



# Fresno County Cancer Report: 2000-2016

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SEPTEMBER 2019



DEPARTMENT OF PUBLIC HEALTH  
COMMUNITY HEALTH  
EPIDEMIOLOGY PROGRAM



# **Fresno County Cancer Report: 2000-2016**

**September 2019**

**This report was produced by:  
The Epidemiology Program  
Community Health Division  
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## **Acknowledgements:**

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## Statistics at a Glance

### Incidence

- Males had a higher overall cancer age-adjusted incidence than females. Over time the male incidence decreased; whereas, the female incidence remained relatively stable
- For 2000-2016, Blacks followed by Whites had the highest overall cancer aggregated age-adjusted incidence

### **Out of all race/ethnicities:**

- *Whites* had the highest age-adjusted incidence for oral cavity & pharynx, esophagus, breast, brain and nervous system, and endocrine system cancer; as well as melanoma, lymphoma, and leukemia
- *Blacks* had the highest age-adjusted incidence for colon & rectum, pancreatic, lung & bronchus, female genital reproductive system, and prostate cancers; as well as for myeloma
- *Asian/ Pacific Islanders* had the age-adjusted highest incidence for stomach cancer
- *American Indian/Alaska Native* had the age-adjusted highest incidence for liver and urinary system cancers
- *Hispanics (all races)* were not the top race/ethnicity for any cancer sites but were a close second for lymphoma and stomach cancer

### Mortality

- Males age-adjusted cancer mortality (175.4 per 100,000) was higher than females (124 per 100,000)
- Lung cancer had the highest age-adjusted mortality rate for both males and females
- Total age-adjusted cancer mortality was lower in Fresno County than the U.S as a whole. This was true for all of the top cancer sites except liver and stomach
- Cancer sites with poor survival: brain & nervous system, pancreas, liver, esophagus, and lung & bronchus
- Cancer sites with higher rates of survival: endocrine system, prostate, melanoma, and breast

### Top Cancer Sites

#### Top Cancer Sites by Sex

##### *Males:*

Prostate  
Urinary System  
Colon & Rectum  
Lung & Bronchus  
Liver  
Lymphoma

##### *Females:*

Breast  
Genital/Reproductive System  
Lung & Bronchus  
Colon & Rectum  
Endocrine System

#### Top Cancer Site by Race/Ethnicity

*Non-Hispanic Whites, non-Hispanic Asians/Pacific Islanders, and Hispanics of all races:*  
Breast

*Non-Hispanic Blacks/African Americans:*  
Lung & Bronchus

#### Top Cancer Sites in Youth (< 15 years)

Leukemia  
Brain & other Nervous System  
Lymphoma  
Endocrine  
Bone & Joint  
Urinary System



## Overview

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### What is Cancer?

Cancer is not one disease but a collection of diseases that may occur anywhere in the body. All cancer types share similarities but differ in where they start, how they grow/spread, and the associated risk factors. All cancers are caused by errors or damage in DNA, which change the way human cells function.<sup>1</sup> These genetic changes can be inherited, caused by environmental exposures, or a combination of both. In a healthy human, cells grow and divide to form new cells as needed to replace damaged cells that have died through a natural process called apoptosis. For all cancer types, abnormal cells survive and new abnormal cells continue to form.<sup>1</sup> The abnormal cell growth is uncontrolled and cells divide without stopping. These cells may form growths called tumors and spread into surrounding tissues. However, not all cancers form tumors; for example, leukemia is a cancer of the blood that lacks the formation of tumors. Malignant cancer is when the cancerous cells metastasize and spread to nearby tissue.<sup>1</sup>

### Report Contents

This report presents cancer data from Fresno County, California retrieved from the National Cancer Institute's Surveillance, Epidemiology, and End Result Program (SEER). The focus of this report is on malignant cancers. Summary information is provided on incidence (new cancer cases) and mortality (cancer deaths) for Fresno County residents and for comparison purposes, the state of California and the United States (estimated through participating SEER Registries). Data are presented on all cancer types combined, as well as seventeen selected cancer sites. Incidence data includes reported cases diagnosed from 2000-2016; mortality data focuses on 2012-2016.

This report can be used to assist with identifying the level of burden from cancer morbidity and mortality.

### Methods

#### Data Source

##### **Surveillance, Epidemiology, and End Results (SEER) Program**

All data presented in this report were retrieved from the SEER Program. SEER is a program under the National Cancer Institute and is the leading data source of cancer incidence and mortality for the United States. SEER's data represents approximately 34.6% of the U.S. population. Data on patient demographics, tumor characteristics, stage of disease, treatment information, and outcome information are collected from population based cancer registries throughout the United States.<sup>2</sup>

California registries that are part of the SEER program include the Greater Bay Area Cancer Registry (San Francisco-Oakland and San Jose-Monterey) and the Greater California Cancer Registry.

# Greater California Cancer Registry

The Cancer Registry of Greater California (CRGC) is a statewide population-based cancer surveillance system that entered into the SEER program in 2001 (first year of full data: 2000). The CRGC collects information about cancers diagnosed in California from 48 of California's 58 counties and is represented by 7 regions: Central California (Region 2), Sacramento (Region 3), Tri-County (Region 4), Desert Sierra (Region 5), Northern California (Region 6), San Diego/ Imperial (Region 7), and Orange County (Region 10).<sup>2-3</sup>

Fresno County is represented in the Central Region, along with Kern, Kings, Madera, Mariposa, Merced, Stanislaus, Tulare, and Tuolumne Counties.<sup>3</sup>

## Data Analysis

## Incidence, Mortality, and Survival

All data were retrieved and analyzed using SEER\*Stat software.<sup>4</sup> With the exception of analyses that included estimates for California or United States as a whole, all analyses were restricted to Fresno County. Fresno County data was designated in SEER\*Stat using the “State-County” variable with the selection of “CA: Fresno County (06019)”. All analyses, unless noted, were restricted to malignant cancer cases.

Data on incidence, incident trends, and survival were based on the SEER\*Stat SEER 18 Research database.<sup>5</sup> Mortality statistics were retrieved utilizing the SEER\*Stat Mortality - All COD, Aggregated With County database.<sup>6</sup> Mortality data available in SEER\*Stat was collected and maintained by the National Center for Health Statistics and includes data on all causes of death.<sup>7</sup>

Incidence and mortality, except where noted, were age-adjusted to the 2000 US Standard population (Appendix B) and presented as cases per 100,000 persons. Population estimates were retrieved from SEER\*Stat and represent modified estimates provided by the U.S. Census Bureau's Population Estimate Program.<sup>8</sup> Cases with unknown age were excluded from all age-adjusted analyses. Counts and associated statistics fewer than 16 were suppressed.

Survival calculations were censored at age 99 years, thus all cancer patients diagnosed at an age greater than 99 years were excluded from all survival calculations. Analyses included only malignant cases of known age and excluded all death certificate/autopsy only cases and cases alive with no survival time. Survival was measured using the actuarial method.<sup>9</sup> Expected survival was calculated using the Ederer II method.<sup>10</sup> Survival was age-standardized so that it could be compared across different cancer populations with possible different age distributions. This report used three standards from the International Cancer Survival Standard (ICSS). ICSS 1 was used for oral, digestive, lung, breast, female genital/reproductive (except cervix uteri), prostate, urinary system, non-Hodgkin lymphomas, multiple myeloma, and leukemia (except acute lymphatic leukemia) cancer sites. ICSS 2 was used for melanoma, brain, and thyroid cancer sites. ICSS 3 was used for Hodgkin's disease (Appendix C).<sup>11</sup> Age-standardized survival is only calculated on adult cancer cases (aged 15 years or greater). For all cancer sites, except prostate, the age standard variable used was coded as "15-44,



Figure source: CRFC<sup>3</sup>

45-54, 55-64, 65-74, and 75+”. Prostate cancer was coded as “15-54, 55-64, 65-74, 75-84, 85+”. The survival cutoff was December 2016.

### **Race and Ethnicity**

SEER codes race information into four main categories that are compatible with annual population estimates: White, Black, American Indian/Alaskan Native, and Asian or Pacific Islander. Spanish-Hispanic ethnicity was not a mutually exclusive category. Data for Hispanics were based on the NAACCR Hispanic Identification Algorithm.<sup>12</sup> This report presents race/ethnicity as a single category: non-Hispanic White, non-Hispanic Black, non-Hispanic American Indian/Alaskan Native, non-Hispanic Asian or Pacific Islander, and Hispanic (any race). American Indian/Alaskan Native data frequently only includes cases in the Purchased/Referred Care Delivery Area (PRCDA).<sup>12</sup>

Cancer site was classified by SEER based on ICD-O-3 coding rules, which are subject to change.

### **Data limitations**

Mandated reporters in compliance with public health laws reported cancer surveillance data. Reports may be incomplete and subject to issues of underreporting, variations in reporting, reporting delays, misclassification of race/ethnicity, migration of patients in and out of SEER Registry areas, etc. <sup>13-14</sup>

# Tables & Figures

**All Cancer Types  
Combined**

Figure 1: Top Malignant Cancers in Fresno County, 2016

**Females**

1. Breast (27.9%)
2. Reproductive (12.1%)
3. Lung & Bronchus (10.1%)
4. Colon & Rectum (8.1%)
5. Endocrine System (6.2%)

**Total**

1. Breast (14.5%)
2. Lung & Bronchus (10.0%)
3. Colon & Rectum (9.4%)
4. Prostate (9.0%)
5. Urinary System (8.6%)

**Males**

1. Prostate (18.5%)
2. Urinary System (11.8%)
3. Colon & Rectum (10.7%)
4. Lung & Bronchus (10.0%)
5. Liver (6.0%)  
Lymphoma (6.0%)

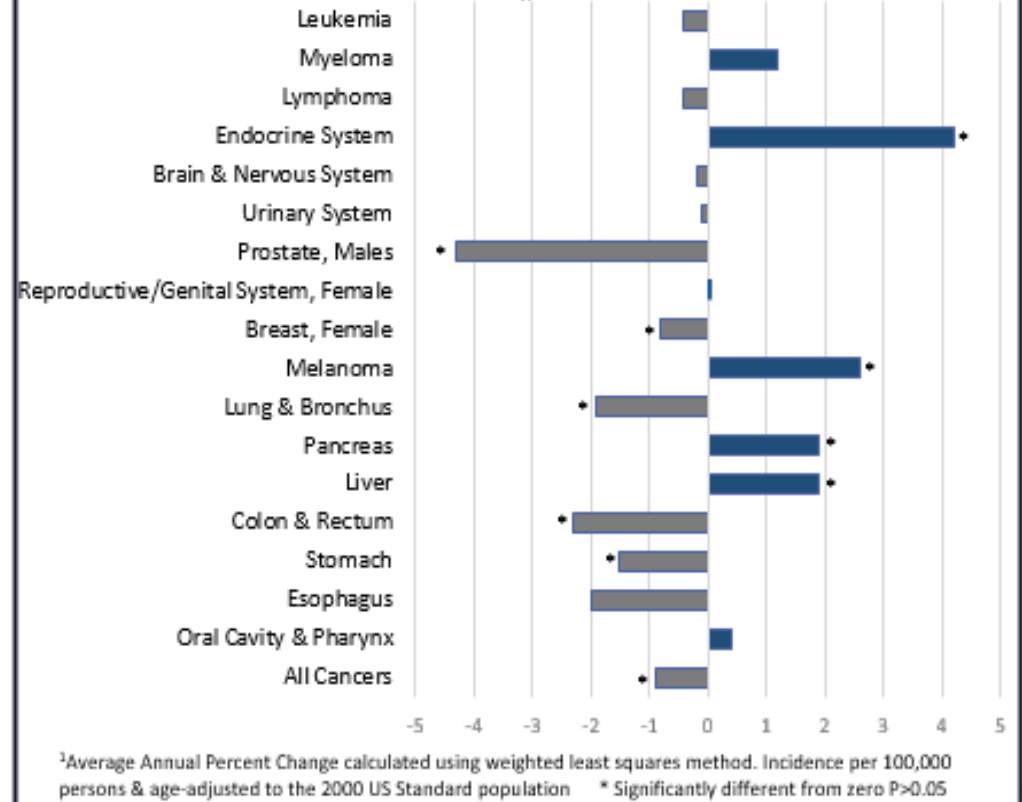
Figure 2: Age-Adjusted Annual Percent Change<sup>1</sup> by Cancer Site, Fresno County, 2000-2016

Table 1: Top New Malignant Cancers in Fresno County, 2016

	1	2	3	4	5
<b>Non-Hispanic Whites</b>	Breast	Lung & Bronchus	Prostate	Colon & Rectum	Urinary System
<b>Non-Hispanic Black</b>	Lung & Bronchus	Prostate (Tied for 1st)	Breast	Colon & Rectum	Urinary System
<b>Non-Hispanic Asian</b>	Breast	Colon & Rectum	Female Reproductive	Lung & Bronchus	Prostate & Liver (Tied for 5th)
<b>Hispanic (All Races)</b>	Breast	Colon & Rectum	Urinary System	Prostate	Lymphoma

**Table 2: Age-Adjusted Mortality (per 100,000) from Malignant Cancer<sup>1</sup>, by Select Site, Aggregated 2012-2016**

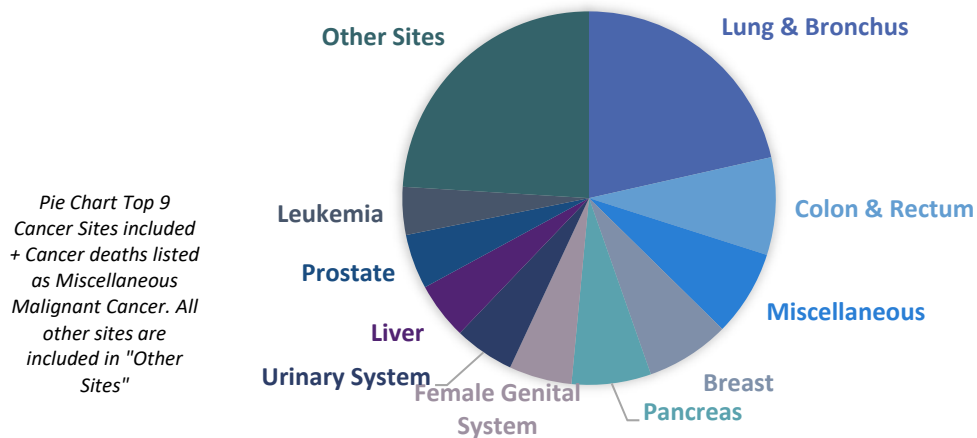
	Fresno			California			US		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
All Malignant Cancers	145.9	175.4	124.0	145.3	171.1	126.7	161.0	193.1	137.7
Lung and Bronchus	32.5	41.6	25.2	30.8	36.5	26.5	41.9	51.6	34.4
Colon and Rectum	12.4	14.8	10.4	12.9	15.1	11.1	14.2	16.9	11.9
Breast	10.8	*	19.8	10.9	0.2	19.8	11.4	0.3	20.6
Pancreas	10.3	12.1	8.8	10.3	11.8	9.2	11.0	12.6	9.6
Miscellaneous Malignant Cancer	11.0	14.2	8.7	9.8	12.0	8.1	11.8	14.8	9.4
Female Reproductive/Genital System	8.0	~	14.9	8.2	~	15.0	8.3	~	15.1
Prostate	7.1	17.1	~	8.2	19.8	~	7.8	19.2	~
Urinary System	7.7	11.6	4.7	7.6	12.3	4.1	8.4	13.4	4.7
Leukemia	6.1	7.8	4.8	6.2	8.1	4.7	6.5	8.8	4.9
Liver	7.1	11.5	3.4	6.0	9.2	3.2	4.9	7.7	2.5
Non-Hodgkin Lymphoma	5.3	5.7	4.9	5.3	6.8	4.2	5.6	7.3	4.4
Brain and Other Nervous System	4.2	5.0	3.3	4.4	5.4	3.5	4.4	5.4	3.6
Stomach	4.0	5.0	3.0	4.0	5.2	3.1	3.1	4.2	2.3
Esophagus	3.1	6.0	0.9	3.3	5.7	1.3	4.0	7.1	1.5
Myeloma	2.7	3.9	1.7	3.0	3.9	2.4	3.3	4.2	2.7
Melanoma of the Skin	1.7	2.8	0.9	2.3	3.5	1.4	2.5	3.7	1.5
Endocrine System	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.8
Oral Cavity and Pharynx	2.4	4.1	1.1	2.5	3.8	1.3	2.5	3.9	1.3

<sup>1</sup>All data from SEER database "Mortality - All COD, Aggregated With County, Total U.S. (1969-2016) <Katrina/Rita Population Adjustment> - Linked To County Attributes - Total U.S., 1969-2017"

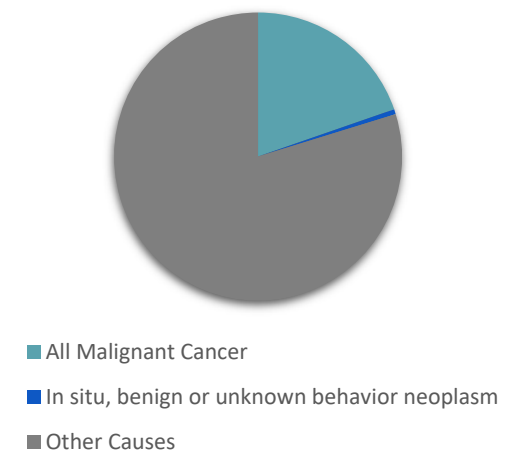
\* Suppressed data due to small sample size

~ Not Applicable

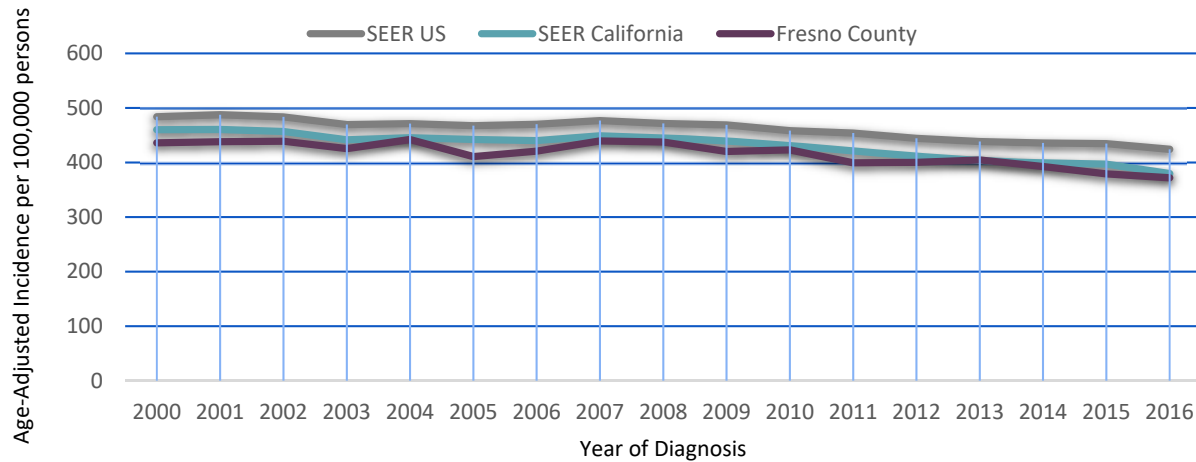
**Figure 3: Percentage of Malignant Cancer Deaths by Site, Fresno County, Aggregated 2012-2016**



**Figure 4: Percentage of Deaths by Cause, Fresno County, Aggregated 2012-2016**

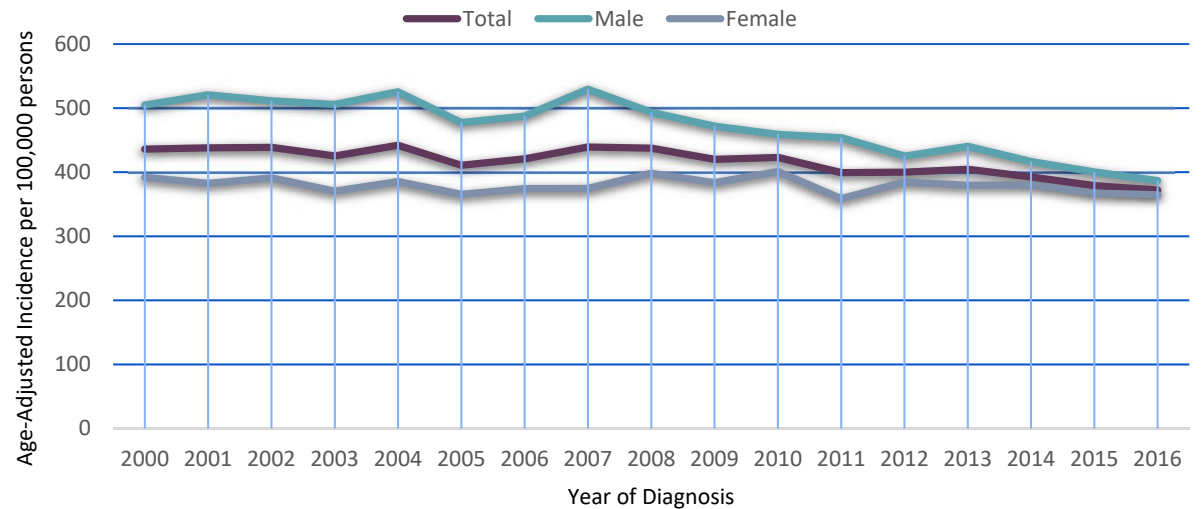


**Figure 5: Age-Adjusted Incidence<sup>1</sup> by location, 2000-2016: Malignant Cancers<sup>2</sup>**



<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data; includes all cancer types combined. California incidence based off SEER Registries (San Francisco-Oakland SMSA Registry, San Jose-Monterey Registry, Los Angeles Registry, and Other Greater California Registries)

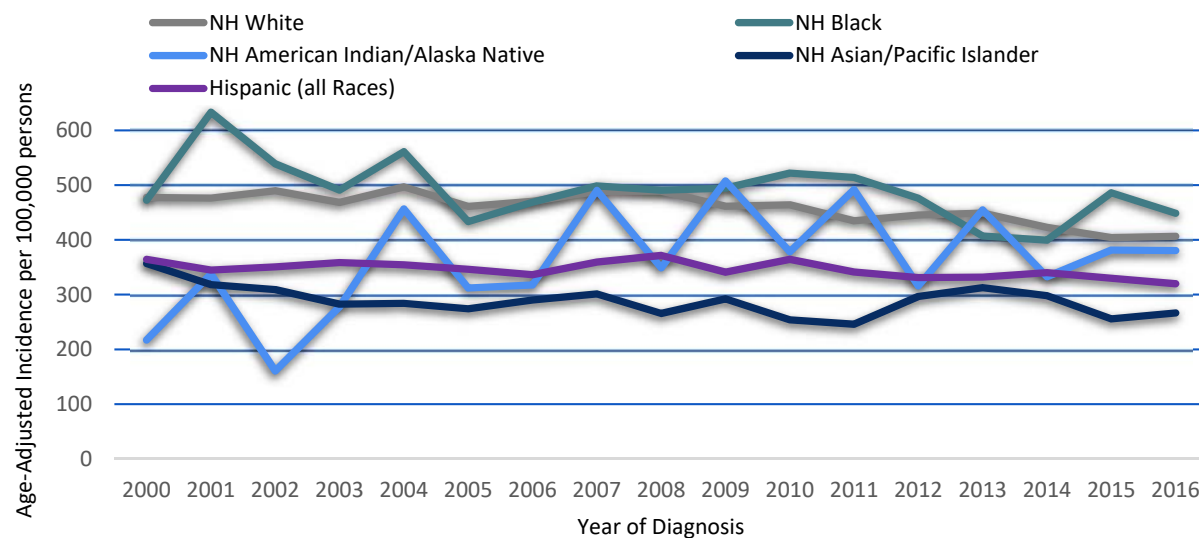
**Figure 6: Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Cancers<sup>2</sup>**



<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data; includes all cancer types combined

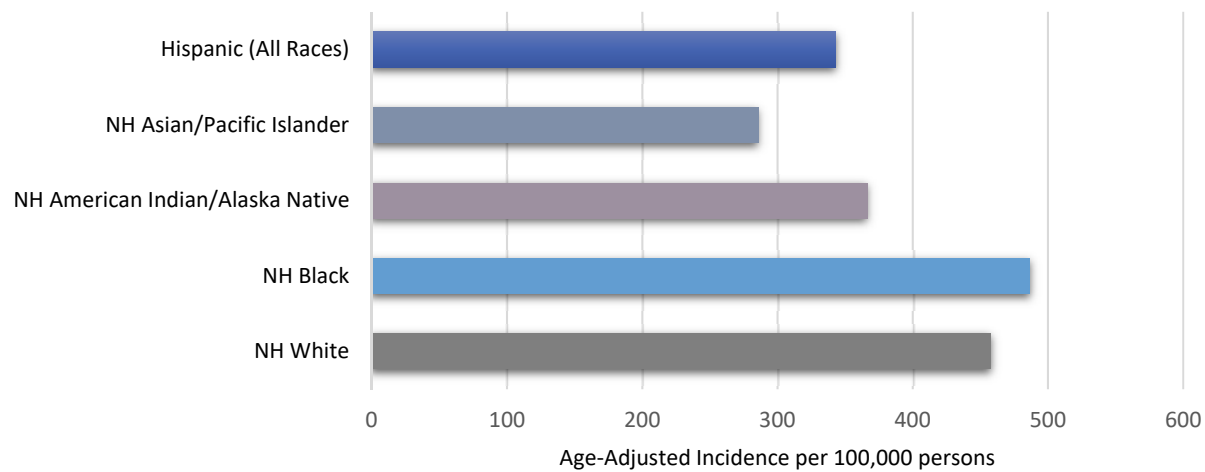


**Figure 7: Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Cancers<sup>2</sup>**

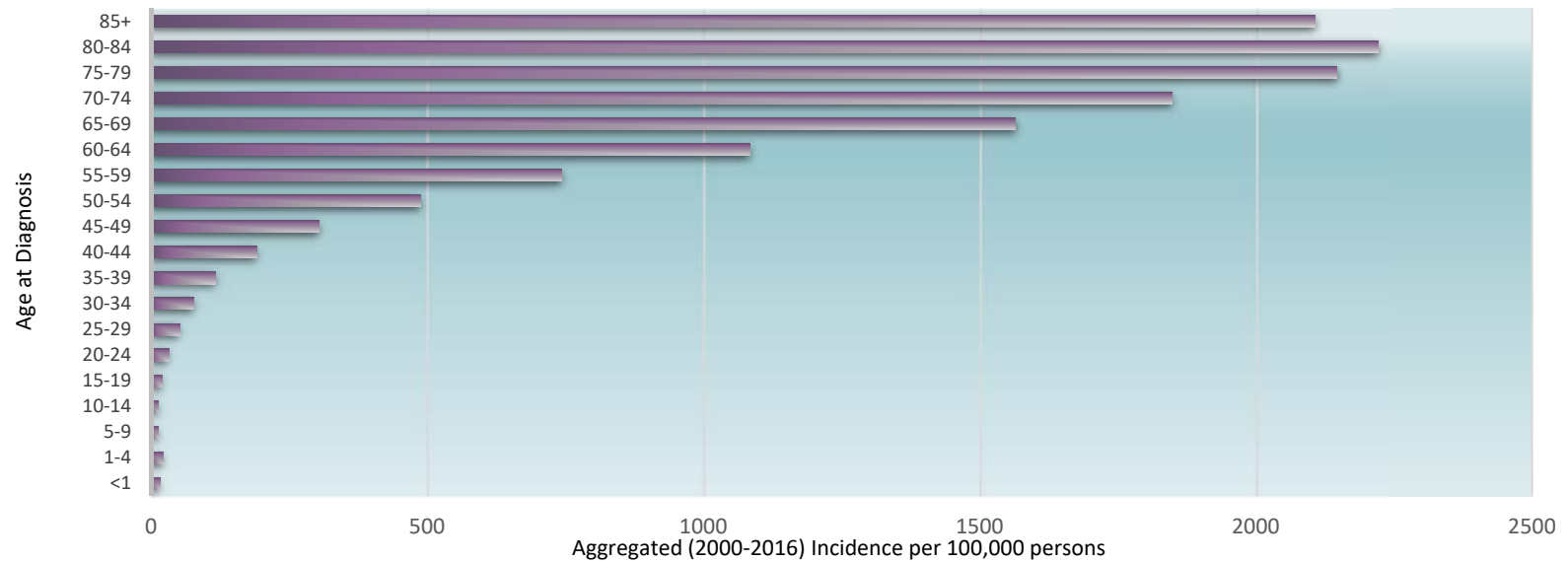


<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data; includes all cancer types combined *NH*= Non-Hispanic

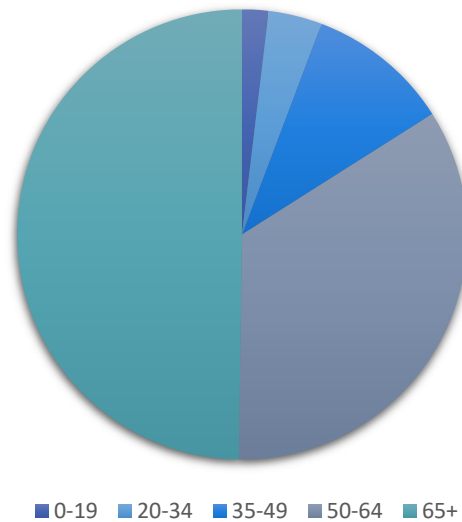
**Figure 8: Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Cancers<sup>2</sup>**



<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data *NH*= Non-Hispanic

**Figure 9:** Aggregated Crude Incidence<sup>1</sup> by Age, Fresno County, 2000-2016: Malignant Cancers<sup>2</sup>

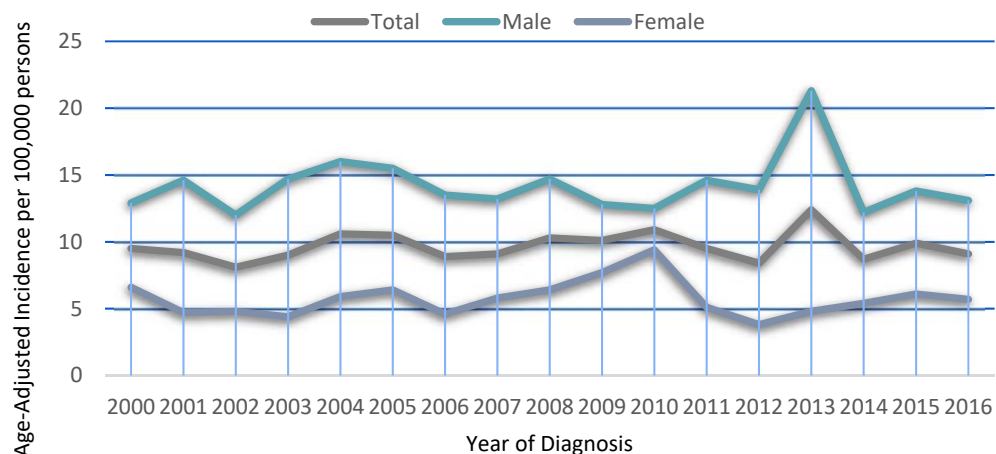
<sup>1</sup> Incidence is the number of cases per 100,000 persons. <sup>2</sup> Based on SEER 18 data

**Figure 10:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2016

Based on SEER 18 data

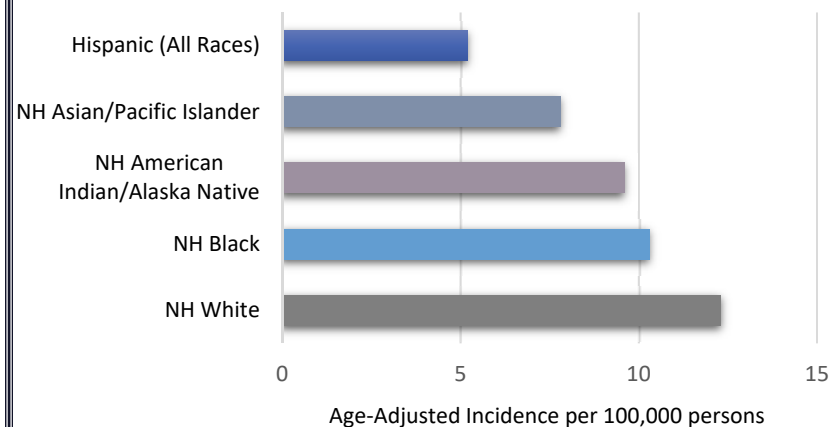
**Select Cancer Sites**

**Figure 11:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Oral Cavity and Pharynx Cancers<sup>2</sup>



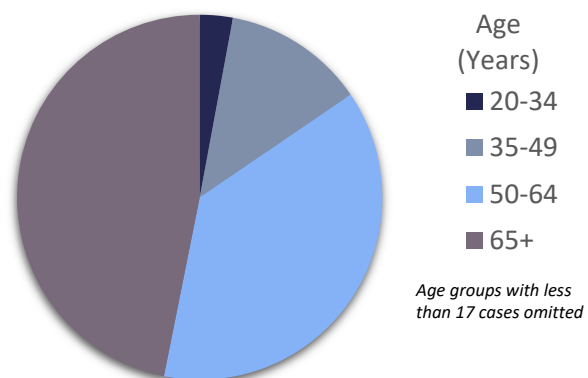
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 12:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Oral Cavity and Pharynx Cancers<sup>2</sup>



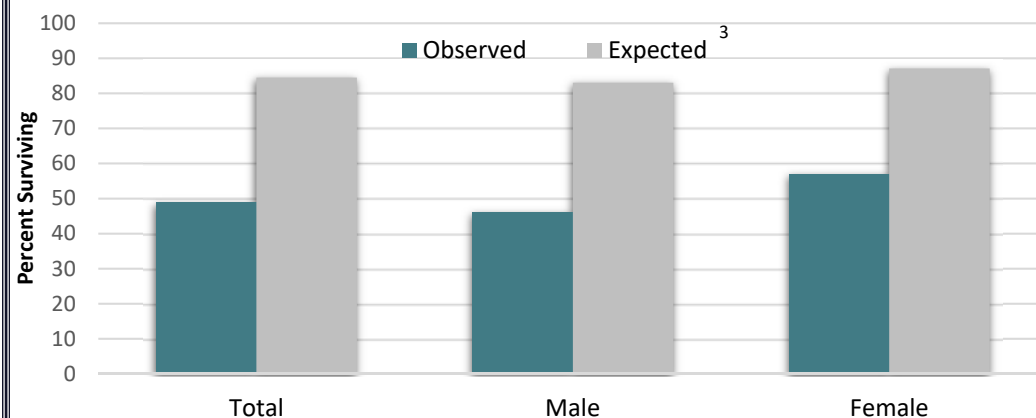
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 13:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Oral Cavity and Pharynx Cancers



Based on SEER 18 data

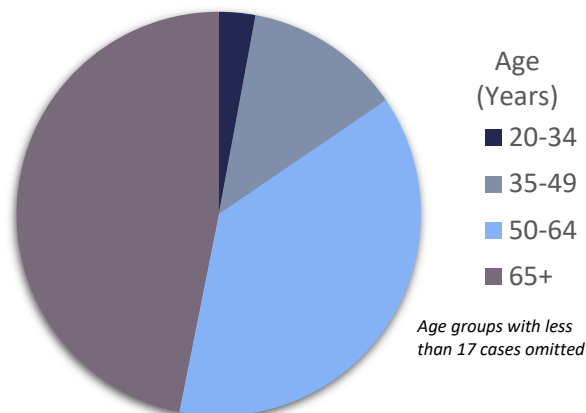
**Figure 14:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Oral Cavity and Pharynx Cancers



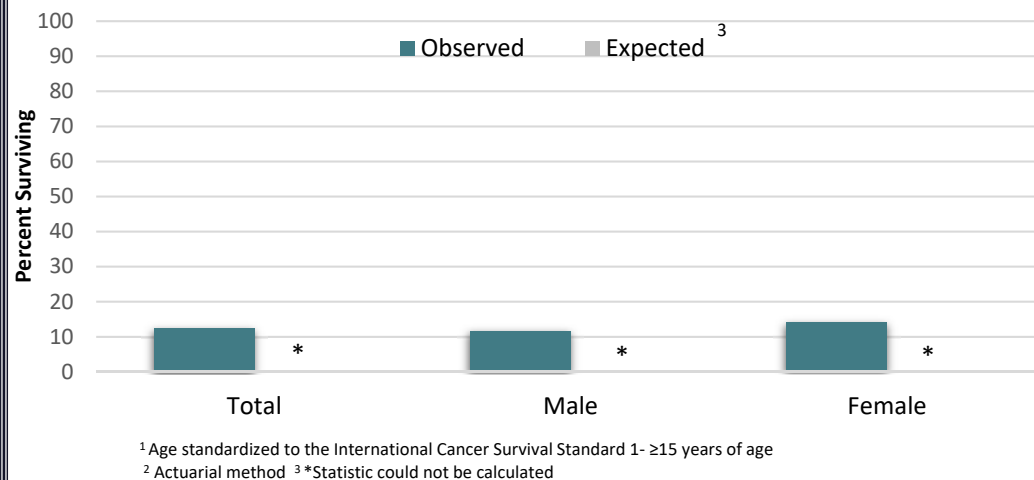
<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

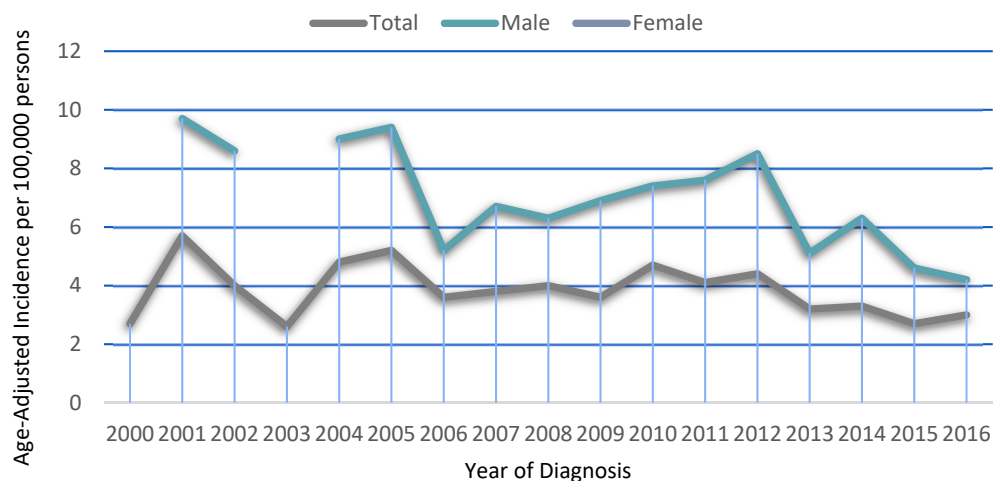
**Figure 15:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Esophagus Cancer



**Figure 16:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Esophagus Cancer

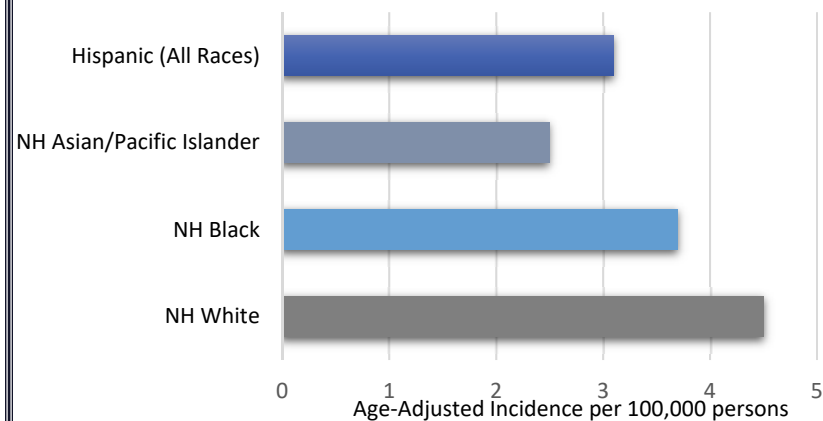


**Figure 17:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Esophagus Cancer<sup>2</sup>



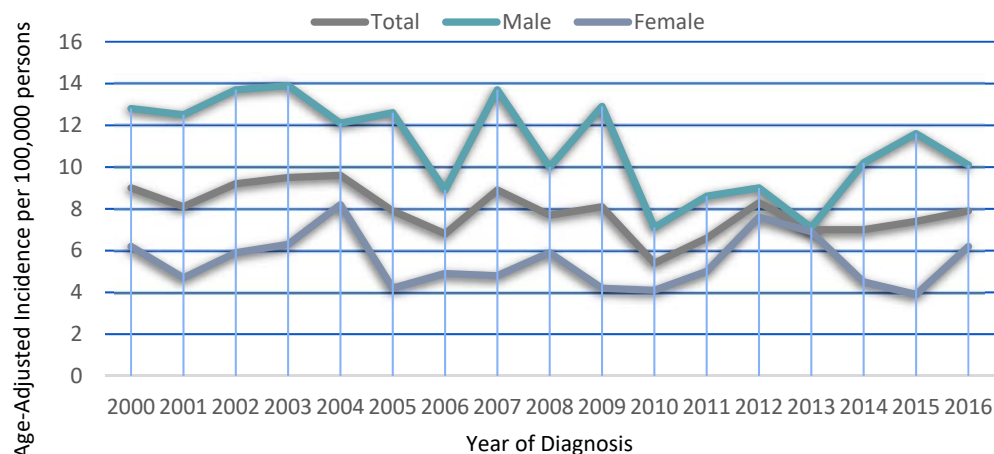
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data \*Data suppressed for years with case counts <16 (All Female counts were required to be suppressed)

**Figure 18:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Esophagus Cancer<sup>2</sup>



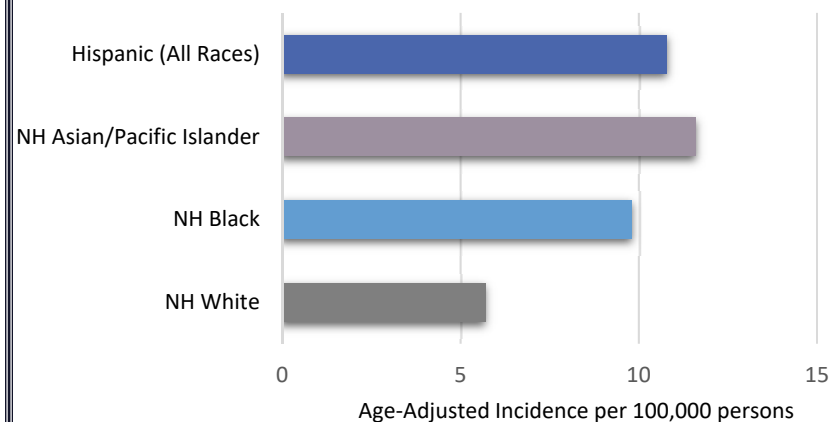
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 19:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Stomach Cancer<sup>2</sup>



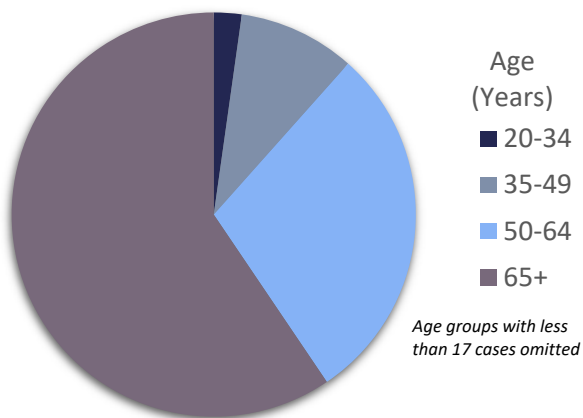
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 20:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Stomach Cancer<sup>2</sup>



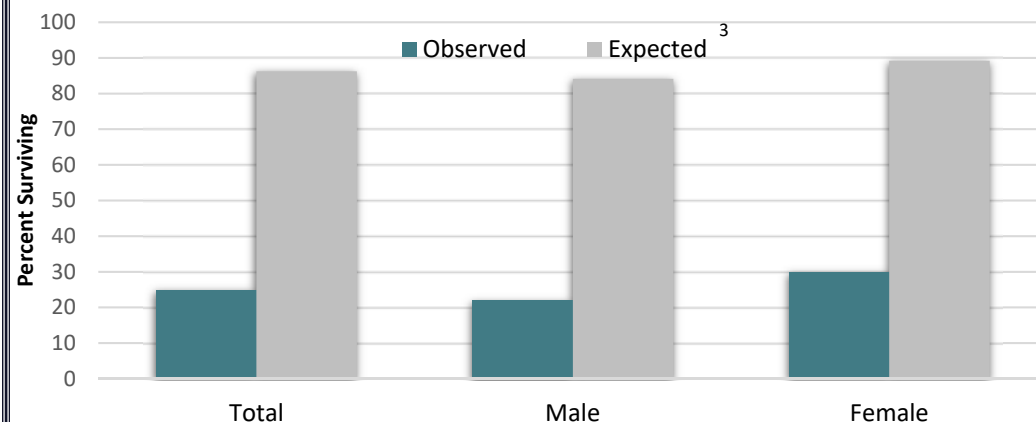
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 21:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Stomach Cancer



Based on SEER 18 data

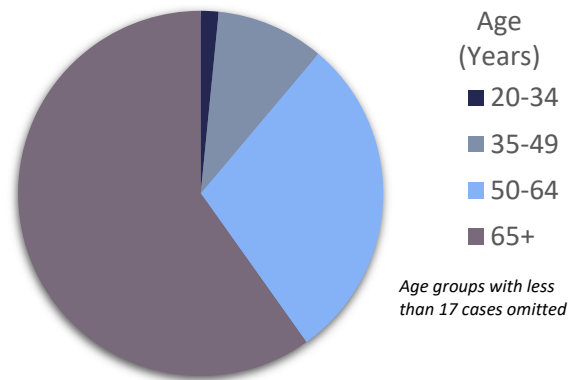
**Figure 22:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Stomach Cancer



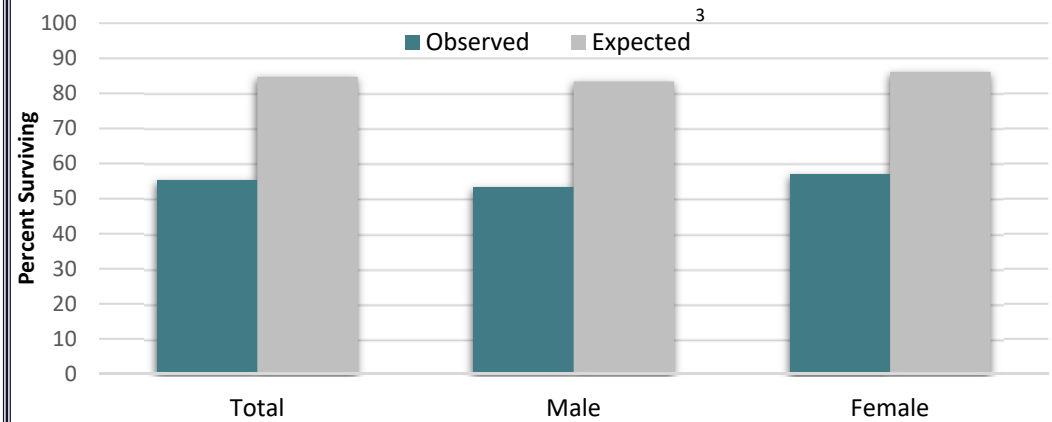
<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 23:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Colon and Rectum Cancers



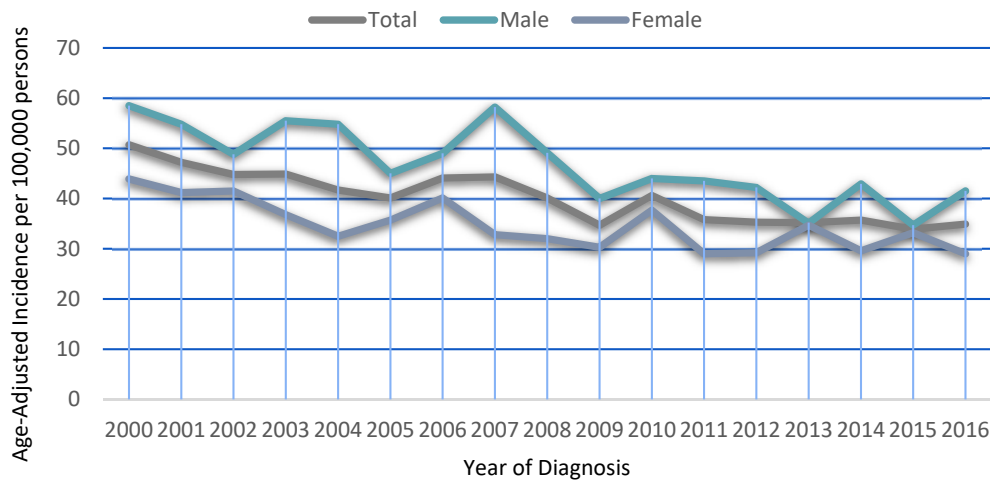
**Figure 24:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Colon and Rectum Cancers



<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

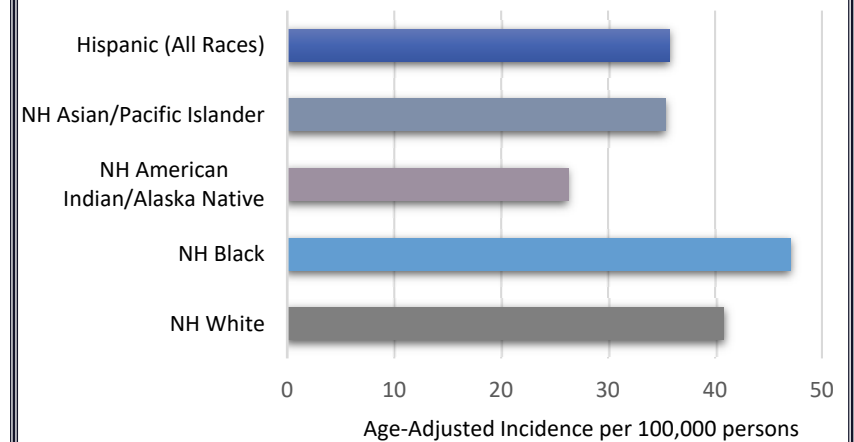
<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 25:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Colon and Rectum Cancers<sup>2</sup>



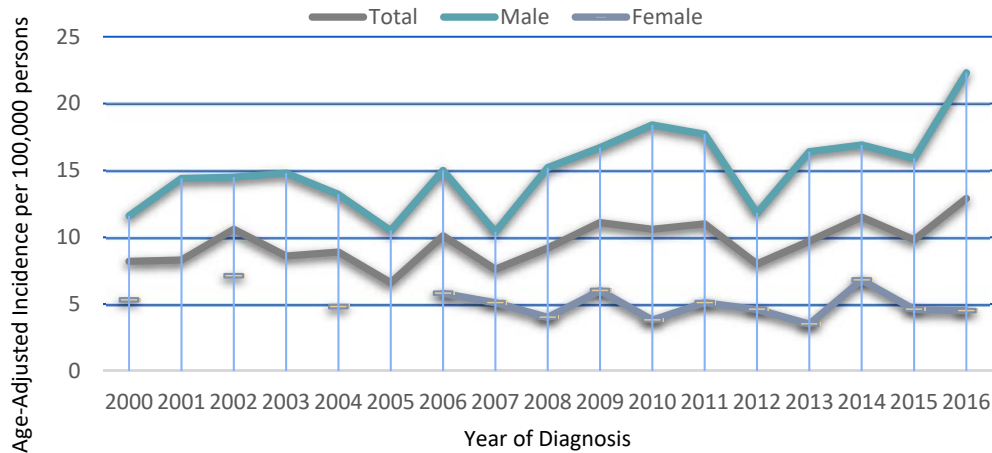
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 26:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Colon and Rectum Cancers<sup>2</sup>



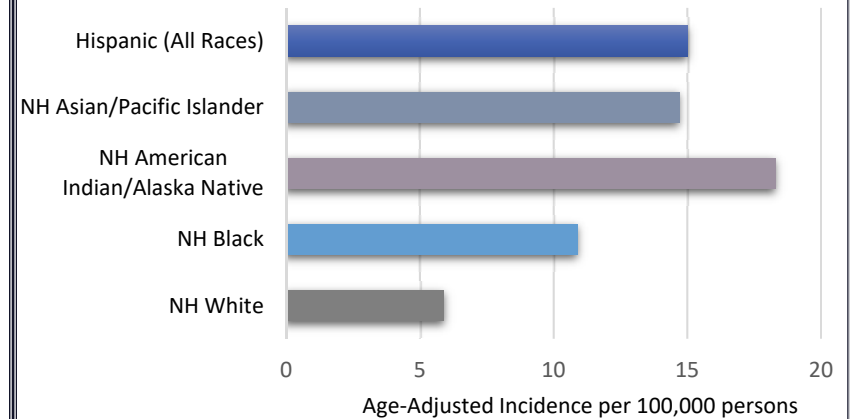
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 27:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Liver Cancer<sup>2</sup>



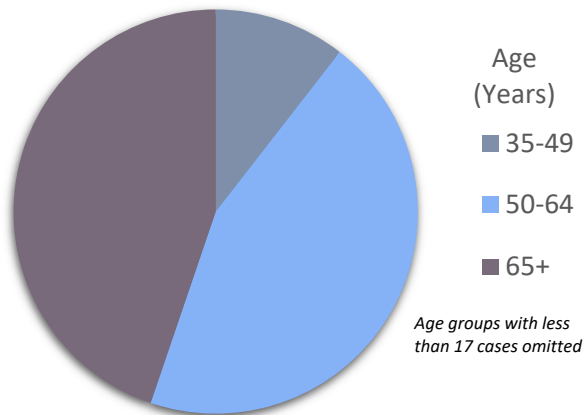
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data \*Data suppressed for years with case counts <16

**Figure 28:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Liver Cancer<sup>2</sup>



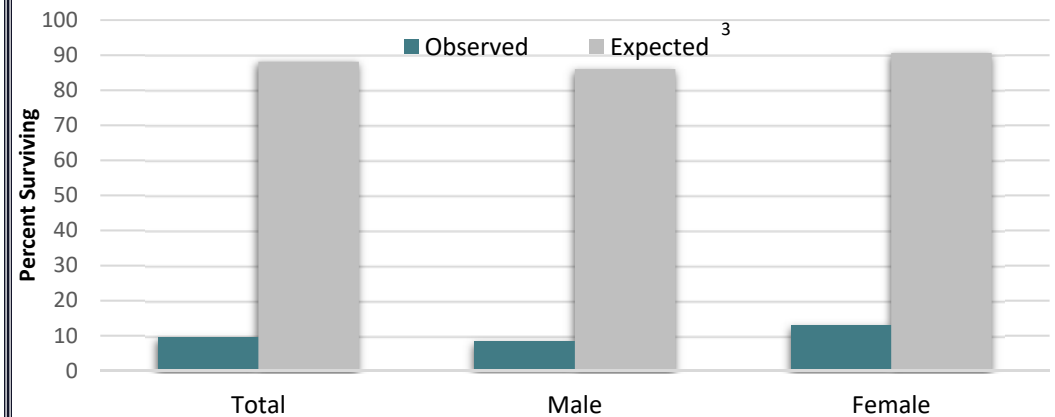
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 29:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Liver Cancer



Based on SEER 18 data

**Figure 30:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Liver Cancer

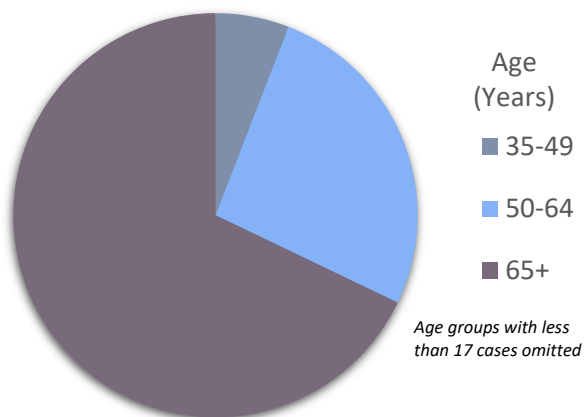


<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

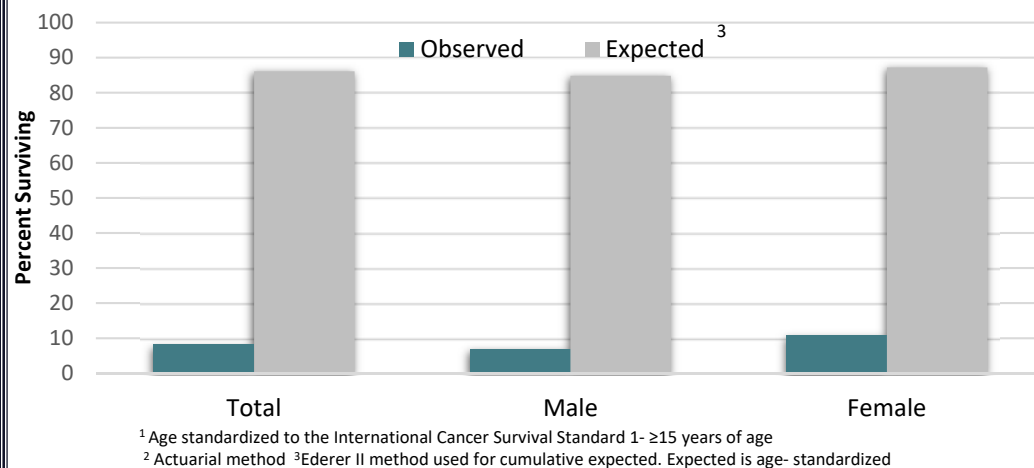
<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized



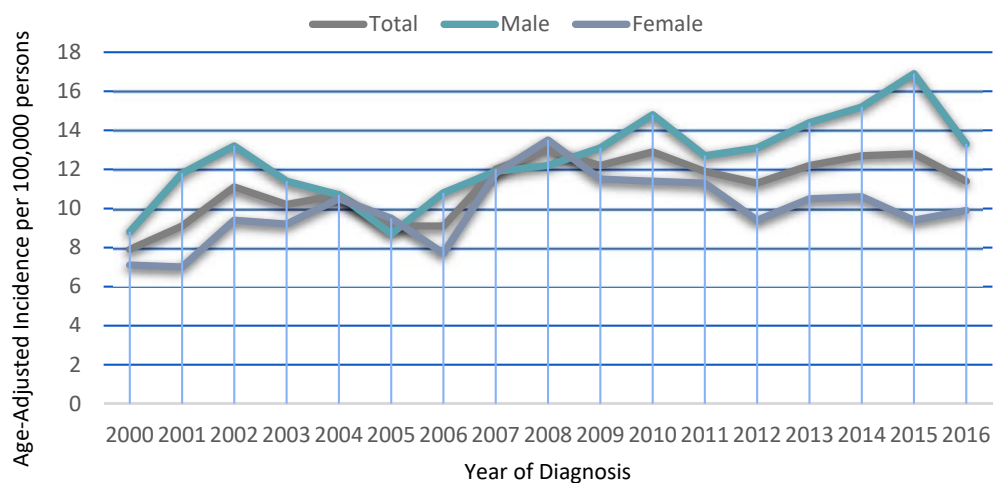
**Figure 31:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Pancreatic Cancer



**Figure 32:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Pancreatic Cancer

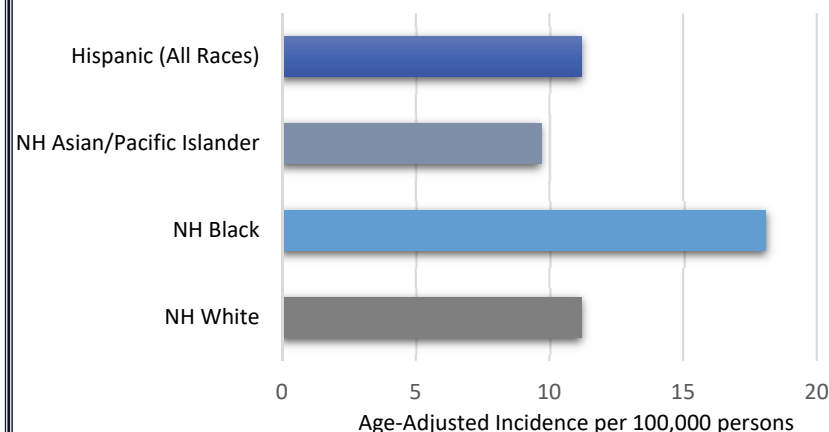


**Figure 33:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Pancreatic Cancer



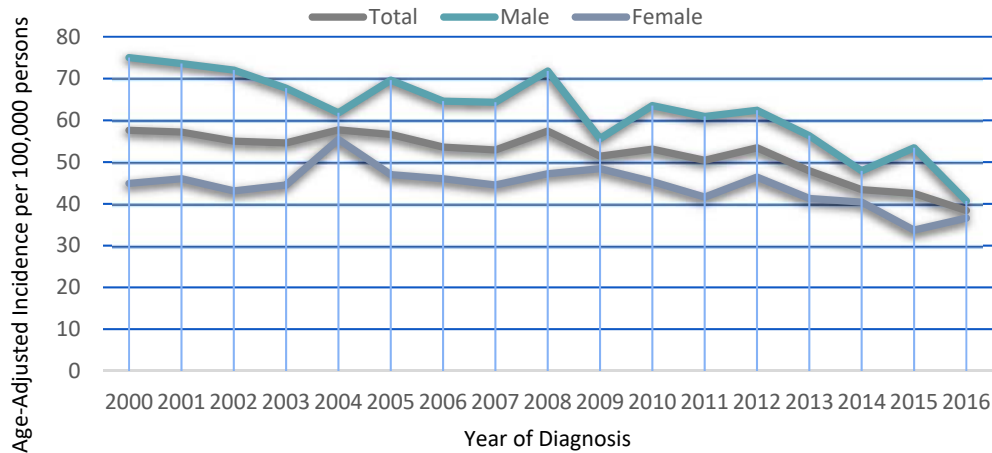
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 34:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Pancreatic Cancer<sup>2</sup>



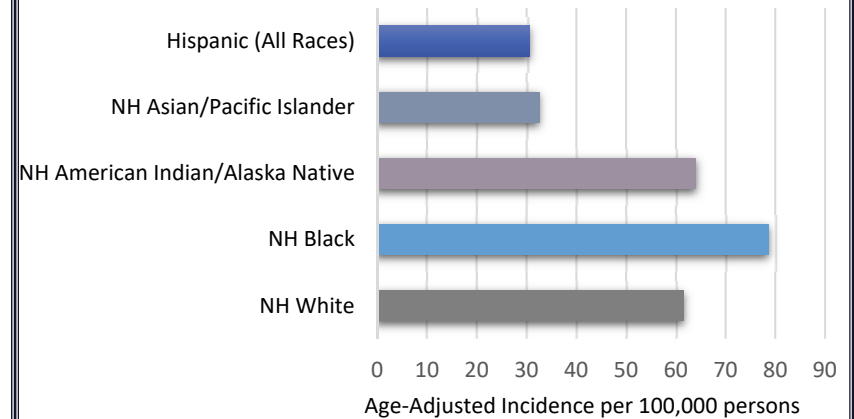
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 35:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Lung and Bronchus Cancers<sup>2</sup>



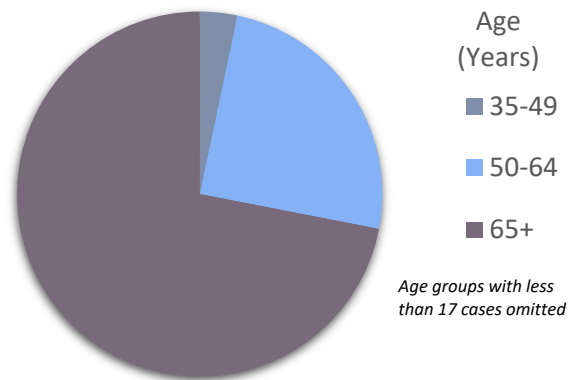
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 36:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Lung and Bronchus Cancers<sup>2</sup>



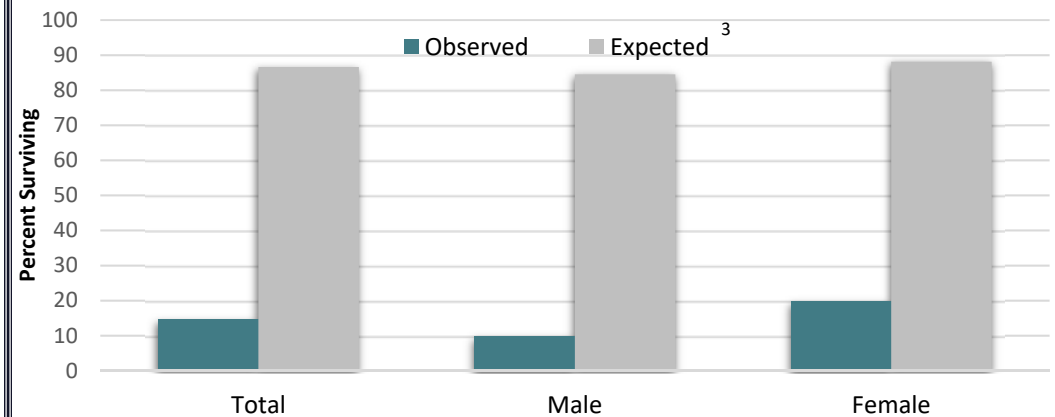
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 37:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Lung and Bronchus Cancers



Based on SEER 18 data

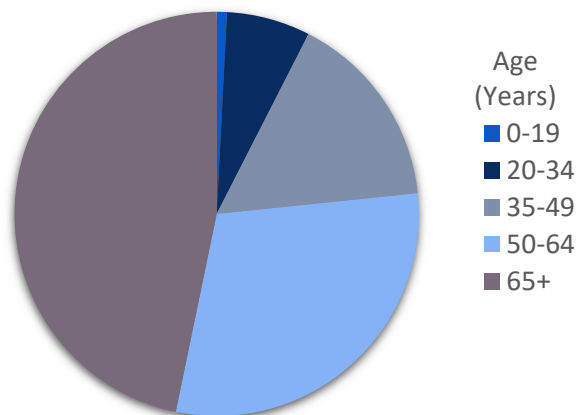
**Figure 38:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Lung and Bronchus Cancers



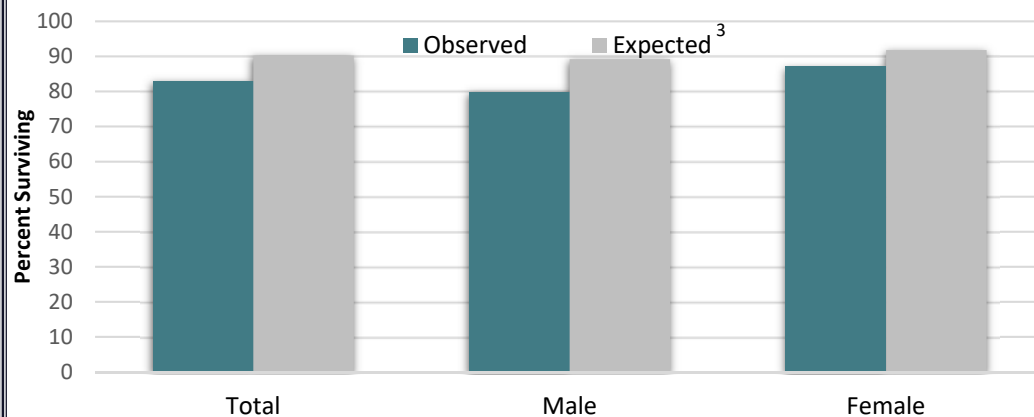
<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 39:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Melanoma



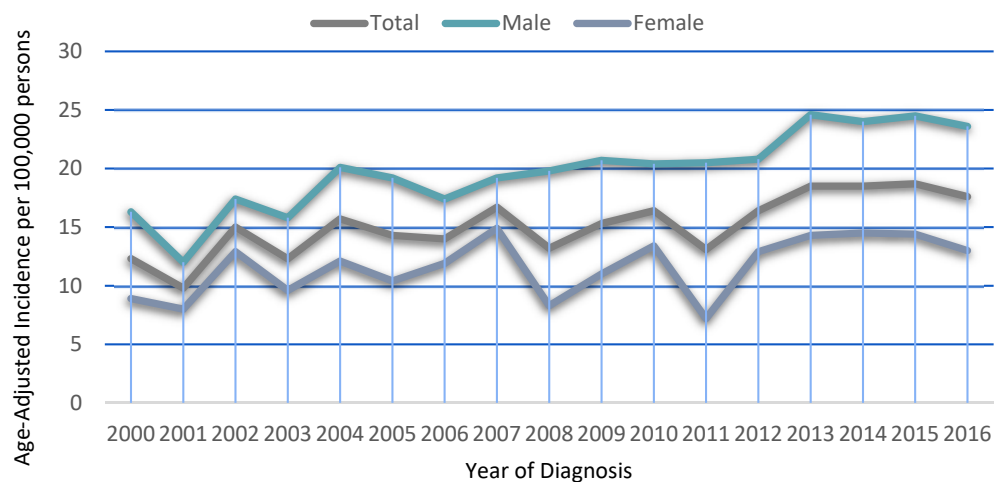
**Figure 40:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Melanoma



<sup>1</sup> Age standardized to the International Cancer Survival Standard 2- ≥15 years of age

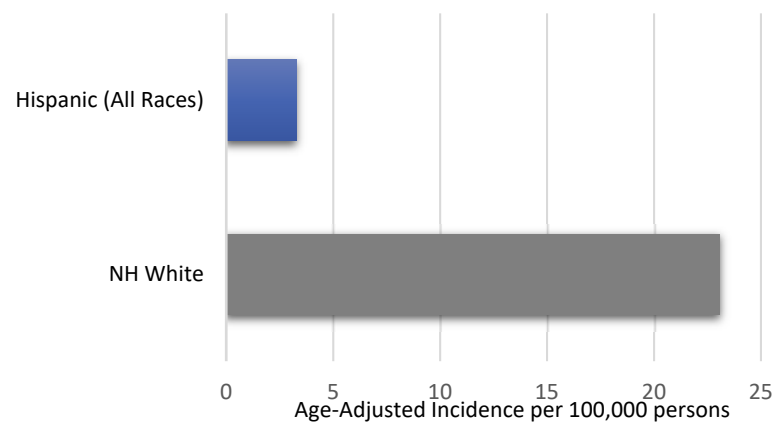
<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 41:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Melanoma<sup>2</sup>



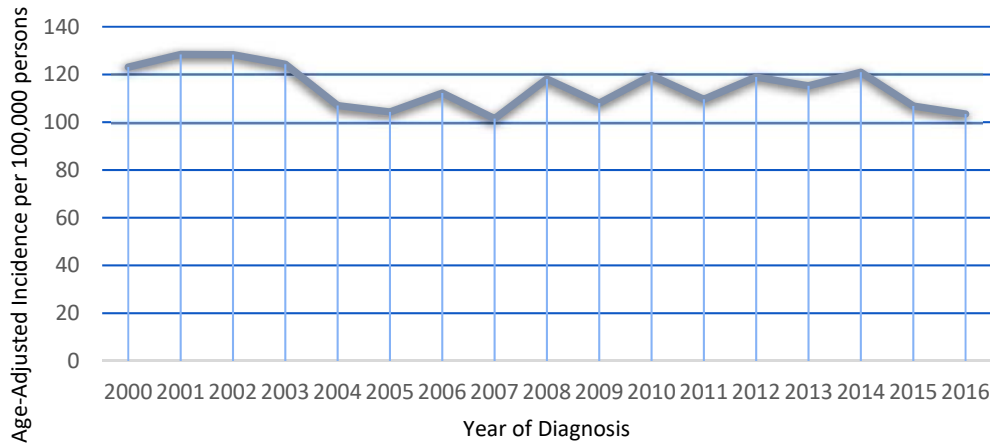
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 42:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Melanoma<sup>2</sup>



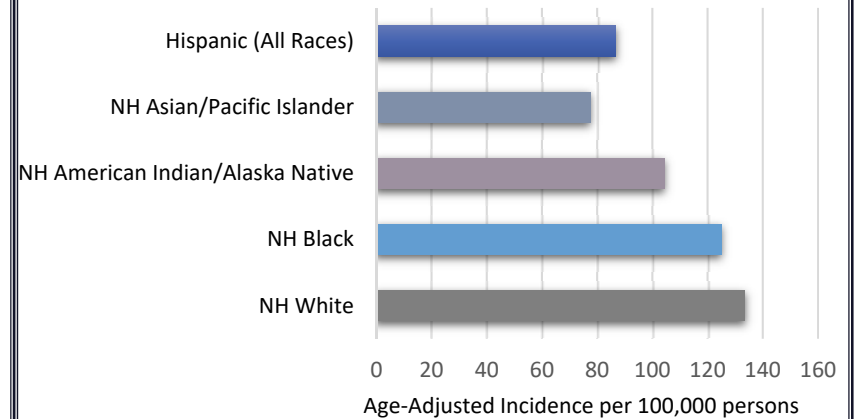
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 43:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Breast Cancer<sup>2</sup> in Females



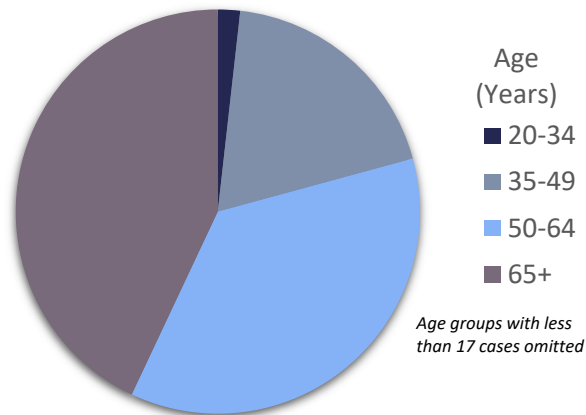
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 44:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Breast Cancer<sup>2</sup> in Females



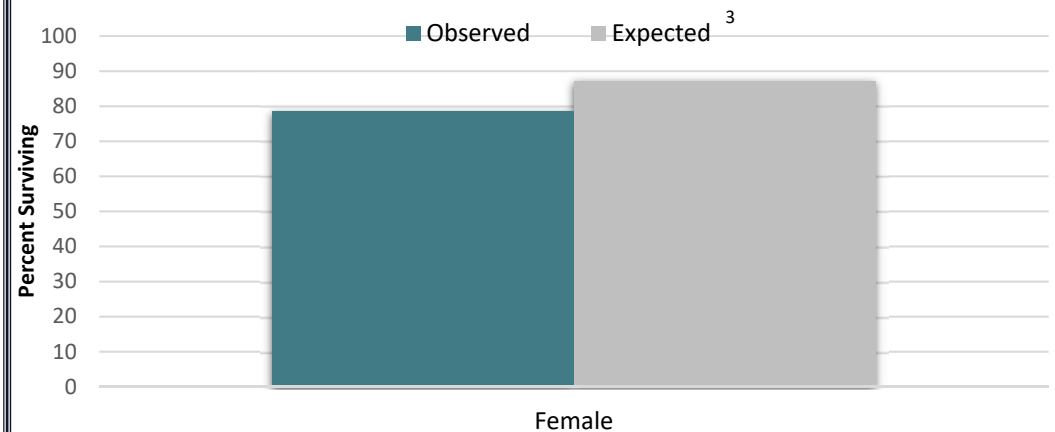
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 45:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Breast Cancer in Females



Based on SEER 18 data

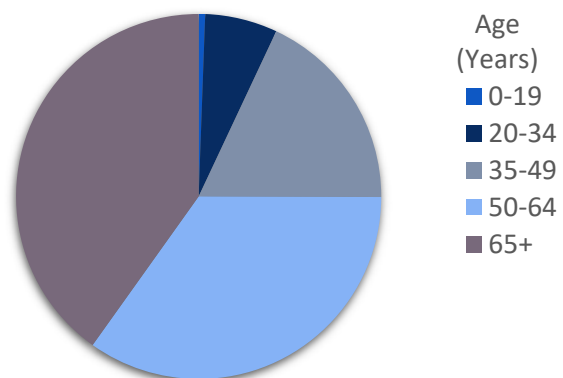
**Figure 46:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Breast Cancer



<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

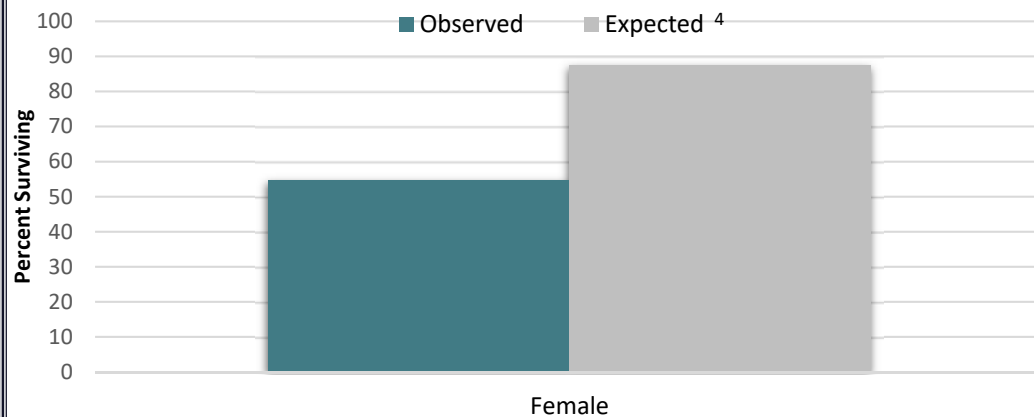
<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 47:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Female Genital System Cancers



Based on SEER 18 data

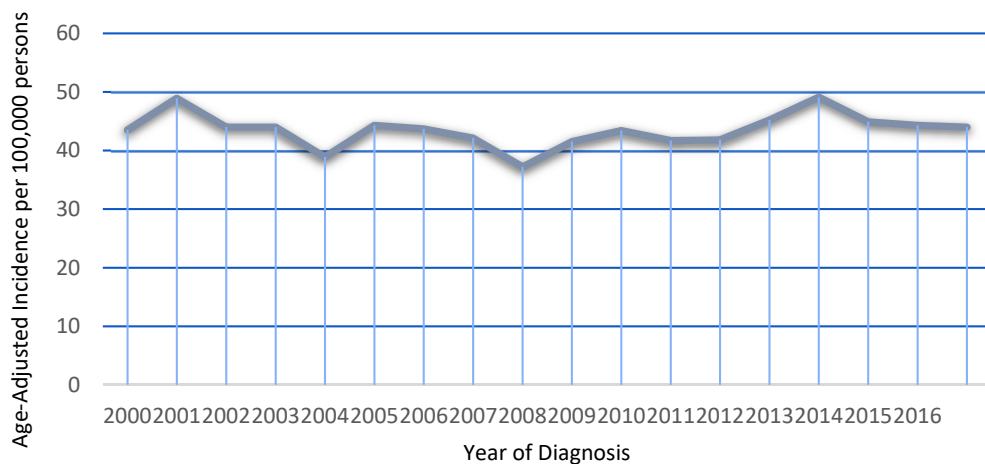
**Figure 48:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Female Genital System Cancers<sup>3</sup>



<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

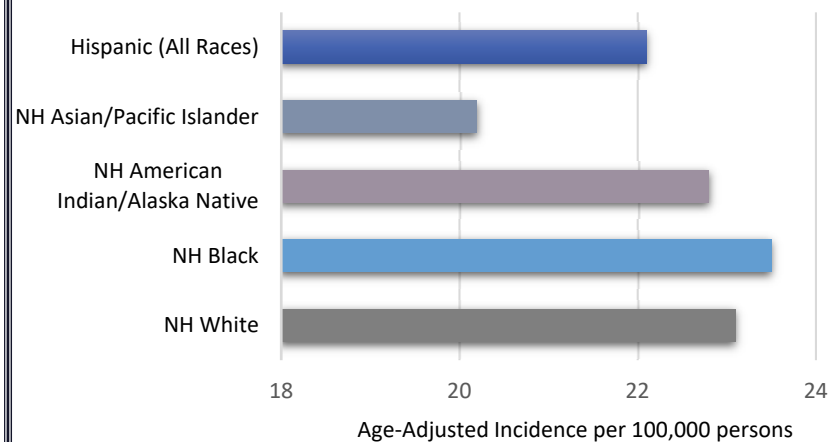
<sup>2</sup> Actuarial method <sup>3</sup> Excludes cervix uteri cancers <sup>4</sup> Ederer II method used for cumulative expected. Expected is age-standardized

**Figure 49:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Female Genital System Cancers<sup>2</sup>



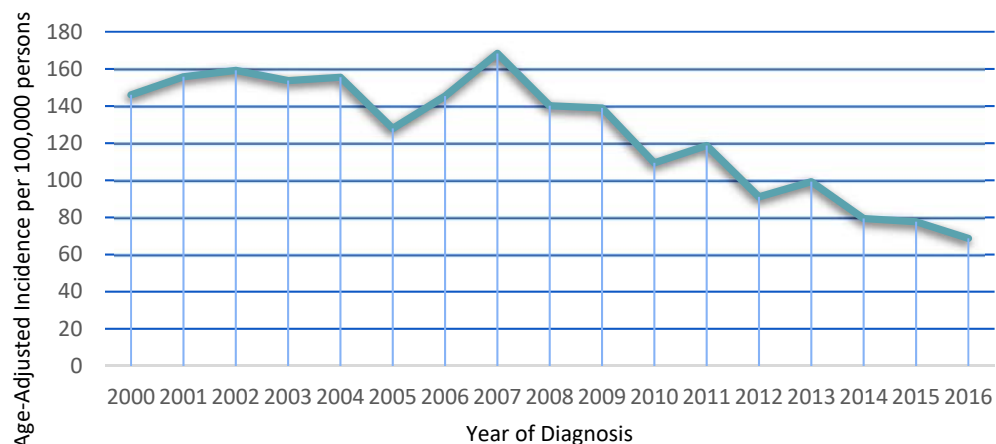
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 50:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Female Genital System Cancers<sup>2</sup>



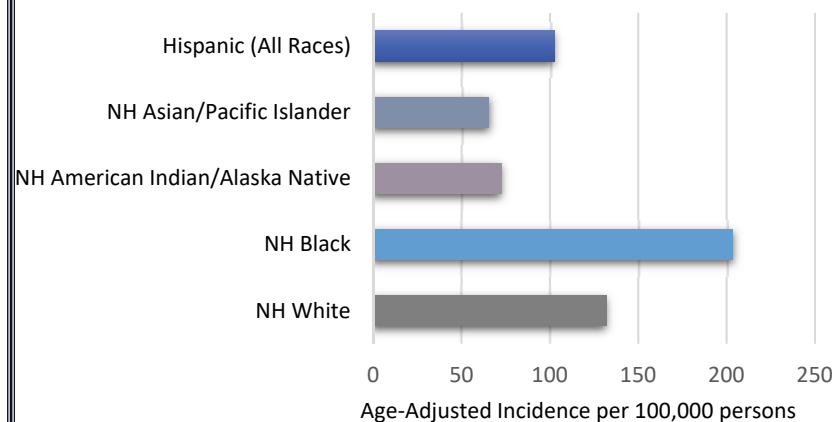
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 51:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Prostate Cancer<sup>2</sup> in Males



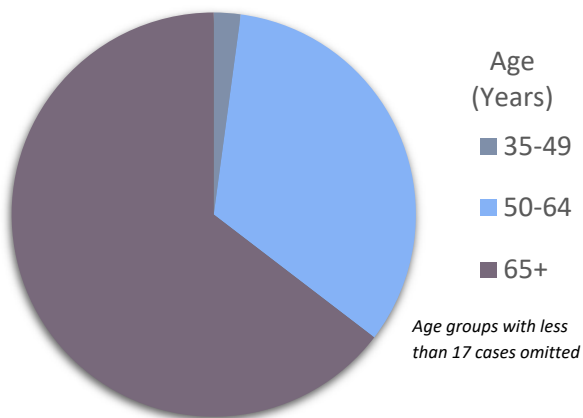
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 52:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Prostate Cancer<sup>2</sup> in Males



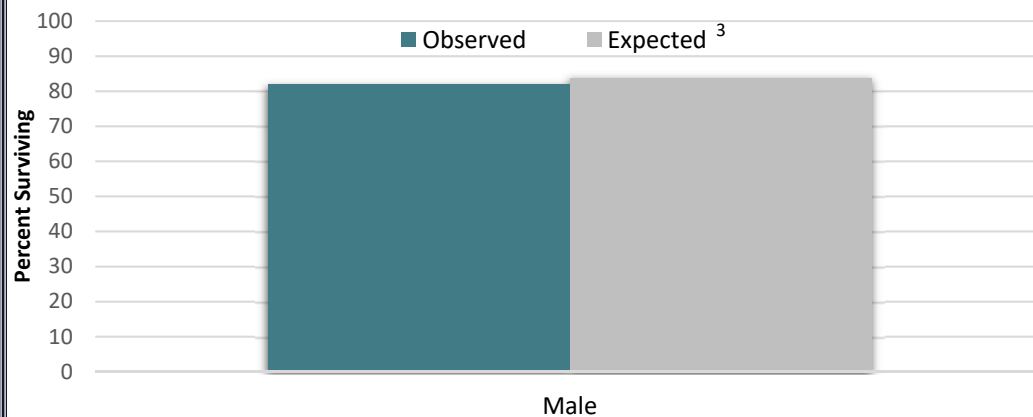
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 53:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Prostate Cancer



Based on SEER 18 data

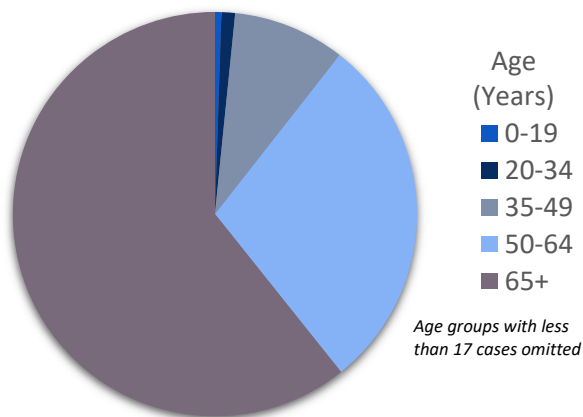
**Figure 54:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Prostate Cancer



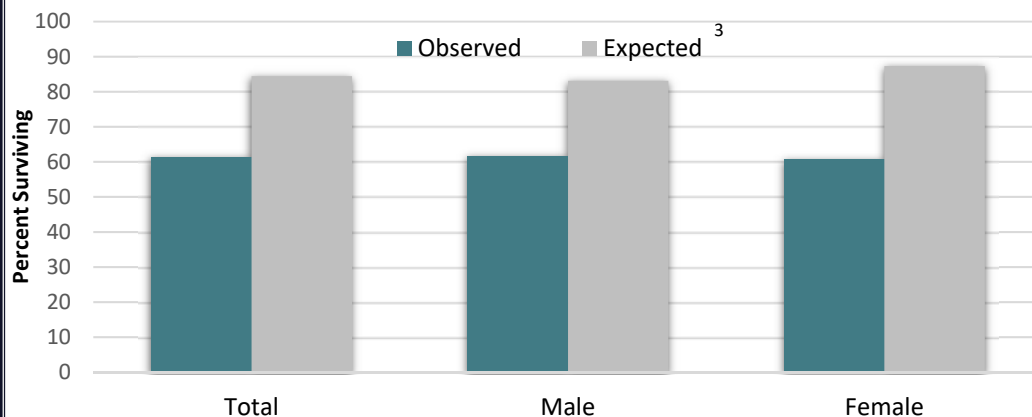
<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 55:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Urinary System Cancers



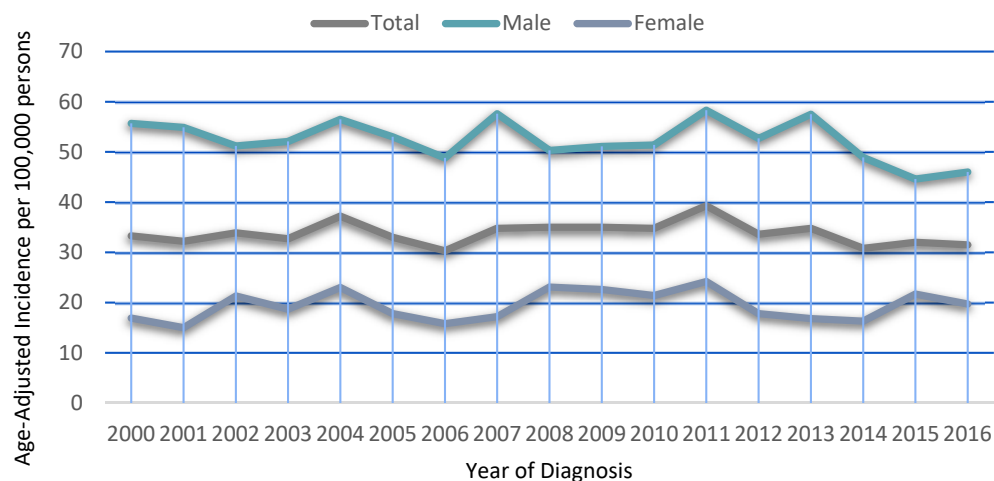
**Figure 56:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Urinary System Cancers



<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

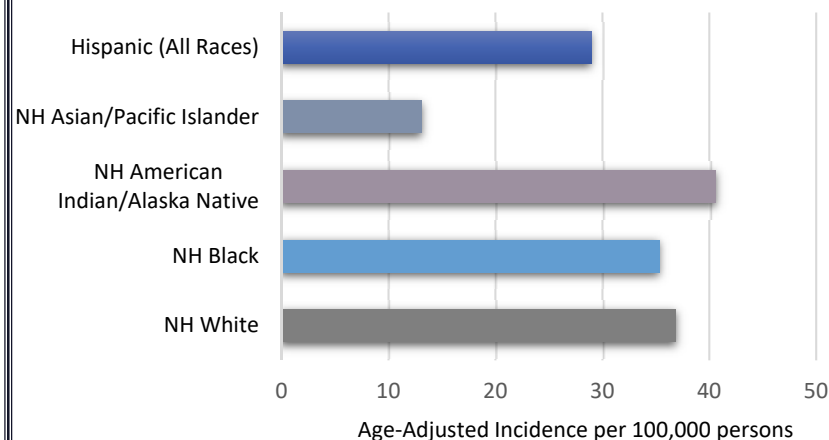
<sup>2</sup> Actuarial method <sup>3</sup> Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 57:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Urinary System Cancers<sup>2</sup>



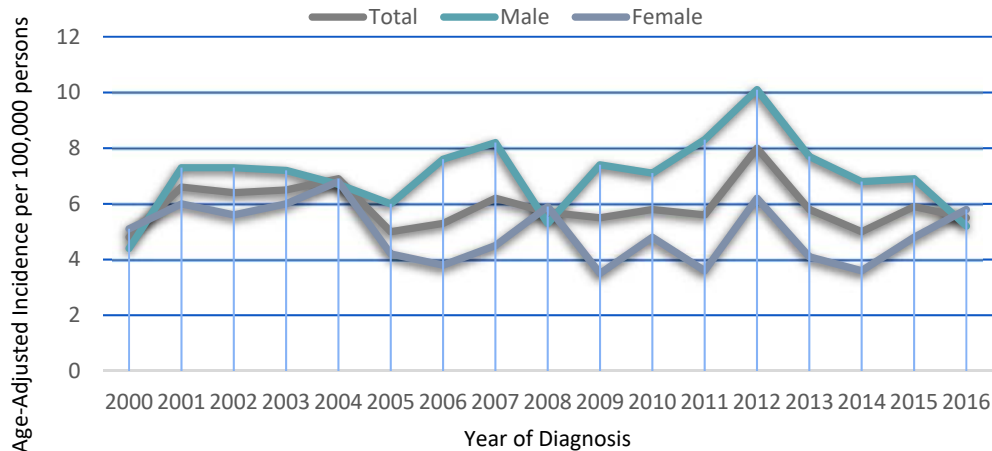
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 58:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Urinary System Cancers<sup>2</sup>



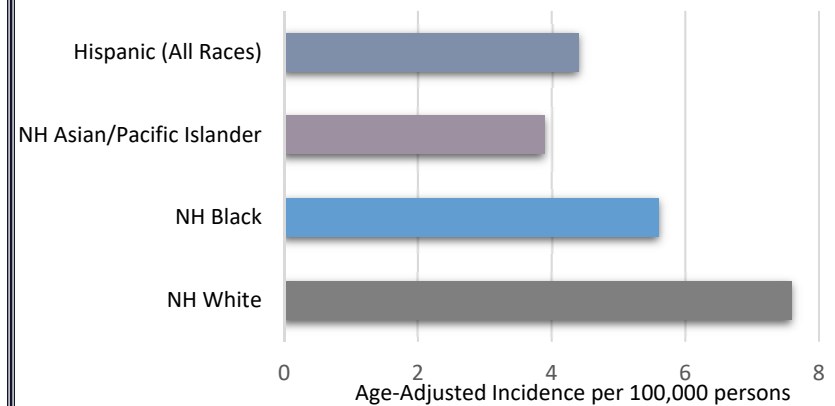
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic

**Figure 59:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Brain and Nervous System Cancers<sup>2</sup>



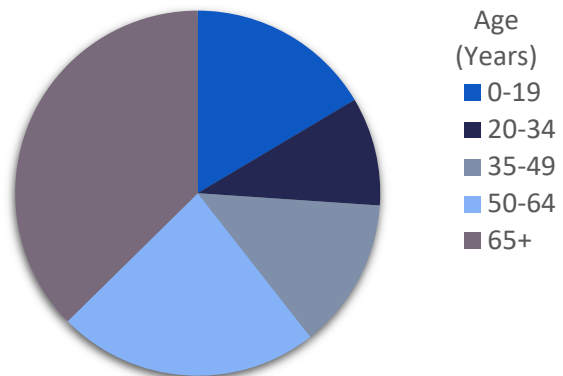
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 60:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Brain and Nervous System Cancers<sup>2</sup>



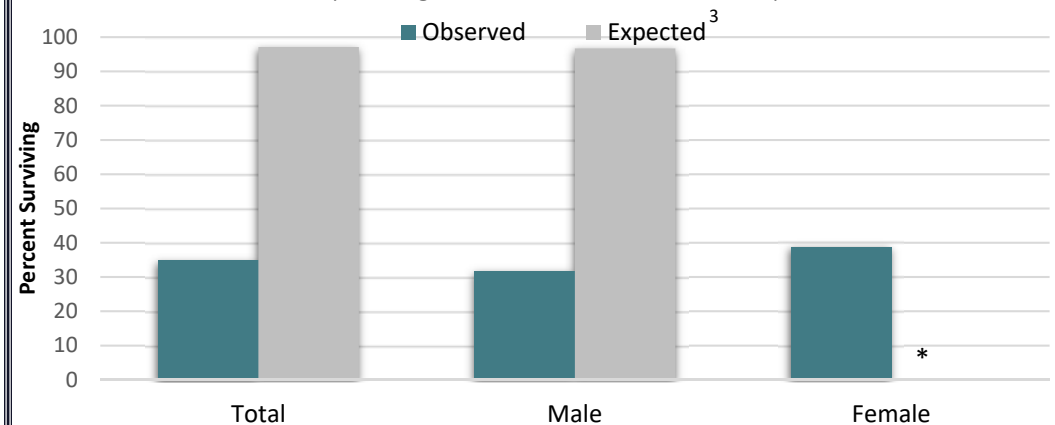
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 61:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Brain and Nervous System Cancers



Based on SEER 18 data

**Figure 62:** Cumulative Age-Standardized<sup>1</sup> 2-Year Survival<sup>2</sup>, Fresno County: Malignant Brain and Nervous System Cancers

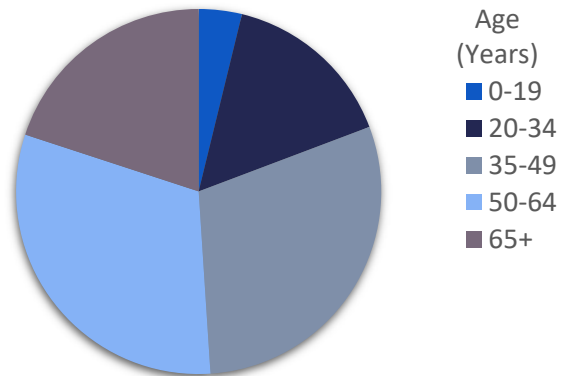


<sup>1</sup> Age standardized to the International Cancer Survival Standard 2- ≥15 years of age

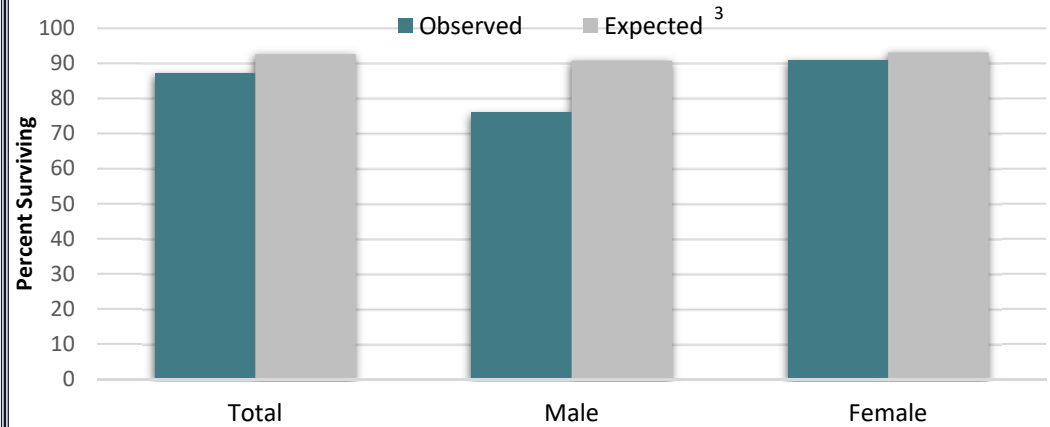
<sup>2</sup> Actuarial method. Statistics for 5-year survival could not be calculated <sup>3</sup>Ederer II method used for cumulative expected. Expected is age-standardized. \* Statistics could not be calculated



**Figure 63:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Endocrine System Cancers



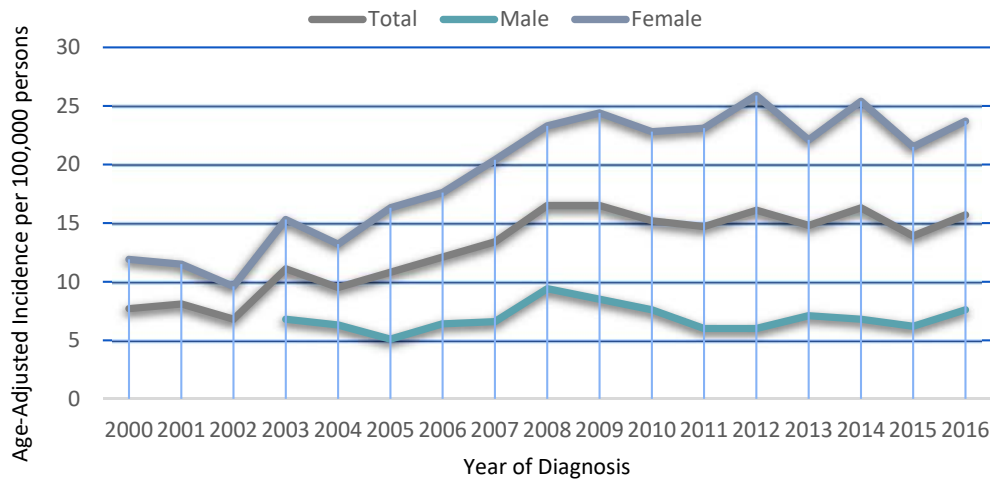
**Figure 64:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Endocrine System Cancers



<sup>1</sup> Age standardized to the International Cancer Survival Standard 2- ≥15 years of age

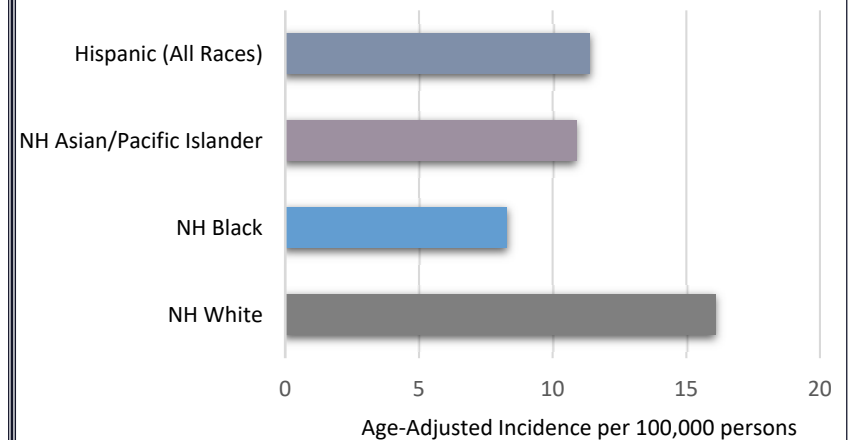
<sup>2</sup> Actuarial method <sup>3</sup>Ederer II method used for cumulative expected. Expected is age- standardized

**Figure 65:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Endocrine System Cancers<sup>2</sup>



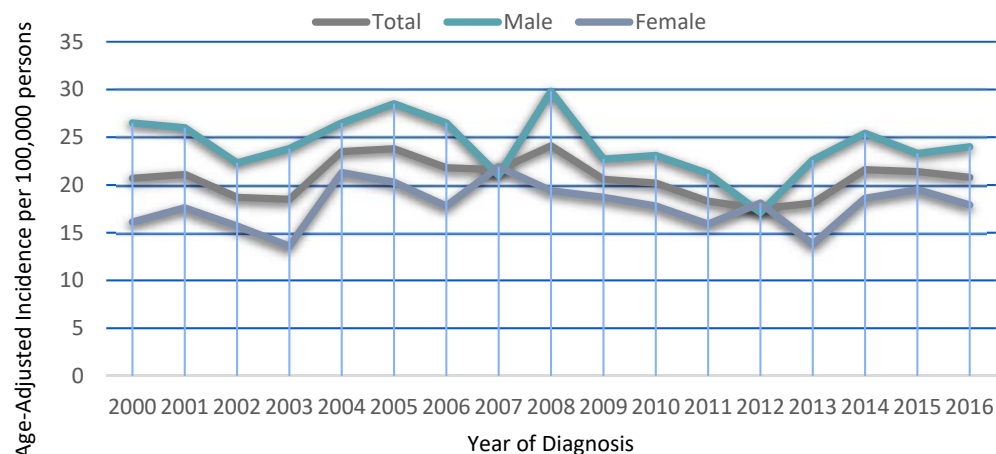
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data \*Data suppressed for years with case counts <16

**Figure 66:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Endocrine System Cancers<sup>2</sup>



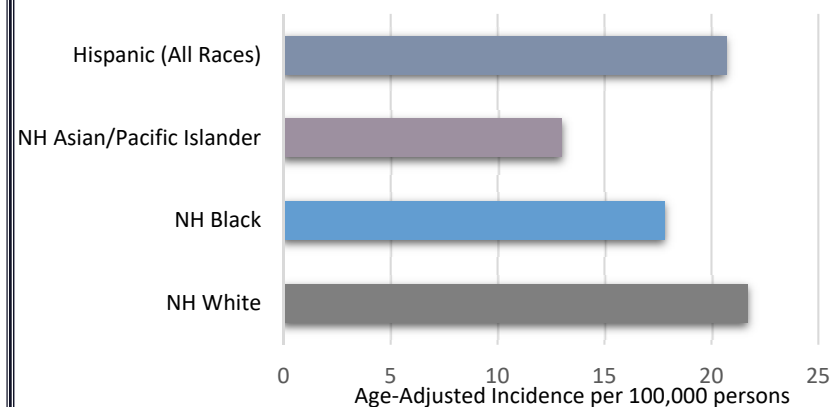
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 67:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Lymphoma<sup>2</sup>



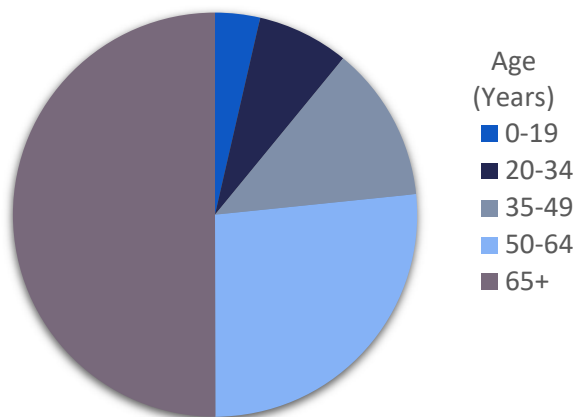
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 68:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Lymphomas<sup>2</sup>



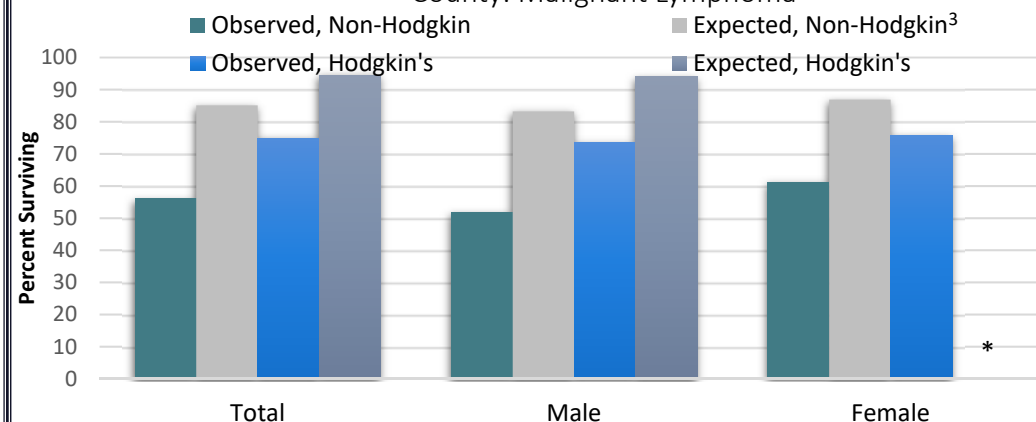
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 69:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Lymphoma



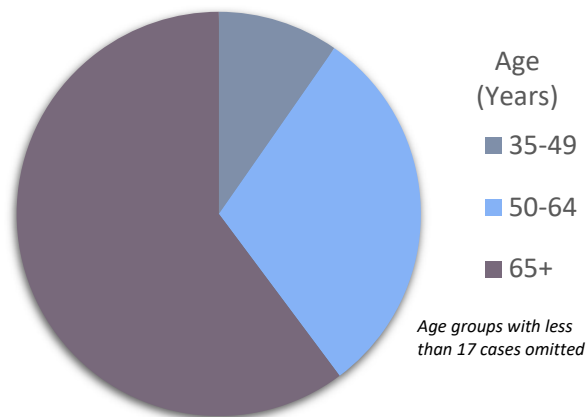
Based on SEER 18 data

**Figure 70:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Lymphoma

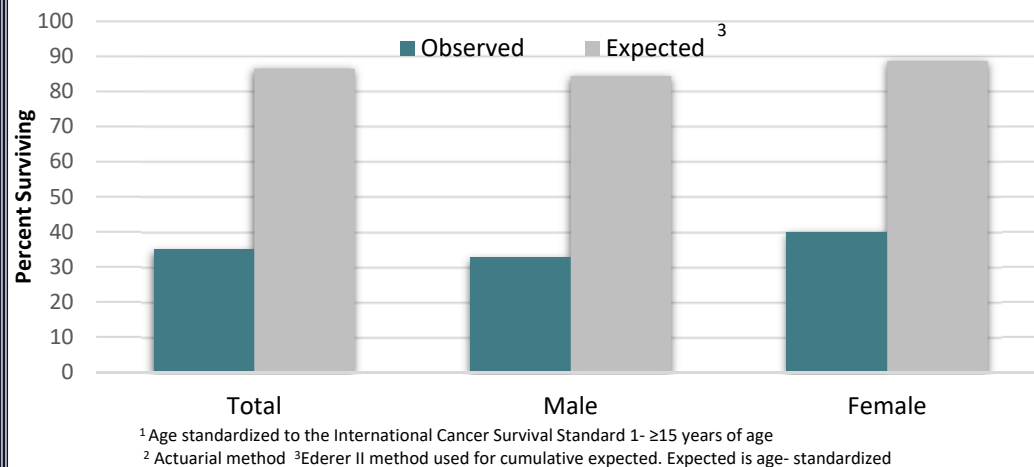


<sup>1</sup> Age standardized to the International Cancer Survival Standard 1 (non-Hodgkin) & 2 (Hodgkin's)- ≥15 years of age <sup>2</sup> Actuarial method <sup>3</sup> Ederer II method used for cumulative expected. Expected is age- standardized \*statistic could not be calculated

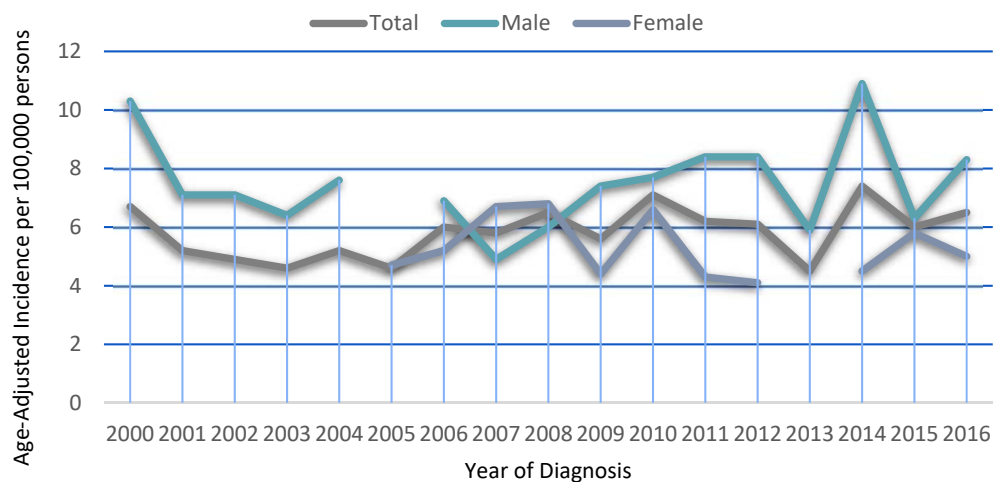
**Figure 71:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Myeloma



**Figure 72:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Myeloma

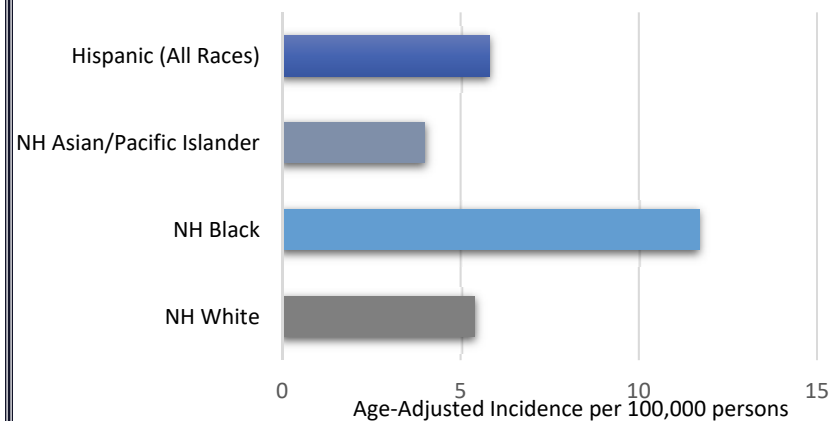


**Figure 73:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Myeloma<sup>2</sup>



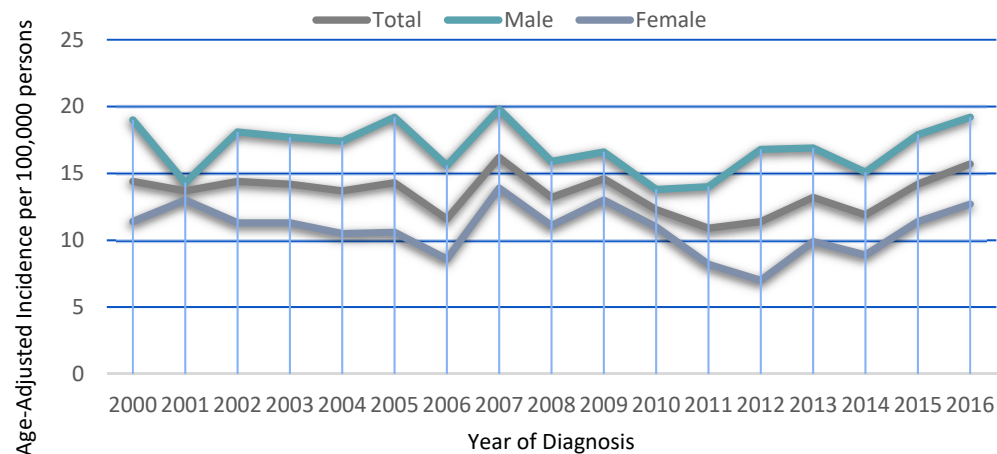
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data \*Data suppressed for years with case counts <16

**Figure 74:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Myeloma<sup>2</sup>



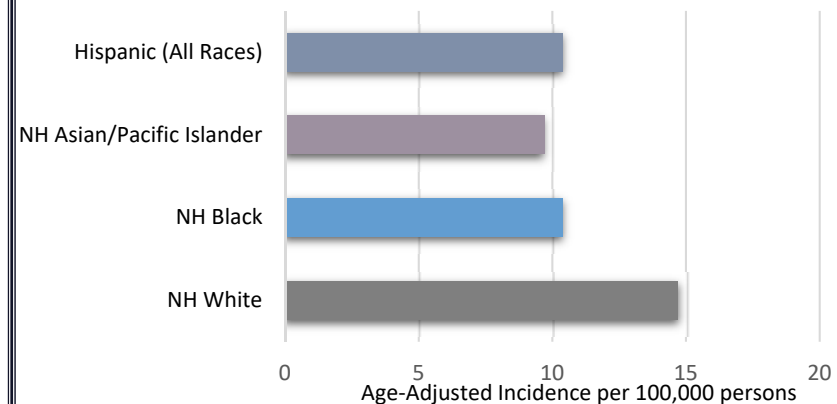
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 75:** Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Malignant Leukemia<sup>2</sup>



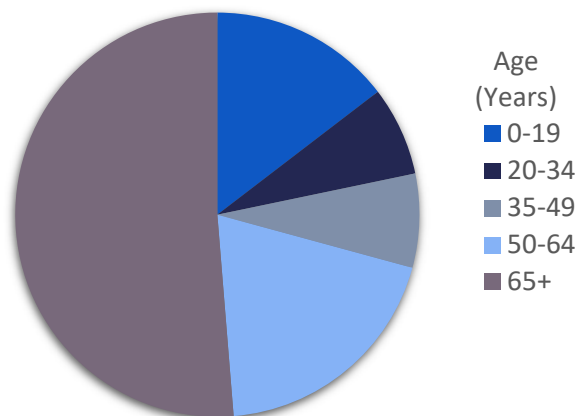
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

**Figure 76:** Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Leukemia<sup>2</sup>



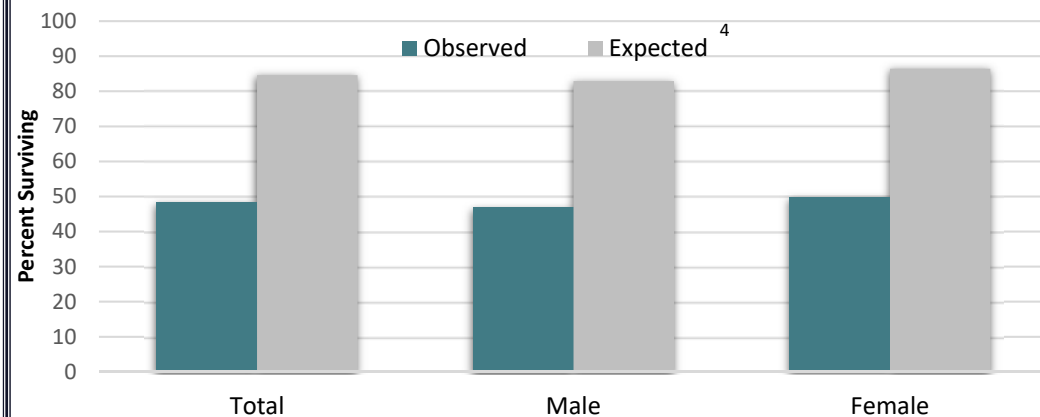
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 77:** Percentage of Malignant Cancer Cases by Age of Diagnosis, Fresno County, 2000-2016: Malignant Leukemia



Based on SEER 18 data

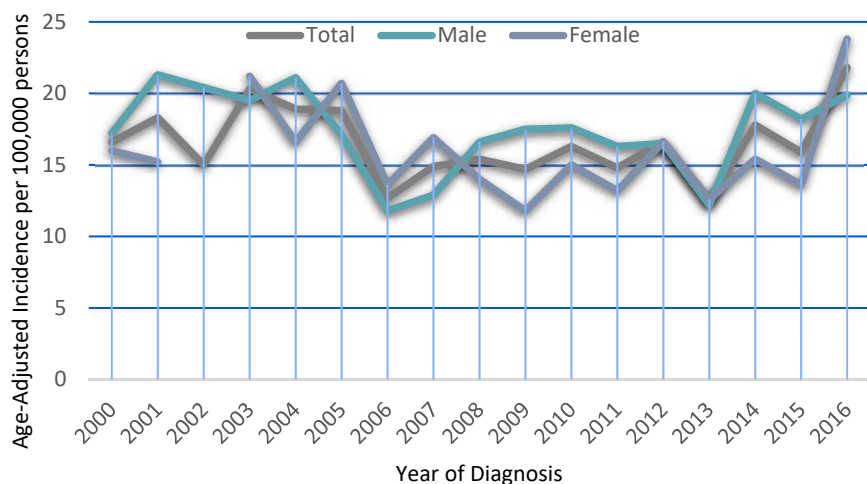
**Figure 78:** Cumulative Age-Standardized<sup>1</sup> 5-Year Survival<sup>2</sup>, Fresno County: Malignant Leukemia<sup>3</sup>



<sup>1</sup> Age standardized to the International Cancer Survival Standard 1- ≥15 years of age

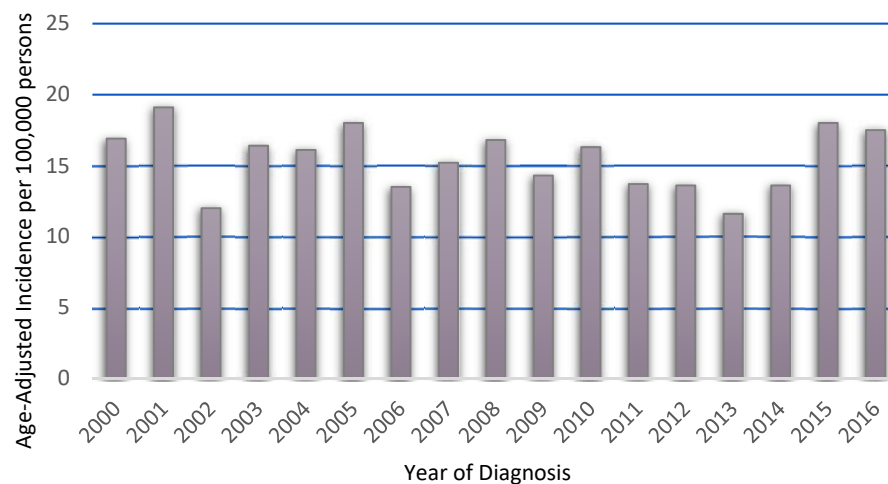
<sup>2</sup> Actuarial method <sup>3</sup> Excludes acute lymphatic leukemia <sup>4</sup> Ederer II method used for cumulative expected. Expected is age-standardized

**Figure 79: Age-Adjusted Incidence<sup>1</sup> by Sex, Fresno County, 2000-2016: Cancers in those under 20 Years of Age<sup>2</sup>**



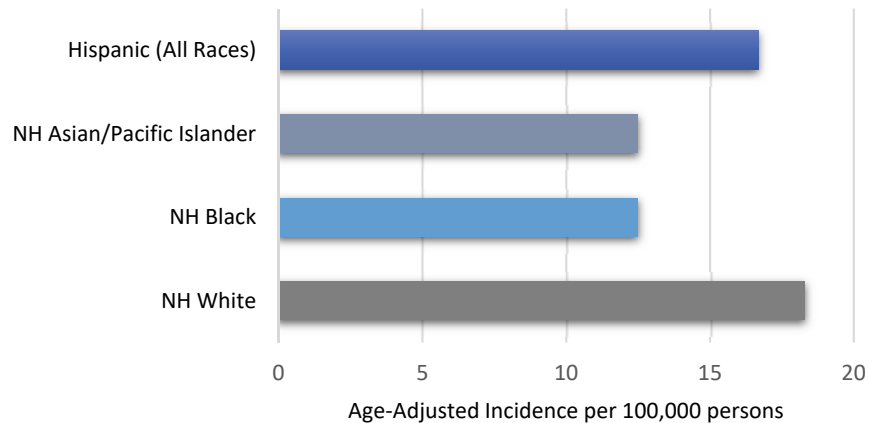
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population.  
<sup>2</sup> Based on SEER 18 data; includes all cancer types combined \*Data suppressed for years with case counts <16

**Figure 81: Age-Adjusted Incidence<sup>1</sup>, Fresno County, 2000-2016: Cancers in Children under 15 Years of Age<sup>2</sup>**



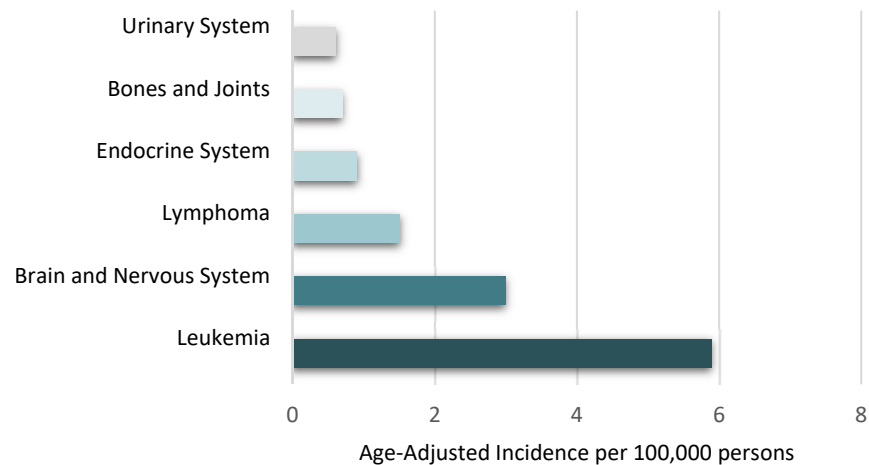
<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population.  
<sup>2</sup> Based on SEER 18 data; includes all cancer types combined

**Figure 80: Aggregated Age-Adjusted Incidence<sup>1</sup> by Race/Ethnicity, Fresno County, 2000-2016: Malignant Cancers in those under 20 Years of Age<sup>2</sup>**



<sup>1</sup> Incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population.  
<sup>2</sup> Based on SEER 18 data NH=Non-Hispanic \*Data on Race/Ethnicities with case counts <16 suppressed

**Figure 82: Top Cancer Sites<sup>1,2</sup> in Children under 15 Years of Age, Fresno County, Aggregated 2000-2016**



<sup>1</sup> Based on age adjusted incidence is the number of cases per 100,000 persons & age-adjusted to the 2000 U.S. standard population. <sup>2</sup> Based on SEER 18 data

## Appendices

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### Appendix A: Technical Notes <sup>15</sup>

**Age-Adjustment** allows for comparisons between populations with different age distributions. Age-adjustments based on the US Standard Population (Appendix B).

**Annual Percent Change (APC)** is calculated by fitting a least squares regression line to the natural logarithm of the rates and utilizes the calendar year as a regressor variable.

$n$  = number of years;  $r$  = rates;  $y = \ln(r)$ ;  $x$  = calendar year;  $y = mx + b$

$$APC = 100 \times (e^m - 1)$$

**Cancer Mortality** is the number of deaths per 100,000 persons

**Cancer Incidence** is the number of new cases per 100,000 persons

**Cancer 5-Year Survival Statistic:** Proportion of cancer patients alive 5-years after their cancer diagnosis. Observed survival is the true percentage of patients alive after the 5-year timeframe; whereas, relative estimated survival is the percentage of patients predicted to be alive. 5-year survival does not measure mortality caused by cancer alone but considers deaths due to all causes.

## Appendix B: 2000 US Standard Population

U.S. Standard Population, 1940–2000								
Age	2000 U.S. Standard Million	2000 U.S. Standard Population (Census P25-1130)	1990 U.S. Standard Million	1980 U.S. Standard Million	1970 U.S. Standard Million	1960 U.S. Standard Million	1950 U.S. Standard Million	1940 U.S. Standard Million
00 years	13,818	3,794,901	12,936	15,598	17,151	22,930	20,882	15,343
01-04 years	55,317	15,191,619	60,863	56,565	67,265	90,390	86,376	64,718
05-09 years	72,533	19,919,840	72,772	73,716	98,204	104,235	87,591	81,147
10-14 years	73,032	20,056,779	68,812	80,523	102,304	93,538	73,785	89,208
15-19 years	72,169	19,819,518	71,384	93,439	93,845	73,717	70,450	93,670
20-24 years	66,478	18,257,225	76,476	94,103	80,561	60,231	76,191	88,007
25-29 years	64,529	17,722,067	85,694	86,168	66,320	60,612	81,237	84,277
30-34 years	71,044	19,511,370	87,905	77,516	56,249	66,635	76,425	77,789
35-39 years	80,762	22,179,956	80,267	61,644	54,656	69,601	74,629	72,495
40-44 years	81,851	22,479,229	70,829	51,510	58,958	64,689	67,712	66,742
45-49 years	72,118	19,805,793	55,778	48,951	59,622	60,670	60,190	62,697
50-54 years	62,716	17,224,359	45,638	51,689	54,643	53,568	54,893	55,114
55-59 years	48,454	13,307,234	42,345	51,271	49,077	47,009	48,011	44,383
60-64 years	38,793	10,654,272	42,685	44,528	42,403	39,830	40,210	35,911
65-69 years	34,264	9,409,940	40,657	38,767	34,406	34,897	33,199	28,911
70-74 years	31,773	8,725,574	32,145	30,008	26,789	26,427	22,641	19,515
75-79 years	26,999	7,414,559	24,612	21,160	18,871	17,028	14,283	11,422
80-84 years	17,842	4,900,234	15,817	12,956	11,241	8,811	7,467	5,881
85+ years	15,508	4,259,173	12,385	9,888	7,435	5,182	3,828	2,770
Total	1,000,000	274,633,642	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000

Source: SEER<sup>16</sup>

## Appendix C: Standard Populations for Survival

ICSS Population Weights used in SEER*Stat by 5-year Age Group			
Age recode with <1 year olds	Population Weights		
	ICSS 1	ICSS 2	ICSS 3
15-19 years	164	1,128	6,938
20-24 years	215	2,011	11,183
25-29 years	416	3,745	12,964
30-34 years	842	5,755	11,630
35-39 years	1,874	7,538	9,635
40-44 years	3,489	7,823	7,650
45-49 years	4,906	8,283	5,324
50-54 years	7,094	8,717	4,676
55-59 years	9,641	9,894	5,224
60-64 years	13,359	11,106	4,776
65-69 years	14,234	10,992	5,067
70-74 years	14,766	9,008	4,933
75-79 years	14,131	7,254	5,179
80-84 years	9,347	4,116	3,247
85+ years	5,522	2,630	1,574

Source: SEER<sup>17</sup>



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