

California Cancer Facts & Figures 2017

Revised – June 2017



A sourcebook of cancer data for cancer prevention
and control activities in California

We are pleased to present *California Cancer Facts & Figures 2017*,

a collaboration of the American Cancer Society, Inc., California Division, and the California Cancer Registry of the California Department of Public Health. We continue to observe promising trends in the steady decline in cancer incidence and death rates. Since 1988, the state's cancer mortality rate has fallen 30% and our cancer incidence rate has declined 15%, both of which demonstrate progress made since the reporting period of the 2016 edition of this publication.

California voters delivered a major public health victory with the passage of Proposition 56, the California Healthcare, Research and Prevention Tobacco Tax Act of 2016. It not only increases the tax on cigarettes sold in California by \$2 per pack, but also places an equivalent tax on other products containing nicotine derived from tobacco including e-cigarettes. Thanks to the American Cancer Society Cancer Action NetworkSM, the American Cancer Society's nonprofit nonpartisan advocacy affiliate, and the Save Lives California Coalition, this stand against Big Tobacco is expected to save nearly 135,000 lives, prevent more than 200,000 kids from ever becoming addicted to these deadly products, and save \$9.22 billion in health care costs (over the lifetime of kids 0-18 alive today). Additionally, Governor Jerry Brown signed into law a package of five unprecedented tobacco control bills (see page 37). These 2016 accomplishments represent the most significant tobacco control legislation enacted in two decades, elevating California once again to the forefront of the tobacco control movement.

In mid-2016, through our hard work and determination, we helped the nation hit the halfway mark as a leader in the nationwide effort to increase colorectal cancer screening rates of adults ages 50 and older to 80% by 2018. The 80% by 2018 initiative has been included in the National Cancer Moonshot initiative, which includes a segment on cancer prevention and early detection, improving life expectancy, and reducing the need for costly treatments. Colorectal cancer is the second-leading cause of cancer-related deaths in our state when men and women are combined, yet it can be prevented through regular screening. According to the Centers for Disease Control and Prevention, about 68.6% of California adults ages 50 and older have been tested as recommended. We are empowering individuals, health systems, and numerous collaborators to reach 80% nationwide colorectal cancer screening by 2018, which means 203,000 deaths and 277,000 cases could be prevented in the US by 2030.

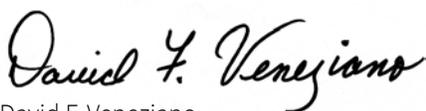
While we've made tremendous progress, our work is not over. In 2017, an estimated 176,140 Californians will be diagnosed with cancer and 59,400 will die of the disease, much of it preventable. The American Cancer Society California Division's theme, *Building for Tomorrow*, speaks to the lifesaving work that we continue to do together with partner organizations and communities.

We hope *California Cancer Facts & Figures 2017* will inform and empower you to help California fulfill the American Cancer Society's mission to save lives, celebrate lives, and lead the fight for a world without cancer.

Sincerely,



P. Kay Coleman
Chair of the Board
American Cancer Society, Inc., California Division



David F. Veneziano
Executive Vice President
American Cancer Society, Inc., California Division





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*This publication attempts to summarize current scientific information about cancer.
Except when specified, it does not represent the official policy of the American Cancer Society.*

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Basic Cancer Data for California

What is cancer?

Cancer is a group of diseases characterized by the uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Although the cause for many cancers, particularly those that occur during childhood, remains unknown, established cancer causes include lifestyle (external) factors, such as tobacco use and excess body weight, and nonmodifiable (internal) factors, such as inherited genetic mutations, hormones, and immune conditions.

How many Californians alive today have ever had cancer?

Nearly 1,492,000 Californians who are alive today have a history of cancer. Some of these individuals were diagnosed recently and are still undergoing treatment, while most were diagnosed many years ago and have no current evidence of cancer.

How many new cancer cases are expected to occur in California in 2017?

In 2017, it is estimated that 176,140 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 20 new cases every hour of every day.

How many Californians are expected to die of cancer in 2017?

Cancer is the second-leading cause of death in California, exceeded only by heart disease. Cancer accounts for nearly 1 of every 4 deaths in California. In 2017, it is estimated that 59,400 Californians will die of cancer.

Data Sources: California Cancer Registry

Cancer Cases and Deaths

Observed California cases and deaths were calculated by the California Cancer Registry (CCR) of the California Department of Public Health (CDPH).

Cancer Incidence and Mortality

Where not otherwise specified, cancer incidence data are from the most current data in the CCR – 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 Public Health Survey Research Program, which is part of the California Department of Public Health's Chronic Disease Surveillance and Research Branch (CDSRB). They are a collaboration between the Centers for Disease Control and Prevention; California State University, Sacramento; and the CDPH. To monitor key health behaviors, approximately 9,000 randomly selected adults are interviewed by telephone annually. Not all questions are asked each year; the most recent data available are presented.

CCR Acknowledgment and Disclaimer

The collection of cancer incidence data used in this study was supported by the California Department of Public Health pursuant to California Health and Safety Code Section 103885; Centers for Disease Control and Prevention's (CDC) National Program of Cancer Registries, under cooperative agreement 5NU58DP003862-04/DP003862; 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 HHSN261201000034C awarded to the Public Health Institute. 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 CDC or their Contractors and Subcontractors is not intended nor should it be inferred.

Table 1. Leading Causes of Death in California, 2013

Cause	Deaths	Percent
Heart Disease	59,832	24%
Cancer	57,504	23%
Cerebrovascular Disease	13,603	5%
Chronic Lower Respiratory Disease	13,550	5%
Alzheimer's Disease	11,868	5%
Accidents	11,189	5%
Diabetes	7,998	3%
Influenza & Pneumonia	6,523	3%
Chronic Liver Disease	4,777	2%
Intentional Self-harm	4,006	2%
All Deaths	248,118	100%

Source: California Department of Public Health, Death Records.

How many people survive cancer?

Over the past three decades, the 5-year relative survival rate for all cancers combined increased 20% among whites and 24% among blacks, yet it remains substantially lower for blacks (68% versus 61%, respectively). Improvements in survival reflect improvements in treatment, as well as earlier diagnosis for some cancers. Survival varies greatly by cancer type and stage at diagnosis.

California Statistics

- Cancer incidence rates in California declined by 15% from 1988 to 2014.
- Cancer mortality rates declined by 30% between 1988 and 2014. 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 10% and the mortality rate has decreased by 37% from 1988 to 2014.
- Colorectal cancer incidence and mortality rates are declining sharply in most racial/ethnic groups.
- The cervical cancer incidence rate in California has decreased by 42% since 1988, and the mortality rate has decreased by 34% in that same time period.
- 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. Observed* Number of New Cases, Deaths, and Existing Cases of Common Cancers in California, 2014

Male	New Cases		Deaths		Existing Cases	
	Number	Percent	Number	Percent	Number	Percent
Prostate	16,822	21%	3,191	11%	290,800	43%
Lung	8,419	11%	6,363	21%	21,800	3%
Colon & Rectum	7,770	10%	2,750	9%	68,600	10%
Leukemia & Lymphoma	7,584	10%	2,655	9%	67,100	10%
Urinary Bladder	5,198	7%	1,109	4%	49,200	7%
All Sites Combined	78,727	100%	30,078	100%	677,400	100%
Female	New Cases		Deaths		Existing Cases	
Breast	25,614	31%	4,427	16%	349,600	43%
Lung	8,444	10%	5,868	21%	27,200	3%
Colon & Rectum	6,834	8%	2,445	9%	67,800	8%
Uterus & Cervix	7,057	9%	1,487	5%	106,500	13%
Leukemia & Lymphoma	5,780	7%	2,103	8%	56,800	7%
All Sites Combined	82,198	100%	28,020	100%	814,200	100%

*These numbers represent actual cancer cases and deaths from 2014, the year for which most recent data are available. Excludes nonmelanoma skin cancers and *in situ* cancers, except bladder. Deaths include persons who may have been diagnosed in previous years.

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

Table 3. Observed* New Cancer Cases and Deaths, 2014

	Observed New Cases			Observed Deaths		
	Both Sexes	Male	Female	Both sexes	Male	Female
All Sites	160,925	78,727	82,198	58,098	30,078	28,020
Oral Cavity & Pharynx	4,251	2,980	1,271	1,027	735	292
Digestive System	31,684	17,741	13,943	16,347	9,297	7,050
Esophagus	1,458	1,114	344	1,302	1,066	236
Stomach	3,025	1,849	1,176	1,576	919	657
Small Intestine	764	398	366	144	78	66
Colon Excluding Rectum	10,155	5,177	4,978	5,195	2,750	2,445
Rectum & Rectosigmoid Junction	4,449	2,593	1,856	1,052	613	439
Anus, Anal Canal, & Anorectum	785	306	479	130	46	84
Liver & Intrahepatic Bile Duct	4,314	3,029	1,285	3,144	2,064	1,080
Gallbladder	506	146	360	285	87	198
Other Biliary	787	419	368	173	91	82
Pancreas	4,780	2,472	2,308	4,123	2,087	2,036
Retroperitoneum	151	74	77	33	15	18
Respiratory System	17,956	9,269	8,687	12,597	6,639	5,958
Nose, Nasal Cavity, & Middle Ear	234	145	89	53	33	20
Larynx	783	652	131	268	217	51
Lung & Bronchus	16,863	8,419	8,444	12,231	6,363	5,868
Pleura	11	8	3	19	11	8
Bones & Joints	357	199	158	167	93	74
Soft Tissue Including Heart	1,450	837	613	564	314	250
Melanoma of the Skin	9,400	5,625	3,775	973	675	298
Other Non-Epithelial Skin	861	547	314	377	272	105
Breast	25,801	187	25,614	4,460	33	4,427
Female Genital System	10,371	0	10,371	3,251	0	3,251
Cervix Uteri	1,391	0	1,391	472	0	472
Corpus Uteri & Uterus, NOS**	5,666	0	5,666	1,015	0	1,015
Ovary	2,440	0	2,440	1,575	0	1,575
Vagina	145	0	145	40	0	40
Vulva	467	0	467	89	0	89
Male Genital System	18,246	18,246	0	3,304	3,304	0
Prostate	16,822	16,822	0	3,191	3,191	0
Testis	1,205	1,205	0	74	74	0
Penis	156	156	0	33	33	0
Urinary System	12,778	9,098	3,680	2,960	2,085	875
Urinary Bladder	6,742	5,198	1,544	1,502	1,109	393
Kidney & Renal Pelvis	5,758	3,717	2,041	1,398	947	451
Ureter	166	103	63	31	13	18
Eye & Orbit	362	191	171	38	25	13
Brain & Other Nervous System	2,380	1,357	1,023	1,740	999	741
Thyroid Gland	5,266	1,275	3,991	244	99	145
Other Endocrine, Thymus	305	172	133	120	68	52
Hodgkin Disease	881	488	393	134	74	60
Non-Hodgkin Lymphomas	7,644	4,249	3,395	2,133	1,156	977
Multiple Myeloma	2,363	1,349	1,014	1,182	644	538
Leukemias	4,839	2,847	1,992	2,491	1,425	1,066
Lymphocytic Leukemia	2,320	1,430	890	748	440	308
Acute Lymphocytic Leukemia	781	450	331	258	145	113
Chronic Lymphocytic Leukemia	1,409	873	536	436	258	178
Myeloid and Monocytic Leukemia	2,330	1,322	1,008	1,327	750	577
Acute Myeloid Leukemia	1,614	900	714	1,112	624	488
Acute Monocytic Leukemia	59	30	29	13		9
Chronic Myeloid Leukemia	600	359	241	119	66	53
Ill Defined/Unknown	3,176	1,630	1,546	3,696	1,915	1,781

*These numbers represent actual cancer cases and deaths from 2014, the year for which most recent data are available. **NOS: Not otherwise specified. Excludes nonmelanoma skin cancers and carcinoma *in situ*, except bladder. Deaths include persons who may have been diagnosed in previous years. Counts of less than 5 are suppressed.

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

Table 4. Observed* New Cancer Cases by County, 2014

	All Sites	Bladder	Breast	Colon & Rectum	Leukemia	Lung	Melanoma	Myeloma	NHL**	Oral	Pancreas	Prostate	Uterus & Cervix
Alameda	6,485	251	1,107	598	205	670	326	92	332	161	198	673	317
Alpine	-	0	-	0	0	0	-	0	-	0	0	-	0
Amador	261	23	30	15	-	49	28	-	10	10	-	22	-
Butte	1,181	55	172	107	35	148	113	14	62	28	34	119	53
Calaveras	295	21	30	24	13	40	27	-	-	15	-	34	10
Colusa	63	-	-	-	-	16	-	0	-	0	-	-	-
Contra Costa	5,314	245	890	451	144	496	422	76	236	132	164	594	251
Del Norte	156	-	19	12	-	23	-	-	-	-	-	18	-
El Dorado	1,102	64	166	85	28	137	102	18	61	39	25	123	41
Fresno	3,406	109	564	316	102	376	165	63	161	78	112	305	133
Glenn	142	-	12	18	-	26	-	-	12	-	-	15	-
Humboldt	659	32	80	59	21	86	54	-	31	27	11	68	37
Imperial	689	26	100	72	25	51	19	23	33	10	21	90	21
Inyo	123	-	24	-	-	16	-	-	-	-	-	12	-
Kern	3,117	115	444	331	93	326	154	55	125	79	95	317	140
Kings	385	10	65	40	12	34	23	-	14	13	-	41	19
Lake	423	21	49	47	13	79	24	-	10	14	13	49	-
Lassen	115	-	-	13	-	13	-	-	-	-	-	10	-
Los Angeles	38,305	1,482	6,181	3,686	1,171	3,654	1,452	580	1,873	909	1,143	4,255	1,883
Madera	613	20	101	55	18	74	37	-	30	-	14	58	19
Marin	1,631	72	271	127	55	150	196	19	95	51	56	131	59
Mariposa	102	0	19	15	0	17	-	0	-	-	-	10	-
Mendocino	468	27	55	36	16	57	30	-	26	20	-	51	21
Merced	835	23	104	85	32	109	45	16	39	15	29	68	37
Modoc	63	-	-	-	-	-	-	0	-	-	-	-	-
Mono	57	-	-	-	-	-	-	0	0	-	0	-	-
Monterey	1,640	62	260	117	48	155	117	18	82	35	51	200	70
Napa	778	41	126	60	18	80	59	13	42	30	26	74	29
Nevada	671	45	121	42	14	71	58	-	31	19	19	72	20
Orange	13,388	521	2,259	1,121	400	1,268	1,006	189	632	370	418	1,392	546
Placer	2,110	99	326	162	63	220	204	28	87	64	63	243	77
Plumas	121	-	21	10	-	12	11	-	-	-	-	-	-
Riverside	9,608	448	1,367	914	261	1,150	546	140	402	233	302	1,105	413
Sacramento	6,744	306	1,071	597	185	834	371	90	308	174	191	566	343
San Benito	244	-	31	33	-	27	14	-	-	-	-	37	-
San Bernardino	7,656	296	1,141	793	278	788	329	112	307	180	213	868	364
San Diego	13,625	619	2,403	1,154	384	1,400	920	199	647	388	385	1,443	533
San Francisco	3,865	144	574	378	109	441	181	51	222	108	113	340	152
San Joaquin	2,792	129	446	273	64	372	122	36	112	76	89	225	125
San Luis Obispo	1,560	71	272	114	46	187	130	38	64	44	41	178	51
San Mateo	3,570	153	665	301	93	327	266	61	190	86	101	362	147
Santa Barbara	2,026	89	307	158	86	206	160	37	108	53	78	203	83
Santa Clara	7,319	291	1,235	663	236	734	463	103	403	217	205	714	296
Santa Cruz	1,229	49	192	102	39	101	139	16	72	33	35	117	53
Shasta	1,237	79	190	96	44	162	85	14	38	45	39	153	42
Sierra	17	-	-	-	0	-	0	0	0	0	0	-	-
Siskiyou	249	15	36	16	14	38	-	-	10	10	-	25	-
Solano	2,060	85	335	169	51	237	94	26	109	63	72	208	94
Sonoma	2,712	122	447	239	80	295	264	39	125	71	81	231	104
Stanislaus	2,088	94	330	223	65	240	90	35	89	42	65	169	82
Sutter	417	18	45	39	12	59	18	-	22	19	13	44	19
Tehama	386	20	60	33	10	59	22	-	13	18	10	55	12
Trinity	92	-	16	10	-	13	-	-	-	-	-	15	-
Tulare	1,379	39	188	134	41	152	57	24	73	42	38	155	56
Tuolumne	369	33	36	27	17	47	33	-	10	-	12	30	21
Ventura	3,905	179	628	314	125	389	298	46	190	127	103	413	156
Yolo	755	31	113	64	21	98	51	15	33	29	27	66	42
Yuba	318	11	43	24	13	42	16	-	13	11	-	26	17

*These numbers represent actual cancer cases diagnosed in 2014, the year for which most recent data is available. **NHL: Non-Hodgkin Lymphoma. Excludes nonmelanoma skin cancers and carcinoma *in situ*, except bladder. Counts of 10 or less are suppressed.

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

Table 5: Observed* Cancer Deaths by County, 2014

	All Sites	Breast	Bladder	Colon & Rectum	Leukemia	Lung	Myeloma	NHL**	Ovary	Pancreas	Prostate	Stomach	Uterus & Cervix
Alameda	2,295	159	63	207	98	498	60	70	60	165	106	61	59
Alpine	-	-	0	0	0	0	0	0	-	0	0	0	0
Amador	93	-	-	-	-	27	-	-	-	-	-	-	-
Butte	444	30	-	42	10	117	-	20	20	33	26	-	-
Calaveras	133	-	-	-	-	39	-	-	-	-	-	0	-
Colusa	24	-	0	-	-	-	0	0	0	-	-	0	-
Contra Costa	1,746	142	53	141	79	376	37	51	47	127	93	42	44
Del Norte	59	-	0	-	-	12	0	-	-	-	-	0	-
El Dorado	350	25	-	32	15	87	-	23	-	19	17	-	-
Fresno	1,243	101	32	103	52	281	23	41	45	79	46	29	37
Glenn	63	-	0	-	-	23	-	-	-	-	-	-	0
Humboldt	278	13	10	19	16	65	-	13	-	19	11	-	11
Imperial	224	13	-	17	12	48	-	10	-	13	13	-	-
Inyo	31	-	-	-	0	-	0	-	0	-	-	-	0
Kern	1,154	93	27	94	40	264	27	41	16	76	66	17	22
Kings	181	11	-	18	-	36	-	11	-	-	-	-	-
Lake	172	12	-	16	-	52	-	-	-	10	-	-	-
Lassen	33	-	0	-	0	-	0	-	-	-	-	-	-
Los Angeles	14,156	1,223	321	1,352	650	2,621	300	557	409	1,033	827	530	412
Madera	209	11	-	18	-	57	-	-	-	12	10	-	-
Marin	441	43	13	35	19	87	-	12	19	36	25	-	-
Mariposa	31	-	0	-	-	-	-	0	-	0	-	0	0
Mendocino	193	11	-	20	11	45	-	-	-	13	11	-	-
Merced	354	22	-	39	18	86	-	-	-	26	21	-	-
Modoc	20	-	0	0	-	-	-	-	-	-	0	0	0
Mono	10	0	-	0	0	-	0	0	-	0	-	0	0
Monterey	577	45	16	40	28	123	14	16	11	40	34	20	15
Napa	294	17	-	25	11	61	-	12	11	22	20	-	-
Nevada	249	26	12	22	-	57	-	11	-	15	13	-	-
Orange	4,531	368	129	384	187	891	94	169	136	365	232	128	106
Placer	713	48	21	48	39	148	21	38	22	57	47	-	15
Plumas	40	-	-	-	-	15	-	-	0	-	-	-	0
Riverside	3,695	255	101	352	151	858	74	141	96	269	197	90	90
Sacramento	2,476	157	71	215	97	616	44	73	51	164	126	55	65
San Benito	67	-	0	-	-	15	-	-	-	-	-	-	-
San Bernardino	2,920	244	61	287	119	626	49	92	92	165	185	80	76
San Diego	4,868	366	140	416	196	1,002	102	174	119	351	291	110	123
San Francisco	1,352	78	38	124	44	299	28	56	26	87	67	43	35
San Joaquin	1,123	94	28	111	48	268	15	45	23	64	73	21	25
San Luis Obispo	526	46	11	44	19	120	-	20	22	40	30	-	15
San Mateo	1,151	93	34	105	45	227	28	36	29	84	55	25	32
Santa Barbara	723	51	20	59	39	124	28	27	11	70	46	21	18
Santa Clara	2,455	167	65	225	116	530	49	92	60	178	119	76	54
Santa Cruz	380	33	-	32	15	65	-	15	15	34	22	-	-
Shasta	465	32	-	29	23	120	10	11	12	29	23	10	12
Sierra	-	-	-	-	0	-	0	-	0	0	-	0	-
Siskiyou	115	-	-	-	-	31	-	-	-	-	-	-	-
Solano	813	69	21	71	37	180	20	22	24	43	46	11	22
Sonoma	942	66	23	90	40	203	17	39	28	69	56	26	25
Stanislaus	888	70	23	87	36	174	17	35	25	65	36	22	23
Sutter	166	-	-	-	11	49	-	-	-	11	-	-	-
Tehama	166	12	-	10	-	51	-	-	-	12	-	-	-
Trinity	26	0	-	-	-	-	0	0	0	-	0	-	0
Tulare	549	39	-	43	17	138	11	21	19	36	33	-	16
Tuolumne	147	-	-	-	-	32	-	-	-	12	-	-	-
Ventura	1,334	84	33	117	75	244	21	53	40	95	68	34	34
Yolo	269	23	-	19	10	61	-	11	-	20	18	-	10
Yuba	130	-	-	13	-	32	-	-	-	-	-	-	-

*These numbers represent cancer deaths from 2014, the year for which most recent data are available. **NHL: Non-Hodgkin Lymphoma. Excludes nonmelanoma skin cancers and carcinoma *in situ*, except bladder. Death counts of 10 or less are suppressed.

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

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 2009-2013, the overall cancer incidence rate in the state was lower compared to the rest of the nation. California cancer incidence rates for African Americans, Asians/Pacific Islanders, and non-Hispanic whites were between 3% and 4% lower than the rest of the country. Hispanics in California had a nearly 11% lower incidence rate than other Hispanics in the nation. Some of the differences in rates may reflect differences in classifying the race/ethnicity of cancer cases between California and SEER.



Cancer Risk and Causes of Cancer

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 87% of all cancers are diagnosed in persons 50 years of age and older.

Cancer researchers use the word *risk* in different ways, most commonly expressing risk as lifetime risk or relative risk. *Lifetime risk* refers to the probability that an individual will develop or die from cancer over the course of a lifetime. In the US, the lifetime risk of developing cancer is 41% in men and 38% in women. These probabilities are estimated based on the overall experience of the general population and may overestimate or underestimate individual risk because of differences in exposures (e.g., smoking), family history, and/or genetic susceptibility.

Relative risk is the strength of the relationship between exposure to a given risk factor and cancer. It is measured by comparing cancer occurrence in people with a certain exposure or trait to cancer occurrence in people without

this characteristic. For example, men and women who smoke are about 25 times more likely to develop lung cancer than nonsmokers, so their relative risk of lung cancer is 25. Most relative risks are not this large. For example, women who have a mother, sister, or daughter with a history of breast cancer are about twice as likely to develop breast cancer as women who do not have this family history; in other words, their relative risk is about 2.

Causes of Cancer

All cancers involve the malfunction of genes that control cell growth and division. For most types of cancer, risk is higher with a family history of the disease. It is now thought that many familial cancers arise from the interplay between common gene variations and similar exposures among family members to lifestyle and environmental risk factors. Only a small proportion of cancers are strongly hereditary, that is, caused by an inherited genetic alteration that confers a very high risk. 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). Excluding secondhand smoke, cigarette smoking is associated with an estimated 32% of all cancer death in the US. Each year, about 7,000 nonsmoking adults die of lung cancer as a result of breathing secondhand smoke. The World Cancer Research Fund estimates that about 20% of all cancers diagnosed in the US are related to body fatness, physical inactivity, excess alcohol consumption, and/or poor nutrition, and thus could also be prevented.

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.

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. However, large gaps remain in the knowledge of how genes, lifestyle, and environmental factors interact in carcinogenesis. Environmental factors can be broadly defined by the National Institute of Environmental Health to include: certain viruses; bacteria; carcinogens in workplace and home environments; carcinogens in air, water, soil, food, and consumer products; radiation from sunlight and indoor tanning booths or lamps; radon; or medical imaging, which sometimes involve many relatively small doses that accumulate over a long time. 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.

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. Losses in the ozone layer may give rise to more skin cancers caused by the sun's harmful ultraviolet (UV) radiation. Exposure to UV rays, from sunlight or use of indoor tanning devices, is a major risk factor for most skin cancers. (The International Agency for Research on Cancer has classified indoor tanning devices as "carcinogenic to humans" based on an extensive review of scientific evidence.) People at highest risk include those with fair skin, freckling, and/or light hair, presence of moles, medical condition or medicines that suppress the immune system, or a personal or family history of skin cancer.

Toxic air contaminants, including diesel particulate matter, are responsible for most of the known airborne cancer risk in California. Long-term exposures to some consumer products and environmental pollutants may similarly increase the risk of cancer through routes that have not yet been well studied. Such substances, including some pesticides, plasticizers, and nanomaterials, may cause subtle hormonal or other physiological alterations that could contribute to the development of cancer in later life.

The relationship between cancer risk and environmental factors is important for several reasons. First, even a relatively low percentage of cancers can translate into a large number of cases and, thus, affected people. Second, the exposure to occupational and environmental carcinogens disproportionately affects low-income communities and communities of color, contributing to disparities in the cancer burden. Third, important research questions remain. These include the role of exposures to certain classes of chemicals, such as endocrine disruptors, during critical periods of human development; the effects of cumulative exposures to certain combinations of chemicals; and the potential for pollutants to interact with each other, as well as with genetic and other risk factors for cancer including smoking. Cancer risk can be reduced through individual actions, such as refraining from tobacco use or quitting smoking, engaging in physical activity, eating a healthy diet that includes fruits and vegetables, and avoiding exposure to carcinogens. Research, public policy, and

regulation are necessary to safeguard the public from exposure to carcinogens and other toxic substances in pesticides, chemicals, and consumer products.

Exactly why one individual develops cancer and another person with very similar life experiences does not is beyond current scientific understanding. Better knowledge

is key to preventing and treating cancers, and it is the focus of rigorous scientific research. Reducing one's cancer risk requires adopting a healthy lifestyle, reducing individual and environmental exposures to known carcinogens, and, if there is a family history of cancer, talking to one's doctor on a regular basis about early detection and appropriate screening.

Lifestyle Factors and Cancer Prevention

A high percentage of cancers could be prevented. The most important ways for individuals to reduce their cancer risk is to avoid tobacco, maintain a healthy weight, be physically active on a regular basis, and eat a mostly plant-based diet, consisting of a variety of vegetables and fruit, whole grains, and limited amounts of red and processed meats. Protecting skin from excessive sun exposure and avoiding indoor tanning are also important in reducing the risk of skin cancers. Regular cancer screenings, when appropriate, also play a vital role in cancer prevention. Although genetic inheritance plays a role in the risk of some individuals developing cancer, noninherited factors have a larger impact on cancer risk for the population as a whole.

The major lifestyle factors that play a role in cancer prevention are highlighted in the following sections: 1) Nutrition, Obesity, and Physical Activity, 2) Tobacco Use, and 3) Screening as Prevention. Please see *Cancer Prevention & Early Detection Facts & Figures 2017-2018* at cancer.org/statistics for more detailed information on how lifestyle and environmental factors affect cancer risk.

Nutrition, Obesity, and Physical Activity

Poor nutrition, obesity, and physical inactivity are major cancer risk factors, second only to tobacco use. The World Cancer Research Fund estimates that about 20% of cancers that occur in the US are due to the combined effects of excess alcohol consumption, poor nutrition, physical inactivity, and excess weight. For the 85% of US adults who don't smoke, maintaining a healthy weight, being physically active on a regular basis, eating a

healthy diet, and limiting alcohol consumption are the most important ways to reduce cancer risk.

A recent review conducted by scientists on behalf of the International Agency for Research on Cancer found that there is sufficient evidence to conclude that being overweight or obese increases the risk of developing 13 cancers: uterine corpus, esophagus (adenocarcinoma), liver, stomach (gastric cardia), kidney (renal cell), brain (meningioma), multiple myeloma, pancreas, colorectum, gallbladder, ovary, breast (postmenopausal), and thyroid. There is also limited evidence that excess body fat is associated with an increased risk of non-Hodgkin lymphoma (diffuse large B-cell lymphoma), male breast cancer, and fatal prostate cancer. Accumulating evidence suggests that obesity also increases the risk of cancer recurrence and decreases survival for several cancers. Some studies have shown that intentional weight loss is associated with decreased cancer risk among women, but the evidence is less clear for men.

The prevalence of obesity among US adults 20-74 years of age has more than doubled, from 15% during 1976-1980 to 38% during 2013-2014. More women are currently obese than men, 40% versus 35%, with the highest rates among Hispanic women (47%) and non-Hispanic black women (57%). Obesity rates in women continue to rise, while they appear to have stabilized in recent years in men. In California, 60.6% of adults are overweight or obese.

Obesity among US children and adolescents has risen in parallel to that among adults across race, ethnicity, and gender. In 2011-2014, 17% of American children 2 to 19

years of age were obese, including 22% of Hispanics, 20% of blacks, 15% of non-Hispanic whites, and 9% of Asians. The proportion of children with unhealthy body weight increases with age, with an obesity prevalence of 9% in ages 2-5 years; 18% in ages 6-11 years; and 21% in ages 12-19 years in 2013-2014. Obesity among children and adolescents appears to have plateaued over the past decade, particularly among ages 2-11 years, with moderate declines reported among children 2 to 5 years of age. Efforts to establish healthy body weight are especially important during childhood because excess weight in youth tends to continue throughout life.

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. Studies have shown that individuals who eat more red and processed meat, potatoes, refined grains, and sugar-sweetened beverages and foods are at a higher risk of developing or dying from a variety of cancers. In fact, processed meat consumption was recently classified as a human carcinogen, and red meat consumption as a probable carcinogen, by the International Agency for Research on Cancer based on the evidence of their association with increased colorectal cancer risk. Adhering to a diet that contains a variety of fruits and vegetables, whole grains, and fish or poultry and fewer red and processed meats is associated with lower risk.

Despite the known benefits of a healthy diet, the majority of Americans do not follow healthy dietary guidelines. In California, only 7% of adults reported eating fruits and or

vegetables five or more times per day in 2014. In addition, only a minority of the state's youth met these dietary recommendations.

It should be noted that the scientific study of nutrition and cancer is challenging, largely because eating patterns are complex and difficult to assess. While the evaluation of dietary patterns (instead of individual food items) is a promising new strategy for better understanding the relationship between diet and cancer, many important questions remain unanswered. Until more is known about the specific components of diet that influence cancer risk, the best advice is to consume a mostly plant-based diet that limits red and processed meats and emphasizes a variety of vegetables, fruits, and whole grains. A special emphasis should be placed on controlling total caloric intake to help achieve and maintain a healthy weight.

Along with healthy eating, living a physically active lifestyle helps reduce the risk of a variety of cancer types, as well as heart disease, diabetes, and many other diseases. Physical activity also indirectly reduces the risk of developing obesity-related cancers because of its role in helping to maintain a healthy weight. High levels of moderate-intensity activity (60-75 minutes per day) have even been shown to offset the increased risk of death associated with prolonged sitting, which has become increasingly common in the workplace. Being active is thought to reduce cancer risk largely by improving energy metabolism and reducing circulating concentrations of estrogen, insulin, and insulin-like growth factors. Physical activity also improves the

Examples of Moderate- and Vigorous-intensity Physical Activity

	Moderate-intensity Activities	Vigorous-intensity Activities
Exercise and leisure	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, hauling, masonry and 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)

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 1 hour 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 the level of activity, can have many health benefits.

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

- Choose foods and beverages in amounts that help achieve and maintain a healthy weight.
- Limit consumption of red and processed 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.

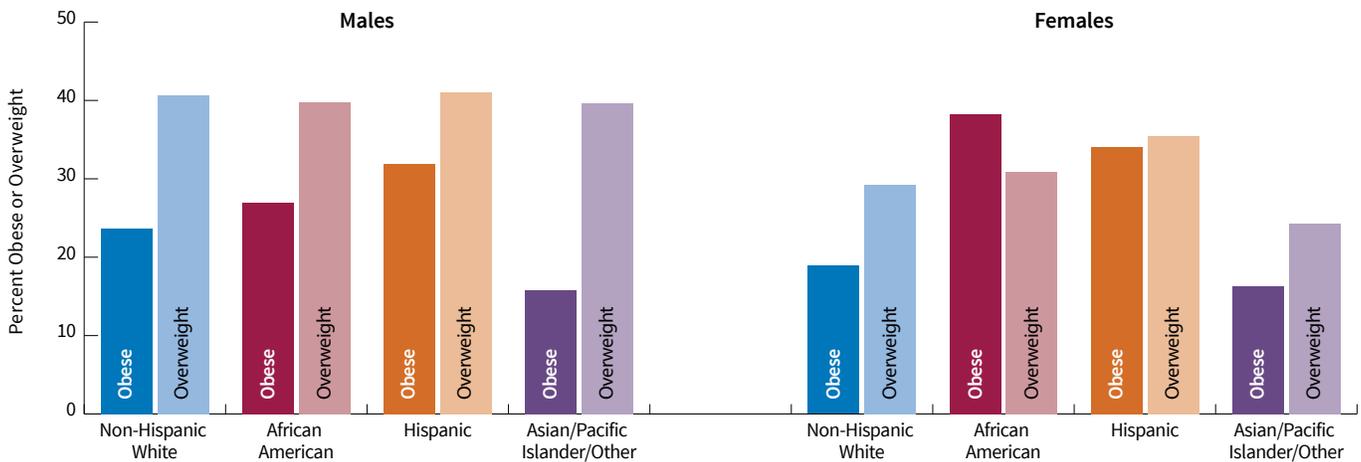
quality of life of cancer patients and has been associated with reduced cancer recurrence and overall mortality.

The American Cancer Society recommends that adults participate in moderate physical activity for at least 150 minutes per week, or at least 75 minutes of vigorous activity (or an equivalent combination preferably spread throughout the week). For children and adolescents, we recommend at least 60 minutes per day of moderate- or vigorous-intensity physical activity, with vigorous-intensity activity at least 3 days a week.

Despite the wide variety of health benefits from being active, in 2015, only 41% of California adults reported doing enough physical activity to meet the 150-minute aerobic recommendation. Males (22%) reported being more highly active, participating in over 300 minutes per week, or at least 150 minutes of vigorous activity, compared to females (20%).

The guidelines above reflect the best nutrition and physical activity evidence available to help Americans reduce their risk of cancer and promote overall health. A

Figure 1. Adult Obesity and Adult Overweight by Race/Ethnicity and Sex in California, 2015



Note: Data are weighted to the 2010 California population.

Source: California Behavioral Risk Factor Survey. Prepared by: California Cancer Registry, California Department of Public Health.

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 large influence that physical and social environments have on individual dietary and activity behaviors. Unfortunately, many Americans encounter substantial barriers to consuming a healthy diet and engaging in regular physical activity. Barriers include limited access to affordable, healthy foods; increased portion sizes; marketing and advertising of foods and beverages that are high in calories, fat, and added sugar; community design that hinders physical activity; and economic and time constraints. It is important to make it easier for people to make healthy lifestyle choices. Therefore, our guidelines call for public, private, and community organizations to create social and physical environments that support the adoption and maintenance of healthy eating and physical activity behaviors to help people stay healthy.

Tobacco Use

Smoking remains the world's most preventable cause of death. Since the first US Surgeon General's report on smoking and health in 1964, smoking has caused more than 21 million premature deaths in the US alone. Each year, cigarette smoking results in an estimated 480,000 premature deaths, including 42,000 from secondhand smoke exposure. Tobacco-related deaths are the single most preventable cause of death in California.

Cigarette Smoking

Half of all of those who continue to smoke will die from smoking-related diseases. About 85% of lung cancers are caused by cigarette smoking. Lung cancer alone kills more than 12,000 Californians each year, which is more than prostate, breast, and colon and rectum cancers combined. Many other cancers are caused by tobacco as well. Smoking increases the risk of cancer of the nasopharynx, nasal cavity and paranasal sinuses, lip, oral cavity, pharynx, larynx, lung, esophagus, pancreas, uterine cervix, ovary (mucinous), kidney, bladder, stomach, and colon and rectum, as well as acute myeloid leukemia. In addition, the International Agency for Research on Cancer recently concluded that there is some evidence that tobacco smoking causes female breast cancer, and the Surgeon General concluded that smoking increases the risk of advanced-stage prostate cancer.

Excluding secondhand smoke, smoking is estimated to cause 32% of all cancer deaths in the US.

Lung cancer incidence rates in California decreased by 40% from 1988 to 2014, while rates in the rest of the country dropped by only 19% between 1988 and 2013. Rates for other smoking-related cancers are declining as well. These achievements are due in large part to the success of the state's tobacco control initiatives. Smoking rates among California adults declined steadily among both men and women in the past decade. In 2006, 13% of California adults smoked, and in 2015 this rate declined to just below 11%. 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 the state is lower than what is experienced in the rest of the US.

Previously, 18- to 24-year-olds in California 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.” In the past few years, the smoking rate for this age group appeared to be decreasing: 17% in 2008, 13% in 2009, and 12% in 2010. However, in 2012 and 2013, the smoking rate for this age group had increased slightly at the same rate of 13.5%. In 2015, the smoking rate for this age group had once again decreased to 10%.

In 2015, smoking prevalence among California adults remained highest among those with annual household incomes below \$25,000. Additionally, prevalence of smoking seen in males was higher compared to females among all levels of income.

Cigar Smoking

Cigar smoking causes many of the same diseases as cigarette smoking and smokeless tobacco. Regular cigar smoking is associated with an increased risk of cancers of the lung, oral cavity, larynx, and esophagus, and cigar smokers have four-to-10 times the risk of dying from these cancers compared to those who have never smoked. In 2015, 3% of adult smokers in California reported having smoked cigars at least once in the past month.

Secondhand Smoke

There is no safe level of exposure to secondhand smoke, or environmental tobacco smoke, which contains more than 7,000 chemicals, at least 69 of which cause cancer. Nonsmokers who are exposed to secondhand smoke are at increased risk of lung diseases (including cancer), coronary artery disease, heart attacks, coughing, wheezing, chest tightness, and reduced lung function.

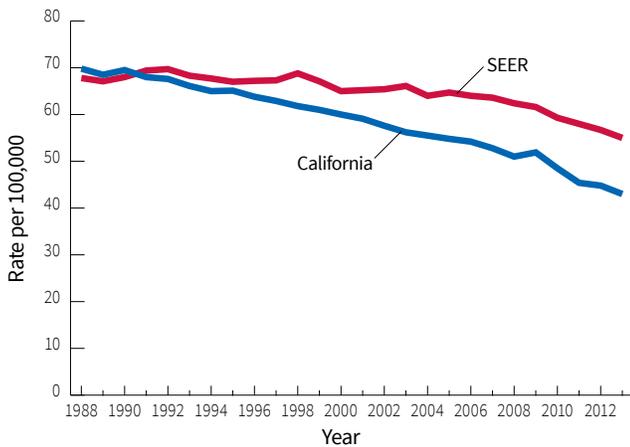
Nationwide, secondhand smoke exposure among nonsmokers declined from 84% in 1988-1994 to 25% in 2011-2012, likely reflecting the widespread implementation of smoke-free laws and a reduction in smoking prevalence. However, this progress differs by subgroup, and people in poverty remain substantially more likely to be exposed than those who are more affluent.

Each year, about 7,000 nonsmoking adults in the US die of lung cancer as a result of breathing secondhand smoke. Secondhand smoke can be particularly harmful to children. In 2015, 78% of California households completely prohibited smoking in the home.

E-cigarettes

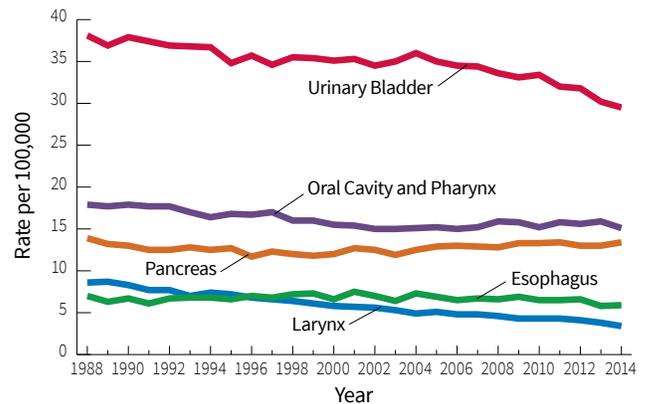
Electronic nicotine delivery systems (ENDS), or e-cigarettes, are battery-operated devices introduced in the US market around 2007 that allow the user to inhale aerosol produced from cartridges or tanks filled with a liquid typically containing nicotine, propylene glycol and/or vegetable glycerin, other chemicals, and sometimes flavoring. Some studies have shown lower levels of toxic chemicals in aerosol from e-cigarette products than in smoke from combustible cigarettes, and e-cigarettes are promoted as a less harmful alternative to traditional cigarettes and a way to bypass smoke-free laws in other states (as of 2016, California regulates e-cigarettes as a tobacco product). However, the long-term health risks of using these products, or being exposed to them secondhand, are unknown and likely vary depending on the specific e-cigarette product and how it is used. E-cigarette use has skyrocketed in the US, and there is growing concern that it will normalize cigarette smoking and lead to the use of other tobacco products with known health risks. Indeed, studies show that adolescent e-cigarette users are two-to-four times

Figure 2. Trends in Lung Cancer Incidence in California and SEER Areas Other than California, 1988-2013



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

Figure 3. Trends in the Incidence of Smoking-related Cancers Other than Lung Among Men in California, 1988-2014



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

more likely than nonusers to initiate combustible (cigarette, cigar, or hookah) tobacco use. These products may also discourage smokers who want to quit from using evidence-based cessation therapies.

In California, as in the rest of the country, e-cigarettes have been gaining in popularity, particularly among high school students. Among adults in the state, the prevalence of reported e-cigarette use (in the past 30 days) nearly doubled between 2012 and 2015, from 1.8% to 3%.

Smokeless Tobacco Products

Smokeless tobacco products include moist snuff, chewing tobacco, snus (a “spitless,” moist powder tobacco pouch), dissolvable nicotine products, and a variety of other tobacco-containing products that are not smoked. These products cause oral, esophageal, and pancreatic cancers; precancerous lesions of the mouth; gum recession; bone loss around the teeth; and tooth staining. They can also lead to nicotine addiction. Switching from smoking to using smokeless tobacco products has been shown to result in a higher risk of tobacco-related death than completely stopping the use of all tobacco products. A little more than 1% of California adults reported current use of smokeless tobacco products such as chewing tobacco, snuff, or snus in 2015.

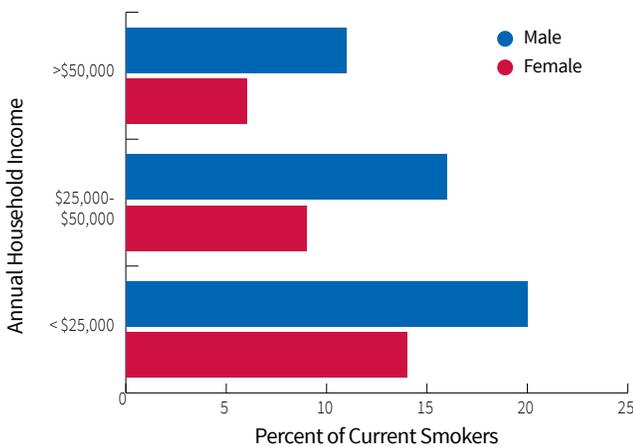
Smoking Cessation

In 2015, 61% 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. Smokers who quit, regardless of age, increase their longevity, while those who quit before middle age generally experience a lifespan similar to never smokers. Smoking cessation reduces the risk of lung and other cancers caused by smoking. In addition, cancer survivors who quit smoking have better health outcomes than those who do not.

Reducing Tobacco Use and Exposure

There are federal, state, and local initiatives aimed at reducing tobacco exposure. While states have been at the forefront of tobacco control efforts, federal initiatives in tobacco control hold promise for reducing tobacco use, and include regulation of tobacco products, ensuring coverage of some clinical cessation services and tax increases. The Family Smoking Prevention and Tobacco Control Act of 2009 granted the US Food and Drug Administration (FDA) the authority to regulate the manufacturing, selling, and marketing of tobacco products. Key provisions that have already gone into effect

Figure 4. Adult Smoking by Annual Household Income and Sex in California, 2015



Note: Data are weighted to the 2010 California population.
Source: California Behavioral Risk Factor Survey and California Adult Tobacco Survey.

include the prohibition of misleading descriptors such as light, low, and mild on tobacco product labels and the prohibition of fruit and candy cigarette flavorings. Provisions in the 2010 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. Furthermore, cost sharing for evidence-based cessation treatments was eliminated for new or renewed private health plans and Medicare recipients.

In 2000, the US Surgeon General outlined the goals and components of comprehensive statewide tobacco control programs, which 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 2016, states averaged 15% of CDC-recommended funding levels for tobacco control programs. Fortunately, states that have previously invested in comprehensive tobacco control programs, such as California, have reduced smoking rates and saved millions of dollars in tobacco-related

health care costs. The state recently raised the purchase age for tobacco products from 18 to 21 and banned the marketing of e-cigarettes to children. It also prohibits e-cigarette use (vaping) in many public places. For more information about California's tobacco control activities, see California's Cancer Control Activities section on page 39, and the American Cancer Society Cancer Action Network 2017 public policy priorities on page 37.

Screening as Prevention

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 growths 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 help 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 spreading beyond the organ where the cancer began. Following American Cancer Society cancer detection guidelines and encouraging others to do so can help save lives. Please see American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People on the next page.



American Cancer Society Recommendations for the Early Detection of Cancer in Average-risk Asymptomatic People*

Cancer Site	Population	Test or Procedure	Recommendation
Breast	Women, ages 40-54	Mammography	Women should undergo regular screening mammography starting at age 45. Women ages 45 to 54 should be screened annually. Women should have the opportunity to begin annual screening between the ages of 40 and 44.
	Women, ages 55+		Transition to screening every 2 years, or have the opportunity to continue annual screening. Continue screening as long as overall health is good and life expectancy is 10+ years.
Cervix	Women, ages 21-29	Pap test	Screening should be done every 3 years with conventional or liquid-based Pap tests.
	Women, ages 30-65	Pap test & HPV DNA test	Screening should be done every 5 years with both the HPV test and the Pap test (preferred), or every 3 years with the Pap test alone (acceptable).
	Women, ages 66+	Pap test & HPV DNA test	Women ages 66+ who have had 3 or more consecutive negative Pap tests or 2 or more consecutive negative HPV and Pap tests within the past 10 years, with the most recent test occurring in the past 5 years should stop cervical cancer screening.
	Women who have had a total hysterectomy		Stop cervical cancer screening.
Colorectal†	Men and women, ages 50+	Guaiac-based fecal occult blood test (gFOBT) with at least 50% sensitivity or fecal immunochemical test (FIT) with at least 50% sensitivity, OR	Annual testing of spontaneously passed stool specimens. Single stool testing during a clinician office visit is not recommended, nor are “throw in the toilet bowl” tests. In comparison with guaiac-based tests for the detection of occult blood, immunochemical tests are more patient-friendly and are likely to be equal or better in sensitivity and specificity. There is no justification for repeating FOBT in response to an initial positive finding.
		Stool DNA test, OR	Every 3 years
		Flexible sigmoidoscopy (FSIG), OR	Every 5 years alone, or consideration can be given to combining FSIG performed every 5 years with a highly sensitive gFOBT or FIT performed annually.
		Double-contrast barium enema, OR	Every 5 years
		Colonoscopy, OR	Every 10 years
CT Colonography	Every 5 years		
Endometrial	Women at menopause		Women should be informed about risks and symptoms of endometrial cancer and encouraged to report unexpected bleeding to a physician.
Lung	Current or former smokers ages 55-74 in good health with 30+ pack-year history	Low-dose helical CT (LDCT)	Clinicians with access to high-volume, high-quality lung cancer screening and treatment centers should initiate a discussion about annual lung cancer screening with apparently healthy patients ages 55-74 who have at least a 30 pack-year smoking history, and who currently smoke or have quit within the past 15 years. 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
Prostate	Men, ages 50+	Prostate-specific antigen (PSA) test with or without digital rectal examination	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. Prostate cancer screening should not occur without an informed decision-making process.

CT-Computed tomography. *All individuals should become familiar with the potential benefits, limitations, and harms associated with cancer screening. †All positive tests (other than colonoscopy) should be followed up with colonoscopy.

Cancer Stages at Diagnosis

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 cancer. A system of summary staging (*in situ*, local, regional, distant) is used for descriptive and statistical analysis of tumor registry data and is particularly useful for looking at trends over time. 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.

Clinicians use a different staging system, called TNM, for most cancers. The TNM system assesses cancer growth and spread 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 (e.g., lymphoma) have alternative staging systems. As the biology of cancer has become better understood, additional tumor-specific features have been incorporated into treatment plans and/or stage for some cancers.

Table 6. Five-year Relative Survival by Stage at Diagnosis in California, 2004-2013

Cancer Type	All Stages	Localized	Regional	Distant
Female Breast	91.3%	99.3%	86.0%	28.5%
Cervix Uteri	69.9%	92.4%	59.6%	18.6%
Uterus*	83.3%	96.3%	69.7%	18.2%
Ovary	49.5%	92.0%	76.1%	30.6%
Prostate	99.7%	100.0%	100.0%	30.7%
Testis	94.4%	98.9%	96.1%	70.5%
Oral & Pharynx	66.6%	85.1%	64.8%	39.6%
Colon & Rectum	67.4%	91.8%	71.9%	14.0%
Pancreas	7.9%	30.4%	10.8%	2.5%
Liver	19.7%	31.3%	11.7%	3.0%
Lung & Bronchus	18.2%	57.2%	28.9%	4.6%
Melanoma	92.1%	98.8%	63.6%	18.1%
Hodgkin Lymphoma	85.1%	92.0%	92.3%	75.7%
NHL**	70.0%	83.1%	73.3%	62.0%
Leukemia***	58.5%	-	-	58.5%
Childhood (0-14 years)	84.8%	-	-	84.9%
Young Adult (15-19 years)	67.0%	-	-	67.0%
Adult (20+ years)	54.3%	-	-	54.3%

*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 2014. Cancers that were unstaged at time of diagnosis are excluded.

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

Table 7. Percent of Cancer Cases Diagnosed at Early* Stage, California and Selected Counties, 2014

	Non-Hispanic White		African American		Hispanic		Asian/Pacific Islander		
	Total Cases	% Early	Total Cases	% Early	Total Cases	% Early	Total Cases	% Early	
Breast - Females	California	18,381	72.5%	2,094	66.5%	6,145	66.0%	4,515	74.0%
	Alameda	597	76.9%	214	65.9%	162	70.4%	406	75.9%
	Contra Costa	693	71.4%	88	60.2%	119	63.0%	160	75.6%
	Fresno	372	75.8%	28	64.3%	204	72.1%	55	70.9%
	Kern	340	67.9%	28	64.3%	127	59.1%	22	72.7%
	Los Angeles	3,289	71.0%	843	67.0%	2,073	65.1%	1,254	72.3%
	Orange	1,768	74.0%	48	62.5%	441	66.7%	432	73.1%
	Riverside	1,012	73.9%	111	64.9%	402	61.9%	117	70.9%
	Sacramento	866	73.6%	138	67.4%	142	68.3%	193	74.1%
	San Bernardino	673	71.2%	153	64.1%	428	64.0%	108	67.6%
	San Diego	1,944	72.4%	114	69.3%	533	68.1%	324	70.4%
	San Francisco	345	70.7%	49	67.3%	67	82.1%	280	76.8%
	San Joaquin	281	66.5%	52	71.2%	92	59.8%	83	74.7%
	San Mateo	452	81.2%	25	64.0%	107	72.0%	265	79.2%
	Santa Clara	783	72.4%	32	75.0%	260	65.4%	435	77.5%
	Ventura	551	71.0%	17	58.8%	134	75.4%	52	71.2%
Prostate - Males	California	9,773	71.1%	1,560	69.9%	3,146	66.2%	1,258	70.7%
	Alameda	315	83.5%	132	79.5%	77	74.0%	106	81.1%
	Contra Costa	401	78.6%	63	61.9%	60	80.0%	34	64.7%
	Fresno	180	75.6%	21	61.9%	76	77.6%	10	-
	Kern	174	57.5%	22	63.6%	75	66.7%	10	-
	Los Angeles	1,768	65.7%	612	68.3%	1,115	57.1%	364	64.8%
	Orange	933	72.1%	37	67.6%	208	71.2%	137	68.6%
	Riverside	628	72.0%	104	81.7%	241	76.8%	27	81.5%
	Sacramento	367	69.5%	83	66.3%	51	70.6%	45	68.9%
	San Bernardino	408	70.8%	125	74.4%	241	69.3%	36	80.6%
	San Diego	980	68.4%	101	58.4%	229	68.6%	82	61.0%
	San Francisco	166	72.9%	40	77.5%	24	91.7%	92	66.3%
	San Joaquin	130	66.2%	31	77.4%	34	52.9%	26	76.9%
	San Mateo	224	77.2%	21	81.0%	44	72.7%	68	79.4%
	Santa Clara	412	75.5%	34	73.5%	112	76.8%	135	79.3%
	Ventura	282	65.2%	14	56.3%	80	56.3%	14	71.4%
Invasive Cervix - Females	California	558	43.9%	78	42.3%	520	42.5%	204	38.2%
	Alameda	17	-	-	-	14	-	18	-
	Contra Costa	25	40.0%	-	-	12	-	-	-
	Fresno	12	-	-	-	19	-	-	-
	Kern	18	-	-	-	20	-	-	-
	Los Angeles	101	43.6%	31	45.2%	174	39.7%	64	39.1%
	Orange	41	46.3%	-	-	36	50.0%	16	-
	Riverside	45	40.0%	-	-	47	42.6%	-	-
	Sacramento	29	-	10	-	10	-	14	-
	San Bernardino	25	40.0%	-	-	43	30.2%	-	-
	San Diego	49	49.0%	-	-	36	-	13	-
	San Francisco	11	-	-	-	-	-	12	-
	San Joaquin	-	-	-	-	10	-	-	-
	San Mateo	-	-	-	-	-	-	-	-
	Santa Clara	16	-	-	-	16	-	12	-
	Ventura	20	-	-	-	10	-	-	-
Colon & Rectum - Males	California	4,453	42.2%	535	39.8%	1,730	39.8%	1,170	42.6%
	Alameda	129	43.4%	57	38.6%	44	36.4%	87	42.5%
	Contra Costa	141	43.3%	25	40.0%	34	52.9%	36	44.4%
	Fresno	86	33.7%	15	-	58	37.9%	12	-
	Kern	118	42.4%	13	-	51	47.1%	-	-
	Los Angeles	828	42.6%	187	40.6%	605	37.9%	350	39.4%
	Orange	381	45.7%	10	-	111	41.4%	140	43.6%
	Riverside	340	47.4%	33	45.5%	116	41.4%	24	-
	Sacramento	189	41.3%	29	48.3%	38	-	56	-
	San Bernardino	232	45.7%	43	32.6%	146	46.6%	28	50.0%
	San Diego	387	42.4%	27	-	106	41.5%	61	52.5%
	San Francisco	84	54.8%	12	-	12	-	116	51.7%
	San Joaquin	72	44.4%	24	-	39	43.6%	25	-
	San Mateo	105	42.9%	-	-	23	-	41	53.7%
	Santa Clara	180	42.8%	11	-	47	40.4%	109	33.9%
	Ventura	115	40.9%	-	-	44	31.8%	10	-
Colon & Rectum - Females	California	3,924	42.6%	520	41.3%	1,460	41.4%	1,015	40.8%
	Alameda	123	48.8%	47	42.6%	39	38.5%	74	37.8%
	Contra Costa	136	44.1%	33	30.3%	20	-	33	42.4%
	Fresno	75	44.0%	-	-	41	43.9%	15	-
	Kern	86	47.7%	11	-	43	46.5%	-	-
	Los Angeles	732	45.6%	221	40.3%	538	43.7%	324	41.7%
	Orange	331	45.6%	-	-	74	45.9%	90	40.0%
	Riverside	242	36.8%	25	40.0%	116	35.3%	24	-
	Sacramento	174	31.6%	36	47.2%	28	-	51	37.3%
	San Bernardino	189	45.0%	34	44.1%	113	49.6%	38	-
	San Diego	378	45.5%	31	-	104	32.7%	65	38.5%
	San Francisco	63	50.8%	16	-	17	-	78	55.1%
	San Joaquin	55	41.8%	-	-	29	-	30	40.0%
	San Mateo	82	39.0%	-	-	23	-	23	56.5%
	Santa Clara	172	35.5%	-	-	56	35.7%	85	34.1%
	Ventura	107	35.5%	-	-	28	-	-	-

**Early stage defined as *in situ* and localized disease. - Data not shown if fewer than 10 cases were reported.

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

Table 8. Three Common Cancers: New Cases and Percent of Early Stage Cases at Diagnosis, California, 2014

Cancer Site	Total New Cases Diagnosed	Percent Early Stage
Female Breast	31,647	71.1%
Prostate	16,827	69.5%
Colorectal	15,094	42.0%

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

How does staging impact survival?

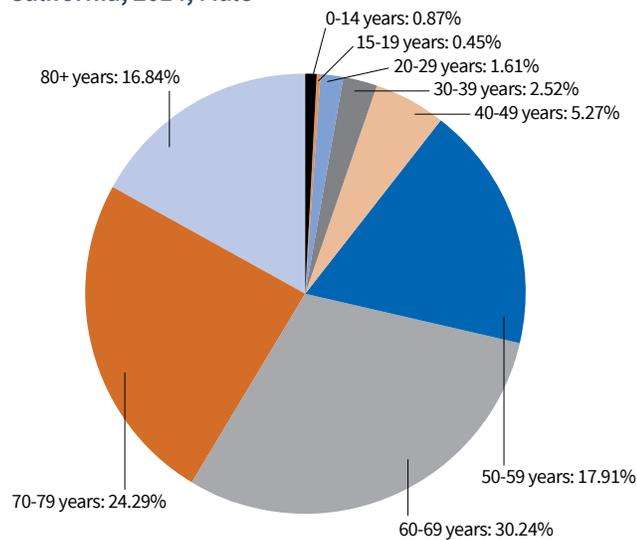
Survival statistics vary greatly by cancer type and stage at diagnosis. Relative survival compares survival among cancer patients to that of people not diagnosed with cancer who are of the same age, race/ethnicity, and sex. It represents the percentage of cancer patients who are alive after some designated 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 may not predict individual prognosis and should be interpreted with caution for several reasons. First, five-year relative survival rates do not reflect the most

recent advances in detection and treatment because they are based on patients who were diagnosed as much as 10 years ago. 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. Third, improvements in survival rates over time do not always indicate progress against cancer. For example, increases in average survival time can occur if screening results in the detection of some indolent cancers that would have gone undetected in the absence of screening (overdiagnosis). Screening also artificially increases survival rates when early diagnosis does not extend lifespan.

Stage at Diagnosis in California's Counties

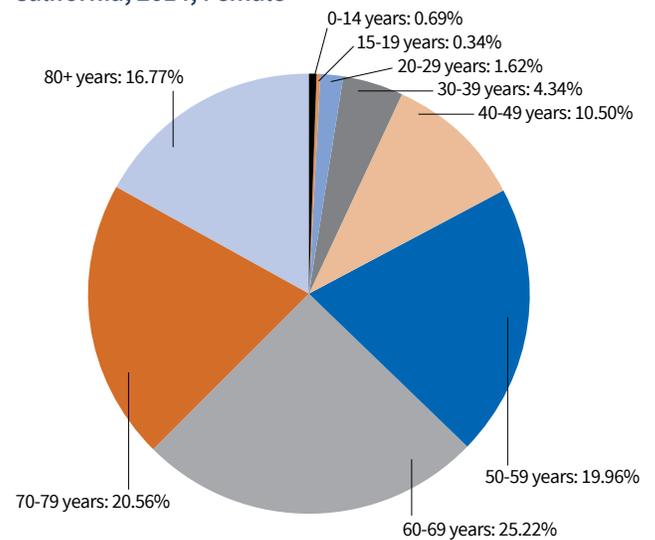
The percentage of cancers diagnosed at an early stage (*in situ* or localized) is an indication of screening and early detection. The 15 most populous counties listed in Table 7, page 17 account for 80% of California's population. The numbers are actual cases reported to the California Cancer Registry for 2014.

Figure 5. Percentage of New Cancers Diagnosed by Age, California, 2014, Male



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

Figure 6. Percentage of New Cancers Diagnosed by Age, California, 2014, Female



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

Cancer Disparities

A major component of the American Cancer Society’s mission to lead the fight for a world without cancer is the elimination of disparities in the cancer burden among different segments of the US population, defined in terms of socioeconomic status (income, education, insurance status, etc.), geographic location, race/ethnicity, sex, and sexual orientation. The causes of health disparities within these groups are complex and include interrelated social, economic, cultural, environmental, and health system factors. However, disparities predominantly arise from inequities in work, wealth, education, housing, and overall standard of living, as well as social barriers to high-quality cancer prevention, early detection, and treatment services.

California’s Diverse Population

The US Census Bureau (census.gov) estimates California’s current population at more than 39 million. Of these, 38% self-identify as white alone (not Hispanic or Latino); 38.8% as Hispanic; 14.7% as Asian; 6.2% as African American; 1.7% as American Indian and Alaskan Native; and 0.5% as Native Hawaiian and other Pacific Islander. It is important to note that although cancer data in the US are primarily reported in terms of broad racial and ethnic categories, these populations are very heterogeneous with substantial variation in the cancer burden within each group.

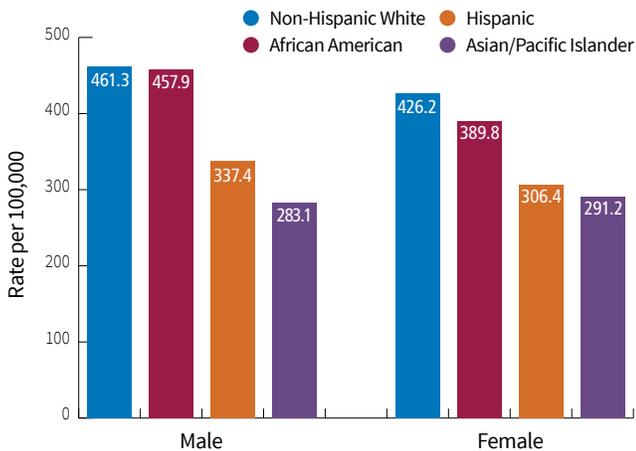
Table 9. Five Most Common Cancers and Number of New Cases by Sex and Detailed Race/Ethnicity, California, 2010-2014

	Male					Female				
	1	2	3	4	5	1	2	3	4	5
Non-Hispanic White	Prostate 59,841	Lung 28,553	Melanoma 22,295	C&R 21,382	Bladder 19,651	Breast 75,697	Lung 29,328	C&R 19,891	Uterus 15,180	Melanoma 13,599
African American	Prostate 9,559	Lung 3,388	C&R 2,720	Kidney 1,320	Bladder 1,030	Breast 8,093	Lung 3,058	C&R 2,630	Uterus 1,674	Pancreas 856
Hispanic	Prostate 17,442	C&R 7,664	Lung 4,949	Kidney 4,327	NHL 4,184	Breast 22,284	C&R 6,579	Uterus 5,631	Thyroid 5,399	Lung 4,513
American Indian/ Alaska Native	Prostate 421	Lung 246	C&R 195	Liver 140	Kidney 134	Breast 671	Lung 233	C&R 212	Uterus 170	Thyroid 87
Chinese	Prostate 2,063	Lung 1,639	C&R 1,511	Liver 703	NHL 591	Breast 3,919	Lung 1,394	C&R 1,291	Uterus 751	Thyroid 680
Japanese	Prostate 705	C&R 489	Lung 412	Bladder 230	NHL 203	Breast 1,485	C&R 570	Lung 485	Uterus 228	NHL 209
Filipino	Prostate 2,376	Lung 1,502	C&R 1,152	NHL 503	Kidney 455	Breast 5,113	Uterus 1,187	C&R 1,149	Lung 1,051	Thyroid 1,031
Hawaiian	Prostate 119	Lung 75	C&R 70	NHL 25	Oral 24	Breast 217	Uterus 66	C&R 54	Lung 51	Thyroid 33
Korean	C&R 486	Lung 467	Prostate 434	Stomach 374	Liver 269	Breast 1,016	C&R 474	Thyroid 304	Lung 290	Stomach 235
Vietnamese	Lung 819	Liver 703	C&R 630	Prostate 597	NHL 258	Breast 1,334	C&R 540	Lung 490	Thyroid 291	Uterus 255
Laotian	Lung 61	Liver 54	C&R 45	Prostate 22	Stomach 20	Breast 60	C&R 46	Lung 26	Thyroid 22	Uterus 24
Kampuchean	C&R 77	Liver 75	Lung 65	Prostate 32	Oral 23	Breast 105	Lung 59	C&R 54	Liver 32	Thyroid 28
South Asian	Prostate 737	C&R 302	Lung 231	NHL 211	Bladder 180	Breast 1,290	Thyroid 254	Uterus 235	C&R 192	Ovary 151
Pacific Islander	Prostate 561	C&R 305	Lung 271	NHL 143	Liver 138	Breast 1,456	Uterus 480	Thyroid 346	C&R 344	Lung 283
Hmong	Lung 28	C&R 19	Liver 17	NHL 13	Oral 11	Breast 27	C&R 24	Lung 20	Cervix 14	Oral 14

Note: C&R: colon & rectum; NHL: Non-Hodgkin Lymphoma.

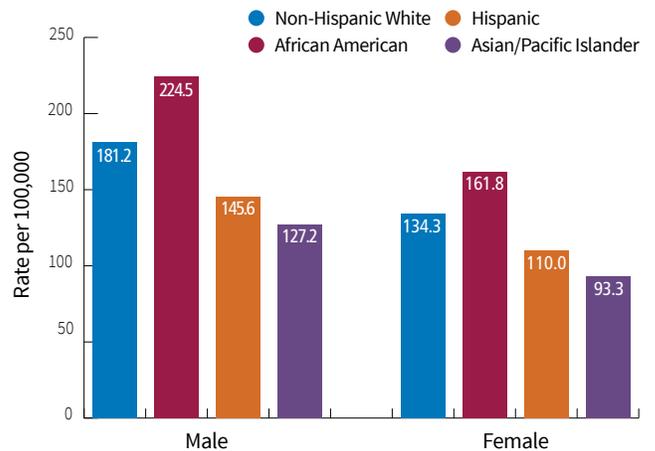
Source: California Cancer Registry, California Department of Public Health.

Figure 7. Cancer Incidence by Race/Ethnicity and Sex in California, 2014



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

Figure 8. Cancer Mortality by Race/Ethnicity and Sex in California, 2014



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

Cancer is the second-leading cause of death for all racial/ethnic groups combined in both California and nationwide. In general, the cancer types 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 three cancers for men. Among women, breast, lung and bronchus, and colon and rectum cancer are among the top three cancers. Breast cancer is the number one cancer among women of all racial/ethnic groups.

Socioeconomic Status

Nearly a quarter of California’s 39 million residents live in poverty, according to the US Census Bureau. People with lower socioeconomic status (SES) have disproportionately higher cancer death rates than those with higher SES, regardless of demographic factors such as race/ethnicity. For example, cancer mortality rates among both black and non-Hispanic white men with 12 or fewer years of education are almost three times higher than those of college graduates for all cancers combined and four-to-five times higher for lung cancer.

People with lower SES generally have higher cancer incidence rates, in part because they are more likely to engage in behaviors that increase cancer risk, such as tobacco use, physical inactivity, and unhealthy diets,

but also due to higher prevalence of cancer-causing infections, as well as workplace and other environmental exposures. Factors that contribute to higher risk in this population include tobacco company and fast food chain marketing strategies that target these populations and environmental and/or community factors that provide few opportunities for physical activity and access to fresh fruits and vegetables.

In addition to higher rates of new cancer diagnoses, lower SES groups are less likely to survive a cancer diagnosis since the disease is often detected at an advanced stage and because they are less likely to receive standard treatment. Barriers to preventive care, early detection, and optimal treatment include inadequate health insurance; financial, structural, and personal barriers to health care; and low health literacy rates. Delays in disseminating improved early detection and treatment have slowed progress in reducing cancer death rates in people with lower SES.

Racial and Ethnic Minorities and Cancer Risk

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

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.

If an LGBT person is diagnosed with cancer, for example, they are faced with decisions navigating health systems such as whether they are comfortable coming out to their oncologist and treatment team, as acknowledged in an article by Richard Wender, MD, chief cancer control officer, American Cancer Society, et al.¹ Additionally, knowledge about LGBT health needs may not be known by health care providers.² These factors cause some LGBT persons to delay 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. Health disparities may be addressed through patient navigation services by reducing the time between diagnosis to treatment completion, as some studies have begun to demonstrate.³ The American Cancer Society has invested in the patient navigation model, and hospital-based patient navigators are employed by us across the country.

While a compounding problem has been that LGBT people have been more likely to lack insurance, the passage of the Affordable Care Act of 2010 (ACA) and the overturn of the Defense of Marriage Act in 2013 have started to improve access and coverage. How the ACA is affected by the new presidential administration remains to be seen.

The following examples illustrate challenges affecting the LGBT community's cancer risk:

- In a large nationwide study, lesbian women reported having fewer mammograms and pelvic exams than heterosexual women. In 2014, 35% of lesbian women in California reported having had a breast cancer screening in the past two years, compared to 54% of heterosexual women. Another study reported less frequent Pap tests among lesbians. In 2014, 68% of lesbian women over 21 years of age reported ever having a Pap test in the past three years, compared to 74% of heterosexual women.
- Infection with the human papillomavirus (HPV) increases the risk of anal cancer. Estimates of anal cancer among the gay, bisexual, and transgender population is estimated to be 20 times higher than the general population.
- Smoking rates are 50% higher in the LGBT population compared to the non-LGBT population, putting them at greater risk of a host of tobacco-related cancers. This is partially due to the tobacco industry's campaign targeting LGBT people through bar promotions, sponsorships, and advertisements in the LGBT press.
- Studies show that LGBT cancer survivors have continued challenges. In one study, they reported higher levels of depressive symptoms than others. Another study noted that LGB cancer survivors were 60% less likely to report their current health status as good versus non-LGB survivors, and they were twice as likely to continue to smoke.

1. Wender, Richard, MD., et al. "The American Cancer Society's Approach to Addressing the Cancer Burden in the LGBT Community." *LGBT Health* 2015.

2. Ard KL, Makadon HJ: Improving the Health Care of Lesbian, Gay, Bisexual and Transgender People: Understanding and Eliminating Health Disparities. The Fenway Institute. Boston, MA, 2012.

3. Paskett ED, Katz ML, Post DM, et al.: The Ohio Patient Navigation Research Program: Does the American Cancer Society patient navigation model improve time to resolution in patients with abnormal screening tests? *Cancer Epidemiol Biomarkers Prev* 2012;1620-1628.

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 of Hispanic ethnicity than those of other Californians. However, both groups have substantially higher rates of certain cancers, such as liver and stomach. 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.

Cancer burden disparities among racial and ethnic minorities largely reflect obstacles to receiving health care services related to cancer prevention, early detection, and high-quality treatment, with poverty as the overriding factor. In 2015, the Behavioral Risk Factor Surveillance Survey indicated that 9.2% of California adults were medically uninsured. Hispanics had the greatest proportion of uninsured individuals at 18.5%, followed by other non-Hispanics (10.6%), African Americans (7.8%), Asians/Pacific Islanders (5.1%), and non-Hispanic whites (3.4%).

Discrimination is another contributing factor of racial/ethnic disparities in cancer mortality. Racial and ethnic minorities tend to receive lower-quality health care than whites even when insurance status, age, severity of disease, and health status are comparable. Social inequalities, including communication barriers and provider assumptions, can affect interactions between patients and physicians and contribute to miscommunication and/or delivery of substandard care.

In addition to poverty and social discrimination, a population's cancer incidence may be influenced by cultural and/or inherited factors that decrease or increase risk. Individuals who maintain a primarily plant-based diet or avoid tobacco because of cultural or religious beliefs have a lower risk of many cancers compared to non-Hispanic whites. For example, Hispanics and Asians have lower rates of lung cancer because historically they have been less likely to smoke (Table 9, page 19). Conversely, because these populations include a large number of recent immigrants, rates of cancers related to infectious agents (e.g., stomach, liver) are higher because

of higher infection prevalence in their countries of origin. Genetic factors may explain some differences in cancer incidence, such as the higher mutation frequency in breast cancer susceptibility genes *BRCA1* and *BRCA2* among women of Ashkenazi Jewish descent. However, it is important to note that genetic differences associated with race or ethnicity contribute only minimally to disparate cancer burdens between populations.

Please refer to numerous American Cancer Society publications, which can be downloaded at cancer.org/statistics, for more information about cancer burden in select racial/ethnic groups:

- *Cancer Facts & Figures 2016* (includes a special section titled Cancer in Asian Americans, Native Hawaiians, and Pacific Islanders)
- *Cancer Facts & Figures for African Americans 2016-2017*
- *Cancer Facts & Figures for Hispanics/Latinos 2015-2017*

Selected Cancers

This section contains information on the California cancer burden for select cancers (breast, cervical, childhood, colorectal, lung, prostate, and skin).

Please see the *Cancer Facts & Figures 2017* publication (cancer.org/statistics) for national statistics and more information about these and other cancers, as well as a special section on rare cancers in adults.

Breast Cancer

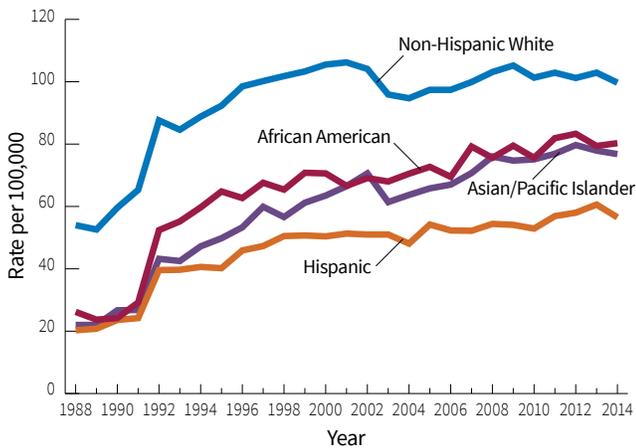
Breast cancer is a malignant tumor that starts in the cells of the breast. The disease occurs primarily in women, but it can also occur in men. Breast cancer is the most common cancer among women in California, regardless of race/ethnicity.

Breast cancer is classified differently based on the way that the cancer cells look under the microscope and whether the cells have spread into surrounding breast tissue.

New California cases: Breast cancer incidence in California has been fairly stable since 1988. There were 25,801 new cases diagnosed in 2014. More cancers are being diagnosed at an early stage, and the rate of late-stage disease has declined. About 71% of female breast cancers diagnosed in the state in 2014 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, which together have increased the number of women who receive regular breast cancer screening.

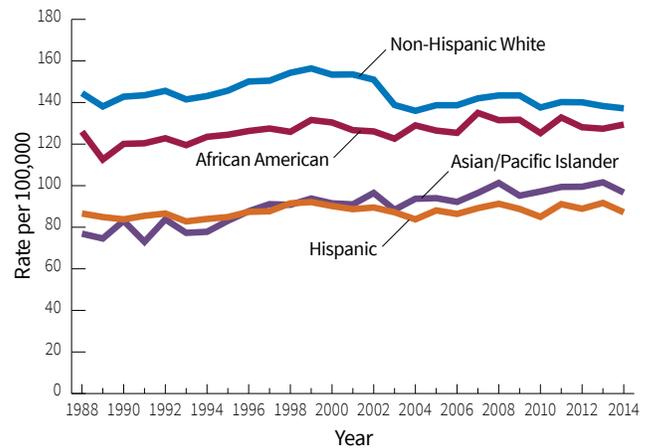
Between 2009-2013, the invasive female breast cancer incidence rate in California compared to the rest of the nation was 13% lower among Hispanics, 7% higher among

Figure 9. Trends in Early Stage Female Breast Cancer Incidence by Race/Ethnicity in California, 1988-2014



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

Figure 10. Trends in Female Breast Cancer Incidence by Race/Ethnicity in California, 1988-2014



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

non-Hispanic whites, 3% lower among Asians/Pacific Islanders, and 1% higher among African Americans.

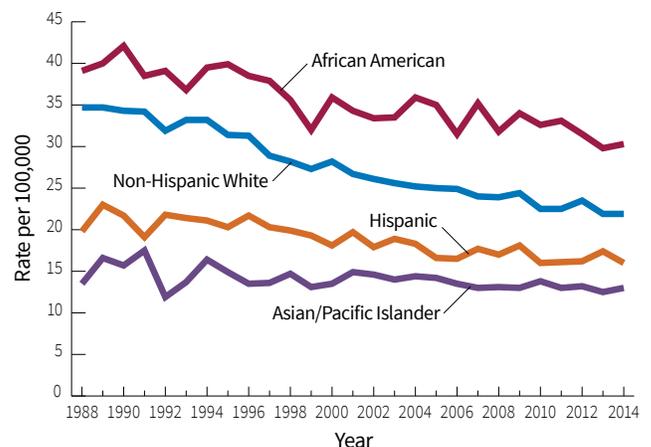
Deaths in California: A total of 4,460 breast cancer deaths occurred in California in 2014. Breast cancer mortality in the state has declined by 37% due to the combined effects of better treatment and earlier diagnosis. While this is very good news for California women, breast cancer incidence rates may begin to rise in the next decade as the large number of women born after World War II reach the age in which the disease 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.

Roughly 170 men are diagnosed with breast cancer each year in California, and about 40 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.

Early detection: Early detection is the best defense against breast cancer (see page 15). For women (and some transgender women and transgender men) at average risk, American Cancer Society screening guidelines recommend that those 40 to 44 years of age have the choice for annual mammography; those 45 to 54 have annual mammography;

and those 55 years of age and older have mammography every two years, or can choose annual mammography, continuing as long as their overall health is good and their life expectancy is 10 or more years. Women at increased risk (e.g., family history, genetic predisposition, past breast cancer) should talk with their doctors about the benefits and limitations of starting mammography screening earlier, having additional tests (e.g., breast ultrasound and magnetic resonance imaging [MRI]), and/or having more frequent exams.

Figure 11. Trends in Female Breast Cancer Mortality by Race/Ethnicity in California, 1988-2014



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

Mammography is a very accurate screening tool for women at both average and increased risk; however, like any medical test, it is not perfect. The test 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 those women, digital mammography or ultrasound imaging in combination with standard mammography may increase the likelihood of detecting cancer. Mammography also results in some over-diagnosis, which is the detection of cancer that would neither have caused harm nor been diagnosed in the absence of screening. For most women at high risk of breast cancer, annual screening using MRI in addition to mammography is recommended, typically starting at the age of 30.

In 2014, 77% of California women 40 years of age and older reported that they had a mammogram in the past two years. Non-Hispanic white women were most likely to have been recently screened within the past two years (57%), while screening among Hispanic, non-Hispanic black, and Asian/Pacific Islander women was 25%, 8%, and 6%, respectively.

Survival: The national 5- and 10-year relative survival rates for invasive breast cancer are 90% and 83%, respectively. Overall, 61% of breast cancer diagnoses are localized disease (cancer that has not spread to lymph nodes or other locations outside the breast), for which the five-year relative survival rate is 99%. In 2017, there will be an estimated 349,600 women and 1,800 men living in California who have had a history of invasive breast cancer. While 71% of female breast cancer diagnoses in the state are localized disease, the five-year relative survival rate is 99%.

Many studies have shown that overweight and obesity adversely affect 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.

See the *Breast Cancer Facts & Figures 2015-2016* publication, available online at cancer.org/statistics, for more information about breast cancer.

Cervical Cancer

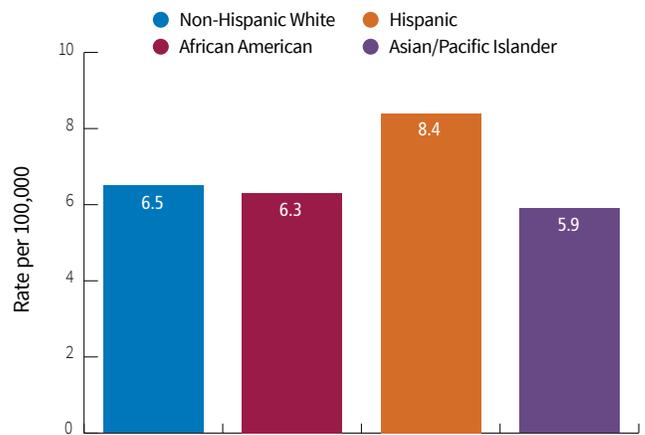
Cervical cancer is cancer that starts in the cervix. The cervix is the lower part of the uterus (womb).

New California cases: A total of 1,391 new cases of cervical cancer were diagnosed 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 the state.

Deaths in California: A total of 472 deaths from cervical cancer occurred 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 2010-2014, rates were stable among both women younger than 50 years of age, and among those 50 and older.

Early detection: The American Cancer Society recommends that all people with cervixes (e.g., women and transgender men, hereafter in this section referred to

Figure 12. Invasive Cervical Cancer Incidence by Race/Ethnicity in California, 2014



Note: Rates are per 100,000 and age-adjusted to the 2000 US standard population.

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

as “women”) begin cervical cancer screening at 21 years of age. For women ages 21-29, screening should be a Pap test every three years. For women ages 30 to 65, screening should be a Pap test combined with a human papillomavirus (HPV) test every five years, or a Pap test every three years (see page 15). Screening for cervical cancer is an opportunity for early detection and prevention. Pap tests can identify precancerous changes for removal before they become cancer. In California, 79% of women 21 years of age and older reported having a Pap test within the past three years. Non-Hispanic white women were most likely to have had a Pap test within the past three years (45%), followed by Hispanic (36%), Asian and Pacific Islander (7%), and non-Hispanic black (6%) women in 2014.

Another important topic in cervical cancer prevention is the human papillomavirus (HPV). Infection with the virus is the number one risk factor for cervical cancer. In fact, almost all – more than 99% – cervical cancers are related to HPV. While nearly all cervical cancers are related to the virus, most genital HPV infections do not cause cervical cancer. Vaccines are available to protect against the most common types of the virus that cause cervical cancer (and various other HPV-associated cancers). The American Cancer Society recommends the HPV vaccine for adolescents at ages 11-12. HPV vaccines cannot protect against established infections, nor do they protect against all types of HPV, which is why vaccinated women should still be screened for cervical cancer.

Survival: If abnormal findings are detected early through a Pap test and treated, survival is nearly 100% nationally. 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 (localized) stage, cervical cancer can have a survival rate as high as 91%. Cervical cancers detected at distant stage have an approximate 17% 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.

Childhood Cancer (Ages 0-14 years)

Major categories of pediatric cancer, or cancer in children, include leukemia (29% of all childhood cancers, including benign brain tumors), brain and other central nervous system tumors (26%), neuroblastoma (6%), Wilms tumor (5%), non-Hodgkin lymphoma (5%), Hodgkin lymphoma (3%), rhabdomyosarcoma (3%), osteosarcoma (2%), retinoblastoma (2%), and Ewing sarcoma (1%).

New California 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 the state between 2009-2013 was 7% higher among African Americans, 4% higher among non-Hispanic whites, 2% higher among Asians/Pacific Islanders, and 1% lower among Hispanics.

Deaths in California: 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 64% over the past four decades, from 7.3 (per 100,000) in 1970 to 2.3 in 2014. The substantial progress in reducing childhood cancer mortality is largely attributable to improvements in treatment and high rates of participation in clinical trials.

Table 10. Number of Children Diagnosed with Cancer by Age at Diagnosis and Race/Ethnicity in California, 2014

Race/Ethnicity	0-4 Years	5-9 years	10-14 years	Total
Non-Hispanic White	158	114	125	397
African American	23	17	25	65
Hispanic	279	165	177	621
Asian/Pacific Islander	68	32	51	151

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

Table 11. Cancer Incidence Among Children Ages 0-14 by Race/Ethnicity in California, 2014

Race/Ethnicity	Cases	Rate
Non-Hispanic White	397	18.3
African American	65	13.7
Hispanic	621	15.5
Asian/Pacific Islander	151	15.9

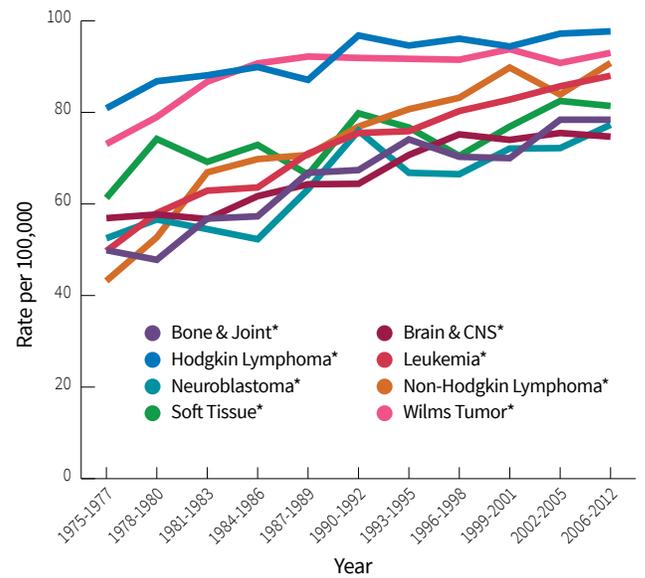
Note: Rates are per 100,000 and age-adjusted to the 2000 US standard population.

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

Survival: Survival for all invasive childhood cancers combined has improved markedly over the past 30 years due to new and improved treatments. Nationwide, the five-year relative survival rate increased from 58% for diagnoses in the mid-1970s, to 83% in the most recent time period (2006-2012). In California, the five-year relative survival rate for children and adolescents diagnosed between 2005 and 2014 for all cancers combined (excluding benign brain/central nervous system tumors) was 82.2%. However, rates vary considerably depending on cancer type, patient age, and other characteristics. For the most recent time period, the five-year survival rate among children 0-14 years with Hodgkin lymphoma was 98%; retinoblastoma, 95%; Wilms tumor, 92%; non-Hodgkin lymphoma, 91%; leukemia, 86% (90% for acute lymphoid leukemia and 64% for acute myeloid leukemia); neuroblastoma, 80%; Ewing sarcoma, 79%; brain and other central nervous system tumors (excluding benign brain tumors), 73%; osteosarcoma, 70%; and rhabdomyosarcoma, 70%.

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. Visit the COG website at survivorshipguidelines.org for more information on childhood cancer management.

Figure 13. Trends in Five-year Relative Survival Among Children Ages 0-14 by Year of Diagnosis, SEER 9 Areas, 1975-2012



Note: Based on follow-up through 2013. Neuroblastoma and Wilms tumor are not mutually exclusive from the other tumors presented in the graph. *The difference between 1975-1977 and 2006-2012 is statistically significant ($p < 0.05$).

Source: SEER Cancer Statistics Review, 1975-2013. National Cancer Institute, 2017.

Colorectal Cancer

Colorectal cancer is cancer of the colon or rectum. It is the second-leading cause of cancer death when men and women are combined. Screening offers an opportunity for the early detection of colorectal cancer and prevention of the disease.

New California cases: In 2014, there were 10,155 cases of colon and 4,449 cases of rectal cancer diagnosed in California. Colorectal cancer risk has declined steadily in the state over the past 25 years, largely attributed to screening. Incidence rates declined substantially for all four major racial/ethnic groups since 1988. The rates decreased 40% among non-Hispanic whites, 40% among African Americans, 29% among Asians/Pacific Islanders, and 13% among Hispanics.

In 2009-2013, the invasive colorectal cancer incidence rate in California, as compared to the rest of the nation, was 1% higher among Asians/Pacific Islanders, 3% lower among African Americans, 8% lower among non-Hispanic whites, and 12% lower among Hispanics.

The risk of colorectal cancer increases with age. In 2013, nearly 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. (Processed meat was classified as a carcinogen by the International Agency for Research on Cancer in 2016 based on its consistent association with colorectal cancer.)

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 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.

Deaths in California: A total of 4,143 deaths from colon cancer and 1,052 deaths from rectal cancer occurred in California in 2014. Over the past 26 years, mortality rates decreased by 44% for all races combined. This trend reflects declining incidence rates and improvements in early detection and treatment.

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. 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.

In 2014, 55% of California adults ages 50 and older reported having had a sigmoidoscopy in the past 5 years or a colonoscopy within the past 10 years. The proportion screened was even lower among persons in poverty (34% male, 38% female) and among Hispanics (40% male, 36% female). Nineteen percent of Californians older than age 50 reported having a fecal occult blood test (FOBT) using a home kit in the past year. Individuals with low incomes and Hispanics were less likely to have had the exam (16% each, respectively).

American Cancer Society Recommendations for Early Detection of Colorectal Cancer

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 keep 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 5 years*
- Colonoscopy every 10 years
- Double-contrast barium enema every 5 years*
- CT colonography (virtual colonoscopy) every 5 years*

Tests that mainly find cancer

- Guaiac-based fecal occult blood test (gFOBT) every year**,**
- Fecal immunochemical test (FIT) every year**,**
- Stool DNA test (sDNA) every 3 years*

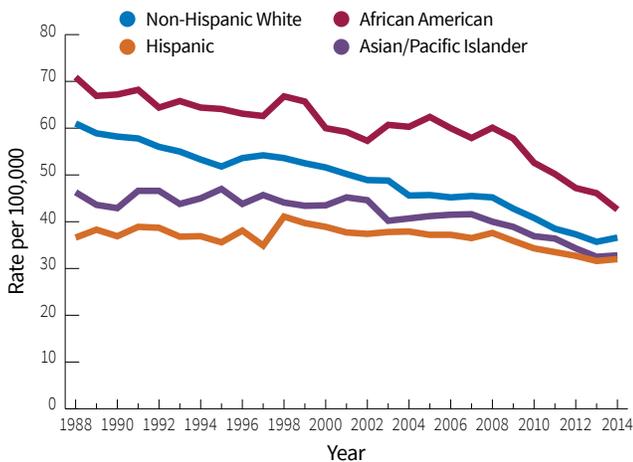
*Colonoscopy should be done if test results are positive. **For FOBT or FIT used as a screening test, the take-home multiple sample method should be used. An FOBT or FIT done during a digital rectal exam in the doctor's office is not adequate for screening.

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 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)

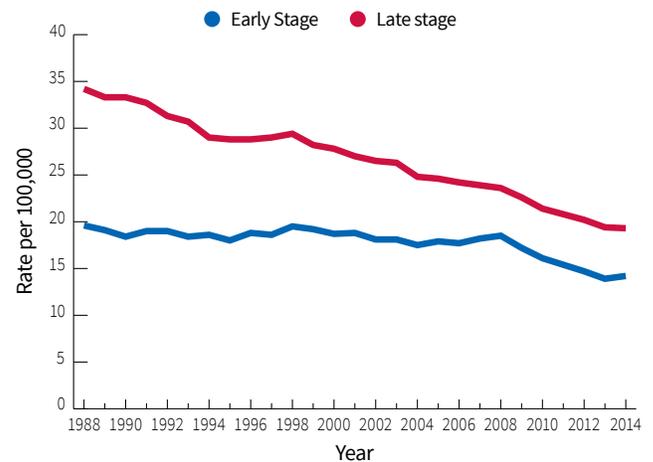
Figure 14. Trends in Invasive Colon and Rectum Cancer Incidence by Race/Ethnicity in California, 1988-2014



Note: Rates are per 100,000 and age-adjusted to the 2000 US standard population.

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

Figure 15. Trends in Colon and Rectum Cancer Incidence by Stage at Diagnosis in California, 1988-2014



Note: Rates are per 100,000 and age-adjusted to the 2000 US standard population.

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

Overall, 63% of adults 50 years of age and older reported having been compliant with an appropriate screening method for colorectal cancer in 2014 – by either an FOBT within the past year, a sigmoidoscopy within the past five years, or a colonoscopy within the past 10 years.

Survival: The five-year relative survival rate for Californians with colorectal cancer is 67%. However, when colorectal cancers are detected at an early, localized stage, the five-year survival is 92%. Unfortunately, only 42% of colorectal cancers are diagnosed at an early 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 72%. If the disease has spread to distant organs, the five-year survival is 14%. The American Cancer Society recommends that both men and women at average risk begin routine screening for colorectal cancer at age 50.

Visit cancer.org/statistics to see the *Colorectal Cancer Facts & Figures 2017-2019* publication.

Lung Cancer

New California cases: In 2014, 16,863 new cases of lung cancer were diagnosed, accounting for about 10% 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 2014, lung cancer incidence rates decreased by 2.6% per year in men and by 1.1% per year in women.

Deaths in California: Lung cancer accounts for more deaths than any other cancer in both men and women. A total of 12,231 deaths, accounting for about 21% of all cancer deaths, occurred in California in 2014. From 1988 to 2014, rates decreased 2.8% per year in men and 1.5% 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.

Early detection: Screening with low-dose spiral computed tomography (LDCT) has been shown to reduce lung cancer mortality by about 20% compared to standard chest x-ray among adults with at least a 30 pack-year smoking history who were current smokers or had quit within 15 years. The American Cancer Society guidelines for the early detection of lung cancer endorse a

process of informed and shared decision making between clinicians who have access to high-volume, high-quality lung cancer screening programs and current or former smokers (quit within 15 years) who are 55 to 74 years of age, in good health, and have at least a 30 pack-year history of smoking. The decision-making discussion should include a description of the benefits, uncertainties, and harms associated with lung cancer screening. The US Preventive Services Task Force has issued similar guidelines. For more information on lung cancer screening, see page 15.

Survival: Nationally, the five-year relative survival rate for lung cancer is 15% for men and 21% for women. Only 16% of lung cancers are diagnosed at a localized stage, for which the five-year survival rate is 55%

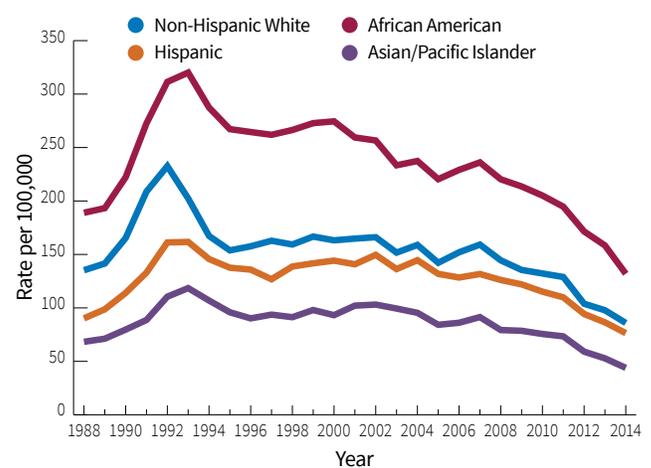
Prostate Cancer

New California cases: In 2014, there were 16,822 new cases of prostate cancer diagnosed in California. It is the most frequently diagnosed cancer in men in almost all racial/ethnic groups in the state, 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 44% lower in 2014 than in 1988. These trends are consistent with the rapid introduction of a new, sensitive screening method.

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 (Lynch syndrome and *BRCA1* and *BRCA2* mutations). Additionally, smoking may increase the risk of fatal prostate cancer. For reasons that remain unclear, the risk of prostate cancer is 70% higher in African Americans than in non-Hispanic whites.

In 2009-2013, the prostate cancer incidence rate in California, as compared to the rest of the nation, was 13% lower among African Americans, 12% lower among Asians/Pacific Islanders, 8% lower among Hispanics, and 6% lower among non-Hispanic whites.

Figure 16. Trends in Prostate Cancer Incidence by Race/Ethnicity in California, 1988-2014



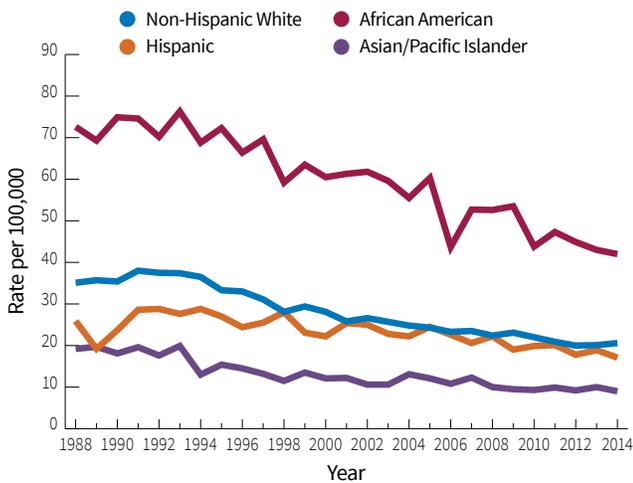
Note: Rates are per 100,000 and age-adjusted to the 2000 US standard population.

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

Deaths in California: With a total of 3,191 deaths in California in 2014, 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. Overall, prostate cancer death rates decreased by 2.7% per year from 1988 to 2014. Prostate cancer mortality in California decreased by 44% after 1988, with declines among men in each racial/ethnic group.

Early detection: No organizations presently endorse routine prostate cancer screening for people with prostates (e.g., men and transgender women, hereafter in this section referred to as “men”) at average risk because of concerns about the high rate of over-diagnosis, along with the significant potential for serious side effects associated with treatment. The American Cancer Society recommends that beginning at age 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 (black men or those with a close relative diagnosed with prostate cancer before the age of 65) should have this discussion beginning at age

Figure 17. Trends in Prostate Cancer Mortality by Race/Ethnicity in California, 1988-2014



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

45, and men at even higher risk (those with several close relatives diagnosed at an early age) should have this discussion at age 40.

In 2014, 67% of California men ages 50 and older reported having had at least one PSA test. White men (69%) were more likely to have been tested than Hispanic and black men (14% and 8%, respectively). Men from households above the poverty level were more likely to have had a prostate cancer screening test than men from households below the poverty level.

Survival: The majority (92%) 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 99%. The five-year survival for distant-stage disease is 29%. According to the most recent data, 10- and 15-year relative survival rates are 98% and 96%, respectively. Obesity and smoking are associated with an increased risk of dying from prostate cancer.

Skin Cancer

New California cases: Skin cancer is the most commonly diagnosed cancer in the US. However, the actual number of the most common types – basal cell and squamous cell skin cancer, more commonly referred to as nonmelanoma skin cancer – is very difficult to estimate because these cases are not required to be reported to cancer registries. Nonmelanoma skin cancer is usually highly curable.

A total of 9,400 new cases of melanoma cancer were diagnosed in California in 2014. Melanoma is rare among African Americans; lifetime risk of developing the disease is 0.1% among both men and women, compared to 4.4% and 2.7% respectively, among whites. Incidence rates are higher in women than in men before the age of 45, but by the age of 65, rates in men are more than double those in women and by the age of 80 they are almost triple.

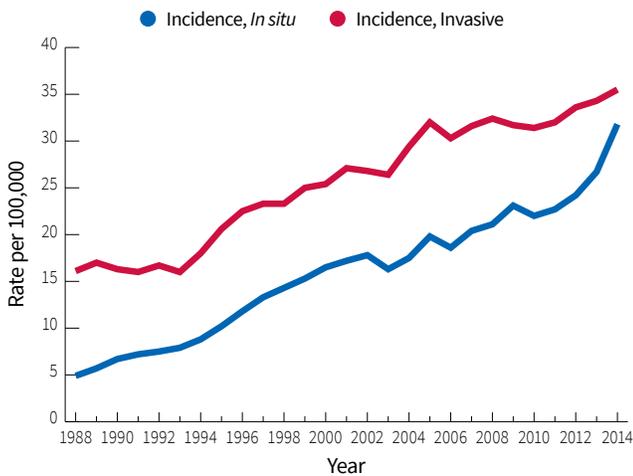
In California, incidence rates of *in situ* (localized stage) melanoma of the skin have increased in the past 26 years for all racial/ethnic groups, a statistically significant increase for Hispanics and non-Hispanic whites.

Incidence rates of invasive melanoma of the skin have also increased for non-Hispanic whites and Hispanics, and remained relatively stable for African Americans and Asians/Pacific Islanders.

Deaths in California: Melanoma accounts for less than 2% of all skin cancer cases, but the vast majority of skin cancer deaths. A total of 973 deaths from melanoma and 377 deaths from other types of skin cancer (does not include nonmelanoma skin cancer) occurred in California in 2014. Between 2010 and 2014, mortality rates of melanoma among Californians younger than 50 years of age decreased by 4.2% per year, while rates also decreased by 0.2% per year among those 50 and older.

Early detection: 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

Figure 18. Trends in Melanoma Incidence Among Non-Hispanic Whites in California, 1988-2014



Note: Rates are per 100,000 and age-adjusted to the 2000 US standard population.

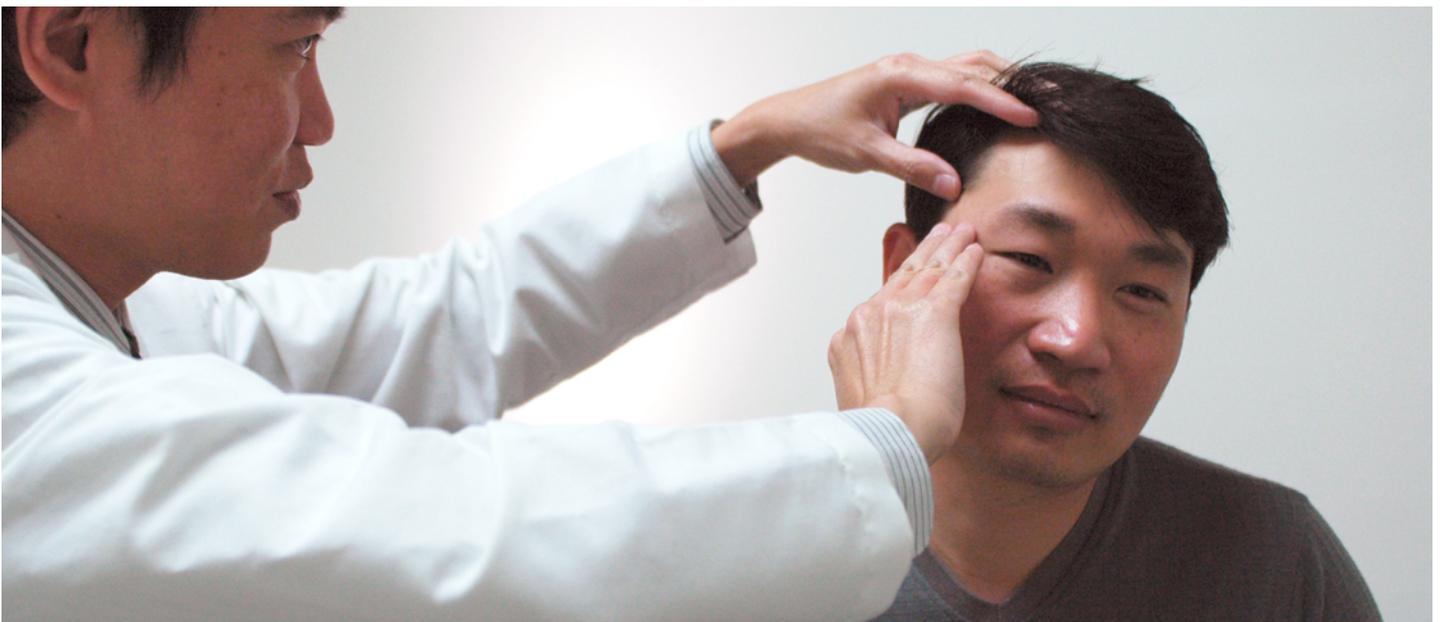
Source: California Cancer Registry, California Department of Public Health.

exposure, including sunburns; use of tanning booths; diseases or treatments that suppress the immune system; and a past history of skin cancer. The International Agency for Research on Cancer has classified indoor tanning devices as “carcinogenic to humans” based on an extensive review of scientific evidence.

The best way to detect skin cancer early is to recognize new or changing skin growths, particularly those that look different from other moles. All major areas of the

skin should be examined regularly, and any 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. Melanomas often start as a small, mole-like growth that increases in size and may change color. The following ABCDE rule outlines warning signs 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); and E is for evolution, meaning a change in the mole’s appearance over time. Not all melanomas have these signs; because of this, all Californians need to be alert for any new or changing skin growths or spots.

Survival: Almost all cases of basal cell and squamous cell skin cancer can be cured, especially if the cancer is detected and treated early. Although melanoma is also highly curable when detected in its earliest stages, it is more likely than nonmelanoma skin cancers to spread to other parts of the body. The 5- and 10-year relative survival rates for people with melanoma are 92% and 89%, respectively. For localized melanoma (84% of cases), the five-year survival rate is 99%; survival rates decline to 64% and 17% for regional- and distant-stage disease, respectively.



American Cancer Society California Division

Our Commitment

In 2017, an estimated 176,140 Californians will hear the words “you have cancer,” a diagnosis that brings major changes to patients and their loved ones. When someone is diagnosed with the disease, the American Cancer Society is here every step of the way, offering cancer information, day-to-day help, and emotional support – 24 hours a day, seven days a week – at cancer.org or 1-800-227-2345.

Financial Support

Generous American Cancer Society donors enable us to fund research, prevention and early detection education, advocacy, and patient services. Our funding of innovative research is one reason why the cancer death rate has declined by 25% since 1991.

On January 1, 2017, 93 new research and training grants in the amount of \$49.7 million took effect at 68 institutions nationwide. This includes 14 new grants at California institutions totaling \$6.9 million. Without the support of individual and corporate donors, we could not accomplish our mission of saving lives.

Volunteer Engagement

The American Cancer Society’s 2 million volunteers are passionate about helping to save lives, celebrate lives, and lead the fight for a world without cancer. Dedicated volunteers help raise vital funds, help patients and caregivers through their cancer experience, and provide office support. Volunteers come from communities large and small, representing all races/ethnic groups, genders, ages, sexual orientations, religions, and socioeconomic status.

In California, volunteers are the heart of our local programs and services, as well as our events. They provide free rides for cancer patients to and from treatments; they help women in active cancer treatment manage appearance-related side effects; they provide personal one-on-one support to those facing breast cancer; and they help organize and participate in our

many fundraising events. Medical professional and lay volunteers also fulfill the important role of media spokespeople. Visit cancer.org/volunteer or call 1-800-227-2345 to learn more about how you can help save lives. Together, we are stronger than cancer.

Communities

Whether it’s providing emotional support, the latest cancer information, or a home away from home when treatment is far away, American Cancer Society volunteers and staff are there for patients, their families, and caregivers when they need us. We recognize and applaud the work of our volunteers, without whom these programs and services would not be possible.

- In 2016, the American Cancer Society, Inc., California Division, reached 34,848 individuals with patient-related information and services, including 18,957 patients diagnosed within the past year.
- 22,522 callers received free patient-related information and support from trained American Cancer Society staff at our 24/7 toll-free information line at 1-800-227-2345.
- 2,517 cancer patients received transportation assistance through our Road To Recovery® program for a total of more than 55,197 one-way trips.
- 826 cancer patients received help with lodging for a total of 8,678 nights.
- 536 breast cancer patients were visited by Reach To Recovery® volunteers, our one-on-one support program for women facing or living with breast cancer.
- 3,486 cancer patients attended Look Good Feel Better® sessions to learn how to deal with appearance-related side effects of treatment.
- 6,168 cancer patients received free wigs or other head coverings.
- 10,344 cancer patients received Personal Health Manager kits and information.

Partnering with Health Systems

At the American Cancer Society, we believe that leading the fight for a world without cancer is a team effort. Our Primary Care, Hospital, and State Health Systems teams engage critical partners to maximize our impact in serving California's diverse communities.

Primary Care Systems

In 2016, the California Division's Primary Care Systems team identified more than 235 primary care systems, including federally qualified health centers (FQHCs), Indian Health Centers, and community health centers to increase cancer screening rates in medically underserved communities by implementing evidence-based client- and provider-oriented intervention strategies. The Primary Care Systems team partnered with 109 California clinic systems to implement evidence-based interventions around breast, cervical, and colorectal cancer screening. In addition, the Community Health Advocates implementing Nationwide Grants for Empowerment and Equity (CHANGE) grant program awarded the California Division \$630,000, allowing the Primary Care Systems team to successfully manage and support 13 CHANGE grants.

Hospital Systems

The American Cancer Society's hospital initiatives focus on working directly with nearly 200 hospital systems with a special focus on National Cancer Institute Comprehensive Cancer Centers, Commission on Cancer (CoC) accredited hospitals, Kaiser Permanente, and other hospitals that serve large numbers of cancer patients. The goal of these partnerships is to prevent cancer and to provide the best quality of care and support to those affected by this disease. In 2016, those partnerships enabled the American Cancer Society to accomplish the following: provide free support programs to cancer patients and their families; participate in community-based survivorship activities; support hospitals in meeting Quality of Cancer Care Standards set by the CoC; and partner on community outreach focused on cancer prevention and early detection.

State Health Systems

The Division's State Health Systems team partners with health systems with a statewide presence that can influence the general public's cancer screening and healthy living activities. Partnerships with health insurers (Commercial, Medi-Cal, Medicare), quality improvement organizations, public health departments, and state programs such as the Breast and Cervical Cancer Early Detection Program, focus on initiatives related to cancer prevention, early detection, and improving cancer patients' quality of life. In 2016, the State Health Systems team continued successful partnerships with California health plans to motivate members to access potentially lifesaving cancer screenings. This team, in collaboration with the California Cancer Registry and the Division's Field Communications team, produces the annual *California Cancer Facts & Figures* publication.

Cancer and the Environment

In addition to the American Cancer Society's traditional role in primary prevention, the organization explores environmental issues that may impact cancer risk. A team of volunteers organized under the American Cancer Society Cancer Action Network in California leads efforts to study the research and learn from experts in order to make recommendations based on a cancer perspective. Issues include children's exposures to toxic chemicals and pesticides, and reducing emissions of cancer-causing air pollutants, especially in disadvantaged communities that experience an unequal burden of the contaminated environment. The team works with state agencies and research institutions in the process of analyzing environment-related state policies. By reaching out to environmental organizations, the team also endeavors to find common ground and form partnerships in the cancer prevention arena.

The 80% by 2018 Colorectal Cancer Screening Initiative

Throughout our history, the American Cancer Society has implemented aggressive awareness campaigns targeting the public and health care professionals. Recognizing the importance of addressing colorectal cancer as a public health problem, we joined with the Centers for Disease Control and Prevention to establish the National Colorectal Cancer Roundtable in 1997. In 2013, the Roundtable launched its 80% by 2018 initiative with the bold goal of increasing the rate of regular colorectal cancer screening among adults ages 50 and older to 80% by 2018. The initiative places an emphasis on economically disadvantaged individuals, who are least likely to be tested. The California Division is committed to increasing screening and saving lives from colorectal cancer by improving access in underserved communities, providing information and support to those facing a colorectal cancer diagnosis, conducting research to help save lives from colorectal cancer, and advocating for increased access to quality screening and treatment for all people with colorectal cancer. Visit nccrt.org to learn more about the initiative and to access valuable 80% by 2018 resources.



HPV Vaccination as Cancer Prevention

Vaccines are among the few medical interventions capable of achieving almost complete eradication of a disease. It is not often we have an opportunity to prevent cancer, or in this case multiple cancers, with a single medical intervention. More than 27,000 cancers are attributable to the human papillomavirus (HPV) each year in the US – 17,600 in women and 9,300 in men. Incidence rates of several of these cancers are still increasing. However, HPV vaccines prevent most cervical, vaginal, vulvar, and anal cancers and are expected to prevent most penile and oropharyngeal cancers. The HPV vaccination is underused despite the overwhelming evidence for its safety and effectiveness.

Vaccines are available for use in ages 9 to 26 years to protect against the most common types of HPV that cause cervical cancer. In October 2016, the Centers for Disease Control and Prevention (CDC) reduced the recommended number of doses of the vaccine from three to two for ages 9 to 14 years, while ages 15 to 26 years still require a three-dose series for full protection. While vaccination rates continue to improve for other adolescent vaccines, HPV vaccination rates have not. Only 1-in-3 girls and 1-in-5 boys in the US are fully vaccinated, far less than the CDC's Healthy People 2020 goal of 80%. For the vaccine to be most effective, it is best to begin early.

The American Cancer Society has recently become increasingly involved in promoting HPV vaccination. In 2014, we received two awards from the CDC enabling us to expand cancer prevention activities to increase HPV vaccination. One award has allowed us to establish the National HPV Vaccination Roundtable, a national coalition of organizations working together to increase HPV vaccination. The second award, the Vaccinate Adolescents against Cancers (HPV VACs) project, works with our Health Systems staff to increase vaccination through our health system partners. The Health Systems staff is working to disseminate educational materials, provide clinician outreach and training, and increase and form strong partnerships. The California Division is proud to have funded three Federally Qualified Health Centers through the HPV VACs project, and is currently partnering with numerous health plans and coalitions to increase HPV vaccine uptake in California.

American Cancer Society Research Program

Research is fundamental to the American Cancer Society’s mission. For over 70 years, we have been finding answers that save lives – from changes in lifestyle, to new approaches in therapies, to improving cancer patients’ quality of life. No single private, not-for-profit organization in the US has invested more to find the causes and cures of cancer than the American Cancer Society. We relentlessly pursue the answers that help us understand how to prevent, detect, and treat all cancer types. We unite the world’s best and brightest researchers with the world’s largest, oldest, and most effective community-based organization to put answers into action.



Table 12. Summary of Research Grants and Fellowships in Effect During Fiscal Year Ending December 31, 2016

Institution	# Grants	Total
Beckman Research Institute of the City of Hope	5	\$3,691,000
California Institute of Technology	3	\$995,000
Cedars-Sinai Medical Center	1	\$720,000
Children’s Hospital of Los Angeles	2	\$1,520,000
Kaiser Foundation Research Institute	2	\$936,000
Leland Stanford Junior University	1	\$720,000
Salk Institute for Biological Studies	1	\$163,500
Stanford University	7	\$3,868,000
The Regents of the University of California, San Diego	7	\$3,782,500
The Regents of the University of California, San Francisco	21	\$7,555,000
The Scripps Research Institute	3	\$1,104,000
University of California, Berkeley	6	\$2,554,500
University of California, Davis	3	\$1,838,000
University of California, Irvine	5	\$3,448,000
University of California, Los Angeles	11	\$6,350,000
University of California, Santa Cruz	3	\$1,551,500
University of Southern California	6	\$4,549,500
California Total	87	\$45,346,500

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

Our comprehensive research program has two focus areas. The Extramural Research and Training Grants program awards grants to promising young researchers through a rigorous peer-review process. The Intramural Research program, led by staff scientists, encompasses epidemiology, surveillance and health services research, behavioral research, economic and health policy research, and statistics and evaluation. Visit cancer.org/research to learn more about our currently funded research projects and to download the *Cancer Facts & Figures 2017* publication.

Nobel Prize Winners

The American Cancer Society has become an expert at identifying visionary scientists early in their careers, and our track record speaks for itself, as 47 of our funded researchers are Nobel Prize winners.

American Cancer Society Cancer Action Network

What is ACS CAN?

The American Cancer Society Cancer Action Network (ACS CAN) is the nonprofit nonpartisan advocacy affiliate of the American Cancer Society. ACS CAN is the nation's leading advocate for public policies that are helping to defeat cancer. The organization ensures that cancer patients, survivors, and their families have a voice in public policy matters at all levels of government. ACS CAN works to encourage elected officials and candidates to make cancer a top national priority.

Why ACS CAN?

Defeating cancer is as much a matter of public policy as scientific discovery. Lawmakers play a critical role in determining how much progress our country makes toward defeating cancer. 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.

Advocacy successes in California include the establishment of the California Cancer Registry, as well as the state Breast and Cervical Cancer Early Detection and Treatment programs and state Breast Cancer Research Program. Decade after decade, California is often first to pass cancer-fighting policies to protect public health. Some of the health wins over the past 40 years include the creation of smoke-free indoor and outdoor public places, improvements to school nutrition standards, restaurant menu labeling that shows calories, indoor tanning restrictions for minors, and increased access to affordable health care insurance.

What does ACS CAN do?

ACS CAN follows the science when supporting evidence-based policy and legislative solutions designed to eliminate cancer as a major health problem. The

organization utilizes its expert lobbying, policy, grassroots, and media advocacy capacity to amplify the voices of patients in support of laws and policies that help save lives from cancer. ACS CAN educates the public and the media by serving as a trusted source of information about candidate positions on cancer-related concerns and key issue campaigns across the country that impact those affected by cancer.

ACS CAN does not endorse candidates or political parties. Like cancer itself, ACS CAN is nonpartisan.

Who is ACS CAN?

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 600 Legislative Ambassadors who are the voices in their communities to influence lawmakers on important cancer-related legislation and policy. They generate support for federal and state legislative priorities, and advocate for local ordinances and initiatives like smoke-free public places and multi-unit housing, tobacco retail licensing, and school nutrition and physical activity policies.

Legislative Ambassadors make possible the community-based grassroots movement that gives ordinary people extraordinary power to fight cancer in the legislative arena. Legislative Ambassadors are kept informed of legislative activities in Sacramento, Washington, DC, and in their local communities. Legislative Ambassadors are briefed on the progress of cancer-related legislation, and are notified when grassroots action is needed and legislators need to be contacted.

Visit acsan.org/California for more information on becoming a Legislative Ambassador and updated information on ACS CAN's local, state, and federal legislative efforts.

Tobacco Control

In 2016, ACS CAN and its volunteer advocates helped pass the most significant tobacco control legislation enacted in two decades, once again elevating California to the forefront of the modern tobacco control movement. The historic package of legislation was aimed at preventing the next generation from becoming addicted to the latest tobacco products marketed to youth. The five bills signed into law by the governor in May included regulating e-cigarettes as tobacco products, raising the minimum sale age for tobacco to 21, expanding smoke-free policies, making K-12 schools tobacco-free, and protecting critical tobacco control funding from being used for administrative costs. The governor also signed a bill to improve access to effective tobacco cessation programs for people on Medi-Cal.

As a member of the Save Lives California coalition, ACS CAN played a key role in convincing voters of the importance of passing Proposition 56, a \$2 per pack tobacco tax increase on the ballot in November 2016. The increase helps fund tobacco control programs and other public health priorities. Californians approved the tobacco tax increase by a wide margin in spite of the tobacco industry spending more than \$71 million to defeat the ballot measure. The tobacco tax also taxes, for the first time, electronic cigarettes. This public health win is seen as a major stride forward in reducing the death and devastation caused by tobacco while significantly reducing smoking-related health care costs in the state.

Cancer Research Funding

Cancer research funded by the federal government is critical to finding cures. At the federal level, ACS CAN works each year to increase funding for cancer research through the National Institutes of Health (NIH) and the National Cancer Institute (NCI). In 2015, Congress approved the largest increase in medical research funding in more than a decade, with a \$2 billion increase to NIH and a \$264 million increase to NCI.

This success was quickly followed in 2016 by President Obama's launch of the National Cancer Moonshot initiative with the goal of accelerating cancer research. In December, Congress took action to change the course of

cancer when it passed the bipartisan 21st Century Cures Act, which included \$4.8 billion in new funding for NIH, including \$1.8 billion specifically for the Cancer Moonshot.

What are ACS CAN's 2017 Public Policy Priorities?

Cancer Research Funding

At the federal level, ACS CAN will continue to advocate for increasing federal funding for cancer research to further progress in the work to find new breakthroughs in cancer prevention and treatment.

In California, the organization is actively engaging in efforts to modernize and increase the efficiency of the California Cancer Registry, the cornerstone of cancer research in the state.

ACS CAN also monitors the state budget process in order to preserve and protect funding for state tobacco-related disease and breast cancer research programs in California. This year, ACS CAN California will sponsor legislation to extend the sunset for the California Breast Cancer Research Fund and the California Cancer Research Fund income tax checkoffs. Funding from the California tax checkoffs is voluntary donations made through California state income tax forms and provides millions of dollars in funding for these programs.

Access to Health Coverage

The American Cancer Society's peer-reviewed scientific research has shown that the uninsured and underinsured are more likely than those with insurance to be diagnosed with cancer at its more advanced stages when treatment is more expensive and patients are more likely to die from the disease. We cannot achieve our mission of leading the fight for a world without cancer unless all Americans have access to adequate and affordable health insurance coverage. The Affordable Care Act (ACA) includes many protections benefitting past, present, and future cancer patients and survivors. More than 20 million individuals, including many cancer patients and survivors, now have insurance facilitated by current law.

In California, more than 4.5 million state residents have gained access to health care coverage under the ACA. California was one of the first states to expand coverage to Medi-Cal (California's Medicaid), and due to successful outreach and enrollment programs, nearly 4 million low-income residents are now insured.

ACS CAN will continue to work with federal and state lawmakers to preserve the critical patient protections included in the current health care law, ensure people affected by cancer maintain access to uninterrupted insurance coverage and help those who are currently uninsured gain access to coverage that includes recommended cancer prevention and treatment.

Early Detection and Screening

Programs that increase access to proven cancer screenings, especially among medically underserved populations, help save lives and are good for the economy. ACS CAN supports cancer control efforts at the Centers for Disease Control and Prevention, including the National Breast and Cervical Cancer Early Detection Program.

In California, ACS CAN supports the Every Woman Counts program, which provides free breast and cervical cancer screening for uninsured and underinsured women. For those diagnosed with breast or cervical cancer, free treatment is available from the Breast and Cervical Cancer Treatment Program, which provides care through the Medi-Cal program. In 2016, ACS CAN worked with the Komen Foundation to update California's program to align with the federal standards, expanding access to this critical program.

Colorectal Cancer – Removing Screening Barriers

In pursuit of the American Cancer Society's goal of collaborating with the National Colorectal Cancer Roundtable and numerous other organizations to increase colorectal cancer screening rates to 80 percent among all adults ages 50 and older by 2018, ACS CAN works with the state's California Colon Cancer Control Program. If we can achieve this goal, an estimated 30,938 cases and 22,673 colorectal cancer deaths could be prevented in California by 2030. In 2017, ACS CAN will continue to work with the

California Colorectal Cancer Coalition to remove cost barriers to colorectal cancer screening in the state.

Healthy Eating and Active Living

Research shows that 1-in-5 cancer cases are due to poor diet, physical inactivity, excess weight, and alcohol consumption. At the federal level, ACS CAN will work to protect and support implementation of quality nutrition standards for food served in schools and menu labeling in restaurants and other similar retailers. In California, ACS CAN will work to increase opportunities for physical activity and improve access to healthy foods both at school and in communities.

Because of the tremendous influence that the surrounding environment has on access to healthy foods and safe opportunities to be physically active, ACS CAN will also support healthy community strategies in California that include Safe Routes to School, community gardens, complete streets policies, safe playgrounds and parks, farmers' markets and more.

Quality of Life/Pain and Palliative Care

No one with cancer should suffer needlessly from pain, nausea, and other symptoms of their treatment as their doctors concentrate on treating their disease. ACS CAN is working to improve patients' quality of life through expanded access to palliative care and pain management policies.

Palliative care is specialized medical care that focuses on providing the best possible quality of life for a patient and their family by offering relief from the pain, stress, and other symptoms of a serious illness. It uses a coordinated team-based approach among medical professionals to help ensure all the patient's needs are met throughout treatment and survivorship.

At the federal level, ACS CAN is working to increase access to and education of palliative care and coordinated care management for cancer patients and survivors. At the state level, the organization is actively engaging in policy initiatives that improve patient access to palliative care and ensure that patients have access to the pain management they need.

California's Cancer Control Activities

Cancer Surveillance

Cancer rates among Californians are monitored by the California Cancer Registry (CCR), which has collected information on almost all cancers diagnosed in the state since 1988. To date, the CCR has collected detailed information on more than 4 million cases of cancer, with more than 160,000 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

One of the most significant and impactful anti-tobacco measures 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 the Proposition 99 surtax 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. In 1989, 1 in 5 adults smoked. Today, fewer than 1 in 8 adults smoke, a decline of more than 50 percent. California's efforts are credited with saving more than 1 million lives and saving over \$134 billion in health care costs for the state. Lung cancer mortality rates are now falling faster in California than elsewhere in the US. Despite these accomplishments, tobacco use continues to take a terrible toll on individuals and families throughout the state, as there are still 3.4

million smokers in California. And, new tobacco products, especially e-cigarettes, are getting a new generation hooked on nicotine.

In June 2016, five new state tobacco control laws took effect: 1) e-cigarettes were classified as tobacco products, making them subject to smoke-free laws, age restrictions and other rules governing tobacco products; 2) the age of sale for tobacco products, including e-cigarettes, was increased from 18 to 21; 3) several loopholes in the smoke-free workplace law were closed; 4) all K-12 public schools, including charter schools, were required to be tobacco-free; 5) the license fee on tobacco retailers and distributors was increased, and for retailers, the license fee was made annual (versus a one-time only fee previously). In November 2016, California voters approved passage of the California Healthcare, Research and Prevention Tobacco Tax Act of 2016, also known as Proposition 56. This initiative increased the state cigarette tax by \$2 per pack, with an equivalent increase on other tobacco products, including electronic cigarettes containing nicotine. Revenue from Proposition 56 was designated in part to increase funding for existing health care programs and also to bolster tobacco use prevention/control programs and tobacco-related disease research. Altogether, these new tobacco laws will strengthen California's tobacco control capacity and capability to end the tobacco epidemic in 2035.

Cancer Prevention

The Nutrition Education and Obesity Prevention Branch is a statewide movement of local, state, and national partners collectively working toward improving the health status of low-income Californians through increased fruit and vegetable consumption and daily physical activity. Multiple venues are used to facilitate behavior change in the homes, schools, worksites, and communities of low-income Californians to create environments that support fruit and vegetable consumption and physical activity.

Comprehensive Cancer Control

The Centers for Disease Control and Prevention (CDC) defines comprehensive cancer control as “a collaborative process through which a community pools resources to reduce the burden of cancer that results in risk reduction, early detection, better treatment, and enhanced survivorship.” California’s Comprehensive Cancer Control Program (CCCP) oversees a statewide comprehensive cancer control coalition, the California Dialogue on Cancer (CDOC), to help determine state priorities related to cancer and oversee the implementation of California’s comprehensive cancer control plan.

The CDOC is a coalition of cancer control stakeholders from across the state. Stakeholders represent a variety of organizations and interest areas, including state and local government, private and nonprofit organizations; health, medical, and business communities; academic institutions; researchers; cancer survivors; caregivers; and advocates. The vision of the CDOC is to reduce cancer suffering and mortality in California. The CDOC was created to provide guidance and coordination for comprehensive cancer control in California while minimizing duplication of efforts by the California Department of Public Health, the American Cancer Society, and other organizations engaged in cancer prevention and control activities. The CDOC is tasked with developing, revising, and coordinating the implementation of California’s comprehensive cancer control plan. The plan is in its third iteration, with goals and measurable objectives to be achieved through 2020. Workgroups have been established to conduct activities based on objectives and strategies identified in the plan, coalition priorities, and other relevant issues in cancer control. Increasing colorectal cancer screening rates has been a CDOC priority for several years and has contributed to the organization’s instrumental role in establishing the California Colorectal Cancer Coalition (C4). The CDOC continues to work with C4, the American

Cancer Society, and dozens of other organizations on the 80% by 2018 initiative to increase colorectal cancer screening among adults ages 50 and older to 80% by 2018.

Breast and Cervical Cancer 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 California Department of Public Health 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.

Colon Cancer Control

The California Colon Cancer Control Program (C4P) is a program that provides community outreach and education for communities, medical professionals, and health systems for improving colorectal cancer screening. C4P contracts with Federally Qualified Health Centers (FQHCs) to assist in the implementation of evidence-based interventions proven to effectively increase colorectal cancer screening rates. In addition, C4P partners with provider organizations, health insurers, Medi-Cal Managed Care plans, and other statewide organizations to promote the shared national goal of 80% of adults ages 50 and older screened by 2018.

California Cancer Registry

The California Cancer Registry (CCR) 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 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 used to do the following:

- 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.

California Cancer Registry (CCR)

P.O. Box 997377, MS 7205
 Sacramento, CA 95899-7377
 916.731.2500

Table 13. 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 California
1969	San Francisco Bay Area Registry included in National Cancer Institute (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 included in SEER Program
1997	50 years of cancer reporting in California
2000	Published 10 years of complete statewide 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.
 Prepared by: California Cancer Registry, California Department of Public Health.

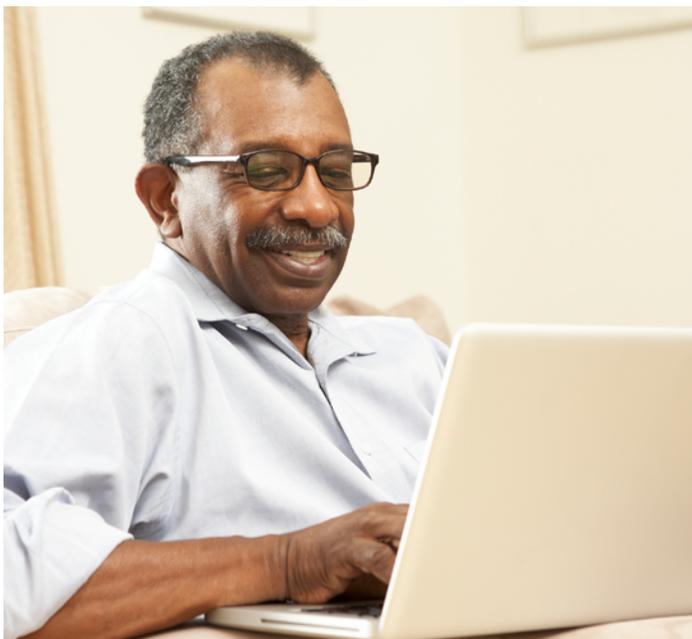


For more information:

The American Cancer Society publishes eight national *Facts & Figures* publications, which present current trends in cancer occurrence and survival, as well as information on symptoms, prevention, early detection, and treatment.

Visit cancer.org/statistics to download a free PDF version of any of these *Facts & Figures* publications:

- *Cancer Facts & Figures 2017*
- *Cancer Prevention & Early Detection Facts & Figures 2017-2018*
- *Breast Cancer Facts & Figures 2015-2016*
- *Colorectal Cancer Facts & Figures 2017-2019*
- *Cancer Facts & Figures for African Americans 2016-2017*
- *Cancer Facts & Figures for Hispanics/Latinos 2015-2017*
- *Cancer Treatment & Survivorship Facts & Figures 2016-2017*
- *Global Cancer Facts & Figures 3rd Edition*



NEW American Cancer Society Cancer Statistics Center

The American Cancer Society Cancer Statistics Center website cancerstatisticscenter.cancer.org is a comprehensive interactive resource for learning about the cancer burden in the US. The website provides detailed statistics on a range of topics, including the current year's estimated numbers of new cancer cases and deaths, current cancer incidence, mortality, survival rates and trends, and state-level risk factor and screening metrics.

The website offers a new way to explore the annual *Cancer Facts & Figures* report, which we have been producing since 1951. For the first time, the website merges data from *Cancer Statistics*, an annual paper by our researchers that is published in the American Cancer Society journal *CA: A Cancer Journal for Clinicians*. The Cancer Statistics Center website promotes cancer prevention and control by providing precise, accurate, and timely information to cancer control advocates, journalists, and government and private public health agencies, as well as policy makers, patients, survivors, and the general public.

California Cancer Registry Tools and Reports

The California Cancer Registry of the California Department of Public Health provides California cancer data used by health researchers, program planners, and public health advocates.

Visit the California Cancer Registry website at ccrcal.org for the following resources:

- Annual Statistical Tables by Cancer Site, 1988-2014
- Geographic Variations in Advanced Stage Oral and Oropharyngeal Cancers in California, 1988-2012
- Status Update of Cancer Incidence, Mortality, and Health Behaviors by Counties
- Data & Mapping Tool (generate customized maps and tables of California cancer incidence or mortality rates)

The American Cancer Society's mission is to save lives, celebrate lives, and lead the fight for a world without cancer.



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