



April 2003

DATA SUMMARY No. DS03-04001

This Data Summary is one of a series of leading cause of death reports.

Highlights

- Suicide was the 10th leading cause of death in California.
• Approximately one-half of all suicide deaths in California involved a firearm.
• Seventy-four percent of all suicide deaths occurred among White residents.
• California has not yet met the Healthy People 2010 National Objective of an age-adjusted death rate of no more than five deaths per 100,000 population.

Suicide Deaths, California 1999

By Cheryl Wilson

Introduction

Suicide was the 10th leading cause of death among California residents and the 11th leading cause among all Americans in 1999.

Suicide is a complex behavior that has been related to multiple risk factors which vary with age, gender, and race/ethnicity. Persons who commit suicide often suffer from depression or another diagnosable mental or substance abuse disorder.

In 1999, firearms continued to be the most commonly used method to commit suicide in the United States. During this year, 57 percent of the total number of suicides in the United States were committed using a firearm. The percent of suicide deaths committed by firearms was higher among males (61.7 percent) than females (36.9 percent).

Due to the prevalence of suicide in this country, the United States Public Health Service established a health objective for Healthy People 2010, seeking to reduce the number of suicide deaths to an age-adjusted rate of no more than 5.0 per 100,000 people.

This report presents data on California's suicide deaths for 1999, and provides analysis of crude and age-adjusted death rates for California residents by sex, age, and race/ethnicity. The suicide data included in this report are extracted

1 Ficenc S. Advance Report: California Vital Statistics, 1999. Center for Health Statistics, California Department of Health Services. May 2001.
2 National Center for Health Statistics, Deaths: Final Data for 1999, National Vital Statistics Reports, DHHS Pub. No. (PHS) 2001-1120, PRS 01-0573 (9/2001).
3 National Institute of Mental Health. Suicide. In Harm's Way: Suicide In America. NIH Publication No. 01-4594. 1997
4 State of California, Department of Health Services, Death Records. 1999.
5 U.S. Department of Health and Human Services. Healthy People 2010 Objectives (Second Edition, in Two Volumes). Washington, D.C., January 2001.

A description of [methods](#) and a brief overview of [data limitations and qualifications](#) are provided at the end of this report.

from vital statistics records with death attributed to suicide as defined by the International Classification of Diseases, Tenth Revision (ICD-10) codes X60-X84, Y87.0 in accordance with the National Center for Health Statistics Reports.<sup>6</sup>

## Suicide Deaths

**Table 1** (page 8) shows suicide death data for California residents for 1999 by race/ethnicity, age group, and sex. Among the age groups listed, California residents age 35 to 44 had the largest number of suicide deaths (641), followed by those in the age group 45 to 54 (593), and the 25 to 34 age group (512).

In 1999, there were a total of 3,047 deaths due to suicide. Of these deaths, males had the highest number (2,401) or 79 percent of all suicide deaths, and females had 646 deaths or 21 percent. During this year, the suicide death ratio was 3.7 male deaths for every female death.

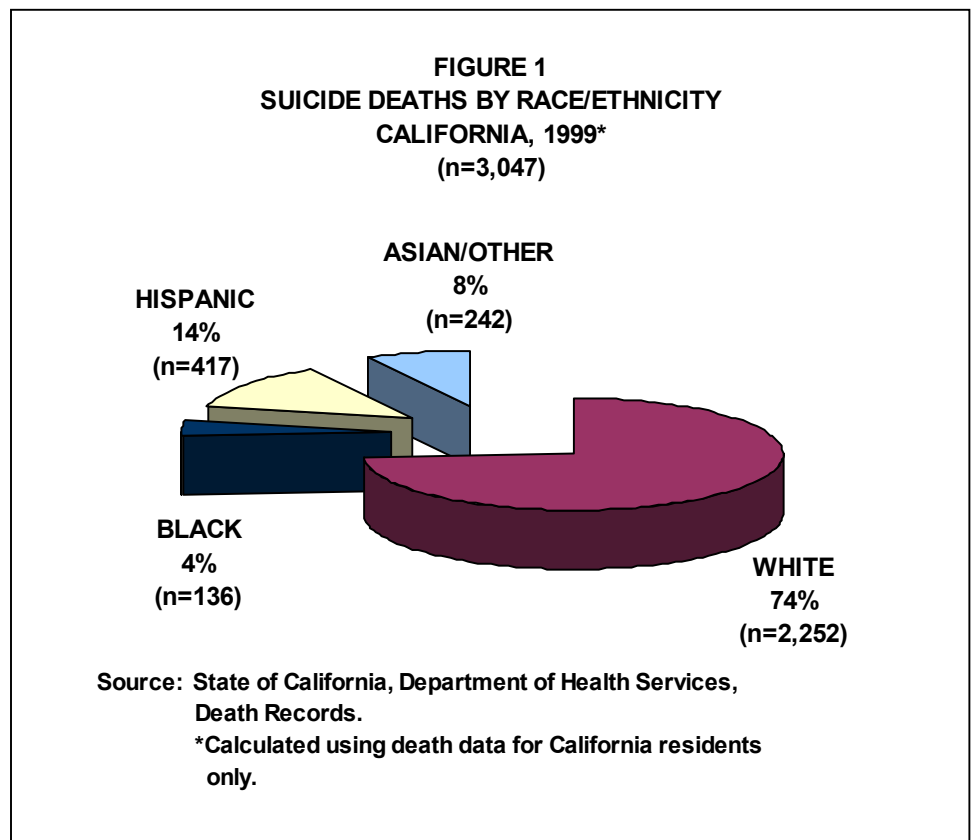
Among each of the major race/ethnic groups, suicide deaths were higher for males than for females. White males had the highest number of suicide deaths (1,748) or 57 percent of the total suicide deaths among California residents in 1999.

**Figure 1** shows Whites had the highest number of suicide deaths (2,252) or 74 percent, followed by Hispanics (417) or 14 percent, Asian/Other (242) or 8 percent, and Blacks (136) or 4 percent.

## Suicide Crude Death Rates

As shown in **Table 1** (page 8), California's suicide crude death rate was 8.9 per 100,000

population. Whites had the highest crude death rate (13.0), followed by Asian/Other (6.0), Blacks (5.9), and Hispanics (4.0). The crude rate for Whites is more than two times higher than the rate for Blacks and Asian/Other and more than three times higher than the rate for Hispanics.



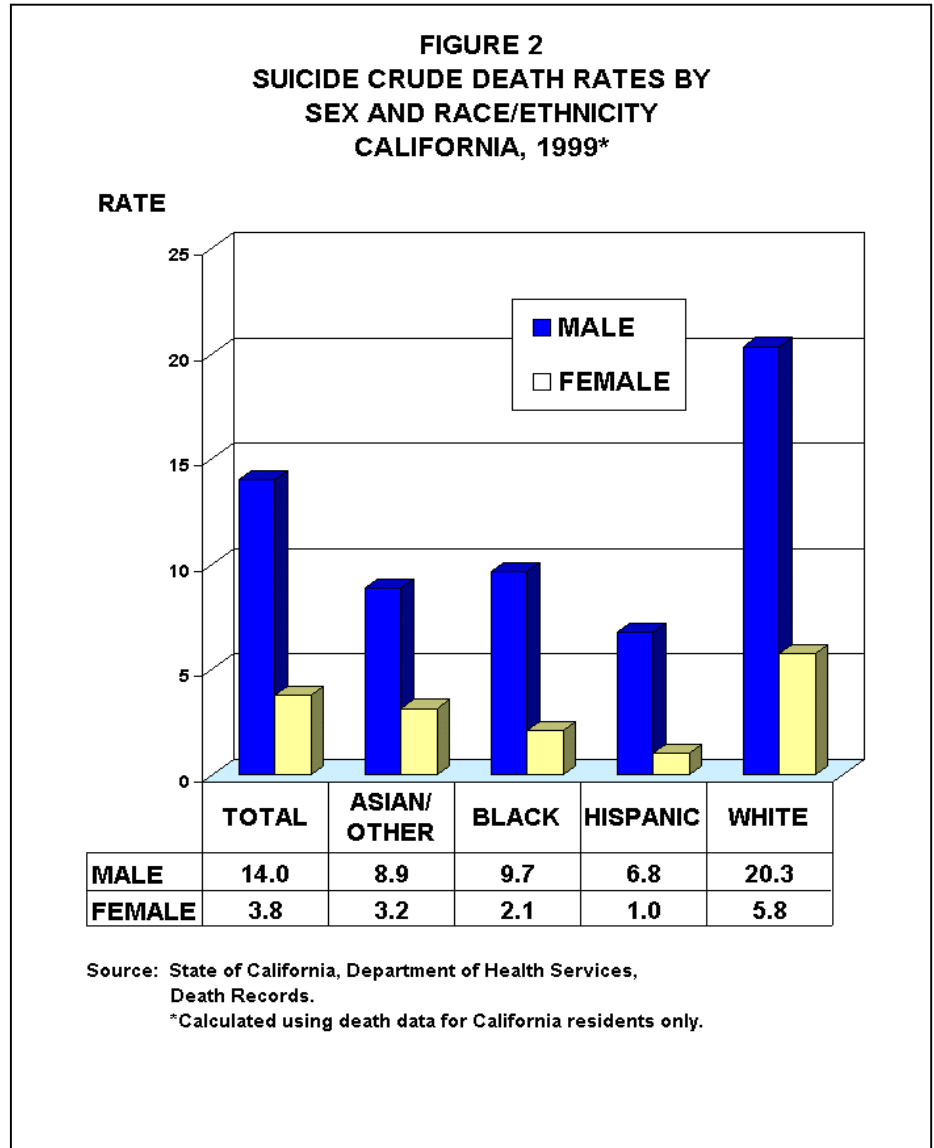
<sup>6</sup>National Center for Health Statistics. *Vital Statistics, Instructions for Classifying the Underlying Cause of Death*. NCHS Instruction Manual, Part 9. Hyattsville, Maryland: Public Health Service, 1999.

See the [Methodological Approach](#) Section later in this report for an explanation of crude, age-specific, and age-adjusted death rates.

**Figure 2** shows among males, Whites had the highest crude death rate (20.3 per 100,000 population) and Hispanics had the lowest (6.8). Similarly, White females had the highest crude death rate (5.8) and Hispanic females had the lowest (1.0). Overall, males had significantly higher crude death rates than females in their corresponding race/ethnic groups.

### Suicide Age-Specific Death Rates

**Table 1** (page 8) shows that reliable age-specific death rates among California residents ranged from a low of .5 deaths per 100,000 population for decedents in the 5 to 14 age group, up to a high of 25.2 for decedents in the 85 and older age group. Age-specific death rates among males were significantly higher than the age-specific death rates among females at all ages.



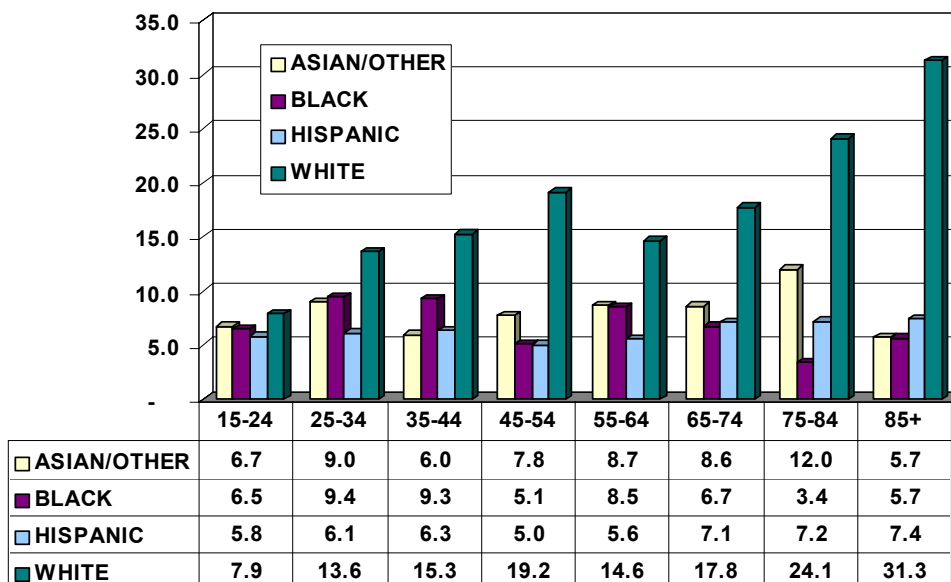
Among California male residents, the age-specific death rates increased with the age of decedent, except for males in the 55 to 64 age group. The lowest reliable age-specific death rate (11.5 per 100,000 population) among males was in the 15 to 24 age group, and the highest age-specific death rate (62.6) was among males in the 85 and older age group. Among females, the lowest reliable age-specific death rate (2.0) was in the 15 to 24 age group, and the highest rate (8.1) was in the 85 and older age group.

As shown in **Figure 3** (page 4), Whites had the highest age-specific suicide death rates among all race groups at all ages from 15 to 24 through 85 and older. Asians had the second highest rate for age groups 15 to 24, 45 to 54, 55 to 64, 65 to 74, and 75 to 84. Blacks were second highest among age groups 5 to 14, 25 to 34, and 35 to 44, with Hispanics second highest in the 85 and older age group.

See the Vital Statistics Query System (VSQ) at our web site [www.dhs.ca.gov/hisp/Applications/vsq/vsq.cfm](http://www.dhs.ca.gov/hisp/Applications/vsq/vsq.cfm) to create your own vital statistics tables.

**FIGURE 3**  
**SUICIDE AGE-SPECIFIC DEATH RATES**  
**BY RACE/ETHNICITY AND AGE**  
**CALIFORNIA 1999\***

Age-Specific  
 Death Rates



Source: State of California, Department of Health Services, Death Records.

\*Calculated using death data for California residents only.

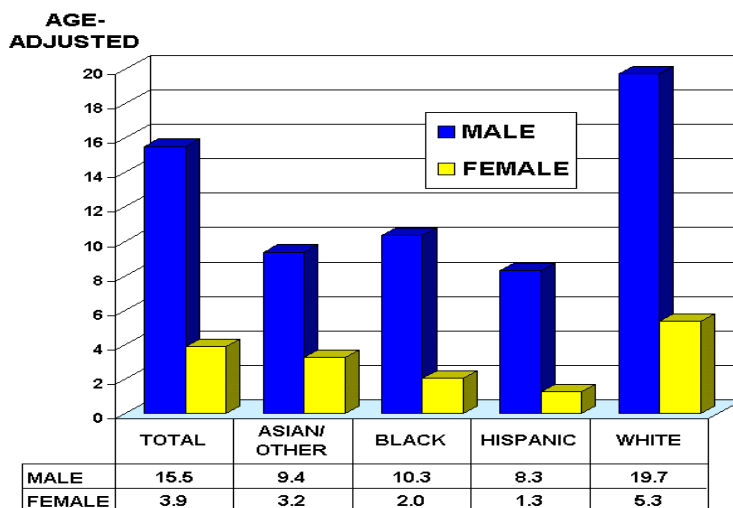
Note: Some of the rates displayed in this table are unreliable (see Table 1, page 8).

### Suicide Age-Adjusted Death Rates

In 1999, California's age-adjusted death rate was 9.4 per 100,000 population (**Table 1**). During this year, California did not meet the Healthy People 2010 National Objective to reduce the age-adjusted suicide death rate to no more than 5.0 deaths per 100,000 population.<sup>2,5,7</sup>

**Figure 4** shows suicide age-adjusted death rates for 1999 among California residents by race/ethnicity and sex.

**FIGURE 4**  
**SUICIDE AGE-ADJUSTED DEATH RATES**  
**BY SEX AND RACE/ETHNICITY**  
**CALIFORNIA, 1999\***



Source: State of California, Department of Health Services, Death Records.

\*Calculated using death data for California residents only.

<sup>7</sup> Klein RJ, Schoenborn, CA. Healthy People 2010 Statistical Notes: Age Adjustment using the 2000 Projected U.S. Population. National Center for Health Statistics, DHHS Publication, No 20. January 2001.

You can read more about crude and age-adjusted death rates on the National Center for Health Statistics web site at [www.cdc.gov/nchs](http://www.cdc.gov/nchs)

During this year, the age-adjusted suicide death rate among California males was significantly greater than for females. The male rate of 15.5 was more than three times greater than the 3.9 rate for females.

The age-adjusted death rate for males in each race/ethnic group was significantly higher than the rate for females in the same race/ethnic group. The ratio of male to female age-adjusted death rates were 2.9 to 1 among Asian/Other, 5.2 to 1 among Blacks, 6.4 to 1 among Hispanics, and 3.7 to 1 among Whites. Among males, Whites had a significantly higher rate (19.7) than males of the other race/ethnic groups. Black males had a rate of 10.3, Asian/Other males (9.4), and Hispanic males (8.3). Similarly, White females had a significantly higher death rate (5.3) than females of the other three race/ethnic groups. Asian/Other females had a rate of 3.2, Black females (2.0), and Hispanic females (1.3).

## Suicide Death Rates for California Counties

**Table 2** (page 9) shows the number of suicide deaths, crude death rates, and age-adjusted rates for California and each county.

Among the counties with reliable rates, the crude rate varied from a high of 22.8 per 100,000 population in Shasta County to a low of 7.1 in Monterey County, a difference in rates by a factor of more than 3 to 1. Shasta and Monterey Counties also had the highest and lowest reliable age-adjusted death rates, 22.2 and 7.6 respectively.

The Healthy People 2010 National Objective to reduce suicide deaths to an age-adjusted rate of no more than 5.0 deaths per 100,000 population was met by 4 counties (none with reliable age-adjusted death rates), but not California as a whole, which had an age-adjusted death rate of 9.4.

## Suicide Deaths among the Three City Health Jurisdictions

**Table 3** shows the 1999 suicide deaths and crude death rates for California's three city health jurisdictions.

Age-adjusted death rates were not calculated for city health jurisdictions because city population data by age are not available.

**TABLE 3  
SUICIDE DEATHS  
AMONG THE CITY HEALTH JURISDICTIONS  
CALIFORNIA, 1999\*\***

CITY HEALTH JURISDICTION	NUMBER OF DEATHS	1999 POPULATION	CRUDE DEATH RATE
BERKELEY	11	103,500	10.6 *
LONG BEACH	42	467,400	9.0
PASADENA	13	135,500	9.6 *

**Date:** Rates are per 100,000 population; ICD-10 codes X60-X84, Y87.0.

\*Death rate unreliable (relative standard error is greater or equal to 23%).

\*\*Calculated using death data for California residents only.

**Source:** State of California, Department of Finance, E-4 Historical City/County Population Estimates 1991-2000, with 1990 Census Counts, September 2001.

State of California, Department of Health Services, Death Records.

Long Beach had the highest number of deaths due to suicide (42), followed by Pasadena (13), and Berkeley (11). Among the crude death rates, Long Beach had the only reliable rate (9.0).

## Methodological Approach

The methods used to analyze vital statistics data are important. Analyzing only the number of deaths has its disadvantages and can be misleading because the population at risk is not taken into consideration. Crude death rates show the actual rate of dying in a given population, but because of the differing age compositions of various populations, they do not provide a statistically valid method for comparing geographic areas and/or multiple reporting periods. Age-specific death rates are the number of deaths per 100,000 population in a specific age group and are used along with standard population proportions to develop a weighted average rate. This rate is referred to as an age-adjusted death rate and removes the effect of different age structures of the populations whose rates are being compared. Age-adjusted death rates therefore provide the preferred method for comparing different race/ethnic groups, sexes, and geographic areas, and for measuring death rates over time. The year 2000 United States population standard is used as the basis for age-adjustments in this report.

## Data Limitations and Qualifications

The suicide death data presented in this report are based on the vital statistics records with ICD-10 codes X60-X84, Y87.0 as defined by the National Center for Health Statistics.<sup>8</sup> Deaths by place of residence means that the data include only those deaths occurring among residents of California and its counties, regardless of the place of death.

The term “significant” within the text indicates statistically significant based on the difference between two independent rates ( $p < .05$ ).

As with any vital statistics data, caution needs to be exercised when analyzing small numbers, including the rates derived from them. Death rates calculated from a small number of deaths and/or population tend to be unreliable and subject to significant variation from one year to the next. To assist the reader, 95 percent confidence intervals are provided in the data tables as a tool for measuring the reliability of death rates. Rates with a relative standard error (coefficient of variation) greater than or equal to 23 percent are indicated with an asterisk (\*).

Beginning in 1999, cause of death is reported using ICD-10.<sup>9</sup> Cause of death for 1979 through 1998 was coded using the International Classification of Diseases, Ninth Revision (ICD-9). Depending on the specific cause of death, the number of deaths and death rate are not comparable between ICD-9 and ICD-10. Therefore, our analyses do not combine both ICD-9 and ICD-10 data.

The variability of the rates has increased in **Table 2** and **Table 3** because of the unavailability of earlier years of data. Three-year average numbers using ICD-10 coding for cause of death will reduce this problem when the data are available in 2002.

<sup>8</sup>Kochanek KD, Smith BL, Anderson RN. *Deaths: Preliminary Data for 1999*. National Vital Statistics Reports; Vol 49, No 3. Hyattsville, Maryland: National Center for Health Statistics. 2001.

<sup>9</sup>World Health Organization. *International Statistical Classification of Diseases and Related Health Problems. Tenth Revision*. Geneva: World Health Organization. 1992.

The four race/ethnic groups presented in the table are mutually exclusive. White, Black, and Asian/Other exclude Hispanic ethnicity, while Hispanic includes any race/ethnic group. In order to remain consistent with the population data obtained from the Department of Finance, the "White race/ethnic group" includes White, Other (specified), Not Stated, and Unknown, and "Asian/Other race/ethnic group" includes: Aleut, American Indian, Asian Indian, Asian (specified/unspecified), Cambodian, Chinese, Eskimo, Filipino, Guamanian, Hawaiian, Japanese, Korean, Laotian, Other Pacific Islander, Samoan, Thai, and Vietnamese. In addition, caution should be exercised in the interpretation of mortality data by race/ethnicity. Misclassification of race/ethnicity on the death certificate may contribute to death rates that may be underestimated among Hispanics and Asian/Other.<sup>10</sup>

Effective with 1999 mortality data, the standard population for calculating age-adjustments was changed from the 1940 population standard to the year 2000 population standard in accordance with new statistical policy implemented by the National Center for Health Statistics. The new population standard affects measurement of mortality trends and group comparisons. Of particular note are the effects on race comparison of mortality.<sup>8</sup> Age-adjusted rates presented in this report are not comparable to rates calculated with different population standards.

In addition, the population data used to calculate the crude rates in **Table 3** (page 5) differ from the population data used to calculate the crude rates in **Table 2** (page 9). Consequently, caution should be exercised when comparing the crude rates among the three local health jurisdictions with the rates among the 58 California counties. Age-adjusted rates for local health jurisdictions were not calculated.

For a more complete explanation of the age-adjustment methodology used in this report, see the "Healthy People 2010 Statistical Notes" publication.<sup>7</sup> Detailed information on data quality and limitations is presented in the appendix of the annual report, "Vital Statistics of California."<sup>11</sup> Formulas used to calculate death rates are included in the technical notes of the "County Health Status Profiles" report.<sup>12</sup>

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<sup>10</sup>Rosenberg HM, et al. Quality of Death Rates by Race and Hispanic Origin: A Summary of Current Research, 1999. *Vital and Health Statistics*, Series 2, No. 128, National Center for Health Statistics, DHHS Pub. No. (PHS) 99-1328, September 1999.

<sup>11</sup>Riedmiller K, Bindra K. *Vital Statistics of California, 1998*. Center for Health Statistics, California Department of Health Services. April 2001.

<sup>12</sup>Schmidt, C. *County Health Status Profiles 2001*. Center for Health Statistics, California Department of Health Services. April 2001.





**TABLE 2**  
**DEATHS DUE TO SUICIDE**  
**CALIFORNIA COUNTIES, 1999**  
**(By Place of Residence)**

COUNTY	1999 DEATHS	PERCENT	1999 POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS	
						LOWER	UPPER
<b>CALIFORNIA</b>	<b>3,047</b>	<b>100.0</b>	<b>34,072,478</b>	<b>8.9</b>	<b>9.4</b>	<b>9.0</b>	<b>9.7</b>
ALAMEDA	114	3.7	1,448,643	7.9	8.0	6.6	9.5
ALPINE	0	0.0	1,226	0.0 +	0.0 +	-	-
AMADOR	8	0.3	34,410	23.2 *	21.2 *	6.0	36.4
BUTTE	30	1.0	204,216	14.7	15.0	9.5	20.4
CALAVERAS	7	0.2	40,597	17.2 *	20.7 *	4.9	36.6
COLUSA	2	0.1	20,091	10.0 *	11.4 *	0.0	27.2
CONTRA COSTA	89	2.9	921,662	9.7	9.8	7.7	11.8
DEL NORTE	2	0.1	30,358	6.6 *	7.0 *	0.0	16.7
EL DORADO	21	0.7	156,996	13.4	12.0 *	6.4	17.6
FRESNO	63	2.1	800,121	7.9	9.0	6.7	11.2
GLENN	3	0.1	28,438	10.5 *	12.0 *	0.0	25.5
HUMBOLDT	20	0.7	127,658	15.7	15.4	8.7	22.2
IMPERIAL	12	0.4	150,381	8.0 *	8.6 *	3.6	13.6
INYO	3	0.1	18,348	16.4 *	19.4 *	0.0	41.4
KERN	62	2.0	662,472	9.4	10.5	7.9	13.1
KINGS	10	0.3	123,683	8.1 *	9.5 *	3.4	15.7
LAKE	11	0.4	58,335	18.9 *	18.1 *	6.9	29.3
LASSEN	5	0.2	35,208	14.2 *	13.0 *	1.3	24.6
LOS ANGELES	732	24.0	9,727,841	7.5	8.1	7.5	8.7
MADERA	13	0.4	121,779	10.7 *	11.8 *	5.3	18.2
MARIN	28	0.9	247,073	11.3	10.5	6.6	14.5
MARIPOSA	2	0.1	16,339	12.2 *	10.7 *	0.0	26.1
MENDOCINO	18	0.6	88,978	20.2 *	20.6 *	11.0	30.1
MERCED	25	0.8	210,707	11.9	13.2	7.9	18.4
MODOC	4	0.1	10,384	38.5 *	33.9 *	0.5	67.3
MONO	0	0.0	10,730	0.0 +	0.0 +	-	-
MONTEREY	28	0.9	395,133	7.1	7.6	4.8	10.5
NAPA	9	0.3	125,123	7.2 *	7.0 *	2.4	11.6
NEVADA	13	0.4	94,014	13.8 *	14.0 *	6.0	22.0
ORANGE	210	6.9	2,787,593	7.5	8.0	6.9	9.1
PLACER	19	0.6	233,836	8.1	8.5 *	4.6	12.3
PLUMAS	3	0.1	20,714	14.5 *	10.3 *	0.0	22.2
RIVERSIDE	155	5.1	1,519,469	10.2	10.7	9.0	12.4
SACRAMENTO	138	4.5	1,189,056	11.6	12.0	10.0	14.0
SAN BENITO	1	a	50,087	2.0 *	2.2 *	0.0	6.6
SAN BERNARDINO	163	5.3	1,688,984	9.7	10.8	9.1	12.5
SAN DIEGO	286	9.4	2,884,572	9.9	10.8	9.5	12.0
SAN FRANCISCO	83	2.7	788,975	10.5	9.6	7.5	11.7
SAN JOAQUIN	56	1.8	566,793	9.9	10.5	7.7	13.2
SAN LUIS OBISPO	28	0.9	247,880	11.3	11.3	7.0	15.5
SAN MATEO	64	2.1	735,381	8.7	8.5	6.4	10.5
SANTA BARBARA	35	1.1	408,292	8.6	8.9	5.9	11.9
SANTA CLARA	128	4.2	1,732,034	7.4	7.7	6.4	9.1
SANTA CRUZ	27	0.9	255,825	10.6	10.2	6.4	14.1
SHASTA	39	1.3	171,211	22.8	22.2	15.2	29.2
SIERRA	0	0.0	3,427	0.0 +	0.0 +	-	-
SISKIYOU	8	0.3	44,847	17.8 *	16.1 *	4.7	27.6
SOLANO	33	1.1	392,201	8.4	9.0	5.9	12.2
SONOMA	47	1.5	450,187	10.4	10.2	7.3	13.1
STANISLAUS	36	1.2	446,056	8.1	8.6	5.8	11.5
SUTTER	7	0.2	79,992	8.8 *	8.7 *	2.2	15.1
TEHAMA	8	0.3	55,806	14.3 *	16.0 *	4.8	27.2
TRINITY	3	0.1	13,353	22.5 *	17.3 *	0.0	37.0
TULARE	37	1.2	371,640	10.0	11.2	7.5	14.8
TUOLUMNE	9	0.3	54,631	16.5 *	14.4 *	4.8	23.9
VENTURA	60	2.0	744,825	8.1	8.9	6.6	11.1
YOLO	20	0.7	160,805	12.4	13.7 *	7.5	19.8
YUBA	10	0.3	63,062	15.9 *	19.3 *	7.3	31.3

Note: ICD-10 codes X60-X84, Y87.0; rates are per 100,000 population.

\* Death rate unreliable (relative standard error is greater than or equal to 23%).

a Represents a percentage of more than zero but less than 0.05.

+ Standard error indeterminate, death rate based on no (zero) deaths.

- Confidence limit is not calculated for no (zero) deaths.

Source: State of California, Department of Finance, Race/Ethnic Population Estimates by County with Age and Sex Detail, 1970-1999, December, 1998.  
State of California, Department of Health Services, Death Records.