



# Center for Health Statistics



## HEART DISEASE DEATHS IN CALIFORNIA, 1999

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DATA SUMMARY  
No. DS02-07001

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

### Highlights

- In 1999, 84.7% of all heart disease deaths occurred among people ages 65 and older.
- The heart disease crude death rate for California was 205.2 deaths per 100,000 population in 1999.
- During 1999, the California heart disease age-adjusted death rate (243.4) was lower than the United States rate (267.8).
- In 1999, Blacks had an age-adjusted death rate significantly higher than Whites, Hispanics, and Asian/Other.

### Introduction

Heart disease has historically been the leading cause of death in the United States and in California. In 1996, 21 million cases of heart disease were reported in the United States and in 1999, 4.5 million hospital discharges were attributed to heart disease.<sup>1</sup> There were 725,192 heart disease deaths in the United States in 1999.<sup>2</sup>

This report presents data on heart disease deaths in California during 1999, and provides analysis of crude and age-adjusted death rates for California residents by sex, age, race/ethnicity, and county. The definition of heart disease used in this report is based on the ICD-10 codes I00-I09, I11, I13, I20-I51 currently presented in National Center for Health Statistics reports.<sup>3</sup> The national health objective for heart disease, as defined by the Healthy People 2010 goals, pertains to coronary heart disease (a narrowly defined subset of heart disease). Therefore, an assessment of California's progress in meeting this objective cannot be monitored with the data presented in this report. An analysis of California's progress in meeting the national health objective for coronary heart disease is presented in other Center for Health Statistics (CHS) reports.<sup>4</sup>

### Heart Disease Deaths

**Table 1** (page 8) displays heart disease death data for 1999 by the four major race/ethnic groups, by age group, and by sex. During this period, the number of deaths attributed to heart disease was slightly higher among females (35,773) than among males (34,127). As shown in **Figure 1** (page 2), the number of heart disease deaths among Whites (53,629) was much higher than Hispanics (6,775), Blacks (5,417), and Asian/Other (4,079).

Heart disease deaths occur predominantly among the older population, and this held true in 1999 with 84.7 percent of all heart disease deaths involving people 65 years and older. This age group, within each respective race/ethnic group,

<sup>1</sup> National Center for Health Statistics, *Fast Stats A to Z: Heart Disease*. Division of Data Services, July 2001. <http://www.cdc.gov/nchs/fastats/heart.htm>

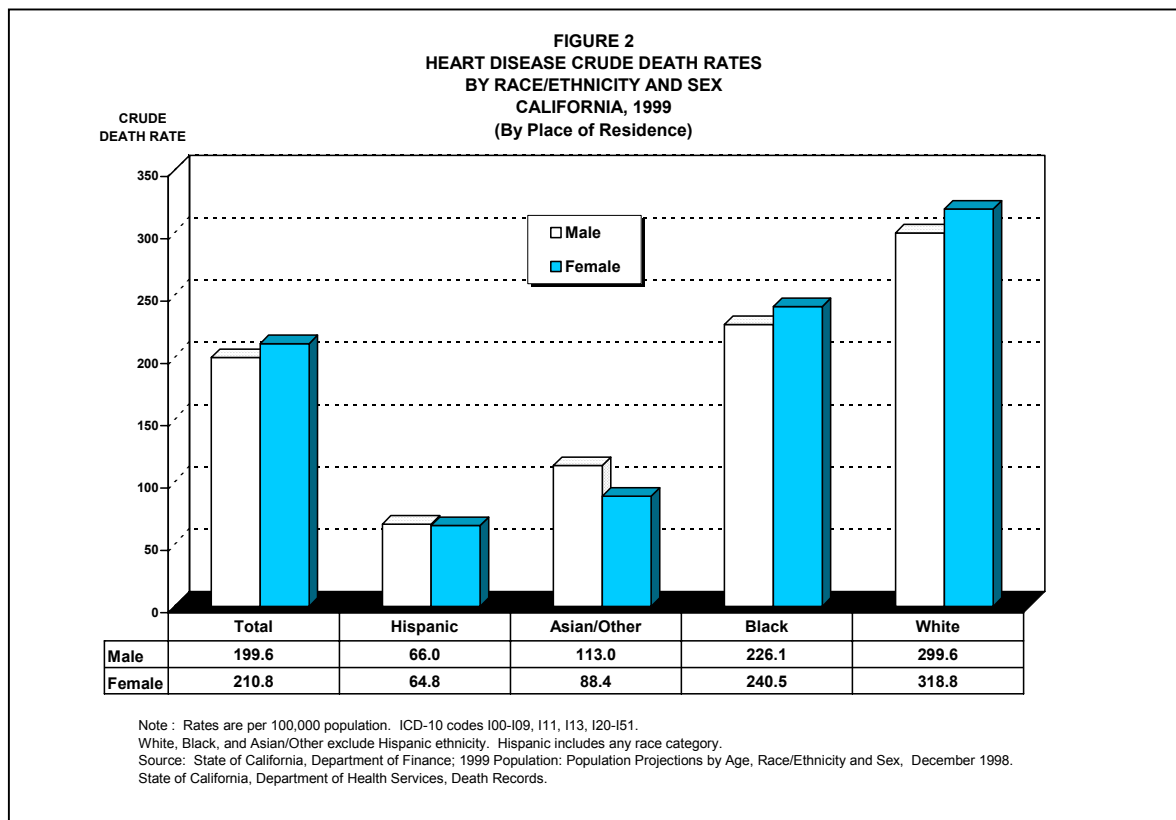
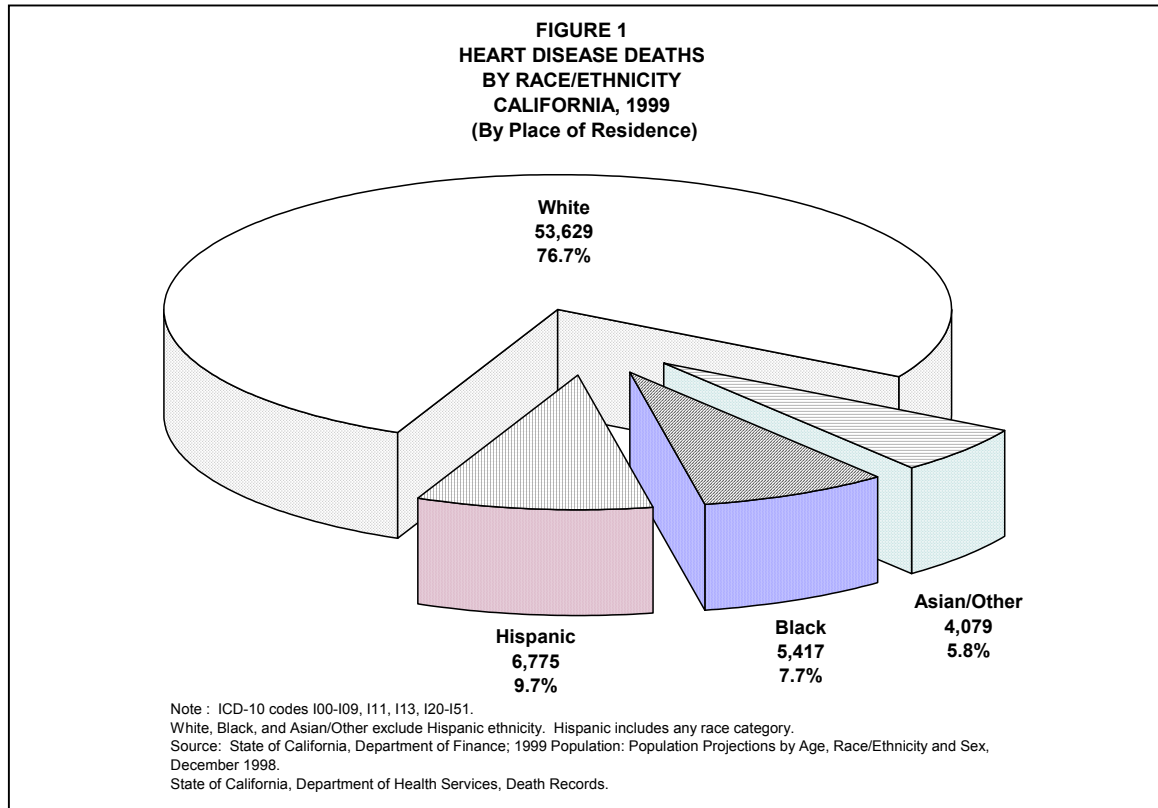
<sup>2</sup> National Center for Health Statistics, Deaths: Final Data for 1999, *National Vital Statistics Reports*, DHHS Pub. No. (PHS) 2001-1120, PRS 01-0573, September 2001; Vol. 49, No. 8, pp. 57-60.

<sup>3</sup> National Center for Health Statistics, Deaths: Preliminary Data for 1999, *National Vital Statistics Reports*, DHHS Pub. No. (PHS) 2001-1120, PRS 01-0358, June 2001; Volume 49, Number 3.

<sup>4</sup> Schmidt C. County Health Status Profiles 2001. Center for Health Statistics, California Department of Health Services, April 2001.

accounted for 87.6 percent of all deaths among Whites, 81.3 percent of all deaths among Asian/Other, 75.7 percent of all deaths among Hispanics, and 69.8 percent of all deaths among Blacks.

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

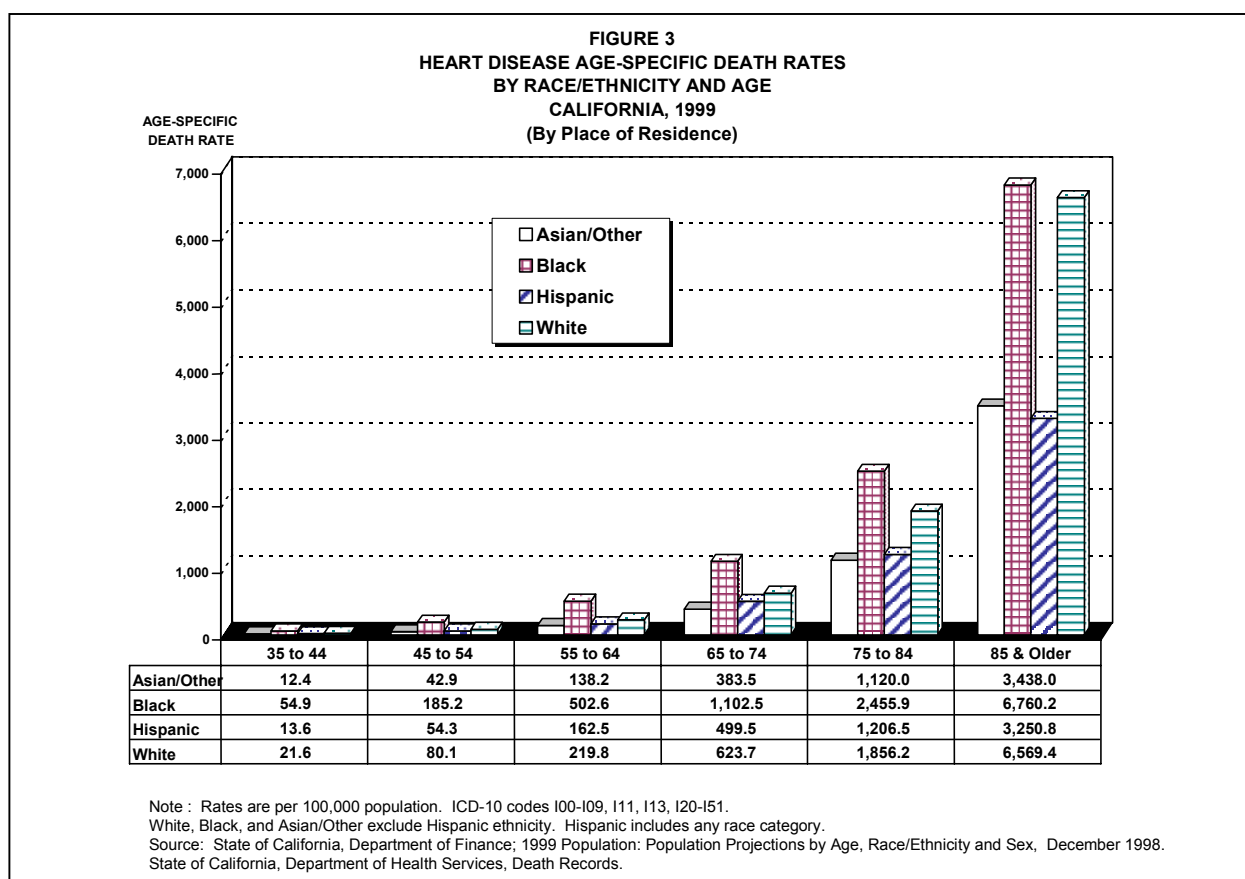


## Heart Disease Crude Death Rates

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

The overall heart disease crude death rate was 205.2 deaths per 100,000 population in 1999. As shown in **Table 1** (page 8), Whites had the highest crude death rate in 1999, a rate of 309.3. Blacks were next with a crude rate of 233.4. Asian/Other and Hispanics had the lowest crude death rates, 100.5 and 65.4 respectively.

**Figure 2** (page 2) shows that among the sexes, within each race/ethnic group, Asian/Other, Black, and White had substantial differences in their heart disease crude death rates. Asian/Other males had a crude rate of 113.0 and Asian/Other females had a rate of 88.4. Among Blacks, females had a rate of 240.5 and males had a rate of 226.1. White females had a crude rate of 318.8 and White males had a rate of 299.6. These differences were statistically significant. There was no significant difference in the rates between Hispanic males and females.



## Heart Disease Age-Specific Death Rates

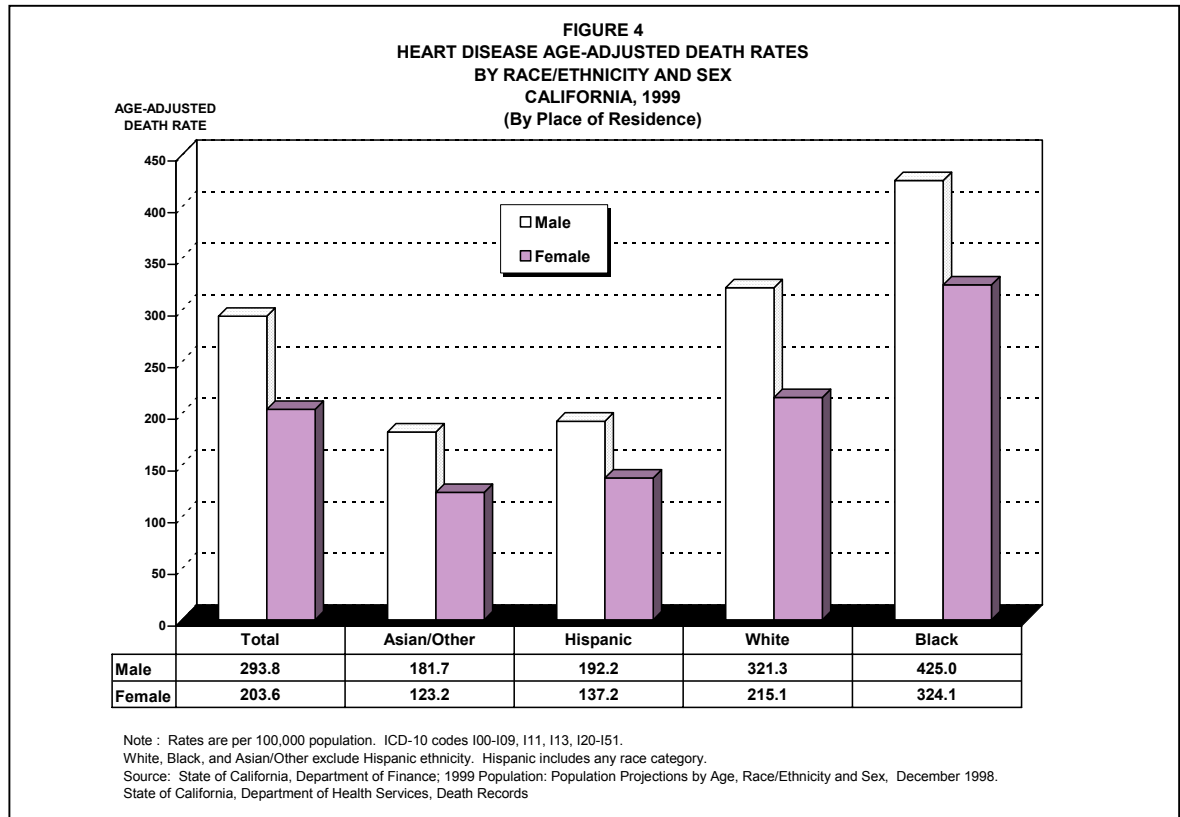
In **Table 1** (page 8) reliable age-specific rates show that males in all four race/ethnic groups consistently had higher rates than females in the corresponding groups, except for the 85 and older age group where Black and Hispanic females had rates higher than their male counterparts. **Table 1** also shows that Blacks had higher age-specific death rates than the other three race/ethnic groups in each age group with reliable rates. Whites and Hispanics had the only reliable rates in the 15 to 24 age group where Hispanics had the highest rate. Hispanics had the only reliable rate in the under one age group. **Figure 3** graphically displays this pattern of higher age-specific death rates for

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

Blacks in the age groups 35 to 44, 45 to 54, 55 to 64, 65 to 74, 75 to 84, and 85 years and older.

## Heart Disease Age-Adjusted Death Rates

In 1999, the United States heart disease age-adjusted death rate (267.8) was higher than the California rate (243.4).<sup>2</sup> A comparison among the races shows that Blacks had an age-adjusted death rate (368.7) significantly higher than Whites (261.0), Hispanics (162.3), and Asian/Other (149.5). As shown in **Figure 4**, the death rate for males was substantially higher than for females in all four of the race/ethnic groups; all of these differences were statistically significant.



## Heart Disease Death Data for California Counties

**Table 2** (page 9) displays the number of deaths, crude death rates, and age-adjusted death rates by county for 1999.

The highest number of heart disease deaths occurred in Los Angeles County (20,006) and the lowest in Alpine County (2).

The highest and lowest reliable heart disease crude death rates were in Inyo County (343.4 per 100,000 population) and San Benito County (135.8), respectively.

The ranking for heart disease age-adjusted death rates showed San Bernardino County with the highest reliable rate (304.6 deaths per 100,000 population) and Modoc County with the lowest (149.6).

For more data, see DHS Center for Health Statistics, Home Page at <http://www.dhs.ca.gov/org/hisp/chs/chsindex.htm>

## Heart Disease Death Data by Local Health Jurisdiction

**Table 3** displays the number of deaths and crude death rates for California's three local health jurisdictions for 1999. Age-adjusted death rates were not calculated for the local health jurisdictions because city population estimates by age are not available.

The city of Long Beach had 1,101 heart disease deaths, Pasadena had 434 heart disease deaths, and Berkeley had 182 heart disease deaths.

Pasadena had a heart disease crude death rate of 322.7 deaths per 100,000 population, Long Beach had a crude rate of 239.3, and Berkeley had a crude rate of 175.7.

**TABLE 3  
HEART DISEASE DEATHS  
AMONG THE LOCAL HEALTH JURISDICTIONS  
CALIFORNIA, 1999  
(By Place of Residence)**

| LOCAL HEALTH JURISDICTION | NUMBER OF DEATHS | 1999 POPULATION | CRUDE DEATH RATE |
|---------------------------|------------------|-----------------|------------------|
| BERKELEY                  | 182              | 103,600         | 175.7            |
| LONG BEACH                | 1,101            | 460,100         | 239.3            |
| PASADENA                  | 434              | 134,500         | 322.7            |

Note: Rates are per 100,000 population;  
ICD-10 codes I00-I09, I11, I13, I20-I51.

Source: State of California, Department of Finance, Report E-4,  
1999 Historical Estimates of California Cities and Counties,  
September 2001.  
State of California, Department of Health Services, Death records.

## 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 comparisons of different race/ethnic groups, sexes, and geographic areas, and for measuring death rates over time. The year 2000 United States population is used as the basis for age-adjustments in this report.

## Data Limitations and Qualifications

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

The heart disease death data presented in this report are based on vital statistics records with ICD-10 codes I00-I09, I11, I13, I20-I51 as defined by the National Center for Health Statistics.<sup>3</sup>

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 the 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 the 10<sup>th</sup> Revision of the *International Classification of Diseases* (ICD-10).<sup>5</sup> Cause of death for 1979 through 1998 was coded using the 9<sup>th</sup> Revision of the *International Classification of Diseases* (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 involve only ICD-9 data (1979-1998) on prior reports and only ICD-10 data for this report (1999), and do not combine both ICD-9 and ICD-10 data.

The variability of the rates has increased in Tables 2 and 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.

The four race/ethnic groups presented in the tables 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 the “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>6</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

<sup>5</sup> World Health Organization. *International Statistical Classification of diseases and Related Health Problems. Tenth Revision.* Geneva: World Health Organization. 1992.

<sup>6</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.



Some of the [earlier reports](#) on this subject are available online.

and group comparisons. Of particular note are the effects on race comparison of mortality.<sup>3</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 differ from the population data used to calculate the crude rates in Table 2. 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 city health jurisdictions were not calculated.

For a more complete explanation of the age-adjusting methodology used in this report see the *Healthy People 2000 Statistical Notes* publication.<sup>7</sup> Detailed information on data quality and limitations are presented in the appendix of the annual report, *Vital Statistics of California*.<sup>8</sup> Formulas used to calculate death rates are included in the technical notes of the *County Health Status Profiles* report.<sup>4</sup>

## Heart Disease Reports from Prior Periods

Cox D. Heart Disease Deaths, California 1998. *Data Summary*. Center for Health Statistics, California Department of Health Services, Report Register No. DS01-02002, February 2001.

Cox D. Heart Disease Deaths, California 1997. *Data Summary*. Center for Health Statistics, California Department of Health Services, Report Register No. DS99-09001, September 1999.

Cox D. Heart Disease Deaths California, 1980-1996. *Data Summary*. Center for Health Statistics, California Department of Health Services, Report Register No. DS98-07001, July 1998.

Sutocky J. Heart Disease Mortality, California, 1970-1990. *Data Summary*. Center for Health Statistics, California Department of Health Services, Report Register No. DS92-03001, March 1992.

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<sup>7</sup> Curtin LR, Klein RJ. Direct Standardization (Age-Adjusted Death Rates), *Healthy People 2000 Statistical Notes*, Number 6 – Revised, National Center for Health Statistics, DHHS Pub. No. (PHS) 95-1237, March 1995.

<sup>8</sup> Riedmiller K, Bindra K. *Vital Statistics of California, 1998*. Center for Health Statistics, California Department of Health Services, April 2001.





TABLE 2  
HEART DISEASE DEATHS  
CALIFORNIA, 1999  
(By Place of Residence)

| COUNTY          | 1999 DEATHS | PERCENT | 1999 POPULATION | CRUDE RATE | AGE-ADJUSTED RATE | 95% CONFIDENCE LIMITS |       |
|-----------------|-------------|---------|-----------------|------------|-------------------|-----------------------|-------|
|                 |             |         |                 |            |                   | LOWER                 | UPPER |
| CALIFORNIA      | 69,900      | 100.0   | 34,072,478      | 205.2      | 243.4             | 242.4                 | 244.3 |
| ALAMEDA         | 2,883       | 4.1     | 1,448,643       | 199.0      | 235.0             | 230.5                 | 239.4 |
| ALPINE          | 2           | 0.0 a   | 1,226           | 163.1 *    | 191.5 *           | 9.5                   | 373.5 |
| AMADOR          | 113         | 0.2     | 34,410          | 328.4      | 222.5             | 198.1                 | 246.9 |
| BUTTE           | 547         | 0.8     | 204,216         | 267.9      | 190.0             | 180.1                 | 199.9 |
| CALAVERAS       | 121         | 0.2     | 40,597          | 298.1      | 217.9             | 193.9                 | 241.9 |
| COLUSA          | 49          | 0.1     | 20,091          | 243.9      | 243.1             | 202.0                 | 284.3 |
| CONTRA COSTA    | 1,769       | 2.5     | 921,662         | 191.9      | 209.5             | 204.8                 | 214.1 |
| DEL NORTE       | 52          | 0.1     | 30,358          | 171.3      | 157.4             | 129.6                 | 185.2 |
| EL DORADO       | 343         | 0.5     | 156,996         | 218.5      | 231.0             | 219.8                 | 242.3 |
| FRESNO          | 1,586       | 2.3     | 800,121         | 198.2      | 243.4             | 237.2                 | 249.6 |
| GLENN           | 74          | 0.1     | 28,438          | 260.2      | 240.3             | 209.5                 | 271.0 |
| HUMBOLDT        | 296         | 0.4     | 127,658         | 231.9      | 231.7             | 217.6                 | 245.9 |
| IMPERIAL        | 253         | 0.4     | 150,381         | 168.2      | 222.8             | 207.6                 | 238.0 |
| INYO            | 63          | 0.1     | 18,348          | 343.4      | 222.2             | 191.0                 | 253.4 |
| KERN            | 1,536       | 2.2     | 662,472         | 231.9      | 284.2             | 276.6                 | 291.8 |
| KINGS           | 201         | 0.3     | 123,683         | 162.5      | 256.3             | 236.9                 | 275.7 |
| LAKE            | 181         | 0.3     | 58,335          | 310.3      | 193.6             | 174.2                 | 213.0 |
| LASSEN          | 65          | 0.1     | 35,208          | 184.6      | 214.1             | 187.0                 | 241.3 |
| LOS ANGELES     | 20,006      | 28.6    | 9,727,841       | 205.7      | 269.0             | 267.2                 | 270.9 |
| MADERA          | 252         | 0.4     | 121,779         | 206.9      | 225.2             | 209.9                 | 240.4 |
| MARIN           | 473         | 0.7     | 247,073         | 191.4      | 189.7             | 181.8                 | 197.6 |
| MARIPOSA        | 51          | 0.1     | 16,339          | 312.1      | 202.5             | 171.6                 | 233.4 |
| MENDOCINO       | 206         | 0.3     | 88,978          | 231.5      | 215.0             | 199.5                 | 230.5 |
| MERCED          | 348         | 0.5     | 210,707         | 165.2      | 228.3             | 215.4                 | 241.3 |
| MODOC           | 21          | 0.0 a   | 10,384          | 202.2      | 149.6             | 107.4                 | 191.8 |
| MONO            | 7           | 0.0 a   | 10,730          | 65.2 *     | 91.2 *            | 58.6                  | 123.9 |
| MONTEREY        | 627         | 0.9     | 395,133         | 158.7      | 204.3             | 196.6                 | 212.0 |
| NAPA            | 318         | 0.5     | 125,123         | 254.1      | 189.7             | 178.5                 | 200.8 |
| NEVADA          | 233         | 0.3     | 94,014          | 247.8      | 169.4             | 158.6                 | 180.2 |
| ORANGE          | 5,296       | 7.6     | 2,787,593       | 190.0      | 265.5             | 262.4                 | 268.6 |
| PLACER          | 488         | 0.7     | 233,836         | 208.7      | 222.4             | 213.6                 | 231.1 |
| PLUMAS          | 54          | 0.1     | 20,714          | 260.7      | 181.0             | 153.0                 | 208.9 |
| RIVERSIDE       | 4,067       | 5.8     | 1,519,469       | 267.7      | 262.3             | 257.7                 | 266.8 |
| SACRAMENTO      | 2,582       | 3.7     | 1,189,056       | 217.1      | 258.0             | 253.0                 | 263.0 |
| SAN BENITO      | 68          | 0.1     | 50,087          | 135.8      | 159.6             | 139.4                 | 179.9 |
| SAN BERNARDINO  | 3,446       | 4.9     | 1,688,984       | 204.0      | 304.6             | 299.5                 | 309.6 |
| SAN DIEGO       | 5,654       | 8.1     | 2,884,572       | 196.0      | 229.2             | 226.1                 | 232.3 |
| SAN FRANCISCO   | 1,888       | 2.7     | 788,975         | 239.3      | 194.6             | 189.6                 | 199.6 |
| SAN JOAQUIN     | 1,371       | 2.0     | 566,793         | 241.9      | 265.3             | 257.6                 | 272.9 |
| SAN LUIS OBISPO | 655         | 0.9     | 247,880         | 264.2      | 227.7             | 217.8                 | 237.6 |
| SAN MATEO       | 1,381       | 2.0     | 735,381         | 187.8      | 188.8             | 183.9                 | 193.7 |
| SANTA BARBARA   | 851         | 1.2     | 408,292         | 208.4      | 207.2             | 200.2                 | 214.3 |
| SANTA CLARA     | 2,601       | 3.7     | 1,732,034       | 150.2      | 215.9             | 212.4                 | 219.5 |
| SANTA CRUZ      | 502         | 0.7     | 255,825         | 196.2      | 208.8             | 200.1                 | 217.5 |
| SHASTA          | 447         | 0.6     | 171,211         | 261.1      | 234.6             | 222.6                 | 246.7 |
| SIERRA          | 8           | 0.0 a   | 3,427           | 233.4 *    | 122.0 *           | 96.7                  | 147.3 |
| SISKIYOU        | 110         | 0.2     | 44,847          | 245.3      | 191.2             | 168.8                 | 213.6 |
| SOLANO          | 632         | 0.9     | 392,201         | 161.1      | 232.1             | 222.8                 | 241.5 |
| SONOMA          | 1,109       | 1.6     | 450,187         | 246.3      | 225.6             | 218.8                 | 232.3 |
| STANISLAUS      | 1,004       | 1.4     | 446,056         | 225.1      | 265.8             | 257.1                 | 274.5 |
| SUTTER          | 211         | 0.3     | 79,992          | 263.8      | 256.3             | 238.1                 | 274.6 |
| TEHAMA          | 177         | 0.3     | 55,806          | 317.2      | 241.8             | 219.9                 | 263.6 |
| TRINITY         | 31          | 0.0 a   | 13,353          | 232.2      | 192.3             | 146.0                 | 238.5 |
| TULARE          | 751         | 1.1     | 371,640         | 202.1      | 242.1             | 232.7                 | 251.6 |
| TUOLUMNE        | 140         | 0.2     | 54,631          | 256.3      | 193.7             | 175.5                 | 211.9 |
| VENTURA         | 1,298       | 1.9     | 744,825         | 174.3      | 218.5             | 213.1                 | 223.9 |
| YOLO            | 254         | 0.4     | 160,805         | 158.0      | 198.9             | 185.9                 | 211.9 |
| YUBA            | 148         | 0.2     | 63,062          | 234.7      | 291.2             | 263.8                 | 318.5 |

Note : Rates are per 100,000 population. ICD-10 codes I00-I09, I11, I13, I20-I51.

\* 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.

Source : State of California, Department of Finance; 1999 Population: Population Projections by Age, Race/Ethnicity and Sex, December 1998.  
State of California, Department of Health Services, Death Records.