

Obesity-Linked Cancers in California, Incidence Trends 1988-2013

Acknowledgements and Disclaimer

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Summary of Findings

- From 1988 through 2013, there was an overall increase in the incidence of the following cancers whose occurrence has been linked to obesity: adenocarcinoma of the esophagus, uterine corpus, kidney, liver, and thyroid. Cancers of the colon and rectum, gall bladder, ovary, and stomach also have been linked to obesity, but their overall incidence rates decreased during this period.
- The overall occurrence of esophageal adenocarcinoma was highest among whites and males. Rising incidence rates were observed among whites and Latinos. The numbers of cases among African Americans and Asian/Pacific Islander were too low for rates to be calculated. Overall, incidence rates for esophageal carcinoma significantly increased by 4.8% per year until 2000, then stabilized.
- Incidence rates for kidney cancer increased in all groups from the mid to late 1990s, and then stabilized after 2008-2009. The increase in rates has been considered incidental to the high use of abdominal diagnostic imaging, although rising rates of obesity may have contributed to the trends.
- Incidence rates for liver cancer, highest among males and Asian/Pacific Islanders, increased by 5.1% per year until 2006, after which rates still increased but not as fast (by 1.4% per year). A similar pattern was observed in most groups except Asian/Pacific Islanders, for whom the incidence of liver cancer declined by 4.6% per year after 2007.
- Thyroid cancer incidence increased in all age and racial/ethnic groups, particularly after the late 1990s. Between 1999 and 2010, incidence rates almost doubled, although the increase in rates seems to have slowed more recently (or trends were no longer significantly different). The reasons for the increase in rates are unclear. While some have considered thyroid cancer to be over-diagnosed, it is possible that rising rates of obesity have played a role in the trend.
- The overall incidence of uterine corpus cancer increased significantly by 1.5% per year since 2003. Increases in rates were noted in most age groups and in all racial/ethnic groups, although among whites the rates increased only after 2003. Rates increased sharply among Latinas (by 4.2% per year) since 2008.

- Incidence rates for cancers of the colon and rectum and stomach decreased significantly in most age categories among males and females and all racial/ethnic groups, although colorectal cancer did not decline among Latinos until 2008. Persons aged 20 to 44 years were the only exception. In this age group, the incidence of colorectal and stomach cancer increased significantly by 1.7% and by 0.4% per year, respectively.
- Incidence rates for cancer of the ovary decreased significantly in all racial/ethnic groups.
- The incidence of gall bladder cancer declined in most groups, particularly among Latinos and Asian/Pacific Islanders by 2.2% and 3.0% per year, respectively. These groups had the highest incidence of the disease. Rates among whites did not decline after 2003.
- The overall incidence of multiple myeloma did not change significantly, although rates increased slightly but significantly among African Americans and Latinos - i.e., by 0.5% and 0.4% per year, respectively.
- No consistent trends across age groups, sex and race/ethnicity were detected for pancreatic cancer.
- For female breast cancer, overall incidence rates have remained mostly stable since 2001. After 2004, incidence rates declined slightly among females 50 to 64 years old but increased by 1.0% per year among those between 65 and 74 years of age. African Americans and Asian/Pacific Islanders were the only group with a consistent increase in the incidence of breast cancer (by 0.6% per year).

Introduction

Obesity, or the accumulation of an excessive amount of body fat, is known to increase the risk of multiple serious health conditions. Compared with people of normal weight, overweight or obese people are at greater risk of developing, among other conditions, diabetes, high blood pressure, cardiovascular disease, stroke, and many cancers.¹⁻³ In the US and many other developed countries, obesity has increased at alarming rates in recent decades. According to the National Health and Nutrition Examination Survey, more than one-third (36.5%) of U.S. adults were considered obese between 2001 and 2014.⁴ In California, results from the 2013-2015 Behavioral Risk Factor Surveillance System survey showed that the prevalence of adult obesity ranged from 20% to 25%.⁵ The prevalence of obesity in adults was higher among African Americans (32.8%) and Latinos (31.1%) than whites (22.2%).⁵ Results from the California Health Interview Survey showed that the number of Californians who are obese has materially increased in recent years. The prevalence of obesity in 2015, compared with 2001, was 41.7% higher among whites, 38.6% higher among Latinos, and 16.5% higher among African Americans.⁶ Although Asian/Pacific Islanders remained the group with the lowest rates of obesity, the percent of obese persons in this group in 2015 more than doubled since 2011.⁶

In April 2016, the International Agency for Research on Cancer (IARC) convened a working group to reassess the effects of body weight on cancer risk.⁷ As a result of the extensive analysis carried out by that working group, the list of cancers for which there is sufficient evidence of a link to obesity was expanded and now includes the following 12 cancers: esophagus (adenocarcinoma), gastric cardia, colon and rectum, liver, gallbladder, pancreas, breast (postmenopausal), uterine corpus, ovary, kidney (renal-cell), thyroid and multiple myeloma. With the high prevalence of obesity in California, it is important to monitor the incidence of these cancers. Assessing the extent of the problem should facilitate finding strategies for preventing obesity-linked cancers.

This report presents incidence trends for 12 obesity-linked cancers by age, sex and race/ethnicity for non-Latino white, African American, Latino, and Asian/Pacific Islander California residents from 1988 to 2013. Information in this report was gathered by the California Cancer Registry (CCR), the state mandated population-based cancer surveillance system in California. The CCR routinely collects demographics, diagnostic, tumor biology, treatment and follow-up information for cancer cases diagnosed in California, thus providing the foundation for cancer research studies and cancer control initiatives throughout the state. Since 2012, the California Cancer Reporting and Epidemiology Surveillance (CalCARES) Program within the Institute for Population Health Improvement at the University of California Davis has

partnered with the California Department of Public Health to manage the day-to-day operations of the CCR.

Methods

Incidence rates, age-adjusted to the 2000 US standard population, were calculated for cancer cases diagnosed among adult (age ≥ 20 years) California residents and reported to the CCR from 1988 through 2013 (the last year for which cancer reporting was considered 100% complete). Age-adjusted rates were calculated using the software Seer*Stat version 8.3.2 (<https://seer.cancer.gov/seerstat/>) for the following 12 cancer types (or sites): adenocarcinoma of esophagus, colon and rectum, uterine corpus, female breast, gallbladder, kidney, liver, multiple myeloma, ovary, pancreas, stomach, and thyroid.

As is customary, age at diagnosis was categorized in four groups: 20-44 years, 45-59 years, 60-74 years, and 75+ years. For colorectal and female breast cancers, age was categorized in the following groups to account for the age after which routine screening is recommended (i.e., at age 50 years): 20-49, 50-64 years, 65-74 years, and 75+ years. This was done since screening and resultant interventions may affect the incidence.

Race/ethnicity was classified according to the North American Association of Central Cancer Registries' Hispanic and Asian/Pacific Islander Identification Algorithm (NHAPIIA) and grouped as non-Latino white (white), African American, Latino, and Asian/Pacific Islander. These four racial/ethnic groups are mutually exclusive, and Latinos can be of any race.

Incidence trends for the 12 cancers included in this report were calculated using the Joinpoint linear regression software version 4.3.1.0 (<https://surveillance.cancer.gov/joinpoint/>). In this regression method, a statistical algorithm detects "joinpoints," or points in time where trends significantly change direction. At each line segment, or time period, the trend in incidence rates was measured using the estimated annual percent change (APC).

Breast Cancer (Female)

Breast cancer is the leading female cancer both in California and the U.S. In 2013, 25,695 California women 20 years and older developed breast cancer and 4,407 died from the disease. The causes of breast cancer are not clear, but its occurrence has been linked to obesity. In addition, the following risk factors increase the likelihood of developing breast cancer:

- Increased age (most invasive breast cancers occur in women over age 55)
- Race/Ethnicity (white women are more likely to develop breast cancer, but African American women are more likely to die from it)
- Mutations to BRCA1, BRCA2, and other 'breast cancer genes'
- Personal history of breast cancer or diagnosis of atypical hyperplasia of the breast
- Family history of breast cancer in a first-degree relative (i.e., mother, sister or daughter)
- Longer lifetime exposure to estrogen (e.g., starting menstruation before age 12, menopause after age 55, or first pregnancy after age 30)
- Use of estrogen hormone replacement therapy
- Exposure to high doses of ionizing radiation, especially from puberty through child bearing years
- Lifestyle factors such as limited physical activity and substantial consumption of alcohol

Trends in Incidence in California, 1988 through 2013

The overall incidence rate of invasive breast cancer increased significantly by 0.7% per year from 1988 to 2001, after which changes were no longer statistically significant. Significant increases in incidence were observed among females between the ages of 50 and 64 until 2001 (APC = 1.3%) and between the ages of 65 and 74 after 2004 (APC = 1.0%). Incidence rates either declined or did not change significantly among all other age groups.

Incidence rates increased significantly over time in most racial/ethnic groups, except among whites after 2001 and among Latinas. Rates increased by 0.6% per year among African Americans (between 1988-2013) and Asian/Pacific Islanders (from 1999 forward).

Invasive Breast Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age and Race/Ethnicity among Women in California, 1988-2013.

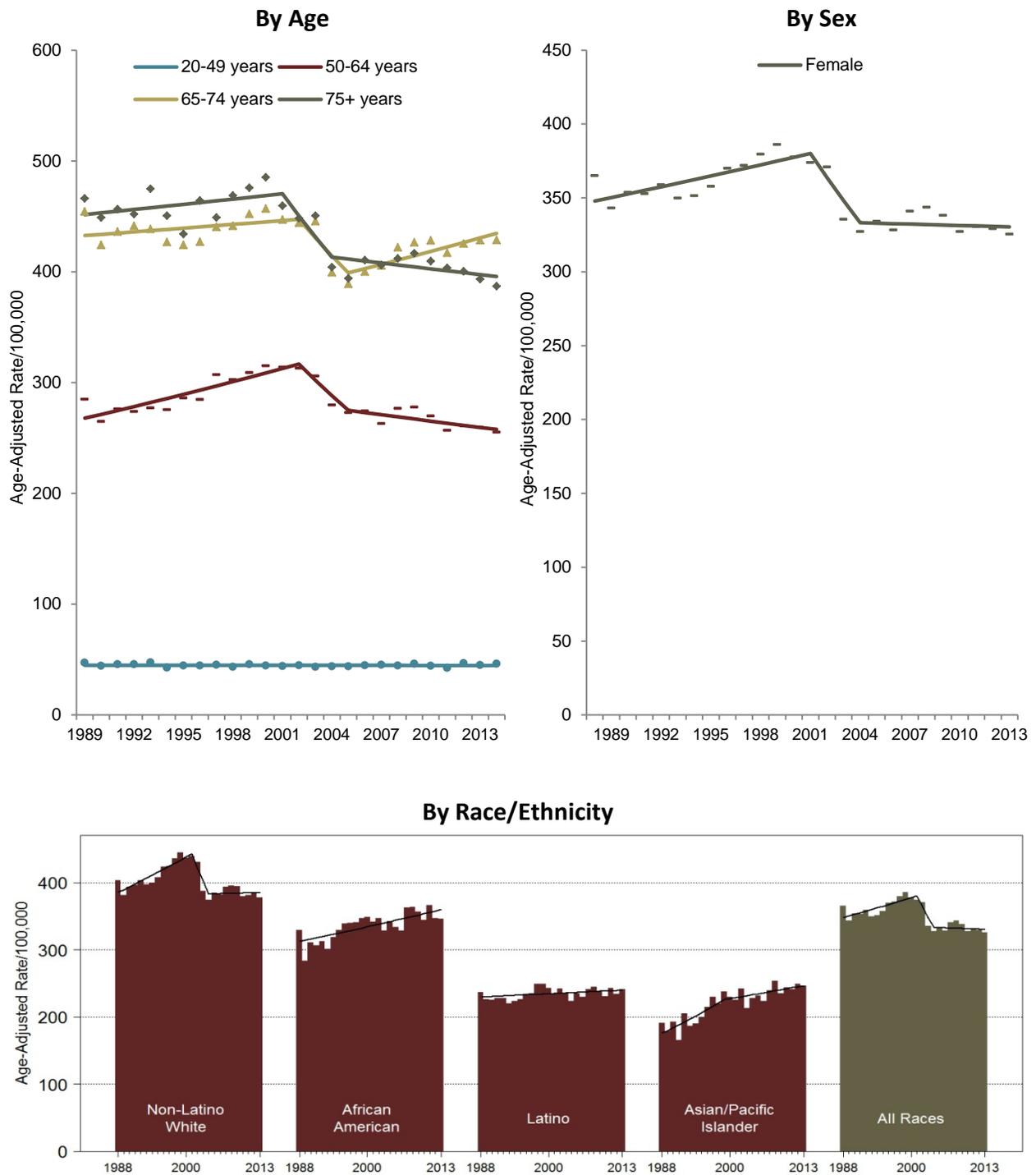
Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2001	0.7	↑	0.3, 1.0	9.5
	2001-2004	-4.3		-9.9, 1.7	-12.4
	2004-2013	-0.1		-0.6, 0.4	-0.9
Age					
50-64	1988-2001	1.3	↑	0.9, 1.7	18.3
	2001-2004	-4.6		-11.3, 2.5	-13.2
	2004-2013	-0.7		-1.3, -0.1	-6.1
65-74	1988-2001	0.3		-0.1, 0.6	4.0
	2001-2004	-3.7		-10.1, 3.1	-10.7
	2004-2013	1.0	↑	0.4, 1.5	9.4
75+	1988-2000	0.3		-0.1, 0.8	3.7
	2000-2003	-4.2		-11.1, 3.2	-12.1
	2003-2013	-0.4		-1.0, 0.2	-3.9
Race/Ethnicity					
Non-Latino White	1988-2001	1.1	↑	0.8, 1.4	15.3
	2001-2004	-4.7		-10.1, 1.0	-13.4
	2004-2013	0.0		-0.5, 0.6	0.0
African American	1988-2013	0.6	↑	0.4, 0.8	16.1
Latino	1988-2013	0.2	↑	0.0, 0.3	5.1
Asian/Pacific Islander	1988-1999	2.3	↑	1.1, 3.6	28.4
	1999-2013	0.6	↑	0.1, 1.2	8.7

↑ Statistically significant increase

↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Invasive Breast Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Colon and Rectum Cancer

Colorectal cancer is the third most commonly diagnosed cancer in California, and the third most common cause of death among both men and women. In 2013, 13,836 adult Californians were diagnosed with colorectal cancer and 5,157 died from it. African Americans had the highest incidence rate (65 cases per 100,000), followed by whites (50 cases per 100,000). Regular endoscopic screening can identify and remove precancerous polyps and potentially prevent colorectal cancer. Other screening methods can also detect colorectal cancer in an early stage of disease when treatment is more likely to be effective.

The cause of colorectal cancer is not known, but obesity has been linked to its occurrence. In addition, the following risk factors increase the likelihood of developing colorectal cancer:

- Increased age (more than 90% of colorectal cancers occur in people over 50)
- Smoking
- Heavy alcohol use
- Personal history of colorectal polyps or inflammatory bowel disease
- Family history of colorectal cancer in a first-degree relative (i.e., parents, siblings, or children)
- Inherited conditions such as familial adenomatous polyposis and Lynch syndrome (hereditary non-polyposis colon cancer)
- Ulcerative colitis
- Crohn's disease

Trends in Incidence in California, 1988 through 2013

Significant declines in incidence rates of colorectal cancer were detected since 1988 among males and females in most age and racial/ethnic groups in California. Between 1988 and 2008, incidence rates significantly declined among males (by 1.6% per year) and females (by 1.2% per year), and declined even more markedly after 2008 (by 4.7% and 4.1% per year among males and females, respectively).

Incidence rates decreased in most age groups, except among persons 20 to 49 years old. Although colorectal cancer is much less commonly diagnosed in this age group, incidence rates for the disease have increased by 1.7% per year since 1993. Between 1988 through 2013, incidence rates also decreased significantly in all racial/ethnic groups, except among Latinos, for whom rates declined only after 2008 (by 3.5% per year).

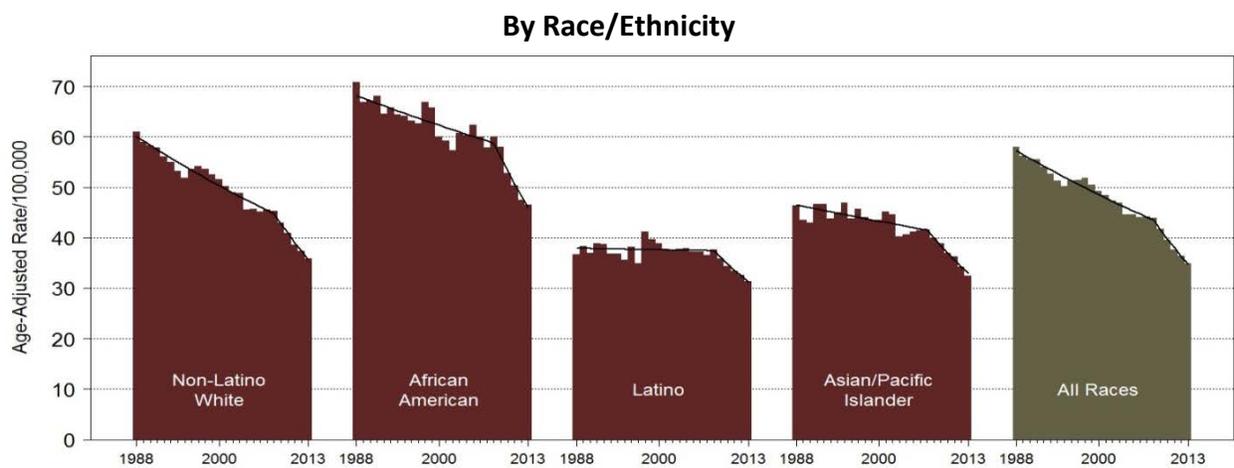
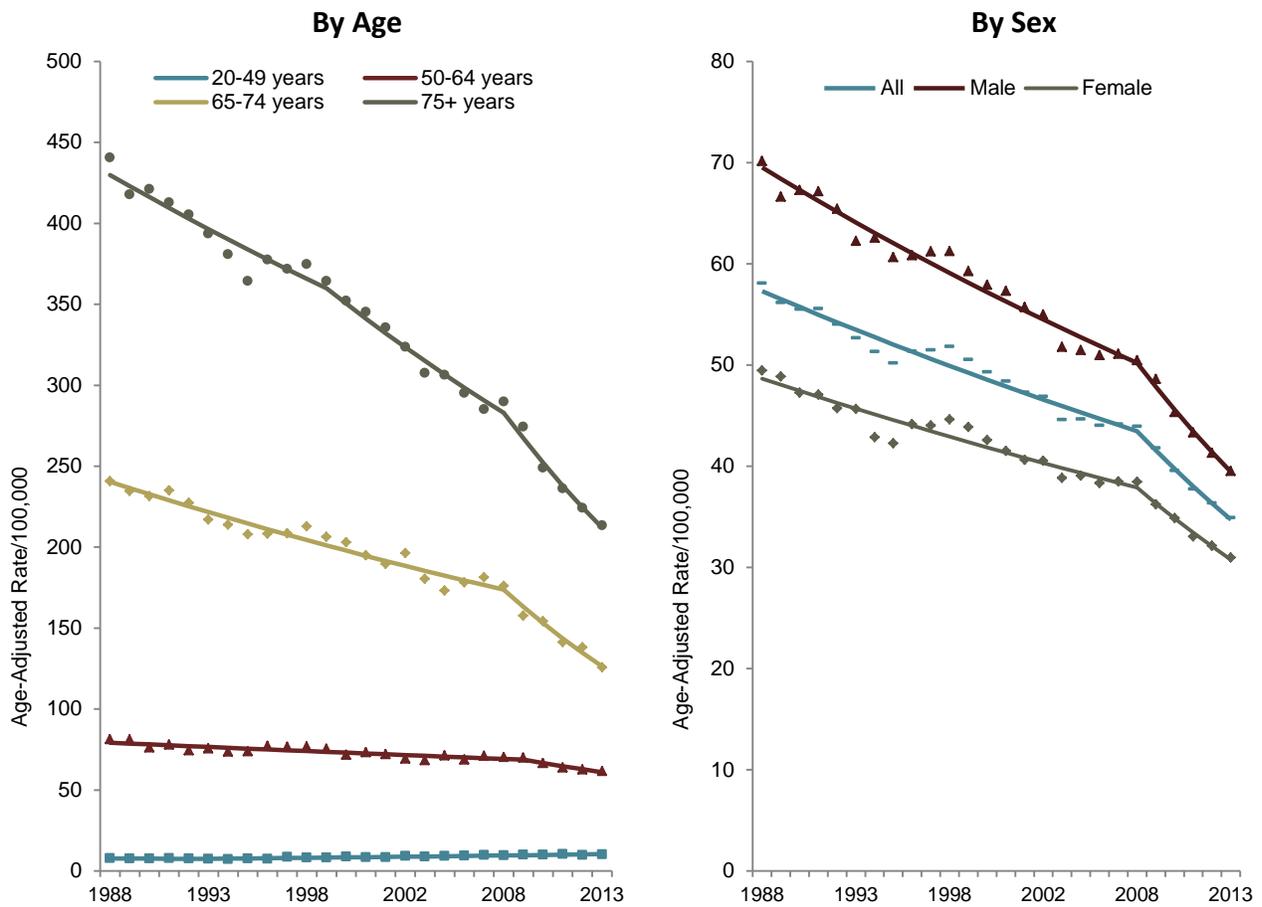
Colon and Rectum Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2008	-1.4	↓	-1.5, -1.2	-24.6
	2008-2013	-4.4	↓	-5.5, -3.3	-20.1
Age					
20-49	1988-1993	-0.7		-3.4, 2.0	-3.5
	1993-2013	1.7	↑	1.4, 2.0	40.1
50-64	1988-2009	-0.7	↓	-0.9, -0.5	-13.7
	2009-2013	-3.0	↓	-4.8, -1.0	-11.5
65-74	1988-2008	-1.6	↓	-1.8, -1.4	-27.6
	2008-2013	-6.2	↓	-7.8, -4.5	-27.4
75+	1988-1999	-1.6	↓	-2.0, -1.2	-16.3
	1999-2008	-2.6	↓	-3.2, -2.1	-21.1
Sex					
Male	1988-2008	-1.6	↓	-1.8, -1.5	-27.6
	2008-2013	-4.7	↓	-5.9, -3.6	-21.4
Female	1988-2008	-1.2	↓	-1.4, -1.1	-21.5
	2008-2013	-4.1	↓	-5.5, -2.7	-18.9
Race/Ethnicity					
Non-Latino White	1988-2008	-1.5	↓	-1.6, -1.3	-26.1
	2008-2013	-4.5	↓	-6.0, -2.9	-20.6
African American	1988-2008	-0.7	↓	-1.0, -0.5	-13.1
	2008-2013	-4.8	↓	-6.6, -3.0	-21.8
Latino	1988-2008	-0.1		-0.4, 0.2	-2.0
	2008-2013	-3.5	↓	-5.2, -1.9	-16.3
Asian/Pacific Islander	1988-2007	-0.6	↓	-0.9, -0.3	-10.8
	2007-2013	-3.8	↓	-5.0, -2.6	-20.7

↑ Statistically significant increase ↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Colon and Rectum Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Esophagus Cancer (Adenocarcinoma)

Adenocarcinoma is the most common form of esophageal cancer in the United States. In 2013, 786 adult Californians developed adenocarcinoma of the esophagus. Esophageal adenocarcinomas occur most often in the lower esophagus near the stomach and are more commonly diagnosed among white males. Like other cancers, the cause of adenocarcinoma of the esophagus is not clear, although its occurrence has been linked to obesity. In addition, the following risk factors increase the likelihood of developing adenocarcinoma of the esophagus:

- Smoking
- Barrett's esophagus (a condition caused by chronic gastroesophageal reflux)

Trends in Incidence in California, 1988 through 2013

The overall incidence rate of adenocarcinoma of the esophagus increased significantly by 4.8% per year from 1988 to 2000, and then remained unchanged. Incidence rates increased significantly in all groups examined, although it appears that trends have stabilized after the late 1990s and early 2000s. The increase in rates was higher among persons between the ages of 45 and 59 (7.9% per year until 1996). Increases of 4.4% and 4.3% per year until 2000-2004 were observed among persons between the ages of 60 and 74, and among those 75 years and older, respectively.

Incidence rates increased significantly by 4.2% per year among males from 1988 to 2001 and by 6.5% per year among females from 1988 to 1999. The rates remained unchanged afterwards. Incidence rates increased significantly among whites and Latinos. Among whites, rates increased by 5.6% per year until 2000 and by 0.8% per year thereafter (a smaller but still significant increase) while among Latinos rates significantly increased by 1.3% over the entire study period. Due to the small number of incident cases, trends for adenocarcinoma of the esophagus among African Americans and Asian/Pacific Islanders or among persons 20 to 44 years old could not be calculated.

Adenocarcinoma of Esophagus: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

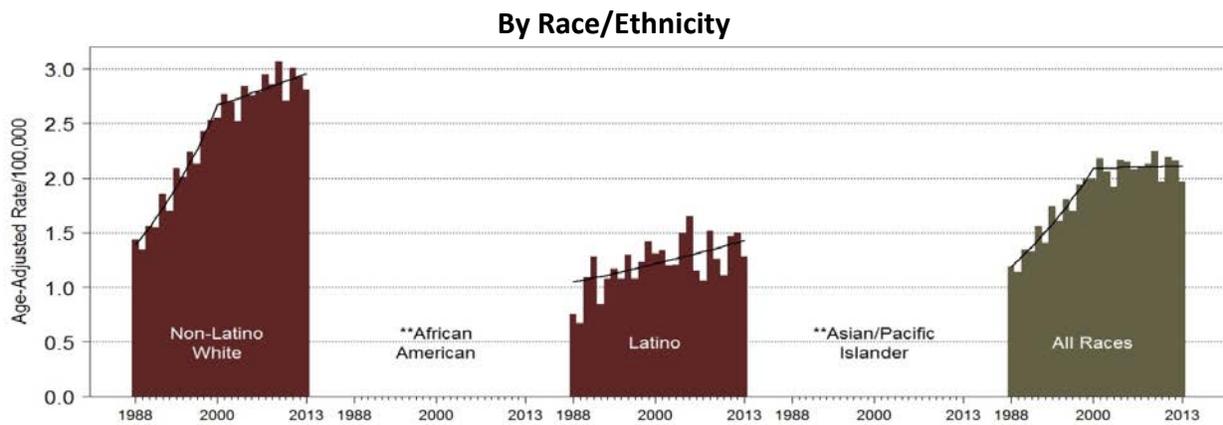
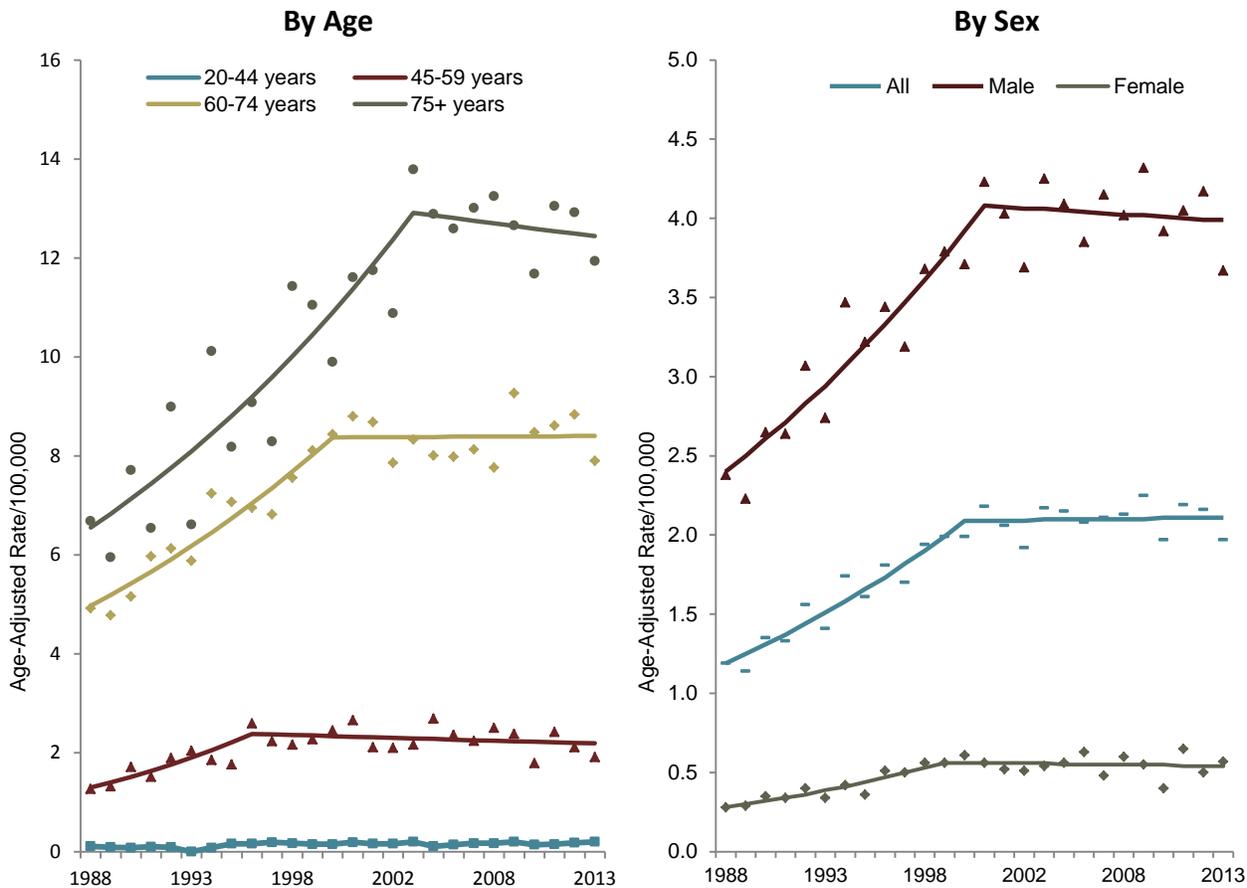
Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2000	4.8	↑	3.6, 5.9	75.5
	2000-2013	0.1		-0.7, 0.8	1.3
Age					
20-44		-			-
45-59	1988-1996	7.9	↑	2.7, 13.3	83.7
	1996-2013	-0.5		-1.6, 0.6	-8.2
60-74	1988-2000	4.4	↑	3.2, 5.7	67.7
	2000-2013	0.0		-0.8, 0.8	0.0
75+	1988-2004	4.3	↑	3.1, 5.6	96.1
	2004-2013	-0.4		-2.4, 1.6	-3.5
Sex					
Male	1988-2001	4.2	↑	3.0, 5.3	70.7
	2001-2013	-0.2		-1.1, 0.7	-2.4
Female	1988-1999	6.5	↑	3.5, 9.5	99.9
	1999-2013	-0.3		-1.8, 1.2	-4.1
Race/Ethnicity					
Non-Latino White	1988-2000	5.6	↑	4.5, 6.7	92.3
	2000-2013	0.8	↑	0.1, 1.5	10.9
African American		-			-
Latino	1988-2013	1.3	↑	0.4, 2.1	38.1
Asian/Pacific Islander		-			-

↑ Statistically significant increase ↓ Statistically significant decrease

- Rates not calculated due to less than 8 cases per year.

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Adenocarcinoma of Esophagus Cancer in California, 1988-2013



** Rates not calculated due to less than 8 cases per year

Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Gallbladder Cancer

Gallbladder cancer is difficult to diagnose at an early stage of disease due to the absence of early signs or symptoms. Almost all gallbladder cancers are adenocarcinomas, and the risk is higher among females than males. In 2013, 465 adult Californians developed gallbladder cancer and 254 died from it. The causes of gallbladder cancer are not clear, but its occurrence has been linked to obesity. In addition, the following risk factors increase the likelihood of developing gallbladder cancer:

- Gallstones (this is the most common risk factor of gallbladder cancer)
- Increased age
- Chronic gallbladder inflammation, porcelain gallbladder, and choledochal cyst
- Abnormalities of the pancreas and bile ducts

Trends in Incidence in California, 1988 through 2013

Since 1988, incidence rates of gallbladder cancer declined significantly by 0.7% and 0.6% per year among California males and females, respectively. Rates decreased significantly by 0.9% and 0.6% among persons in the age group 45-59 years and 60-74 years, respectively. Among persons over 75 years of age, incidence rates decreased significantly by 2.9 % per year until 2000.

Incidence rates decreased significantly between two and three percent per year among whites (until 2003), Latinos, and Asian/Pacific Islanders. Rates remained unchanged among African Americans. The incidence of gallbladder cancer among whites increased after the early 2000s, although the change was not statistically significant.

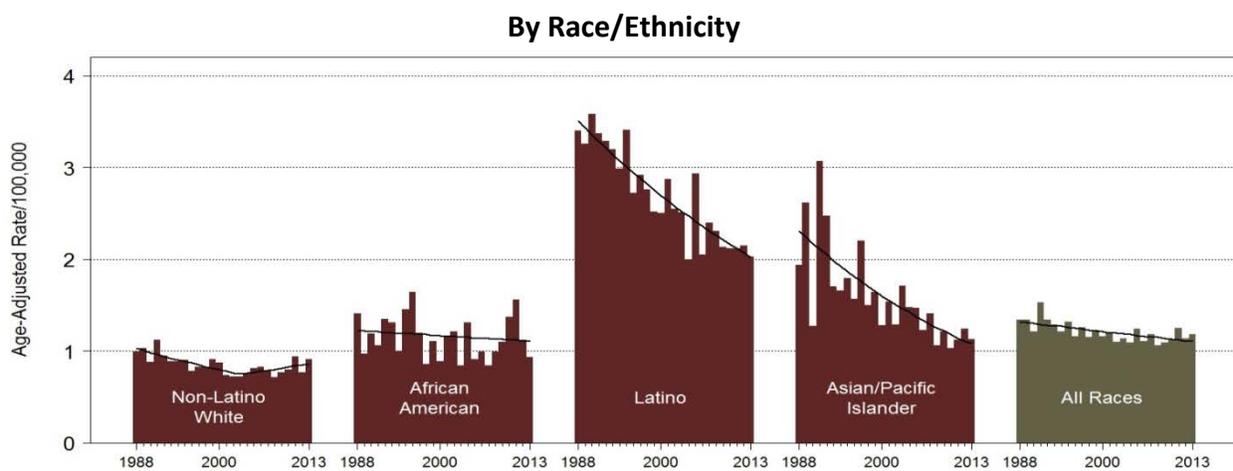
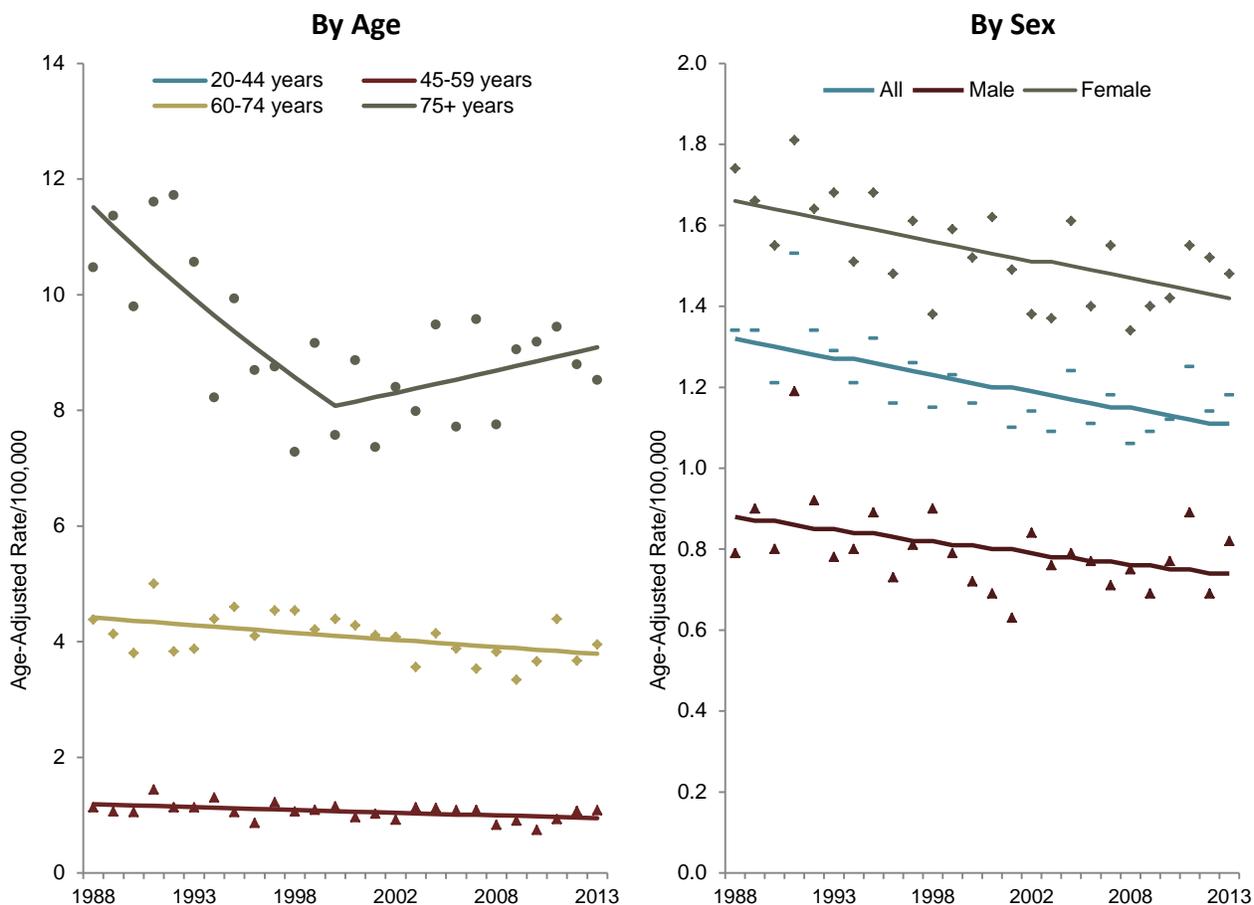
Gallbladder Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2013	-0.7	↓	-1.0, -0.4	-16.1
Age					
20-44		-			-
45-59	1988-2013	-0.9	↓	-1.5, -0.2	-20.2
60-74	1988-2013	-0.6	↓	-1.1, -0.2	-14.0
75+	1988-2000	-2.9	↓	-4.6, -1.2	-29.8
	2000-2013	0.9		-0.5, 2.3	12.4
Sex					
Male	1988-2013	-0.7	↓	-1.3, -0.1	-16.1
Female	1988-2013	-0.6	↓	-1.0, -0.3	-14.0
Race/Ethnicity					
Non-Latino White	1988-2003	-2.1	↓	-3.1, -1.1	-27.3
	2003-2013	1.4		-0.4, 3.3	14.9
African American	1988-2013	-0.4		-1.5, 0.7	-9.5
Latino	1988-2013	-2.2	↓	-2.6, -1.7	-42.7
Asian/Pacific Islander	1988-2013	-3.0	↓	-3.9, -2.1	-53.3

↑ Statistically significant increase ↓ Statistically significant decrease
 - Rates not calculated due to less than 8 cases per year

*Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Gallbladder Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Kidney Cancer

In 2013, 5,278 adult Californians developed kidney cancer and 1,350 died from it. Kidney cancer is usually diagnosed in people over 40, and occurs twice as commonly in males as in females. The causes of kidney cancer are not clear, but its occurrence has been linked to obesity. In addition, the following risk factors increase the likelihood of developing kidney cancer:

- Smoking (smoking doubles the risk of developing kidney cancer)
- High blood pressure
- Treatment for kidney failure (i.e., long-term dialysis)
- Inherited syndromes such as Von Hippel-Lindau disease
- Occupational exposure to asbestos or cadmium

Trends in Incidence in California, 1988 through 2013

Incidence rates of kidney cancer increased significantly from 1988 to 2008 and stabilized thereafter. The pattern of increased incidence until 2008-2009, followed by a levelling off, was evident in rates among all groups examined. The only exception was among persons 22 to 44 years of age, for whom incidence rates continued to increase significantly until 2013 (APC = 5.3% between 1996 and 2013).

Incidence rates also increased significantly among all racial/ethnic groups, particularly after the late 1990s, with APCs ranging from 3.7% (whites) to 4.8% (African Americans). Incidence rates stabilized after 2007–2009 in all racial/ethnic groups. For Asian/Pacific Islanders, incidence rates remained unchanged after 2004.

The initial increase in the incidence of kidney cancer has been attributed mostly to a higher use of abdominal diagnostic imaging for unrelated conditions, although the increase in obesity may have contributed to the trend.⁸

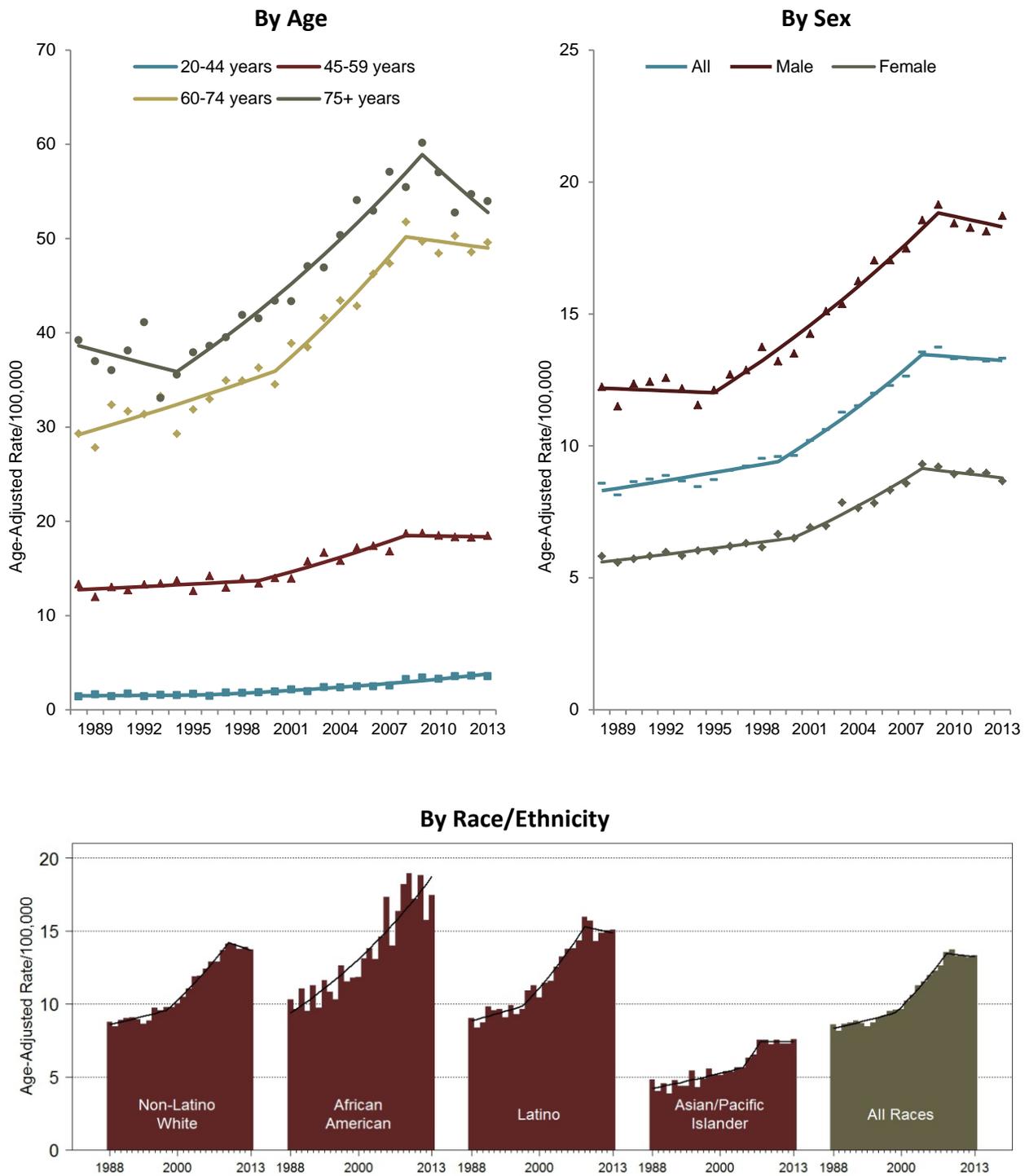
Kidney Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-1999	1.2	↑	0.7, 1.7	14.0
	1999-2008	4.1	↑	3.4, 4.7	43.6
	2008-2013	-0.3		-1.4, 0.8	-1.5
Age					
20-44	1988-1996	0.8		-2.0, 3.7	6.6
	1996-2013	5.3	↑	4.6, 6.0	140.6
45-59	1988-1999	0.7		-0.3, 1.6	8.0
	1999-2008	3.4	↑	2.2, 4.6	35.1
	2008-2013	-0.2		-2.2, 1.9	-1.0
60-74	1988-2000	1.7	↑	1.0, 2.5	22.4
	2000-2008	4.3	↑	2.9, 5.7	40.0
	2008-2013	-0.5		-2.3, 1.4	-2.5
75+	1988-1994	-1.2		-3.7, 1.4	-7.0
	1994-2009	3.4	↑	2.8, 3.9	65.1
	2009-2013	-2.7		-5.8, 0.4	-10.4
Sex					
Male	1988-1995	-0.2		-1.5, 1.2	-1.4
	1995-2009	3.3	↑	2.8, 3.7	57.5
	2009-2013	-0.7		-2.6, 1.3	-2.8
Female	1988-2000	1.3	↑	0.9, 1.9	16.8
	2000-2008	4.3	↑	3.4, 5.2	40.0
	2008-2013	-0.8		-2.1, 0.5	-3.9
Race/Ethnicity					
Non-Latino White	1988-1998	1.2	↑	0.5, 1.8	12.7
	1998-2009	3.7	↑	3.1, 4.2	49.1
	2009-2013	-0.9		-2.8, 1.1	-3.6
African American	1988-2000	1.7	↑	0.1, 3.4	22.4
	2000-2009	4.8	↑	2.5, 7.2	52.5
	2009-2013	-2.3		-7.7, 3.3	-8.9
Latino	1988-1997	1.3		-0.3, 2.8	12.3
	1997-2008	4.1	↑	3.2, 5.0	55.6
	2008-2013	-0.6		-2.3, 1.3	-3.0
Asian/Pacific Islander	1988-2004	1.9	↑	1.0, 2.8	35.1
	2004-2007	9.2		-5.2, 25.7	30.2
	2007-2013	0.2		-1.8, 2.2	1.2

↑ Statistically significant increase ↓ Statistically significant decrease

Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Trends in Age-Adjusted Incidence Rates for Kidney Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Liver Cancer

In 2013, 3,642 adult Californians were diagnosed with liver cancer, and nearly 2,500 died from it. The main known cause of liver cancer is chronic infection with hepatitis B or hepatitis C viruses. Obesity and associated diabetes or insulin resistance syndrome is also recognized as a risk factor for the disease. In addition, the following risk factors increase the likelihood of developing liver cancer:

- Cirrhosis (from heavy alcohol use)
- Exposure to aflatoxin (e.g., through consumption of mold-contaminated grains or nuts)

Trends in Incidence in California, 1988 through 2013

The overall incidence rate of liver cancer increased significantly by 5.1% per year from 1988 through 2006, and by 1.4% per year thereafter. The increase in rates was evident in all age groups, although there are signs that the increase has slowed. Among persons 20 to 59 years of age, incidence rates declined after the late 2000s, although the trend was statistically significant only among persons 20 to 44 years of age. Among persons between the age of 60 and 74 years, incidence rates increased significantly over time, by 5.9% per year between 1988-1999, and then by 3.3% per year until 2013. For those over age 75, rates increased by 4.1% per year until 2008, and then were unchanged.

Incidence rates increased significantly in both sexes and in all racial/ethnic groups. As noted above, rates are still increasing but at a slower pace. The only exception was Asian/Pacific Islanders, for whom the incidence of liver cancer has been the highest among all racial/ethnic groups. Incidence rates for Asian/Pacific Islanders declined significantly by 4.6% after 2007. With the increasing trends, rates in all groups are now similar to those for African Americans and Latinos.

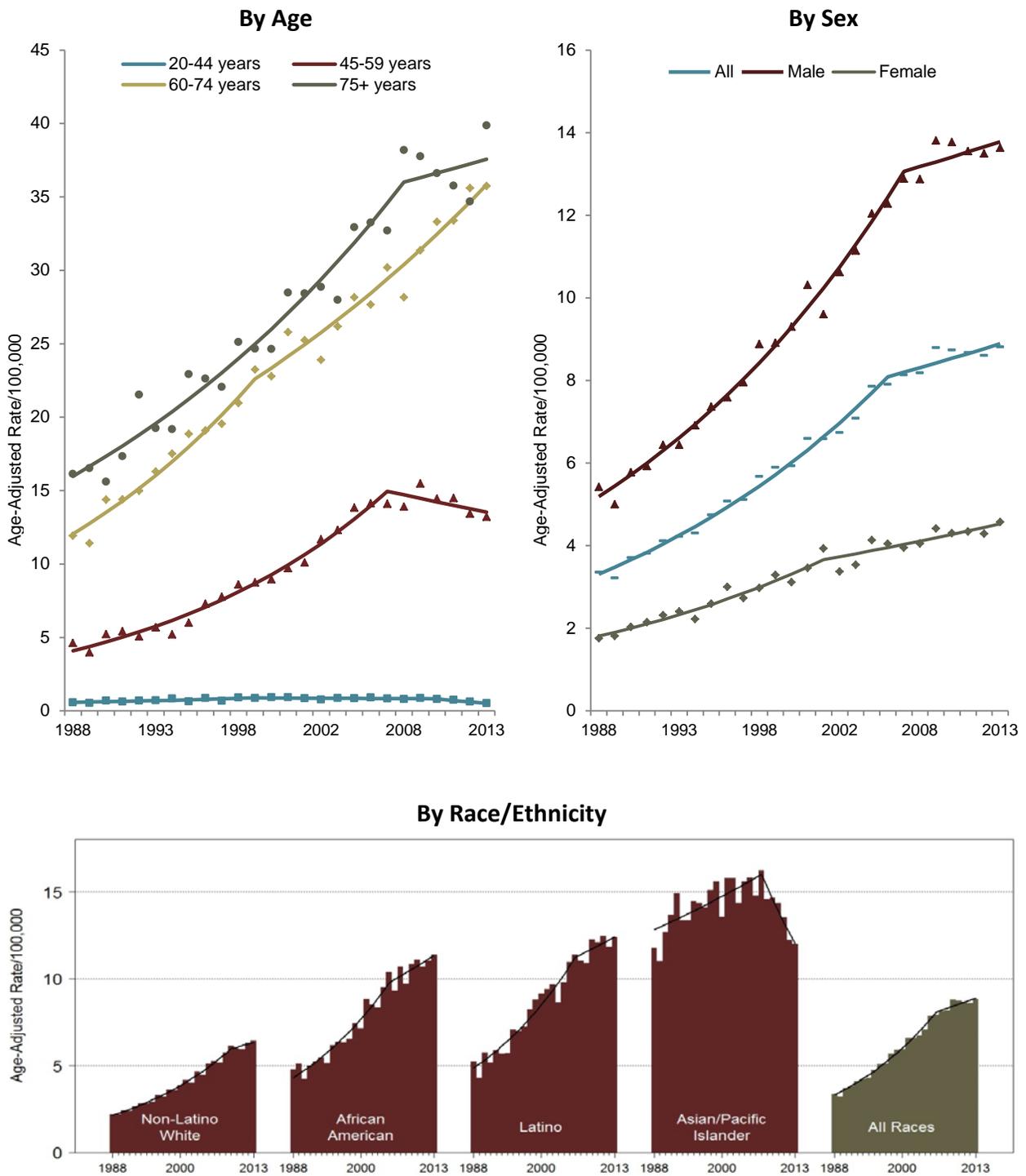
Liver Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2006	5.1	↑	4.8, 5.5	144.8
	2006-2013	1.4	↑	0.4, 2.3	10.2
Age					
20-44	1988-1999	4.0	↑	2.0, 6.0	53.9
	1999-2010	-0.6		-2.5, 1.3	-6.4
	2010-2013	-14.5	↓	-26.1, -1.0	-37.5
45-59	1988-2007	7.1	↑	6.4, 7.7	268.1
	2007-2013	-1.6		-3.6, 0.4	-9.2
60-74	1988-1999	5.9	↑	4.8, 7.0	87.9
	1999-2013	3.3	↑	2.9, 3.8	57.5
75+	1988-2008	4.1	↑	3.6, 4.7	123.4
	2008-2013	0.8		-2.0, 3.8	4.1
Sex					
Male	1988-2007	5.0	↑	4.7, 5.3	152.7
	2007-2013	0.9		-0.3, 2.1	5.5
Female	1988-2002	5.2	↑	4.3, 6.2	103.3
	2002-2013	2.0	↑	1.1, 2.9	24.3
Race/Ethnicity					
Non-Latino White	1988-2009	5.1	↑	4.8, 5.4	184.2
	2009-2013	1.5		-0.9, 3.9	6.1
African American	1988-2005	5.0	↑	4.2, 5.7	129.2
	2005-2013	1.9	↑	0.5, 3.3	16.3
Latino	1988-2001	5.7	↑	4.3, 7.2	105.6
	2001-2013	2.5	↑	1.7, 3.4	34.5
Asian/Pacific Islander	1988-2007	1.2	↑	0.6, 1.7	25.4
	2007-2013	-4.6	↓	-6.7, -2.6	-24.6

↑ Statistically significant increase ↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Liver Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Multiple Myeloma

Multiple myeloma is a cancer that forms in plasma cells, a type of white blood cell that produces antibodies to fight infections. In 2013, 2,126 adult Californians developed multiple myeloma and 1,139 died from the disease. Compared with other racial/ethnic groups, incidence rates are higher among African Americans. The cause of multiple myeloma is unclear, but its occurrence has been linked to obesity. In addition, the following risk factors increase the likelihood of developing multiple myeloma:

- Increased age
- Exposure to ionizing radiation

Trends in Incidence in California, 1988 through 2013

The overall incidence rate of multiple myeloma did not significantly change during the study period. Rates increased significantly by 1.2% per year among persons between the age of 20 and 44 and by 0.7% per year among those between the age of 45 and 59; among other age groups rates remained unchanged.

Among males, incidence rates increased slightly but significantly (by 0.6% per year) throughout the study period. Among females, incidence rates did not increase and declined significantly by 5.8% per year after 2010. Slight but significant increases in the incidence of multiple myeloma between 1988 and 2013 were detected among African Americans (APC = 0.5) and Latinos (APC = 0.4). Among whites, rates increased until 2011, but have since stabilized. Incidence rates among Asian/Pacific Islanders remained unchanged.

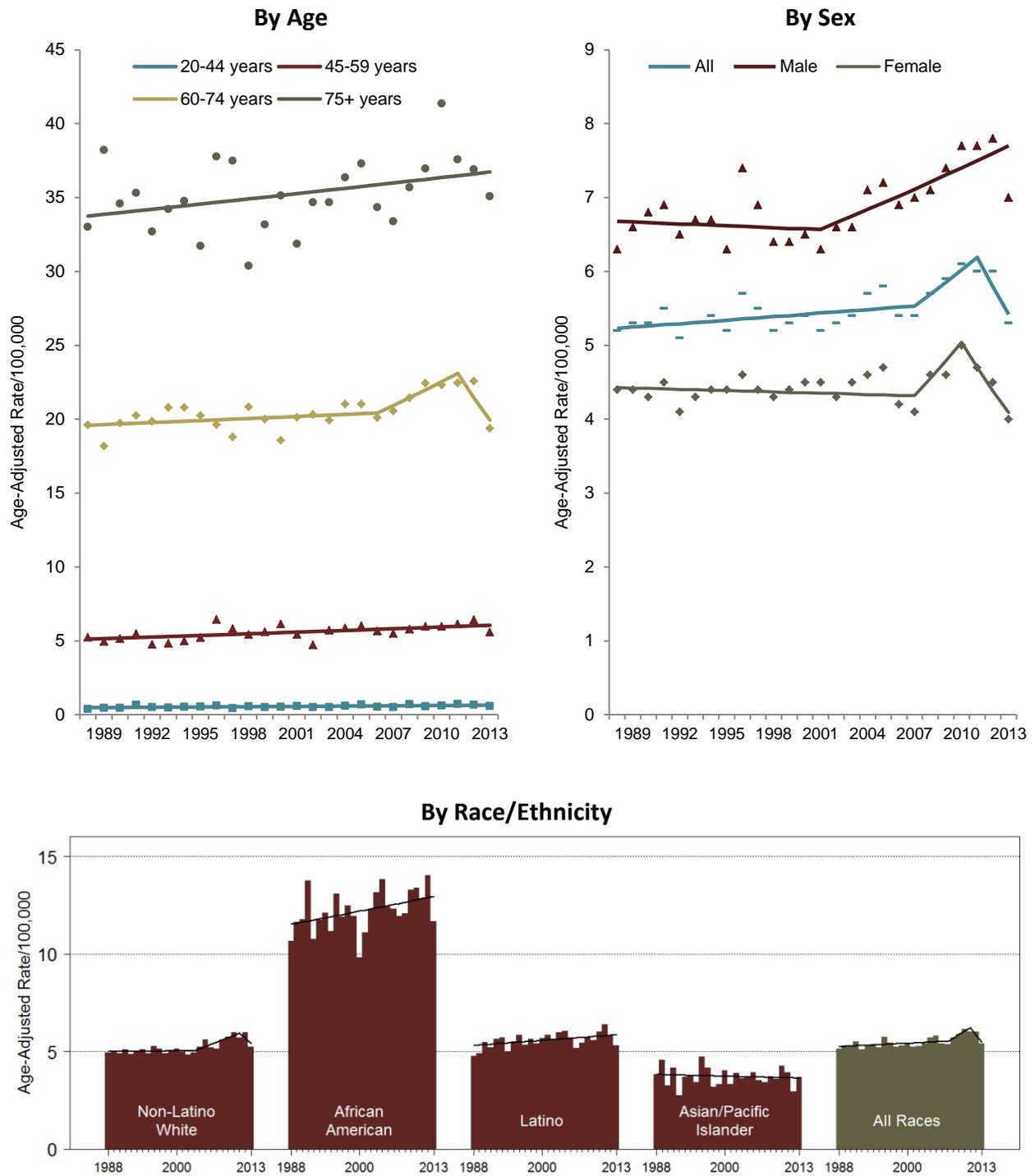
Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013: Multiple Myeloma

Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2007	0.3		0.0, 0.6	5.9
	2007-2011	3.0		-1.1, 7.3	12.6
	2011-2013	-6.1		-13.3, 1.7	-11.8
Age					
20-44	1988-2013	1.2	↑	0.4, 1.9	34.7
45-59	1988-2013	0.7	↑	0.3, 1.1	19.1
60-74	1988-2006	0.2		-0.1, 0.6	3.7
	2006-2011	2.5		-0.7, 5.8	13.1
	2011-2013	-7.1		-15.3, 1.9	-13.7
75+	1988-2013	0.3		0.0, 0.7	7.8
Sex					
Male	1988-2013	0.6	↑	0.4, 0.9	16.1
Female	1988-2007	0.1		-0.2, 0.3	1.9
	2007-2010	4.0		-4.6, 13.3	12.5
	2010-2013	-5.8	↓	-9.8, -1.7	-16.4
Race/Ethnicity					
Non-Latino White	1988-2003	0.1		-0.4, 0.5	1.5
	2003-2011	2.1	↑	0.9, 3.4	18.1
	2011-2013	-4.7		-12.9, 4.2	-9.2
African American	1988-2013	0.5	↑	0.0, 0.9	13.3
Latino	1988-2013	0.4	↑	0.1, 0.7	10.5
Asian/Pacific Islander	1988-2013	-0.2		-0.9, 0.5	-4.9

↑ Statistically significant increase ↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Multiple Myeloma in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Ovary Cancer

Ovarian cancer is the most fatal of all female reproductive system cancers. In 2013, 2,366 females in California developed ovarian cancer, and 1,556 died from it. The cause of ovarian cancer is not known, but its occurrence has been linked to obesity. In addition, the following risk factors increase the risk of developing ovarian cancer:

- Increased age (most ovarian cancers develop after menopause)
- Inherited BRCA1 and BRCA2 genetic mutations, or non-polyposis colon cancer genes
- Personal history of breast, uterus or colorectal cancer
- Family history of ovarian, breast, or colorectal cancer
- Use of estrogen hormone replacement therapy after menopause

Trends in Incidence in California, 1988 through 2013

The overall incidence of ovarian cancer declined significantly, by 1.1% per year until 2008 and by 2.1% per year thereafter. Rates declined significantly among all age groups, with APCs ranging from -0.8% to -2.9%, except for females between the age of 20 and 44 years after 2006.

Incidence rates also declined significantly among all racial/ethnic groups over time. Rates decreased by 1.1% (1988-2009) and 2.9% (2009-2013) per year among whites, by 0.9% per year among African Americans, and by 0.5% per year among Latinas and Asian/Pacific Islanders. Although obesity rates have increased over time, it is possible that the use of oral contraceptives, which is known to reduce the risk of ovarian cancer, has contributed to the decline in the incidence of ovarian cancer.^{9, 10}

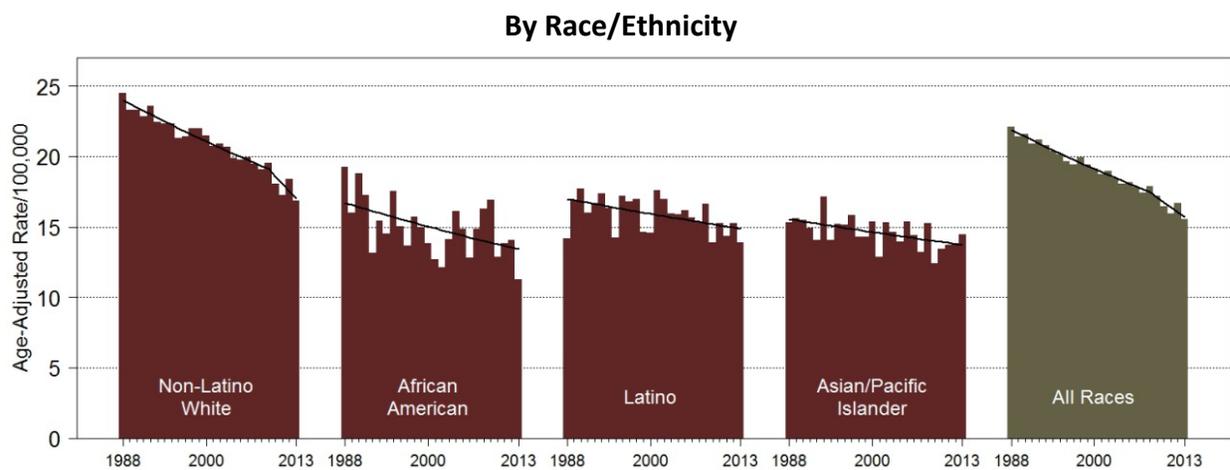
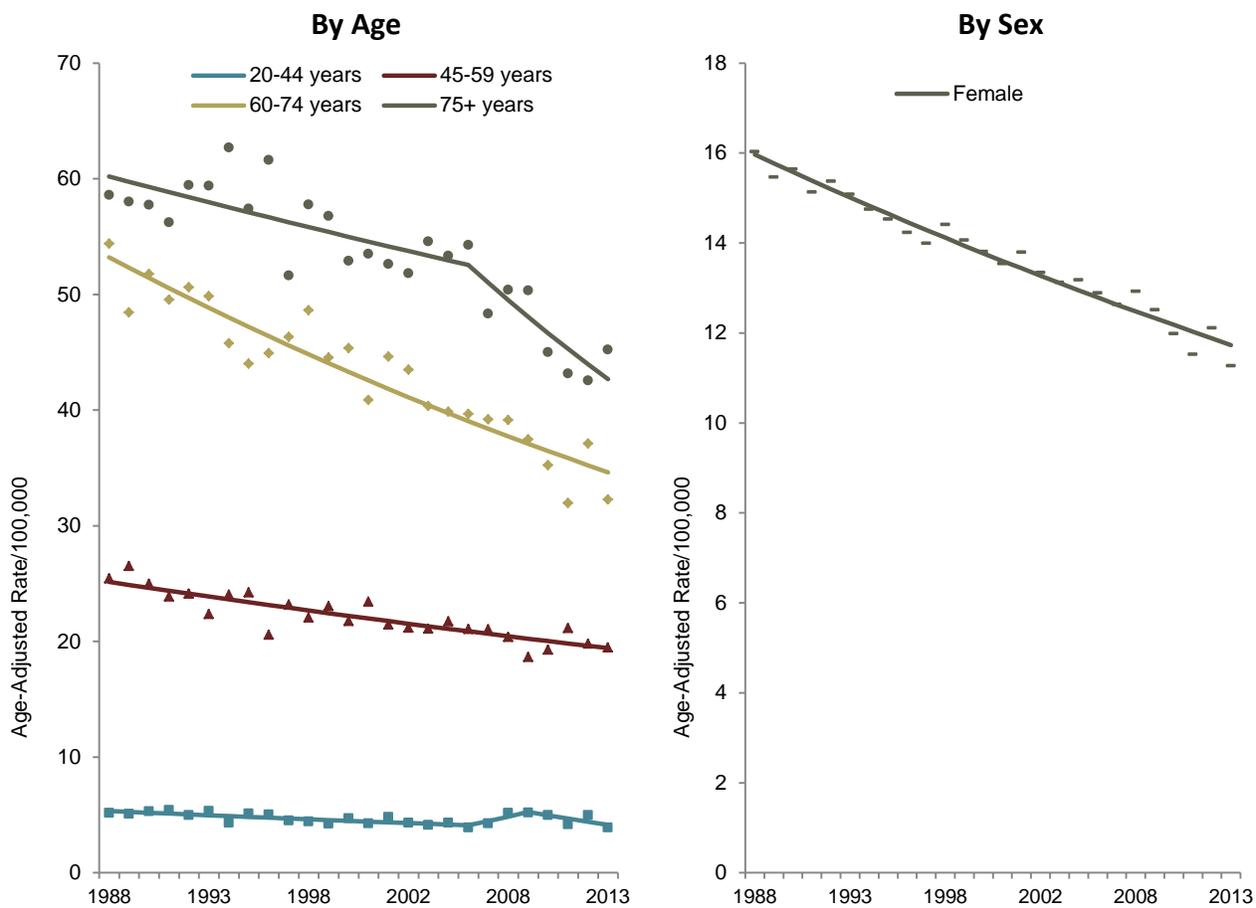
Ovary Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Race/Ethnicity and Sex in California, 1988-2013.

Race/Ethnicity	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2008	-1.1	↓	-1.3, -1.0	-19.8
	2008-2013	-2.1	↓	-3.0, -1.1	-10.1
Age					
20-44	1988-2006	-1.4	↓	-2.1, -0.8	-22.4
	2006-2009	8.5		-11.5, 33.1	27.7
	2009-2013	-5.8		-11.8, 0.6	-21.3
45-59	1988-2013	-1.0	↓	-1.3, -0.8	-22.2
60-74	1988-2013	-1.7	↓	-2.0, -1.4	-34.9
75+	1988-2006	-0.8	↓	-1.2, -0.3	-13.5
	2006-2013	-2.9	↓	-4.7, -1.1	-18.6
Race/Ethnicity					
Non-Latino White	1988-2009	-1.1	↓	-1.2, -0.9	-20.7
	2009-2013	-2.9	↓	-4.9, -0.8	-11.1
African American	1988-2013	-0.9	↓	-1.5, -0.3	-20.2
Latino	1988-2013	-0.5	↓	-0.9, -0.2	-11.8
Asian/Pacific Islander	1988-2013	-0.5	↓	-0.8, -0.1	-11.8

↑ Statistically significant increase ↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Ovary Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Pancreas Cancer

Cancer of the pancreas spreads rapidly and has a poor prognosis. In 2013, 4,528 adult Californians developed pancreatic cancer and 4,096 died from it. The cause of pancreatic cancer is still unknown, but its occurrence has been linked to obesity. In addition, the following risk factors increase the likelihood of developing cancer of the pancreas:

- Smoking (smoking substantially increases the risk of developing pancreatic cancer)
- Long term diabetes
- Chronic inflammation of the pancreas (i.e., chronic pancreatitis)
- Family history of pancreatic, colon, breast or ovarian cancer
- Cirrhosis of the liver

Trends in Incidence in California, 1988 through 2013

The overall incidence of pancreatic cancer increased significantly by 1.4% per year from 1999 until 2006, after which rates stabilized. There was variability in trends by age and time period, but since 1996, incidence rates significantly increased among persons 20 to 44 years of age (APC = 1.2) and among those 60 to 74 years old (APC = 0.6%).

Incidence rates remained unchanged among females. Among males, rates increased slightly but significantly since 1996 (APC = 0.6). Trends by racial/ethnic group showed that among Asian/Pacific Islanders, rates increased by 1.% per year since 1993. Among Latinos, incidence rates did not change during the entire study period, while among whites rates stabilized after 2006. African Americans were the only racial/ethnic group with a small (APC = -0.5) but statistically significant decline in the incidence of pancreatic cancer in California.

Pancreas Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

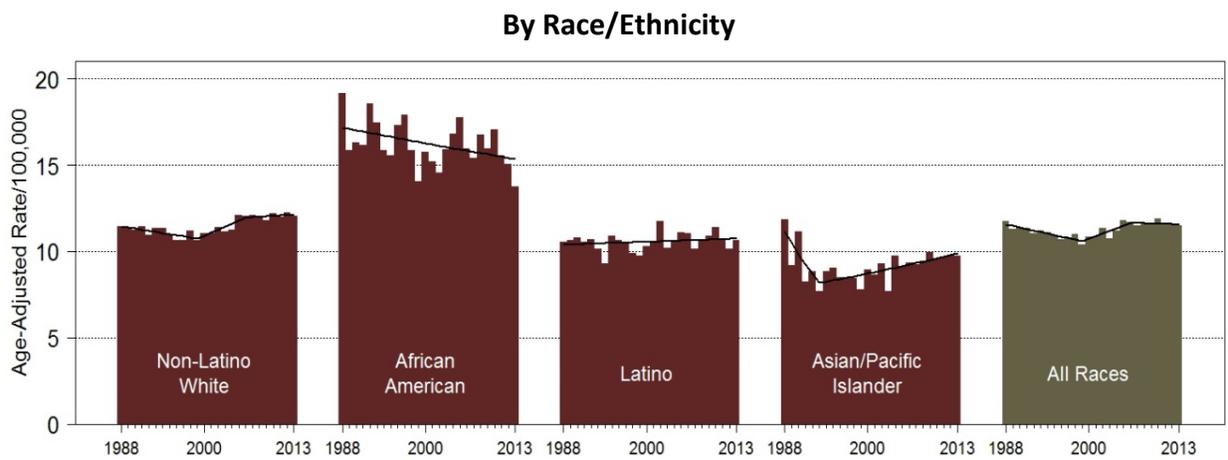
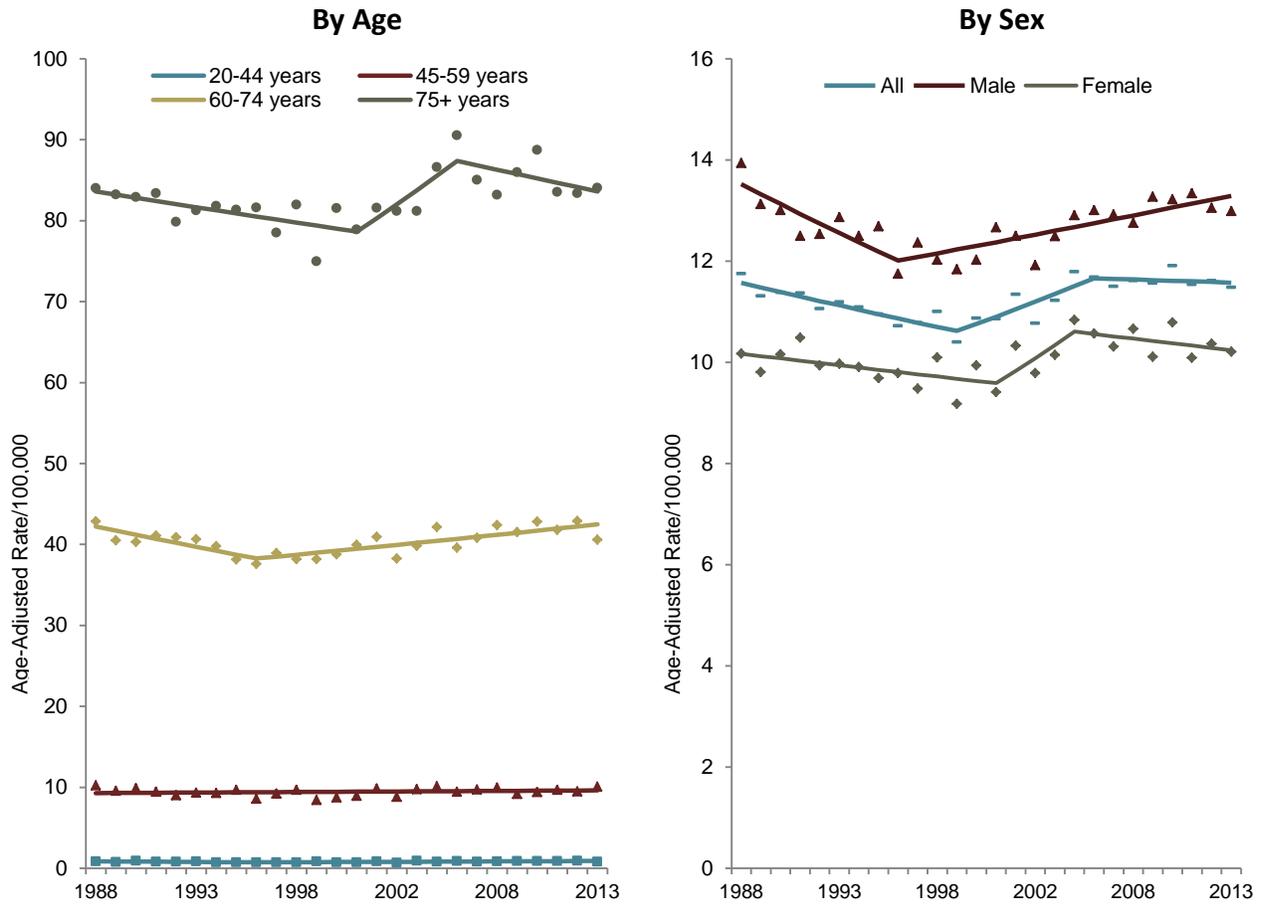
Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-1999	-0.8	↓	-1.2, -0.4	-8.5
	1999-2006	1.4	↑	0.5, 2.3	10.2
	2006-2013	-0.1		-0.7, 0.5	-0.7
Age					
20-44	1988-1996	-2.0		-4.8, 0.7	-14.9
	1996-2013	1.2	↑	0.4, 2.1	22.5
45-59	1988-2013	0.1		-0.1, 0.4	2.5
60-74	1988-1996	-1.2	↓	-2.1, -0.4	-9.2
	1996-2013	0.6	↑	0.4, 0.9	10.7
75+	1988-2001	-0.5	↓	-0.9, 0.0	-6.3
	2001-2006	2.1		-0.1, 4.4	11.0
	2006-2013	-0.6		-1.5, 0.3	-4.1
Sex					
Male	1988-1996	-1.5	↓	-2.3, -0.7	-11.4
	1996-2013	0.6	↑	0.4, 0.8	10.7
Female	1988-2001	-0.5		-0.9, 0.0	-6.3
	2001-2005	2.6		-1.5, 6.9	10.8
	2005-2013	-0.4		-1.3, 0.4	-3.2
Race/Ethnicity					
Non-Latino White	1988-1999	-0.6	↓	-1.0, -0.2	-6.4
	1999-2006	1.5	↑	0.5, 2.6	11.0
	2006-2013	0.2		-0.6, 0.9	1.4
African American	1988-2013	-0.5	↓	-0.8, -0.1	-11.8
Latino	1988-2013	0.1		-0.1, 0.4	2.5
Asian/Pacific Islander	1988-1993	-6.1	↓	-11.4, -0.4	-27.0
	1993-2013	1.0	↑	0.5, 1.4	22.0

↑ Statistically significant increase

↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Pancreas Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Stomach Cancer

In 2013, 2,899 adult Californians were diagnosed with stomach cancer and 1,544 died from it. Most stomach cancers are diagnosed in people over 70, and males are much more likely to develop the disease than females. The cause of stomach cancer is not clear, but its occurrence has been linked to obesity. In addition, the following risk factors increase the likelihood of developing stomach cancer:

- Diet high in salty, smoked, or pickled foods
- Infection with *Helicobacter pylori*
- Chronic atrophic gastritis
- Smoking
- Heavy alcohol use
- Inherited cancer syndromes such as hereditary non-polyposis colorectal cancer and familial adenomatous polyposis

Trends in Incidence in California, 1988 through 2013

Since 1988, the overall incidence rate of stomach cancer declined significantly by 1.2% per year, or by 26% over the entire period. Incidence rates decreased significantly in most age groups, except for persons 20 to 44 years of age, for whom rates increased slightly but significantly since 1988 (APC = 0.4). Among those between 45 and 59 years of age, incidence rates declined by 2.4% per year until 2000, when rates stabilized. Incidence rates also declined significantly by 1.4% and 1.5% per year among persons 60 to 74 years of age and among those age 75 and older, respectively.

During the study period, incidence rates significantly declined, among males by 1.6% per year and among females by 0.8% per year. Incidence rates declined significantly in all racial/ethnic groups, except whites since 2005. The overall percent decline in rates among non-whites ranged from 31.5% among Latinos to 49.6% among Asian/Pacific Islanders.

Despite the increase in obesity rates, decreases in smoking and in the prevalence of *H. pylori* infection are likely to have contributed to the declining trends in stomach cancer.¹¹

Stomach Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

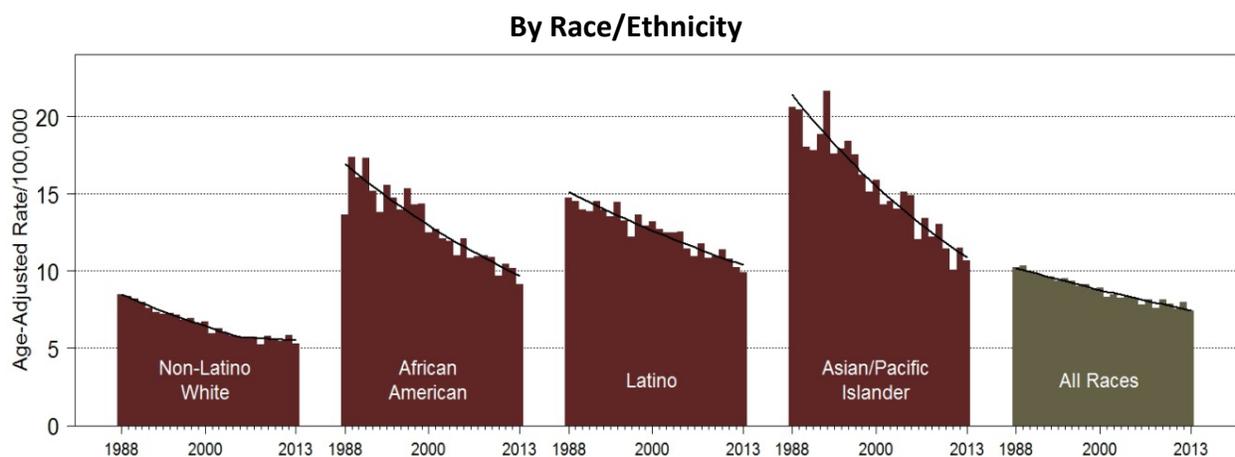
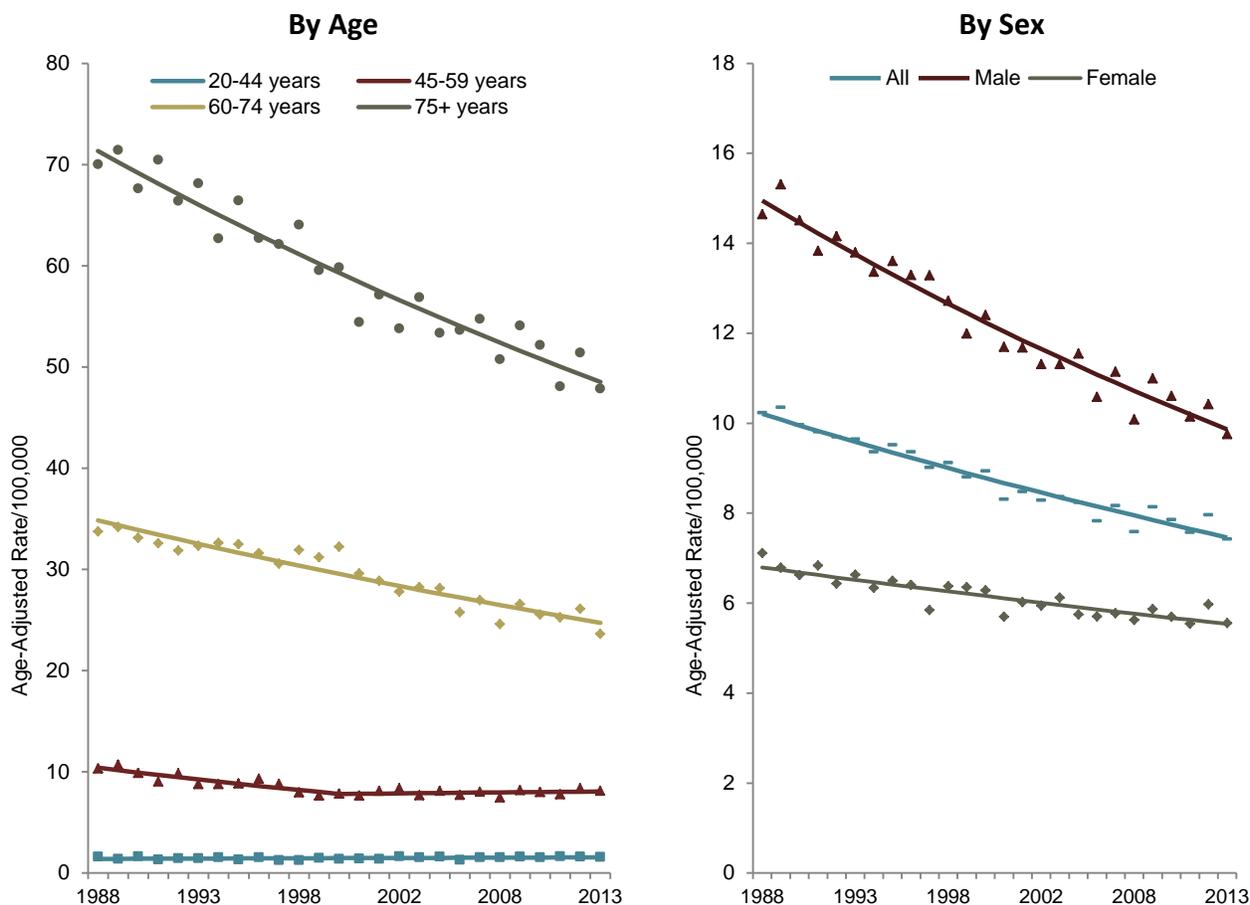
Demographics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-2013	-1.2	↓	-1.4, -1.1	-26.1
Age					
20-44	1988-2013	0.4	↑	0, 0.9	10.5
45-59	1988-2000	-2.4	↓	-3.1, -0.4	-25.3
	2000-2013	0.2		-0.4, 0.8	2.6
60-74	1988-2013	-1.4	↓	-1.5, 1.2	-29.7
75+	1988-2013	-1.5	↓	-1.7, 1.4	-31.5
Sex					
Male	1988-2013	-1.6	↓	-1.8, -1.5	-33.2
Female	1988-2013	-0.8	↓	-1.0, -0.6	-18.2
Race/Ethnicity					
Non-Latino White	1988-2005	-2.3	↓	-2.6, -2.0	-32.7
	2005-2013	-0.5		-1.6, 0.5	-3.9
African American	1988-2013	-2.2	↓	-2.6, -1.9	-42.7
Latino	1988-2013	-1.5	↓	-1.7, -1.3	-31.5
Asian/Pacific Islander	1988-2013	-2.7	↓	-3.0, -2.3	-49.6

↑ Statistically significant increase

↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Stomach Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Thyroid Cancer

In 2013, 4,887 adults were diagnosed with thyroid cancer in California, and 248 died from it. Thyroid cancer is more often diagnosed after age 45, and women are more likely to develop the disease than men. The cause of thyroid cancer is not known, but its occurrence has been linked to obesity. In addition, the following factors increase the risk of developing thyroid cancer:

- History of radiation treatment of the head or neck
- Exposure to ionizing radiation (e.g., radioactive fallout from atomic weapons or nuclear power plant accidents)
- Inherited genetic syndromes such as multiple endocrine neoplasia and familial adenomatous polyposis
- Mutation to the RET proto-oncogene (associated with medullary thyroid cancer)

Trends in Incidence in California, 1988 through 2013

The overall incidence rate of thyroid cancer increased significantly before 2010 but seems to have stabilized thereafter (APCs = 2.5 until 1999 and 5.9 from 1999 through 2010). Increases in incidence rates were detected in all age groups, although not all temporal changes in rates were statistically significant.

Incidence rates increased significantly in both males and females, particularly after the late 1990s, but seem to have slowed around 2009-2010. Increases in rates were also detected in all racial/ethnic groups, although rates among whites stabilized around 2010. Statistically significant rate increases ranged from 1.8% per year among Asian/Pacific Islanders to 6.2% per year among whites.

The increase in the incidence of thyroid cancer has been the subject of much debate. While the increased incidence of the disease has been partially attributed to higher detection, previous findings suggest that changes in diagnostic technology alone do not account for the observed trends.^{12, 13} Therefore, it is possible that obesity has also contributed to the increased occurrence of thyroid cancer.

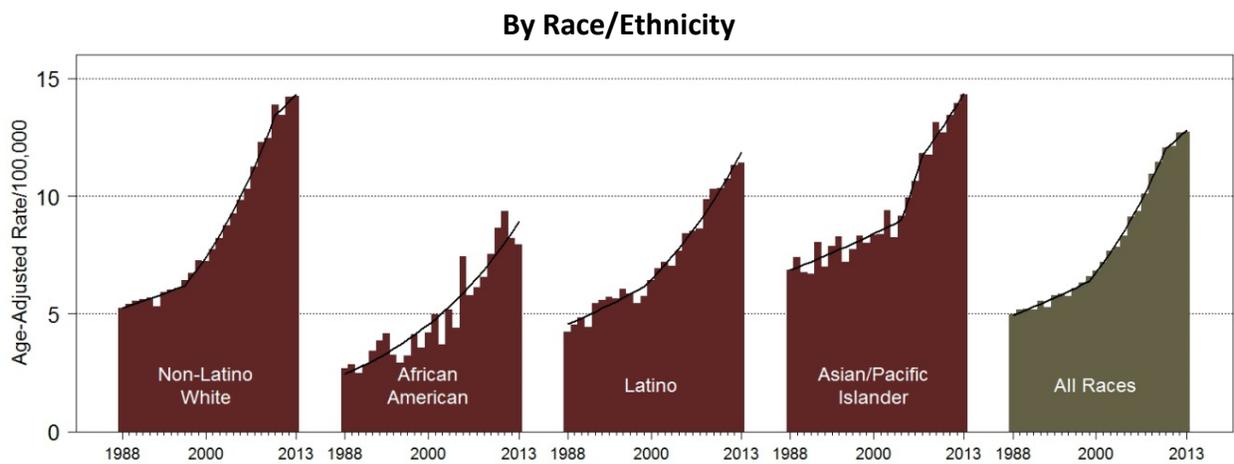
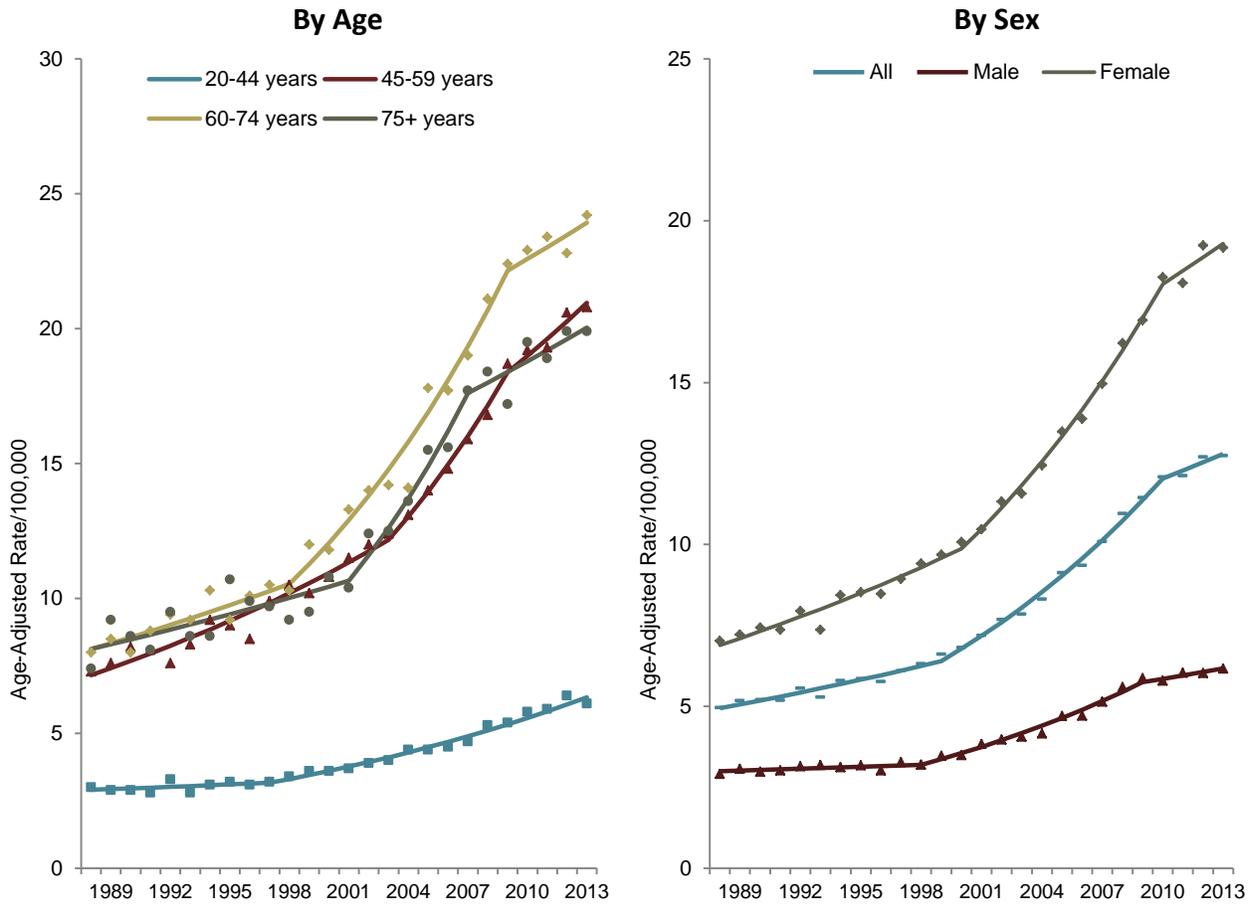
Thyroid Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Age, Sex and Race/Ethnicity in California, 1988-2013.

Demographics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-1999	2.5	↑	1.9, 3.0	31.2
	1999-2010	5.9	↑	5.5, 6.4	87.9
	2010-2013	2.0		-0.2, 4.2	6.1
Age					
20-44	1988-1996	1.2		-0.2, 2.6	10.0
	1996-2013	4.6		4.2, 4.9	114.8
45-59	1988-1997	2.6		1.3, 3.9	26.0
	1997-2010	6.1		5.6, 6.7	115.9
	2010-2013	2.3		-1.1, 5.7	7.1
60-74	1988-1999	2.7		1.2, 4.2	34.1
	1999-2008	7.8		6.0, 9.7	96.6
	2008-2013	2.3		-0.3, 4.9	12.0
75+	1988-2000	0.9		-0.7, 2.6	11.4
	2000-2007	7.3		3.6, 11.1	63.8
	2007-2013	2.5		-0.4, 5.5	16.0
Sex					
Male	1988-1998	0.7		-0.1, 1.5	7.2
	1998-2009	5.5	↑	4.9, 6.1	80.2
	2009-2013	1.7		-0.2, 3.6	7.0
Female	1988-2000	3.2	↑	2.6, 3.7	45.9
	2000-2010	6.3	↑	5.7, 6.9	84.2
	2010-2013	2.3		-0.3, 4.9	7.1
Race/Ethnicity					
Non-Latino White	1988-1997	1.9	↑	1.2, 2.7	18.5
	1997-2010	6.2	↑	5.8, 6.6	118.6
	2010-2013	2.1		-0.6, 4.8	6.4
African American	1988-2013	5.4	↑	4.5, 6.3	272.4
Latino	1988-1999	2.9	↑	1.5, 4.2	37.0
	1999-2013	4.8	↑	4.2, 5.3	92.8
Asian/Pacific Islander	1988-2004	1.8	↑	1.1, 2.5	33.0
	2004-2007	9.1		-2.7, 22.4	29.9
	2007-2013	3.4	↑	1.8, 5.0	22.2

↑ Statistically significant increase ↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Thyroid Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
 Institute for Population Health Improvement, UC Davis Health

Uterine Corpus Cancer

Cancer of the uterine corpus, or endometrium, is the most common invasive cancer of the female reproductive system. In 2013, 5,033 California females were diagnosed with the disease, and almost 1,000 died from it. Endometrial cancer arises in the inner lining of the uterus and is more likely to be diagnosed after menopause. Cases in which it was not specified if the tumor originated in the uterine corpus were excluded from the analysis in this report.

The cause of endometrial cancer is not clear, but its occurrence has been linked to obesity. In addition, the following factors increase the risk of developing endometrial cancer:

- Exposure to high levels of the hormone estrogen (e.g., late menopause and/or early start of menses, never being pregnant, or estrogen hormone replacement therapy after menopause)
- Hereditary non-polyposis colon cancer syndrome
- Polycystic ovary syndrome

Trends in Incidence in California, 1988 through 2013

The overall incidence rate of uterine corpus cancer has increased significantly by 1.5% per year since 2003. Incidence rates increased among all age groups, especially during the last ten years. The only exception was among women aged 75 years and older, for whom a decline in rates stabilized after 2004.

Incidence rates of uterine cancer significantly increased in all racial/ethnic groups, although among whites only after 2003. Among Latinas, rates increased by 4.5% per year after 2008, while among African Americans and Asian/Pacific Islanders incidence rates increased during the entire period, by 1.9% and 2.0% per year, respectively.

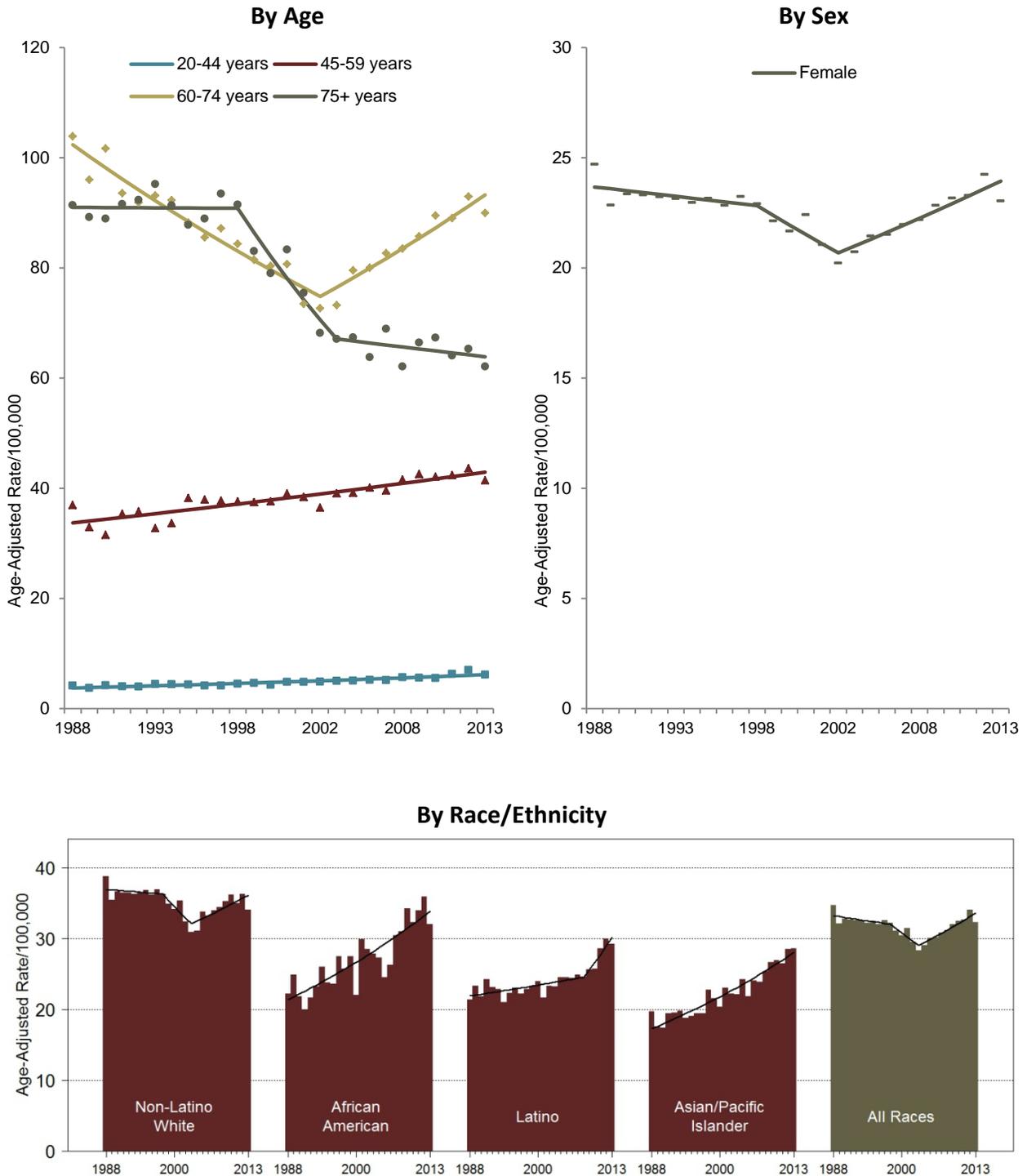
Uterine Corpus Cancer: Annual Percent Change (APC) and Overall Percent Change in Age-Adjusted Incidence Rates by Race/Ethnicity and Sex in California, 1988-2013.

Characteristics	Time Period	APC		APC 95% Confidence Interval	Overall % Change
Overall	1988-1998	-0.4		-0.9, 0.1	-3.9
	1998-2003	-2.0		-3.9, 0.0	-9.6
	2003-2013	1.5	↑	1.0, 1.9	16.1
Age					
20-44	1988-2013	2.0	↑	1.7, 2.3	64.1
45-59	1988-2013	1.0	↑	0.8, 1.2	28.2
60-74	1988-2003	-2.1	↓	-2.4, -1.7	-27.3
	2003-2013	2.2	↑	1.7, 2.8	24.3
75+	1988-1998	0.0		-0.8, 0.8	0.0
	1998-2004	-4.9	↓	-7.1, -2.7	-26.0
	2004-2013	-0.5		-1.5, 0.5	-4.4
Race/Ethnicity					
Non-Latino White	1988-1998	-0.2		-0.9, 0.5	-2.0
	1998-2003	-2.4		-5.1, 0.4	-11.4
	2003-2013	1.2	↑	0.5, 1.9	12.7
African American	1988-2013	1.9	↑	1.4, 2.3	60.1
Latino	1988-2008	0.6	↑	0.2, 0.9	12.7
	2008-2013	4.2	↑	2.4, 6.2	22.8
Asian/Pacific Islander	1988-2013	2.0	↑	1.7, 2.2	64.1

↑ Statistically significant increase ↓ Statistically significant decrease

*Data Source: California Cancer Registry, California Department of Public Health
Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
Institute for Population Health Improvement, UC Davis Health*

Trends in Age-Adjusted Incidence Rates for Uterine Corpus Cancer in California, 1988-2013



Data Source: California Cancer Registry, California Department of Public Health
 Prepared by the California Cancer Reporting and Epidemiologic Surveillance (CalCARES) Program,
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