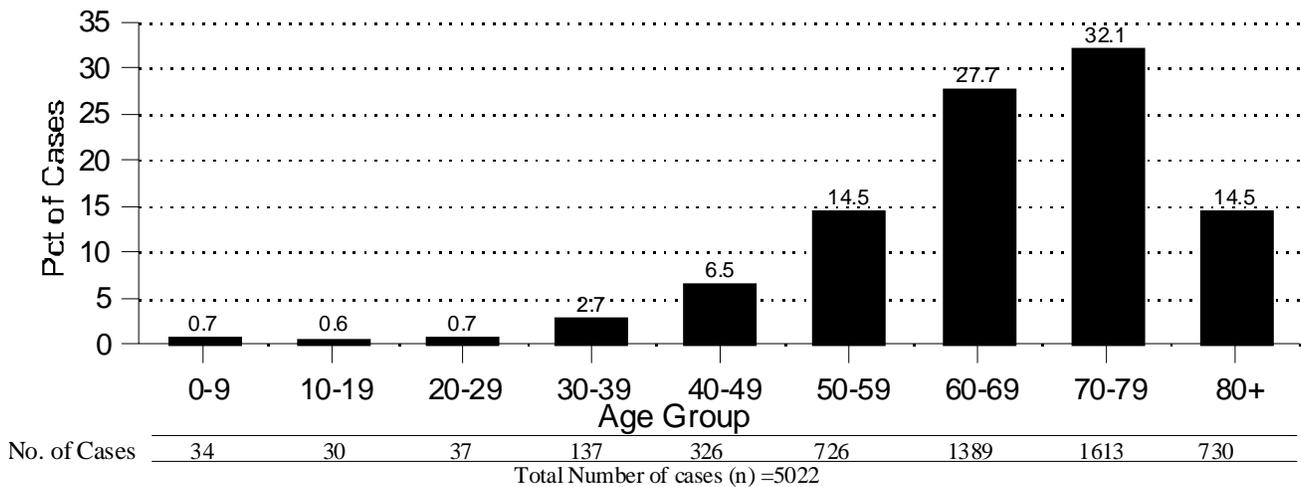
Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. Invasive cancer cases only. 63 unknown race cases are included in the "TOTAL" category only. \* Other race includes Native American, Japanese, Filipino, Korean, Asian Indian, Vietnamese, Samoan, Other Asian, Pacific Islander and Other race.

PART IV

CANCER INCIDENCE IN  
ARIZONA RURAL  
COUNTIES  
1998

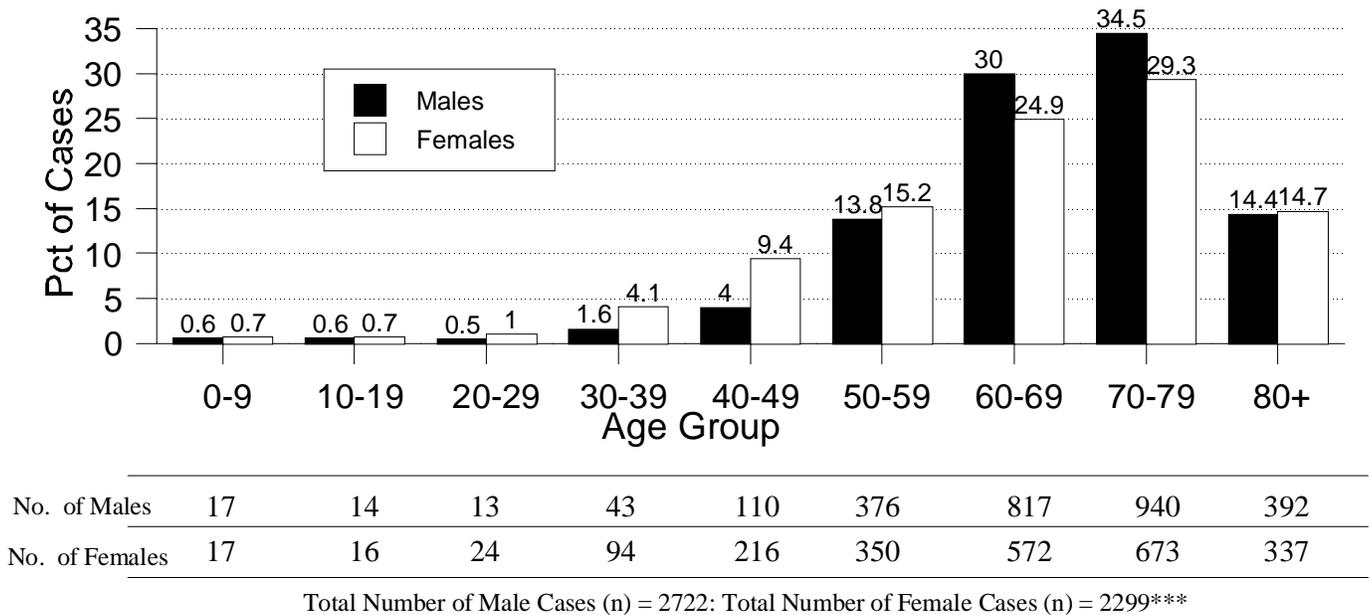
# CANCER IN RURAL COUNTIES: 1998

Figure IV-A: Invasive Cancer Case Percent Distribution  
By Age\* (All Sites)



\* Distribution by age at diagnosis excludes 1 case with an unknown age at diagnosis.

Figure IV-B: Invasive Cancer Case Percent Distribution  
By Age and Sex\*\* (All Sites)



\*\* Distribution by age at diagnosis and sex excludes 1 case with an unknown age and 1 case with other sex.  
 \*\*\* Male percentages are the percent of all **male** cases, and female percentages are the percent of all **female** cases.

# CANCER IN RURAL COUNTIES: 1998

Figure IV-C: Race Distribution of Invasive Cancer Cases  
(All Sites)

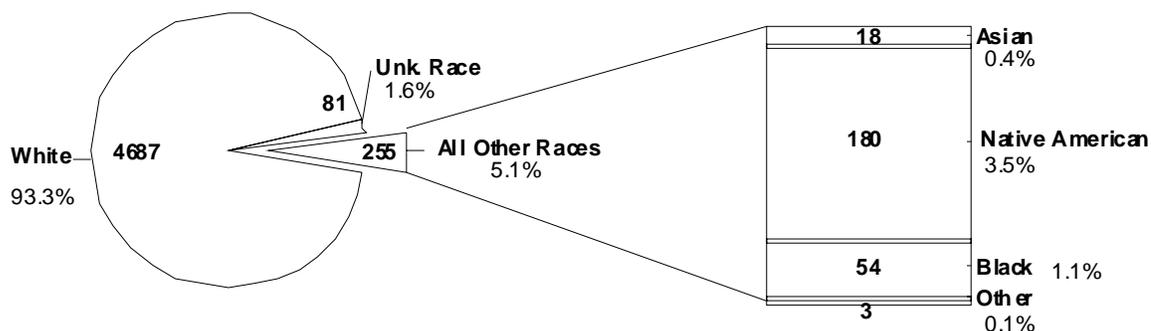
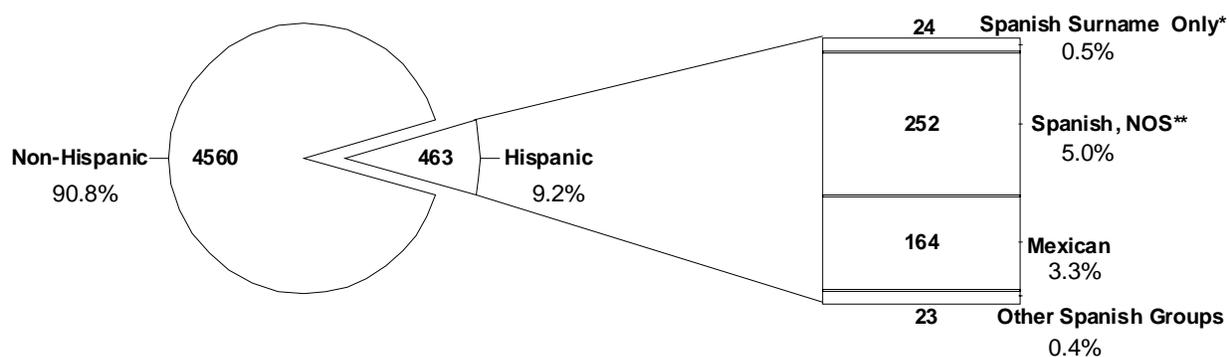


Figure IV-D: Ethnic Distribution of Invasive Cancer Cases  
(All Sites)



\* Spanish Surname Only: Ethnicity derived from Spanish last name with the use of a computer program.

\*\*Spanish NOS: Spanish, not otherwise specified.

**Arizona Rural Counties**  
**Table IV-A. 1998 Frequency of Invasive Cancer Cases**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
All Sites	2723	2299	5023
Oral Cavity & Pharynx:	74	26	100
Lip	12	2	14
Tongue	17	4	21
Salivary gland	4	3	7
Floor of Mouth	3	5	8
Gum & other oral cavity	8	2	10
Nasopharynx	2	1	3
Tonsil	10	1	11
Oropharynx	2	1	3
Hypopharynx	15	5	20
Other oral cavity & pharynx	1	2	3
Digestive System:	554	415	969
Esophagus	46	9	55
Stomach	58	32	90
Small Intestine	12	7	19
Colon & Rectum	319	261	580
Colon	208	176	384
Rectum	111	85	196
Anus, anal canal & anorectum	9	8	17
Liver & Intrahepatic bile duct	36	20	56
Liver	33	14	47
Intrahepatic bile duct	3	6	9
Gallbladder	6	12	18
Other biliary	10	9	19
Pancreas	51	51	102
Retroperitoneum & peritoneum	4	4	8
Other digestive system	3	2	5

13 "Other primary site" cases are listed only in the "All Sites" category of this table. "All Sites" does not include bladder in situ cases. Included only in the "Total" category is one "other sex" case.

**Arizona Rural Counties**  
**Table IV-A. 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
Respiratory System:	551	352	903
Nose, nasal cavity & middle ear	5	4	9
Larynx	39	6	45
Lung & bronchus	496	341	837
Pleura	11	1	12
Trachea & other respiratory organs	0	0	0
Bone & joints	6	3	9
Soft tissue (including heart)	19	18	37
Skin (excluding basal & squamous):	122	82	204
Melanomas of the skin	112	76	188
Other non-epithelial skin	10	6	16
Breast	8	707	715
Female Genital System:	NA	249	249
Cervix uteri	NA	45	45
Corpus uteri	NA	110	110
Uterus, NOS	NA	3	3
Ovary	NA	72	72
Vagina	NA	1	1
Vulva	NA	16	16
Other female genital system	NA	2	2
Male Genital System:	788	NA	788
Prostate	761	NA	761
Testis	21	NA	21
Penis	2	NA	2
Other male genital system	4	NA	4

NA = not applicable.

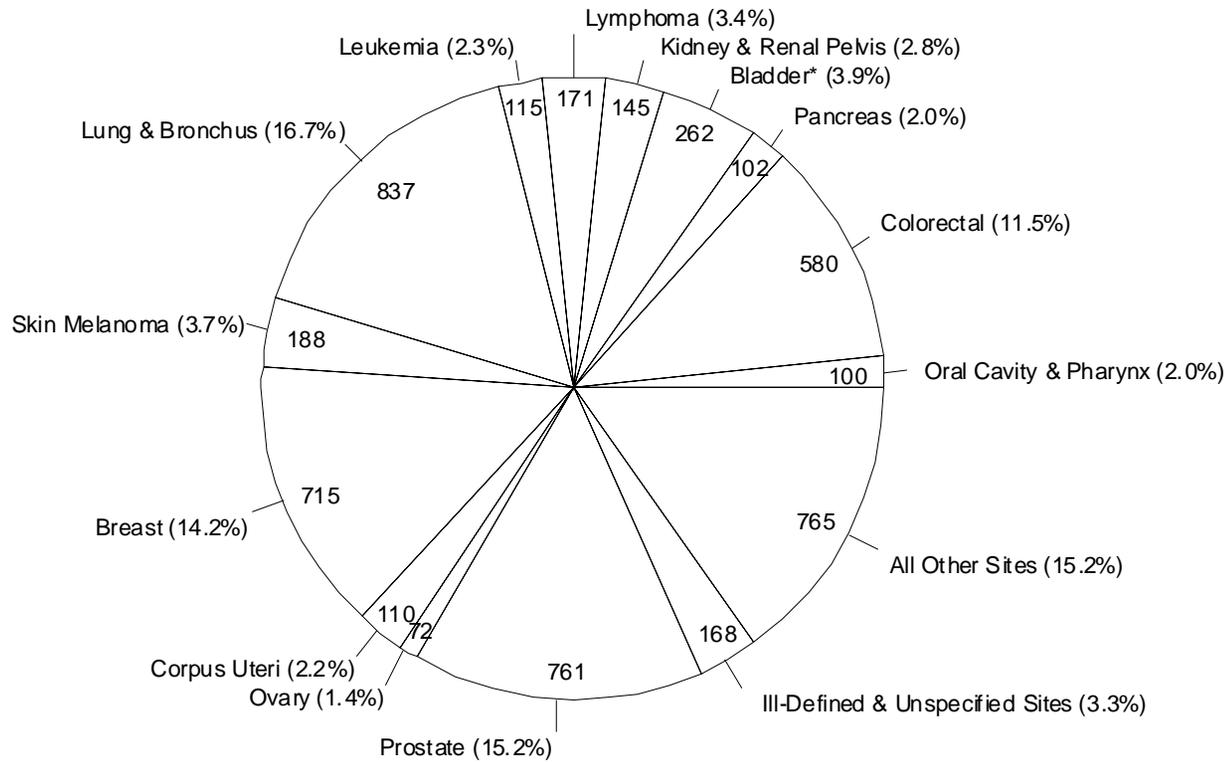
**Arizona Rural Counties**  
**Table IV-A . 1998 Frequency of Invasive Cancer Cases (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		TOTAL
	MALE	FEMALE	
Urinary System*:	288	129	417
Urinary bladder*	195	67	262
Kidney & renal pelvis	84	61	145
Ureter	7	1	8
Other urinary system	2	0	2
Eye & Orbit	5	4	9
Brain & Nervous System:	43	29	72
Brain	40	28	68
Cranial nerves & other nervous system	3	1	4
Endocrine System:	17	69	86
Thyroid	15	62	77
Other endocrine & thymus	2	7	9
Lymphomas:	97	74	171
Hodgkin's disease	9	8	17
Non-Hodgkin's lymphomas	88	66	154
Multiple Myeloma	42	23	65
Leukemias:	71	44	115
Lymphocytic	32	24	56
Myeloid	27	14	41
Monocytic	3	0	3
Other	9	6	15
Ill-defined & unspecified	86	82	168

\* = Includes invasive and in situ bladder cases.

# CANCER IN RURAL COUNTIES: 1998

Figure IV-E: Case Distribution by Invasive Cancer Type



- Bladder cases include 68 in situ cases. Percentage of bladder cases is invasive cases only.

# CANCER IN RURAL COUNTIES: 1998

Figure IV-F: Ten Most Common Invasive Cancer Types  
Among Males in Rural Counties

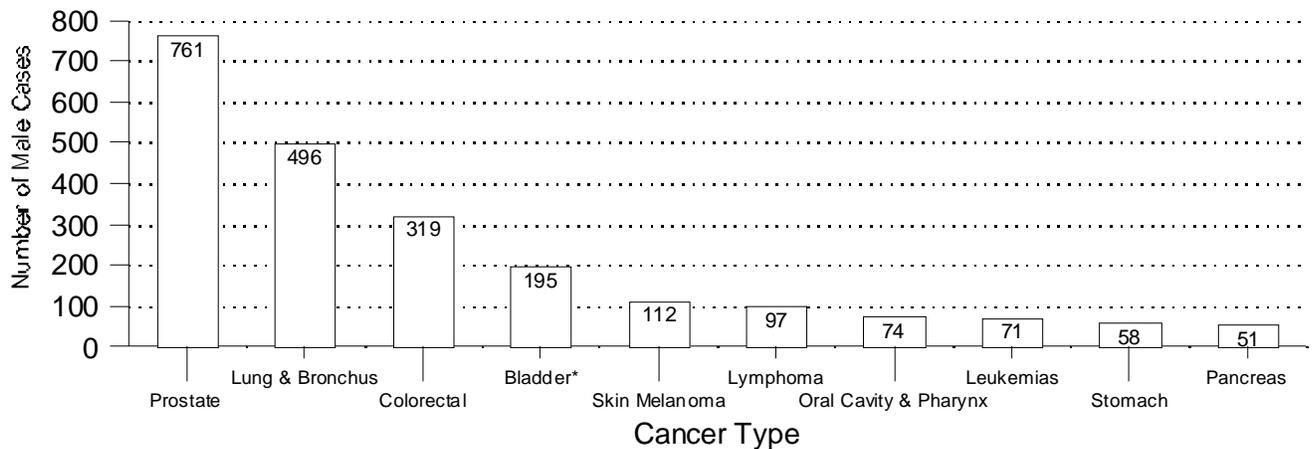
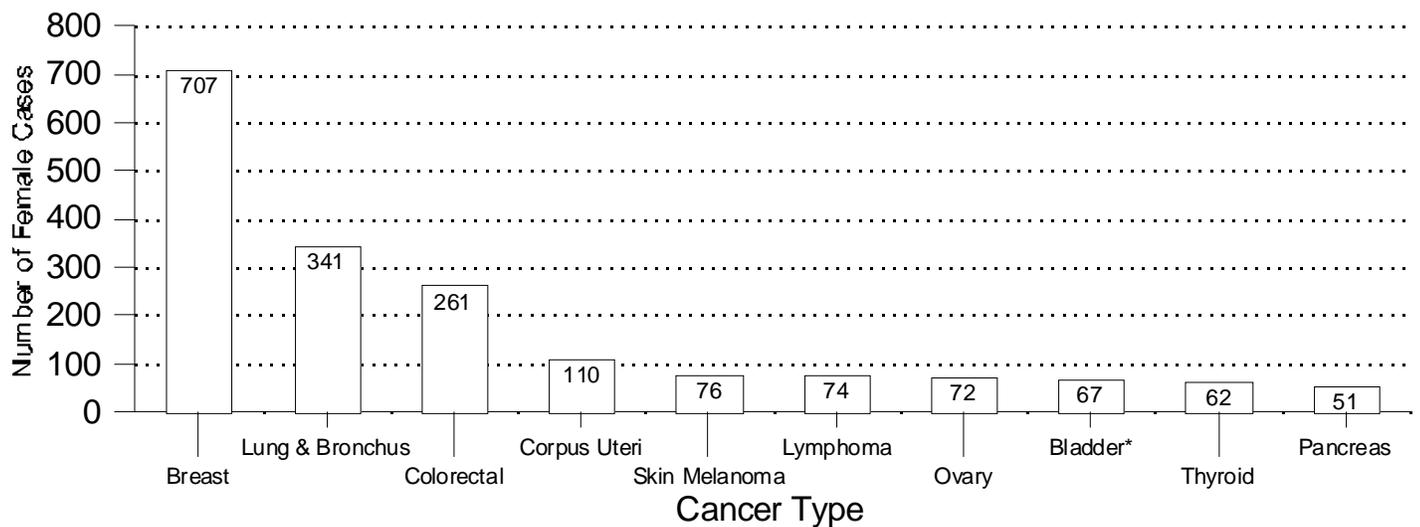


Figure IV-G: Ten Most Common Invasive Cancer Types  
Among Females in Rural Counties



\* Bladder cases includes 54 male in situ cases and 14 female in situ cases.

**Table IV-B. 1998 Age-Adjusted Incidence Rates  
Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
All Sites	382.13	309.93	343.58
Oral Cavity & Pharynx:	10.63	3.78	7.06
Lip	1.58	--	0.88
Tongue	2.53	--	1.49
Salivary gland	--	--	--
Floor of Mouth	--	--	--
Gum & other oral cavity	--	--	0.72
Nasopharynx	--	--	--
Tonsil	1.56	--	0.85
Oropharynx	--	--	--
Hypopharynx	2.11	--	1.32
Other oral cavity & pharynx	--	--	--
Digestive System:	76.11	51.32	63.10
Esophagus	6.62	--	3.81
Stomach	7.80	4.18	5.87
Small Intestine	1.63	--	1.25
Colon & Rectum	42.84	32.01	37.16
Colon	27.94	20.84	24.25
Rectum	14.91	11.17	12.91
Anus, anal canal & anorectum	--	--	1.17
Liver & Intrahepatic bile duct	5.48	2.25	3.83
Liver	5.12	1.57	3.30
Intrahepatic bile duct	--	--	--
Gallbladder	--	1.45	1.12
Other biliary	1.34	--	1.21
Pancreas	7.30	6.24	6.72
Retroperitoneum & peritoneum	--	--	--
Other digestive system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 13 "Other primary site" cases are listed only in the "All Sites" category of this table. One "other sex" case is included only in the "Total" category. "All sites" does not include bladder in situ cases. Invasive cancer cases only. -- = Insufficient cases for an adjusted rate calculation.

**Arizona Rural Counties**  
**Table IV-B. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Respiratory System:	76.73	45.27	60.40
Nose, nasal cavity & middle ear	--	--	--
Larynx	6.05	--	3.39
Lung & bronchus	68.60	43.71	55.68
Pleura	1.32	--	0.68
Trachea & other respiratory organs	--	--	--
Bone & joints	--	--	--
Soft tissue (including heart)	3.06	2.56	2.81
Skin (excluding basal & squamous):	18.31	11.61	14.80
Melanomas of the skin	16.61	10.57	13.46
Other non-epithelial skin	1.70	--	1.34
Breast	--	98.39	51.35
Female Genital System:	NA	35.37	NA
Cervix uteri	NA	7.33	NA
Corpus uteri	NA	15.55	NA
Uterus, NOS	NA	--	NA
Ovary	NA	9.56	NA
Vagina	NA	--	NA
Vulva	NA	2.19	NA
Other female genital system	NA	--	NA
Male Genital System:	107.92	NA	NA
Prostate	103.47	NA	NA
Testis	3.49	NA	NA
Penis	--	NA	NA
Other male genital system	--	NA	NA

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Arizona Rural Counties**  
**Table IV-B. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Sex**

PRIMARY SITE	SEX		
	MALE	FEMALE	TOTAL
Urinary System*:	39.52	16.13	27.39
Urinary bladder *	25.73	8.10	16.52
Kidney & renal pelvis	12.52	7.93	10.21
Ureter	--	--	--
Other urinary system	--	--	--
Eye & Orbit	--	--	--
Brain & Nervous System:	6.87	4.58	5.66
Brain	6.33	4.35	5.28
Cranial nerves & other nervous system	--	--	--
Endocrine System:	2.83	11.21	7.02
Thyroid	2.50	10.09	6.28
Other endocrine & thymus	--	--	--
Lymphomas:	14.71	10.17	12.40
Hodgkin's disease	--	--	1.53
Non-Hodgkin's lymphomas	13.00	8.82	10.87
Multiple Myeloma	6.31	2.71	4.44
Leukemias:	10.23	6.91	8.45
Lymphocytic	4.66	3.73	4.16
Myeloid	3.86	2.28	3.00
Monocytic	--	--	--
Other	--	--	1.08
Ill-defined & unspecified	11.95	9.58	10.71

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Arizona Rural Counties**  
**Table IV-C. 1998 Age-Adjusted Incidence Rates**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
All Sites	363.08	232.24	343.58
Oral Cavity & Pharynx:	7.70	--	7.06
Lip	1.01	--	0.88
Tongue	1.58	--	1.49
Salivary gland	--	--	--
Floor of Mouth	--	--	--
Gum & other oral cavity	--	--	0.72
Nasopharynx	--	--	--
Tonsil	0.93	--	0.85
Oropharynx	--	--	--
Hypopharynx	1.46	--	1.32
Other oral cavity & pharynx	--	--	--
Digestive System:	64.33	58.14	63.10
Esophagus	4.11	--	3.81
Stomach	5.57	9.26	5.87
Small Intestine	1.25	--	1.25
Colon & Rectum	38.74	27.00	37.16
Colon	25.09	18.09	24.25
Rectum	13.65	8.91	12.91
Anus, anal canal & anorectum	1.19	--	1.17
Liver & Intrahepatic bile duct	3.67	5.45	3.83
Liver	3.06	5.45	3.30
Intrahepatic bile duct	--	--	--
Gallbladder	0.92	--	1.12
Other biliary	1.32	--	1.21
Pancreas	6.43	8.61	6.72
Retroperitoneum & peritoneum	--	--	--
Other digestive system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. 13 "Other primary site" cases are listed only in the "All Sites" category of this table. "All Sites" does not include bladder in situ cases. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Arizona Rural Counties**  
**Table IV-C. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		TOTAL
	NON-HISPANIC	HISPANIC	
Respiratory System:	65.37	30.09	60.40
Nose, nasal cavity & middle ear	--	--	--
Larynx	3.58	--	3.39
Lung & bronchus	60.27	27.82	55.68
Pleura	0.77	--	0.68
Trachea & other respiratory organs	--	--	--
Bone & joints	--	--	--
Soft tissue (including heart)	2.98	--	2.81
Skin (excluding basal & squamous):	17.15	--	14.80
Melanomas of the skin	15.48	--	13.46
Other non-epithelial skin	1.67	5.57	1.34
Breast	55.14	31.63	51.35
Breast (female)	106.05	59.29	98.39
Female Genital System:	39.03	18.86	35.37
Cervix uteri	8.60	--	7.33
Corpus uteri	16.93	--	15.55
Uterus, NOS	--	--	--
Ovary	10.36	--	9.56
Vagina	--	--	--
Vulva	2.62	--	2.19
Other female genital system	--	--	--
Male Genital System:	112.23	80.31	107.92
Prostate	107.25	78.27	103.47
Testis	3.86	--	3.49
Penis	--	--	--
Other male genital system	--	--	--

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only.

**Arizona Rural Counties**  
**Table IV-C. 1998 Age-Adjusted Incidence Rates (continued)**  
**Primary Site by Ethnicity**

PRIMARY SITE	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
Urinary System*:	29.35	15.33	27.39
Urinary bladder *	17.68	8.02	16.52
Kidney & renal pelvis	10.91	7.30	10.21
Ureter	--	--	--
Other urinary system	--	--	--
Eye & Orbit	--	--	--
Brain & Nervous System:	5.13	6.97	5.66
Brain	5.07	5.57	5.28
Cranial nerves & other nervous system	--	--	--
Endocrine System:	7.64	5.36	7.02
Thyroid	6.74	4.85	6.28
Other endocrine & thymus	--	--	--
Lymphomas:	12.30	12.60	12.40
Hodgkin's disease	1.55	--	1.53
Non-Hodgkin's lymphomas	10.75	10.48	10.87
Multiple Myeloma	4.95	--	4.44
Leukemias:	8.50	5.31	8.45
Lymphocytic	3.63	4.65	4.16
Myeloid	3.34	--	3.00
Monocytic	--	--	--
Other	1.27	--	1.08
Ill-defined & unspecified	10.87	9.72	10.71

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Invasive cancer cases only. \* = Includes invasive and in situ bladder cases.

**Arizona Rural Counties**

**Table IV-D. 1998 Age-Specific Incidence Rates, All Sites  
Age Group by Sex**

AGE GROUP	SEX		
	MALE	FEMALE	TOTAL
0 - 9 Years	18.73	20.00	19.34
10 - 19 Years	15.90	19.60	17.68
20 - 29 Years	18.00	37.03	27.00
30 - 39 Years	59.83	133.86	96.41
40 - 49 Years	152.56	305.42	228.25
50 - 59 Years	717.69	618.53	666.20
60 - 69 Years	1700.28	1113.88	1397.34
70 - 79 Years	2236.82	1497.29	1854.62
80+ Years	2289.05	1602.40	1913.20

Rates are per 100,000 persons. Invasive cancer cases only. Not included is 1 case with unknown age group. One “other sex” case is included only in the “Total” category.

**Arizona Rural Counties**

**Table VI-E. 1998 Age-Specific Incidence Rates, All Sites  
Age Group by Ethnicity**

AGE GROUP	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
0 - 9 Years	15.07	28.41	19.34
10 - 19 Years	14.94	24.38	17.68
20 - 29 Years	31.08	16.09	27.00
30 - 39 Years	115.88	40.75	96.41
40 - 49 Years	257.10	112.40	228.25
50 - 59 Years	729.36	351.43	666.20
60 - 69 Years	1459.23	1007.06	1397.34
70 - 79 Years	1925.71	1267.29	1854.62
80+ Years	1938.09	1680.67	1913.20

Rates are per 100,000 persons. Invasive cancer cases only. Not included is 1 case with unknown age group.

**Arizona Rural Counties**  
**Table IV-F. 1998 Age-Adjusted Incidence Rates, All Sites**  
**Sex by Race**

SEX	RACE			TOTAL
	WHITE	BLACK	*OTHER	
Male	394.72	363.84	165.19	382.13
Female	248.29	297.35	142.05	309.93
Total	300.87	324.71	151.54	343.58

Rates are per 100,000 persons and are adjusted to the 1970 U.S. population. Invasive cancer cases only. 81 unknown race cases are included in the "TOTAL" category only. One "other sex" case is included in the "Total" category only. \* Other race includes Native American, Chinese, Japanese, Filipino, Hawaiian, Asian Indian, Vietnamese, Melanesan, Other Asian, Pacific Islander and Other race.

# PART V

# CANCER MORTALITY IN ARIZONA 1998

**Arizona**  
**Table V-A. 1998 Age-Adjusted Malignant Neoplasm Mortality Rates, All Causes**  
**County of Residence by Sex**

COUNTY	SEX		
	MALE	FEMALE	TOTAL
Apache	115.67	75.74	94.17
Cochise	144.09	130.97	136.74
Coconino	112.34	111.30	111.80
Gila	141.80	113.10	126.58
Graham	154.35	108.14	131.46
Greenlee	--	—	—
La Paz	103.83	122.00	111.59
Maricopa	130.43	99.67	113.34
Mohave	163.88	102.73	131.68
Navajo	136.18	105.10	119.49
Pima	128.48	93.15	108.44
Pinal	145.15	98.96	121.98
Santa Cruz	137.30	55.38	92.80
Yavapai	132.63	104.58	117.78
Yuma	105.99	77.51	91.35
Arizona	131.89	99.65	113.48

Rates are per 100,000 persons and are adjusted to the 1940 U.S. population. -- = Insufficient cases for an adjusted rate calculation. Source: ADHS Office of Vital Records.

**Arizona**  
**Table V-B. 1998 Age-Adjusted Malignant Neoplasm Mortality Rates, All Causes**  
**County of Residence by Race**

COUNTY	RACE			
	WHITE	BLACK	OTHER	TOTAL
Maricopa	126.20	129.22	77.38	113.34
Pima	117.98	134.55	95.97	108.44
*All Other	100.98	262.33	76.12	117.75
Arizona	115.29	136.26	79.11	113.48

Rates are per 100,000 persons and are adjusted to the 1940 U.S. population. \* Includes: Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Pinal, Santa Cruz, Yavapai, and Yuma.  
Source: ADHS Office of Vital Records.

**Arizona**  
**Table V-C. 1998 Age-Adjusted Malignant Neoplasm Mortality Rates, All Causes**  
**County of Residence by Ethnicity**

COUNTY	ETHNICITY		
	NON-HISPANIC	HISPANIC	TOTAL
Maricopa	115.02	90.26	113.34
Pima	115.71	71.84	108.44
*All Other	126.61	89.43	117.75
Arizona	117.67	85.32	113.48

Rates are per 100,000 persons and are adjusted to the 1940 U.S. population. \* Includes: Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Pinal, Santa Cruz, Yavapai, and Yuma. Unknown Included only in the "TOTAL" category are 10 cases with an unknown ethnicity.  
Source: ADHS Office of Vital Records.

**Arizona**  
**Table V-D. 1998 Age-Specific Malignant Neoplasm Mortality Rates, All Causes**  
**Age Group by Sex**

AGE GROUP	SEX		
	MALE	FEMALE	TOTAL
0 - 19 Years	5.08	5.05	5.07
20 - 29 Years	7.43	7.20	7.32
30 - 39 Years	15.68	18.42	17.04
40 - 49 Years	74.37	72.00	73.17
50 - 59 Years	233.41	192.65	212.28
60 - 69 Years	610.67	436.06	518.01
70 - 79 Years	1092.48	730.11	894.12
80+ Years	1686.61	1099.13	1333.26

Rates are per 100,000 persons. Source: ADHS Office of Vital Records.

**Arizona**  
**Table V-E. 1998 Age-Adjusted Malignant Neoplasm Mortality Rates**  
**Cause of Death by Sex**

CAUSE OF DEATH	SEX		
	MALE	FEMALE	TOTAL
Lung	40.05	24.78	31.77
Female Breast	NA	18.23	18.23
Prostate	13.02	NA	13.02
Colorectal	13.39	8.55	10.80
Ovarian	NA	5.34	5.34
Lymphomas	7.28	4.68	5.91
Pancreas	6.28	4.81	5.50
Leukemias	5.73	3.76	4.67
Kidney/Renal Pelvis	3.63	2.22	2.86
Liver	3.81	1.75	2.71
Esophagus	4.57	1.05	2.67
Stomach	3.09	2.08	2.54
Bladder	3.75	1.30	2.41

Rates are per 100,000 persons and are adjusted to the 1940 U.S. population. NA= Not applicable.  
Source: ADHS Office of Vital Records.

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# **APPENDIX**

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

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
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)	
Invalid site	Site or histology code not within valid range or site code not found in this table	

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

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