



CENTER FOR HEALTH STATISTICS
DATA SUMMARY

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(October 2000)

**DIABETES DEATHS,
CALIFORNIA
1997- 1998**

Introduction

Diabetes is the seventh leading cause of death in the United States and contributes to more than 193,000 deaths each year. Currently, an estimated 10.3 million people in the United States have been diagnosed with diabetes and another 5.4 million people with diabetes remain undiagnosed.¹

Diabetes disproportionately affects minority populations and the elderly and its incidence is likely to increase as minority populations grow and the U.S. population becomes older. The human suffering caused by diabetes and its complications is tragic, while the economic cost to society is great. Diabetes can have a harmful effect on most of the organ systems in the human body; it is a frequent cause of end-stage renal disease, non-traumatic lower-extremity amputation, and a leading cause of blindness among working age adults. Persons with diabetes are at increased risk for ischemic heart disease, neuropathy, and stroke.

This report presents the most current data on diabetes deaths, and provides analysis of crude and age-adjusted death rates for California residents by sex, age, and race/ethnicity. This report contains data for the years 1997 and 1998, though its focus is on the 1998 data.

The definition of diabetes used in this report is based on the ICD-9 code 250 traditionally presented in the National Center for Health Statistics (NCHS) *Monthly Vital Statistics Report*.² In this Data Summary as in the previously mentioned NCHS report, diabetes related deaths are counted only when diabetes is the underlying cause of death. The United States Public Health Service has established a number

of health objectives pertaining to diabetes, which are published in *Healthy People 2000*.³ Since these objectives are based on both underlying and contributing causes of diabetes deaths rather than underlying cause only, California's progress in meeting the year 2000 national health objective for diabetes will not be addressed in this report. The Center for Health Statistics publication *Healthy California 2000: Midcourse Review, California's Experience in Achieving the National Health Promotion and Disease Prevention Objectives* is a reference for research related to the *Healthy People 2000* goals as they pertain to California.⁴

The method used to analyze vital statistics data is also 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, on the other hand, show the actual rate of dying in a given population, but the age composition of that population is not taken into consideration. Therefore, the use of age-adjusted death rates becomes the preferred method for measuring death rates over time, and for comparing death rates between race/ethnic groups, sex, and geographic areas. The 1940 United States (standard million) population was used as the basis for age-adjusting in this report.

Diabetes Deaths

Table 1 (page 6) displays diabetes death data for 1998 by race/ethnicity, age, and sex. Diabetes deaths occur predominantly among the older population, and this held true in 1998 with 74.2 percent of all diabetes deaths involving people 65 years and older. This age group, within each

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respective race/ethnic group, accounted for 78.4 percent of all diabetes deaths among Whites, 76.9 percent of deaths among Asian/Other, 67.0 percent of deaths among Hispanics, and 65.9 percent of deaths among Blacks. During 1998, the number of deaths attributed to diabetes was slightly higher among females (2,954) than among males (2,842).

As shown in **Figure 1**, the number of diabetes deaths among Whites (3,231) was higher than Hispanics (1,334), Blacks (698), and Asian/Other (533).

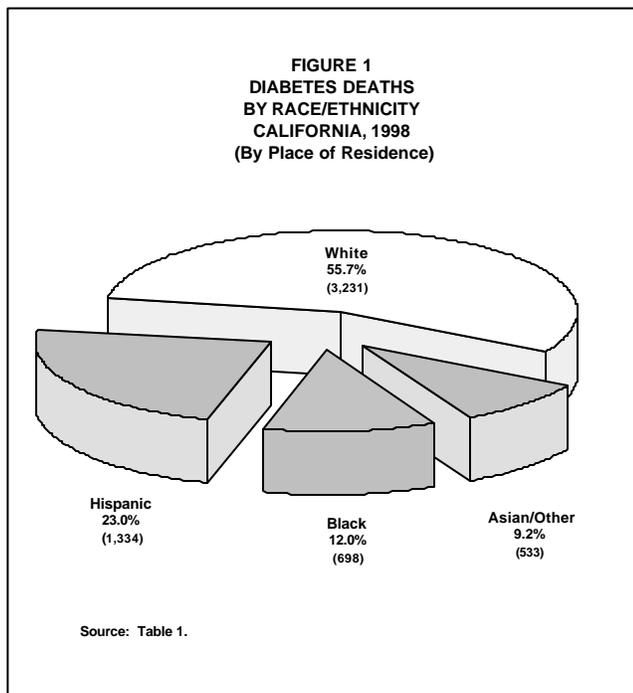


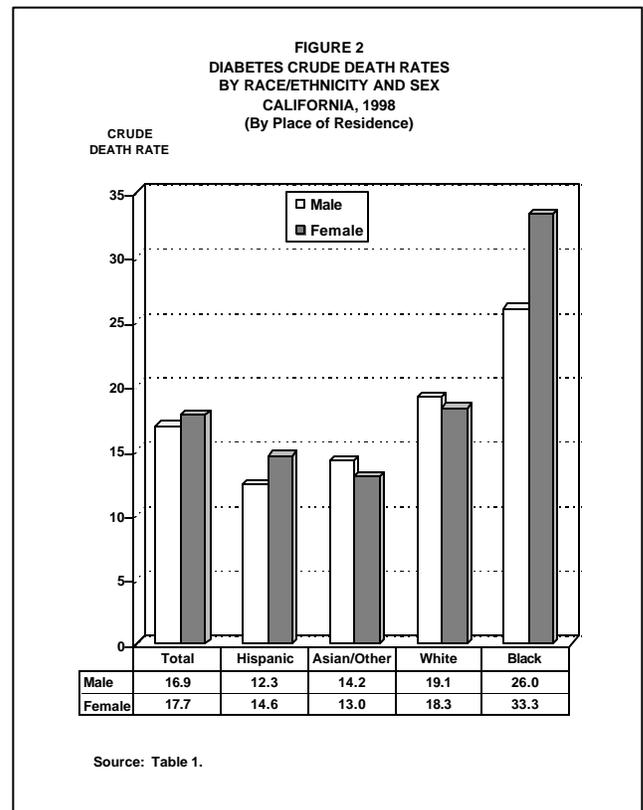
Table 2 (page 7) shows that the data for 1997 closely resembles the data for 1998 in both the overall numbers and their distribution among the race/ethnic groups and the sexes. Whites had the highest number of diabetes deaths (3,165), Hispanics were next (1,260), then Blacks (676), and Asian/Other (510). Females had a higher number of diabetes deaths (2,944) than males (2,667).

Diabetes Crude Death Rates

The diabetes crude death rate for California increased slightly from 17.0 deaths per 100,000 population in 1997 to 17.3 in 1998. As shown in **Table 1** (page 6), Blacks had the highest crude death rate in 1998, a rate of 29.7. Whites were next with a crude rate of 18.7, followed by

Asian/Other with a rate of 13.6 and Hispanics with a rate of 13.4. Each of these rates increased slightly from 1997 when Blacks had a diabetes crude death rate of 29.2, Whites had a rate of 18.4, Asian/Other had a rate of 13.5, and Hispanics had a rate of 13.1. None of the increases from 1997 to 1998 were statistically significant.

Figure 2 shows Black and Hispanic females had significantly higher diabetes crude death rates than males in the corresponding race/ethnic groups. Black females had a rate of 33.3 deaths per 100,000 population and Black males had a rate of 26.0. Hispanic females had a rate of 14.6 and Hispanic males had a rate of 12.3. Contrary to the findings for the other two race/ethnic groups, Asian/Other and White males had higher rates than females in their respective race/ethnic groups, although these differences were not statistically significant.

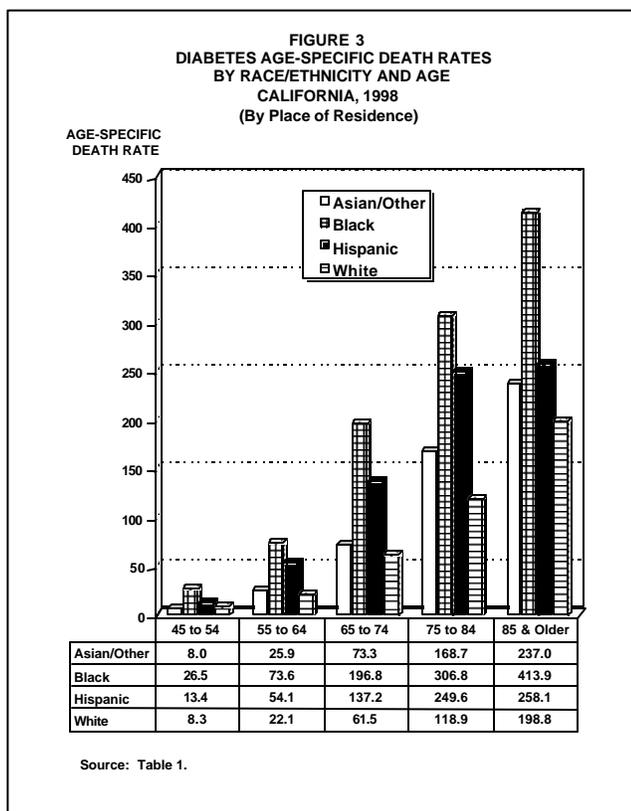


Diabetes Age-Specific Death Rates

In **Table 1** (page 6) reliable age-specific rates show that among the sexes in 1998, Asian/Other males consistently had higher rates than Asian/Other females. This was also true among

Whites where males consistently had higher rates. Both Black and Hispanic males had higher rates than females in their respective race/ethnic groups, except in the 75 to 84 age group where females had higher rates.

Figure 3 shows that in 1998, among the age groups with reliable rates, Blacks had higher diabetes age-specific death rates than the other three race/ethnic groups. Not shown in **Figure 3**, but displayed in **Table 1** (page 6), are the diabetes age-specific death rates for the 35 to 44 age group where Blacks had the highest rate and Hispanics and Whites had lower rates. The rate for Asian/Other was unreliable for this age group. Whites had the only reliable rate in the 25 to 34 age group.



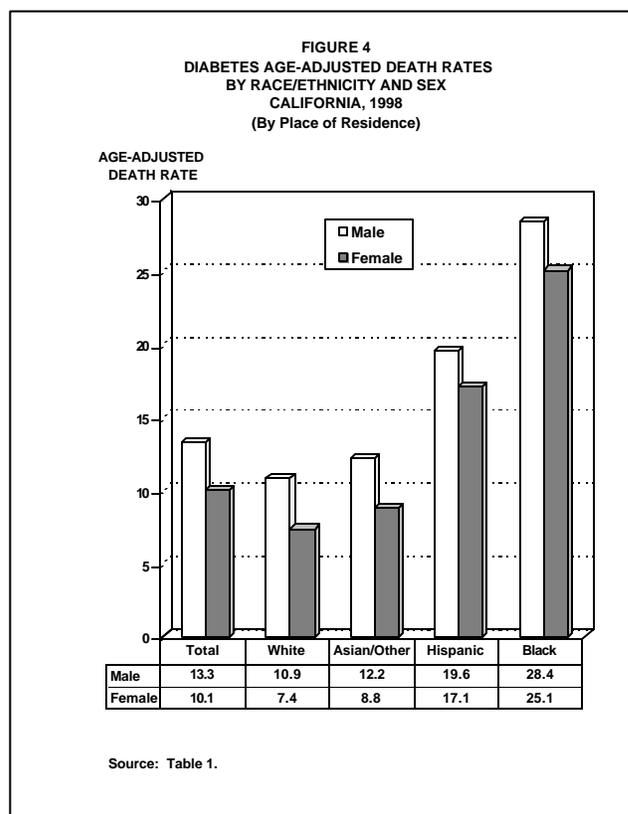
In **Table 2** (page 7) reliable age-specific rates show that among the sexes in 1997, White males consistently had higher rates than White females. Both Asian/Other and Hispanic males had higher rates than females in their respective race/ethnic groups, except in the 65 to 74 age group. Black males had higher rates than Black females except in the 55 to 64 age group.

Displayed in **Table 2** (page 7), the data for 1997 show that blacks had higher diabetes death rates than the other three race/ethnic groups except in the 25 to 34 age group where Whites had the only reliable rate.

Diabetes Age-Adjusted Death Rates

In 1998 the United States diabetes age-adjusted death rate (13.6 per 100,000 population) was higher than the California rate (11.6).⁵

Displayed in **Table 1** (page 6), a comparison among the race/ethnic groups shows that in 1998 Blacks (26.9) had an age-adjusted death rate significantly higher than Hispanics (18.3), Asian/Other (10.4), and Whites (9.0). As shown in **Table 2** (page 7), the data among the four race/ethnic groups is very similar for 1997. Blacks (26.9) had an age-adjusted death rate significantly higher than Hispanics (18.3), Asian/Other (10.5), and Whites (8.9).



As shown in **Figure 4**, in 1998 the diabetes age-adjusted death rate for males was higher than for females in all four of the race/ethnic groups. Black males (28.4) had a higher rate than Black females (25.1). This pattern was the same for

Hispanic males (19.6) and females (17.1), Asian/Other males (12.2) and females (8.8), and White males (10.9) and females (7.4). These differences were statistically significant for Asian/Other and Whites.

Table 2 (page 7) displays similar data for 1997 where Black males (27.6) had a higher diabetes age-adjusted death rate than Black females (26.5). This held true among Hispanic males (19.7) and females (17.1), Asian/Other males (11.0) and females (10.0), and White males (10.2) and females (8.0).

Diabetes Death Data for California Counties

Table 3 (page 8) displays the number of deaths, crude death rates, and age-adjusted death rates by county averaged over a three-year period, 1996 to 1998. This averaging is done to reduce the large fluctuations in the death rates that are inherent among counties with a small number of events and/or population.

The highest average number of diabetes deaths occurred in Los Angeles County (1,715.3) and the lowest in Alpine and Sierra Counties (0.3).

The highest reliable crude death rate was in Kings County (33.1 per 100,000 population), the lowest in Marin and Monterey Counties (10.7).

Table 3 (page 8) displays diabetes age-adjusted death rates where Kings County had the highest reliable rate (29.0 per 100,000 population) and Marin County had the lowest (5.0).

Diabetes Death Data by Local Health Jurisdiction

Table 4 displays the number of deaths and crude death rates for California's three local health jurisdictions averaged over a three-year period, 1996 to 1998.

The city of Long Beach had 70.0 diabetes deaths, Pasadena had 24.0 diabetes deaths, and Berkeley had 16.0 diabetes deaths.

Pasadena had a diabetes crude death rate of 17.3 deaths per 100,000 population, Long Beach had

a crude rate of 15.9, and Berkeley had a crude rate of 15.1.

Age-adjusted death rates were not calculated for the local health jurisdictions because city population estimates by age were not available.

TABLE 4
DEATHS DUE TO DIABETES
AMONG THE LOCAL HEALTH JURISDICTIONS
CALIFORNIA, 1996-1998
(By Place of Residence)

LOCAL HEALTH JURISDICTION	NUMBER OF DEATHS (Average)	1997 POPULATION	CRUDE DEATH RATE
BERKELEY	16.0	106,300	15.1
LONG BEACH	70.0	440,800	15.9
PASADENA	24.0	138,600	17.3

Note: Rates are per 100,000 population; ICD-9 code 250.

Source: State of California, Department of Finance, Report Hist E-4, 1997 Historical Estimates of California Cities and Counties, May 1999. State of California, Department of Health Services, Death records.

Notes:

The diabetes death data presented in this report is ICD-9 code 250.

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. Consequently, **Tables 2 and 3** present three-year annual average death data to increase the reliability of the data by county and local health jurisdiction. 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).

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.

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, Vietnamese, Other Pacific Islander, Samoan, Thai, and Laotian. 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.⁶

For a complete explanation of the age-adjusting methodology used in this report see the *Healthy People 2000 Statistical Notes* publication.⁷ Detailed information on data quality and limitations as well as the formulas used to calculate vital statistics rates are presented in the appendix of the annual report, *Vital Statistics of California*.⁸ Another source of information is the Department of Health Services, Center for Health Statistics Home Page [www.dhs.ca.gov/org/hisp/chs/chsindex.htm].

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