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DATA SUMMARY No. DS06-07002

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

Highlights

- **In 2004, 87.5 percent of all diabetes deaths in California occurred among people age 55 and older.**
- **The diabetes crude death rate for California was 19.6 deaths per 100,000 population in 2004.**
- **During 2004 the California diabetes age-adjusted death rate of 21.3 deaths per 100,000 population was lower than the U.S. rate of 24.4.**
- **In 2004 Blacks had the highest diabetes age-adjusted death rate at 42.8 deaths per 100,000 population.**

Diabetes Deaths in California, 2004

By Daniel H. Cox

Introduction

In 2004 diabetes was the reported underlying cause of death for 72,815 residents of the United States (U.S.) and the sixth leading cause death.[1] In California, diabetes ranked seventh and was the underlying cause of 7,119 deaths in 2004. In 2005, an estimated 20.8 million people in the U.S. had diabetes; 6.2 million of those people were undiagnosed.[2]

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 and 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. In economic terms, the direct medical expenditures attributable to diabetes in 2002 have been estimated at 91.8 billion dollars.[3]

The definition of diabetes used in this report is based on the International Classification of Diseases, Tenth Revision (ICD-10) codes E10-E14 currently presented in the National Center for Health Statistics (NCHS), National 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 U.S. Public Health Service has established a number of health objectives pertaining to diabetes, which are published in *Tracking Healthy People 2010 (HP2010)*.[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 HP 2010 national objective for diabetes will not be addressed in this report.

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[1] Miniño A, Heron M, Smith B. Deaths: Preliminary Data for 2004. Health E-Stats. April 2006.

[2] National Institute of Diabetes and Digestive and Kidney Diseases. National Diabetes Statistics Fact Sheet: General information and National Estimates on Diabetes in the United States, 2005. Bethesda, MD: U.S. DHHS, National Institute of Health, Publication No. 06-3892, November 2005.

[3] Hogan P, Dall T, Nikolov P. Economic Costs of Diabetes in the U.S. in 2002. American Diabetes Association, Diabetes Care, Volume 26, Number 3, March 2003.

[4] 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; Vol. 49, No. 3.

[5] U.S. Department of Health and Human Services. Tracking Healthy People 2010. Washington DC: U.S. Government Printing Office, November 2000.

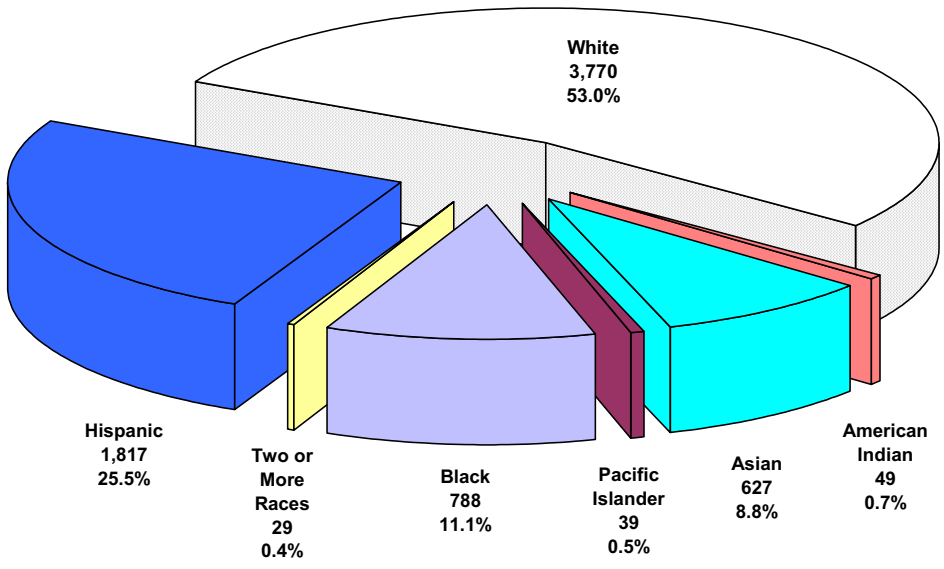
A brief overview of data limitations and qualifications is provided at the end of this report.

Diabetes Deaths

Table 1 (pages 10 and 11) displays California's diabetes death data for 2004 by race/ethnicity, age, and sex. Diabetes deaths occur predominantly in the older population, and this held true in 2004 with 87.5 percent of all diabetes deaths involving people in the age groups 55 years and older. These age groups, within each respective race/ethnic group, accounted for 91.4 percent of all diabetes deaths among Asians, 89.7 percent among Whites, 85.7 percent among Hispanics, 82.8 percent among Two or More Races, 79.3 percent among Blacks, 77.6 percent among American Indians, and 76.9 percent among Pacific Islanders. During 2004 the number of deaths attributed to diabetes was slightly higher for females (3,579) than for males (3,540).

As shown in **Figure 1**, the number of diabetes deaths among Whites (3,770) was higher than Hispanics (1,817), Blacks (788), Asians (627), American Indians (49), Pacific Islanders (39), and Two or More Races (29).

FIGURE 1
DIABETES DEATHS
BY RACE/ETHNICITY *
CALIFORNIA 2004



Source: State of California, Department of Health Services, Death Records.
* Calculated using death data for California residents only.

Diabetes Crude Death Rates

The diabetes crude death rate for California increased significantly from 18.2 deaths per 100,000 population in 2000 to 19.6 in 2004.[6] As shown in **Table 1** (pages 10 and 11), Blacks had the highest crude death rate in 2004, a rate of 32.5 that was followed closely by Pacific Islanders with a rate of 30.9. Whites were next with a crude rate of 23.6, followed by American Indians at 17.7, Asians at 15.5, Hispanics at 14.2, and

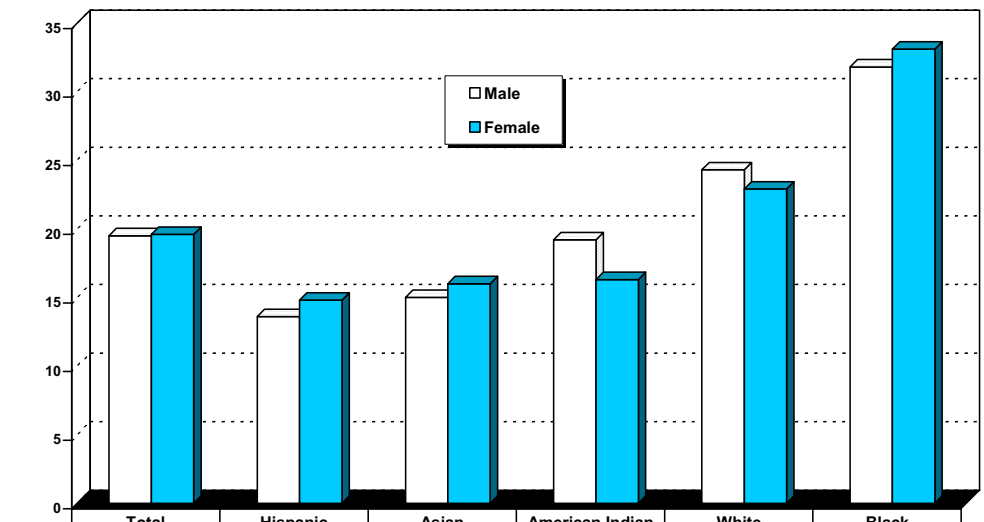
[6] Cox DH. Diabetes Deaths in California, 2000-2003. Data Summary No. DS05-07000. Center for Health Statistics, California Department of Health Services, July 2005.

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

Two or More Races at 4.0. Three of these seven rates increased from 2000 when Whites had a rate of 21.8, Hispanics had 13.1, and Asians had 12.1.[6] Two of the rates decreased from 2000 when Blacks had a diabetes crude death rate of 33.1 and American Indians had a rate of 19.2. The diabetes crude death rates for Pacific Islanders and Two or More Races were unreliable in 2000 so no comparison was made. The differences among Asians, Hispanics, and Whites from 2000 to 2004 were statistically significant.

Figure 2 shows Black, Asian, and Hispanic females had higher diabetes crude death rates than males in their corresponding race/ethnic groups. Black females had a rate of 33.1 deaths per 100,000 population, and Black males had a rate of 31.8. Asian females had a rate of 16.0 and Asian males had a rate of 15.0. Hispanic females had a rate of 14.8 and Hispanic males had a rate of 13.6. None of these differences were statistically significant. Contrary to the findings for the other three race/ethnic groups, American Indian males and White males had diabetes crude death rates that were higher than the rates for females in their corresponding race/ethnic groups. American Indian males had a rate of 19.2 deaths per 100,000 population, compared with the American Indian female rate of 16.3. White males had a rate of 24.3 compared with the White female rate of 22.9. Neither of these differences was statistically significant. In this comparison the rate for Pacific Islander males was unreliable, though it should be noted that Pacific Islander females had a reliable rate of 34.7 (**Table 1** pages 10 and 11) that was higher than the rate for females or males in any of the other race/ethnic groups. The rates for Pacific Islander and Two or More Races were not included in **Figure 2** because of unreliability.

FIGURE 2
DIABETES CRUDE DEATH RATES
BY RACE/ETHNICITY AND SEX *
CALIFORNIA 2004



	Total	Hispanic	Asian	American Indian	White	Black
Male	19.5	13.6	15.0	19.2	24.3	31.8
Female	19.6	14.8	16.0	16.3	22.9	33.1

Source: State of California, Department of Health Services, Death Records.
* Calculated using death data for California residents only.
Total includes Pacific Islander and Two or More Races, not shown individually due to unreliable rates.

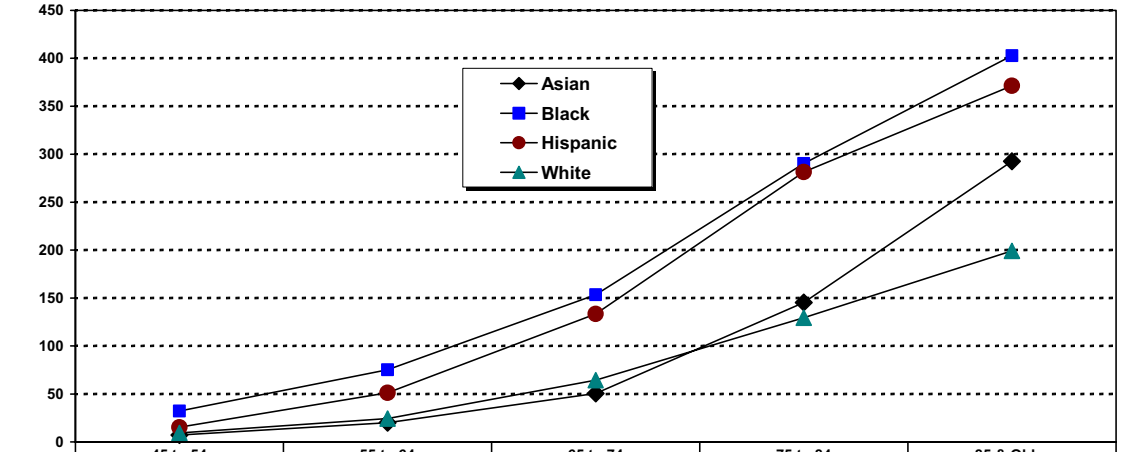
You can read more about crude and age-adjusted rates on the National Center for Health Statistics website at www.cdc.gov/nchs/

Diabetes Age-Specific Death Rates

In **Table 1** (pages 10 and 11), reliable age-specific rates show that among the sexes in 2004, males in the Asian, Black, Hispanic, and White race/ethnic groups consistently had higher diabetes death rates than females in their corresponding race/ethnic groups. The only exceptions to this finding were in the 85 and Older age group where Black females had a higher death rate than Black males and Hispanic females had a higher death rate than Hispanic males. The diabetes age-specific death rates for American Indian, Pacific Islander, and Two or More Races were not reliable in 2004.

Figure 3 shows that in 2004, among the age groups with reliable rates, Blacks had higher diabetes age-specific death rates than the other three race/ethnic groups. The age-specific differences between Blacks and the other race/ethnic groups were statistically significant except in the 65 to 74, 75 to 84, and 85 and Older age groups where the differences between Blacks and Hispanics were not significant.

FIGURE 3
DIABETES AGE-SPECIFIC DEATH RATES
BY RACE/ETHNICITY AND AGE *
CALIFORNIA 2004



	45 to 54	55 to 64	65 to 74	75 to 84	85 & Older
Asian	7.2	20.0	50.5	145.4	292.7
Black	32.2	75.3	153.4	290.4	402.8
Hispanic	15.3	51.2	133.5	281.5	371.4
White	9.2	24.4	64.4	129.5	199.2

Source: State of California, Department of Health Services, Death Records.
* Calculated using death data for California residents only.
Because of unreliability age-specific rates for American Indian, Pacific Islander, and Two or More Races were not included in Figure 3.

Not shown in **Figure 3**, but displayed in **Table 1** (pages 10 and 11) are the diabetes age-specific death rates for the 35 to 44 age group where Blacks had a significantly higher death rate than Whites or Hispanics. The rate for Asians was not reliable in the 35 to 44 age group. In the 25 to 34 age group Blacks had a significantly higher diabetes death rate than Whites. The rates for Asians and Hispanics were not reliable in the 25 to 34 age group. None of the age and race-specific rates in the age groups younger than 25 years old were reliable.

See the Vital Statistics Query System (VSQ) at our website www.applications.dhs.ca.gov/vsq/default.asp to create your own vital statistics tables.

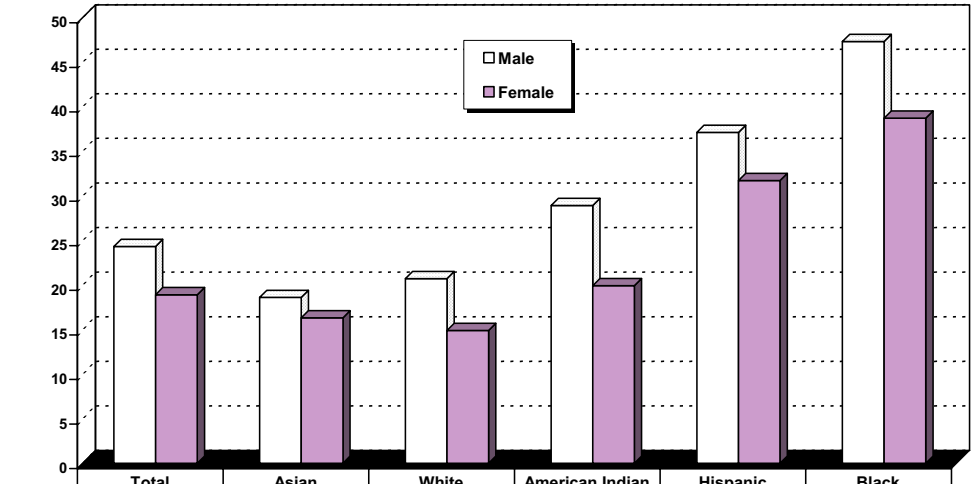
Diabetes Age-Adjusted Death Rates

In 2004 the California diabetes age-adjusted death rate of 21.3 deaths per 100,000 population was lower than the U.S. rate of 24.4.[1] The California rate increased slightly from 2000 when the diabetes age-adjusted death rate was 21.1, though this difference was not statistically significant.[6]

Displayed in **Table 1** (pages 10 and 11), a comparison among the race/ethnic groups shows that in 2004 Blacks had a diabetes age-adjusted death rate of 42.6, which was higher than the Pacific Islander rate of 42.4, Hispanic rate of 34.3, American Indian rate of 23.9, White rate of 17.5, Asian rate of 17.3, and Two or More Races rate of 7.7. Two of these seven rates increased from 2000 when Whites had a rate of 17.4 and Asians had a rate of 16.5. The age-adjusted death rates for Blacks, Hispanics, and American Indians decreased from 2000, when the rates were 46.6, 35.2, and 27.7 respectively. None of these differences were statistically significant. The age-adjusted death rates for Pacific Islanders and Two or More Races were not reliable in 2000 so no comparison could be made.

As shown in **Figure 4**, in 2004 the diabetes age-adjusted death rate for males was higher than for females in the five race/ethnic groups with reliable rates. Black males (47.3) had a higher rate than Black females (38.7). Hispanic males (37.1) had a higher rate than Hispanic females (31.7). American Indian males (28.9) had a higher rate than American Indian females (19.9). White males (20.7) had a higher rate than White females (14.9), and Asian males (18.6) had a higher rate than Asian females (16.3). The male/female differences among Blacks, Hispanics, and Whites were statistically significant.

FIGURE 4
DIABETES AGE-ADJUSTED DEATH RATES
BY RACE/ETHNICITY AND SEX *
CALIFORNIA 2004



	Total	Asian	White	American Indian	Hispanic	Black
Male	24.3	18.6	20.7	28.9	37.1	47.3
Female	18.9	16.3	14.9	19.9	31.7	38.7

Source: State of California, Department of Health Services, Death Records.
* Calculated using death data for California residents only.
Total includes Pacific Islander and Two or More Races, not shown individually due to unreliable rates.

For more data, see DHS Center for Health Statistics, Office of Health Information and Research website at www.dhs.ca.gov/ohir

Not shown in **Figure 4** (page 5) but displayed in **Table 1** (pages 10 and 11) is the diabetes age-adjusted death rate for Pacific Islander females, a rate of 47.3 that matched the highest diabetes age-adjusted death rate for Black males of 47.3. Males and females in the Two or More Races group and males in the Pacific Islander group did not have reliable rates so gender comparisons could not be made.

Diabetes Death Data for California Counties

Table 2 (page 12) displays the number of deaths, crude death rates, and age-adjusted death rates by county averaged over a three-year period, 2002 to 2004. 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.

Los Angeles County (2,168.0) had the highest average number of diabetes deaths for the three-year period and Alpine County (0.3) had the lowest.

The highest reliable diabetes crude death rate occurred in Kings County (37.5 deaths per 100,000 population) and the lowest occurred in both El Dorado (12.5) and Santa Cruz (12.5) Counties.

The status of diabetes age-adjusted death rates among the counties showed Kings County with the highest reliable rate (58.2 deaths per 100,000 population) and Marin County with the lowest (10.7).

As shown in **Table 2**, in 2004 twenty-one counties had significantly different diabetes age-adjusted death rates than the California rate of 21.3; twelve of these counties had lower age-adjusted death rates than the California rate and nine had higher rates. Please refer to the Data Limitations and Qualifications Section for language regarding significance testing between the county and state age-adjusted death rates.

Figure 5 (page 13) graphically presents 2004 diabetes age-adjusted death rates for California counties in a quantile format with a separate pattern to display counties with unreliable rates.

Diabetes Death Data by City Health Jurisdiction

Table 3 (page 7) displays the number of deaths and crude death rates for California's three city health jurisdictions averaged over a three-year period, 2002 to 2004. Age-adjusted death rates were not calculated for the city health jurisdictions because city population estimates by age were not available.

The city of Long Beach had an annual average of 99.3 diabetes deaths for the three-year period, Pasadena had 31.3, and Berkeley had 19.7.

The city of Pasadena had a diabetes crude death rate of 22.0 deaths per 100,000 population, followed by Long Beach at 20.7 and Berkeley at 18.9.

TABLE 3
DIABETES DEATHS
AMONG THE CITY HEALTH JURISDICTIONS*
CALIFORNIA, 2002-2004

CITY HEALTH JURISDICTION	NUMBER OF DEATHS (Average)	2003 POPULATION	CRUDE DEATH RATE
BERKELEY	19.7	104,195	18.9
LONG BEACH	99.3	481,015	20.7
PASADENA	31.3	142,214	22.0

Note: Rates are per 100,000 population. Data is ICD-10 codes E10-E14.
* Calculated using death data for California residents only.

Source: State of California, Department of Finance, E-4 Population Estimates for Cities, Counties and the State, 2001-2006, with 2000 Benchmark, May 2006.
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, 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. The weighted average 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.

Age-adjusted rates are presented when the single, summary measure is needed, but data analysts should inspect age-specific rates first.[7] Age-specific rates provide insights to important age-related mortality trends that can be masked by age-adjusted rates. For example, a shift in the number of deaths from one age group to another could produce very little change in the age-adjusted rate, but may warrant further investigation. In addition, analysis of age-specific rates can reveal that populations being compared do not show a consistent relationship (e.g., the trend is not in the same direction for all age-specific rates) in which case the analysis of age-specific rates is recommended over age-adjusted rates.

[7] Choi BCK, de Guia NA, and Walsh P. Look before you leap: Stratify before you standardize. American Journal of Epidemiology, 149: 1087-1096. 1999.

Data Limitations and Qualifications

The diabetes death data presented in this report are based on vital statistics records with ICD-10 codes E10-E14 as defined by the NCHS.[4]

Deaths by place of residence means that the data include only those deaths occurring among residents of California, regardless of the place of death.

The term "significant" within the text indicates statistical significance based on the difference between two independent rates ($p < .05$). Significant difference between the county and State age-adjusted death rates was determined by comparing the 95 percent confidence intervals (CI) of the two rates, which are based on the rate, standard deviation, and standard error. Rates were considered to be significantly different from each other when their CIs (rounded to the nearest hundredth) did not overlap. If the upper limit of the county CI fell below the lower limit of the State CI, the county rate was deemed to be significantly lower. If the lower limit of the county CI exceeded the higher limit of the State CI, the county rate was deemed to be significantly higher. Significant differences of overlapping CIs were not addressed in this report. Overlapping CIs require a more precise statistical measure to determine significant and non-significant differences in rates because CIs may overlap as much as 29 percent and still be significantly different.[8]

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. To assist the reader, the 95 percent CIs 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 (*). The CIs represent the range of values likely to contain the "true" value 95 percent of the time.

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

To meet the U.S. Office of Management and Budget minimum standards for race and ethnicity data collection and reporting, the report presents the following race/ethnic groups: American Indian, Asian, Black, Hispanic, Pacific Islander, White, and Two or More Races. Hispanic origin of decedents is determined first and includes any race group. Second, decedents of the Two or More Races group are determined and are not reported in single race groups. In order to remain consistent with the population data obtained from the Department of Finance, the single race groups are defined as follows: the "American Indian" race group includes Aleut, American Indian, and Eskimo; the "Asian" race group includes Asian Indian, Asian (specified/unspecified), Cambodian, Chinese, Filipino, Hmong, Japanese, Korean, Laotian, Thai, and Vietnamese;

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[8] van Belle G. Statistical Rules of Thumb, Rule 2.5. Wiley Publishing. March 2002.

[9] World Health Organization. International Statistical Classification of Diseases and Related Health Problems. Tenth Revision. Geneva: World Health Organization. 1992.

the “Pacific Islander” race group includes Guamanian, Hawaiian, Samoan, and Other Pacific Islander; the “White” race group includes White, Other (specified), Not Stated, and Unknown.

Caution should be exercised in the interpretation of mortality data by race/ethnicity. Misclassification of race/ethnicity on death certificates may contribute to death rates that may be understated among American Indians, Asians, Hispanics, and Pacific Islanders.[10] This problem could contribute to understatements of rates for the Two or More Races group as well. All race groups may not be individually displayed on the tables due to unreliable rates, but the State totals do include their data.

Beginning in 2000 federal race/ethnicity reporting guidelines changed to allow reporting of more than one race on death certificates. California initiated use of the new guidelines on January 1, 2000, and collects up to three races. California’s population estimates recently added the Multirace (Two or More Races) group. To be consistent with the population groups, current reports tabulate race of decedent using all races mentioned on the death certificate. Therefore, prior reports depicting race group statistics based on single race are not comparable with current reports.

The 2000 U.S. population standard was used for calculating age-adjustments in accordance with statistical policy implemented by NCHS.[11] Age-adjusted death rates are not comparable when rates are calculated with different population standards, e.g., the 1940 standard population. Additionally, population data used to calculate city crude rates in **Table 3** (page 7) differ from population data used to calculate county crude rates in **Table 2** (page 12). Caution should be exercised when comparing the crude rates of the three city health jurisdictions with the crude rates of the 58 California counties. Age-adjusted rates for city health jurisdictions were not calculated.

A more complete explanation of age-adjustment methodology is available in the "Healthy People 2010 Statistical Notes" publication.[12] Detailed information on data quality and limitations is presented in the appendix of the annual report, "Vital Statistics of California."[13] Formulas used to calculate death rates are included in the technical notes of the "County Health Status Profiles" report.[14]

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[10] 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.

[11] Anderson RN, Rosenberg HM. Age Standardization of Death Rates: Implementation of the Year 2000 Standard. National Vital Statistics Reports; Volume 47, No. 3, Hyattsville, Maryland: National Center for Health Statistics. October 1998.

[12] 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.

[13] Ficenec S, Bindra K. Vital Statistics of California, 2003. Center for Health Statistics, California Department of Health Services. August 2005.

[14] Shippen S. County Health Status Profiles 2006. Center for Health Statistics, California Department of Health Services. April 2006.

TABLE 1
DIABETES DEATHS
BY RACE/ETHNICITY, AGE, AND SEX
CALIFORNIA, 2004
(By Place of Residence)

AGE GROUPS	DEATHS			POPULATION			RATES			95% CONFIDENCE LIMITS					
										TOTAL		MALE		FEMALE	
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER
TOTAL															
Under 1	0	0	0	534,769	272,800	261,969	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	2,047,621	1,045,813	1,001,808	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	3	0	3	5,369,098	2,750,853	2,618,245	0.1 *	0.0 +	0.1 *	0.0	0.1	-	-	0.0	0.2
15 to 24	20	9	11	5,294,261	2,757,217	2,537,044	0.4	0.3 *	0.4 *	0.2	0.5	0.1	0.5	0.2	0.7
25 to 34	63	40	23	5,231,086	2,701,183	2,529,903	1.2	1.5	0.9	0.9	1.5	1.0	1.9	0.5	1.3
35 to 44	205	128	77	5,672,590	2,883,426	2,789,164	3.6	4.4	2.8	3.1	4.1	3.7	5.2	2.1	3.4
45 to 54	598	354	244	4,931,148	2,440,823	2,490,325	12.1	14.5	9.8	11.2	13.1	13.0	16.0	8.6	11.0
55 to 64	1,068	612	456	3,303,083	1,594,612	1,708,471	32.3	38.4	26.7	30.4	34.3	35.3	41.4	24.2	29.1
65 to 74	1,637	881	756	2,025,575	936,610	1,088,965	80.8	94.1	69.4	76.9	84.7	87.9	100.3	64.5	74.4
75 to 84	2,250	1,043	1,207	1,420,413	590,956	829,457	158.4	176.5	145.5	151.9	164.9	165.8	187.2	137.3	153.7
85 & Older	1,275	473	802	546,767	187,361	359,406	233.2	252.5	223.1	220.4	246.0	229.7	275.2	207.7	238.6
Total	7,119	3,540	3,579	36,376,411	18,161,654	18,214,757	19.6	19.5	19.6	19.1	20.0	18.8	20.1	19.0	20.3
Age-Adjusted							21.3	24.3	18.9	20.8	21.8	23.5	25.1	18.2	19.5
AMERICAN INDIAN															
Under 1	0	0	0	3,420	1,749	1,671	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	10,132	5,219	4,913	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	0	0	0	44,098	22,317	21,781	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
15 to 24	0	0	0	45,586	23,211	22,375	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
25 to 34	1	1	0	36,784	18,309	18,475	2.7 *	5.5 *	0.0 +	0.0	8.0	0.0	16.2	-	-
35 to 44	4	3	1	43,965	21,368	22,597	9.1 *	14.0 *	4.4 *	0.2	18.0	0.0	29.9	0.0	13.1
45 to 54	6	3	3	42,504	20,200	22,304	14.1 *	14.9 *	13.5 *	2.8	25.4	0.0	31.7	0.0	28.7
55 to 64	6	2	4	26,857	12,754	14,103	22.3 *	15.7 *	28.4 *	4.5	40.2	0.0	37.4	0.6	56.2
65 to 74	15	8	7	12,903	5,996	6,907	116.3 *	133.4 *	101.3 *	57.4	175.1	41.0	225.9	26.3	176.4
75 to 84	14	8	6	6,734	2,840	3,894	207.9 *	281.7 *	154.1 *	99.0	316.8	86.5	476.9	30.8	277.4
85 & Older	3	1	2	3,868	1,435	2,433	77.6 *	69.7 *	82.2 *	0.0	165.3	0.0	206.3	0.0	196.1
Total	49	26	23	276,851	135,398	141,453	17.7	19.2	16.3	12.7	22.7	11.8	26.6	9.6	22.9
Age-Adjusted							23.9	28.9	19.9	17.0	30.8	17.3	40.6	11.5	28.3
ASIAN															
Under 1	0	0	0	48,115	24,552	23,563	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	188,290	96,379	91,911	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	0	0	0	498,432	257,125	241,307	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
15 to 24	0	0	0	567,146	291,640	275,506	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
25 to 34	2	1	1	618,710	302,916	315,794	0.3 *	0.3 *	0.3 *	0.0	0.8	0.0	1.0	0.0	0.9
35 to 44	8	2	6	671,272	321,320	349,952	1.2 *	0.6 *	1.7 *	0.4	2.0	0.0	1.5	0.3	3.1
45 to 54	44	28	16	609,567	284,594	324,973	7.2	9.8	4.9 *	5.1	9.4	6.2	13.5	2.5	7.3
55 to 64	77	46	31	385,197	179,303	205,894	20.0	25.7	15.1	15.5	24.5	18.2	33.1	9.8	20.4
65 to 74	124	62	62	245,629	107,974	137,655	50.5	57.4	45.0	41.6	59.4	43.1	71.7	33.8	56.3
75 to 84	224	95	129	154,086	64,809	89,277	145.4	146.6	144.5	126.3	164.4	117.1	176.1	119.6	169.4
85 & Older	148	59	89	50,569	20,013	30,556	292.7	294.8	291.3	245.5	339.8	219.6	370.0	230.8	351.8
Total	627	293	334	4,037,013	1,950,625	2,086,388	15.5	15.0	16.0	14.3	16.7	13.3	16.7	14.3	17.7
Age-Adjusted							17.3	18.6	16.3	16.0	18.7	16.5	20.8	14.5	18.0
BLACK															
Under 1	0	0	0	32,707	16,671	16,036	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	122,652	62,561	60,091	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	2	0	2	408,879	208,120	200,759	0.5 *	0.0 +	1.0 *	0.0	1.2	-	-	0.0	2.4
15 to 24	4	0	4	395,238	205,416	189,822	1.0 *	0.0 +	2.1 *	0.0	2.0	-	-	0.0	4.2
25 to 34	19	11	8	326,490	160,606	165,884	5.8	6.8 *	4.8 *	3.2	8.4	2.8	10.9	1.5	8.2
35 to 44	32	22	10	399,615	199,186	200,429	8.0	11.0	5.0 *	5.2	10.8	6.4	15.7	1.9	8.1
45 to 54	106	55	51	329,298	160,793	168,505	32.2	34.2	30.3	26.1	38.3	25.2	43.2	22.0	38.6
55 to 64	150	84	66	199,142	92,418	106,724	75.3	90.9	61.8	63.3	87.4	71.5	110.3	46.9	76.8
65 to 74	186	97	89	121,222	55,208	66,014	153.4	175.7	134.8	131.4	175.5	140.7	210.7	106.8	162.8
75 to 84	188	82	106	64,749	25,309	39,440	290.4	324.0	268.8	248.8	331.9	253.9	394.1	217.6	319.9
85 & Older	101	29	72	25,074	7,615	17,459	402.8	380.8	412.4	324.2	481.4	242.2	519.4	317.1	507.7
Total	788	380	408	2,425,066	1,193,903	1,231,163	32.5	31.8	33.1	30.2	34.8	28.6	35.0	29.9	36.4
Age-Adjusted							42.6	47.3	38.7	39.6	45.6	42.3	52.3	34.9	42.5
HISPANIC															
Under 1	0	0	0	273,401	139,443	133,958	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	1,003,339	512,381	490,958	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	0	0	0	2,503,684	1,279,931	1,223,753	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
15 to 24	7	4	3	2,275,634	1,199,542	1,076,092	0.3 *	0.3 *	0.3 *	0.1	0.5	0.0	0.7	0.0	0.6
25 to 34	13	8	5	2,332,753	1,244,497	1,088,256	0.6 *	0.6 *	0.5 *	0.3	0.9	0.2	1.1	0.1	0.9
35 to 44	52	32	20	1,954,969	1,014,652	940,317	2.7	3.2	2.1	1.9	3.4	2.1	4.2	1.2	3.1
45 to 54	188	121	67	1,228,904	607,654	621,250	15.3	19.9	10.8	13.1	17.5	16.4	23.5	8.2	13.4
55 to 64	326	185	141	636,784	298,857	337,927	51.2	61.9	41.7	45.6	56.8	53.0	70.8	34.8	48.6
65 to 74	477	233	244	357,389	157,978	199,411	133.5	147.5	122.4	121.5	145.4	128.6	166.4	107.0	137.7
75 to 84	537	238	299	190,758	78,695	112,063	281.5	302.4	266.8	257.7	305.3	264.0	340.9	236.6	297.1
85 & Older	217	68	149	58,423	20,677	37,746	371.4	328.9	394.7	322.0	420.8	250.7	407.0	331.4	458.1
Total	1,817	889	928	12,816,038	6,554,307	6,261,731	14.2	13.6	14.8	13.5	14.8	12.7	14.5	13.9	15.8
Age-Adjusted							34.3	37.1	31.7	32.6	35.9	34.5	39.8	29.6	33.8

Note : Rates are per 100,000 population. ICD-10 codes E10-E14.
The year 2000 U.S. standard population is used for age-adjusted rates.
Two or More Races, White, Pacific Islander, Black, Asian, and American Indian exclude Hispanic ethnicity.
Hispanic includes any race category.
Deaths reported under Two or More Races are not duplicated in single race/ethnic groups.

* Death rate unreliable, relative standard error is greater than or equal to 23 percent.
\+ Standard error indeterminate, death rate based on no (zero) deaths.
\- Confidence limit is not calculated for no (zero) deaths.

Source : State of California, Department of Finance, Race/Ethnic Population with Age and Sex Detail, 2000-2050. May 2004.
State of California, Department of Health Services, Death Records.

TABLE 1 (Continued)
DIABETES DEATHS
BY RACE/ETHNICITY, AGE, AND SEX
CALIFORNIA, 2004
(By Place of Residence)

AGE GROUPS	DEATHS			POPULATION			RATES			95% CONFIDENCE LIMITS					
										TOTAL		MALE		FEMALE	
	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL	MALE	FEMALE	LOWER	UPPER	LOWER	UPPER	LOWER	UPPER
TOTAL															
Under 1	0	0	0	534,769	272,800	261,969	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	2,047,621	1,045,813	1,001,808	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	3	0	3	5,369,098	2,750,853	2,618,245	0.1 *	0.0 +	0.1 *	0.0	0.1	-	-	0.0	0.2
15 to 24	20	9	11	5,294,261	2,757,217	2,537,044	0.4	0.3 *	0.4 *	0.2	0.5	0.1	0.5	0.2	0.7
25 to 34	63	40	23	5,231,086	2,701,183	2,529,903	1.2	1.5	0.9	0.9	1.5	1.0	1.9	0.5	1.3
35 to 44	205	128	77	5,672,590	2,883,426	2,789,164	3.6	4.4	2.8	3.1	4.1	3.7	5.2	2.1	3.4
45 to 54	598	354	244	4,931,148	2,440,823	2,490,325	12.1	14.5	9.8	11.2	13.1	13.0	16.0	8.6	11.0
55 to 64	1,068	612	456	3,303,083	1,594,612	1,708,471	32.3	38.4	26.7	30.4	34.3	35.3	41.4	24.2	29.1
65 to 74	1,637	881	756	2,025,575	936,610	1,088,965	80.8	94.1	69.4	76.9	84.7	87.9	100.3	64.5	74.4
75 to 84	2,250	1,043	1,207	1,420,413	590,956	829,457	158.4	176.5	145.5	151.9	164.9	165.8	187.2	137.3	153.7
85 & Older	1,275	473	802	546,767	187,361	359,406	233.2	252.5	223.1	220.4	246.0	229.7	275.2	207.7	238.6
Total	7,119	3,540	3,579	36,376,411	18,161,654	18,214,757	19.6	19.5	19.6	19.1	20.0	18.8	20.1	19.0	20.3
Age-Adjusted							21.3	24.3	18.9	20.8	21.8	23.5	25.1	18.2	19.5
PACIFIC ISLANDER															
Under 1	0	0	0	1,651	840	811	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	5,973	3,062	2,911	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	0	0	0	20,060	10,247	9,813	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
15 to 24	0	0	0	21,713	11,142	10,571	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
25 to 34	0	0	0	21,154	10,412	10,742	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
35 to 44	1	1	0	21,764	10,687	11,077	4.6 *	9.4 *	0.0 +	0.0	13.6	0.0	27.7	-	-
45 to 54	8	3	5	15,953	7,886	8,067	50.1 *	38.0 *	62.0 *	15.4	84.9	0.0	81.1	7.7	116.3
55 to 64	14	6	8	9,434	4,586	4,848	148.4 *	130.8 *	165.0 *	70.7	226.1	26.1	235.5	50.7	279.4
65 to 74	13	7	6	5,288	2,517	2,771	245.8 *	278.1 *	216.5 *	112.2	379.5	72.1	484.1	43.3	389.8
75 to 84	3	0	3	2,362	1,053	1,309	127.0 *	0.0 +	229.2 *	0.0	270.7	-	-	0.0	488.5
85 & Older	0	0	0	872	370	502	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
Total	39	17	22	126,224	62,802	63,422	30.9	27.1 *	34.7	21.2	40.6	14.2	39.9	20.2	49.2
Age-Adjusted							42.4	36.4 *	47.3	28.6	56.2	18.8	54.1	26.9	67.8
WHITE															
Under 1	0	0	0	164,750	84,066	80,684	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	617,372	315,162	302,210	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	1	0	1	1,722,936	886,271	836,665	0.1 *	0.0 +	0.1 *	0.0	0.2	-	-	0.0	0.4
15 to 24	9	5	4	1,856,335	960,424	895,911	0.5 *	0.5 *	0.4 *	0.2	0.8	0.1	1.0	0.0	0.9
25 to 34	27	19	8	1,808,165	922,586	885,579	1.5	2.1	0.9 *	0.9	2.1	1.1	3.0	0.3	1.5
35 to 44	107	67	40	2,502,123	1,278,269	1,223,854	4.3	5.2	3.3	3.5	5.1	4.0	6.5	2.3	4.3
45 to 54	243	144	99	2,639,194	1,328,451	1,310,743	9.2	10.8	7.6	8.0	10.4	9.1	12.6	6.1	9.0
55 to 64	489	286	203	2,005,398	987,820	1,017,578	24.4	29.0	19.9	22.2	26.5	25.6	32.3	17.2	22.7
65 to 74	812	468	344	1,260,712	596,472	664,240	64.4	78.5	51.8	60.0	68.8	71.4	85.6	46.3	57.3
75 to 84	1,280	619	661	988,209	412,295	575,914	129.5	150.1	114.8	122.4	136.6	138.3	162.0	106.0	123.5
85 & Older	802	316	486	402,581	135,267	267,314	199.2	233.6	181.8	185.4	213.0	207.9	259.4	165.6	198.0
Total	3,770	1,924	1,846	15,967,775	7,907,083	8,060,692	23.6	24.3	22.9	22.9	24.4	23.2	25.4	21.9	23.9
Age-Adjusted							17.5	20.7	14.9	16.9	18.1	19.8	21.7	14.2	15.6
TWO OR MORE RACES															
Under 1	0	0	0	10,725	5,479	5,246	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
1 to 4	0	0	0	99,863	51,049	48,814	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
5 to 14	0	0	0	171,009	86,842	84,167	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
15 to 24	0	0	0	132,609	65,842	66,767	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
25 to 34	1	0	1	87,030	41,857	45,173	1.1 *	0.0 +	2.2 *	0.0	3.4	-	-	0.0	6.6
35 to 44	1	1	0	78,882	37,944	40,938	1.3 *	2.6 *	0.0 +	0.0	3.8	0.0	7.8	-	-
45 to 54	3	0	3	65,728	31,245	34,483	4.6 *	0.0 +	8.7 *	0.0	9.7	-	-	0.0	18.5
55 to 64	6	3	3	40,271	18,874	21,397	14.9 *	15.9 *	14.0 *	3.0	26.8	0.0	33.9	0.0	29.9
65 to 74	10	6	4	22,432	10,465	11,967	44.6 *	57.3 *	33.4 *	16.9	72.2	11.5	103.2	0.7	66.2
75 to 84	4	1	3	13,515	5,955	7,560	29.6 *	16.8 *	39.7 *	0.6	58.6	0.0	49.7	0.0	84.6
85 & Older	4	0	4	5,380	1,984	3,396	74.3 *	0.0 +	117.8 *	1.5	147.2	-	-	2.4	233.2
Total	29	11	18	727,444	357,536	369,908	4.0	3.1 *	4.9 *	2.5	5.4	1.3	4.9	2.6	7.1
Age-Adjusted							7.7	6.4 *	8.5 *	4.9	10.6	2.5	10.2	4.5	12.5

Note : Rates are per 100,000 population. ICD-10 codes E10-E14.
The year 2000 U.S. standard population is used for age-adjusted rates.
Two or More Races, White, Pacific Islander, Black, Asian, and American Indian exclude Hispanic ethnicity.
Hispanic includes any race category.
Deaths reported under Two or More Races are not duplicated in single race/ethnic groups.

* Death rate unreliable, relative standard error is greater than or equal to 23 percent.
\+ Standard error indeterminate, death rate based on no (zero) deaths.
\- Confidence limit is not calculated for no (zero) deaths.

Source : State of California, Department of Finance, Race/Ethnic Population with Age and Sex Detail, 2000-2050. May 2004.
State of California, Department of Health Services, Death Records.

TABLE 2
DIABETES DEATHS
CALIFORNIA, 2002-2004
(By Place of Residence)

COUNTY	2002-2004 DEATHS (Average)	PERCENT	2003 POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS	
						LOWER	UPPER
CALIFORNIA	6,996.7	100.0	35,934,967	19.5	21.3	20.8	21.8
ALAMEDA	288.0	4.1	1,495,367	19.3	22.1	19.5	24.6
ALPINE	0.3	a	1,268	26.3 *	30.5 *	0.0	133.8
AMADOR	6.3	0.1	37,074	17.1 *	12.5 *	2.7	22.2
BUTTE	52.0	0.7	212,473	24.5	20.1	14.5	25.6
CALAVERAS	6.7	0.1	43,566	15.3 *	11.1 *	2.5	19.6
COLUSA	4.3	0.1	20,026	21.6 *	23.7 *	1.4	46.1
CONTRA COSTA	194.3	2.8	1,003,704	19.4	20.1	17.3	22.9
DEL NORTE	5.7	0.1	28,192	20.1 *	19.6 *	3.4	35.7
EL DORADO[1]	21.0	0.3	168,227	12.5	11.9	6.7	17.1
FRESNO[1]	203.0	2.9	855,469	23.7	29.4	25.4	33.5
GLENN	9.0	0.1	27,626	32.6 *	30.1 *	10.4	49.9
HUMBOLDT	40.7	0.6	129,515	31.4	31.2	21.6	40.8
IMPERIAL	37.7	0.5	153,673	24.5	31.4	21.3	41.6
INYO	4.7	0.1	18,617	25.1 *	15.1 *	1.3	29.0
KERN[1]	175.3	2.5	717,332	24.4	28.0	23.9	32.2
KINGS[1]	52.0	0.7	138,763	37.5	58.2	42.2	74.2
LAKE	12.0	0.2	62,359	19.2 *	13.5 *	5.8	21.1
LASSEN	5.0	0.1	34,633	14.4 *	15.9 *	1.9	30.0
LOS ANGELES[1]	2,168.0	31.0	10,047,236	21.6	23.9	22.9	24.9
MADERA	33.3	0.5	133,965	24.9	26.1	17.2	35.0
MARIN[1]	32.3	0.5	250,252	12.9	10.7	6.9	14.4
MARIPOSA	3.3	a	17,886	18.6 *	13.8 *	0.0	28.7
MENDOCINO	17.3	0.2	89,156	19.4 *	17.6 *	9.3	25.9
MERCED[1]	65.0	0.9	230,696	28.2	38.2	28.8	47.5
MODOC	2.7	a	9,541	27.9 *	18.9 *	0.0	41.5
MONO	0.7	a	13,443	5.0 *	4.7 *	0.0	16.1
MONTEREY	73.0	1.0	418,842	17.4	21.0	16.2	25.9
NAPA	35.0	0.5	130,920	26.7	21.2	14.0	28.3
NEVADA	17.0	0.2	96,923	17.5 *	13.0 *	6.8	19.3
ORANGE[1]	439.3	6.3	3,001,146	14.6	17.5	15.9	19.2
PLACER[1]	45.3	0.6	285,336	15.9	14.3	10.1	18.4
PLUMAS	5.0	0.1	21,181	23.6 *	16.5 *	1.5	31.5
RIVERSIDE[1]	284.3	4.1	1,758,719	16.2	16.2	14.3	18.1
SACRAMENTO	248.0	3.5	1,331,563	18.6	20.4	17.9	23.0
SAN BENITO	5.3	0.1	56,605	9.4 *	13.8 *	2.0	25.5
SAN BERNARDINO[1]	403.0	5.8	1,869,219	21.6	30.1	27.1	33.1
SAN DIEGO[1]	501.7	7.2	2,989,178	16.8	18.8	17.2	20.4
SAN FRANCISCO[1]	138.0	2.0	786,980	17.5	15.4	12.8	18.0
SAN JOAQUIN[1]	161.7	2.3	625,702	25.8	31.8	26.9	36.8
SAN LUIS OBISPO[1]	45.0	0.6	257,452	17.5	14.7	10.4	19.0
SAN MATEO[1]	98.0	1.4	712,772	13.7	13.1	10.5	15.7
SANTA BARBARA	76.3	1.1	412,069	18.5	18.3	14.1	22.4
SANTA CLARA[1]	254.3	3.6	1,723,819	14.8	17.5	15.4	19.7
SANTA CRUZ[1]	32.3	0.5	259,220	12.5	13.7	8.9	18.5
SHASTA[1]	35.7	0.5	175,421	20.3	15.4	10.2	20.5
SIERRA	1.7	a	3,563	46.8 *	29.1 *	0.0	73.9
SISKIYOU	13.7	0.2	45,081	30.3 *	21.7 *	9.8	33.6
SOLANO	82.7	1.2	416,406	19.9	21.7	17.0	26.4
SONOMA	94.0	1.3	473,274	19.9	18.0	14.3	21.7
STANISLAUS[1]	114.7	1.6	489,491	23.4	27.7	22.6	32.7
SUTTER	21.0	0.3	84,978	24.7	25.5	14.6	36.4
TEHAMA	16.3	0.2	58,665	27.8 *	20.0 *	10.1	29.9
TRINITY	4.3	0.1	13,579	31.9 *	22.7 *	0.6	44.9
TULARE[1]	101.0	1.4	392,989	25.7	34.3	27.6	41.0
TUOLUMNE	12.0	0.2	57,120	21.0 *	14.7 *	6.4	23.0
VENTURA	149.7	2.1	799,114	18.7	20.8	17.5	24.2
YOLO	34.3	0.5	183,602	18.7	24.6	16.4	32.9
YUBA	12.3	0.2	63,979	19.3 *	22.5 *	9.9	35.1

Note : Rates are per 100,000 population. ICD-10 codes E10-E14.

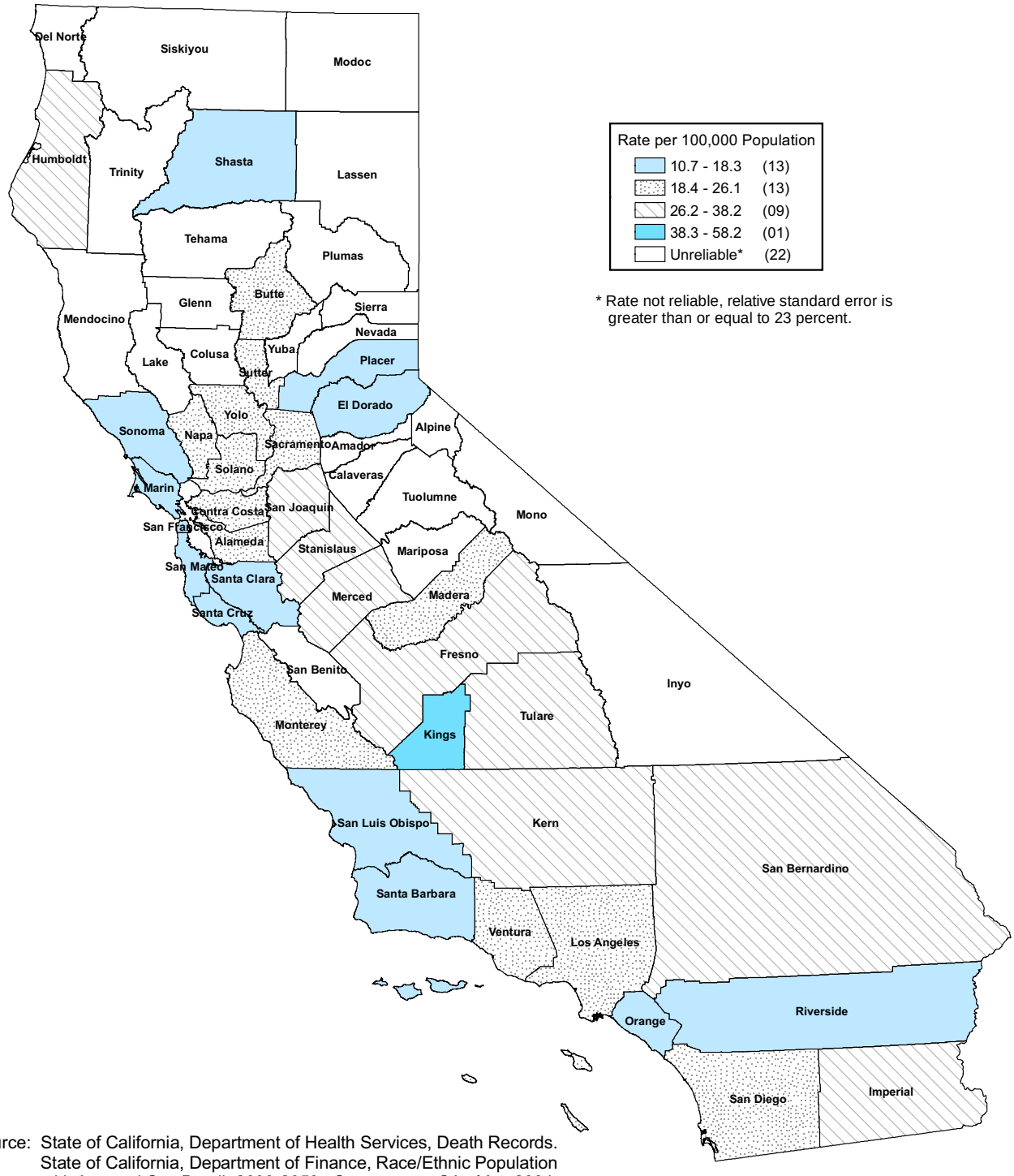
* Death rate unreliable, relative standard error is greater than or equal to 23 percent.
The year 2000 U.S. standard population is used for age-adjusted rates.

1 County age-adjusted rate is significantly different from California age-adjusted rate.

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

Source : State of California, Department of Finance, Race/Ethnic Population with Age and Sex Detail, 2000-2050. May 2004.
State of California, Department of Health Services, Death Records.

Figure 5
Deaths Due to Diabetes
Age-Adjusted Death Rates
California Counties, 2002-2004



* Rate not reliable, relative standard error is greater than or equal to 23 percent.

Source: State of California, Department of Health Services, Death Records.
State of California, Department of Finance, Race/Ethnic Population with Age and Sex Detail, 2000-2050. Sacramento, CA. May 2004.