California Cancer Facts & Figures 2014

A sourcebook for planning and implementation programs for cancer prevention and control

Searching for Causes & Cures
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CALIFORNIA CANCER REGISTRY
CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

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We are very pleased to present *California Cancer Facts & Figures 2014*, published by the American Cancer Society and the California Cancer Registry of the California Department of Public Health. Each year, we strive to provide the latest data on cancer incidence and mortality, as well as the strategies that will save more lives from the disease.

One of the most promising trends we have observed is a steady decline in the death rate from cancer in the US over the past two decades. The cancer mortality rate has fallen 20% from its peak in 1991, translating to more than 1.3 million cancer deaths avoided.

While we are making progress, there is still so much to be done. In 2014, scientists estimate that 155,920 Californians will be diagnosed with cancer and 56,230 will die of the disease. Prostate, breast, lung, and colorectal cancer will account for about half of all newly diagnosed cases and approximately 40% of all cancer deaths.

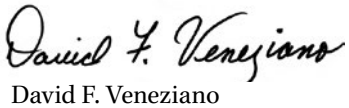
The American Cancer Society is working to finish the fight against cancer by helping people stay well and get well, find cures, and fight back. Last year, we exceeded our goal of enrolling 300,000 people, representing diverse communities across the country, in Cancer Prevention Study-3 (CPS-3). This American Cancer Society multi-year survey focuses on lifestyle, behavioral, environmental, and genetic factors that may cause or prevent cancer. Previous Society studies have been vital in improving our understanding of cancer risk factors, including proving the link between smoking and lung cancer. CPS-3 will help us identify new and emerging cancer risks so that we can save more lives in the future.

We hope that you will find *California Cancer Facts & Figures 2014* informative, and we urge you to join us in creating a world with less cancer and more birthdays.

Sincerely,

Lori G. Bremner
Chair of the Board, California Division

Kurt Snipes, PhD
President, California Division



David F. Veneziano
Executive Vice President, California Division

American Cancer Society®

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Basic Cancer Data for California

What is cancer?

Cancer is a large group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer is caused by both external factors (tobacco, infectious organisms, chemicals, and radiation) and internal factors (inherited mutations, hormones, immune conditions, and mutations that occur from metabolism). These causal factors may act together or in sequence to initiate or promote the development of cancer. Ten or more years often pass between exposure to external factors and detectable cancer. However, many cancers can be cured if detected and treated promptly, and the risk of many others can be greatly reduced by lifestyle changes, especially avoidance of tobacco. Cancer strikes at any age. In California, it kills more children from birth to age 14 than any other disease. Among adults, it occurs more frequently with advancing age.

Can cancer be prevented?

A substantial proportion of cancers could be prevented. All cancers caused by cigarette smoking and heavy use of alcohol could be prevented completely. The American Cancer Society estimates that in 2014 about 16,000 cancer deaths in California will be caused by tobacco use, and 1,700 cancer deaths will be related to excessive alcohol use, frequently in combination with tobacco use. The World Cancer Research Fund estimates that about one-quarter to one-third of the new cancer cases expected to occur in the US in 2014 will be related to overweight or obesity, physical inactivity, and poor nutrition, and thus could also be prevented. Certain cancers are related to infectious agents, such as human papillomavirus (HPV), hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), and *Helicobacter pylori (H. pylori)*; many of these cancers could be prevented through behavioral changes, vaccines, or antibiotics. Many of the 7,755 estimated melanomas that will be diagnosed in California in 2014 could be prevented by protecting skin from excessive sun exposure and avoiding indoor tanning.

Screening offers the ability for secondary prevention by detecting cancer early, before symptoms appear. Regular screening tests that allow the early detection and removal of precancerous growth are known to reduce mortality for cancers of the cervix, colon, and rectum. A heightened awareness of changes in the breast, skin, or testicles may also result in the detection of these tumors at earlier stages. Screening for colorectal (also known as colon and rectum cancer) and cervical cancers can actually prevent cancer by allowing for the detection and removal of precancerous lesions.

Early diagnosis can also save lives by identifying cancers when they require less extensive treatment and have better outcomes. Five-year relative survival rates for common cancers, such as breast, prostate, colon and rectum, cervix, and melanoma of the skin, are 93% to 100% if they are discovered before having spread beyond the organ where the cancer began. Following American Cancer Society cancer detection guidelines and encouraging others to do so can save lives. Please see Table 11. American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People on page 21.

How many people alive today have ever had cancer?

More than 1,382,200 Californians who are alive today have a history of cancer. Some of these individuals were cancer free, while others still had evidence of cancer and may have been undergoing treatment. "Cancer free" usually means that a patient has no evidence of disease and has the same life expectancy as a person who has never had cancer.

How many new cases are expected to occur in 2014?

In 2014, it is estimated that 155,920 Californians will be diagnosed with cancer. This estimate does not include carcinoma *in situ* (noninvasive cancer) of any site except urinary bladder, and does not include basal cell and squamous cell skin cancers, which are not required to be reported to cancer registries. This is equivalent to nearly 18 new cases every hour of every day.

How many people will die of cancer in 2014?

Cancer is the second leading cause of death in California, causing more than 56,000 deaths each year – about 153 people each day. Cancer is the second most common cause of death in California, exceeded only by heart disease, accounting for nearly 1 of every 4 deaths. Following American Cancer Society guidelines for cancer prevention will also lower the risk for other diseases such as heart disease, cerebrovascular disease, chronic lung disease, and diabetes.

How many people survive?

In the early 1900s, few cancer patients had any hope of long-term survival. In the 1930s, less than 1 in 5 was alive five years after treatment, in the 1940s it was 1 in 4, and in the 1960s it was 1 in 3. Today, more than 3 out of 5 cancer patients will be alive five years after diagnosis and treatment. The improvement in survival reflects both progress in diagnosing certain cancers at an earlier stage and improvements in treatment. It is estimated that nearly 105,000 Californians who are diagnosed with cancer this year will be alive in five years.

Survival statistics vary greatly by cancer type and stage at diagnosis. Relative survival compares survival among cancer patients to that of people not diagnosed with cancer who are of the same age, race, and sex. It represents the percentage of cancer patients who are alive after some designated time period (usually five years) relative to persons without cancer. It does not distinguish between patients who have been cured and those who have relapsed or are still in treatment. While five-year relative survival is useful in monitoring progress in the early detection and treatment of cancer, it does not represent the proportion of people who are cured permanently, since cancer deaths can occur beyond five years after diagnosis.

Although relative survival for specific cancer types provides some indication about the average survival experience of cancer patients in a given population, it may not predict individual prognosis and should be interpreted with caution. First, five-year relative survival rates for the most recent time period are based on patients who were diagnosed from 2002 to 2011 and thus do not reflect the most recent advances in detection and treatment. Second, factors that influence survival, such as treatment protocols, other illnesses, and biological and behavioral differences of individual cancers or people, cannot be taken into account in the estimation of relative survival rates.

How do cancer incidence rates in California compare to the rest of the United States?

Cancer rates for the US are estimated by the Surveillance, Epidemiology, and End Results (SEER) Program. The SEER Program registers cancer patients in geographic areas covering about 26% of the US population, including all of California. In 2006-2010, the overall cancer incidence rate in California was lower compared to the rest of the nation. California cancer incidence rates for Asian/Pacific Islanders, African Americans, and non-Hispanic whites were between 2 and 3% lower than the rest of the country. Hispanics in California had a nearly 5% lower incidence rate than other Hispanics in the nation. Some of the differences in rates may reflect difference in classifying the race/ethnicity of cancer cases between California and SEER.

Data Sources: California Cancer Registry

Expected Cases and Deaths

Expected California cases and deaths were estimated by the California Cancer Registry (CCR), California Department of Public Health (CDPH). These estimates will differ from those published by the American Cancer Society in *Cancer Facts & Figures 2014*, which are based on rates from the Surveillance, Epidemiology, and End Results (SEER) program.

Cancer Incidence and Mortality

Where not otherwise specified, cancer incidence data are from the most current data on the CCR. The CCR is a legally mandated, statewide, population-based cancer registry, implemented in 1988. Cancer mortality data are from the CDPH Center for Health Statistics and are based on the underlying cause of death.

California Behavioral Risk Factor Survey (BRFS), California Adult Tobacco Survey (CATS)

These surveys are conducted by the Survey Research Group (SRG), which is part of the Chronic Disease Surveillance and Research Branch. They are a collaboration between the Centers for Disease Control and Prevention, the Public Health Institute, and the CDPH. To monitor key health behaviors, approximately 8,500 randomly selected adults and 2,400 youth ages 12-17 are interviewed by telephone annually. Not all questions are asked each year; the most recent data available are presented. For more information on these and other SRG surveys, visit the SRG website at www.s-r-g.org.

CCR Acknowledgement and Disclaimer

The collection of cancer incidence data used in this study was supported by the California Department of Public Health as part of the statewide cancer reporting program mandated by California Health and Safety Code Section 103885; the National Cancer Institute's Surveillance, Epidemiology, and End Results Program under contract HHSN261201000140C awarded to the Cancer Prevention Institute of California, contract HHSN261201000035C awarded to the University of Southern California, and contract HSN261201000034C awarded to the Public Health Institute; and the Centers for Disease Control and Prevention's National Program of Cancer Registries, under agreement U58DP003862-01 awarded to the California Department of Public Health. The ideas and opinions expressed herein are those of the author(s) and endorsement by the State of California, Department of Public Health, the National Cancer Institute, and the Centers for Disease Control and Prevention or their Contractors and Subcontractors is not intended nor should be inferred.

Table 1. Expected Number of New Cases, Deaths, and Existing Cases of Common Cancers in California, 2014

Male	New Cases		Deaths		Existing Cases	
Prostate	22,080	28%	3,065	11%	259,900	41%
Lung	8,400	11%	6,680	23%	18,200	3%
Colon & Rectum	7,425	9%	2,705	9%	60,700	10%
Leukemia & Lymphoma	6,815	9%	2,610	9%	55,400	9%
Urinary Bladder	5,035	6%	1,010	3%	40,600	6%
All Cancers Combined	79,100	100%	29,015	100%	627,500	100%
Female	**New Cases**		**Deaths**		**Existing Cases**	
Breast	24,985	33%	4,245	16%	314,300	42%
Lung	8,040	10%	6,010	22%	21,800	3%
Colon & Rectum	6,835	9%	2,560	9%	61,200	8%
Uterus & Cervix	6,595	9%	1,340	5%	96,800	13%
Leukemia & Lymphoma	5,245	7%	2,005	7%	48,000	6%
All Cancers Combined	76,815	100%	27,215	100%	754,700	100%

Source: California Cancer Registry, California Department of Public Health. Excludes non-melanoma skin cancers and in situ cancers, except bladder. Deaths include persons who may have been diagnosed in previous years. These projections are offered as approximations, and should not be regarded as definitive. For more information, please visit the California Cancer Registry website at http://www.ccral.org.

California Statistics

- Cancer incidence rates in California declined by 9% from 1988 to 2011.
- Cancer mortality rates declined by 23% between 1988 and 2011. Mortality rates declined for all four major racial/ethnic groups in the state.
- Tobacco-related cancers continue to decline, including cancers of the lung and bronchus, larynx, oral cavity, stomach, and bladder. California has experienced a much larger decrease in lung cancer incidence rates than the rest of the US, in large part due to the success of the state's tobacco control initiative.
- The female breast cancer incidence rate in California has decreased by 7% from 1988 to 2011, but the mortality rate has decreased by 36%.
- Colon and rectum cancer incidence and mortality rates are declining sharply in most racial/ethnic groups.
- Cancer incidence in California is about the same or somewhat lower than elsewhere in the US for most types of cancer.
- Despite these improvements, nearly 1 out of every 2 Californians born today will develop cancer at some point in their lives, and it is likely that 1 in 5 will die of the disease.

Table 2. Leading Causes of Death in California, 2010

Cause	Deaths	Percent
Heart Disease	58,034	25%
Cancer	56,124	24%
Cerebrovascular Disease	13,566	6%
Chronic Lower Respiratory Disease	12,928	6%
Alzheimer's Disease	10,833	5%
Accidents	10,108	4%
Diabetes	7,027	3%
Influenza and Pneumonia	5,856	3%
Chronic Liver Disease	4,252	2%
Intentional Self-harm	3,835	2%
All Deaths	233,143	100%

Source: California Department of Public Health, Death Records. Prepared by the California Department of Public Health, California Cancer Registry.

Table 3. Expected New Cancer Cases and Deaths in California, 2014

	Expected Cases			Expected Deaths		
	Both Sexes*	Male	Female	Both Sexes*	Male	Female
All Sites	155,920	79,100	76,815	56,230	29,015	27,215
Oral Cavity and Pharynx	3,995	2,830	1,165	910	615	295
Digestive System	29,515	16,380	13,140	15,535	8,710	6,825
Esophagus	1,440	1,100	340	1,275	1,000	275
Stomach	2,810	1,700	1,110	1,550	890	660
Small Intestine	705	370	330	135	75	60
Colon Excluding Rectum	9,975	4,965	5,010	4,280	2,160	2,120
Rectum and Rectosigmoid	4,280	2,460	1,825	985	545	440
Anus, Canal and Anorectum	675	280	395	100	40	60
Liver and Intrahepatic Bile Duct	3,585	2,570	1,015	2,785	1,855	930
Gallbladder	430	130	295	245	65	180
Other Biliary	785	415	370	155	70	80
Pancreas	4,310	2,220	2,090	3,800	1,930	1,870
Retroperitoneum	130	75	60	25	15	10
Respiratory System	17,610	9,350	8,260	13,060	6,970	6,090
Nasal Cavity, Middle Ear	225	135	90	35	20	15
Larynx	865	725	140	290	235	55
Lung and Bronchus	16,440	8,400	8,040	12,690	6,680	6,010
Pleura	15	10	5	25	25	5
Bones and Joints	345	185	155	175	110	65
Soft Tissue Including Heart	1,250	715	530	475	255	220
Melanomas of the Skin	7,755	4,715	3,040	920	630	290
Other Non-Epithelial Skin	720	440	280	330	250	80
Breast	25,185	200	24,985	4,280	35	4,245
Female Genital System	9,535	0	9,535	3,035	0	3,035
Cervix Uteri	1,405	0	1,405	430	0	430
Corpus Uteri and Uterus, NOS**	5,190	0	5,190	910	0	910
Ovary	2,310	0	2,310	1,530	0	1,530
Vagina	145	0	145	50	0	50
Vulva	405	0	405	75	0	70
Male Genital System	23,320	23,320	0	3,155	3,155	0
Prostate	22,080	22,080	0	3,065	3,065	0
Testis	1,065	1,065	0	60	60	0
Penis	140	140	0	25	25	0
Urinary System	12,115	8,495	3,620	2,850	1,900	950
Urinary Bladder	6,595	5,035	1,560	1,450	1,010	435
Kidney and Renal Pelvis	5,350	3,420	1,935	1,335	855	480
Ureter	175	105	65	35	15	20
Eye and Orbit	300	160	140	55	30	25
Brain and Other Nervous System	2,225	1,250	975	1,615	905	710
Thyroid Gland	4,730	1,190	3,540	220	95	130
Other Endocrine, Thymus	270	145	125	105	60	45
Hodgkin Disease	920	515	405	145	85	55
Non-Hodgkin Lymphomas	6,725	3,795	2,930	2,105	1,195	910
Multiple Myeloma	2,110	1,210	900	1,130	620	505
Leukemias	4,415	2,505	1,910	2,370	1,330	1,040
Lymphocytic Leukemia	2,210	1,285	925	720	420	300
Acute Lymphocytic Leukemia	730	400	330	240	135	100
Chronic Lymphocytic Leukemia	1,345	800	545	435	255	175
Myeloid and Monocytic Leukemia	2,050	1,150	900	1,240	700	540
Acute Myeloid Leukemia	1,400	755	645	1,015	565	450
Acute Monocytic Leukemia	80	50	35	10	10	0
Chronic Myeloid Leukemia	510	310	195	125	70	55
Ill Defined/Unknown	3,195	1,675	1,520	3,760	2,065	1,695

Source: California Cancer Registry, California Department of Public Health. Excludes non-melanoma skin cancers and carcinoma *in situ*, except bladder. Deaths include persons who may have been diagnosed in previous years. These projections are offered as an approximation, and should not be regarded as definitive.
* Male and female cases and deaths do not sum up to the total because of rounding of numbers. ** NOS: Not otherwise specified.

Table 4. Expected New Cancer Cases by County, 2014

County	All	Breast	Prostate	Lung	Rectum	Bladder	Cervix	NHL*	Melanoma	Oral	Leukemia	Pancreas	Myeloma
Alameda	6,255	1,000	895	650	555	250	250	295	250	145	170	190	105
Alpine	.	.	.	.	.	.	.	.	.	.	.	.	.
Amador	280	45	45	40	25	15	15	.	15	.	.	.	.
Butte	1,310	205	185	170	110	75	75	55	70	30	40	40	20
Calaveras	290	45	50	35	25	.	.	15	20	.	.	.	.
Colusa	75	.	15	.	.	.	.	.	.	.	.	.	.
Contra Costa	5,440	865	835	565	505	230	230	235	310	125	145	125	80
Del Norte	150	20	15	30	.	.	.	.	.	.	.	.	.
El Dorado	1,005	165	170	105	90	55	55	45	70	30	35	35	.
Fresno	3,260	505	450	405	295	135	135	135	115	80	95	95	50
Glenn	145	20	25	20	15	.	.	.	.	.	.	.	.
Humboldt	680	85	90	85	60	40	40	35	40	20	20	.	.
Imperial	605	70	100	70	55	20	20	25	15	15	30	20	15
Inyo	100	15	20	15	.	.	.	.	.	.	.	.	.
Kern	2,920	390	455	370	255	105	105	125	110	90	80	65	45
Kings	465	60	75	60	40	15	15	20	15	15	15	.	.
Lake	420	55	40	65	40	20	20	15	30	15	.	.	.
Lassen	135	15	20	15	.	.	.	.	.	.	.	.	.
Los Angeles	37,895	6,170	5,145	3,635	3,795	1,530	1,530	1,700	1,235	880	1,080	1,045	520
Madera	570	80	75	65	50	30	30	20	30	15	20	15	.
Marin	1,625	255	260	145	125	70	70	80	150	65	45	35	20
Mariposa	105	15	15	15	.	.	.	.	.	.	.	.	.
Mendocino	505	75	65	60	45	25	25	20	30	15	.	15	.
Merced	875	125	120	120	80	25	25	35	25	25	30	25	15
Modoc	50	.	.	.	.	.	.	.	.	.	.	.	.
Mono	40	.	.	.	.	.	.	.	.	.	.	.	.
Monterey	1,650	245	300	175	110	65	65	75	85	40	50	55	30
Napa	790	115	125	90	70	35	35	35	50	20	25	20	.
Nevada	615	105	90	65	45	35	35	30	45	20	15	20	.
Orange	12,830	2,155	1,825	1,240	1,110	500	500	590	785	320	385	345	165
Placer	1,960	320	295	190	160	90	90	95	130	45	45	55	20
Plumas	120	15	20	15	.	.	.	.	.	.	.	.	.
Riverside	8,640	1,320	1,285	935	845	415	415	355	465	220	250	230	115
Sacramento	6,465	1,030	900	775	600	280	280	245	285	165	160	180	80
San Benito	235	35	45	20	20	.	.	.	.	.	.	.	.
San Bernardino	7,270	1,055	1,075	775	695	290	290	280	300	175	210	170	85
San Diego	13,455	2,225	1,720	1,455	1,095	565	565	565	940	360	375	345	150
San Francisco	3,940	590	440	440	390	145	145	180	175	125	105	135	65
San Joaquin	2,755	380	410	355	265	115	115	105	85	80	75	65	40
San Luis Obispo	1,445	210	225	155	110	80	80	65	125	40	45	30	20
San Mateo	3,575	580	540	370	285	170	170	175	190	100	95	100	45
Santa Barbara	1,875	305	240	180	170	105	105	75	145	45	55	55	30
Santa Clara	7,270	1,100	1,220	675	670	295	295	355	345	155	220	210	105
Santa Cruz	1,190	190	220	80	90	60	60	55	90	35	40	35	15
Shasta	1,125	175	140	145	85	55	55	50	100	40	35	35	15
Sierra	15	.	.	.	.	.	.	.	.	.	.	.	.
Siskiyou	280	40	40	45	20	15	15	.	.	.	.	.	.
Solano	2,005	320	320	240	175	75	75	85	85	45	55	55	30
Sonoma	2,635	410	355	290	235	130	130	100	220	75	65	75	25
Stanislaus	2,090	300	245	290	220	80	80	85	100	40	50	55	25
Sutter	370	50	45	50	30	20	20	15	20	.	.	.	.
Tehama	310	45	30	40	25	15	15	15	20	.	.	.	.
Trinity	85	15	15	.	.	.	.	.	.	.	.	.	.
Tulare	1,425	210	190	175	130	55	55	55	55	30	45	40	20
Tuolumne	375	55	50	55	35	20	20	20	25	15	.	.	.
Ventura	3,450	570	465	340	310	150	150	170	230	70	95	100	45
Yolo	745	130	100	70	65	30	30	35	50	20	20	20	15
Yuba	285	40	40	40	30	.	.	.	15	.	.	.	.

Source: California Cancer Registry, California Department of Public Health. Excludes non-melanoma skin cancers and carcinoma *in situ*, except bladder. Expected counts of 10 or less are suppressed. These projections are offered as an approximation, and should not be regarded as definitive.

* NHL: Non-Hodgkin lymphoma

For more information, please visit the California Cancer Registry website at http://www.ccrcal.org.

Table 5. Expected Cancer Deaths by County, 2014

County	All	Lung	Rectum	Breast	Prostate	Pancreas	NHL*	Leukemia	Stomach	Ovary	Bladder	Cervix	Myeloma
Alameda	2,180	495	200	180	125	165	90	75	70	55	55	45	55
Alpine	.	.	.	.	.	.	.	.	.	.	.	.	.
Amador	105	35	.	.	.	.	.	.	.	.	.	.	.
Butte	500	120	35	35	30	30	20	25	.	15	.	.	15
Calaveras	115	30	.	.	.	.	.	.	.	.	.	.	.
Colusa	40	15	.	.	.	.	.	.	.	.	.	.	.
Contra Costa	1,755	400	175	145	90	120	65	60	40	50	50	40	45
Del Norte	60	15	.	.	.	.	.	.	.	.	.	.	.
El Dorado	340	70	25	20	15	25	15	25	.	.	.	.	.
Fresno	1,240	285	110	80	65	85	40	50	30	45	30	25	20
Glenn	50	.	.	.	.	.	.	.	.	.	.	.	.
Humboldt	275	65	25	20	15	.	15	.	.	.	.	.	.
Imperial	215	45	25	15	.	15	.	.	.	.	.	.	.
Inyo	35	.	.	.	.	.	.	.	.	.	.	.	.
Kern	1,040	255	90	80	55	65	40	45	25	20	30	25	20
Kings	155	40	.	.	.	.	.	.	.	.	.	.	.
Lake	170	50	15	.	.	.	.	.	.	.	.	.	.
Lassen	40	.	.	.	.	.	.	.	.	.	.	.	.
Los Angeles	13,900	2,925	1,325	1,140	760	985	535	600	520	385	320	385	275
Madera	210	60	20	.	.	15	.	.	.	.	.	.	.
Marin	505	115	45	35	25	35	20	20	.	15	.	.	.
Mariposa	40	15	.	.	.	.	.	.	.	.	.	.	.
Mendocino	185	50	15	15	.	.	.	.	.	.	.	.	.
Merced	335	80	40	25	15	20	15	15	.	.	.	.	.
Modoc	25	.	.	.	.	.	.	.	.	.	.	.	.
Mono	.	.	.	.	.	.	.	.	.	.	.	.	.
Monterey	575	135	45	40	30	40	20	25	15	15	15	15	15
Napa	295	65	25	20	15	25	.	15	.	.	.	.	.
Nevada	240	60	20	.	20	20	.	.	.	.	.	.	.
Orange	4,355	970	375	325	235	285	165	210	120	145	125	95	85
Placer	650	145	50	65	30	50	30	30	.	25	20	.	15
Plumas	50	.	.	.	.	.	.	.	.	.	.	.	.
Riverside	3,340	805	345	245	200	235	115	135	85	85	80	80	65
Sacramento	2,420	600	225	170	120	140	80	100	60	60	60	50	35
San Benito	70	15	.	.	.	.	.	.	.	.	.	.	.
San Bernardino	2,805	635	285	220	160	145	95	105	70	70	75	70	50
San Diego	4,815	1,095	425	355	295	305	195	200	120	145	125	120	95
San Francisco	1,410	335	150	90	65	115	50	60	35	30	35	30	25
San Joaquin	1,070	285	90	80	50	70	30	35	25	25	20	30	20
San Luis Obispo	520	110	45	40	35	35	20	25	.	.	20	.	.
San Mateo	1,185	265	110	85	65	75	50	45	40	40	30	30	25
Santa Barbara	620	135	55	40	40	40	20	30	15	20	15	15	15
Santa Clara	2,360	485	220	180	120	175	105	105	80	60	55	60	45
Santa Cruz	375	60	35	40	25	25	15	15	.	.	.	.	.
Shasta	455	105	45	30	25	25	20	15	.	.	.	.	.
Sierra	.	.	.	.	.	.	.	.	.	.	.	.	.
Siskiyou	125	35	.	.	.	.	.	.	.	.	.	.	.
Solano	700	175	55	55	35	50	25	30	15	20	15	15	15
Sonoma	945	225	90	80	45	65	20	40	20	25	30	15	15
Stanislaus	775	195	80	45	35	45	25	35	20	25	15	15	15
Sutter	150	50	.	.	.	.	.	.	.	.	.	.	.
Tehama	140	40	.	.	.	.	.	.	.	.	.	.	.
Trinity	35	.	.	.	.	.	.	.	.	.	.	.	.
Tulare	565	150	50	35	30	35	20	20	15	.	20	20	.
Tuolumne	130	35	15	.	.	.	.	.	.	.	.	.	.
Ventura	1,185	245	120	95	70	85	45	50	25	35	30	25	20
Yolo	260	50	25	15	15	20	.	.	.	.	.	.	.
Yuba	125	35	.	.	.	.	.	.	.	.	.	.	.

Source: California Cancer Registry, California Department of Public Health. Deaths include persons who may have been diagnosed in previous years. These projections are offered as an approximation, and should not be regarded as definitive. Expected deaths of 10 or less are suppressed.

* NHL: Non-Hodgkin lymphoma For more information, please visit the California Cancer Registry website at http://www.ccrcal.org.

Cancer Risk

Who is at risk of developing cancer?

Anyone can develop cancer. Since the risk of being diagnosed with cancer increases with age, most cases occur in adults who are middle aged or older. About 77% of all cancers are diagnosed in persons 55 years of age and older. Cancer researchers use the word "risk" in different ways, most commonly expressing risk as lifetime risk or relative risk. In this publication, *lifetime risk* refers to the probability that an individual will develop or die from cancer over the course of a lifetime, from birth to death. In the US, men have slightly less than a 1 in 2 lifetime risk of developing cancer; for women, the risk is a little more than 1 in 3. The often-cited 1 in 8 risk for female breast cancer represents a newborn's likelihood of eventually being diagnosed with invasive breast cancer during her lifetime. This statistic does not apply to women of all ages. For example, the probability of being diagnosed with breast cancer over any 20-year period is much lower than commonly believed – 1 in 21 women will be diagnosed with breast cancer from ages 45 through 64 if cancer-free at age 45. For women cancer-free at 65, 1 in 14 women will be diagnosed with breast cancer between the ages of 65 and 84. It is important to note that these estimates are based on the average experience of the general population and may overestimate or underestimate individual risk because of differences in exposure (e.g., smoking), and/or genetic susceptibility.

Relative risk is a measure of the strength of the relationship between a risk factor and cancer. It compares the risk of developing cancer in persons with a certain exposure or trait to the risk in persons who do not have this characteristic. For example, male smokers are about 23 times more likely to develop lung cancer than nonsmokers, so their relative risk is 23. Most relative risks are not this large. For example, women who have a first-degree relative (mother, sister, or daughter) with a history of breast cancer are about two times more likely to develop breast cancer than women who do not have this family history.

Causes of Cancer

All cancers involve the malfunction of genes that control cell growth and division. Only a small proportion of cancers are strongly hereditary, in that an inherited genetic alteration confers a very high risk of developing one or more specific types of cancer. Inherited factors play a larger role in determining risk for some cancers (e.g., colorectal, breast, and prostate) than for others. It is now thought that many familial cancers arise from the interplay between common gene variations and lifestyle/environmental risk factors. However, most cancers do not result from inherited genes but from damage to genes occurring during a person's lifetime. Genetic damage may result from internal factors, such as hormones or the metabolism of nutrients within cells, or external factors, such as tobacco, or excessive exposure to chemicals, sunlight, or ionizing radiation.

Exactly why one individual develops cancer and another person with very similar life experiences does not is beyond current scientific understanding. Better understanding is key to preventing and treating cancers, and it is the focus of rigorous scientific research. Just as there are many different cancers, there are many factors that contribute to an individual's risk of developing cancer – it is extremely difficult to point to any one factor as the cause. The timing and duration of cancer-causing exposures impact a person's risk, and exposures to the developing child during the prenatal period or the first years of life may be especially harmful. Although science has demonstrated that exposure to certain substances or circumstances will increase an individual's chance of getting cancer, the disease is never a certain outcome of any particular exposure.

For example, a family history of cancer means that a person may be more likely to develop the disease than someone without such a history. However, heredity appears to be the dominant cause of only about 5% of cancers. Exposure to tobacco smoke is known to significantly increase cancer risk, and is associated with an estimated 30% of all cancers, including 85% of lung cancers. As many as 40% of all cancers are thought to be associated with combinations of poor diet, inactivity, elevated body weight, excessive alcohol consumption, and high salt intake – collectively referred to as unhealthy lifestyle factors.

Estimates vary on the contribution to cancer associated with exposure to other environmental carcinogenic agents, variously estimated to be associated with 2% to 15% of all cancers, and these continue to be the subject of study. Included in this category are exposures to certain viruses and bacteria, exposures to known workplace carcinogens, and exposures to radiation from sunlight, radon, or medical imaging, which sometimes involve many relatively small doses that accumulate over a long time. Over the past few decades, increases in radiation exposures from the tremendous growth of diagnostic radiation imaging, such as CT scans and fluoroscopy, have raised serious concerns, particularly for the pediatric population. Also, losses in the ozone layer may give rise to more skin cancers caused by sun radiation. Long-term exposures to some consumer products and environmental pollutants, both natural and man-made, may similarly increase the risk of cancer through routes that have not yet been well studied. Although their roles in cancer development remain uncertain, such substances, including some pesticides, plasticizers, and nano-materials, may cause subtle hormonal or other physiological alterations that could contribute to the development of cancer in later life.

Reducing the chances of developing cancer requires adopting a healthy lifestyle, reducing exposures to known carcinogens, and

Table 6. Probability of Being Diagnosed with Certain Cancers during Selected Age Intervals[1], California, 2007–2011

Current Age	Birth		25		45		65	
Risk by Age	**20**	**Eventually**	**45**	**Eventually**	**65**	**Eventually**	**85**	**Eventually**
All Sites								
Male	1:265	1:2	1:63	1:2	1:7	1:2	1:2	1:2
Female	1:299	1:2	1:35	1:2	1:8	1:2	1:3	1:3
Breast								
Female	*	1:8	1:98	1:8	1:21	1:8	1:14	1:11
Colon and Rectum								
Male	*	1:20	1:666	1:19	1:79	1:19	1:29	1:22
Female	*	1:21	1:714	1:21	1:103	1:21	1:36	1:24
Lung and Bronchus								
Male	*	1:15	1:2, 069	1:15	1:88	1:15	1:20	1:15
Female	*	1:17	1:2, 021	1:17	1:105	1:17	1:24	1:19
Prostate								
Male	*	1:7	1:1, 682	1:7	1:23	1:6	1:8	1:7

[1]Assuming person is cancer-free at the beginning of the age interval.
* Probability is extremely small.
Source: California Cancer Registry, California Department of Public Health. Prepared by the California Department of Public Health, California Cancer Registry.

if there is a family history of cancer, talking to one's doctor on a regular basis. See the American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention for a list of steps to take to improve the chances of never getting cancer and of enjoying many future birthdays.

How is cancer staged?

Staging describes the extent or spread of cancer at the time of diagnosis. Proper staging is essential in determining the choice of therapy and in assessing prognosis. A cancer's stage is based on the size or extent of the primary (main) tumor and whether it has spread to other areas of the body. A number of different staging systems are used to classify tumors. A system of summary staging (*in situ*, local, regional, and distant) is used for descriptive and statistical analysis of tumor registry data. Diagnosis at early stage is a tumor diagnosed at *in situ* or localized stage. It is an indication of screening and early detection. Diagnosis at late stage is a tumor diagnosed at regional or distant stage and is associated with poorer prognosis.

In Situ

The tumor is at the earliest stage and has not spread or extended through the first layer of cells (the basement membrane) in the area in which it is growing.

Localized

The tumor has broken through the basement membrane, but is still confined to the organ in which it is growing.

Regional

The tumor has spread to lymph nodes or adjacent tissues.

Distant

The tumor has spread to other parts of the body (metastasized). An invasive tumor has spread beyond the layer of tissue in which it developed and is growing into surrounding, healthy tissues.

For most cancers, clinicians typically use the TNM cancer staging system, which assesses tumors in three ways: extent of the primary tumor (T), absence or presence of regional lymph node involvement (N), and absence or presence of distant metastases (M). Once the T, N, and M categories are determined, a stage of 0, I, II, III, or IV is assigned, with stage 0 being *in situ*, stage I being early and stage IV being the most advanced disease. Some cancers have alternative staging systems (e.g., leukemia). As the molecular properties of cancer have become better understood, tumor biological markers and genetic features have been incorporated into prognostic models, treatment plans, and/or stage for some cancer sites.

Table 7. Five-year Relative Survival by Stage at Diagnosis in California, 2002–2011

Cancer Type	All Stages	Localized	Regional	Distant
Female Breast	92.3%	100.0%	86.5%	26.9%
Cervix Uteri	70.9%	93.2%	59.8%	18.8%
Uterus*	84.0%	97.2%	69.4%	17.5%
Ovary	48.1%	91.9%	76.3%	29.7%
Prostate	100.0%	100.0%	100.0%	29.3%
Testis	94.2%	98.7%	95.0%	70.8%
Oral & Pharynx	65.9%	85.6%	62.4%	37.8%
Colon & Rectum	68.7%	94.7%	73.0%	13.2%
Pancreas	7.1%	25.8%	9.8%	2.7%
Liver	18.8%	30.2%	11.9%	3.0%
Lung & Bronchus	17.2%	56.5%	27.9%	4.1%
Melanoma	92.2%	99.5%	62.7%	16.7%
Hodgkin Lymphoma	84.3%	89.8%	91.6%	74.7%
NHL**	68.9%	82.6%	72.3%	60.7%
Leukemia***	55.2%	--	--	55.2%
Childhood (0-14 years)	82.8%	--	--	82.8%
Young Adult (15-19 years)	66.0%	--	--	66.0%
Adult (20+ years)	50.5%	--	--	50.5%

*Uterus includes Corpus Uteri and Uterus NOS

**NHL: Non-Hodgkin Lymphoma

***All leukemias are staged as distant disease; thus survival cannot be calculated for other stages.

Note: Follow-up is through December 2010. Cancers that were unstaged at time of diagnosis are excluded.

Source: California Cancer Registry, California Department of Public Health. Prepared by the California Department of Public Health, Cancer Surveillance Section.

For more information please visit the California Cancer Registry website at http://ccrcal.org.

Stage at Diagnosis in California's Counties

The percentage of cancers diagnosed at an early stage (*in situ* or localized) is an indication of screening and early detection for the cancers listed on page 10. The 15 most populous counties listed in Table 9 account for 80% of California's population. The numbers are actual cases reported to the CCR for 2011, while Tables 4 and 5 - on pages 5 and 6, respectively - show the expected number of cancers in 2014.

Table 8. Three Common Cancers: New Cases and Percent of Early Stage Cases at Diagnosis, California, 2011

Cancer Site	Total New Cases Diagnosed	Percent Early Stage
Female Breast	29,916	71.4%
Prostate	20,629	80.3%
Colorectal	14,079	44.7%

Source: California Cancer Registry, California Department of Public Health. Prepared by the California Department of Public Health, California Cancer Registry.

Table 9. Percent of Cancer Cases Diagnosed at Early Stage, California and Selected Counties, 2011

	Non-Hispanic White		African American		Hispanic		Asian/Pacific Islander	
	Total Cases	%Early	Total Cases	%Early	Total Cases	%Early	Total Cases	%Early
Breast - Females								
California	**18,265**	**73.2%**	**1,934**	**65.9%**	**5,406**	**65.5%**	**3,906**	**73.6%**
Alameda	624	75.5%	182	65.4%	117	73.5%	315	75.6%
Contra Costa	702	76.1%	106	63.2%	97	66.0%	153	73.9%
Fresno	364	74.7%	29	75.9%	157	59.2%	35	80.0%
Kern	264	65.5%	16	75.0%	112	59.8%	23	60.9%
Los Angeles	3,438	71.7%	810	64.9%	1,854	63.8%	1,174	70.1%
Orange	1,788	73.3%	36	61.1%	394	67.8%	369	76.2%
Riverside	982	73.8%	89	68.5%	382	65.7%	69	69.6%
Sacramento	873	72.4%	129	65.1%	116	80.2%	152	76.3%
San Bernadino	710	68.7%	131	61.8%	336	63.7%	97	73.2%
San Diego	1,868	72.6%	89	66.3%	469	67.4%	289	77.5%
San Francisco	371	77.4%	45	66.7%	64	71.9%	315	74.0%
San Joaquin	272	72.1%	43	65.1%	94	74.5%	57	70.2%
San Mateo	422	78.7%	21	76.2%	96	70.8%	203	76.4%
Santa Clara	809	78.2%	41	73.2%	206	67.0%	335	77.0%
Ventura	494	74.1%	15	66.7%	127	71.7%	52	76.9%
Prostate - Males								
California	**12,684**	**80.2%**	**1,890**	**79.9%**	**3,403**	**80.5%**	**1,600**	**79.9%**
Alameda	422	85.5%	171	84.8%	99	79.8%	116	91.4%
Contra Costa	497	84.1%	92	82.6%	87	83.9%	64	89.1%
Fresno	266	77.8%	35	74.3%	101	75.2%	17	58.8%
Kern	273	79.9%	28	75.0%	69	79.7%	10	-
Los Angeles	1,973	76.7%	693	78.8%	1,080	77.0%	449	75.1%
Orange	1,241	82.2%	39	76.9%	217	81.1%	127	77.2%
Riverside	745	82.8%	97	84.5%	237	84.4%	32	75.0%
Sacramento	554	81.8%	114	80.7%	75	80.0%	53	77.4%
San Bernadino	563	78.9%	134	81.3%	222	75.7%	49	65.3%
San Diego	1,152	76.9%	128	77.3%	229	83.8%	116	79.3%
San Francisco	219	80.8%	54	81.5%	38	86.8%	105	81.9%
San Joaquin	211	82.5%	30	80.0%	66	81.8%	35	97.1%
San Mateo	325	78.2%	24	70.8%	76	80.3%	86	84.9%
Santa Clara	698	83.5%	41	80.5%	181	89.0%	196	83.7%
Ventura	320	74.4%	17	64.7%	65	66.2%	21	61.9%
Invasive Cervix - Females								
California	**566**	**48.1%**	**83**	**48.2%**	**480**	**48.1%**	**182**	**45.6%**
Alameda	19	-	-	-	10	-	15	-
Contra Costa	18	66.7%	-	-	11	-	-	-
Fresno	10	-	-	-	19	52.6%	-	-
Kern	-	-	-	-	15	-	-	-
Los Angeles	122	49.2%	38	42.1%	183	49.2%	47	51.1%
Orange	43	48.8%	0	-	31	38.7%	14	-
Riverside	24	-	-	-	37	45.9%	11	-
Sacramento	40	37.5%	-	-	10	-	13	-
San Bernadino	28	53.6%	-	-	39	43.6%	-	-
San Diego	56	46.4%	-	-	25	60.0%	22	77.3%
San Francisco	-	-	-	-	^	-	10	-
San Joaquin	-	-	-	-	^	-	-	-
San Mateo	-	-	-	-	^	-	-	-
Santa Clara	17	76.5%	-	-	16	62.5%	11	-
Ventura	13	-	-	-	^	-	-	-

Table 9. Percent of Cancer Cases Diagnosed at Early Stage, California and Selected Counties, 2011 (continued)

	Non-Hispanic White		African American		Hispanic		Asian/Pacific Islander	
	Total Cases	%Early	Total Cases	%Early	Total Cases	%Early	Total Cases	%Early
Colon & Rectum - Males								
California	**4,267**	**45.6%**	**568**	**51.6%**	**1,467**	**40.5%**	**976**	**45.6%**
Alameda	142	43.7%	39	61.5%	34	38.2%	67	41.8%
Contra Costa	145	37.9%	31	48.4%	34	41.2%	25	64.0%
Fresno	82	47.6%	12	-	58	43.1%	14	-
Kern	96	50.0%	-	-	29	55.2%	-	-
Los Angeles	821	46.4%	248	53.6%	516	40.3%	318	42.1%
Orange	346	51.2%	13	-	86	46.5%	119	46.2%
Riverside	275	48.7%	24	45.8%	116	36.2%	15	-
Sacramento	183	41.5%	37	62.2%	22	-	37	48.6%
San Bernadino	224	46.0%	35	62.9%	104	36.5%	21	52.4%
San Diego	399	41.1%	30	33.3%	104	41.3%	49	34.7%
San Francisco	71	45.1%	14	-	11	-	85	48.2%
San Joaquin	96	52.1%	12	-	26	57.7%	17	-
San Mateo	79	54.4%	-	-	19	-	33	48.5%
Santa Clara	172	47.7%	11	-	49	53.1%	95	50.5%
Ventura	113	48.7%	-	-	34	-	-	-
Colon & Rectum - Females								
California	**3,913**	**43.6%**	**493**	**47.5%**	**1,245**	**42.3%**	**928**	**41.9%**
Alameda	140	42.1%	43	34.9%	23	-	57	36.8%
Contra Costa	155	44.5%	19	52.6%	29	41.4%	26	38.5%
Fresno	70	50.0%	-	-	30	60.0%	13	-
Kern	72	38.9%	-	-	25	48.0%	-	-
Los Angeles	768	42.2%	212	47.2%	438	43.2%	314	43.3%
Orange	324	47.2%	11	-	89	44.9%	96	45.8%
Riverside	256	39.8%	30	63.3%	81	27.2%	16	-
Sacramento	188	41.5%	29	48.3%	34	50.0%	41	36.6%
San Bernadino	175	46.3%	35	51.4%	86	44.2%	21	-
San Diego	327	41.9%	19	-	86	33.7%	57	38.6%
San Francisco	73	50.7%	20	-	20	-	84	41.7%
San Joaquin	78	44.9%	13	-	19	52.6%	13	-
San Mateo	99	54.5%	-	-	17	-	30	40.0%
Santa Clara	190	44.7%	-	-	45	53.3%	96	41.7%
Ventura	96	50.0%	-	-	26	-	10	-

Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.
- Data not shown if fewer than 10 cases were reported.

What Are the Costs of Cancer?

The National Institutes of Health (NIH) estimates that the overall costs of cancer in 2009 were $216.6 billion: $86.6 billion for direct medical costs (total of all health expenditures) and $130.0 billion for indirect mortality costs (cost of lost productivity due to premature death). The NIH projects the direct medical cost of cancer in 2020 will reach at least $158 billion, and as high as $207 billion (in 2010 dollars), depending on 2% annual increases or 5% annual increases in medical costs. In another study by RTI International and the Centers for Disease Control and Prevention, the estimated 2020 cancer-related direct medical costs in California will exceed $28.3 billion. This does not factor in the billions of dollars more for indirect mortality cost (cost of lost productivity due to premature death).

Lack of health insurance and other barriers prevents many Californians from receiving optimal health care. According to the US Census Bureau, the state has the largest number of residents without health insurance in the US, and the 10th highest rate of uninsured individuals. Approximately 48.6 million Americans (15.7%) were uninsured in 2011; almost one-third of Hispanics (31%) and 1 in 10 children (18 years of age and younger) had no health insurance. Uninsured patients and those from ethnic minorities are substantially more likely to be diagnosed with cancer at a later stage, when treatment can be more extensive and more costly. The Affordable Care Act is expected to reduce substantially the number of people who are uninsured and improve the health care system for cancer patients. For more information on the relationship between health insurance and cancer, see *Cancer Facts & Figures 2008, Special Section*, available online at cancer.org/statistics.

Select Cancer Demographics

California's Diverse Populations

The US Census Bureau estimates California's population to be more than 38 million. Of these, 39.4% are White alone; 6.6% are African Americans; 38.2% are Hispanics; 13.9% are Asian/Pacific Islanders; 1.7% are American Indians and Alaskan Natives; and 0.5% are American Indian and Alaska Native. This great diversity is further enhanced due to the fact that the Asian/Pacific Islander and Hispanic populations are composed of numerous nationalities, many of whom are recent immigrants.

In general, the types of cancers that commonly develop are similar regardless of race/ethnicity. In most racial/ethnic groups in California, prostate, lung and bronchus, and colon and rectum cancer are among the top four cancers for men. However, lung cancer is the most common among Laotian and Vietnamese men. Among women, breast, lung and bronchus, and colon and rectum cancer are among the top four cancers. Breast cancer is the number one cancer among women of all racial/ethnic groups. Cancer is the second leading cause of death for all racial/ethnic groups combined.

The risk of developing cancer varies considerably by race/ethnicity. African American men have the highest overall cancer rate, followed by non-Hispanic white men. Among women, non-Hispanic white women are the most likely to be diagnosed with cancer, but African American women are more likely to die of the disease. Cancer rates are considerably lower among persons of Asian/Pacific Islander origin and persons of Hispanic ethnicity than among other Californians. However, both groups have substantially higher rates of certain cancers, such as liver and stomach cancer. Hispanic women are also more likely to develop and die from cervical cancer. Research indicates that cancer rates in populations immigrating to the US tend to increase over time.

Racial/Ethnic Differences in Cancer Risk in California

The reasons for racial/ethnic differences in cancer risk and developing cancer are not well understood. It is likely that they result from a complex combination of dietary, lifestyle, environmental, occupational, and genetic factors. Higher mortality rates among some populations are due in part to poverty, which may increase the risk of developing certain cancers and limit access to and utilization of preventive measures and screening. Poor health among persons in poverty may also limit treatment options and decrease cancer survival. Research into racial/ethnic differences in cancer risk may help us understand some of the underlying causes of cancer.

According to the 2009 California Health Interview Survey, more than 7 million Californians, including both non-elderly adults and children, were uninsured for all or part of 2009. Insurance status varied by race/ethnicity. The challenge of communities and public health professionals is to help improve the plight of those at risk, to identify the apparent protective cultural practices that explain lower incidence and mortality in some groups, and to assist other groups to adopt protective practices.

In general, cancer rates are about 30%-40% lower among persons of Asian/Pacific Islander origin and persons of Hispanic ethnicity than among non-Hispanic white Californians. However, as with African Americans, both of these groups have substantially higher rates of stomach and liver cancer. Cancer is the leading cause of death among Hispanics and Asian/Pacific Islanders and is the second leading cause of death among non-Hispanic whites and African Americans in California.

Lesbian, Gay, Bisexual, and Transgender (LGBT) Differences in Cancer Risk

The Lesbian, Gay, Bisexual and Transgender (LGBT) population is at greater risk of cancer due to a variety of unique social, economic, and structural factors. These include discrimination, stigma, and ostracism, all of which impact experiences with health care providers and overall health outcomes. These factors may cause some members of the LGBT community to wait too long before seeking health care services. As a result, they may not undergo regular screening tests and may be diagnosed with cancer at a later stage, when the disease is more difficult to treat. A compounding problem has been that LGBT individuals have been more likely to be uninsured; the passage of the Affordable Care Act (ACA) of 2010 and the overturning of the Defense of Marriage Act (DOMA) in 2013 are expected to improve access to care and coverage.

The following are a few examples of challenges affecting the LGBT community's cancer risk: 1) In a large, nationwide study, lesbians reported having fewer mammograms and pelvic exams than the heterosexual population; 2) another study reported less frequent Pap tests among lesbians; and 3) when compared with the general population, gay men are more likely to smoke, which puts them at a much higher risk of lung and other tobacco-related cancers.

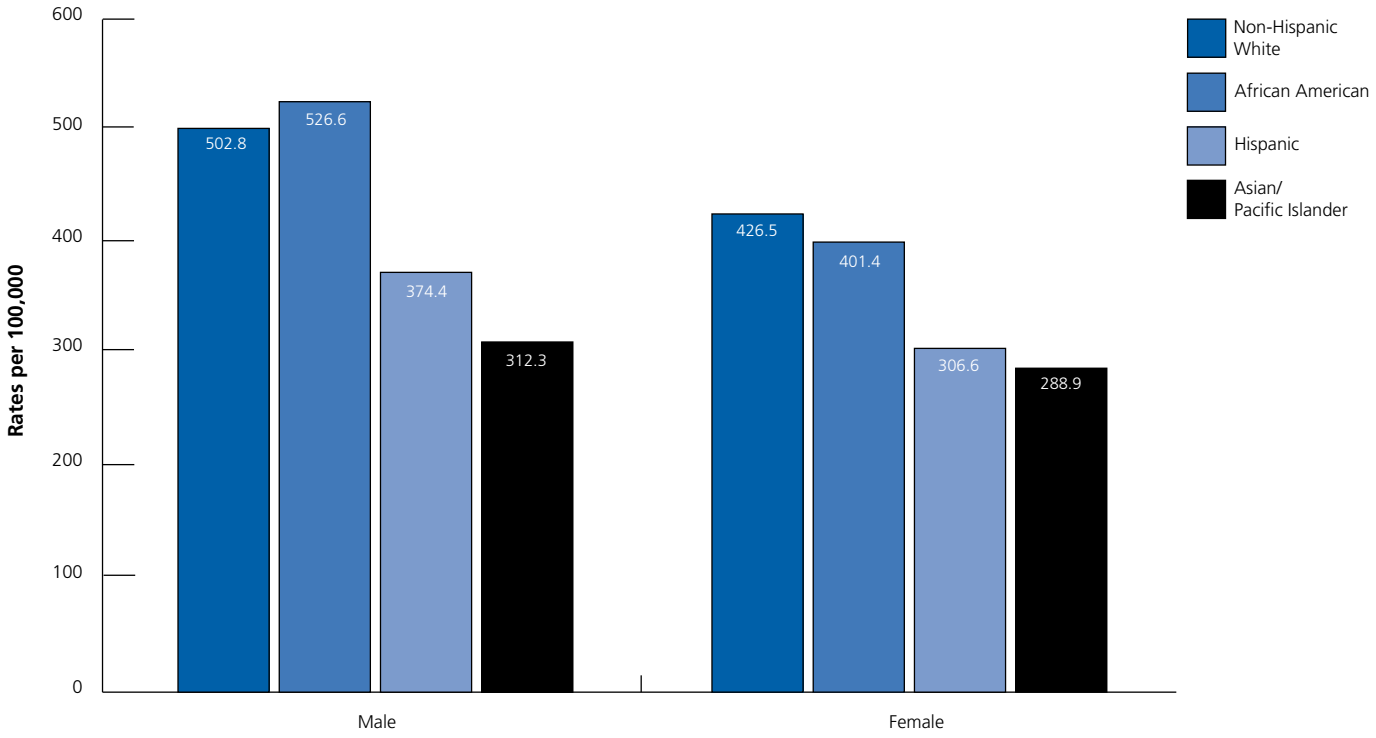
Given that lung cancer is the most common fatal cancer in both men and women in the US, it is important to recognize the role that the tobacco industry has played in targeting youth, the future generation of smokers in the eyes of "Big Tobacco." Partially due to the tobacco industry's relentless campaign to target gay men and women through bar promotions, sponsorships, and advertisements in the LGBT press, LGBT individuals have significantly higher smoking rates than heterosexual individuals (32.8% compared to 19.5%). According to the Centers for Disease Control and Prevention, in 2011, cigarette companies spent $8.37 billion on advertising and promotional expenses in the US, the equivalent of $23 million per day, or $27 for every person (adults and children) in the country. The result: nearly 4,000 people under the age of 18 smoke their first cigarette each day, and it is estimated that 1,000 of them become daily smokers.

Table 10. Five Most Common Cancers and Number of New Cases by Sex and Detailed Race/Ethnicity, California, 2007–2011

	Male					Female				
	1	2	3	4	5	1	2	3	4	5
Non-Hispanic White	Prostate 70,090	Lung 30,829	C&R 23,265	Melanoma 19,877	Bladder 19,371	Breast 75,713	Lung 30,437	C&R 21,875	Uterus 14,387	Melanoma 12,577
Non-Hispanic Black	Prostate 10,176	Lung 3,475	C&R 2,779	Kidney 1,225	Bladder 949	Breast 7,554	Lung 2,933	C&R 2,792	Uterus 1,437	Pancreas 818
Hispanic	Prostate 18,033	C&R 7,099	Lung 4,923	NHL 3,689	Kidney 3,684	Breast 20,449	C&R 5,887	Uterus 4,474	Thyroid 4,346	Lung 4,197
American Indian/Alaska Native	Prostate 336	Lung 172	C&R 149	Liver 124	Kidney 92	Breast 446	Lung 169	C&R 151	Uterus 125	Kidney 65
Chinese	Prostate 2,331	Lung 1,523	C&R 1,386	Liver 789	NHL 528	Breast 3,514	C&R 1,326	Lung 1,138	Uterus 634	Thyroid 576
Japanese	Prostate 802	C&R 543	Lung 416	Bladder 244	Stomach 197	Breast 1,472	C&R 639	Lung 471	Uterus 256	Pancreas 194
Filipino	Prostate 2,614	Lung 1,353	C&R 1,148	NHL 451	Liver 437	Breast 4,356	C&R 1,166	Lung 998	Uterus 993	Thyroid 919
Hawaiian	Prostate 94	Lung 55	C&R 44	NHL 21	Bladder 17	Breast 125	Uterus 37	C&R 32	Lung 31	Thyroid 22
Korean	Prostate 480	C&R 472	Lung 394	Stomach 368	Liver 260	Breast 933	C&R 468	Lung 283	Stomach 261	Thyroid 233
Vietnamese	Lung 702	Liver 690	Prostate 606	C&R 574	NHL 202	Breast 1,102	C&R 458	Lung 389	Thyroid 274	Liver 211
Laotian	Liver 55	Lung 54	C&R 36	Prostate 25	Stomach 24	Breast 51	C&R 38	Liver 32	Thyroid 19	Lung 17
Kampuchean	Liver 71	C&R 70	Lung 42	Prostate 33	Oral 22	Breast 78	C&R 58	Lung 52	Liver 33	Cervix Uteri 28
South Asian	Prostate 679	C&R 201	Lung 166	NHL 145	Bladder 117	Breast 926	Uterus 172	Thyroid 172	C&R 166	Ovary 113
Pacific Islander	Prostate 204	Lung 102	C&R 71	Liver 49	NHL 32	Breast 344	Uterus 137	Lung 80	C&R 76	Thyroid 54
Hmong	Lung 25	C&R 20	Liver 19	Stomach 14	NHL 12	Lung 14	Cervix Uteri 14	C&R 12	Breast 9	Uterus 9

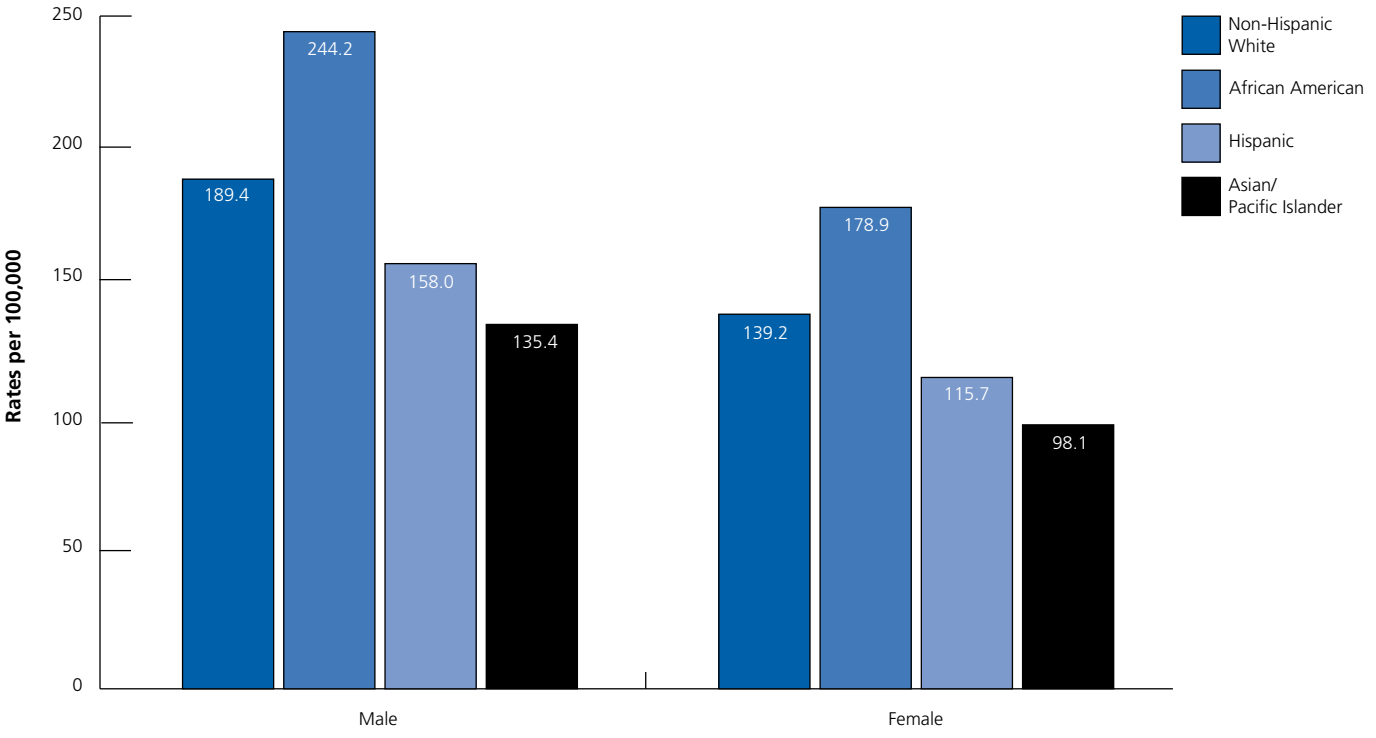
Source: California Cancer Registry, California Department of Public Health. Note: C&R=colon & rectum; NHL=Non-Hodgkin lymphoma.

Figure 1. Cancer Incidence by Race/Ethnicity and Sex in California, 2011



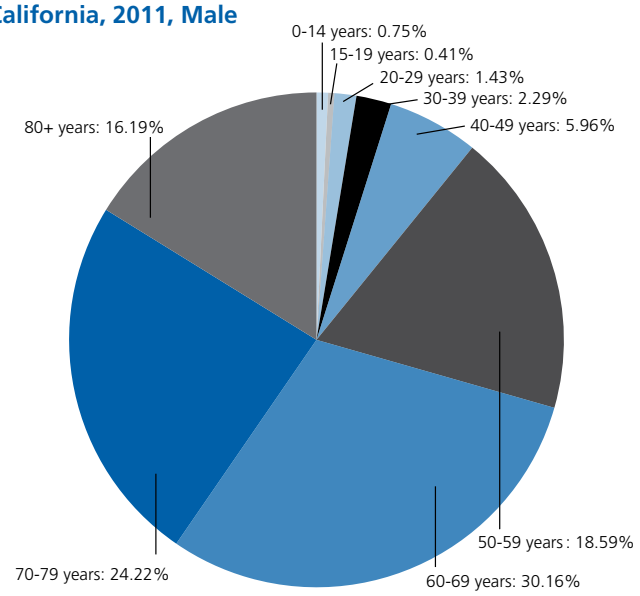
Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 2. Cancer Mortality by Race/Ethnicity and Sex in California, 2011



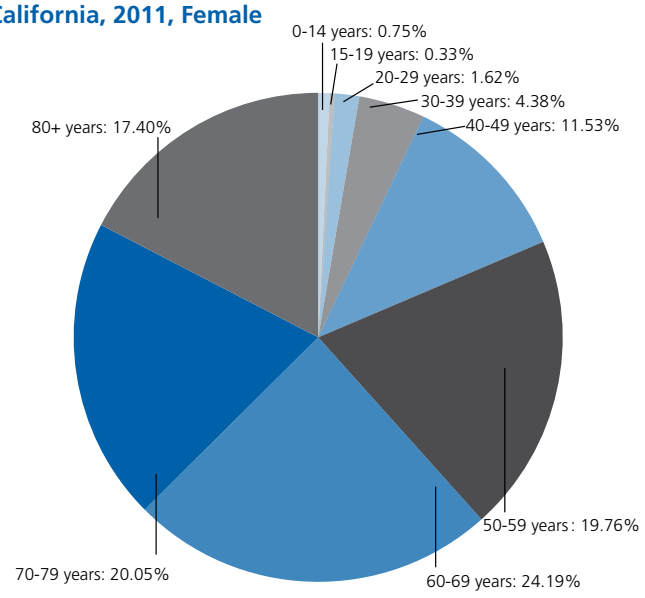
Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 3. Percentage of New Cancers Diagnosed by Age, California, 2011, Male



Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 4. Percentage of New Cancers Diagnosed by Age, California, 2011, Female



Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Nutrition, Obesity, Physical Activity, and Cancer Prevention

Obesity, physical inactivity, and poor nutrition are major risk factors for cancer, second only to tobacco use. For people who do not smoke – which is the majority of Americans – maintaining a healthy weight by being physically active and consuming a healthy diet are the most important means to reduce cancer risk. Although genetic inheritance plays a role in the risk of some individuals developing cancer, non-inherited factors have a larger impact on cancer risk for the population as a whole. Avoiding the use of tobacco products and exposure to secondhand smoke, maintaining a healthy weight, staying physically active throughout life, and consuming a healthy diet can substantially reduce a person's lifetime risk of developing or dying from cancer.

In the past decade, research has linked an increasing number of cancers to obesity. In a 2003 American Cancer Society study published in the *New England Journal of Medicine*, researchers documented the association between body mass index (BMI, a measure of body weight status) and death from many forms of cancer, estimating that 90,000 cancer deaths nationwide each year are related to excess weight. The study lends additional evidence that poor diet, obesity, and lack of physical activity are critical pieces of the cancer puzzle.

The number of overweight and obese adults has been increasing over the past several decades among men and women, and people of all ages, races, and educational backgrounds. While recent data suggest that the increase in obesity rates may be leveling off in some groups, rates continue to present a public health concern. According to the National Center for Health Statistics, almost two-thirds of US adults are so overweight that it poses a risk to their health. In California, 60.3% of adults are overweight or obese. In children, overweight and obesity rates have more than doubled over the past two decades and in 2010, more than one-third of children and adolescents in the US were overweight or obese. These children are at increased risk for becoming obese adults, which could increase future cancer rates.

There is strong scientific evidence that healthy dietary patterns, in combination with regular physical activity, are needed to maintain a healthy body weight and to reduce cancer risk. Eating a diet high in fruits and vegetables is associated with lower risk of cancers of the mouth and pharynx, esophagus, lung, stomach, colon and rectum. Healthy eating includes consuming at least 2½ cups of fruits and vegetables each day. Unfortunately, only 29% of California adults reported eating 2½ or more cups of fruits and vegetables in 2010. Women were more likely than men to consume the recommended servings (32% compared to 25%). In addition, only a minority of California's youth met these dietary recommendations.

Along with healthy eating, regular physical activity is one of the best ways to prevent chronic disease. Physical activity reduces the risk of breast, colon, and, possibly, endometrial and prostate cancers, and may reduce the risk of many other cancers through its role in weight management. The American Cancer Society recommends that adults participate in moderate physical activ-

ity for at least 150 minutes per week, or at least 75 minutes of vigorous activity (or a combination thereof). For children and adolescents, the Society recommends at least 60 minutes per day of moderate- or vigorous-intensity physical activity.

California is far from reaching this goal. In 2010, 39% of California adults reported being engaged in moderate physical activity for 30 minutes or more at least five times a week.

The American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention are based on a comprehensive evidence-based review. A recent study found that dietary and lifestyle behaviors consistent with these guidelines are associated with lower mortality rates for all causes of death combined, and for cancer and cardiovascular diseases specifically. This makes it all the more important to encourage and support Californians in their efforts to eat a healthier diet and lead a more physically active lifestyle.

While reducing cancer risk requires promoting the benefits of healthy eating, physical activity, and weight control, the American Cancer Society also recognizes the importance of efforts to make it easier for people to make healthy lifestyle choices. Therefore, the guidelines include recommendations for community actions to create a supportive physical and social environment that promotes and facilitates healthy behaviors, removing or reducing barriers that make it difficult to follow diet and activity recommendations.

The guidelines are as follows:

American Cancer Society Guidelines on Nutrition and Physical Activity for Cancer Prevention

Individual choices

Achieve and maintain a healthy weight throughout life.

- Be as lean as possible throughout life without being underweight.
- Avoid excess weight gain at all ages. For those who are currently overweight or obese, losing even a small amount of weight has health benefits and is a good place to start.
- Engage in regular physical activity and limit consumption of high-calorie foods and beverages as key strategies for maintaining a healthy weight.

Adopt a physically active lifestyle.

- Adults should engage in at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity each week, or an equivalent combination, preferably spread throughout the week.
- Children and adolescents should engage in at least 60 minutes of moderate- or vigorous-intensity physical activity each day, with vigorous-intensity activity at least 3 days each week.
- Limit sedentary behavior such as sitting, lying down, and watching television and other forms of screen-based entertainment.
- Doing any intentional physical activity above usual activities, no matter what one's level of activity, can have many health benefits.

Consume a healthy diet, with an emphasis on plant sources.

- Choose foods and beverages in amounts that help achieve and maintain a healthy weight.
- Limit consumption of processed meat and red meats.
- Eat at least 2½ cups of vegetables and fruits each day.
- Choose whole-grain instead of refined-grain products.

Limit consumption of alcoholic beverages.

- Drink no more than 1 drink per day for women or 2 per day for men.

Community Action

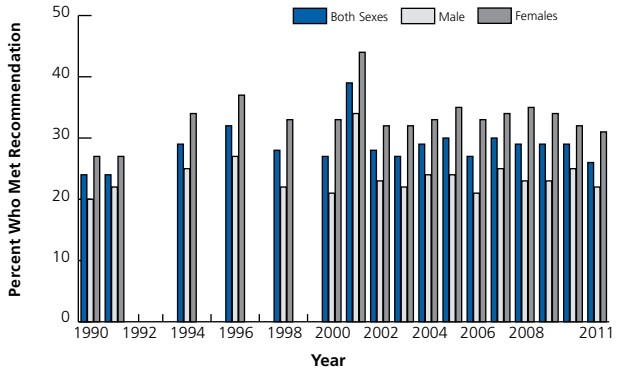
It is recommended that public, private, and community organizations work collaboratively at national, state, and local levels to apply policy and environmental changes that:

- Increase access to affordable, healthy foods in communities, worksites, and schools; decrease access to and marketing of foods and beverages of low nutritional value, particularly to youth.
- Provide safe, enjoyable, and accessible environments for physical activity in schools and worksites, and for transportation and recreation in communities.

Examples of Moderate and Vigorous Physical Activity

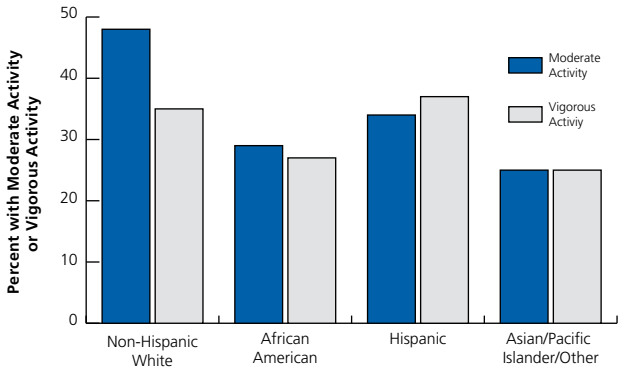
	Moderate-intensity Activities	*Vigorous-intensity Activities*
Exercise	Walking, dancing, leisurely bicycling, ice and roller skating, horseback riding, canoeing, yoga	Jogging or running, fast bicycling, circuit weight training, aerobic dance, martial arts, jumping rope, swimming
Sports	Volleyball, golf, softball, baseball, badminton, doubles tennis, downhill skiing	Soccer, field or ice hockey, lacrosse, singles tennis, racquetball, basketball, cross-country skiing
Home activities	Mowing the lawn, general yard and garden maintenance	Digging, carrying and hauling, masonry, carpentry
Occupational activity	Walking and lifting as part of the job (custodial work, farming, auto or machine repair)	Heavy manual labor (forestry, construction, fire-fighting)

Figure 5. Percentage of California Adults Who Eat Five Servings of Fruits and Vegetables a Day, by Sex, 1990-2011



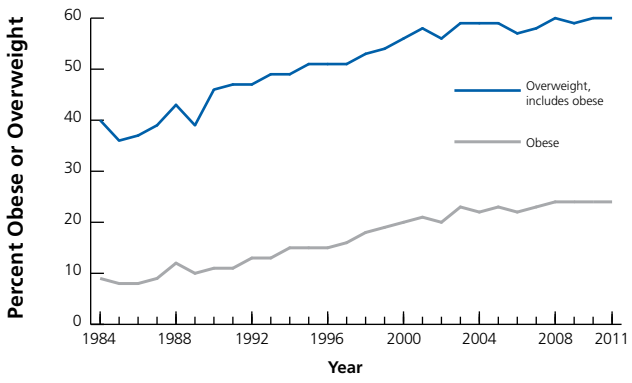
Note: Data are weighted to the 2000 California population.
Source: California Behavioral Risk Factor Survey.
*2001 included more types of fruits and vegetables.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 6. Physical Activity among Adults in California, 2010



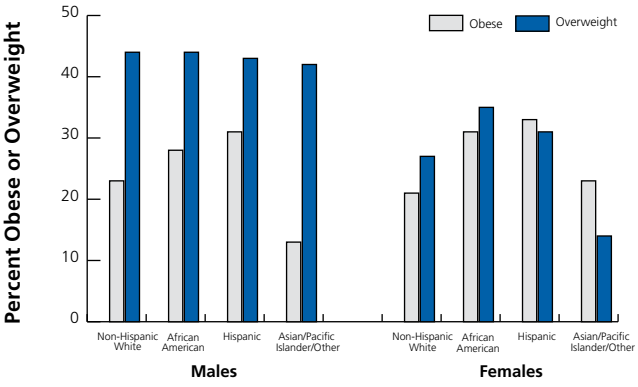
Note: Data are weighted to the 2000 California population.
Source: California Behavioral Risk Factor Survey.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 7. Trends in Adult Obesity and Adult Overweight in California, 1984-2011



Note: Data are weighted to the 2000 California population.
Source: California Behavioral Risk Factor Survey.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 8. Adult Obesity and Adult Overweight by Sex in California, 2010



Note: Data are weighted to the 2000 California population.
Source: California Behavioral Risk Factor Survey.
Prepared by the California Department of Public Health, California Cancer Registry.

Tobacco Use

Smoking-related diseases remain the world's most preventable cause of death. Since the first US Surgeon General's report on smoking and health in 1964, there have been more than 15 million premature deaths attributable to smoking in the US. The World Health Organization estimates that there are 6 million smoking-related premature deaths worldwide each year.

Health Consequences of Smoking

Half of all those who continue to smoke will die from smoking-related diseases. In the US, tobacco use is responsible for nearly 1 in 5 deaths; this equaled an estimated 443,000 premature deaths each year between 2000 and 2004. In addition, an estimated 8.6 million people suffer from chronic conditions related to smoking, such as chronic bronchitis, emphysema, and cardiovascular diseases.

- Smoking accounts for at least 30% of all cancer deaths, including 87% of lung cancer deaths among men and 70% of lung cancer deaths among women.
- The risk of developing lung cancer is about 23 times higher in male smokers and 13 times higher in female smokers, compared to lifelong nonsmokers.
- Smoking increases the risk of the following types of cancer: nasopharynx, nasal cavity and paranasal sinuses, lip, oral cavity, pharynx, larynx, lung, esophagus, pancreas, uterine cervix, ovary (mucinous), kidney, bladder, stomach, colorectal, and acute myeloid leukemia.
- The International Agency for Research on Cancer (IARC) recently concluded that there is some evidence that tobacco smoking causes female breast cancer.
- Smoking is a major cause of heart disease, cerebrovascular disease, chronic bronchitis, and emphysema, and is associated with gastric ulcers.
- The risk of lung cancer is just as high in smokers of "light" or "low-tar" yield cigarettes as in those who smoke "regular" or "full-flavored" products.

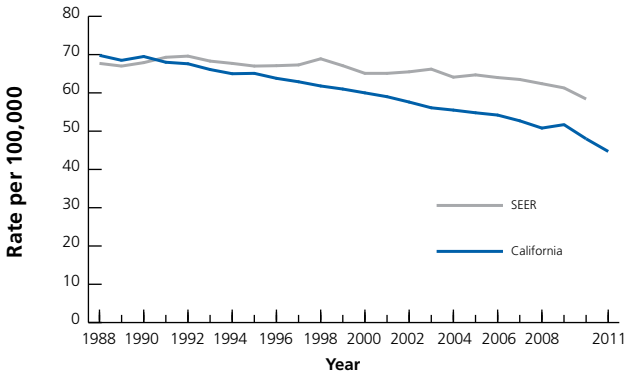
About 85% of lung cancer is caused by cigarette smoking. Lung cancer alone kills nearly 13,000 Californians each year, more than prostate, breast, and colon and rectum cancers combined. However, many other cancers are caused by tobacco as well. Overall, 1 out of every 3 cancer deaths is due to tobacco.

Lung cancer incidence rates in California decreased by 33% from 1988 to 2011, while rates in the rest of the country dropped by only 11% between 1988 and 2009. Rates for other smoking-related cancers are declining as well. These achievements are due in large part to the success of California tobacco control initiatives.

Cigar smoking increases the risk of death from several cancers, including cancer of the lung, oral cavity (lip, tongue, mouth, throat), esophagus (the tube connecting the mouth to the stomach), and larynx (voice box). Studies have shown that male cigar smokers are 4 to 10 times more likely to die from oral and laryngeal cancers than nonsmokers. Cigar smokers may spend up to an hour smoking a single large cigar, which can contain as much tobacco as a pack of cigarettes. Smoking more cigars each day or inhaling cigar smoke leads to more exposure and higher risks. Studies have shown the risk of death is higher if a person smokes three or more cigars rather than two or fewer cigars per day.

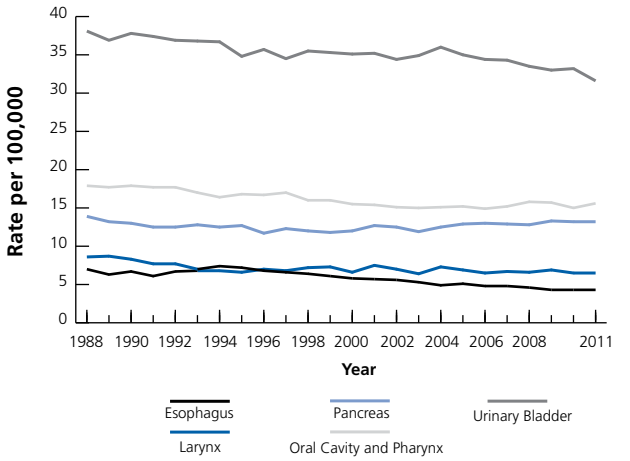
The most serious health effect of spit tobacco is an increased risk of cancer of the mouth and pharynx and of leukoplakia. Oral cancer occurs several times more frequently among snuff dippers compared with non-tobacco users. The risk of cancer of the cheek and gums may increase nearly 50-fold among long-term snuff users.

Figure 9. Trends in Lung Cancer Incidence in California and SEER Areas Other than California, 1988-2011



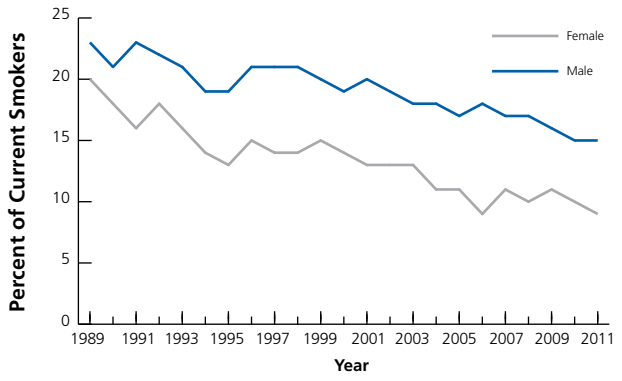
Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 10. Trends in the Incidence of Smoking-related Cancers Other than Lung among Men in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 11. Trends in Adult Smoking by Sex in California, 1989-2011



Note: Data are weighted to the 2000 California population.
Source: California Behavioral Risk Factor Survey and California Adult Tobacco Survey. Prepared by the California Department of Public Health, California Cancer Registry.

Smoking Trends

Smoking rates among California adults declined steadily among both men and women from 1989 to 2010. In 2009, 13% of California adults smoked and in 2012, 12% still smoked. Overall smoking rates have declined for middle school and high school students. In California during 2004, 3.9% of middle school students and 13.2% of high school students reported smoking during the past 30 days. The smoking prevalence in California is lower than what is experienced by the rest of the US.

Previously, in California, 18- to 24-year-olds were smoking at an increasing rate and were recognized as the fastest growing age group using tobacco. Tobacco companies have been targeting them in earnest as the "smokers of the future." Fortunately, the smoking rate for this age group has been decreasing in the past few years: 17% in 2008, 13% in 2009 and 12% in 2010.

Reducing Tobacco Use and Exposure

In 2000, the US Surgeon General outlined the goals and components of comprehensive statewide tobacco control programs. These programs seek to prevent the initiation of tobacco use among youth; promote quitting at all ages; eliminate nonsmokers' exposure to secondhand smoke; and identify and eliminate the disparities related to tobacco use and its effects among different population groups.

The Centers for Disease Control and Prevention (CDC) recommends funding levels for comprehensive tobacco use prevention and cessation programs for all 50 states and the District of Columbia. In fiscal year 2013, 5 states allocated 50% or more of CDC-recommended funding levels for tobacco control programs. States that have previously invested in comprehensive tobacco control programs, such as California, Massachusetts, and Florida, have reduced smoking rates and saved millions of dollars in tobacco-related health care costs. Recent federal initiatives in tobacco control, including national legislation ensuring coverage of some clinical cessation services, regulation of tobacco products, and tax increases, hold promise for reducing tobacco use. Provisions in the Affordable Care Act ensure at least minimum coverage of evidence-based cessation treatments, including pharmacotherapy and cessation counseling to previously uninsured tobacco users, pregnant Medicaid recipients, and eligible Medicare recipients. The Centers for Medicare and Medicaid Services subsequently issued a decision memo changing the eligibility requirement for Medicare recipients, so that they no longer have to be diagnosed with a smoking-related disease in order to access cessation treatments. Starting in 2014, state Medicaid programs can no longer exempt cessation pharmacotherapy from prescription drug coverage. Several provisions of the Family Smoking Prevention and Tobacco Control Act, which for the first time grants the US Food and Drug Administration the authority to regulate the manufacturing, selling, and marketing of tobacco products, have already gone into effect.

Cigarette Smoking

- Between 1965 and 2004, cigarette smoking among adults 18 years of age and older declined by half from 42% to 21%. Between 2005 and 2012, there was a modest, but statistically significant decline in smoking prevalence from 21% to 18%. However, declines were not consistent from year to year and were not observed in all population subgroups.
- In 2011, approximately 41.5 million adults were current smokers, about 4 million fewer than in 2005.
- The proportion of daily smokers reporting light or intermittent smoking (less than 10 cigarettes per day) increased significantly between 2005 (16%) and 2012 (21%), whereas heavy smoking declined from 13% to 7%.
- Although cigarette smoking became prevalent among men before women, the gender gap narrowed in the mid-1980s and has since remained constant. As of 2012, there was a 2 percentage point difference in smoking prevalence between white men (21%) and women (19%), a 7 percentage point difference between African American men (22%) and women (15%), a 9 percentage point difference between Hispanic men (17%) and women (8%), and a 12 percentage point difference between Asian men (17%) and women (5%).
- Smoking is most common among the least educated. For example, in 2012, smoking prevalence was 32% among adults with 9 to 11 years of education and 6% among those with graduate degrees. The highest smoking rate was among adults with a GED (general educational development), or high school equivalency credential (42%).

- While the percentage of smokers has decreased at every level of educational attainment, college graduates have had the greatest decline, from 21% in 1983 to 9% in 2012. Among those with a high school diploma, prevalence decreased less dramatically, from 34% to 23%.
- Among US states in 2012, the prevalence of adult smoking ranged from 10.6% in Utah to 28.3% in Kentucky.
- The decrease in smoking prevalence among high school students between the late 1970s and early 1990s was more rapid among African Americans than whites; consequently, lung cancer rates among adults younger than 40 years of age, which historically were substantially higher in African Americans, have converged.
- Although cigarette smoking among US high school students increased significantly from 28% in 1991 to 36% in 1997, the rate declined to 21% (male: 22%, female: 22%) by 2003. Between 2003 and 2011, there was no significant change in the smoking rate among high school males (20%) and females (16%).

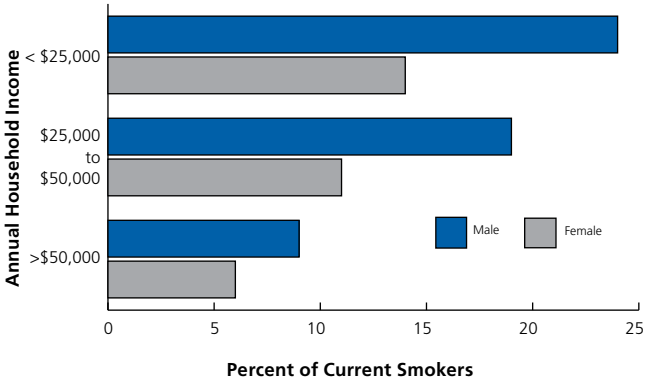
Kicking the Habit

In 2010, 56% of adult smokers in California reported that they tried to quit in the past year. Nicotine, the drug in tobacco, causes addiction with pharmacologic and behavioral processes similar to those that determine addiction to cocaine and heroin. Because of this, quitting can be a difficult challenge; nonetheless, millions of Californians have kicked the habit. For those who do quit, the risk of lung cancer decreases over time. After 15 years, the risk is only slightly higher than among persons who have never smoked, even among those who smoked more than a pack a day.

Secondhand Smoke

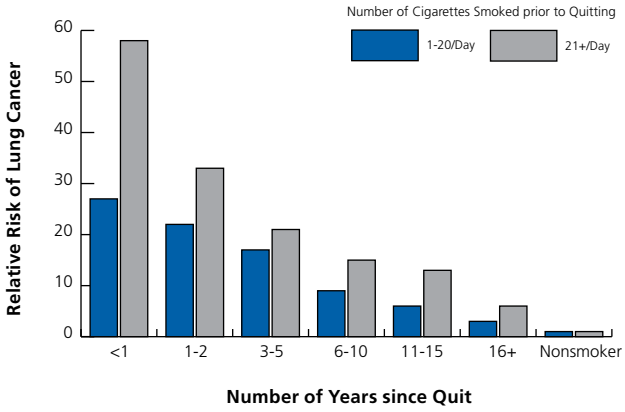
In 2007, the US Surgeon General's report on environmental tobacco smoke (ETS) found that there is no risk-free level of secondhand smoke (SHS) exposure. Even brief exposure can be dangerous. It is estimated that more than 88 million nonsmoking Americans 3 years of age and older were exposed to SHS in 2007-2008. Each year, about 3,400 nonsmoking adults in the US die of lung cancer as a result of breathing secondhand smoke. ETS can be particularly harmful to children. In 2010, 81.1% of California households with children 5 years old or younger completely prohibited smoking in the home.

Figure 12. Adult Smoking by Annual Household Income and Sex in California, 2011



Note: Data are weighted to the 2000 California population.
Source: California Behavioral Risk Factor Survey and California Adult Tobacco Survey.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 13. Effect of Smoking Cessation on Lung Cancer Risk among Men



Source: Cancer Rates and Risks, 4th Edition, National Cancer Institute, 1996.
Prepared by the California Department of Public Health, California Cancer Registry.

Table 11. American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People

Breast	Women age 20+	Clinical breast examination+	Every 3 years for women in their 20s and 30s and every year for women 40 and over
		Mammography	Annual, starting at age 40
		Breast self-examination	Optional, monthly, starting at age 20
Colorectal	Men & Women (average risk) age 50+	*Tests that find polyps and cancer:*	
		Flexible sigmoidoscopy*	Every five years
		Colonoscopy	Every 10 years
		Double-contrast barium enema*	Every five years
		CT colonography (virtual colonoscopy)*	Every five years
		Tests that mainly find cancer:	
		Fecal occult blood test (gFOBT)*,**	Every year
		Fecal immunochemical test (FIT)*,**	Every year
		Stool DNA test (sDNA)***	Interval uncertain
Prostate	Men age 50+	Digital rectal examination (DRE) and prostate-specific antigen test (PSA) after a discussion with the health care provider	Men who have at least a 10-year life expectancy should have an opportunity to make an informed decision with their health care provider about whether to be screened for prostate cancer, after receiving information about the potential benefits, risks, and uncertainties associated with prostate cancer screening. The discussion should begin at age 50 for men who are at average risk of prostate cancer, or at age 45 for men at high risk (i.e., African Americans and men who have a first-degree relative diagnosed with prostate cancer prior to age 65). Men who choose to be tested who have a PSA of less than 2.5 ng/ml may only need to be retested every 2 years. Screening should be done yearly for men whose PSA level is 2.5 ng/ml or higher.
Cervix	Women age 21+	Pap test and HPV testing Cervical cancer screening should begin at age 21. Women under age 21 should not be tested. Women between ages 21 and 29 should have a Pap test every 3 years. HPV testing should not be used in this age group unless it is needed after an abnormal Pap test result. Women between the ages of 30 and 65 should have a Pap test plus an HPV test (called "co-testing") every 5 years. This is the preferred approach, but it is also OK to have a Pap test alone every 3 years. Women over age 65 who have had regular cervical cancer testing with normal results should not be tested for cervical cancer. Once testing is stopped, it should not be started again. Women with a history of a serious cervical pre-cancer should continue to be tested for at least 20 years after that diagnosis, even if testing continues past age 65. A woman who has had her uterus removed (and also her cervix) for reasons not related to cervical cancer and who has no history of cervical cancer or serious pre-cancer should not be tested. A woman who has been vaccinated against HPV should still follow the screening recommendations for her age group.	
Cancer-related checkup	Men and Women age 20+	A cancer-related checkup during a periodic health examination should include health counseling and, depending on a person's age and gender,exams for cancers of the thyroid, oral cavity, skin, lymph nodes, testes, and ovaries, as well health counseling about tobacco, sun exposure, diet and nutrition, risk factors, sexual practices, and environmental and occupational exposures.	
Lung	Men and women, ages 55-74, in good health with at least a 30 pack-year history AND either still smoking or have quit smoking within the past 15 years ¥	Low-dose helical CT (LDCT) A process of informed and shared decision making with a clinician related to the potential benefits, limitations, and harms associated with screening for lung cancer with LDCT should occur before any decision is made to initiate lung cancer screening. Smoking cessation counseling remains a high priority for clinical attention in discussions with current smokers, who should be informed of their continuing risk of lung cancer. Screening should not be viewed as an alternative to smoking cessation.	

+Beginning at age 40, annual clinical breast examination should be performed prior to mammography. *Colonoscopy should be done if test results are positive. **For FOBT or FIT used as a screening test, the take-home multiple sample method should be used. One test done by the doctor in the office is not adequate for testing. *** The stool DNA test approved for colorectal cancer screening in 2008 is no longer commercially available. New stool DNA tests are presently undergoing evaluation and may become available at some future time. ¥ A pack year is defined as one pack of cigarettes a day for one year.

Cancer Types and Screening Guidelines

Breast Cancer

Breast cancer is a malignant tumor that starts in the cells of the breast. Breast cancer is the most common cancer among women in California, regardless of race/ethnicity.

New Cases: Breast cancer incidence in California has been fairly stable since 1988. An estimated 25,185 new cases are expected in 2014. More cancers are being diagnosed at an early stage, and the rate of late-stage disease has declined. About 73% of female breast cancers diagnosed in California in 2011 were found at an early stage. This shift to earlier stage diagnoses reflects, in part, the successful efforts of the American Cancer Society and other organizations to increase the number of women who receive regular breast cancer screening.

Nationally, breast cancer incidence has been decreasing since the late 1990s, with a dramatic decrease between 2002 and 2003, particularly in the 50-69 age groups. This may be due to the reduced use of hormone replacement therapy.

Between 2005-2009, the invasive female breast cancer incidence rate in California as compared to the rest of the nation was the same among Asian/Pacific Islanders, 4% higher among African Americans, 5% lower among Hispanics, and 9% higher among non-Hispanic whites. However, Asian/Pacific Islander women, who commonly have low breast cancer incidence rates in their native countries, experience increasing rates upon migrating and assimilating into the United States. Research in Los Angeles County has found that breast cancer rates among Japanese Americans are twice those of Chinese and Korean women and are quickly approaching rates of non-Hispanic whites. This increase can be explained in part by the fact that the Japanese were the first large Asian population to migrate to Los Angeles County and to adopt the Western lifestyle. Breast cancer incidence rates may continue to increase in the future as more Asian/Pacific Islander subgroups adopt more Westernized lifestyles.

For reasons that are not completely understood, being well-educated and financially well-off are associated with a higher risk of developing breast cancer. Non-Hispanic white women in the highest socioeconomic status (SES) category are at highest risk. Some geographic variation in breast cancer rates within California may be related to these factors.

Deaths: An estimated 4,280 breast cancer deaths are expected in California in 2014. Breast cancer mortality in California has declined by 36% (from 1988-2011) due to the combined effects of better treatment and earlier diagnosis. While this is very good news for California women, breast cancer incidence rates may begin to rise in the next decade as the large number of women born after World War II reach the age in which breast cancer becomes more common. This group of women may be at higher risk of breast cancer than their mothers due to younger age at first period or menstruation, smaller family size, delayed childbearing, and other factors. This effect may already be seen in women of Asian/Pacific Islander ancestry. Since 1988, the breast cancer incidence rate among this group of women has increased by 28%.

Breast cancer mortality has been declining among non-Hispanic white women for some time. Declines are now statistically significant for African American and Hispanic women as well. From 1988 to 2011, breast cancer mortality has declined for all race/ethnic groups. These trends may in part be attributed to earlier diagnosis due to more effective cancer screening.

Roughly 140 men are diagnosed with breast cancer each year in California, and about 30 die of the disease annually. Breast cancer in men is clinically very similar to the disease in women, but the prognosis is often poorer because men tend to be diagnosed at a later stage.

Signs and symptoms: Breast cancer typically produces no symptoms when the tumor is small and most treatable. Therefore, it is important for women to follow recommended screening guidelines to detect breast cancer at an early stage. Larger tumors may become evident as a breast mass, which is often painless. Less common symptoms include persistent changes to the breast, such as thickening, swelling, distortion, tenderness, skin irritation, redness, scaliness, or nipple abnormalities, such as ulceration, retraction, or spontaneous discharge. Breast pain is more likely to be caused by benign conditions and is not a common early symptom of breast cancer.

Risk factors: Potentially modifiable risk factors associated with increased breast cancer risk include weight gain after the age of 18, being overweight or obese (for postmenopausal breast cancer), use of menopausal hormone therapy (MHT) which was previously known as hormone replacement therapy, physical inactivity, and alcohol consumption. In addition, recent research indicates that long-term, heavy smoking also increases breast cancer risk, particularly among women who start smoking before first pregnancy. The International Agency for Research on Cancer has concluded that there is limited evidence that shift work, particularly at night, is also associated with an increased risk of breast cancer.

Other factors associated with increased breast cancer risk include high breast tissue density (the amount of glandular tissue relative to fatty tissue measured on a mammogram), high bone mineral density (women with low density are at increased risk for osteoporosis), type 2 diabetes, certain benign breast conditions (such as atypical hyperplasia), and lobular carcinoma *in situ*. High-dose radiation to the chest for cancer treatment also increases risk. Reproductive factors that increase risk include a

long menstrual history (menstrual periods that start early and/or end later in life), recent use of oral contraceptives or depo-provera, never having children, and having one's first child after the age of 30.

Risk is also increased by a family history of breast cancer, particularly having one or more affected first-degree relatives (though most women with breast cancer do not have a family history of the disease). Inherited mutations (alterations) in the breast cancer susceptibility genes *BRCA1* and *BRCA2* are very rare in the general population (much less than 1%), but account for 5%-10% of all female breast cancers, an estimated 5%-20% of male breast cancers, and 15%-20% of familial breast cancers. Scientists now believe that most familial breast cancer is due to the interaction between lifestyle factors and more common variations in the genetic code that confer a small increase in breast cancer risk. Individuals with a strong family history of breast and/or certain other cancers, such as ovarian and colon cancer, should consider counseling to determine if genetic testing is appropriate. Prevention measures may be possible for individuals with breast cancer susceptibility mutations. Studies show that prophylactic removal of the ovaries and/or breasts considerably decreases the risk of breast cancer in *BRCA1* and *BRCA2* mutation carriers; however, not all women who choose this surgery would have developed breast cancer. Women should undergo counseling before making a decision about prophylactic surgery.

Protective factors associated with a decreased risk of breast cancer include breastfeeding; regular, moderate, or vigorous physical activity; and maintaining a healthy body weight. Two medications, tamoxifen and raloxifene, have been approved to reduce breast cancer risk in women at high risk. Raloxifene appears to have a lower risk of certain side effects, such as uterine cancer and blood clots; however, it is only approved for use in postmenopausal women.

Early detection: Breast cancer screening for women at average risk includes clinical breast exam and mammography. Mammography can often detect breast cancer at an early stage, when treatment is more effective. Numerous studies have shown that early detection with mammography saves lives and increases treatment options. Steady declines in breast cancer mortality among women since 1989 have been attributed to a combination of early detection and improvements in treatment. Mammography is a very accurate screening tool for women at both average and increased risk; however, like any medical test, it is not perfect. Mammography will detect most, but not all, breast cancers in women without symptoms, though the sensitivity is lower for younger women and women with dense breasts. For these women, digital mammography or ultrasound imaging in combination with standard mammography may increase the likelihood of detecting cancer. Mammography also results in some overdiagnoses, which is the detection of cancer that would neither have caused harm nor been diagnosed in the absence of screening. Most women with an abnormal mammogram do not have cancer. Lesions that remain suspicious after additional imaging are usually biopsied for a definitive diagnosis. For most women at high risk of breast cancer, annual screening using magnetic resonance imaging (MRI) in addition to mammography is recommended, typically starting at the age of 30.

In 2010, 61% of women of screening age reported that they had a mammogram in the past year, compared to only 39% in 1987. However, a recent trend in mammography rates reflects as much as a 4% decline nationwide. Low-income women have shown the largest increase in mammography use, especially in recent years. African American women were most likely to have been recently screened (67%), while screening among Hispanic, non-Hispanic white, and Asian/Pacific Islander women were 56%, 63%, and 55%, respectively.

Concerted efforts should be made to improve access to health care and to encourage all women 40 and older to receive regular mammograms. For more information on the Society's recommendations for breast cancer screening, see Table 11. American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk, Asymptomatic People on page 21.

Treatment: Taking into account tumor size, extent of spread, and other characteristics, as well as patient preference, treatment usually involves breast-conserving surgery (surgical removal of the tumor and surrounding tissue) or mastectomy (surgical removal of the breast). Numerous studies have shown that for early breast cancer (cancer that has not spread to the skin, chest wall, or distant organs), long-term survival is similar among women treated with breast-conserving surgery plus radiation therapy and those treated with mastectomy. Women undergoing mastectomy who elect breast reconstruction have several options, including the materials used to restore the breast shape and the timing of the procedure.

Underarm lymph nodes are usually removed and evaluated during surgery to determine whether the tumor has spread beyond the breast. In women with early stage disease, sentinel lymph node biopsy, a procedure in which only the first lymph nodes to which cancer is likely to spread are removed, has a lower chance of long-term side effects (e.g., lymphedema, arm swelling caused by the accumulation of lymph fluid) and is as effective as a full axillary node dissection, in which many nodes are removed.

Treatment may also involve radiation therapy, chemotherapy (before or after surgery), hormone therapy (e.g., selective estrogen response modifiers, aromatase inhibitors, ovarian ablation), and/or targeted therapy. Postmenopausal women with early stage breast cancer that tests positive for hormone receptors benefit from treatment with an aromatase inhibitor (e.g., letrozole, anastrozole, or exemestane) in addition to, or instead of, tamoxifen. For women whose cancer tests positive for HER2/neu, several therapies are available that target the growth-pro-

moting protein HER2. The US Food and Drug Administration (FDA) revoked approval of bevacizumab (Avastin) for the treatment of metastatic breast cancer in 2011 because of evidence showing minimal benefit and potentially dangerous side effects.

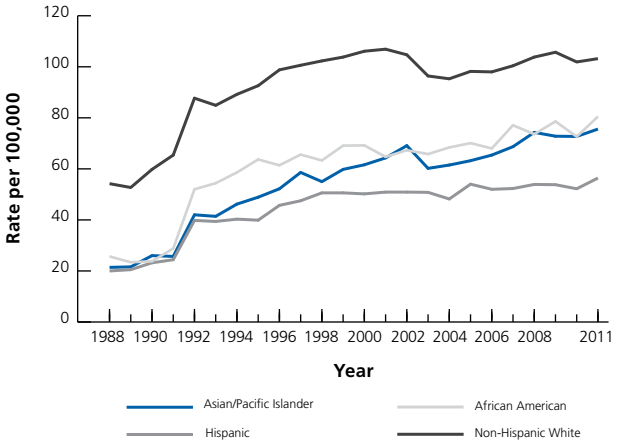
While some cases of ductal carcinoma *in situ* (DCIS) will progress to become invasive cancer, many will not. However, because there is currently no way to identify which lesions will progress, surgery is recommended for all patients. Treatment options for DCIS include breast-conserving surgery with radiation therapy or mastectomy; if the tumor is hormone receptor-positive, surgery may be followed by treatment with tamoxifen. Removal of axillary lymph nodes is not generally needed, but a sentinel lymph node procedure may be performed with a mastectomy. A report by a panel of experts convened by the National Institutes of Health concluded that in light of the noninvasive nature and favorable prognosis of DCIS, the primary goal of future research should be the development of risk categories so each patient can be given the minimum treatment necessary for a successful outcome.

Survival: Overall, 61% of breast cancer diagnoses are localized disease (cancer has not spread to lymph nodes or other locations outside the breast), for which the five-year relative survival rate is nearly 100%. If the cancer has spread to tissues or lymph nodes under the arm (regional stage), the survival rate is 87%. If the spread is to lymph nodes around the collarbone or to distant lymph nodes or organs (distant stage), the survival rate falls to 27%.

Many studies have shown that being overweight adversely affects survival for postmenopausal women with breast cancer. In addition, breast cancer survivors who are more physically active, particularly after diagnosis, are less likely to die from breast cancer, or other causes, than those who are inactive.

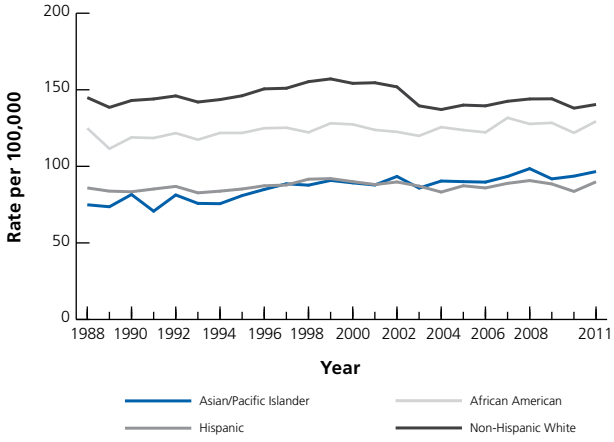
For more information about breast cancer, see the *American Cancer Society Breast Cancer Facts & Figures*, available online at cancer.org/statistics.

Figure 14. Trends in Early Stage Female Breast Cancer Incidence by Race/Ethnicity in California, 1988-2011



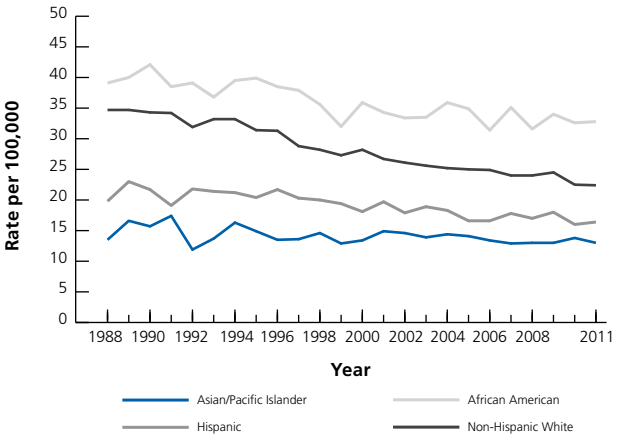
Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 15. Trends in Female Breast Cancer Incidence by Race/Ethnicity in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 16. Trends in Female Breast Cancer Mortality by Race/Ethnicity in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.
The APC is significantly different from zero (p<0.05).

Cervical Cancer

Cervical cancer is cancer that starts in the cervix. The cervix is the lower part of the uterus (womb). It is sometimes called the uterine cervix. The body of the uterus (the upper part) is where a fetus grows. The cervix connects the body of the uterus to the vagina (birth canal). The part of the cervix closest to the body of the uterus is called the endocervix. The part next to the vagina is the exocervix (or ectocervix). The two main types of cells covering the cervix are squamous cells (on the exocervix) and glandular cells (on the endocervix). The place these two cell types meet is called the transformation zone. Most cervical cancers start in the transformation zone.

New Cases: An estimated 1,405 new cases of cervical cancer are expected in California in 2014. In general, the risk of developing cancer is much lower for persons of Hispanic and Asian/Pacific Islander origin than for non-Hispanic whites and African Americans. However, this is not true for cervical cancer. Hispanic women have the highest risk of developing cervical cancer, about 1½ times higher than non-Hispanic white and Asian/Pacific Islander women. Cervical cancer is one of the top 10 cancers diagnosed among many of the groups recently immigrating to California.

Deaths: An estimated 430 deaths from cervical cancer are expected in California in 2014. Mortality rates have declined rapidly in the past decades due to prevention and early detection as a result of screening with the Pap test, but have begun to level off in recent years. From 2005-2009, rates were stable among both women younger than 50, and among those 50 years and older.

Signs and symptoms: Women with early cervical cancers and precancers usually have no symptoms. Symptoms often do not begin until the cancer becomes invasive and grows into nearby tissue. When this happens, the most common symptoms are:

- Abnormal vaginal bleeding, such as bleeding after vaginal intercourse, bleeding after menopause, bleeding and spotting between periods, and having (menstrual) periods that are longer or heavier than usual. Bleeding after douching or after a pelvic exam may also occur.
- An unusual discharge from the vagina – the discharge may contain some blood and may occur between periods or after menopause
- Pain during intercourse

These signs and symptoms can also be caused by conditions other than cervical cancer. For example, an infection can cause pain or bleeding. Still, if any of these signs or other suspicious symptoms are present, a health care professional should be seen right away. Ignoring symptoms may allow the cancer to progress to a more advanced stage and lower the chance for effective treatment.

It is important for women to have regular Pap tests and pelvic exams rather than waiting for symptoms to appear.

A primary doctor can often treat precancers and perform colposcopy and biopsy to diagnose precancers and cancers. If there is a diagnosis of invasive cancer, the doctor should refer to a gynecologic oncologist, a doctor who specializes in cancers of women's reproductive systems.

Risk factors: Several risk factors increase the chance of getting cervical cancer. Women without any of these risk factors rarely develop cervical cancer. Although these factors increase the odds of getting cervical cancer, many women with these risk factors do not develop this disease. When a woman develops cervical cancer or precancerous changes of the cervix, it is not possible to say with certainty that a particular risk factor was the cause.

Some risk factors include:

- Human papilloma virus (HPV)
- Smoking
- Diet
- Multiple full-term pregnancies
- Young age at the first full-term pregnancy
- Poverty
- Family history of cervical cancer

The most important risk factor for cervical cancer is infection by the human papilloma virus (HPV). In fact, almost all – more than 99% – cervical cancers are related to HPV. Of the more than 150 related HPV genotypes, about 70% are caused by HPV geno-

types 16 or 18. While nearly all cervical cancers are related to HPV, most genital HPV infections do not cause cervical cancer.

Women who smoke are about twice as likely as nonsmokers to get cervical cancer. Smoking exposes the body to many cancer-causing chemicals that affect organs other than the lungs. These harmful substances are absorbed through the lungs and carried in the bloodstream throughout the body. Tobacco byproducts have been found in the cervical mucus of women who smoke. Researchers believe that these substances damage the DNA of cervical cells, and may contribute to the development of cervical cancer. Smoking also makes the immune system less effective in fighting HPV infections.

Poverty is also a risk factor for cervical cancer. Many low-income women do not have ready access to adequate health care services, including Pap tests. This means they might not get screened or treated for cervical cancers and precancers.

Prevention: The US Food and Drug Administration has approved two vaccines for the prevention of HPV infection. Studies show that these vaccines have the potential to prevent up to 70% of the more than 1,405 invasive cervical cancer cases and 430 cervical cancer deaths in California each year. HPV vaccines cannot protect against established infections, nor do they protect against all types of HPV that cause cervical cancer, which is why vaccinated women should still be screened for cervical cancer.

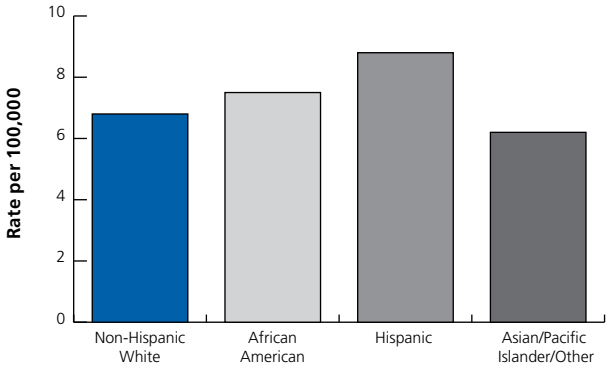
Screening can prevent cervical cancer by detecting precancerous lesions. The Pap test is the most widely used cervical cancer screening method. It is a simple procedure in which a small sample of cells is collected from the cervix and examined under a microscope. Pap tests are effective, but not perfect, and false positives and false negatives are possible. HPV tests, which detect HPV infections associated with cervical cancer, can forecast cervical cancer risk many years in the future and are used in conjunction with the Pap test, either as an additional screening test or when Pap test results are uncertain. Most cervical precancers develop slowly, so cancer can usually be prevented if a woman is screened regularly.

Early detection: The American Cancer Society recommends that all women begin cervical cancer screening at 21 years of age. For women ages 21-29 years, screening should be a Pap test every three years. For women ages 30 to 65 years, the preferred screening method is HPV and Pap "co-testing" every five years (a Pap test alone every three years is also acceptable).

Treatment: Common types of treatments for cervical cancer include surgery, radiation therapy, and chemotherapy. Often a combination of treatments is used.

Survival: If abnormal findings are detected early through a Pap test and treated, survival is virtually 100%. As with all other cancers, the five-year survival rate of cervical cancer depends largely on the stage in which the cancer is detected and treated. If detected in the early stages (*in situ* or stage 1), cervical cancer can have a survival rate as high as 93% (localized), decreasing to 60% (regional). Cervical cancers detected at distant stage have an approximate 19% five-year survival rate. With what is known about cervical cancer prevention, early detection, and treatment, cervical cancer deaths can be reduced to virtually zero if prevention and early detection guidelines are followed.

Figure 17. Invasive Cervical Cancer Incidence by Race/Ethnicity in California, 2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Childhood Cancer (Ages 0-14 years)

For a detailed overview of childhood cancers, see the Special Section: Childhood & Adolescent Cancers in the Society's *Cancer Facts & Figures 2014* publication (at cancer.org/statistics).

New Cases: More than 1,700 children and young adults under the age of 20 are diagnosed with cancer in California each year. Of these, more than 1,000 are between 0-14 years. When compared to the rest of the nation, the cancer incidence rate among children 0-14 years in California between 2005-2009 was 2% higher among non-Hispanic whites, 1% lower among African Americans, 16% higher among Hispanics, and 5% lower among Asian/Pacific Islanders.

Deaths: Although accidents kill about three times more children than cancer, an estimated 1 of every 265 children will develop some form of cancer before they are 20 years old. Mortality rates for childhood cancer in California have declined by 61% over the past four decades, from 7.3 (per 100,000) in 1970 to 2.7 in 2010. The substantial progress in reducing childhood cancer mortality is largely attributable to improvements in treatment and high rates of participation in clinical trials.

Signs and symptoms: Early symptoms are usually nonspecific. Parents should ensure that children have regular medical check-ups and be alert to any unusual, persistent symptoms. Signs of childhood cancer include an unusual mass or swelling; unexplained paleness or loss of energy; a sudden increase in the tendency to bruise or bleed; a persistent, localized pain; a prolonged, unexplained fever or illness; frequent headaches, often with vomiting; sudden eye or vision changes; and excessive, rapid weight loss. Major categories of pediatric cancer and more specific symptoms include:

- Leukemia (31% of all childhood cancers, including benign brain tumors), which may be recognized by bone and joint pain, weakness, pale skin, bleeding or bruising, and fever or infection
- Brain and other central nervous system tumors (25%), which may cause headaches, nausea, vomiting, blurred or double vision, dizziness, and difficulty walking or handling objects
- Neuroblastoma (6%), a cancer of the nervous system that is most common in children younger than five years of age and usually appears as a swelling in the abdomen
- Wilms tumor (5%), a kidney cancer that may be recognized by a swelling or lump in the abdomen
- Non-Hodgkin lymphoma (4%) and Hodgkin lymphoma (4%), which affect lymph nodes but may involve the bone marrow and other organs, and may cause swelling of lymph nodes in the neck, armpit, or groin, as well as weakness and fever
- Rhabdomyosarcoma (3%), a soft tissue sarcoma that can occur in the head and neck, genitourinary area, trunk, and extremities, and may cause pain and/or a mass or swelling
- Osteosarcoma (3%), a bone cancer that most often occurs in adolescents and commonly appears as sporadic pain in the affected bone that may worsen at night or with activity, with eventual progression to local swelling
- Retinoblastoma (2%), an eye cancer that usually occurs in children younger than five years of age and is typically recognized because of discoloration behind the pupil
- Ewing sarcoma (1%), another type of cancer that usually arises in bone, is most common in adolescents, and typically appears as pain at the tumor site.

(Proportions are based on International Classification of Childhood Cancer groupings, including benign brain/central nervous system tumors, and are for all races combined and may vary according to race/ethnicity.)

Treatment: Childhood cancers can be treated by a combination of therapies (surgery, radiation, and chemotherapy) chosen based on the type and stage of cancer. Treatment is coordinated by a team of experts, including pediatric oncologists and nurses, social workers, psychologists, and others who assist children and their families. Because these cancers are uncommon, outcomes are more successful when treatment is managed by specialists at a children's cancer center. If the child is eligible, placement in a clinical trial, which compares a new treatment to the best current treatment, should also be considered.

Survival: Survival for all invasive childhood cancers combined has improved markedly over the past 30 years due to new and improved treatments. The five-year relative survival rate increased from 58% for diagnoses in the mid-1970s to 83% in the most recent time period (2003-2009). However, rates vary considerably depending on cancer type, patient age, and other characteristics. For the most recent time period (2003-2009), the five-year survival among children 0-14 years with Hodgkin lymphoma, 98%; Wilms tumor, 90%; non-Hodgkin lymphoma, 85%; leukemia, 86%; neuroblastoma, 76%; brain and other central nervous system tumors, 75%; soft tissue, 80%; and bone and joint, 79%.

Pediatric cancer patients may experience treatment-related side effects long after active treatment. Late treatment effects include impairment in the function of specific organs, secondary cancers, and cognitive deficits. The Children's Oncology Group (COG) has developed long-term follow-up guidelines for screening and management of late effects in survivors of childhood cancer. For more information on childhood cancer management, see the COG website at survivorshipguidelines.org.

Table 12. Number of Children Diagnosed with Cancer by Age at Diagnosis and Race/Ethnicity in California, 2011

Race/Ethniciy	0-4 Years	5-9 Years	10-14 Years	Total
Non-Hispanic White	170	107	111	388
African American	25	17	17	59
Hispanic	287	144	166	597
Asian/Pacific Islander	52	33	28	113

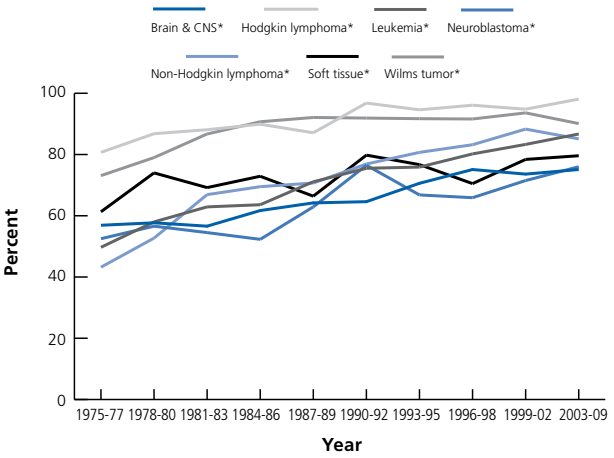
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Table 13. Cancer Incidence among Children Ages 0-14 by Race/Ethnicity in California, 2011

Race/Ethnicity	Cases	Rate
Non-Hispanic White	388	17.6
African American	59	12.1
Hispanic	597	14.8
Asian/Pacific Islander	113	12.4

Rates are per 100,000 and age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 18. Trends in Five-year Relative Survival among Children Ages 0-14 by Year of Diagnosis, 1975-2009



Note: Based on follow up through 2010. Neuroblastoma and Wilms tumor are not mutually exclusive from the other tumors presented in graph.
Source: SEER Cancer Statistics Review, 1975-2010. National Cancer Institute, 2013.
* The difference between 1975-1977 and 2003-2009 is statistically significant ($p<0.05$).
Prepared by the California Department of Public Health, California Cancer Registry.

Colon and Rectum Cancer

Colon and rectum cancer is the third most common cancer in California among both men and women, and it is the third most common cause of cancer-related death for each sex. Although it is less common than either breast or prostate cancer, colon and rectum cancer has a poorer prognosis. The five-year survival rate for colon and rectum cancer is 69%, compared to 92% and nearly 100% for breast and prostate cancers, respectively. The poorer prognosis is related to detection at a later stage.

New cases: An estimated 9,975 cases of colon and 4,280 cases of rectal cancer are expected to occur in California in 2014. Colorectal cancer risk has declined steadily in the state over the past 24 years. Colorectal cancer incidence rates declined substantially for all four major racial/ethnic groups since 1988. Incidence rates of colorectal cancer decreased 34% among non-Hispanic whites, 27% among African Americans, 20% among Asian/Pacific Islanders and 10% among Hispanics.

The reasons for declining colorectal cancer rates are not clearly understood. It has been suggested that increased use of endoscopic screening (sigmoidoscopy or colonoscopy) has resulted in the removal of benign polyps that would have progressed to cancer. Among the other possible contributors to declining rates are the increased use of aspirin to prevent heart disease, and dietary changes including increased calcium intake.

In 2005-2009, the invasive colorectal cancer incidence rate in California, as compared to the rest of the nation, was 8% higher among Asian/Pacific Islanders, 2% higher among African Americans, 7% lower among Hispanics, and 6% lower among non-Hispanic whites.

Deaths: An estimated 4,280 deaths of colon and 985 deaths of rectal cancer are expected in California in 2014. Over the past 23 years, mortality rates decreased by 36% for all races combined. Among new cases, more of the decline in colorectal cancer rates has been among late-stage tumors. These decreases reflect declining incidence rates and improvements in early detection and treatment.

Signs and symptoms: Early stage colorectal cancer typically does not have symptoms, which is why screening is usually necessary to detect this cancer in its early stages. Symptoms may include rectal bleeding, blood in the stool, a change in bowel habits or stool shape (e.g., narrower than usual), the feeling that the bowel is not completely empty, cramping pain in the lower abdomen, decreased appetite, or weight loss. In some cases, blood loss from the cancer leads to anemia (low red blood cells), causing symptoms such as weakness and excessive fatigue. Timely evaluation of symptoms consistent with colorectal cancer is essential, and is especially important for adults younger than age 50 among whom colorectal cancer incidence is increasing.

Risk factors: The risk of colorectal cancer increases with age. In 2010, 90% of cases were diagnosed in individuals 50 years of age and older. Modifiable factors associated with increased risk include obesity, physical inactivity, a diet high in red or processed meat, alcohol consumption, long-term smoking, and possibly very low intake of fruits and vegetables. Hereditary and medical factors that increase risk include a personal or family history of colorectal cancer and/or polyps, a personal history of chronic inflammatory bowel disease (ulcerative colitis, Crohn's disease), certain inherited genetic conditions (e.g., Lynch syndrome, also known as hereditary non-polyposis colorectal cancer, and familial adenomatous polyposis [FAP]), and type 2 diabetes.

Consumption of milk and calcium and higher blood levels of vitamin D appear to decrease colorectal cancer risk. Regular use of nonsteroidal anti-inflammatory drugs, such as aspirin, also

reduces risk. However, these drugs are not recommended for the prevention of colorectal cancer among individuals at average risk because they can have serious adverse health effects. Accumulating evidence suggests that past or current use of menopausal hormone therapy (particularly combined estrogen and progesterone) also lowers risk. However, hormone therapy is not recommended for the prevention of colorectal cancer because it increases risk for breast cancer, stroke, heart attack, and blood clots.

Early detection: Beginning at the age of 50, men and women who are at average risk for developing colorectal cancer should begin screening. Screening can detect and allow for the removal of colorectal polyps that might become cancerous, as well as detect cancer at an early stage, when treatment is usually less extensive and more successful. In 2008, the American Cancer Society collaborated with several other organizations to release colorectal cancer screening guidelines. These joint guidelines emphasize cancer prevention and draw a distinction between colorectal screening tests that primarily detect cancer and those that can detect both cancer and precancerous polyps. There are a number of recommended screening options, which differ by the extent of bowel preparation, as well as test performance, limitations, time interval, and cost.

Survival from colon and rectum cancer is 94% when the cancer is diagnosed before it has extended beyond the intestinal wall. Colon and rectum cancers are harder to detect when asymptomatic than breast and prostate cancers, and are less likely to be diagnosed at an early stage (*in situ* or localized).

In 2010, about 43% of colon and rectum cancers diagnosed in California were early stage, compared to about 80% for prostate, and 65% for breast cancer. The American Cancer Society recommends that both men and women begin routine screening for this cancer at age 50.

In 2010, only 51% of California adults ages 50 and older reported having had sigmoidoscopy or colonoscopy within the past five years. The proportion screened was even lower among persons in poverty (35% male, 42% female), and among Hispanics (38% male and female).

In 2010, 37% of Californians older than age 50 reported having a fecal occult blood test (FOBT) using a home kit in the past five years. Individuals with low incomes, Hispanics, and Asian/Pacific Islanders were less likely to have had the exam (29%, 26%, and 30% respectively).

Treatment: Surgery is the most common treatment for colorectal cancer. For cancers that have not spread, surgical removal

American Cancer Society Recommendations for Colorectal Cancer Early Detection

People at average risk

The American Cancer Society believes that preventing colorectal cancer (and not just finding it early) should be a major reason for being tested. Finding and removing polyps keeps some people from getting colorectal cancer. Tests that have the best chance of finding both polyps and cancer are preferred if these tests are available.

Beginning at age 50, both men and women at average risk for developing colorectal cancer should use one of the screening tests below:

Tests that find polyps and cancer

- Flexible sigmoidoscopy every five years*
- Colonoscopy every 10 years
- Double-contrast barium enema every five years*
- CT colonography (virtual colonoscopy) every five years*

Tests that mainly find cancer

- Fecal occult blood test (FOBT) every year*,**
- Fecal immunochemical test (FIT) every year*,**
- Stool DNA test (sDNA)***

*Colonoscopy should be done if test results are positive.

**For FOBT or FIT used as a screening test, the take-home multiple sample method should be used. An FOBT or FIT done during a digital rectal exam in the doctor's office is not adequate for screening.

*** The stool DNA test approved for colorectal cancer screening in 2008 is no longer commercially available. New stool DNA tests are presently undergoing evaluation and may become available at some future time.

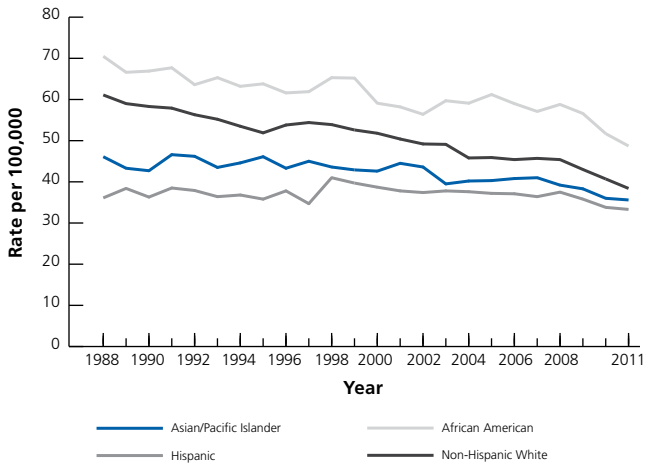
People at increased or high risk

If there is an increased or high risk of colorectal cancer, begin screening before age 50 and/or be screened more often. The following conditions make the risk higher than average:

- A personal history of colorectal cancer or adenomatous polyps
- A personal history of inflammatory bowel disease (ulcerative colitis or Crohn's disease)
- A strong family history of colorectal cancer or polyps
- A known family history of a hereditary colorectal cancer syndrome such as familial adenomatous polyposis (FAP) or hereditary non-polyposis colon cancer (HNPCC)

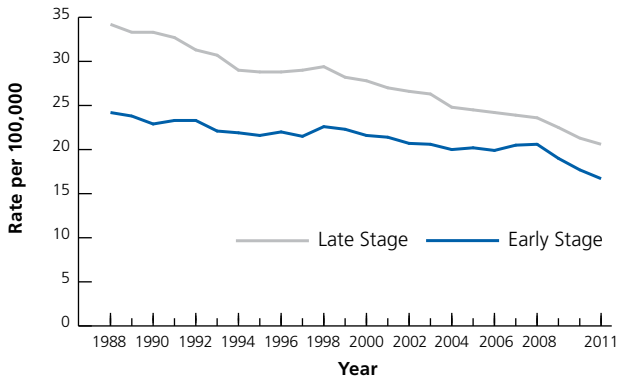
may be curative. A permanent colostomy (creation of an abdominal opening for elimination of body waste) is rarely needed for colon cancer and is infrequently required for rectal cancer. Chemotherapy alone, or in combination with radiation, is given before (neoadjuvant) or after (adjuvant) surgery to most patients whose cancer has penetrated the bowel wall deeply or spread to lymph nodes. Adjuvant chemotherapy for colon cancer in otherwise healthy patients 70 years of age and older is equally effective as in younger patients; toxicity in older patients can be limited by avoiding certain drugs (e.g., oxaliplatin). Several targeted therapies have been approved by the FDA to treat metastatic colorectal cancer.

Figure 19. Trends in Invasive Colon and Rectum Cancer Incidence by Race/Ethnicity in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 20. Trends in Colon and Rectum Cancer Incidence by Stage at Diagnosis in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Survival: The five-year relative survival rate for Californians with colorectal cancer is 69%. When colorectal cancers are detected at an early, localized stage, the five-year survival is 95%; however, only 45% of colorectal cancers are diagnosed at this stage, in part due to the underuse of screening. If the cancer has spread regionally to involve nearby organs or lymph nodes at the time of diagnosis, the five-year survival drops to 73%. If the disease has spread to distant organs, the five-year survival is 13%.

Liver

New cases: An estimated 3,585 new cases of liver cancer (including intrahepatic bile duct cancers) are expected to occur in California during 2014. Most (80%) of these cases are hepatocellular carcinoma (HCC). Liver cancer incidence rates are about three times higher in men than in women. From 1988 to 2011, rates increased by 4.0% per year in men and by 3.3% per year in women.

Deaths: An estimated 2,785 liver cancer deaths are expected in 2014 in California. From 1988 to 2011, death rates for liver cancer increased by 2.7% per year in men and 2.5% per year in women.

Signs and symptoms: Common symptoms include abdominal pain and/or swelling, weight loss, weakness, loss of appetite, jaundice (a yellowish discoloration of the skin and eyes), and fever. Enlargement of the liver is the most common physical sign.

Risk factors: In the US and other Western countries, the majority of liver cancer cases are due to alcohol-related cirrhosis, and possibly nonalcoholic fatty liver disease associated with obesity, diabetes, and related metabolic disorders. Chronic hepatitis B virus (HBV) and hepatitis C virus (HCV) infections are associated with less than half of liver cancer cases in the US, although they are the major risk factors for the disease worldwide. In the US, rates of HCC are higher in immigrants from areas where HBV is endemic, such as China, Southeast Asia, and sub-Saharan Africa. A vaccine that protects against HBV has been available since 1982. Vaccination is recommended for all infants at birth; for all children under 18 years of age who were not vaccinated at birth; and for adults in high-risk groups (e.g., health care workers, injection drug users, and those younger than 60 years of age who have been diagnosed with diabetes). It is also recommended that pregnant women be tested for HBV.

There is no vaccine available to prevent HCV infection, though new antiviral therapies may prevent chronic infection among those with acute (new) infection. The Centers for Disease Control and Prevention (CDC) recommends one-time HCV testing for everyone born from 1945 to 1965 because people in this birth cohort account for about three-fourths of HCV-infected individuals and HCV-related deaths in the US. Routine testing is recommended for individuals at high risk of infection, such as injection drug users, those on hemodialysis, and people who are HIV infected. People who test positive can receive treatment, which may reduce their risk of liver cancer, and counseling to reduce the risk of HCV transmission to others. Other preventive

measures for HCV infection include screening of donated blood, organs, and tissues; adherence to infection control practices during medical and dental procedures; and needle-exchange programs for injection drug users. For more information on viral hepatitis, including who is at risk, visit the CDC website at cdc.gov/hepatitis/.

Certain genetic disorders, such as hemochromatosis, also increase the risk of liver cancer. In economically developing countries, the risk is increased by some parasitic infections (schistosomiasis and liver flukes) and consumption of food contaminated with aflatoxin, a toxin produced by mold during the storage of agricultural products in a warm, humid environment.

Early detection: Screening for liver cancer has not been shown to reduce mortality. Nonetheless, many doctors in the US screen high-risk people (e.g., those with cirrhosis) with ultrasound or blood tests.

Treatment: Early stage liver cancer can sometimes be successfully treated with surgery in a limited number of patients with sufficient healthy liver tissue. Liver transplantation may be an option for individuals with small tumors that cannot be surgically removed. Other treatment options include ablation (tumor destruction) or embolization (blocking blood flow to the tumor). Fewer treatment options exist for patients diagnosed at an advanced stage. Sorafenib (Nexavar) is a targeted drug approved for the treatment of HCC in patients who are not candidates for surgery.

Survival: The overall five-year relative survival rate for patients with liver cancer in California is nearly 19%. If patients are diagnosed at an early stage, five-year survival is 30%. Survival decreases to 12% and 3% for patients who are diagnosed at regional and distant stages of disease, respectively.

Lung and Bronchus

New cases: An estimated 16,440 new cases of lung cancer are expected in 2014, accounting for about 9% of all cancer diagnoses in California. The incidence rate has been declining since the mid-1980s in men, but only since the mid-2000s in women. From 1988 to 2011, lung cancer incidence rates decreased by 2.4% per year in men and by 0.9% per year in women.

Deaths: Lung cancer accounts for more deaths than any other cancer in both men and women. An estimated 12,690 deaths, accounting for about 23% of all cancer deaths, are expected to occur in California in 2014. From 1988 to 2011, rates decreased 2.6% per year in men and 1.2% per year in women. Gender differences in lung cancer mortality reflect historical differences in patterns of smoking uptake and cessation over the past 50 years.

Signs and symptoms: Symptoms may include persistent cough, sputum streaked with blood, chest pain, voice change, and recurrent pneumonia or bronchitis.

Risk factors: Cigarette smoking is by far the most important risk factor for lung cancer; risk increases with both quantity and duration of smoking. Cigar and pipe smoking also increase risk. Exposure to radon gas released from soil and building materials is estimated to be the second leading cause of lung cancer in Europe and North America. Other risk factors include occupational or environmental exposure to secondhand smoke, asbestos (particularly among smokers), certain metals (chromium, cadmium, arsenic), some organic chemicals, radiation, air pollution, and diesel exhaust. Additional occupational exposures that increase lung cancer risk include rubber manufacturing, paving, roofing, painting, and chimney sweeping. Risk is also probably increased among people with a medical history of tuberculosis. Genetic susceptibility plays a contributing role in the development of lung cancer, especially in those who develop the disease at a young age.

Early detection: In 2010, results from the National Lung Screening Trial (NLST) showed 20% fewer lung cancer deaths among current and former heavy smokers who were screened with spiral CT compared to standard chest x-ray. In January 2013, the American Cancer Society issued guidelines for the early detection of lung cancer based on a systematic review of the evidence. These guidelines endorse a process of shared decision making between clinicians who have access to high-volume, high-quality lung cancer screening programs and current or former adult smokers (who quit within the previous 15 years) who are 55 to 74 years of age, in good health, and with at least a 30-year pack history of smoking. Shared decision making should include a discussion of the benefits, uncertainties, and harms associated with lung cancer screening. For more information on lung cancer screening, see Table 11. American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People on page 21.

Treatment: Lung cancer is classified as small cell (14%) or non-small cell (84%) for the purposes of treatment. Based on type and stage of cancer, as well as specific molecular characteristics of cancer cells, treatments include surgery, radiation therapy, chemotherapy, and targeted therapies. For early stage non-small cell lung cancers, surgery is usually the treatment of choice; chemotherapy (sometimes in combination with radiation therapy) is often given as well. Advanced-stage non-small cell lung cancer patients are usually treated with chemotherapy, targeted drugs, or some combination of the two. Chemotherapy alone or combined with radiation is the usual treatment of choice for small cell lung cancer; on this regimen, a large percentage of patients experience remission, though the cancer often returns.

Survival: The one- and five-year relative survival rates for lung cancer cases diagnosed during 2003-2009 were 43% and 17%, respectively. Only 15% of lung cancers are diagnosed at a localized stage, for which the five-year survival rate is 54%. The five-year survival for small cell lung cancer (6%) is lower than that for non-small cell (18%).

Prostate Cancer

New cases: An estimated 22,080 new cases of prostate cancer will occur in California during 2014. Prostate cancer is the most frequently diagnosed cancer in men in almost all racial/ethnic groups in California, aside from skin cancer. The number of prostate cancers diagnosed each year rose dramatically in the early 1990s when the prostate-specific antigen (PSA) test began to be widely used to detect this cancer. Incidence rates peaked in 1992-93 and were approximately 4% lower in 2011 than in 1988. These trends are consistent with the rapid introduction of a new, sensitive screening method.

African American men are at especially high risk for prostate cancer. They are approximately 45% more likely to develop this disease than non-Hispanic white men, 58% more likely than Hispanic men, and 94% more likely than Asian/Pacific Islanders. Unlike breast cancer, prostate cancer tends to be diagnosed late in life. Nearly 60% of prostate cancers are diagnosed among men ages 65 and older.

In 2005-2009, the prostate cancer incidence rate in California, as compared to the rest of the nation, was 15% lower among Asian/Pacific Islanders, 10% lower among African Americans, 4% lower among Hispanics, and 6% lower among non-Hispanic white men.

Deaths: With an estimated 3,065 deaths in 2014 in California, prostate cancer is the second-leading cause of cancer death in men. Prostate cancer death rates have been decreasing since the early 1990s in men of all races/ethnicities, though they remain more than twice as high in African Americans as in any other group (see Table 10. Five Most Common Cancers and Number of New Cases by Sex and Detailed Race/Ethnicity, California, 2007-2011 on page 13). Overall, prostate cancer death rates decreased by 3.1% per year from 1988 to 2011. Prostate cancer mortality in California decreased by 40% after 1988, with declines among men in each racial/ethnic group.

Signs and symptoms: Early prostate cancer usually has no symptoms. With more advanced disease, men may experience weak or interrupted urine flow; the inability to urinate or difficulty starting or stopping the urine flow; the need to urinate frequently, especially at night; blood in the urine; or pain or burning with urination. Advanced prostate cancer commonly spreads to the bones, which can cause pain in the hips, spine, ribs, or other areas.

Risk factors: Very little is known about the causes of prostate cancer. Large international differences in prostate cancer risk indicate that lifestyle factors such as diet may be involved, and it is likely that diet interacts with hormonal status in complex ways.

The only well-established risk factors for prostate cancer are increasing age, African ancestry, a family history of the disease, and certain inherited genetic conditions. About 60% of all prostate cancer cases are diagnosed in men 65 years of age and older, and 97% occur in men 50 and older. African American men and Caribbean men of African descent have the highest documented prostate cancer incidence rates in the world. Genetic studies suggest that strong familial predisposition may be responsible for 5%-10% of prostate cancers. Inherited conditions associated with increased risk include Lynch syndrome and the *BRCA2* mutation phenotype. Studies suggest that a diet high in processed meat or dairy foods may be a risk factor, and obesity appears to increase the risk of aggressive prostate cancer. There is some evidence that occupational exposures of firefighters (e.g., toxic combustion products) increase risk.

Prevention: The chemoprevention of prostate cancer is an active area of research. Two drugs of interest, finasteride and dutasteride, reduce the amount of certain male hormones in the body and are approved to treat the symptoms of benign prostate enlargement. Both drugs have been found to lower the risk of prostate cancer by 25% in large clinical trials with similar potential side effects, including reduced libido and the risk of erectile dysfunction. However, a study of long-term survival among participants in the finasteride trial recently reported that the drug had no effect on overall survival or survival after the diagnosis of prostate cancer. Neither finasteride nor dutasteride is approved for the prevention of prostate cancer at this time.

Early detection: In 2010, 73% of Californian men ages 50 and older reported having had at least one PSA test, while 82% reported having at least one digital rectal exam (DRE) test. Non-Hispanic white and African American men were more likely than Hispanic and Asian men to have been tested in the past year. Men from households above poverty level were more likely to have had a prostate cancer screening test than men from households below poverty.

Results from two large clinical trials designed to determine the efficacy of PSA testing for reducing prostate cancer death were inconsistent. Given the significant potential for serious side effects associated with prostate cancer treatment along with concerns about the high prevalence of slow-growing, non-lethal disease, no organizations presently endorse regular prostate cancer screening. The American Cancer Society recommends that, beginning at the age of 50, men who are at average risk of prostate cancer and have a life expectancy of at least 10 years have a conversation with their health care provider about the benefits and limitations of PSA testing. Men should have an opportunity to make an informed decision about whether to be tested based on their personal values and preferences. Men at high risk of developing prostate cancer (African Americans or

men with a close relative diagnosed with prostate cancer before the age of 65) should have this discussion with their health care provider beginning at 45. Men at even higher risk (because they have several close relatives diagnosed with prostate cancer at an early age) should have this discussion with their provider at 40. The American Urologic Association recently issued similar recommendations. Current research is exploring new biologic markers for prostate cancer to improve diagnosis and prognosis. Please refer to Table 11. American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People on page 21 for screening guidelines for the early detection of prostate cancer.

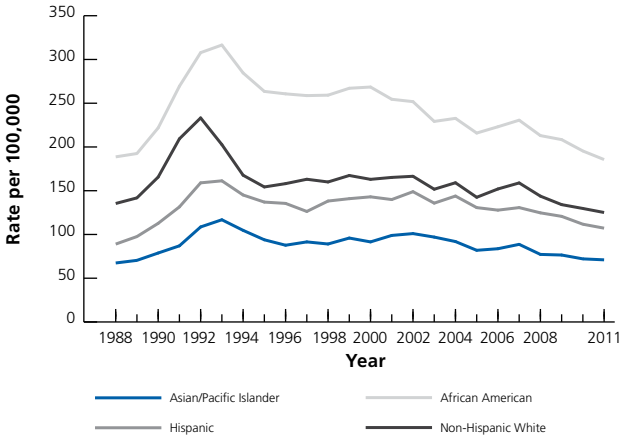
Treatment: Treatment options vary depending on age, stage, and grade of cancer, as well as other medical conditions. The grade assigned to the tumor, typically called the Gleason score, indicates the likely aggressiveness of the cancer. Although scores as low as 2 are theoretically possible, in practice most cancers are assigned scores ranging from 6 (low grade, less aggressive) to 10 (high grade, very aggressive).

Early stage disease may be treated with surgery (open, laparoscopic, or robotic-assisted), external beam radiation, or radioactive seed implants (brachytherapy). Data show similar survival rates for patients with early stage disease treated with any of these methods, and there is no current evidence supporting a "best" treatment for prostate cancer. Hormonal therapy may be used along with surgery or radiation therapy in some cases. Treatment often impacts a man's quality of life due to side effects or complications, such as urinary and erectile difficulties, that may be short or long term. Accumulating evidence indicates that careful observation ("active surveillance"), rather than immediate treatment, can be an appropriate option for men with less aggressive tumors and for older men.

More advanced disease is treated with hormonal therapy, chemotherapy, radiation therapy, and/or other treatments. Hormone treatment may control advanced prostate cancer for long periods by shrinking the size or limiting the growth of the cancer, thus helping to relieve pain and other symptoms. An option for some men with advanced prostate cancer that is no longer responding to hormones is a cancer vaccine known as sipuleucel-T (Provenge). For this treatment, special immune cells are removed from a man's body, exposed to prostate proteins in a lab, and then re-infused back into the body, where they attack prostate cancer cells. Newer, more effective forms of hormone therapy, such as abiraterone (Zytiga) and enzalutamide (Xtandi), have been shown to be beneficial for the treatment of metastatic disease that is resistant to initial hormone therapy and/or chemotherapy. Radium-223 (Xofigo) was recently approved to treat hormone-resistant prostate cancer that has spread to the bones.

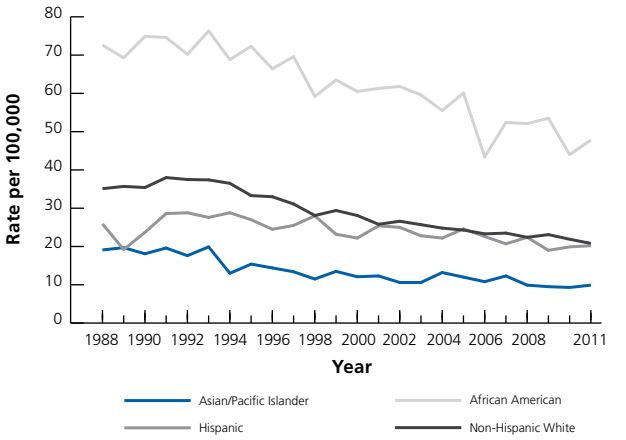
Survival: The majority (93%) of prostate cancers are discovered in the local or regional stages, for which the five-year relative survival rate approaches 100%. Over the past 25 years, the five-year relative survival rate for all stages combined has increased from 68% to almost 100%. Obesity and smoking are associated with an increased risk of dying from prostate cancer.

Figure 21. Trends in Prostate Cancer Incidence by Race/Ethnicity in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Figure 22. Trends in Prostate Cancer Mortality by Race/Ethnicity in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

Skin Cancer

Skin cancer of all kinds is associated with exposure to the sun. Childhood sunburns can increase the risk of developing skin cancer as an adult. Even a suntan is harmful. Sunburns and tanning hurt the skin and serve as outward signs of internal skin damage. Malignant melanoma is the most serious type of skin cancer. It often appears on parts of the body not regularly exposed to sunlight. Nonmelanoma skin cancers (NMSC), also known as basal cell and squamous cell skin cancers, or keratinocyte carcinomas, are difficult to estimate because these cases are not required to be reported to cancer registries. One study of NMSC occurrence in

the US estimated that in 2006, 3.5 million cases were diagnosed among 2.2 million people. Most cases of NMSC are highly curable.

New Cases: An estimated 7,755 new cases of melanoma and an estimated 720 new cases of other non-epithelial skin cancers are expected in California in 2014. Melanoma incidence rates have been increasing for at least 30 years. From 1988 to 2011, incidence rates among whites increased 3.1% per year in California.

Melanoma is rare among African Americans, whose lifetime risk of developing the disease is 0.1%, compared to 2.4% among whites. While light-skinned people have a greater risk of developing melanoma, this disease is increasing among people of color. In California, incidence rates of *in situ* melanoma of the skin have increased in the past 24 years for all racial/ethnic groups, a statistically significant increase for Hispanics and non-Hispanic whites. Incidence rates of invasive melanoma of the skin have also increased for non-Hispanic whites, decreased for Hispanics, and remained relatively stable for African Americans and Asian/Pacific Islanders.

Signs and symptoms: A simple ABCD rule outlines the warning signals of the most common type of melanoma: A is for asymmetry (one half of the mole does not match the other half); B is for border irregularity (the edges are ragged, notched, or blurred); C is for color (the pigmentation is not uniform, with variable degrees of tan, brown, or black); D is for diameter greater than 6 millimeters (about the size of a pencil eraser). Other important warning signs of melanoma include the appearance of a new growth on the skin, scaling, bleeding, change in the appearance of a bump or nodule, the spread of pigmentation beyond its borders, or a change in sensation, itchiness, pain, or a sore that doesn't heal. Changes that progress over a month or more should be evaluated by a doctor.

Basal cell carcinomas may appear as growths that are flat, or as small, raised, pink or red, translucent, shiny areas that may bleed following minor injury. Squamous cell carcinomas may appear as growing lumps, often with a rough surface, or as flat, reddish patches that grow slowly. Adults should periodically examine their skin and be aware of any changes. New or unusual lesions or a progressive change in a lesion's appearance (size, shape, or color, etc.) should be evaluated promptly by a physician.

Deaths: An estimated 920 deaths from melanoma and 330 deaths from other types of skin cancer (does not include NMSC) will occur in California in 2014. Death rates for melanoma have been declining rapidly in whites younger than 50: from 1988 to 2011, rates decreased by 2.9% per year in men and by 3.2% per year in women. In contrast, among whites 50 and older, death rates increased by 0.9% per year in men and decreased by 0.1% per year in women during this same time period.

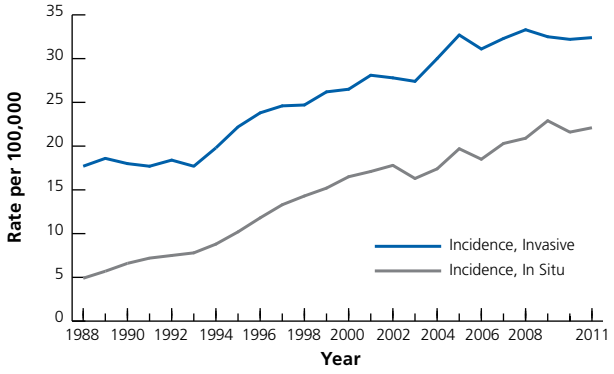
Melanoma accounts for less than 2% of all skin cancer cases, but the vast majority of skin cancer deaths.

Risk factors: Risk factors vary for different types of skin cancer. For melanoma, major risk factors include a personal or family history of melanoma and the presence of atypical, large, or numerous (more than 50) moles. Other risk factors for all types of skin cancer include sun sensitivity (e.g., sunburning easily, difficulty tanning, or natural blond or red hair color); a history of excessive sun exposure, including sunburns; use of tanning booths; diseases or treatments that suppress the immune system; and a past history of skin cancer.

To reduce the risk of skin cancer:

- Reduce sun exposure between 10 a.m. and 4 p.m.
- Reduce/eliminate exposure to tanning beds and sunlamps.
- Wear tightly woven, loose-fitting clothing that covers as much of the body as possible, sunglasses and a wide-brimmed hat (at least four inches) that produces a shadow that covers the eyes, nose, face, ears, and neck.
- Liberally apply sunscreen with SPF 30 or greater and broad spectrum (UVA and UVB) protection 15 minutes before going outdoors and every two hours once outdoors or more often if sweating or swimming.
- Protect children from overexposure to the sun. Place play equipment in the shade. Babies younger than 6 months should be kept out of direct sunlight and protected from the sun using hats and protective clothing.

Figure 23. Trends in Melanoma Incidence among Non-Hispanic Whites in California, 1988-2011



Note: Rates are age-adjusted to the 2000 US population.
Source: California Cancer Registry, California Department of Public Health.
Prepared by the California Department of Public Health, California Cancer Registry.

American Cancer Society California Division

Our Commitment

In 2014, an estimated 155,920 Californians will be diagnosed with cancer. A cancer diagnosis brings major changes to cancer patients and their loved ones, and the American Cancer Society provides help at every point, from linking new patients with survivors, to providing valuable information about the latest clinical trials, to providing transportation for patients to and from medical treatments. The Society is committed to providing comprehensive support 24 hours a day, seven days a week.

Financial Support

The generosity of our donors enables us to fight cancer on many fronts. Donations fund research, education, advocacy, and patient services. In 2012, 46% of funds raised went directly to patient support, prevention, and risk reduction, as well as detection and treatment, in California. Beginning in calendar year 2013, 33 grants totaling $13,248,332 were awarded to California researchers. Without the support of individual and corporate donors, the American Cancer Society could not accomplish its mission of eliminating cancer as a major health problem and helping to improve the quality of life of cancer patients and their families.

Volunteer Engagement

The American Cancer Society would not be what it is today without the dedication and inspiration of its many volunteers. The California Division is led by a volunteer Board of Directors comprised of community leaders, health care providers, and concerned citizens. In total, more than 303,709 people volunteer with the California Division of the American Cancer Society to help raise funds, provide office support, and provide patient services to assist cancer patients and their caregivers. In 2013, more than 2,400 volunteers helped provide patient and caregiver support services in their local communities. Our volunteers come from every walk of life and represent nearly every occupation, age, and ethnic group.

In California, volunteers are essential to nearly every Society program and are primarily responsible for our continued success. They provide transportation for patients who need help getting to and from medical treatments via the Road To Recovery® program; help cancer patients undergoing radiation and chemotherapy with cosmetic techniques via the Look Good Feel Better® program; provide inspiration as cancer survivors on the Cancer Survivors Network℠ and through our Reach To Recovery® breast cancer support program; and help coordinate and participate in the many fundraising events the Society holds each year.

Communities

In 2013, the California Division of the American Cancer Society reached 48,102 individuals with patient-related information and services, including 22,426 patients diagnosed within the past year.

- 22,506 callers received free patient-related information and support from American Cancer Society Cancer Information Specialists staffing the 24/7 toll-free information line; 18,983 others were referred to the Society by their health care provider.
- 11,016 cancer patients in California received free transportation assistance from the Society for a total of more than 418,000 rides.
- 561 breast cancer patients were visited by a Reach To Recovery® volunteer, our one-on-one volunteer support program for women with breast cancer.
- 4,205 patients attended Look Good Feel Better® sessions to learn how to deal with appearance-related side effects of treatment.
- 28,588 cancer survivors were honored at Relay For Life® events, and 3,010 survivors attended Making Strides Against Breast Cancer® events in California.
- 13,142 patients in California received a Personal Health Manager information and organizer tool kit.

Partnering with Health Systems

At the American Cancer Society, we believe that success in the fight against cancer is a team effort. We partner with community health centers, hospitals and treatment centers, health plans, and community entities to make progress toward our mission of eliminating cancer as a major health problem. Our work with these systems focuses on preventing cancer and promoting wellness, detecting cancers early through screening interventions, and improving quality of life for cancer patients, caregivers, and survivors. By working together with these crucial entities, we are able to maximize our impact in serving California's diverse communities.

American Cancer Society Research Program

The American Cancer Society is the largest nongovernmental, not-for-profit investor in cancer research in the US. Since our research program began in 1946, the Society has devoted more than $4 billion to cancer research. As the nation's largest private source of funds for scientists studying cancer, the Society focuses its funding on investigator-initiated, peer-reviewed proposals. This process ensures that scientists propose projects that they believe are ready to be tackled with available knowledge and techniques, rather than working on projects designed by admin-

Table 14. Summary of Research Grants and Fellowships: In effect during Fiscal Year Ending December 31, 2013

# Grants	Institution	Total
7	City of Hope & Beckman Research Center	$6,687,700
2	California Institute of Technology	$870,000
3	Cedars-Sinai Medical Center	$1,965,000
2	Children's Hospital of Los Angeles	$1,440,000
2	Leland Stanford Junior University	$772,000
8	Salk Institute for Biological Studies	$1,152,000
3	San Diego State University	$1,662,000
2	Sanford Burnham Institute for Medical Research	$870,000
16	Stanford University	$4,315,000
5	Scripps Research Institute	$1,311,000
5	University of California, Berkeley	$2,710,000
6	University of California, Davis	$2,928,000
9	University of California, Irvine	$4,914,000
10	University of California, Los Angeles	$5,335,000
18	University of California, San Diego	$7,949,000
28	University of California, San Francisco	$12,603,000
2	University of California, Santa Cruz	$1,440,000
12	University of Southern California	$9,437,000
140	Total Grants	$68,360,700

Note: These awards represent multiple-year funding for grants that may be carried over three or four years.

istrators who are removed from the front lines of research. This intellectual freedom encourages discovery in areas where scientists believe we are most likely to make the most progress.

Nobel Prize Winners

The Society is proud of the 47 investigators who we supported before they went on to win the Nobel Prize, considered the highest accolade any scientist can receive.

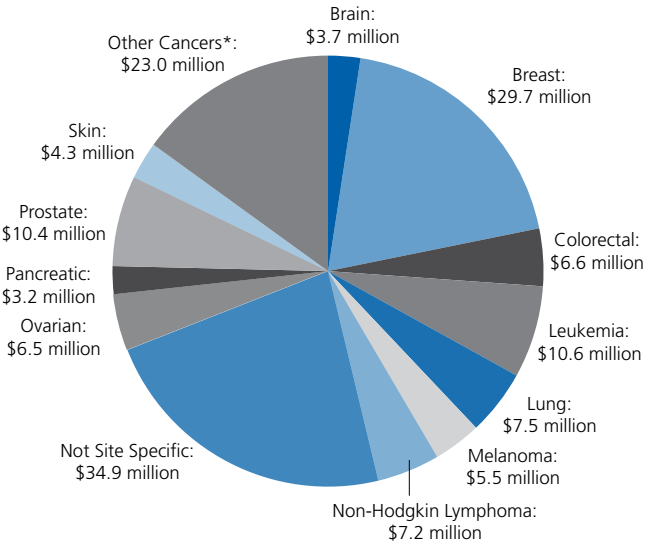
Cancer Prevention Study-3

The American Cancer Society Epidemiology Research Program concluded recruitment of its next generation large-scale study, Cancer Prevention Study-3 (CPS-3) in December 2013. CPS-3 will build on a legacy of over 50 years of conducting epidemiologic studies that have led to more than 600 scientific publications examining lifestyle, behavioral, environmental, and genetic risk factors for cancer. Among the many scientific contributions from the Cancer Prevention Studies, key findings include uncovering the link between smoking and lung cancer, daily aspirin use and lower risk of colon cancer, obesity and higher risk of various cancers, and sitting time and higher risk of premature death.

The Cancer Prevention Studies are a cornerstone of the Society's research program and focus on identifying risk factors for cancer and how to prevent it. Cancer Prevention Study-II continues to provide important insights into cancer risk factors, but the study population is aging. Thus, the Society launched the next generation study, CPS-3, to continue its important epidemiologic research. The goal of CPS-3 was to enroll at least 300,000 men and women between the ages of 30 and 65 years who have never been diagnosed with cancer, with at least 25% of study volunteers representing racially and ethnically diverse populations. By the end of 2013, more than 300,000 men and women across the nation had joined the movement for more birthdays and to fight back against cancer by enrolling in CPS-3. At enrollment, study volunteers provided a small blood sample, waist circumference measurement, and completed a comprehensive survey on lifestyle, medical, family history, occupation, and other factors. Participants will then be followed through mailed surveys at home every few years for the next few decades.

CPS-3 is a critical research initiative for the next generation of cancer prevention researchers because it will position Society researchers to further examine the interplay between lifestyle, environmental, behavioral, and genetic risk factors for cancer in diverse populations. The changing landscape of lifestyle and environment, such as the rapid rise in obesity or technologic advancements leading to a dramatic increase in sedentary behavior, and how these changes may impact cancer risk needs to be examined. Having preliminarily enrolled 28,000 study volunteers, California played a critical role in this recruitment effort because of the size and diversity of the population. As CPS-3 participants, they will help us understand how to prevent cancer, which will save lives and give people more of their most precious resource – time. More time with their families and friends, more memories, more celebrations and more birthdays.

Figure 24. Funding by Selected Cancer Types, Sept. 1, 2011 - Dec. 31, 2012; Total Awarded: $153.1 Million



*Other cancer types include anal, bladder, blood, bone, cervical, endometrial, esophageal, eye, gastrointestinal, head and neck, heart, Hodgkin lymphoma, kidney, liver, myeloma, neuroblastoma, oral cavity and lip cancer, rhabdomyosarcoma, sarcoma, stomach, testicular, thyroid, vascular system and Wilms tumor.

American Cancer Society Cancer Action Network in California

Although they are separate organizations, the American Cancer Society and the American Cancer Society Cancer Action Network℠ (ACS CAN) have a shared mission of eliminating death and suffering from cancer. California-focused advocacy efforts are directed out of the ACS CAN Sacramento office.

What is ACS CAN?

ACS CAN is the nationwide, nonpartisan advocacy affiliate organization of the Society. It is the nation's leading advocate for public policies that are helping to defeat cancer.

Why ACS CAN?

Defeating cancer is as much a matter of public policy as it is scientific discovery. Lawmakers play a critical role in determining how much progress our country makes toward defeating cancer. ACS CAN gives a voice to cancer patients, survivors, and their families as they encourage lawmakers at all levels of government to join the fight to make cancer a national priority. ACS CAN's work has resulted in enormous progress through increased funding for cancer research and prevention programs, stronger tobacco control policies nationwide, and improved access to the full range of cancer care for people diagnosed with the disease and their families.

In California, organized legislative advocacy efforts resulted in the establishment of the California Cancer Registry and the breast and cervical cancer screening and treatment programs, and passage of critical cancer control laws that require insurance coverage for cancer screening tests and certain treatments. By focusing local, state, and national attention on the cancer fight, raising funds, educating voters, and rallying others to the join the fight, ACS CAN unites and empowers people with cancer and their families to help save lives.

What does ACS CAN do?

ACS CAN advocates through its dedicated and passionate volunteers and staff. The organization's work helps advance the American Cancer Society's mission to defeat cancer by helping to protect and increase public investment in groundbreaking medical research, and by improving access nationwide to the latest prevention and early detection measures, treatments, and follow-up care that are proven to save lives. Like the Society, ACS CAN follows the science when supporting evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. ACS CAN utilizes its expert lobbying, policy, grassroots, and communications capacity to amplify the voices of patients in support of laws and policies that save lives from cancer. Additionally, the organization's voter education program, Cancer Votes, ensures candidates for public office are aware of the impact cancer has on the people they represent and why they should make the fight against the disease a priority once they are in office.

What does ACS CAN not do?

ACS CAN does not endorse candidates or political parties, and it is not a political action committee (PAC). The organization does educate voters by serving as a trusted source of information about candidate positions on cancer-related concerns and on key issue campaigns across the country that impact those affected by cancer. Like cancer itself, ACS CAN is nonpartisan.

Volunteer Legislative Ambassadors

At the heart of ACS CAN's grassroots advocacy movement is a cadre of Volunteer Legislative Ambassadors, who have taken on leadership roles to advocate for cancer patients and their families at the local, state, and federal levels of government. In California, there are nearly 500 Volunteer Legislative Ambassadors, who are the voices in their communities to influence lawmakers on important cancer-related legislation and policy. Ambassadors are building awareness and legislative movement on cancer issues. They recruit new legislative ambassadors, generate support for federal and state legislative priorities, and also advocate for local ordinances and initiatives, such as smoke-free housing, smoke-free workplaces, school nutrition and physical activity guidelines, smoke-free outdoor areas, and tobacco retail licensing.

During 2013, legislative ambassadors advocated for federal quality of life and palliative care bills, asking congressional members to co-sponsor legislation to help cancer patients. In an effort to pass new federal laws, the state will continue to increase the number of co-sponsorships with congressional members in 2014.

Volunteer Legislative Ambassadors fuel the community-based grassroots movement that gives ordinary people extraordinary power to fight cancer in the legislative arena. These ambassadors are kept informed of legislative activities in Sacramento, Washington, DC, and in their local communities. Legislative ambassadors also receive information on which pieces of legislation are moving and when legislators need to be contacted. For more information on ACS CAN, legislative ambassadors, or updated information on the American Cancer Society Cancer Action Network's local, state, and federal legislative efforts, visit acscan.org/California.

Cancer and the Environment

In addition to the American Cancer Society's traditional role in primary prevention, the Society and ACS CAN address a variety of risk factors in the human environment. Among the Society's

prevention goals are to promote clearer understanding of the cancer risks from carcinogenic agents in the workplace, environment, consumer products, and strategies for minimizing associated human impacts. In the scientific evaluation of human health risk from chemicals, the Society maintains that cancer risk should continue as one of the priority measures; priority should be given to evaluating chemicals in widespread commercial use; for new chemicals or compounds, human health risk should be evaluated before widespread public exposure to those substances; regulation and management of toxic chemicals in the US needs to be strengthened; and testing and research need to be accelerated for both the health impacts of chemicals and ways to reduce public harm.

With ever-advancing science on the role of environmental factors and cancer, the Society in California is actively engaged in the formulation of coherent research, policy, and practice to reduce use and exposures to carcinogens, especially in vulnerable populations and disadvantaged communities that live with an unequal burden of the contaminated environment. The Society is committed to continuing and expanding partnerships with environmental organizations, to sharing information, considering collaborations, and engaging in education and advocacy efforts. A team of volunteer experts and concerned citizens was established in 2001 to assist in the development of science-based approaches related to environmental issues. It has reviewed and recommended the Society's responses to issues such as cancer clusters, asbestos, integrated pest management policies for schools and day care sites, diesel exhaust emissions, air pollution, environmental justice, healthy communities, medical radiation, and carcinogens in consumer products. The California team also analyzes and considers actions on relevant state regulations and legislation, and works with state agencies on the implementation of new laws. Working with subject experts, the team conducts trainings for volunteers and staff and provides guidance when local environmental concerns emerge.

Public Policy Priorities – 2014

Tobacco Control

ACS CAN is working at the federal, state, and local levels to promote policies that reduce tobacco use and save lives. At the federal level, efforts are focused on the implementation of the Family Smoking Prevention and Tobacco Control Act, the historic law passed in 2009 that gave the US Food and Drug Administration the authority to regulate tobacco products. ACS CAN is also working at the federal level to broaden cessation coverage in public and private insurance plans. At the state level, California is working to revive its decades-old legacy of tobacco control leadership. Key strategies include a tobacco tax increase, a substantial increase in funding for state tobacco control efforts, expansion of smoke-free policies, and improved access to effective smoking cessation.

Cancer Research

The American Cancer Society is the largest private funder of cancer research, contributing approximately $150 million per year to scientists conducting promising research projects across the country. The federal investment in cancer research is $5 billion per year, far exceeding that of the Society or any other organization. Sustaining the federal investment, which funds research projects and creates jobs in cancer centers and medical facilities across the country, is critical to making continued progress in the fight against cancer. ACS CAN, along with a coalition of more than 40 national cancer advocacy groups called One Voice Against Cancer, is advocating for robust federal funding for research at the National Institutes of Health and the National Cancer Institute, as well as the cancer control programs of the Centers for Disease Control and Prevention (CDC).

Early Detection and Screening

ACS CAN supports the CDC's National Breast and Cervical Cancer Early Detection Program, which helps women detect cancer at its earliest, most treatable stages. In California, the Every Woman Counts program provides free breast cancer screening for medically uninsured women. For those diagnosed with breast cancer, free treatment is available from the Breast and Cervical Cancer Treatment Program. ACS CAN is working to protect funding for those programs, as well as funding for the federal Prevention and Public Health Fund, which will save lives by reducing tobacco use, addressing the causes of obesity, and increasing access to proven cancer screenings nationwide. ACS CAN and the American Cancer Society are also working with the California Colon Cancer Control Program (C4P) to increase colorectal cancer screening and save lives. C4P was established with a CDC grant to provide outreach and education for communities and medical providers and to collaborate with nonprofit groups, health insurers and other stakeholders.

Affordable Care Act Implementation

The Affordable Care Act (ACA) is helping to ensure that people with cancer and their families have access to quality, affordable health care by banning pre-existing condition exclusions, eliminating arbitrary dollar limits on coverage, and prohibiting sharp increases in premiums when a person is diagnosed with a serious condition such as cancer. These provisions are preventing cancer patients and survivors from having to skip lifesaving care or go deep into debt to pay for it. The ACA will provide Americans with more comprehensive health care coverage including:

- Requiring all health plans sold in new health insurance marketplaces (Covered California) to cover essential benefits that include cancer screening, treatment, and follow-up care
- Making proven cancer screenings and other preventive care available at no cost to people in new plans, Medicare, and to those who are newly eligible for Medicaid (Medi-Cal)
- Making sure that Medicare covers a yearly checkup to discuss disease prevention and ways to stay healthy
- Training health care professionals to treat pain and other symptoms to help improve patients' quality of life
- Closing the hole in Medicare Part D that forced seniors to pay high costs for prescription drugs
- Making coverage available for patients who participate in clinical trials

California has been a national leader in implementing and improving upon the opportunities set out by the federal law. ACS CAN in California will continue to work to fully maximize the benefits for its residents, and fulfill the promise of ACA.

Several million Californians are eligible for new coverage options made through the ACA.

- 2.6 million will be eligible for premium assistance to help purchase health insurance through Covered California.
- 1.4 million will be newly eligible for Medi-Cal under the expansion, of which more than 600,000 have already benefited from the Low Income Health Program and began the automatic transition to Medi-Cal on January 1, 2014.
- 2.7 million will not be eligible for subsidies but will have guaranteed access to insurance because of new consumer protections.

Additional information about Covered California can be found at coveredca.com. This website can be used to determine eligibility for premium assistance through Covered California, as well as eligibility for Medi-Cal.

ACS CAN is committed to ensuring that the law's patient protections are strongly implemented and made accessible through provisions designed to improve health care quality and delivery.

Quality of Life

ACS CAN and the American Cancer Society are working together to emphasize the need for patient-centered care that focuses not only on treating disease but also on managing the physical and psychological side effects of treatment. ACS CAN is working to build congressional interest around legislative proposals that broaden access to palliative care, which provides patients at any state of diagnosis with an extra layer of support provided by a team of doctors, nurses, and specialists working to address the stress, pain, and other symptoms associated with cancer treatment. The organization also is working to strengthen federal and state pain policies to ensure that patients and survivors can access the pain medications and care they need.

Reducing Obesity

ACS CAN supports evidence-based policies at the federal, state, and local levels to promote healthy eating and physical activity and reduce overweight and obesity. These include nutrition standards for all foods offered in schools or marketed to youth; physical education and physical activity requirements for schools; increased access to healthy foods and opportunities for physical activity in communities; and tools and services that support consumers in making healthy choices and managing their weight. Because of the tremendous influence that the surrounding environment has on access to healthy foods and safe opportunities to be physically active, ACS CAN in California supports healthy community strategies that will help to reduce cancer risks and address environmental concerns.

California's Cancer Control Activities

Cancer Surveillance

Cancer rates among Californians are monitored by the Chronic Disease Surveillance and Research Branch, through the California Cancer Registry (CCR), which has collected information on all cancers diagnosed in the state since 1988. To date, the CCR has collected detailed information on more than 2 million cases of cancer, with more than 130,000 new cases added annually. The database includes information on demographics, cancer type, extent of disease at diagnosis, treatment, and survival. With this high-quality data, leading cancer researchers are able to advance scientific knowledge about the causes, treatments, cures, and prevention of cancer.

The CCR in conjunction with the American Cancer Society produces *California Cancer Facts & Figures* each year. Additionally, through annual and special-topic reports, the CCR keeps health professionals, policy makers, cancer advocates, and researchers informed about the status of cancer in California. CCR data are the cornerstone of cancer research in the state.

Tobacco Control

The strongest anti-tobacco legislation in the nation was passed by the citizens of California in 1988 – the Tobacco Tax and Health Promotion Act (Proposition 99). Since then, the California Department of Public Health (CDPH) has used funds from Proposition 99 taxes on tobacco products to launch an award-winning anti-smoking media campaign, to fund local prevention programs, and to monitor smoking prevalence and other use of tobacco products throughout the state. Lung cancer mortality rates are now falling faster in California than elsewhere in the US.

Cancer Prevention

The Cancer Prevention and Nutrition Section was established in 1986 to develop technical capacity in the CDPH for implementing large-scale dietary improvement measures. Its activities include the development and implementation of the 5 a Day for Better Health! Campaign in 1988, California Dietary Practices Surveys starting in 1989, and the Network for Healthy California.

Comprehensive Cancer Control

The California Dialogue on Cancer (CDOC) is a coalition of cancer control leaders from throughout the state, including members of state and local government, members of the public, nonprofit organizations, medical professionals, researchers, and cancer survivors, caregivers, and advocates. The members of the CDOC share the vision of reducing the cancer burden on the residents of California.

The CDOC was created to provide guidance and coordination for comprehensive cancer control activities in California while minimizing duplication of efforts by the CDPH, the California Division of the American Cancer Society, and other organizations engaged in cancer prevention and control activities. The CDOC originally convened in 2003 to develop the California Comprehensive Cancer Control Plan (CCCP). The plan has since been revised by the CDOC with updated goals and measurable objectives that aim to improve cancer outcomes, minimize disparities, and support continued cancer control efforts through 2015.

The CDOC's subcommittees or implementation teams conduct activities that align directly with the goals and objectives of the CCCP. Currently, the CDOC's implementation teams focus their efforts on the following areas: advocacy; disparities, access to care and early detection; prevention; and treatment and survivorship. Issues related to access to care have been the main priority for the coalition over the past few years. The coalition's Access to Care team has successfully convened community forums and initiated the formation of local coalitions/regional cancer care alliances throughout the state and plans to continue enhancing these efforts in the coming years. The CDOC has also played an instrumental role in supporting and establishing the California Colorectal Cancer Coalition (C4).

Breast and Cervical Detection

Every Woman Counts (EWC) provides free clinical breast exams, mammograms, pelvic exams, and Pap tests to California's underserved women. The EWC, which originally was a CDPH program, is now part of the Department of Health Care Service's Cancer Detection and Treatment Branch (CDTB). The mission of the EWC is to save lives by preventing and reducing the devastating effects of cancer for Californians through education, early detection, diagnosis and treatment, and integrated preventive services, with special emphasis on the underserved. Regional cancer detection partnerships assist in outreach and education to women, quality assurance, and provider education. To determine eligibility for free screening, women can call 1-800-511-2300. Assistance is available in English, Spanish, Mandarin, Cantonese, Vietnamese, and Korean.

Table 15. Cancer Reporting in California

Year	Milestone
1947	California Tumor Registry established in selected large hospitals
1960	Alameda County Cancer Registry established as the first population-based cancer registry in Callifornia
1969	San Francisco Bay Area Registry included in National Cancer Institute's (NCI) Third National Cancer Survey
1972	Cancer Surveillance Program (CSP) of Los Angeles County established
1983	Cancer Surveillance Program of Orange County established
1985	California Cancer Reporting Law signed into effect (CCR established)
1988	Population-based cancer reporting initiated statewide
1992	CSP of Los Angeles County included in SEER Program
1997	50 years of cancer reporting in California
2000	Published 10 years of complete statewide cancer reporting
2001	Greater California Registry included in SEER Program
2007	20 years of statewide population-based cancer reporting
2009	Published 20 years of complete statewide cancer reporting
2012	25 years of statewide population-based cancer reporting

Source: California Cancer Registry, California Department of Public Health.

California Cancer Registry

The California Cancer Registry (CCR) is a collaborative effort among the California Department of Public Health's Chronic Disease Surveillance and Research Branch (CDSRB); the Institute for Population Health Improvement, UC Davis Health System; regional cancer registries; health care providers; cancer registrars; and cancer researchers throughout state and the nation. The CDSRB collects, analyzes, and disseminates information on cancer incidence and mortality. The statewide population-based cancer surveillance system monitors the incidence and mortality of specific cancers over time and analyzes differential cancer risks cancer by geographic region, age, race/ethnicity, sex, and other social characteristics of the population. It gathers cancer incidence data through the CCR, and conducts and collaborates with other researchers on special cancer research projects concerning the etiology, treatment, risk factors, and prevention of specific cancers. In addition, the system is designed to monitor patient survival with respect to the type of cancer, extent of disease, therapy, demographics, and other parameters of prognostic importance. In general, data generated from the CCR are utilized to:

- Monitor the amount of cancer and cancer incidence trends by geographic area and time in order to detect potential cancer problems of public health significance in occupational settings and the environment, and to assist in their investigation.
- Provide information to stimulate the development and targeting of resources to benefit local communities, cancer patients, and their families.
- Promote high-quality research into epidemiology and clinical medicine by enabling population-based studies to be performed to provide better information for cancer control.
- Inform health professionals and educate citizens regarding specific health risks, early detection, and treatment for cancers known to be elevated in their communities.
- Respond to public concerns and questions about cancer.

In California, legislation declaring mandatory cancer reporting became effective in 1985. Since January 1988, under the Statewide Cancer Reporting Law (Section 103885 of the Health and Safety Code), the CCR has covered the entire population of the state through the regional population-based registries.

Regional Cancer Registries

Region 1/8: Cancer Prevention Institute of California, 2201 Walnut Ave., Ste. 300, Fremont, CA 94538 / 510-608-500; Fax: 510-608-5095
Counties: Monterey, San Benito, Santa Clara and Santa Cruz, Alameda, Contra Costa, Marin, San Francisco, and San Mateo

Region 2: Cancer Registry of Central California, 1680 W. Shaw Ave., Fresno, CA 93711 / 530-345-2483; Fax: 530-345-3214
Counties: Fresno, Kern, Kings, Madera, Mariposa, Merced, Stanislaus, Tulare, and Tuolumne

Region 3: Sacramento and Sierra Cancer Registry, 1825 Bell St., Ste. 102, Sacramento, CA 95825 / 916-779-0300; Fax: 916-564-9300
Counties: Alpine, Amador, Calaveras, El Dorado, Nevada, Placer, Sacramento, San Joaquin, Sierra, Solano, Sutter, Yolo, and Yuba

Region 4: Central Coast Cancer Registry, 1825 Bell St., Ste. 102, Sacramento, CA 95825 / 916-779-0300; Fax: 916-564-9300
Counties: San Luis Obispo, Santa Barbara, and Ventura

Region 5: Desert Sierra Cancer Surveillance Program, 11306 Mountain View Ave., Ste. B100, Loma Linda, CA 92354 / 909-558-6174; Fax: 909-558-6178
Counties: Inyo, Mono, Riverside, and San Bernardino

Region 6: Cancer Registry of Northern California, 25 Jan Court, Ste. 130, Chico, CA 95928 / 530-345-2483; Fax: 530-345-3214
Counties: Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Napa, Plumas, Shasta, Siskiyou, Sonoma, Tehama, and Trinity

Region 7: Cancer Registry of San Diego and Imperial Counties, 1825 Bell St., Ste. 102, Sacramento, CA 95825 / 916-779-0300; Fax: 916-564-9300
Counties: Imperial and San Diego

Region 9: Cancer Surveillance Program–University of Southern California, Soto Street Building, Ste. 305, 2001 North Soto St., MC 9238, Los Angeles, CA 90089-9238 / 323-442-2300; Fax: 323-442-2301
County: Los Angeles

Region 10: Orange County Cancer Registry, 1825 Bell St., Ste. 102, Sacramento, CA 95825 / 916-779-0300; Fax: 916-564-9300
County: Orange

American Cancer Society, Inc., California Division

Regions & Counties

California Division Headquarters
1710 Webster St.
Oakland, CA 94612
510-893-7900

Border Sierra
2655 Camino Del Rio N., Ste. 100
San Diego, CA 92108
619-299-4200

Greater Bay Area / Redwood Empire
601 Montgomery St., Ste. 650
San Francisco, CA 94111
415-394-7100

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Great Valley
1545 River Park Drive, Ste. 100
Sacramento, CA 95815
916-446-7933

Los Angeles
3333 Wilshire Blvd., Ste. 900
Los Angeles, CA 90010-1110
213-386-7660

Orange County
1940 E. Deere Ave., Ste. 100
Santa Ana, CA 92705
949-261-9446

Silicon Coastal
747 Camden Ave., Ste. B
Campbell, CA 95008
408-871-1062

Suggested Citation:
American Cancer Society, California Department of Public Health, California Cancer Registry. *California Cancer Facts & Figures 2014.* Oakland, CA: American Cancer Society, Inc. California Division, February 2014.

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