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

Highlights

- Influenza and pneumonia ranked sixth in the leading causes of death in California.
- About 91 percent of all influenza and pneumonia deaths occur among people age 65 and older.
- Crude death rates decreased from 23.2 in 2001 to 22.6 in 2002 for influenza and pneumonia.
- The age-adjusted death rate for influenza and pneumonia decreased from 26.9 in 2001 to 26.0 in 2002.
- Yolo County had the highest age-adjusted death rate and San Luis Obispo County the lowest rate for influenza and pneumonia.

Influenza and Pneumonia Deaths California, 2001-2002

By Karen Flannigan

Introduction

Influenza and pneumonia continued to rank sixth in the leading causes of death in California and seventh nationally.^{1,2} Pneumonia is frequently a complication of influenza, thus the two diseases are traditionally reported together. Though there are typically more pneumonia deaths each year than influenza deaths, the number of influenza deaths still varies during epidemics. Pneumonia and influenza death numbers have fluctuated considerably over the years reflecting the cyclic nature of communicable diseases. Influenza can be caused by more virulent virus strains in some years than others as the viruses mutate constantly. Influenza vaccination programs have been successful in reducing the number of severe illnesses and deaths caused by this disease. Pneumonia is caused by a variety of agents such as bacteria, viruses, and mycoplasmas, among others.³ A pneumococcal vaccine now widely available may also have a profound effect on reducing the future number of deaths from pneumonia.

Adults aged 65 and older are more likely to have serious complications from influenza. People considered at high risk for pneumonia include the elderly, the very young, and those with underlying health problems, such as chronic obstructive pulmonary disease, diabetes mellitus, congestive heart failure, and sickle cell disease. There were 4.8 million reported cases of pneumonia and 95 million cases of influenza in the U. S. in 1996.³ Pneumonia and influenza deaths ranked fifth among those aged 65 and older in both California and the U.S. in 2002.^{1, 2}

The U.S. Department of Health and Human Services developed a plan including 10-year health objectives for the Nation known as Healthy People 2010 (HP 2010).⁴ The HP 2010 objectives related to influenza and pneumonia focus on increasing the number of adults vaccinated in specific age, health status, racial/ethnic, and institutionalized groups as an effective strategy to reduce illness and deaths due to these diseases. These objectives require specific data collection not covered in this report.

¹State of California, Department of Health Services. Death Records. 2002

²Kochanek K, Smith B. *Deaths: Preliminary Data for 2002*. National Vital Statistics Reports; Vol. 52, No.13. National Center for Health Statistics. February 2004.

³American Lung Association. *Pneumonia and Influenza Fact Sheets*. URL: <http://www.lungusa.org/> Accessed May 4, 2004.

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

For more information on the issues related to the change from ICD-9 to ICD-10 Codes, see www.cdc.gov/nchs/icd9.htm

This report presents data on deaths due to influenza and pneumonia for 2001 and 2002, although the primary focus is on the 2002 data, with analysis of crude and age-adjusted rates for California residents by sex, age, race/ethnicity, and county. The data included are extracted from vital statistics records with the underlying cause of death attributable to influenza or pneumonia as defined by the International Classification of Diseases, Tenth Revision (ICD-10) codes J10-J18, in accordance with National Center for Health Statistics (NCHS) reports.⁵ Federal data surveillance and the baseline of 1999 data reflect a decline in rates due to the definition change from the International Classification of Diseases, Ninth Revision (ICD-9) to ICD-10. Beginning in 1999 the reported number of deaths attributed to influenza and pneumonia declined to approximately two-thirds of the numbers reported for prior periods, thus caution must be exercised in analyzing trends spanning ICD-9 and ICD-10 periods.⁶

Influenza and Pneumonia Deaths

California's influenza and pneumonia death data by race/ethnicity, age group, and sex for 2001 and 2002 are displayed in **Tables 1** and **2** (pages 9-10) respectively. In 2002

female influenza and pneumonia deaths outnumbered male deaths (4,401 versus 3,697). Approximately 91 percent of all influenza and pneumonia deaths occurred among California residents aged 65 and older.

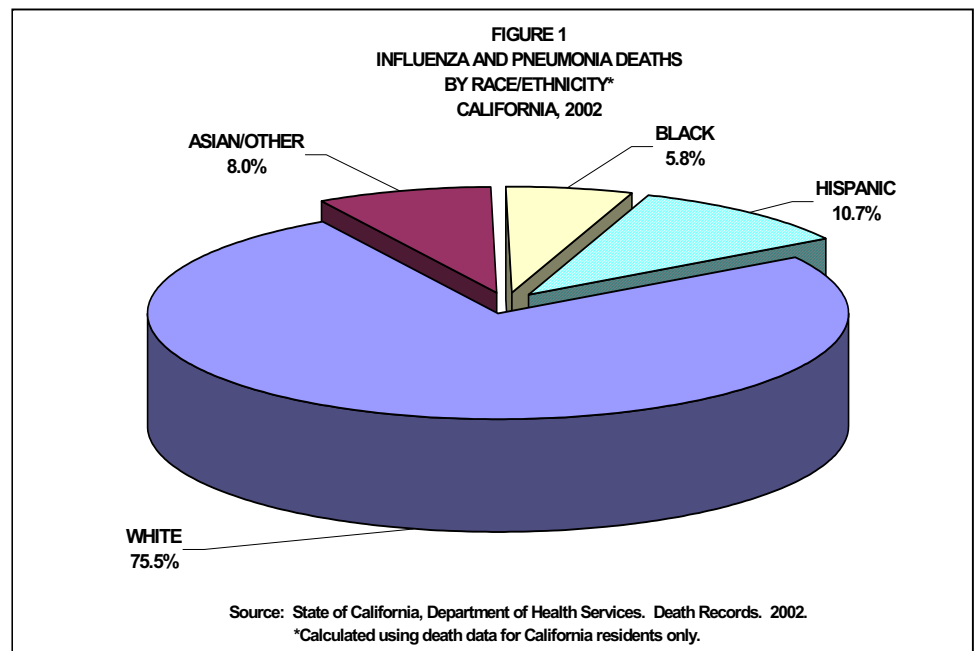


Figure 1 shows

Whites had the largest percentage of influenza and pneumonia deaths with 75.5 percent, followed by Hispanics with 10.7 percent, Asian/Other with 8.0 percent, and Blacks with 5.8 percent in 2002.

A comparison of **Tables 1** and **2** shows that total pneumonia and influenza deaths decreased from 2001 to 2002 overall and for each race/ethnic group. However, deaths among females continued to be higher than males, but decreased 1.7 percent overall and decreased within each race/ethnic group, except Black female deaths remained the same for both years. Total male deaths increased 0.2 percent in 2002 while the race/ethnic group changes varied with deaths decreasing for Asian/Other and Black males and increasing for Hispanic and White males.

⁵National 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.

⁶Anderson RN, et al. *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.

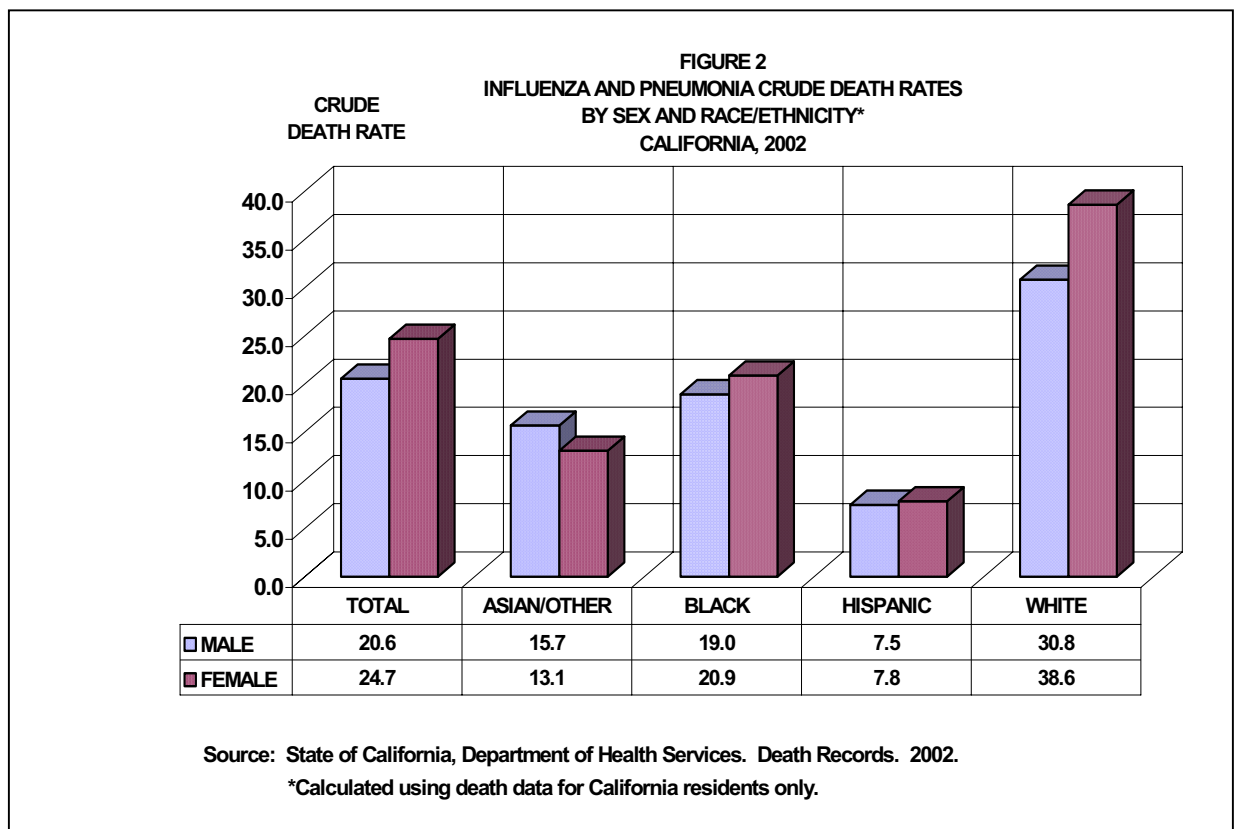
See the [Methodological Approach](#) section later in this report for an explanation of crude and age-adjusted death rates.

Influenza and Pneumonia Crude Death Rates

California's influenza and pneumonia crude death rate for 2002 was 22.6 per 100,000 population (**Table 2**, page 10), declining 2.6 percent from the 2001 rate of 23.2 (**Table 1**, page 9), and decreasing 3.8 percent from the 1999 base year rate of 23.5.⁷ California's crude death rate fell below the national rate of 22.9 for influenza and pneumonia in 2002.²

Female influenza and pneumonia crude death rates of 25.5 and 24.7 were significantly higher than the male rates of 20.9 and 20.6 in 2001 and 2002 respectively (**Tables 1 and 2**, pages 9-10). In 2002 Whites had the highest crude death rate (34.8), followed by Blacks (19.9), Asian/Other (14.4), and Hispanics (7.6). Differences among the race/ethnic groups were statistically significant. This trend continued from 2001 when the White rate was highest (35.0), followed by Blacks (20.5), Asian/Other (15.4), and Hispanics (8.1). Influenza and pneumonia crude death rates declined for all race/ethnic groups of both genders, except for Hispanic male rates, which increased 1.4 percent from 2001 to 2002.

Figure 2 shows that in 2002 females had higher crude death rates compared with their male counterparts in each race/ethnic group, except for the Asian/Other group where males were highest. The White female rate (38.6) was significantly higher compared with rates for both genders in all race/ethnic groups, followed by White males (30.8); Black females (20.9) and Black males (19.0); Asian/Other males (15.7) and Asian/Other females (13.1); and Hispanic females (7.8) and Hispanic males (7.5).



⁷ Richards F. *Influenza and Pneumonia Deaths, California 1999-2000*. Center for Health Statistics, California Department of Health Services. July 2003.

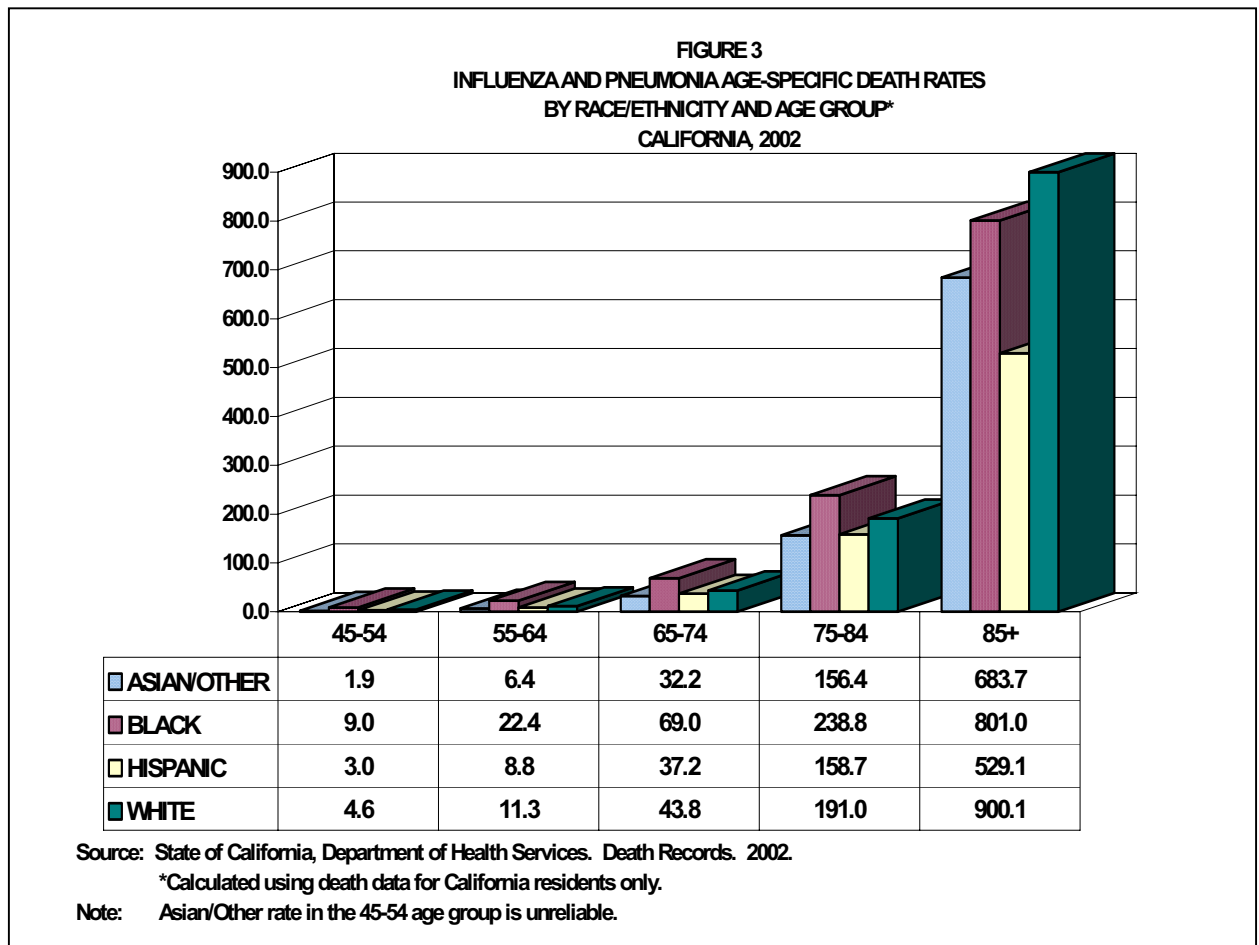
A brief overview of [data limitations and qualifications](#) is provided at the end of this report.

Influenza and Pneumonia Age-Specific Death Rates

Tables 1 and 2 (pages 9-10) display age-specific death rates for all groups and each of the four major race/ethnic groups for 2001 and 2002. The influenza and pneumonia age-specific death rates generally increased with age for the 35 and older age groups regardless of race/ethnicity. Among California residents, age-specific influenza and pneumonia death rates were reliable for both years in the under one year age group and for age groups 25 and older, with the highest rate occurring in the 85 and older age group.

Where age and gender-specific rates were reliable, the male rates for all race/ethnic groups were higher than female rates in those age groups for both years. This pattern is opposite from the gender differences in the total crude death rates, where female rates were higher than male rates in all race/ethnic groups with one exception, the Asian/Other male rate was higher than the Asian/Other female rate.

Figure 3 shows the age-specific death rates for 2002 by race/ethnicity and age group. In comparing the race/ethnic group differences, the highest and lowest age-specific death rates varied as follows: Whites had the highest rate of any race/ethnic group in the 85 and older age group; Blacks were highest in the 45 to 84 age groups; Hispanics had the lowest rates in the 45 to 54 and 85 and older age groups; and Asian/Other were lowest in the 55 through 84 age groups. The Asian/Other rate in age group 45 to 54 was unreliable.



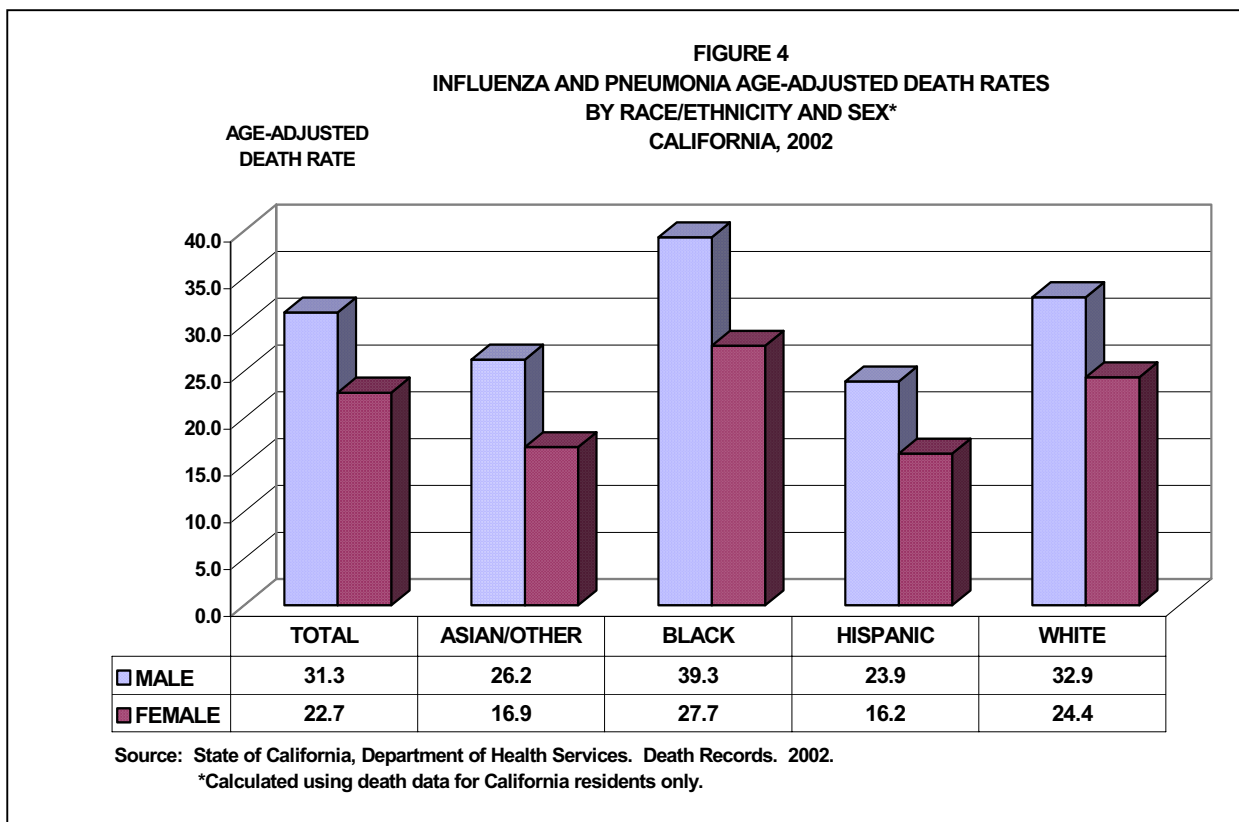
Influenza and Pneumonia Age-Adjusted Death Rates

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

Table 2 (page 10) shows that California's influenza and pneumonia age-adjusted death rate in 2002 was 26.0 per 100,000 population, which decreased 3.3 percent from the 2001 rate of 26.9 (**Table 1**, page 9), and decreased 7.8 percent from the 1999 base year rate of 28.2 age-adjusted deaths per 100,000 population.⁷ California's rate was 14.5 percent higher than the national influenza and pneumonia age-adjusted death rate of 22.7 for 2002.²

Figure 4 shows influenza and pneumonia age-adjusted death rates by race/ethnicity and sex for 2002. Males had a higher age-adjusted rate at 31.3 compared with the female rate of 22.7, a statistically significant difference. Males within the four major race/ethnic groups also had the higher age-adjusted rates when compared with their female counterparts. All gender differences between influenza and pneumonia age-adjusted rates among the four major race/ethnic groups were statistically significant. The largest gender rate difference was among Blacks, followed by Asian/Other, Whites, and Hispanics.

Among males for 2002, Blacks had the highest rate (39.3), followed by Whites (32.9), Asian/Other (26.2), and Hispanics (23.9). Differences between males of the major race/ethnic groups were significant, except for comparisons of Hispanic and Asian/Other male rates. Female rates followed a similar pattern. Black females were highest (27.7), followed by White females (24.4), Asian/Other females (16.9), and Hispanic females (16.2), but the statistical significance of their differences varied. Rates of Black and White females were significantly higher compared with the Hispanic and Asian/Other females; comparisons of Black with White and Hispanic with Asian/Other female rates did not demonstrate a statistically significant difference.



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

Influenza and Pneumonia Death Data for California Counties

Table 3 (page 11) displays the 2000-2002 average numbers of deaths, crude death rates, and age-adjusted death rates for California and its 58 counties.

The highest average number of deaths occurred in Los Angeles County (2,464.0), followed by San Diego (680.7) and Orange County (628.0). The highest reliable crude death rate due to pneumonia and influenza was in Napa County (44.4 per 100,000 population) and lowest rate was in Merced County (13.9).

Of the counties with reliable age-adjusted death rates due to pneumonia and influenza, Yolo County had the highest rate (40.6 per 100,000 population) while San Luis Obispo County had the lowest rate (13.6).

Influenza and Pneumonia Death Data for City Health Jurisdictions

Table 4 shows the 2000-2002 average number of pneumonia and influenza deaths and the crude death rates for three of California's city health jurisdictions. Long Beach had the highest average number of deaths (106.0), followed by Pasadena (61.0) and Berkeley (17.0). The crude death rates were 45.1 per 100,000 population for Pasadena, 22.7 for Long Beach, and 16.4 for Berkeley; however, the rate for Berkeley was not reliable.

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

**TABLE 4
INFLUENZA AND PNEUMONIA DEATHS
BY SELECTED CITY HEALTH JURISDICTIONS*
CALIFORNIA, 2000-2002**

CITY HEALTH JURISDICTION	NUMBER OF DEATHS (Average)	2001 POPULATION	CRUDE DEATH RATE
BERKELEY	17.0	103,600	16.4 **
LONG BEACH	106.0	466,500	22.7
PASADENA	61.0	135,300	45.1

Note: ICD-10 codes J10-J18; rates are per 100,000 population.
 *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 Population Estimates for Cities, Counties and the State, 2001-2003, with 2000 DRU Benchmark.
 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, demographic groups, 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 2000 population standard is used as the basis for age-adjustments in this report.

Data Limitations and Qualifications

The pneumonia and influenza death data presented in this report are based on vital statistics records with ICD-10 codes J10-J18 as defined by the NCHS.³ Deaths by place of residence means that the data include only those deaths occurring among residents of California and its counties, regardless of the person's 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 the death rates. Rates with a relative standard error (coefficient of variation) greater than or equal to 23 percent are considered unstable and are indicated with an asterisk (*).

Beginning in 1999, cause of death is reported using ICD-10.⁸ Depending on the specific cause of death, the number of deaths and death rates are not comparable between ICD-9 and ICD-10.⁶ Therefore, our analyses do not combine both ICD-9 and ICD-10 data.

The four major 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 California 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, Hmong, 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 the underestimate of Hispanic and Asian/Other death rates.⁹

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 where more than one race was listed. Race groups with 2000 data forward are therefore not strictly compatible with prior years and trends should be viewed with caution.

⁸ World Health Organization. *International Statistical Classification of Diseases and Related Health Problems*. Tenth Revision. Geneva, Switzerland. World Health Organization. 1992.

⁹ 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 (PHS) Pub. No. 99-1328. September 1999.

For more data and prior reports, see DHS Center for Health Statistics, Home Page www.dhs.ca.gov/org/hisp/chs/default.htm

The standard population for calculating age-adjustments was changed with 1999 data from the 1940 population standard to the 2000 population standard in accordance with statistical policy implemented by the NCHS. The population standard change affects measurement of mortality trends and group comparisons. Of particular note are the effects on race comparison of mortality.¹⁰ Age-adjusted death 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 city health jurisdictions with the rates among the 58 California counties. Age-adjusted rates for local city health jurisdictions were not calculated.

For a more complete explanation of the age-adjusting methodology used in this report, see the “Healthy People 2010 Statistical Notes” publication.¹¹ Detailed information on data quality and limitations is presented in the appendix of the annual report, “Vital Statistics of California.”¹² Formulas used to calculate death rates are included in the technical notes of the “County Health Status Profiles” report.¹³

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¹⁰ Anderson RN, Rosenberg HM. *Age Standardization of Death Rates: Implementation of the Year 2000 Standard*. National Vital Statistics Reports; Vol. 47 No. 3. Hyattsville, Maryland. National Center for Health Statistics.

¹¹ 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.

¹² Ficenc S, Bindra K. *Vital Statistics of California, 2001*. Center for Health Statistics, California Department of Health Services. June 2004.

¹³ Shippen S, Wilson C. *County Health Status Profiles 2004*. Center for Health Statistics, California Department of Health Services. April 2004.

TABLE 1
INFLUENZA AND PNEUMONIA DEATHS BY RACE/ETHNICITY, AGE, AND SEX
CALIFORNIA, 2001
(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	25	15	10	560,999	286,873	274,126	4.5	5.2 *	3.6 *	2.7	6.2	2.6	7.9	1.4	5.9
1 - 4	15	11	4	2,243,262	1,147,543	1,095,719	0.7 *	1.0 *	0.4 *	0.3	1.0	0.4	1.5	0.0	0.7
5 - 14	10	5	5	5,672,643	2,906,408	2,766,235	0.2 *	0.2 *	0.2 *	0.1	0.3	0.0	0.3	0.0	0.3
15 - 24	13	7	6	4,753,513	2,467,107	2,286,406	0.3 *	0.3 *	0.3 *	0.1	0.4	0.1	0.5	0.1	0.5
25 - 34	20	13	7	4,918,489	2,594,607	2,323,882	0.4	0.5 *	0.3 *	0.2	0.6	0.2	0.8	0.1	0.5
35 - 44	100	63	37	5,765,426	2,956,340	2,809,086	1.7	2.1	1.3	1.4	2.1	1.6	2.7	0.9	1.7
45 - 54	171	108	63	4,674,074	2,325,619	2,348,455	3.7	4.6	2.7	3.1	4.2	3.8	5.5	2.0	3.3
55 - 64	306	164	142	2,862,622	1,396,328	1,466,294	10.7	11.7	9.7	9.5	11.9	9.9	13.5	8.1	11.3
65 - 74	853	466	387	1,976,584	916,584	1,060,000	43.2	50.8	36.5	40.3	46.1	46.2	55.5	32.9	40.1
75 - 84	2,681	1,361	1,320	1,337,545	547,455	790,090	200.4	248.6	167.1	192.9	208.0	235.4	261.8	158.1	176.1
85 & OLDER	3,972	1,478	2,494	468,178	149,547	318,631	848.4	988.3	782.7	822.0	874.8	937.9	1,038.7	752.0	813.4
UNKNOWN	1	0	1												
TOTAL	8,167	3,691	4,476	35,233,335	17,694,411	17,538,924	23.2	20.9	25.5	22.7	23.7	20.2	21.5	24.8	26.3
AGE-ADJUSTED							26.9	32.1	23.6	26.3	27.5	31.0	33.1	22.9	24.3
ASIAN/OTHER															
UNDER 1	2	1	1	69,275	33,440	33,835	2.9 *	2.8 *	3.0 *	0.0	6.9	0.0	8.4	0.0	8.7
1 - 4	2	1	1	274,035	140,219	133,816	0.7 *	0.7 *	0.7 *	0.0	1.7	0.0	2.1	0.0	2.2
5 - 14	3	2	1	682,107	351,057	331,050	0.4 *	0.6 *	0.3 *	0.0	0.9	0.0	1.4	0.0	0.9
15 - 24	4	2	2	626,372	320,815	305,557	0.6 *	0.6 *	0.7 *	0.0	1.3	0.0	1.5	0.0	1.6
25 - 34	3	2	1	663,350	335,748	327,602	0.5 *	0.6 *	0.3 *	0.0	1.0	0.0	1.4	0.0	0.9
35 - 44	5	3	2	709,159	345,299	363,860	0.7 *	0.9 *	0.5 *	0.1	1.3	0.0	1.9	0.0	1.3
45 - 54	9	7	2	596,166	282,159	314,007	1.5 *	2.5 *	0.6 *	0.5	2.5	0.6	4.3	0.0	1.5
55 - 64	31	16	15	334,827	159,091	175,736	9.3	10.1 *	8.5 *	6.0	12.5	5.1	15.0	4.2	12.9
65 - 74	83	45	38	224,875	99,888	124,987	36.9	45.1	30.4	29.0	44.9	31.9	58.2	20.7	40.1
75 - 84	224	119	105	131,980	56,160	75,820	169.7	211.9	138.5	147.5	191.9	173.8	250.0	112.0	165.0
85 & OLDER	304	156	148	41,442	17,481	23,961	733.6	892.4	617.7	651.1	816.0	752.4	1,032.4	518.2	717.2
UNKNOWN	1	0	1												
TOTAL	671	354	317	4,353,588	2,143,357	2,210,231	15.4	16.5	14.3	14.2	16.6	14.8	18.2	12.8	15.9
AGE-ADJUSTED							22.8	28.0	19.0	21.1	24.6	25.0	30.9	16.9	21.1
BLACK															
UNDER 1	3	0	3	37,075	18,968	18,107	8.1 *	0.0 +	16.6 *	0.0	17.2	-	-	0.0	35.3
1 - 4	1	1	0	148,109	75,817	72,292	0.7 *	1.3 *	0.0 +	0.0	2.0	0.0	3.9	-	-
5 - 14	1	0	1	413,833	209,845	203,988	0.2 *	0.0 +	0.5 *	0.0	0.7	-	-	0.0	1.5
15 - 24	0	0	0	364,172	192,652	171,520	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
25 - 34	3	3	0	344,312	182,447	161,865	0.9 *	1.6 *	0.0 +	0.0	1.9	0.0	3.5	-	-
35 - 44	12	7	5	385,985	188,545	197,440	3.1 *	3.7 *	2.5 *	1.3	4.9	1.0	6.5	0.3	4.8
45 - 54	24	12	12	302,852	142,935	159,917	7.9	8.4 *	7.5 *	4.8	11.1	3.6	13.1	3.3	11.7
55 - 64	37	15	22	172,047	79,765	92,282	21.5	18.8 *	23.8	14.6	28.4	9.3	28.3	13.9	33.8
65 - 74	73	46	27	107,106	47,268	59,838	68.2	97.3	45.1	52.5	83.8	69.2	125.4	28.1	62.1
75 - 84	172	89	83	61,885	23,844	38,041	277.9	373.3	218.2	236.4	319.5	295.7	450.8	171.2	265.1
85 & OLDER	156	59	97	18,436	5,511	12,925	846.2	1,070.6	750.5	713.4	979.0	797.4	1,343.8	601.1	899.8
UNKNOWN	0	0	0												
TOTAL	482	232	250	2,355,812	1,167,597	1,188,215	20.5	19.9	21.0	18.6	22.3	17.3	22.4	18.4	23.6
AGE-ADJUSTED							33.8	43.4	28.2	30.8	36.9	37.5	49.3	24.7	31.7
HISPANIC															
UNDER 1	15	10	5	272,023	139,031	132,992	5.5 *	7.2 *	3.8 *	2.7	8.3	2.7	11.7	0.5	7.1
1 - 4	6	5	1	1,070,328	547,371	522,957	0.6 *	0.9 *	0.2 *	0.1	1.0	0.1	1.7	0.0	0.6
5 - 14	3	2	1	2,398,512	1,225,596	1,172,916	0.1 *	0.2 *	0.1 *	0.0	0.3	0.0	0.4	0.0	0.3
15 - 24	5	4	1	1,664,220	861,697	802,523	0.3 *	0.5 *	0.1 *	0.0	0.6	0.0	0.9	0.0	0.4
25 - 34	3	2	1	1,767,279	977,600	789,679	0.2 *	0.2 *	0.1 *	0.0	0.4	0.0	0.5	0.0	0.4
35 - 44	28	17	11	1,701,500	916,547	784,953	1.6	1.9 *	1.4 *	1.0	2.3	1.0	2.7	0.6	2.2
45 - 54	27	18	9	1,050,953	536,610	514,343	2.6	3.4 *	1.7 *	1.6	3.5	1.8	4.9	0.6	2.9
55 - 64	54	29	25	532,881	260,356	272,525	10.1	11.1	9.2	7.4	12.8	7.1	15.2	5.6	12.8
65 - 74	127	62	65	331,669	152,519	179,150	38.3	40.7	36.3	31.6	45.0	30.5	50.8	27.5	45.1
75 - 84	273	130	143	172,771	71,849	100,922	158.0	180.9	141.7	139.3	176.8	149.8	212.0	118.5	164.9
85 & OLDER	350	143	207	58,574	19,479	39,095	597.5	734.1	529.5	534.9	660.1	613.8	854.4	457.3	601.6
UNKNOWN	0	0	0												
TOTAL	891	422	469	11,020,710	5,708,655	5,312,055	8.1	7.4	8.8	7.6	8.6	6.7	8.1	8.0	9.6
AGE-ADJUSTED							20.6	24.2	18.3	19.2	22.0	21.7	26.6	16.7	20.0
WHITE															
UNDER 1	5	4	1	182,626	93,434	89,192	2.7 *	4.3 *	1.1 *	0.3	5.1	0.1	8.5	0.0	3.3
1 - 4	6	4	2	750,790	384,136	366,654	0.8 *	1.0 *	0.5 *	0.2	1.4	0.0	2.1	0.0	1.3
5 - 14	3	1	2	2,178,191	1,119,910	1,058,281	0.1 *	0.1 *	0.2 *	0.0	0.3	0.0	0.3	0.0	0.5
15 - 24	4	1	3	2,098,749	1,091,943	1,006,806	0.2 *	0.1 *	0.3 *	0.0	0.4	0.0	0.3	0.0	0.6
25 - 34	11	6	5	2,143,548	1,098,812	1,044,736	0.5 *	0.5 *	0.5 *	0.2	0.8	0.1	1.0	0.1	0.9
35 - 44	55	36	19	2,968,782	1,505,949	1,462,833	1.9	2.4	1.3	1.4	2.3	1.6	3.2	0.7	1.9
45 - 54	111	71	40	2,724,103	1,363,915	1,360,188	4.1	5.2	2.9	3.3	4.8	4.0	6.4	2.0	3.9
55 - 64	184	104	80	1,822,867	897,116	925,751	10.1	11.6	8.6	8.6	11.6	9.4	13.8	6.7	10.5
65 - 74	570	313	257	1,312,934	616,909	696,025	43.4	50.7	36.9	39.9	47.0	45.1	56.4	32.4	41.4
75 - 84	2,012	1,023	989	970,909	395,602	575,307	207.2	258.6	171.9	198.2	216.3	242.7	274.4	161.2	182.6
85 & OLDER	3,162	1,120	2,042	349,726	107,076	242,650	904.1	1,046.0	841.5	872.6	935.7	984.7	1,107.2	805.0	878.0
UNKNOWN	0	0	0												
TOTAL	6,123	2,683	3,440	17,503,225	8,674,802	8,828,423	35.0	30.9	39.0	34.1	35.9	29.8	32.1	37.7	40.3
AGE-ADJUSTED							28.1	33.5	24.7	27.4	28.8	32.2	34.8	23.9	25.6

Note: ICD-10 codes J10-J18; rates are per 100,000 population. White, Black, and Asian/Other exclude Hispanic ethnicity. The race/ethnic groups on this table were tabulated based on the first race on those certificates where more than one race was listed.
Year 2000 U.S. standard population is used for age-adjusted rates.

* 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) events.

Source: State of California, Department of Finance, 2001 Population Projections with Age, Sex and Race/Ethnic Detail, December 1998.
State of California, Department of Health Services, Death Records.

TABLE 2
INFLUENZA AND PNEUMONIA DEATHS BY RACE/ETHNICITY, AGE, AND SEX
CALIFORNIA, 2002
(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	31	24	7	565,286	289,063	276,223	5.5	8.3	2.5 *	3.6	7.4	5.0	11.6	0.7	4.4
1 - 4	15	8	7	2,259,315	1,155,699	1,103,616	0.7 *	0.7 *	0.6 *	0.3	1.0	0.2	1.2	0.2	1.1
5 - 14	9	5	4	5,779,949	2,962,038	2,817,911	0.2 *	0.2 *	0.1 *	0.1	0.3	0.0	0.3	0.0	0.3
15 - 24	10	6	4	4,878,693	2,531,467	2,347,226	0.2 *	0.2 *	0.2 *	0.1	0.3	0.0	0.4	0.0	0.3
25 - 34	31	18	13	4,876,792	2,566,475	2,310,317	0.6	0.7 *	0.6 *	0.4	0.9	0.4	1.0	0.3	0.9
35 - 44	85	52	33	5,762,850	2,962,675	2,800,175	1.5	1.8	1.2	1.2	1.8	1.3	2.2	0.8	1.6
45 - 54	198	118	80	4,794,731	2,387,728	2,407,003	4.1	4.9	3.3	3.6	4.7	4.1	5.8	2.6	4.1
55 - 64	332	189	143	3,041,927	1,484,478	1,557,449	10.9	12.7	9.2	9.7	12.1	10.9	14.5	7.7	10.7
65 - 74	853	472	381	1,998,910	931,513	1,067,397	42.7	50.7	35.7	39.8	45.5	46.1	55.2	32.1	39.3
75 - 84	2,521	1,249	1,272	1,360,295	557,358	802,937	185.3	224.1	158.4	178.1	192.6	211.7	236.5	149.7	167.1
85 & OLDER	4,013	1,556	2,457	483,490	155,701	327,789	830.0	999.4	749.6	804.3	855.7	949.7	1,048.0	719.9	779.2
UNKNOWN	0	0	0												
TOTAL	8,098	3,697	4,401	35,802,238	17,984,195	17,818,043	22.6	20.6	24.7	22.1	23.1	19.9	21.2	24.0	25.4
AGE-ADJUSTED							26.0	31.3	22.7	25.4	26.6	30.2	32.3	22.0	23.4
ASIAN/OTHER															
UNDER 1	4	3	1	71,070	36,363	34,707	5.6 *	8.3 *	2.9 *	0.1	11.1	0.0	17.6	0.0	8.5
1 - 4	2	2	0	282,531	144,555	137,976	0.7 *	1.4 *	0.0 +	0.0	1.7	0.0	3.3	-	-
5 - 14	1	0	1	704,536	362,486	342,050	0.1 *	0.0 +	0.3 *	0.0	0.4	-	-	0.0	0.9
15 - 24	1	1	0	647,043	331,690	315,353	0.2 *	0.3 *	0.0 +	0.0	0.5	0.0	0.9	-	-
25 - 34	3	1	2	679,965	344,174	335,791	0.4 *	0.3 *	0.6 *	0.0	0.9	0.0	0.9	0.0	1.4
35 - 44	4	3	1	719,105	350,905	368,200	0.6 *	0.9 *	0.3 *	0.0	1.1	0.0	1.8	0.0	0.8
45 - 54	12	10	2	620,977	294,261	326,716	1.9 *	3.4 *	0.6 *	0.8	3.0	1.3	5.5	0.0	1.5
55 - 64	23	13	10	360,153	170,641	189,512	6.4	7.6 *	5.3 *	3.8	9.0	3.5	11.8	2.0	8.5
65 - 74	75	38	37	232,917	104,165	128,752	32.2	36.5	28.7	24.9	39.5	24.9	48.1	19.5	38.0
75 - 84	218	118	100	139,375	58,899	80,476	156.4	200.3	124.3	135.6	177.2	164.2	236.5	99.9	148.6
85 & OLDER	304	159	145	44,465	18,527	25,938	683.7	858.2	559.0	606.8	760.5	724.8	991.6	468.0	650.0
UNKNOWN	0	0	0												
TOTAL	647	348	299	4,502,137	2,216,666	2,285,471	14.4	15.7	13.1	13.3	15.5	14.0	17.3	11.6	14.6
AGE-ADJUSTED							20.9	26.2	16.9	19.3	22.5	23.4	29.0	15.0	18.8
BLACK															
UNDER 1	7	6	1	37,035	18,947	18,088	18.9 *	31.7 *	5.5 *	4.9	32.9	6.3	57.0	0.0	16.4
1 - 4	3	0	3	148,422	75,963	72,459	2.0 *	0.0 +	4.1 *	0.0	4.3	-	-	0.0	8.8
5 - 14	1	1	0	412,599	209,510	203,089	0.2 *	0.5 *	0.0 +	0.0	0.7	0.0	1.4	-	-
15 - 24	1	0	1	370,840	196,122	174,718	0.3 *	0.0 +	0.6 *	0.0	0.8	-	-	0.0	1.7
25 - 34	7	3	4	340,450	181,068	159,382	2.1 *	1.7 *	2.5 *	0.5	3.6	0.0	3.5	0.1	5.0
35 - 44	13	6	7	382,583	187,179	195,404	3.4 *	3.2 *	3.6 *	1.6	5.2	0.6	5.8	0.9	6.2
45 - 54	28	16	12	312,810	147,562	165,248	9.0	10.8 *	7.3 *	5.6	12.3	5.5	16.2	3.2	11.4
55 - 64	40	22	18	178,888	82,569	96,319	22.4	26.6	18.7 *	15.4	29.3	15.5	37.8	10.1	27.3
65 - 74	75	46	29	108,774	48,191	60,583	69.0	95.5	47.9	53.3	84.6	67.9	123.0	30.4	65.3
75 - 84	149	69	80	62,397	24,072	38,325	238.8	286.6	208.7	200.5	277.1	219.0	354.3	163.0	254.5
85 & OLDER	149	54	95	18,601	5,543	13,058	801.0	974.2	727.5	672.4	929.7	714.4	1,234.0	581.2	873.8
UNKNOWN	0	0	0												
TOTAL	473	223	250	2,373,399	1,176,726	1,196,673	19.9	19.0	20.9	18.1	21.7	16.5	21.4	18.3	23.5
AGE-ADJUSTED							32.1	39.3	27.7	29.2	35.1	33.8	44.8	24.3	31.2
HISPANIC															
UNDER 1	16	13	3	276,097	141,109	134,988	5.8 *	9.2 *	2.2 *	3.0	8.6	4.2	14.2	0.0	4.7
1 - 4	3	3	0	1,083,387	553,994	529,393	0.3 *	0.5 *	0.0 +	0.0	0.6	0.0	1.2	-	-
5 - 14	5	4	1	2,502,767	1,279,414	1,223,353	0.2 *	0.3 *	0.1 *	0.0	0.4	0.0	0.6	0.0	0.2
15 - 24	2	2	0	1,717,001	889,356	827,645	0.1 *	0.2 *	0.0 +	0.0	0.3	0.0	0.5	-	-
25 - 34	6	5	1	1,748,261	960,276	787,985	0.3 *	0.5 *	0.1 *	0.1	0.6	0.1	1.0	0.0	0.4
35 - 44	14	12	2	1,756,084	951,727	804,357	0.8 *	1.3 *	0.2 *	0.4	1.2	0.5	2.0	0.0	0.6
45 - 54	33	20	13	1,113,871	570,189	543,682	3.0	3.5	2.4 *	2.0	4.0	2.0	5.0	1.1	3.7
55 - 64	50	27	23	569,723	279,445	290,278	8.8	9.7	7.9	6.3	11.2	6.0	13.3	4.7	11.2
65 - 74	127	65	62	341,805	157,826	183,979	37.2	41.2	33.7	30.7	43.6	31.2	51.2	25.3	42.1
75 - 84	291	157	134	183,377	76,439	106,938	158.7	205.4	125.3	140.5	176.9	173.3	237.5	104.1	146.5
85 & OLDER	320	131	189	60,479	19,997	40,482	529.1	655.1	466.9	471.1	587.1	542.9	767.3	400.3	533.4
UNKNOWN	0	0	0												
TOTAL	867	439	428	11,352,852	5,879,772	5,473,080	7.6	7.5	7.8	7.1	8.1	6.8	8.2	7.1	8.6
AGE-ADJUSTED							19.3	23.9	16.2	17.9	20.6	21.5	26.3	14.7	17.7
WHITE															
UNDER 1	4	2	2	181,084	92,644	88,440	2.2 *	2.2 *	2.3 *	0.0	4.4	0.0	5.2	0.0	5.4
1 - 4	7	3	4	744,975	381,187	363,788	0.9 *	0.8 *	1.1 *	0.2	1.6	0.0	1.7	0.0	2.2
5 - 14	2	0	2	2,160,047	1,110,628	1,049,419	0.1 *	0.0 +	0.2 *	0.0	0.2	-	-	0.0	0.5
15 - 24	6	3	3	2,143,809	1,114,299	1,029,510	0.3 *	0.3 *	0.3 *	0.1	0.5	0.0	0.6	0.0	0.6
25 - 34	15	9	6	2,108,116	1,080,957	1,027,159	0.7 *	0.8 *	0.6 *	0.4	1.1	0.3	1.4	0.1	1.1
35 - 44	54	31	23	2,905,078	1,472,864	1,432,214	1.9	2.1	1.6	1.4	2.4	1.4	2.8	0.9	2.3
45 - 54	125	72	53	2,747,073	1,375,716	1,371,357	4.6	5.2	3.9	3.8	5.3	4.0	6.4	2.8	4.9
55 - 64	219	127	92	1,933,163	951,823	981,340	11.3	13.3	9.4	9.8	12.8	11.0	15.7	7.5	11.3
65 - 74	576	323	253	1,315,414	621,331	694,083	43.8	52.0	36.5	40.2	47.4	46.3	57.7	32.0	40.9
75 - 84	1,863	905	958	975,146	397,948	577,198	191.0	227.4	166.0	182.4	199.7	212.6	242.2	155.5	176.5
85 & OLDER	3,240	1,212	2,028	359,945	111,634	248,311	900.1	1,085.7	816.7	869.1	931.1	1,024.6	1,146.8	781.2	852.3
UNKNOWN	0	0	0												
TOTAL	6,111	2,687	3,424	17,573,850	8,711,031	8,862,819	34.8	30.8	38.6	33.9	35.6	29.7	32.0	37.3	39.9
AGE-ADJUSTED							27.6	32.9	24.4	26.9	28.2	31.6	34.2	23.5	25.2

Notes: ICD-10 codes J10-J18; rates are per 100,000 population. White, Black, and Asian/Other exclude Hispanic ethnicity. The race/ethnic groups on this table were tabulated based on the first race on those certificates where more than one race was listed.
Year 2000 U.S. standard population is used for age-adjusted rates.

* 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) events.

Sources: State of California, Department of Finance. 2002 Population Projections with Age, Sex and Race/Ethnic Detail. December 1998.
State of California, Department of Health Services. Death Records.

TABLE 3
INFLUENZA AND PNEUMONIA DEATHS
CALIFORNIA COUNTIES, 2000-2002
(By Place of Residence)

COUNTY	2000 - 2002 DEATHS (AVERAGE)	PERCENT	2001 POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS	
						LOWER	UPPER
CALIFORNIA	8,206.7	100.0	35,233,335	23.3	27.0	26.4	27.6
ALAMEDA	302.3	3.7	1,492,004	20.3	23.5	20.8	26.1
ALPINE	0.0	0.0	1,268	0.0 +	0.0 +	-	-
AMADOR	14.0	0.2	35,242	39.7 *	25.1 *	11.9	38.2
BUTTE	65.7	0.8	213,040	30.8	20.1	15.2	25.1
CALAVERAS	9.7	0.1	43,392	22.3 *	16.4 *	5.9	26.9
COLUSA	5.7	0.1	22,012	25.7 *	23.4 *	4.0	42.7
CONTRA COSTA	209.0	2.5	942,662	22.2	23.5	20.3	26.7
DEL NORTE	10.7	0.1	31,801	33.5 *	27.2 *	10.9	43.6
EL DORADO	34.0	0.4	168,912	20.1	20.9	13.8	28.0
FRESNO	177.0	2.2	825,365	21.4	25.4	21.7	29.2
GLENN	5.3	0.1	30,291	17.6 *	15.3 *	2.2	28.3
HUMBOLDT	36.0	0.4	129,211	27.9	26.7	18.0	35.4
IMPERIAL	12.0	0.1	161,177	7.4 *	9.3 *	4.0	14.6
INYO	6.7	0.1	18,510	36.0 *	23.3 *	5.4	41.2
KERN	167.0	2.0	694,749	24.0	28.6	24.2	32.9
KINGS	12.7	0.2	129,375	9.8 *	14.7 *	6.5	22.8
LAKE	25.0	0.3	62,080	40.3	24.6	14.6	34.6
LASSEN	4.3	0.1	36,759	11.8 *	12.6 *	0.7	24.6
LOS ANGELES	2,464.0	30.0	9,925,413	24.8	32.1	30.9	33.4
MADERA	17.3	0.2	131,052	13.2 *	14.2 *	7.5	20.9
MARIN	78.0	1.0	249,634	31.2	29.7	23.1	36.3
MARIPOSA	3.3	a	17,218	19.4 *	12.5 *	0.0	26.0
MENDOCINO	25.7	0.3	91,963	27.9	24.9	15.2	34.5
MERCED	30.7	0.4	219,936	13.9	19.0	12.3	25.7
MODOC	2.7	a	10,589	25.2 *	17.4 *	0.0	38.5
MONO	0.7	a	11,081	6.0 *	7.9 *	0.0	28.0
MONTEREY	61.7	0.8	409,511	15.1	19.0	14.3	23.8
NAPA	57.3	0.7	129,130	44.4	32.7	24.1	41.2
NEVADA	25.7	0.3	99,670	25.8	17.5	10.7	24.2
ORANGE	628.0	7.7	2,872,632	21.9	30.9	28.5	33.4
PLACER	64.0	0.8	252,688	25.3	26.6	20.1	33.1
PLUMAS	6.0	0.1	21,044	28.5 *	18.5 *	3.6	33.4
RIVERSIDE	356.7	4.3	1,626,134	21.9	20.9	18.7	23.1
SACRAMENTO	346.0	4.2	1,236,054	28.0	32.2	28.8	35.6
SAN BENITO	8.3	0.1	53,577	15.6 *	18.7 *	6.0	31.4
SAN BERNARDINO	326.0	4.0	1,771,707	18.4	27.4	24.4	30.4
SAN DIEGO	680.7	8.3	3,005,038	22.7	25.5	23.6	27.4
SAN FRANCISCO	295.3	3.6	794,342	37.2	28.3	25.1	31.6
SAN JOAQUIN	113.7	1.4	593,538	19.2	20.1	16.4	23.8
SAN LUIS OBISPO	43.7	0.5	262,123	16.7	13.6	9.5	17.6
SAN MATEO	205.0	2.5	759,313	27.0	26.7	23.1	30.4
SANTA BARBARA	95.3	1.2	417,331	22.8	22.0	17.5	26.4
SANTA CLARA	336.0	4.1	1,795,132	18.7	26.7	23.8	29.6
SANTA CRUZ	49.7	0.6	264,525	18.8	19.3	13.9	24.6
SHASTA	53.3	0.6	179,892	29.6	25.4	18.6	32.2
SIERRA	1.0	a	3,465	28.9 *	15.4 *	0.0	45.6
SISKIYOU	14.0	0.2	45,624	30.7 *	22.4 *	10.5	34.2
SOLANO	88.3	1.1	408,095	21.6	31.8	25.1	38.5
SONOMA	128.3	1.6	468,682	27.4	24.1	19.9	28.3
STANISLAUS	133.7	1.6	472,096	28.3	32.4	26.9	37.9
SUTTER	23.3	0.3	83,999	27.8	26.2	15.5	36.9
TEHAMA	19.0	0.2	57,642	33.0	24.0 *	13.1	34.9
TRINITY	3.3	a	13,605	24.5 *	20.0 *	0.0	41.5
TULARE	93.3	1.1	388,730	24.0	28.0	22.3	33.7
TUOLUMNE	14.7	0.2	57,497	25.5 *	18.0 *	8.7	27.3
VENTURA	143.0	1.7	763,586	18.7	22.9	19.1	26.6
YOLO	56.7	0.7	167,259	33.9	40.6	30.0	51.2
YUBA	16.3	0.2	64,938	25.2 *	30.7 *	15.8	45.6

Notes: ICD-10 codes J10-J18; rates are per 100,000 population.

Year 2000 U.S. standard population is used for age-adjusted rates.

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

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

- Confidence limit is not calculated for no (zero) events.

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

Sources: State of California, Department of Finance. 2001 Population Projections with Age, Sex and Race/Ethnic Detail. December 1998.

State of California, Department of Health Services. Death Records.