



January 2003

DATA SUMMARY No. DS 03-01000

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

Highlights

- HIVD was the eighth leading cause of death for Californian Black males in 1999 and 2000. HIVD age-adjusted death rates declined from 4.9 (per 100,000 population) in 1999 to 4.3 in 2000. San Francisco County had the highest average HIVD age-adjusted death rate for 1999-2000 at 21.9. California has not yet met the Healthy People 2010 National Objective for HIVD of no more than 0.7 age-adjusted deaths per 100,000 population.

Human Immunodeficiency Virus Disease Deaths California 1999-2000

By Cynthia Schmidt

Introduction

Death rates due to human immunodeficiency virus disease (HIVD) have declined significantly, but the prevalence of people living with HIVD has increased. According to the Centers for Disease Control and Prevention, an estimated 270,000 people in the United States were living with AIDS (now known as HIVD) at the end of 1997. At the end of 1999, there were an estimated 317,000 people living with HIVD reflecting a 17.4 percent increase from 1997.

Prior to 1999, the International Classification of Diseases, Ninth Revision (ICD-9) was used to code mortality causes of death. Beginning in 1987, in accordance with the National Center for Health Statistics (NCHS), the new ICD Codes 042-044 for acquired immune deficiency syndrome (AIDS) and human immunodeficiency virus (HIV) infection were used.

Beginning with 1999 data and the adoption of the International Classification of Diseases, Tenth Revision (ICD-10), the title of these causes of death is HIVD and the codes are B20 – B24.

The NCHS reports that the change in mortality coding methodology from ICD-9 to ICD-10 shows a comparability ratio for HIVD of 1.0637, denoting about 6 percent more deaths due to HIVD using the new ICD-10 methodology.

As with other diseases, "survival analysis" is the most appropriate statistical technique for determining whether or not survival has increased. Therefore, the mortality data within this report should be supplemented with incidence data to adequately measure the impact of the HIVD epidemic. Data related to the incidence of HIVD in California can be obtained from the Department of Health Services, Office of AIDS.

1Centers for Disease Control, Division of HIVD Prevention. HIVD Surveillance Supplemental Report, 2001; Volume 7 (No.1).

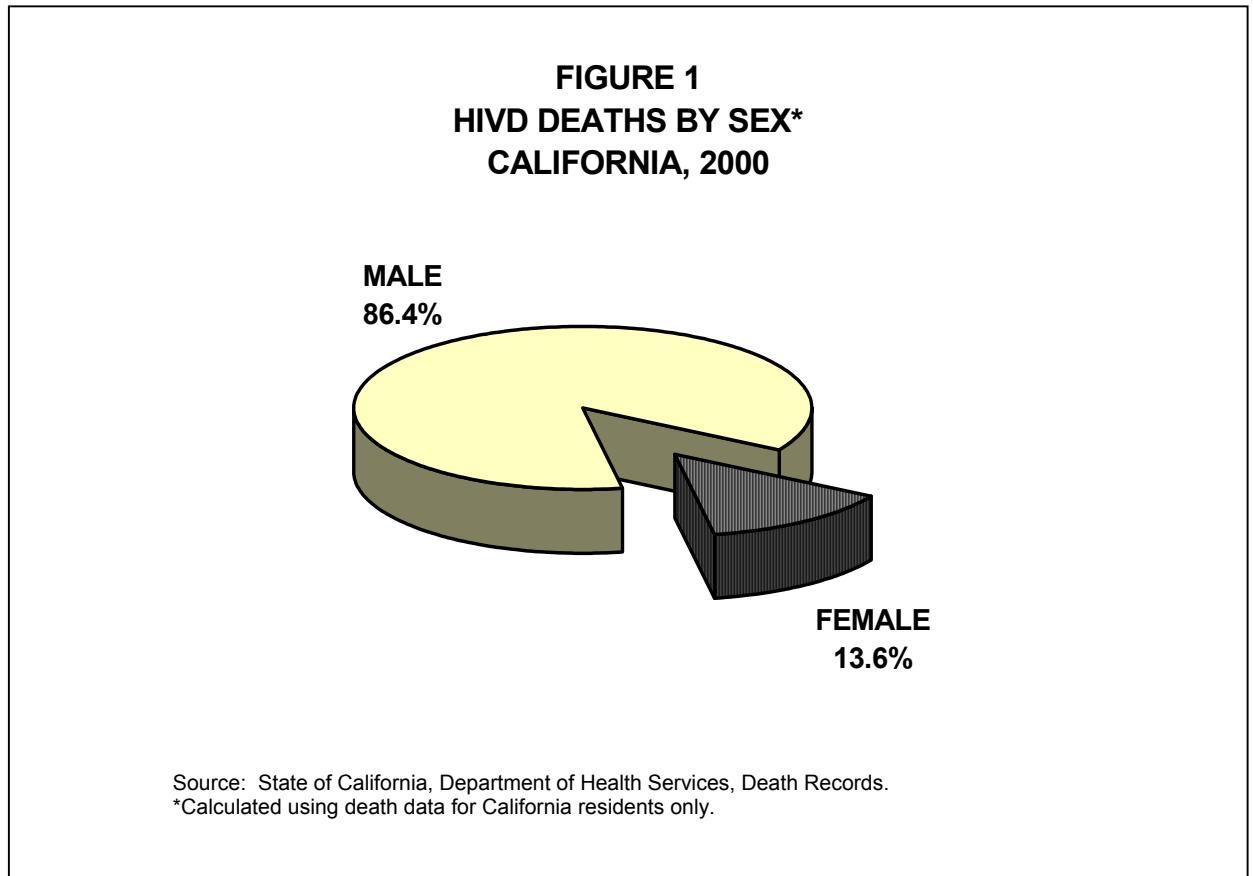
2Anderson RN, Minino AM, Hoyert DL, Rosenberg HM. Comparability of Cause of Death Between ICD-9 and ICD-10: Preliminary Estimates. National Vital Statistics Reports; Vol. 49 No. 2. Hyattsville, Maryland: National Center for Health Statistics, 2001.

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

This report presents data on California's HIVD deaths for 1999 and 2000, and provides analysis of crude and age-adjusted death rates for California residents by sex, age, and race/ethnicity. The HIVD data included in this report are extracted from vital statistics records with death attributed to HIVD as defined by ICD-10 codes B20-B24, in accordance with the National Center for Health Statistics Reports.<sup>3</sup>

## HIVD Deaths

**Table 1** (page 9) shows HIVD death data for California residents by race/ethnicity, age group, and sex. In 2000, 70.3 percent of all HIVD deaths occurred among people in the age group 35 to 54. This same age group had a similar percent in 1999, accounting for 69.3 percent of all HIVD deaths.



HIVD deaths among California residents were significantly higher for males than for females. As shown in **Figure 1**, males accounted for 1,255 or 86.4 percent of the total HIVD deaths, and females accounted for 198 or 13.6 percent. The ratio of male to female deaths was the same for 1999, with males having six times the number of HIVD deaths.

As shown in **Table 2** (page 10) in 1999, Whites had the highest number of HIVD deaths, 790 or 50.7 percent of all HIVD deaths. Hispanics followed with 368 deaths or 23.6 percent; Blacks had 364 deaths or 23.4 percent; and Asian/Other had 36 deaths or 2.3 percent.

<sup>3</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.

In 2000, each of the major race/ethnic groups showed a slight decrease in their total number of HIVD deaths from those reported for 1999. Among the major race/ethnic groups in 2000, Whites had the highest number of HIVD deaths with 708 deaths, a decrease of 10.4 percent from 1999. Blacks followed with 357 deaths, a 1.9 percent decrease from 1999. Hispanics ranked third with 355 deaths, a 3.5 percent decrease, and last Asian/Other had 33 deaths showing an 8.3 percent decrease.

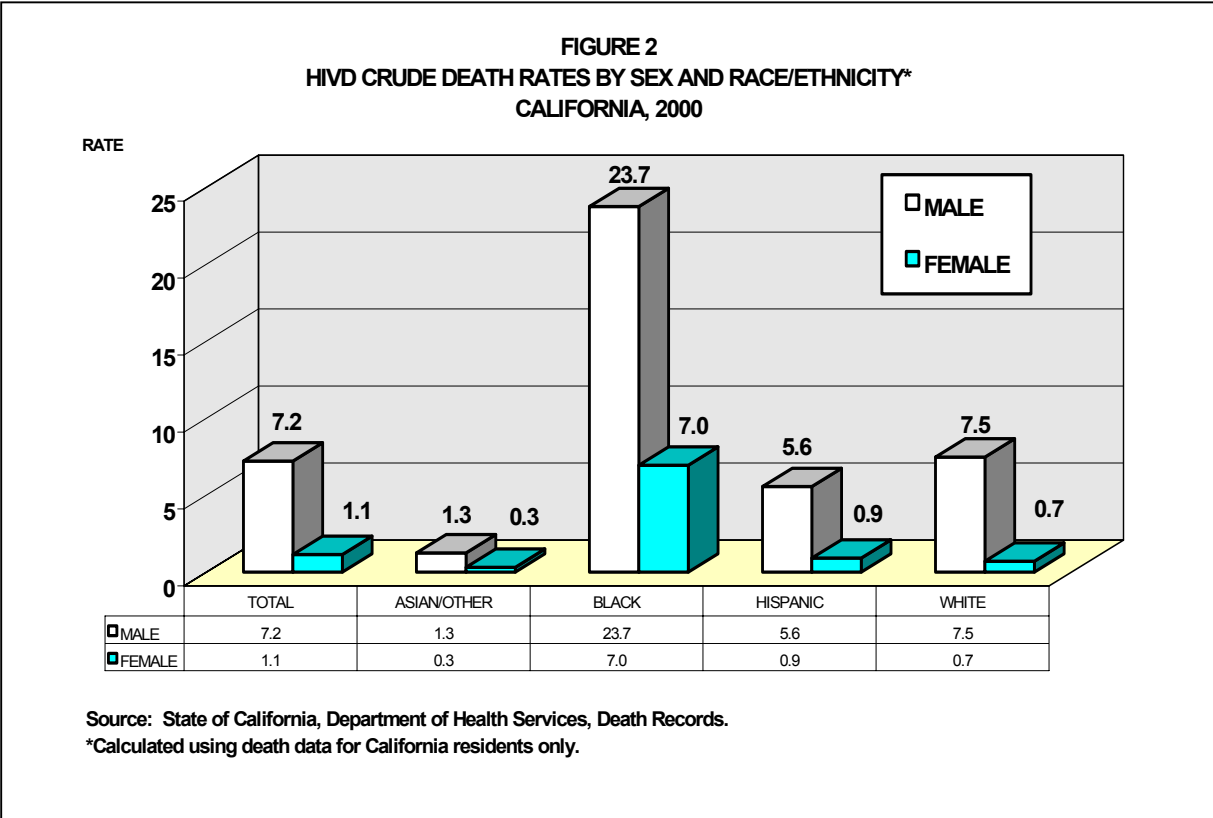
**Tables 1 and 2** (pages 9 and 10) show that among each of the major race/ethnic groups, HIVD deaths were significantly higher for males than for females in both 1999 and 2000.

**HIVD Crude Death Rates**

**Table 1** (page 9) shows California's HIVD crude death rate in 2000 was 4.2 per 100,000 population, which represented an 8.7 percent decrease from the 1999 crude death rate of 4.6, as shown in **Table 2** (page 10). The difference in crude death rates from 1999 to 2000 was statistically significant.

California's crude death rates among males and females declined in 2000 from their prior year rates. The crude death rate among males declined 8.9 percent from 7.9 to 7.2 per 100,000 population, and among females the rate declined 8.3 percent from 1.2 to 1.1.

As shown in **Table 1** (page 9), Blacks had the highest crude death rate (15.3), followed by Whites (4.1), Hispanics (3.3), and Asian/Other (0.8). The Black death rate was significantly higher than all other race/ethnic groups. In 2000, each of the race/ethnic groups had lower crude death rates than those reported for 1999 (**Table 2**).

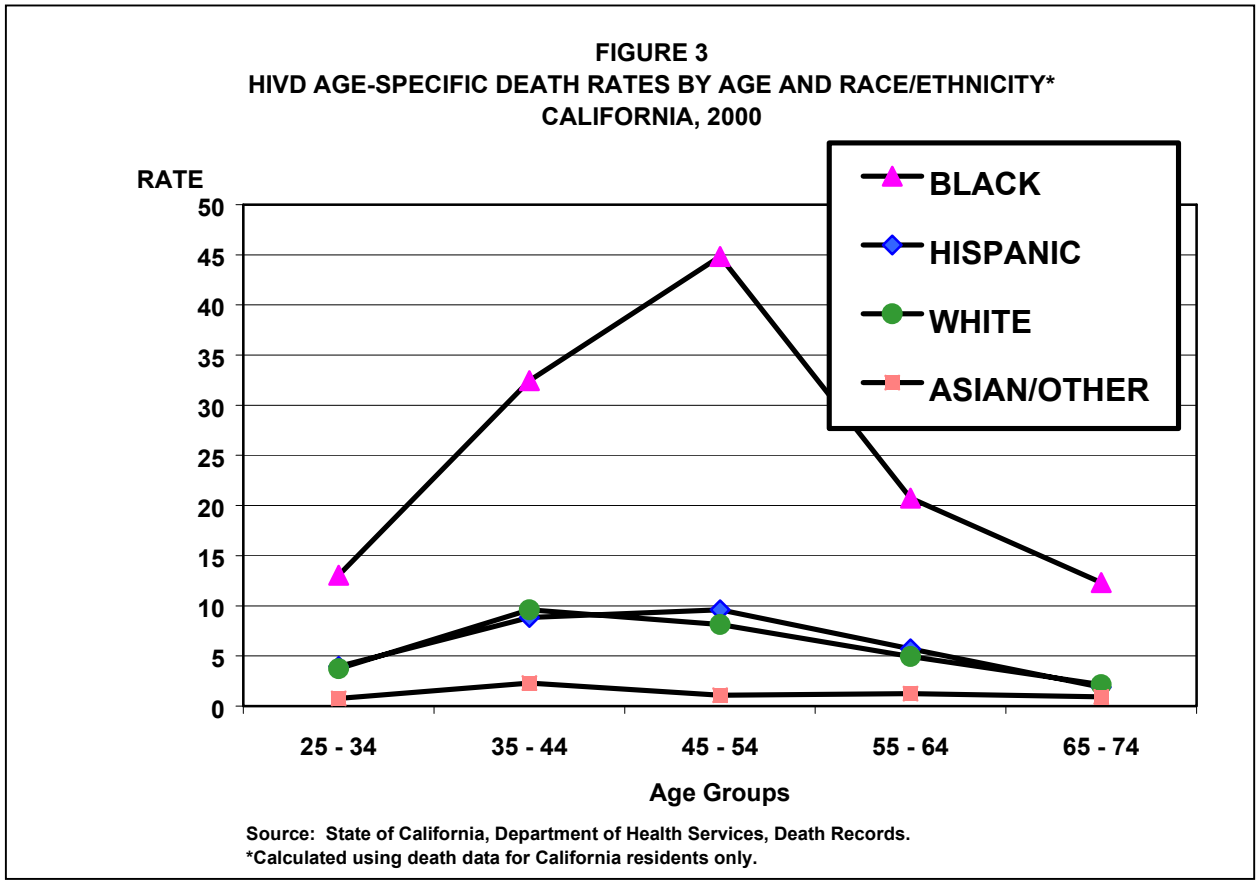


See the Vital Statistics Query System (VSQ) at our Web site [www.dhs.ca.gov/hisp/Applications/vsq/vsq.cfm](http://www.dhs.ca.gov/hisp/Applications/vsq/vsq.cfm) to create your own vital statistics tables.

**Figure 2** (page 3) shows that among males, Blacks had the highest crude death rate (23.7 per 100,000 population) in 2000, followed by White males (7.5), Hispanic males (5.6), and Asian/Other males (1.3). Among females, Blacks had the highest crude death rate (7.0), followed by Hispanics (0.9), and Whites (0.7). The crude death rate for Asian/Other females was not reliable. Overall, males had significantly higher crude death rates than females for each of the race/ethnic groups in both 1999 and 2000.

**HIVD Age-Specific Death Rates**

As shown in **Table 1** (page 9), male reliable age-specific death rates were higher than rates for females overall and for each race/ethnic group. Among California residents, males experienced the highest age-specific death rates in the 45 to 54 age group (17.6). Females in the 35 to 44 age group had the highest age-specific death rates due to HIVD (2.7). In 1999, the highest age-specific death rates among males and females occurred in the 35 to 44 age group at 19.0 and 3.3 respectively (**Table 2**).



**Figure 3** shows the age-specific death rates for 2000 by race/ethnicity and age group. Blacks had the highest rates in all age groups shown (25 to 74 years old). Among the race/ethnic groups with reliable rates, Hispanics had the second highest rate (9.6) in the 45 to 54 age group. Whites had the second highest rate (9.6) in the 35 to 44 age group. None of the Asian/Other age-specific rates were reliable.

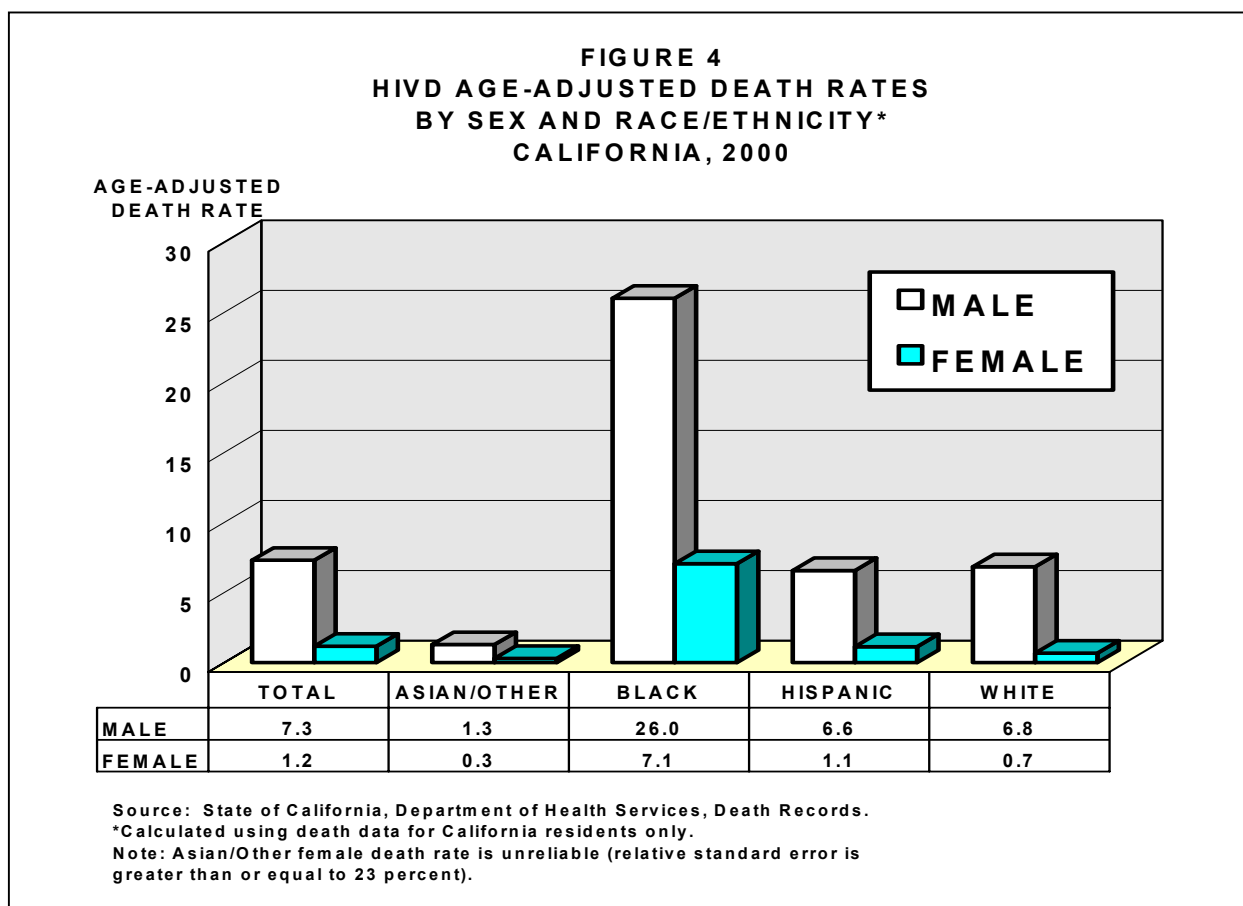
**Table 2** (page 10) shows in 1999 the highest age-specific death rates among Blacks occurred in the 45 to 54 age group; Hispanics and Whites had the highest age specific rates in the 35 to 44 age group. As in 2000, none of the Asian/Other age specific rates were reliable.

## HIVD Age-Adjusted Death Rates

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)

As shown in **Table 1** (page 9), California's age-adjusted death rate in 2000 was 4.3 per 100,000 population, which was lower than the 1999 rate of 4.6, **Table 2** (page 10). In 1999 and 2000, California did not meet the Healthy People 2010 National Health Objective of reducing the number of HIVD deaths in the United States to an age-adjusted death rate of no more than 0.7 per 100,000 population.<sup>4</sup>

In 2000, California's age-adjusted death rate (4.3) fell 6.5 percent from the 1999 rate of 4.6. The male age-adjusted death rate of 7.3 per 100,000 population declined 7.6 percent from the 1999 rate of 7.9. Among females, the age-adjusted death rate also declined 7.7 percent from 1.3 deaths per 100,000 female population in 1999 to an age-adjusted death rate of 1.2 in 2000. In 2000, the male age-adjusted HIVD death rate was significantly higher, 6.1 times greater than the rate for females.



Among the major race/ethnic groups in 2000, Blacks had the highest age-adjusted death rate (16.1) per 100,000 population, followed by Whites (3.8), Hispanics (4.0), and Asian/Other (0.8). From 1999 to 2000, the age-adjusted death rates decreased for all the major race/ethnic groups except for the Hispanic rate, which remained the same at 4.0 for both years.

**Figure 4** shows age-adjusted death rates by race/ethnicity and sex. In 2000, the age-adjusted death rates among males were significantly higher for Blacks, Hispanics, and Whites compared to their female counterparts. The male age-adjusted death rates

<sup>4</sup>U.S. Department of Health and Human Services. *Healthy People 2010 Objectives* (Second Edition, in Two Volumes). Washington, D.C., January 2001.

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

among Asian/Other was 4.3 times higher than the female rate, among Blacks 3.7 times higher, Hispanics 6.0 times, and White males had a rate 9.7 times greater than the White female rate.

Black males had a significantly higher age-adjusted death rate (26.0) than males in all other race/ethnic groups. Among females, the age-adjusted death rate for Blacks (7.1) was significantly greater than the rates for females in all other race/ethnic groups, though the rate for Asian/Other females was unreliable.

In 2000, the age-adjusted death rate for Black males increased 2.0 percent from 1999. The age-adjusted rate for Asian/Other males decreased 18.8 percent, the Hispanic rate decreased 2.9 percent, and the White rate decreased 10.5 percent. Age-adjusted death rates for each race/ethnic group among females changed from 1999 rates as follows: Blacks decreased 10.1 percent, Whites decreased 12.5 percent and Hispanics increased 22.2 percent. The age-adjusted rate for Asian/Other females was not reliable for either year.

**HIVD Death Rates for California Counties**

Table 3 (page 11) shows the number of HIVD deaths averaged over a two-year period from 1999 to 2000 with crude and age-adjusted death rates for California's 58 counties.

The highest average number of deaths occurred in Los Angeles County (543.5), followed by San Francisco County (198.0), and San Diego County (134.0).

Among the 17 counties with reliable crude death rates, San Francisco County had the highest rate (25.1), followed by Alameda County (6.1 HIVD deaths per 100,000 population). San Mateo County had the lowest reliable crude rate at 1.8.

Among the 17 counties with reliable age-adjusted death rates, San Francisco County had the highest age-adjusted rate at 21.9 per 100,000 population, which was 12.9 times higher than the lowest rate of 1.7, occurring in San Mateo County.

The Healthy People 2010 National Objective to reduce HIVD deaths to an age-adjusted rate of no more than 0.7 deaths per 100,000 was met by six counties (none with reliable age-adjusted death rates). California as a whole did not meet the objective with an average age-adjusted death rate of 4.5 for the two-year period.

**HIVD Deaths among the Three City Health Jurisdictions**

Table 4 shows the two-year average (1999-2000) number of HIVD deaths and crude death rates for California's three city health jurisdictions. Age-adjusted death rates were

**TABLE 4  
DEATHS DUE TO HIVD  
AMONG THE CITY HEALTH JURISDICTIONS\*  
CALIFORNIA, 1999-2000**

CITY HEALTH JURISDICTION	NUMBER OF DEATHS (Average)	1999 POPULATION	CRUDE DEATH RATE
BERKELEY	6.0	103,500	5.8 **
LONG BEACH	52.0	467,400	11.1
PASADENA	11.5	135,500	8.5 **

Notes: Rates are per 100,000 population; ICD-10 codes B20-B24.  
 \*Calculated using death data for California residents only.  
 \*\*Death rate unreliable (relative standard error is greater than or equal to 23 percent).  
 Sources: 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.

not calculated for city health jurisdictions because city population data by age are not available.

Long Beach had the highest average number of deaths (52.0), followed by Pasadena (11.5), and Berkeley (6.0). The crude death rates were 5.8 per 100,000 population for Berkeley, 11.1 for Long Beach, and 8.5 for Pasadena. However, the rates for Berkeley and Pasadena were not reliable.

## 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, crude rates 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 population standard is used as the basis for age-adjustments in this report.

## Data Limitations and Qualifications

The HIVD death data presented in this report are based on vital statistics records with ICD-10 codes B20-B24 as defined by the National Center for Health Statistics.<sup>3</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>5</sup> Cause of death for 1979 through 1998 was coded using 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 **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.

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<sup>5</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 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>

Beginning in 2000, federal race/ethnicity reporting guidelines changed to allow the reporting of up to three races on death certificates. The race/ethnic groups in this report were tabulated based on the first listed race on those certificates for which more than one race was listed. Race groups for 2000 are therefore not strictly compatible with prior years and trends should be viewed with caution.

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>7</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 4** (page 6) differ from the population data used to calculate the crude rates in **Table 3** (page 11). Consequently, caution should be exercised when comparing the crude rates among the three health jurisdictions with the rates among the 58 California counties. Age-adjusted rates for city 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>8</sup> Formulas used to calculate death rates are included in the technical notes of the “County Health Status Profiles” report.<sup>9</sup>

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<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.

<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.

<sup>8</sup>Riedmiller K, Ficenc S, Bindra K, Christensen J. *Vital Statistics of California, 1999*. Center for Health Statistics, California Department of Health Services, April 2001.

<sup>9</sup>Schmidt C. *County Health Status Profiles 2002*. Center for Health Statistics, California Department of Health Services, April 2002.







**TABLE 3  
DEATHS DUE TO HIVD  
CALIFORNIA COUNTIES, 1999-2000  
(By Place of Residence)**

COUNTY	DEATHS 1999-2000	1999-2000 DEATHS (AVERAGE)	PERCENT	1999 POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS	
							LOWER	UPPER
CALIFORNIA	3,011	1,505.5	100.0	32,956,695	4.4	4.5	4.2	4.7
ALAMEDA	176	88.0	5.8	1,398,421	6.1	5.7	4.5	6.9
ALPINE	0	0.0	0.0	1,174	0.0 +	0.0 +	-	-
AMADOR	1	0.5	a	33,472	1.5 *	1.1 *	0.0	4.3
BUTTE	7	3.5	0.2	198,459	1.7 *	1.6 *	0.0	3.4
CALAVERAS	3	1.5	0.1	37,916	3.7 *	4.4 *	0.0	11.5
COLUSA	1	0.5	a	18,530	2.5 *	2.5 *	0.0	9.6
CONTRA COSTA	68	34.0	2.3	896,206	3.7	3.5	2.3	4.7
DEL NORTE	0	0.0	0.0	28,413	0.0 +	0.0 +	-	-
EL DORADO	5	2.5	0.2	147,409	1.6 *	1.6 *	0.0	3.5
FRESNO	61	30.5	2.0	778,674	3.8	4.2	2.7	5.7
GLENN	1	0.5	a	26,856	1.8 *	2.0 *	0.0	7.6
HUMBOLDT	10	5.0	0.3	126,137	3.9 *	4.0 *	0.5	7.5
IMPERIAL	9	4.5	0.3	142,759	3.0 *	3.7 *	0.2	7.1
INYO	0	0.0	0.0	18,272	0.0 +	0.0 +	-	-
KERN	27	13.5	0.9	634,404	2.0	2.2	1.0	3.4
KINGS	10	5.0	0.3	117,793	4.0 *	4.2 *	0.4	8.0
LAKE	6	3.0	0.2	55,047	5.1 *	6.4 *	0.0	13.8
LASSEN	1	0.5	a	33,861	1.4 *	1.6 *	0.0	6.0
LOS ANGELES	1,087	543.5	36.1	9,524,613	5.6	5.6	5.1	6.1
MADERA	8	4.0	0.3	113,525	3.3 *	3.6 *	0.0	7.2
MARIN	17	8.5	0.6	243,214	3.4 *	3.1 *	1.0	5.3
MARIPOSA	0	0.0	0.0	15,957	0.0 +	0.0 +	-	-
MENDOCINO	2	1.0	0.1	85,966	1.1 *	1.1 *	0.0	3.4
MERCED	12	6.0	0.4	201,905	2.8 *	3.1 *	0.6	5.6
MODOC	1	0.5	a	10,140	4.8 *	6.3 *	0.0	23.7
MONO	1	0.5	a	10,140	4.7 *	3.6 *	0.0	13.7
MONTEREY	17	8.5	0.6	377,744	2.2 *	2.2 *	0.7	3.7
NAPA	8	4.0	0.3	121,239	3.2 *	3.3 *	0.1	6.5
NEVADA	3	1.5	0.1	88,356	1.6 *	1.3 *	0.0	3.5
ORANGE	119	59.5	4.0	2,705,313	2.1	2.1	1.5	2.6
PLACER	8	4.0	0.3	215,634	1.7 *	1.7 *	0.0	3.5
PLUMAS	1	0.5	a	20,402	2.4 *	1.5 *	0.0	5.6
RIVERSIDE	145	72.5	4.8	1,423,699	4.8	5.2	4.0	6.4
SACRAMENTO	104	52.0	3.5	1,146,825	4.4	4.3	3.1	5.5
SAN BENITO	2	1.0	0.1	46,121	2.0 *	2.0 *	0.0	6.0
SAN BERNARDINO	106	53.0	3.5	1,617,262	3.1	3.3	2.4	4.1
SAN DIEGO	268	134.0	8.9	2,763,401	4.6	5.2	4.3	6.1
SAN FRANCISCO	396	198.0	13.2	777,368	25.1	21.9	18.9	25.0
SAN JOAQUIN	25	12.5	0.8	542,196	2.2	2.4	1.1	3.7
SAN LUIS OBISPO	7	3.5	0.2	234,813	1.4 *	1.6 *	0.0	3.2
SAN MATEO	27	13.5	0.9	711,699	1.8	1.7	0.8	2.6
SANTA BARBARA	11	5.5	0.4	400,751	1.3 *	1.4 *	0.2	2.5
SANTA CLARA	67	33.5	2.2	1,671,414	1.9	1.8	1.2	2.4
SANTA CRUZ	21	10.5	0.7	247,216	4.1 *	3.9 *	1.5	6.2
SHASTA	6	3.0	0.2	163,351	1.8 *	1.9 *	0.0	4.1
SIERRA	0	0.0	0.0	3,406	0.0 +	0.0 +	-	-
SISKIYOU	0	0.0	0.0	44,186	0.0 +	0.0 +	-	-
SOLANO	39	19.5	1.3	378,664	5.0	4.9	2.7	7.1
SONOMA	35	17.5	1.2	432,771	3.9	3.7	2.0	5.4
STANISLAUS	18	9.0	0.6	425,407	2.0 *	2.2 *	0.7	3.6
SUTTER	6	3.0	0.2	76,004	3.8 *	4.0 *	0.0	8.6
TEHAMA	2	1.0	0.1	54,702	1.8 *	1.9 *	0.0	5.6
TRINITY	1	0.5	a	13,230	3.7 *	5.2 *	0.0	19.5
TULARE	9	4.5	0.3	358,337	1.2 *	1.4 *	0.1	2.8
TUOLUMNE	4	2.0	0.1	52,280	3.7 *	3.8 *	0.0	9.2
VENTURA	31	15.5	1.0	727,154	2.1	2.1	1.0	3.1
YOLO	8	4.0	0.3	154,850	2.5 *	3.0 *	0.0	6.0
YUBA	3	1.5	0.1	61,246	2.4 *	2.9 *	0.0	7.5

Note: Rates are per 100,000 population; ICD-10 codes B20-B24.

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

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, 1999 Population Projections with Age, Sex and Race/Ethnic Detail, December 1998.  
State of California, Department of Health Services, Death Records.