CENTER FOR HEALTH STATISTICS
DATA SUMMARY

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DIABETES DEATHS, CALIFORNIA, 1980-1996

Introduction

Diabetes is a complex, serious, costly, and increasingly common disease that disproportionately affects minority populations and the elderly. According to the Centers for Disease Control and Prevention *Diabetes Surveillance* report for 1997, the incidence of diabetes 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 considering that diabetes can have a harmful effect on most of the organ systems in the human body. It is the leading cause of end-stage renal disease, non-traumatic lower-extremity amputation, and blindness among working age adults. Persons with diabetes are at increased risk for ischemic heart disease, neuropathy, and stroke.[1] According to the California Diabetes Control Program, in 1992 the health care costs of diabetes in California were approximately 12 billion dollars.[2] In 1996 an estimated 1,078,800 adults in California were afflicted with diabetes.[3] Thus, diabetes poses an immense public health challenge in California.

This report focuses on trends in diabetes deaths during the period 1980 through 1996, and provides analysis of trend data on crude and age-adjusted death rates for California residents by sex, age, race/ethnicity, and county. 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*.[4] 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*.[5] 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* is a reference for research related to the *Healthy People 2000* goals as they pertain to California.[6]

Diabetes Deaths, Crude and Age-Adjusted Death Rates by Sex

As shown in **Table 1** (page 5), there was an increase of 106% in the total number of diabetes deaths from 1980 (2,616) to 1996 (5,380). During the time span covered by this report, the number of deaths attributed to diabetes was consistently higher among females than among males. The average number of deaths among females (1,930.7) was 25% higher than the average number of deaths among males (1,542.9) for the 17-year period.

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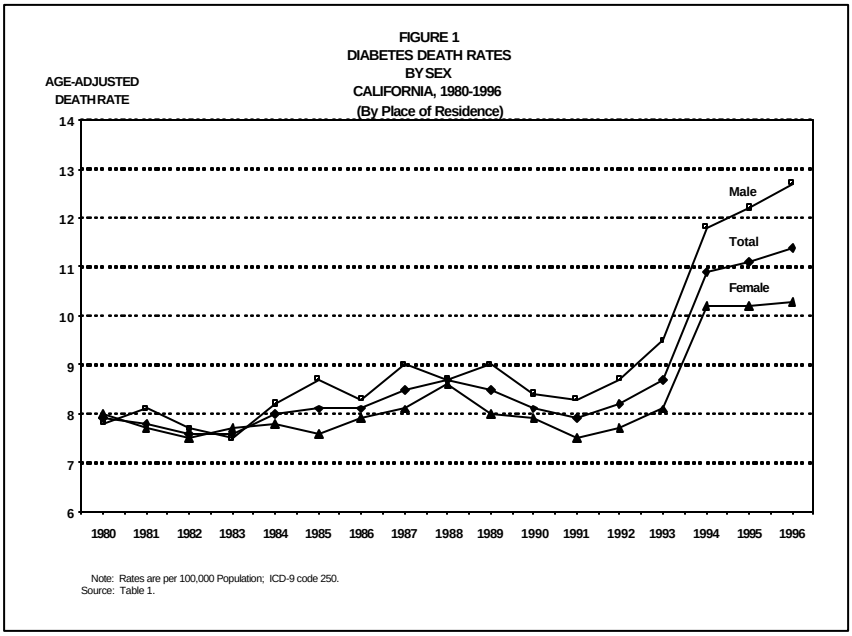
The overall crude death rate (**Table 1**) increased significantly during the time span of this report. Crude rates ranged from a low of 10.7 per 100,000 population in 1982 and 1983 up to a high of 16.6 in 1996, a 55% rise. Analysis of the data by sex shows that in 1980 the crude death rate for females (12.7) was significantly higher than for males (9.2), a difference of 38%. Though the difference was lower (10%) in 1996, the crude death rate for females (17.4) was still significantly higher than the crude death rate for males (15.8). From 1980 to 1996 the crude death rate increased 72% for males and 37% for females.

Crude death rates, as discussed above, show the actual rate of dying in a given population, but the age composition of that population is not taken into consideration. Comparing crude death rates could be misleading if one sex has a disproportionately older population since most deaths occur among older persons. Age-adjusted death rates eliminate the age differences that exist among population subgroups and allow a more direct comparison of their varying risks of mortality. For the purpose of comparing death rates between males and females, it is preferable to use age-adjusted death rates.

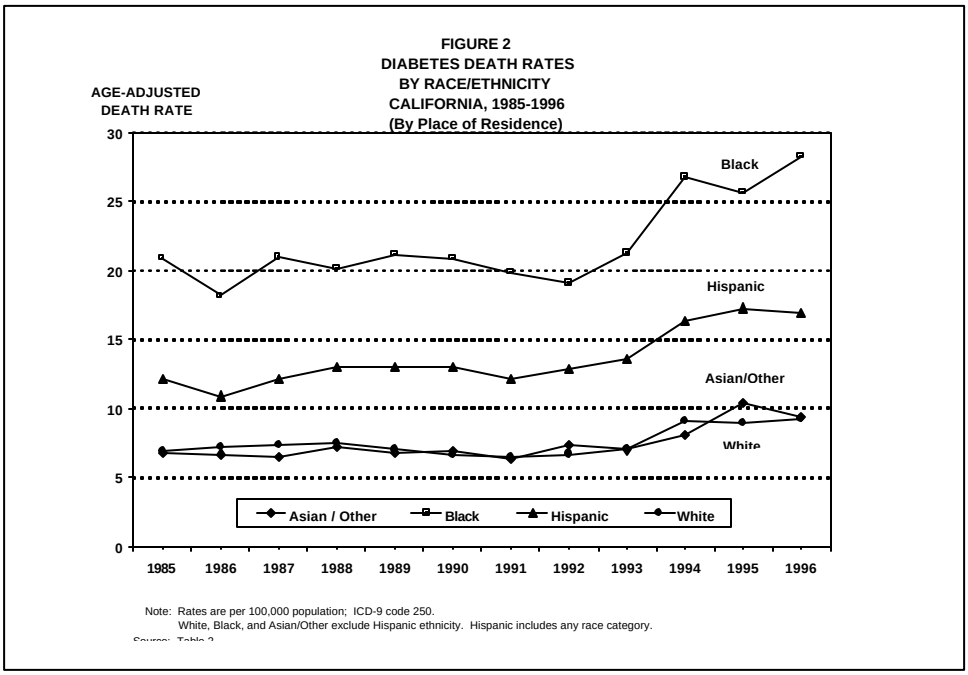
In 1996 the United States diabetes age-adjusted death rate (13.6) was significantly higher than the California rate (11.4).[7] As shown in **Figure 1**, California's age-adjusted death rate rose from 7.9 in 1980 to 11.4 in 1996, a 44% increase. Regression analysis showed this to be a statistically significant increase. Unlike the crude death rate comparison, after age-adjusting, male death rates were slightly higher than female death rates except in the years 1980 and 1983. Males had significantly higher rates in 1985, 1989, and 1992 through 1996. From 1980 to 1996 age-adjusted death rates rose 63% for males, from 7.8 in 1980 to 12.7 in 1996. Females experienced an increase of 29% in their age-adjusted death rate, from 8.0 in 1980 to 10.3 in 1996. These increases were statistically significant for both males and females.



Diabetes Deaths, Crude and Age-Adjusted Death Rates by Race/Ethnicity

Table 2 (page 6) shows diabetes death data by the four major race/ethnic groups from 1985 to 1996. During this period, the average number of diabetes deaths among Whites (2,384.9) was higher than Hispanics (697.4), Blacks (471.2), and Asian/Other (243.0).

Table 2 also shows that the crude death rate for Blacks increased by 56%, from 19.8 per 100,000 population in 1985 to 30.8 in 1996. The crude death rate for Whites increased by 46% from 12.6 in 1985 to 18.4 in 1996. For Hispanics the crude death rate increased by 63% from 7.3 in 1985 to 11.9 in 1996. Asian/Other showed the sharpest increase at 79%, with crude death rates of 6.3 in 1985 and 11.3 in 1996. These were all statistically significant increases. The highest crude death rate for Blacks (30.8) and Whites (18.4) occurred in 1996, for Asian/Other (12.3) in 1995, and for Hispanics (11.9) in both 1995 and 1996.

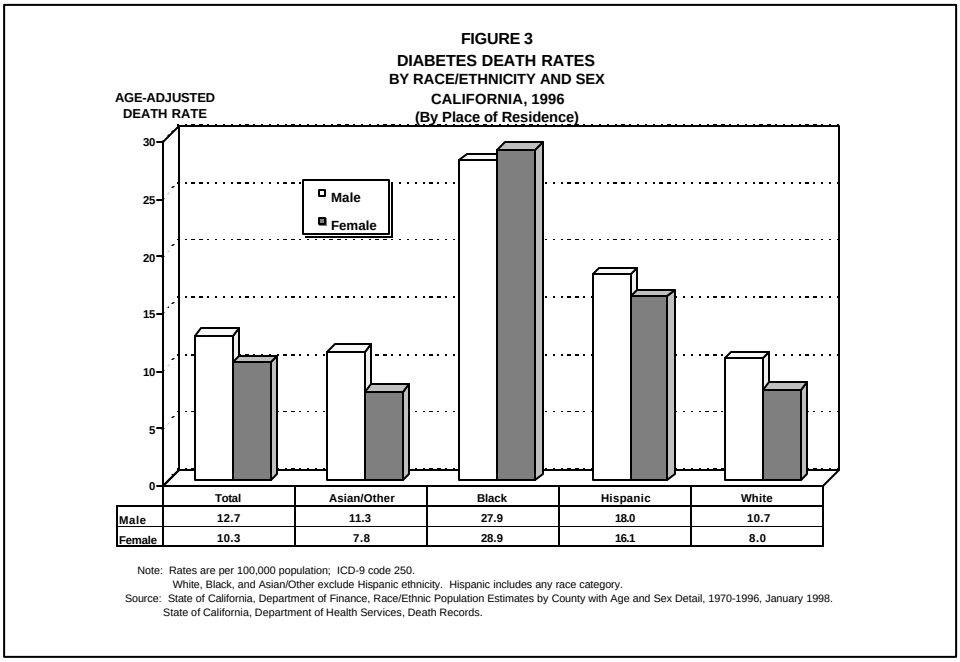


As illustrated in **Figure 2**, from 1985 to 1996 the age-adjusted death rates among all four race/ethnic groups increased by 33% or more. Regression analysis showed all of the increases to be statistically significant. The highest age-adjusted death rate for Blacks (28.3) and for Whites (9.2) occurred in 1996, for Hispanics (17.3) and for Asian/Other (10.4) it occurred in 1995. The lowest age-adjusted death rate for Blacks (18.2) and for Hispanics (10.9) occurred in 1986, for Asian/Other (6.4) and for Whites (6.5) it occurred in 1991. In all years, Blacks had significantly higher age-adjusted death rates than the other three race/ethnic groups. At its highest point in 1996, the Black age-adjusted death rate was 1.7 times higher than the Hispanic rate, three times higher than the Asian/Other rate, and 3.1 times higher than the White rate.

Diabetes Deaths and Death Rates by Age, Race/Ethnicity, and Sex, 1996

Table 3 (page 7) shows diabetes death data by the four major race/ethnic groups, by age group, and by sex for 1996. Diabetes deaths occur predominantly among the elderly and this held true in 1996 with 73% of these deaths involving people 65 years of age and older. Also shown in **Table 3**, the number of diabetes deaths among Whites (3,151) was higher than Hispanics (1,115), Blacks (701) or Asian/Other (413).

Figure 3 shows that Black females had the highest age-adjusted death rate (28.9) in 1996, which was 4% higher than the rate for Black males (27.9), though the difference between the two was not statistically significant. The rates for Black females and males were significantly higher than male and female rates in the other three race/ethnic groups. Hispanic males had a rate of 18.0, Asian/Other males had a rate of 11.3, and White males had a rate of 10.7. The male age-adjusted death rates in these three race/ethnic groups were higher by 12% or more, than the corresponding female rates. Hispanic females had a rate of 16.1, White females had a rate of 8.0, and Asian/Other females had a rate of 7.8.



In **Table 3** (page 7) reliable diabetes age-specific death rates show that males in the Asian/Other and White race/ethnic groups consistently had higher rates than females in the same age groups. Among Hispanics, males had higher age-specific rates than females except for the 85 and Older age group. Among Blacks, females had the highest age-specific rates in four of the six age groups with reliable rates. One notable pattern is the age-specific death rate among Blacks in 1996. Starting in the age group 35 to 44 and continuing through the age group 85 and Older, Blacks had significantly higher death rates than the other three race/ethnic groups.

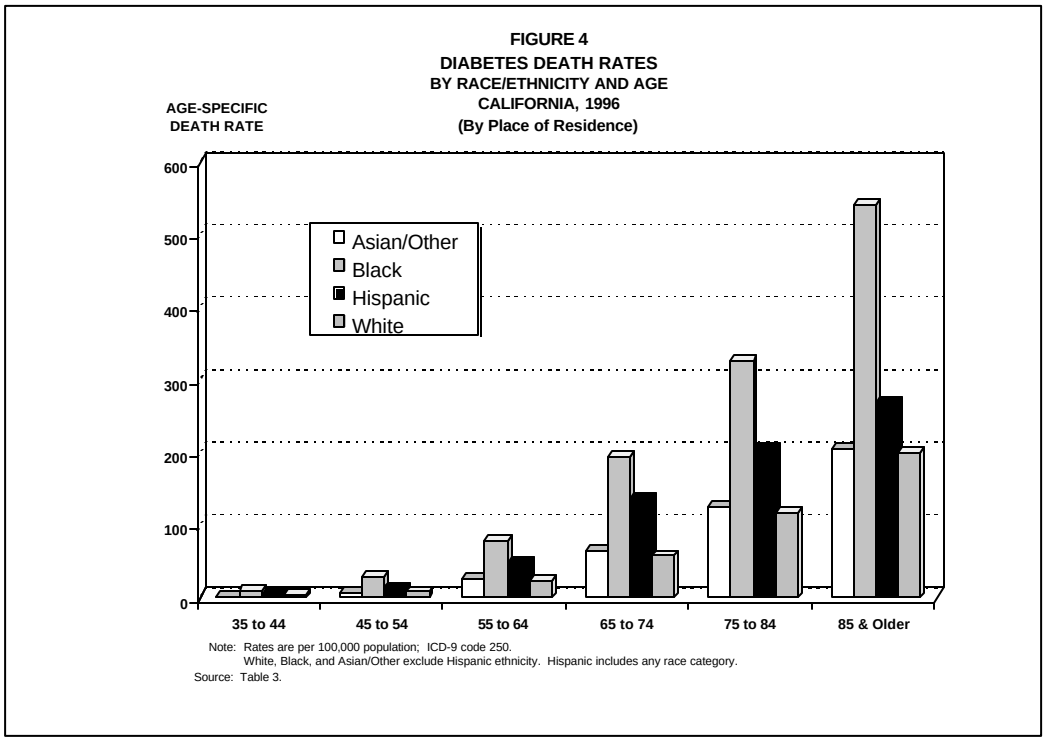


Figure 4 graphically shows the higher age-specific death rates for Blacks in the age group 35 to 44, through the age group 85 and Older. **Figure 4** also shows that Hispanics in the 45 to 54 through the 85 and Older age groups had the second highest age-specific death rates among the four race/ethnic groups. Whites had the lowest age-specific death rate in the age groups 55 to 64, 65 to 74, 75 to 84, and 85 and Older, though it was not significantly different from the Asian/Other rate.

Diabetes Death Rates among California Counties

Table 4 (page 8) displays the number of deaths, crude death rates, and age-adjusted death rates by county averaged over a three-year period, 1994 to 1996. 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 (1,537.0) and the lowest in Alpine County, which had no deaths due to diabetes.

The highest and lowest reliable crude death rates due to diabetes were in Glenn County (41.5 per 100,000 population) and Imperial County (8.7).

Kings County had the highest reliable age-adjusted death rate due to diabetes (24.6 per 100,000 population) and Marin County had the lowest (5.2).

TABLE 1
DEATHS DUE TO DIABETES
BY SEX
CALIFORNIA. 1980-1996
(By Place of Residence)

SEX	EVENT YEAR	DEATHS	POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS LOWER	UPPER
TOTAL							
	1996	5,380	32,383,811	16.6	11.4	11.1	11.7
	1995	5,096	32,062,912	15.9	11.1	10.8	11.4
	1994	4,918	31,790,557	15.5	10.9	10.6	11.3
	1993	3,831	31,515,753	12.2	8.7	8.4	9.0
	1992	3,559	31,186,559	11.4	8.2	7.9	8.5
	1991	3,308	30,563,276	10.8	7.9	7.6	8.1
	1990	3,378	29,942,397	11.3	8.1	7.8	8.4
	1989	3,364	29,142,106	11.5	8.5	8.2	8.8
	1988	3,416	28,393,094	12.0	8.7	8.4	9.0
	1987	3,283	27,716,860	11.8	8.5	8.2	8.8
	1986	3,028	27,052,291	11.2	8.1	7.8	8.4
	1985	2,997	26,402,633	11.4	8.1	7.8	8.5
	1984	2,886	25,816,294	11.2	8.0	7.7	8.3
	1983	2,700	25,336,301	10.7	7.6	7.3	7.9
	1982	2,655	24,805,011	10.7	7.6	7.3	7.9
	1981	2,636	24,277,674	10.9	7.8	7.5	8.1
	1980	2,616	23,780,068	11.0	7.9	7.5	8.2
MALE							
	1996	2,564	16,227,924	15.8	12.7	12.2	13.2
	1995	2,385	16,062,552	14.8	12.2	11.7	12.7
	1994	2,256	15,921,009	14.2	11.8	11.3	12.3
	1993	1,776	15,782,166	11.3	9.5	9.0	9.9
	1992	1,608	15,616,376	10.3	8.7	8.3	9.2
	1991	1,504	15,301,183	9.8	8.3	7.9	8.8
	1990	1,467	14,989,516	9.8	8.4	7.9	8.8
	1989	1,500	14,573,988	10.3	9.0	8.5	9.5
	1988	1,445	14,181,700	10.2	8.7	8.3	9.2
	1987	1,445	13,825,118	10.5	9.0	8.5	9.5
	1986	1,285	13,474,197	9.5	8.3	7.8	8.7
	1985	1,335	13,130,674	10.2	8.7	8.2	9.2
	1984	1,219	12,818,768	9.5	8.2	7.7	8.7
	1983	1,100	12,559,834	8.8	7.5	7.1	8.0
	1982	1,120	12,275,613	9.1	7.7	7.3	8.2
	1981	1,138	11,993,514	9.5	8.1	7.6	8.5
	1980	1,082	11,722,769	9.2	7.8	7.3	8.3
FEMALE							
	1996	2,816	16,155,887	17.4	10.3	9.9	10.8
	1995	2,711	16,000,360	16.9	10.2	9.8	10.7
	1994	2,662	15,869,548	16.8	10.2	9.8	10.7
	1993	2,055	15,733,587	13.1	8.1	7.7	8.4
	1992	1,951	15,570,183	12.5	7.7	7.3	8.1
	1991	1,804	15,262,093	11.8	7.5	7.1	7.9
	1990	1,911	14,952,881	12.8	7.9	7.5	8.3
	1989	1,864	14,568,118	12.8	8.0	7.6	8.4
	1988	1,971	14,211,394	13.9	8.6	8.2	9.0
	1987	1,838	13,891,742	13.2	8.1	7.7	8.6
	1986	1,743	13,578,094	12.8	7.9	7.5	8.3
	1985	1,662	13,271,959	12.5	7.6	7.2	8.0
	1984	1,667	12,997,526	12.8	7.8	7.4	8.2
	1983	1,600	12,776,467	12.5	7.7	7.3	8.2
	1982	1,535	12,529,398	12.3	7.5	7.0	7.9
	1981	1,498	12,284,160	12.2	7.7	7.2	8.1
	1980	1,534	12,057,299	12.7	8.0	7.5	8.4

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

Source : State of California, Department of Finance, Race/Ethnic Population Estimates by County with Age and Sex Detail, 1970-1996, January 199
State of California, Department of Health Services, Death Records.

TABLE 2
DEATHS DUE TO DIABETES
BY RACE/ETHNICITY
CALIFORNIA, 1985-1996
(By Place of Residence)

RACE/ ETHNICITY	EVENT YEAR	DEATHS	POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS LOWER	UPPER
ASIAN/OTHER							
	1996	413	3,645,998	11.3	9.4	8.4	10.3
	1995	434	3,530,931	12.3	10.4	9.4	11.4
	1994	327	3,429,125	9.5	8.1	7.2	9.0
	1993	263	3,323,013	7.9	7.0	6.1	7.8
	1992	261	3,209,399	8.1	7.3	6.4	8.2
	1991	204	3,068,424	6.6	6.4	5.5	7.3
	1990	211	2,930,570	7.2	6.9	6.0	7.9
	1989	188	2,774,167	6.8	6.8	5.8	7.8
	1988	182	2,616,586	7.0	7.2	6.1	8.2
	1987	151	2,465,134	6.1	6.5	5.4	7.5
	1986	147	2,313,141	6.4	6.7	5.6	7.8
	1985	135	2,158,886	6.3	6.8	5.7	8.0
BLACK							
	1996	701	2,275,401	30.8	28.3	26.2	30.5
	1995	600	2,250,502	26.7	25.7	23.5	27.8
	1994	625	2,232,841	28.0	26.8	24.7	29.0
	1993	481	2,214,376	21.7	21.3	19.3	23.3
	1992	420	2,192,451	19.2	19.1	17.2	21.0
	1991	426	2,147,691	19.8	19.9	18.0	21.9
	1990	435	2,105,207	20.7	20.9	18.9	22.9
	1989	430	2,061,823	20.9	21.2	19.2	23.3
	1988	403	2,024,779	19.9	20.2	18.2	22.3
	1987	408	1,992,361	20.5	21.0	18.9	23.0
	1986	344	1,958,844	17.6	18.2	16.2	20.2
	1985	381	1,923,209	19.8	20.9	18.8	23.1
HISPANIC							
	1996	1,115	9,330,740	11.9	17.0	16.0	18.0
	1995	1,085	9,100,994	11.9	17.3	16.3	18.4
	1994	970	8,882,966	10.9	16.4	15.4	17.5
	1993	757	8,658,118	8.7	13.6	12.6	14.6
	1992	689	8,421,133	8.2	12.9	11.9	13.9
	1991	607	8,097,870	7.5	12.1	11.1	13.0
	1990	626	7,774,789	8.1	13.0	11.9	14.0
	1989	591	7,419,574	8.0	13.0	11.9	14.0
	1988	559	7,077,579	7.9	13.0	11.9	14.2
	1987	494	6,754,398	7.3	12.1	11.0	13.2
	1986	431	6,428,436	6.7	10.9	9.8	11.9
	1985	445	6,103,662	7.3	12.2	11.0	13.3
WHITE							
	1996	3,151	17,131,672	18.4	9.2	8.8	9.6
	1995	2,977	17,180,485	17.3	8.9	8.5	9.3
	1994	2,996	17,245,625	17.4	9.1	8.7	9.4
	1993	2,330	17,320,246	13.5	7.1	6.8	7.4
	1992	2,189	17,363,576	12.6	6.7	6.4	7.0
	1991	2,071	17,249,291	12.0	6.5	6.2	6.8
	1990	2,106	17,131,831	12.3	6.6	6.3	6.9
	1989	2,155	16,886,542	12.8	7.0	6.7	7.4
	1988	2,272	16,674,150	13.6	7.5	7.1	7.8
	1987	2,230	16,504,967	13.5	7.4	7.0	7.7
	1986	2,106	16,351,870	12.9	7.2	6.9	7.5
	1985	2,036	16,216,876	12.6	6.9	6.6	7.3

Note : Rates are per 100,000 population. ICD-9 code 250.
White, Black, and Asian/Other exclude Hispanic ethnicity. Hispanic includes any race category.

Source : State of California, Department of Finance, Race/Ethnic Population Estimates by County with Age and Sex Detail, 1970-1996, January 1998.
State of California, Department of Health Services, Death Records.

TABLE 3
DEATHS DUE TO DIABETES
BY RACE/ETHNICITY, AGE, AND SEX
CALIFORNIA, 1996
(By Place of Residence)

RACE/ ETHNICITY	AGE GROUPS	1996 DEATHS			AGE-SPECIFIC DEATH RATE			95% CONFIDENCE LIMITS					
								TOTAL		MALE		FEMALE	
		TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER
TOTAL													
	Under 1	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	1 to 4	1	1	0	0.0 *	0.1 *	0.0 +	0.0	0.1	-0.1	0.3	-	-
	5 to 14	3	2	1	0.1 *	0.1 *	0.0 *	0.0	0.1	0.0	0.2	0.0	0.1
	15 to 24	11	8	3	0.3	0.4 *	0.1 *	0.1	0.4	0.1	0.6	0.0	0.3
	25 to 34	79	48	31	1.5	1.7	1.2	1.1	1.8	1.2	2.2	0.8	1.7
	35 to 44	202	111	91	3.7	4.0	3.4	3.2	4.3	3.3	4.8	2.7	4.1
	45 to 54	409	232	177	10.7	12.3	9.2	9.7	11.8	10.7	13.9	7.9	10.6
	55 to 64	766	396	370	32.5	34.5	30.5	30.2	34.8	31.1	37.9	27.4	33.6
	65 to 74	1,502	746	756	76.9	84.8	70.4	73.0	80.7	78.7	90.9	65.4	75.4
	75 to 84	1,579	733	846	135.9	157.4	121.6	129.2	142.6	146.0	168.8	113.4	129.7
	85 & Older	828	287	541	223.1	255.7	209.0	207.9	238.3	226.1	285.2	191.4	226.6
	Unknown	0	0	0									
	Total	5,380	2,564	2,816	16.6	15.8	17.4	16.2	17.1	15.2	16.4	16.8	18.1
ASIAN/OTHER													
	Under 1	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	1 to 4	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	5 to 14	1	1	0	0.2 *	0.3 *	0.0 +	-0.2	0.5	-0.3	1.0	-	-
	15 to 24	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	25 to 34	7	4	3	1.2 *	1.3 *	1.0 *	0.3	2.0	0.0	2.6	-0.1	2.1
	35 to 44	13	8	5	2.1	2.6 *	1.5 *	0.9	3.2	0.8	4.5	0.2	2.9
	45 to 54	29	16	13	6.6	7.7	5.6	4.2	9.0	3.9	11.5	2.6	8.7
	55 to 64	69	39	30	26.9	32.3	22.0	20.5	33.2	22.2	42.4	14.2	29.9
	65 to 74	124	67	57	65.8	81.9	53.4	54.2	77.4	62.3	101.5	39.5	67.3
	75 to 84	116	58	58	125.6	146.3	110.0	102.7	148.4	108.7	184.0	81.7	138.3
	85 & Older	54	25	29	205.0	222.6	192.0	150.4	259.7	135.3	309.9	122.1	261.9
	Unknown	0	0	0									
	Total	413	218	195	11.3	12.2	10.5	10.2	12.4	10.6	13.8	9.0	12.0
BLACK													
	Under 1	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	1 to 4	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	5 to 14	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	15 to 24	1	0	1	0.3 *	0.0 +	0.6 *	-0.3	0.9	-	-	-0.6	1.8
	25 to 34	13	7	6	3.3	3.4 *	3.1 *	1.5	5.1	0.9	6.0	0.6	5.6
	35 to 44	35	12	23	9.4	6.7	12.0	6.3	12.5	2.9	10.4	7.1	16.9
	45 to 54	72	35	37	29.7	30.7	28.8	22.8	36.5	20.5	40.8	19.5	38.0
	55 to 64	121	52	69	79.4	72.9	85.2	65.3	93.6	53.1	92.7	65.1	105.3
	65 to 74	199	79	120	194.7	181.0	205.0	167.7	221.8	141.1	220.9	168.3	241.7
	75 to 84	174	77	97	325.7	391.4	287.4	277.3	374.0	303.9	478.8	230.2	344.6
	85 & Older	86	24	62	541.5	514.0	552.9	427.0	655.9	308.4	719.7	415.3	690.5
	Unknown	0	0	0									
	Total	701	286	415	30.8	25.5	36.0	28.5	33.1	22.5	28.5	32.5	39.4
HISPANIC													
	Under 1	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	1 to 4	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	5 to 14	2	1	1	0.1 *	0.1 *	0.1 *	0.0	0.3	-0.1	0.3	-0.1	0.3
	15 to 24	6	4	2	0.4 *	0.5 *	0.3 *	0.1	0.8	0.0	1.1	-0.1	0.7
	25 to 34	12	7	5	0.7	0.7 *	0.6 *	0.3	1.0	0.2	1.2	0.1	1.2
	35 to 44	43	29	14	3.1	4.0	2.1	2.2	4.1	2.6	5.5	1.0	3.3
	45 to 54	105	69	36	14.0	18.3	9.7	11.4	16.7	14.0	22.7	6.5	12.9
	55 to 64	199	96	103	47.8	48.0	47.7	41.2	54.5	38.4	57.6	38.5	56.9
	65 to 74	380	178	202	135.7	140.8	131.5	122.0	149.3	120.1	161.5	113.3	149.6
	75 to 84	250	101	149	204.7	210.0	201.2	179.3	230.1	169.1	251.0	168.9	233.6
	85 & Older	118	39	79	267.6	252.4	275.8	219.3	315.8	173.2	331.6	214.9	336.6
	Unknown	0	0	0									
	Total	1,115	524	591	11.9	10.8	13.1	11.2	12.7	9.9	11.8	12.1	14.2
WHITE													
	Under 1	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	1 to 4	1	1	0	0.1 *	0.2 *	0.0 +	-0.1	0.4	-0.2	0.7	-	-
	5 to 14	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	15 to 24	4	4	0	0.2 *	0.4 *	0.0 +	0.0	0.4	0.0	0.8	-	-
	25 to 34	47	30	17	1.8	2.3	1.4	1.3	2.4	1.5	3.1	0.7	2.0
	35 to 44	111	62	49	3.7	4.0	3.3	3.0	4.4	3.0	5.0	2.4	4.2
	45 to 54	203	112	91	8.5	9.4	7.7	7.4	9.7	7.7	11.2	6.1	9.2
	55 to 64	377	209	168	24.6	27.7	21.5	22.1	27.0	23.9	31.4	18.3	24.8
	65 to 74	799	422	377	57.8	67.2	49.9	53.8	61.8	60.8	73.6	44.9	55.0
	75 to 84	1,039	497	542	116.3	138.7	101.2	109.2	123.3	126.5	150.9	92.7	109.8
	85 & Older	570	199	371	200.1	246.0	182.0	183.7	216.6	211.8	280.1	163.4	200.5
	Unknown	0	0	0									
	Total	3,151	1,536	1,615	18.4	18.1	18.7	17.8	19.0	17.2	19.0	17.8	19.6

Note : Rates are per 100,000 population. ICD-9 code 250.
White, Black, and Asian/Other exclude Hispanic ethnicity. Hispanic includes any race category.

* Death rate unreliable, relative standard error is greater than 30%.
\+ Standard error indeterminate, death rate based on no (zero) deaths.
\- Upper and lower limits at the 95% confidence level are indeterminate.

Source : State of California, Department of Finance, Race/Ethnic Population Estimates by County with Age and Sex Detail, 1970-1996, January 1998.
State of California, Department of Health Services, Death Records.

TABLE 4
DEATHS DUE TO DIABETES
BY COUNTY
CALIFORNIA. 1994-1996
(By Place of Residence)

COUNTY	1994-1996 DEATHS (Average)	PERCENT	1995 POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS LOWER	UPPER
CALIFORNIA	5,131.3	100.0	32,062,912	16.0	11.2	10.8	11.5
ALAMEDA	248.7	4.8	1,347,739	18.5	12.8	11.1	14.5
ALPINE	0.0	0.0	1,185	0.0 +	0.0 +	-	-
AMADOR	5.7	0.1	32,572	17.4 *	8.2 *	0.7	15.8
BUTTE	38.0	0.7	196,108	19.4	9.4	5.8	13.0
CALAVERAS	4.7	0.1	36,907	12.6 *	4.8 *	0.1	9.5
COLUSA	2.7	0.1	17,799	15.0 *	9.2 *	-2.4	20.8
CONTRA COSTA	142.0	2.8	867,315	16.4	10.6	8.8	12.5
DEL NORTE	8.0	0.2	27,597	29.0 *	16.7 *	3.6	29.8
EL DORADO	19.7	0.4	144,158	13.6	8.3	4.2	12.4
FRESNO	158.3	3.1	754,045	21.0	15.3	12.6	17.9
GLENN	11.0	0.2	26,523	41.5	22.8	7.3	38.4
HUMBOLDT	34.3	0.7	124,481	27.6	16.6	10.5	22.8
IMPERIAL	12.0	0.2	137,445	8.7	7.2	2.8	11.6
INYO	4.0	0.1	18,571	21.5 *	8.6 *	-1.2	18.3
KERN	109.7	2.1	616,701	17.8	14.0	11.2	16.8
KINGS	31.3	0.6	114,902	27.3	24.6	15.3	33.9
LAKE	13.7	0.3	54,984	24.9	10.1	3.6	16.6
LASSEN	3.7	0.1	28,678	12.8 *	7.4 *	-0.9	15.6
LOS ANGELES	1,537.0	30.0	9,352,192	16.4	12.6	11.9	13.2
MADERA	26.7	0.5	106,429	25.1	16.8	9.8	23.8
MARIN	25.3	0.5	238,981	10.6	5.2	3.0	7.3
MARIPOSA	2.0	0.0 a	15,903	12.6 *	6.2 *	-5.6	18.0
MENDOCINO	17.0	0.3	84,269	20.2	10.3	4.7	15.9
MERCED	45.7	0.9	198,522	23.0	18.7	12.9	24.6
MODOC	2.0	0.0 a	10,064	19.9 *	8.3 *	-4.8	21.5
MONO	0.3	0.0 a	10,624	3.1 *	1.2 *	-2.9	5.3
MONTEREY	46.7	0.9	361,840	12.9	9.6	6.6	12.6
NAPA	22.3	0.4	117,735	19.0	9.5	4.9	14.1
NEVADA	10.3	0.2	86,506	11.9 *	5.2 *	1.4	9.0
ORANGE	316.3	6.2	2,614,851	12.1	9.0	8.0	10.1
PLACER	31.3	0.6	203,454	15.4	8.8	5.3	12.2
PLUMAS	1.3	0.0 a	20,484	6.5 *	2.6 *	-2.8	8.1
RIVERSIDE	194.0	3.8	1,370,338	14.2	8.9	7.5	10.3
SACRAMENTO	185.3	3.6	1,117,748	16.6	12.1	10.3	14.0
SAN BENITO	6.7	0.1	42,604	15.6 *	10.3 *	1.7	18.8
SAN BERNARDINO	300.7	5.9	1,581,620	19.0	16.0	14.1	18.0
SAN DIEGO	353.3	6.9	2,669,280	13.2	9.1	8.1	10.2
SAN FRANCISCO	115.3	2.2	751,532	15.3	7.5	5.9	9.0
SAN JOAQUIN	112.0	2.2	524,611	21.3	14.0	11.1	16.9
SAN LUIS OBISPO	31.0	0.6	228,401	13.6	6.1	3.5	8.7
SAN MATEO	94.7	1.8	689,731	13.7	7.8	6.1	9.5
SANTA BARBARA	52.3	1.0	391,425	13.4	7.6	5.3	9.9
SANTA CLARA	224.7	4.4	1,603,340	14.0	10.6	9.1	12.0
SANTA CRUZ	34.7	0.7	241,510	14.4	8.3	5.2	11.5
SHASTA	28.7	0.6	160,877	17.8	9.7	5.8	13.6
SIERRA	1.3	0.0 a	3,410	39.1 *	15.3 *	-12.6	43.3
SISKIYOU	8.3	0.2	44,616	18.7 *	8.3 *	1.8	14.9
SOLANO	52.3	1.0	370,556	14.1	12.0	8.6	15.3
SONOMA	62.0	1.2	419,459	14.8	7.9	5.6	10.1
STANISLAUS	77.3	1.5	413,806	18.7	13.8	10.4	17.1
SUTTER	11.3	0.2	73,721	15.4	9.8	3.6	16.0
TEHAMA	16.3	0.3	54,195	30.1	14.9	6.6	23.1
TRINITY	1.3	0.0 a	13,363	10.0 *	3.4 *	-2.5	9.4
TULARE	72.0	1.4	349,860	20.6	15.9	11.9	19.9
TUOLUMNE	9.3	0.2	51,516	18.1 *	6.3 *	2.0	10.6
VENTURA	124.0	2.4	712,762	17.4	11.6	9.4	13.8
YOLO	21.3	0.4	150,812	14.1	10.6	5.8	15.4
YUBA	9.3	0.2	62,255	15.0 *	12.7 *	4.3	21.2

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

* Death rate unreliable, relative standard error is greater than 30%.

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

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

\- Upper and lower limits at the 95% confidence level are indeterminate.

Source : State of California, Department of Finance, Race/Ethnic Population Estimates by County with Age and Sex Detail, 1970-1996, January 1998.
State of California, Department of Health Services, Death Records.

TABLE 5
POPULATION ESTIMATES
BY RACE/ETHNICITY. SEX. AND AGE
CALIFORNIA. 1996

RACE/ ETHNICITY	TOTAL	AGE GROUPS										
		Under 1	1 to 4	5 to 14	15 to 24	25 to 34	35 to 44	45 to 54	55 to 64	65 to 74	75 to 84	85 & Older
TOTAL	32,383,811	540,625	2,298,325	4,914,945	4,217,867	5,357,377	5,401,744	3,806,109	2,359,866	1,954,134	1,161,701	371,118
MALE	16,227,924	276,538	1,175,708	2,514,194	2,198,841	2,828,447	2,741,290	1,887,994	1,146,990	879,924	465,740	112,258
FEMALE	16,155,887	264,087	1,122,617	2,400,751	2,019,026	2,528,930	2,660,454	1,918,115	1,212,876	1,074,210	695,961	258,860
ASIAN/OTHER	3,645,998	60,717	254,397	564,354	533,767	599,056	631,504	438,067	256,917	188,491	92,392	26,336
MALE	1,791,148	31,247	131,069	288,489	274,693	301,165	303,109	207,939	120,782	81,782	39,642	11,231
FEMALE	1,854,850	29,470	123,328	275,865	259,074	297,891	328,395	230,128	136,135	106,709	52,750	15,105
BLACK	2,275,401	37,276	170,539	388,094	345,698	395,287	371,892	242,802	152,306	102,194	53,430	15,883
MALE	1,121,544	18,939	86,386	196,545	182,527	203,575	180,097	114,139	71,336	43,656	19,675	4,669
FEMALE	1,153,857	18,337	84,153	191,549	163,171	191,712	191,795	128,663	80,970	58,538	33,755	11,214
HISPANIC	9,330,740	252,617	1,034,656	1,816,510	1,436,639	1,808,376	1,372,005	747,447	416,154	280,103	122,130	44,103
MALE	4,830,901	128,626	527,237	925,990	749,483	1,012,882	720,340	376,227	200,126	126,447	48,089	15,454
FEMALE	4,499,839	123,991	507,419	890,520	687,156	795,494	651,665	371,220	216,028	153,656	74,041	28,649
WHITE	17,131,672	190,015	838,733	2,145,987	1,901,763	2,554,658	3,026,343	2,377,793	1,534,489	1,383,346	893,749	284,796
MALE	8,484,331	97,726	431,016	1,103,170	992,138	1,310,825	1,537,744	1,189,689	754,746	628,039	358,334	80,904
FEMALE	8,647,341	92,289	407,717	1,042,817	909,625	1,243,833	1,488,599	1,188,104	779,743	755,307	535,415	203,892

Note : White, Black, and Asian/Other exclude Hispanic ethnicity. Hispanic includes any race category.

Source : State of California, Department of Finance, Race/Ethnic Population Estimates with Age and Sex Detail, 1970-1996, January 1998.

Notes:

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

The term "significant" within the text indicates either statistically significant based on the slope of a least-squares line not equal to zero ($p<.05$) for regression analysis, or 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% 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 30% are indicated with an "*" (asterisk). Also, three-year averages were used in **Table 4** (page 8) to increase the reliability of the rates derived from small numbers, and to reduce the year-to-year variability inherent among these rates.

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. Race/ethnic data are not presented for years prior to 1985 due to the unavailability of mutually exclusive data for Hispanics and Whites. 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.[8]

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.

For a more complete explanation of the age-adjusting methodology see the *Healthy People 2000 Statistical Notes* publication.[9] 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*.[10] 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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