



CENTER FOR HEALTH STATISTICS  
**DATA SUMMARY**  
REPORT REGISTER NO. DS98-12001  
(December 1998)

**PNEUMONIA AND  
INFLUENZA DEATHS  
CALIFORNIA, 1980-1996**

## Introduction

This report presents pneumonia and influenza death data in California for the years 1980 through 1996. Also included in this report are trend analyses and comparisons of the data by sex, age, race/ethnicity, and county.

Pneumonia alone encompasses many different diseases that involve infection or inflammation of the lungs. Because pneumonia is frequently a complication of influenza, 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 considerably during epidemics. Influenza can be represented by more virulent strains in some years more than others as the viruses mutate constantly.<sup>1</sup> Together the number of pneumonia and influenza deaths have fluctuated considerably over the years reflecting the cyclic nature of communicable diseases.

There were over 4.2 million reported cases of pneumonia and 90.4 million cases of influenza in the United States in 1994.<sup>2</sup> In 1996, pneumonia and influenza combined were the 6<sup>th</sup> leading cause of death in the United States with 83,727 deaths.<sup>3</sup> In California during 1996, deaths due to pneumonia and influenza were the 5<sup>th</sup> leading cause with 11,134 deaths.<sup>4</sup>

Deaths due to pneumonia and influenza predominantly affect those aged 65 and over. The high mortality rate and low immunization rate among high risk populations led the United States Public Health Service to establish a number of national *Healthy People 2000*<sup>5</sup> objectives related to pneumonia and influenza. One objective is to reduce epidemic-related pneumonia and influenza deaths among people aged 65 and older to no more than 15.9 per 100,000. Epidemic-related pneumonia and influenza deaths are those deaths that occur above and beyond the normal yearly fluctuations of mortality. Objectives related to the reduction of pneumonia-related days of restricted activity and improvement in immunization rates among high-risk populations are also published in *Healthy People 2000*.<sup>5</sup> Because this report presents annualized mortality information for all age groups regardless of seasonal epidemics, California's progress in meeting the national health objective is not discussed.

## Pneumonia and Influenza Deaths

As shown in **Table 1** (page 5), though the number of pneumonia and influenza deaths fluctuated, they nearly doubled over the 17 year period from 1980 (5,570) to 1996 (11,134). The number of pneumonia and influenza deaths among males and females also showed similar increases during this period. Deaths among males increased 84.2 percent from 2,720 in 1980, to a high of 5,009 in 1996. Deaths among females increased from 2,850 in 1980 to a high of 6,125 in 1996 representing a 114.9 percent increase. Further comparison of the pneumonia and influenza deaths by sex showed females had more deaths than males in all years from 1980 through 1996.

**Table 2** (page 6) shows pneumonia and influenza deaths by the four major race/ethnic groups from 1985 through 1996. Throughout the 12-year period, the majority of deaths due to pneumonia and influenza occurred among Whites (82.2 percent), followed by Hispanics (7.7 percent), Blacks (5.5 percent), and Asian/Other (4.6 percent).

*This Data Summary was prepared by Michael Quinn, Center for Health Statistics, 304 S Street, P.O. Box 942732, Sacramento, CA 94234-7320, (916) 445-6355.*

Analysis of the trend data revealed fluctuations, but an otherwise overall increase in the number of pneumonia and influenza deaths among each of the four race/ethnic groups from 1985 through 1996. During this period, the number of pneumonia and influenza deaths increased 166.0 percent among Asian/Other, 88.0 percent among Hispanics, 72.5 percent among Blacks, and 28.5 percent among Whites.

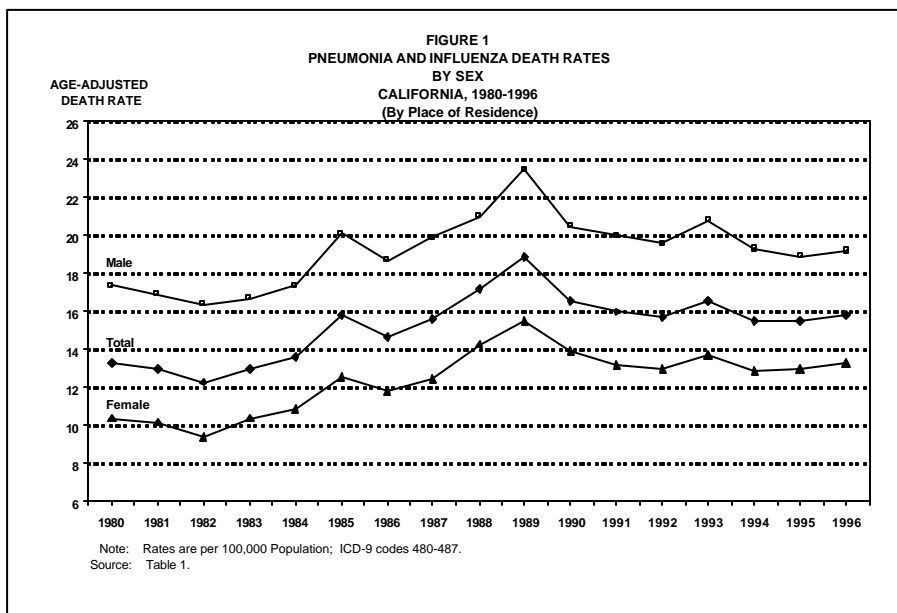
## Pneumonia and Influenza Crude Death Rates

As shown in **Table 1** (page 5), California's crude death rate due to pneumonia and influenza decreased slightly from 23.4 per 100,000 population in 1980 to 22.0 in 1982 then fluctuated over the next fourteen years to reach a high of 34.4 in 1996 representing a 56.4 percent increase. The death rate among females and males revealed a similar pattern. The female death rate was 23.6 in 1980, decreased to 22.0 in 1982, and then increased 72.3 percent through the following 14 years to a high of 37.9 in 1996. The male death rate was 23.2 in 1980, decreased to 22.1 in 1982, and then increased 39.8 percent to a high of 30.9 in 1996. Further analysis revealed that the female death rates were higher than the male death rates for all years except 1982.

**Table 2** (page 6) shows the pneumonia and influenza crude death rate by the four major race/ethnic groups. From 1985 through 1996, Whites had the highest death rate, nearly two times higher than Blacks, almost three times higher than Asian/Other, and five times higher than Hispanics. All four race/ethnic groups showed significant increases in their crude death rate since 1985. The death rate among Asian/Other increased significantly from 11.2 per 100,000 population in 1985 to a high of 17.6 in 1996 representing a 57.1 percent increase. The crude death rate for Blacks varied over the 12 year period with an overall increase of 45.7 percent, which was significant. The Black death rate rose 61.8 percent from a low of 18.6 in 1985 to a high of 30.1 in 1989, then dropped to 23.0 in 1990, and rose again during the next six years to 27.1 in 1996. The White death rate increased significantly from 42.7 in 1985 to a high of 52.0 in 1996 representing a 21.8 percent increase. The White crude death rate also reflected an increase during 1989 (51.4), up 20.4 percent from 1985. The death rate among Hispanics also varied but still increased 22.4 percent from 8.5 in 1985 to 10.4 in 1996. Higher rates for Hispanics were also noted in 1989 (10.4) and 1993 (10.9).

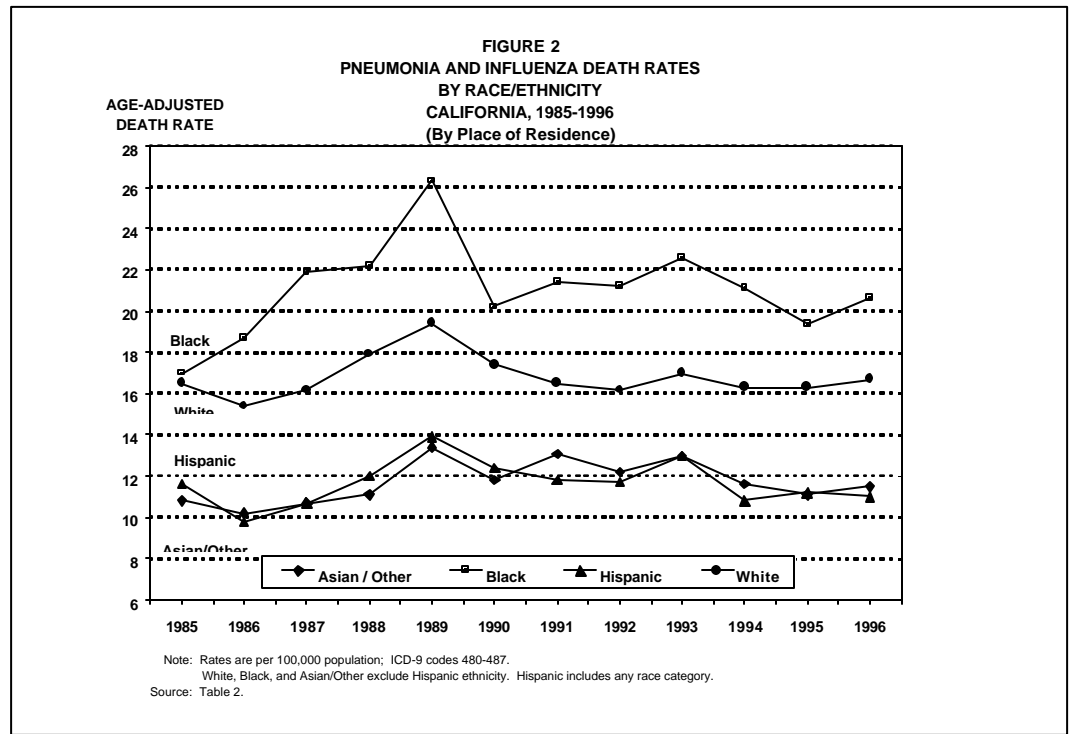
## Pneumonia and Influenza Age-Adjusted Death Rates

As illustrated in **Figure 1**, the pneumonia and influenza age-adjusted death rate among the total population was 13.3 per 100,000 population in 1980 then decreased to a low of 12.3 in 1982. Over the next 14 years, the age-adjusted death rate varied with high points in 1985 (15.8), 1989 (18.9), and 1993 (16.6). In 1996 the rate was 15.8. Even though the trend in the age-adjusted death rate varied over the years 1980 through 1996 the overall increase was significant. Analysis of the death rates by sex showed the male age-adjusted death rate was 17.4 in 1980, increased to a high of 23.5 in 1989, and fluctuated over the next seven years to 19.2 in 1996. The female age-adjusted death rate increased significantly from 10.4 in 1980 to a high of 15.5 in 1989, then fluctuated to 13.3 in 1996.

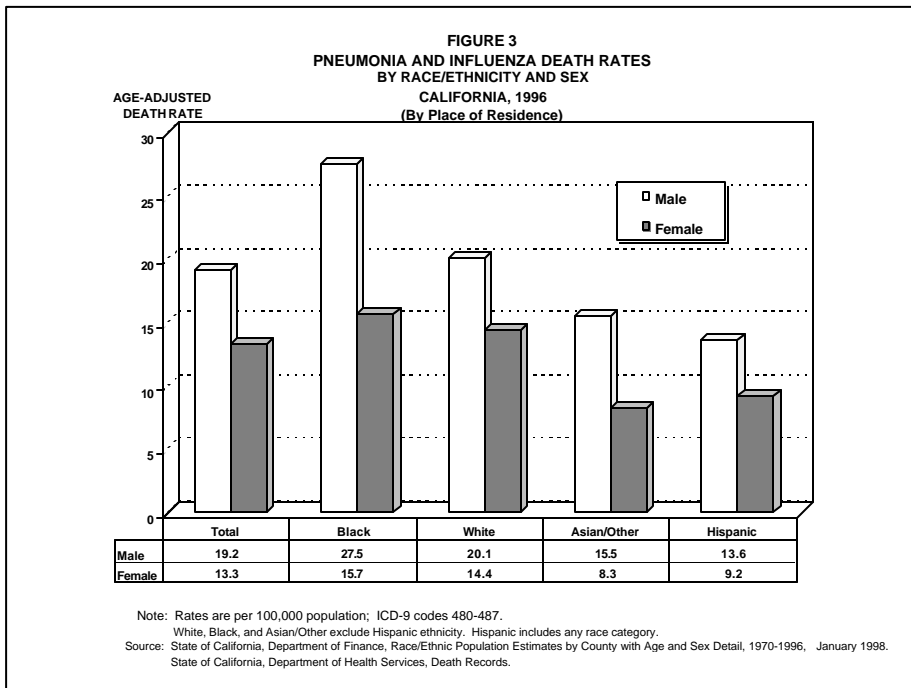


Even though both the male and female age-adjusted death rates have risen, the male rate continues to be higher. The gap between them appears to be slightly narrowing over the 17 year period. In 1980 the male rate was almost 1.7 higher than the female rate. Since then, the differential in the male to female age-adjusted death rate decreased to 1.4 to 1 in 1996.

As illustrated in **Figure 2**, Blacks had the highest age-adjusted death rate followed by Whites. The age-adjusted death rate for Asian/Other and Hispanics were very similar from 1985 through 1996 even duplicating rates in 1987 and 1993. The age-adjusted death rates among Blacks and Whites were significantly higher than the rates among Asian/Other and Hispanics during this period. The Black age-adjusted death rate was 17.0 per 100,000 population in 1985, rose to a high of 26.3 in 1989, decreased to 20.2 in 1990, rose to 22.6 in 1993, and then dropped to 20.6 in 1996. The White age-adjusted death rate was 16.5 in 1985, increased to a high of 19.4 in 1989, and then declined to 16.2 in 1992 before increasing to 16.7 in 1996. The Hispanic age-adjusted death rate was 11.6 in 1985, reached a high of 13.9 in 1989, and in 1996 was 11.0. The age-adjusted death rate among Asian/Other was 10.8 in 1985, increased to a high of 13.4 in 1989, and fluctuated over the following seven years to 11.5 in 1996. Peak rates were reflected among all race/ethnic groups in 1989 and 1993. Over the twelve-year period, regression analysis revealed no significant upward or downward trend among any of the four race/ethnic groups.



The Black age-adjusted death rate was 17.0 per 100,000 population in 1985, rose to a high of 26.3 in 1989, decreased to 20.2 in 1990, rose to 22.6 in 1993, and then dropped to 20.6 in 1996. The White age-adjusted death rate was 16.5 in 1985, increased to a high of 19.4 in 1989, and then declined to 16.2 in 1992 before increasing to 16.7 in 1996. The Hispanic age-adjusted death rate was 11.6 in 1985, reached a high of 13.9 in 1989, and in 1996 was 11.0. The age-adjusted death rate among Asian/Other was 10.8 in 1985, increased to a high of 13.4 in 1989, and fluctuated over the following seven years to 11.5 in 1996. Peak rates were reflected among all race/ethnic groups in 1989 and 1993. Over the twelve-year period, regression analysis revealed no significant upward or downward trend among any of the four race/ethnic groups.



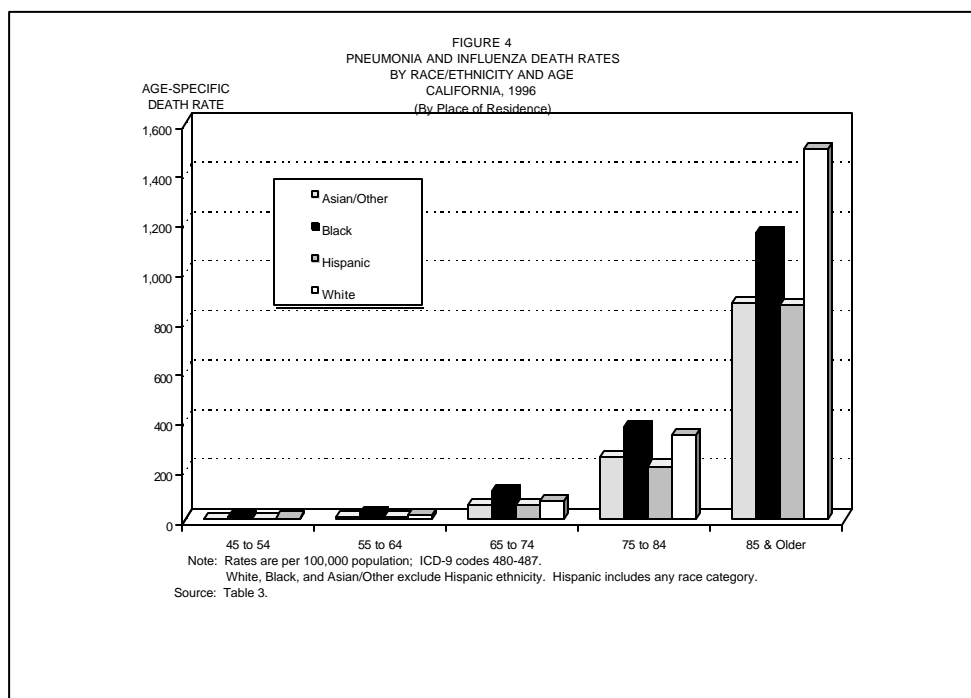
As illustrated in **Figure 3**, males had higher age-adjusted death rates than females in 1996, regardless of race/ethnicity. Of the four race/ethnic groups, Asian/Other had the highest male to female rate differential, 1.9 to 1. In comparing male age-adjusted death rates, Blacks had the highest, 27.5 per 100,000 population. Their age-adjusted death rate was significantly higher than the rates among White males (20.1), Asian/Other males (15.5), and Hispanic males (13.6). In comparing the female age-adjusted death rates, Blacks had the highest, was 15.7 per 100,000 population. Their age-adjusted death rate was higher than the rates among White females (14.4), and significantly higher than the rates among Hispanic females (9.2), and Asian/Other females (8.3).

## Pneumonia and Influenza Age-Specific Deaths and Death Rates

As shown in **Table 3** (page 7), the majority of deaths due to pneumonia and influenza in 1996 was among the elderly. California residents aged 85 and older had the greatest number of deaths due to pneumonia and influenza (5,053) followed by those aged 75-84 (3,752), and those aged 65-74 (1,377). Of the four race/ethnic groups, Whites had the most deaths (8,905) or 80.0 percent of the total number of pneumonia and influenza deaths in California. They also had the most pneumonia and influenza deaths in all but the three youngest age groups. Analysis of the pneumonia and influenza deaths by race/ethnicity and sex revealed White females had the greatest number of deaths (5,050) followed by White males (3,855).

**Table 3** also shows the highest age-specific pneumonia and influenza death rates among all race/ethnic groups were among California residents aged 65 and over. Further analysis among those aged 65 and over by race/ethnicity and sex revealed males in almost every race/ethnic category had higher age-specific death rates than females.

As illustrated in **Figure 4**, Whites and Blacks had the highest age-specific pneumonia and influenza death rates, while Asian/Other and Hispanics had the lowest in 1996. Among those aged 85 and over, Whites had the highest age-specific death rate (1,494.1 per 100,000 population) followed by Blacks (1,158.5), Asian/Other (877.1), and Hispanics (868.4). The pattern changed among those aged 75-84 where Blacks had the highest age-specific death rate (372.4) followed by Whites (341.7), Asian/Other (256.5), and Hispanics (214.5). For those aged 65-74, Blacks had the highest age-specific death rate (115.5), followed by Whites (71.6), Asian/Other (58.4), and Hispanics (56.8).



## Pneumonia and Influenza Death Rates Among California Counties

**Table 4** (page 8) shows the 1994-1996 three-year average numbers and rates of pneumonia and influenza deaths for California and its 58 counties. Of the 58 counties, Los Angeles had the highest number of deaths (2,935.0) followed by San Diego (847.7), and Orange (712.7).

Of the counties with reliable crude death rates due to pneumonia and influenza, Lake had the highest (75.8 per 100,000 population) and Imperial had the lowest (16.5). The crude rates for these two counties differed by a factor of 4.6 to 1. California's crude death rate due to pneumonia and influenza was 33.2.

Of the counties with reliable age-adjusted death rates due to pneumonia and influenza, Stanislaus had the highest (27.3 per 100,000 population) and Imperial had the lowest (10.1). California's age-adjusted death rate due to pneumonia and influenza was 15.6.

**TABLE 1**  
**DEATHS DUE TO PNEUMONIA AND INFLUENZA**  
**BY SEX**  
**CALIFORNIA, 1980-1996**  
(By Place of Residence)

SEX	EVENT YEAR	DEATHS	POPULATION	CRUDE RATE	AGE-ADJUSTED RATE	95% CONFIDENCE LIMITS LOWER	UPPER
<b>TOTAL</b>							
	1996	11,134	32,383,811	34.4	15.8	15.4	16.1
	1995	10,548	32,062,912	32.9	15.5	15.1	15.8
	1994	10,237	31,790,557	32.2	15.5	15.2	15.9
	1993	10,508	31,515,753	33.3	16.6	16.3	17.0
	1992	9,793	31,186,559	31.4	15.7	15.4	16.1
	1991	9,725	30,563,276	31.8	16.0	15.7	16.4
	1990	9,686	29,942,397	32.3	16.6	16.3	17.0
	1989	10,479	29,142,106	36.0	18.9	18.5	19.3
	1988	9,382	28,393,094	33.0	17.2	16.8	17.5
	1987	8,263	27,716,860	29.8	15.6	15.2	16.0
	1986	7,602	27,052,291	28.1	14.7	14.4	15.1
	1985	8,046	26,402,633	30.5	15.8	15.4	16.2
	1984	6,624	25,816,294	25.7	13.6	13.2	14.0
	1983	6,021	25,336,301	23.8	13.0	12.6	13.4
	1982	5,469	24,805,011	22.0	12.3	12.0	12.7
	1981	5,616	24,277,674	23.1	13.0	12.7	13.4
	1980	5,570	23,780,068	23.4	13.3	12.9	13.6
<b>MALE</b>							
	1996	5,009	16,227,924	30.9	19.2	18.7	19.8
	1995	4,726	16,062,552	29.4	18.9	18.4	19.5
	1994	4,679	15,921,009	29.4	19.3	18.7	19.9
	1993	4,865	15,782,166	30.8	20.8	20.2	21.4
	1992	4,515	15,616,376	28.9	19.6	19.0	20.2
	1991	4,464	15,301,183	29.2	20.0	19.4	20.7
	1990	4,333	14,989,516	28.9	20.5	19.9	21.1
	1989	4,735	14,573,988	32.5	23.5	22.8	24.2
	1988	4,172	14,181,700	29.4	21.0	20.3	21.6
	1987	3,875	13,825,118	28.0	19.9	19.2	20.5
	1986	3,553	13,474,197	26.4	18.7	18.1	19.4
	1985	3,738	13,130,674	28.5	20.1	19.4	20.8
	1984	3,144	12,818,768	24.5	17.4	16.7	18.0
	1983	2,876	12,559,834	22.9	16.7	16.0	17.3
	1982	2,717	12,275,613	22.1	16.4	15.7	17.0
	1981	2,714	11,993,514	22.6	16.9	16.3	17.6
	1980	2,720	11,722,769	23.2	17.4	16.8	18.1
<b>FEMALE</b>							
	1996	6,125	16,155,887	37.9	13.3	12.9	13.7
	1995	5,822	16,000,360	36.4	13.0	12.6	13.4
	1994	5,558	15,869,548	35.0	12.9	12.5	13.4
	1993	5,643	15,733,587	35.9	13.7	13.3	14.1
	1992	5,278	15,570,183	33.9	13.0	12.6	13.5
	1991	5,261	15,262,093	34.5	13.2	12.8	13.7
	1990	5,353	14,952,881	35.8	13.9	13.4	14.3
	1989	5,744	14,568,118	39.4	15.5	15.1	16.0
	1988	5,210	14,211,394	36.7	14.3	13.9	14.8
	1987	4,388	13,891,742	31.6	12.5	12.0	12.9
	1986	4,049	13,578,094	29.8	11.8	11.4	12.2
	1985	4,308	13,271,959	32.5	12.6	12.1	13.0
	1984	3,480	12,997,526	26.8	10.9	10.5	11.4
	1983	3,145	12,776,467	24.6	10.4	9.9	10.8
	1982	2,752	12,529,398	22.0	9.4	9.0	9.8
	1981	2,902	12,284,160	23.6	10.2	9.8	10.7
	1980	2,850	12,057,299	23.6	10.4	9.9	10.8

Note : Rates are per 100,000 population. ICD-9 codes 480-487.

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

**TABLE 2**  
**DEATHS DUE TO PNEUMONIA AND INFLUENZA**  
**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
<b>ASIAN/OTHER</b>							
	1996	641	3,645,998	17.6	11.5	10.5	12.4
	1995	591	3,530,931	16.7	11.1	10.1	12.0
	1994	556	3,429,125	16.2	11.6	10.6	12.6
	1993	575	3,323,013	17.3	13.0	11.9	14.1
	1992	510	3,209,399	15.9	12.2	11.1	13.3
	1991	494	3,068,424	16.1	13.1	11.9	14.3
	1990	406	2,930,570	13.9	11.8	10.6	12.9
	1989	414	2,774,167	14.9	13.4	12.1	14.7
	1988	310	2,616,586	11.8	11.1	9.8	12.3
	1987	287	2,465,134	11.6	10.7	9.4	11.9
	1986	251	2,313,141	10.9	10.2	8.9	11.5
	1985	241	2,158,886	11.2	10.8	9.4	12.1
<b>BLACK</b>							
	1996	616	2,275,401	27.1	20.6	18.9	22.3
	1995	565	2,250,502	25.1	19.4	17.7	21.1
	1994	581	2,232,841	26.0	21.1	19.3	23.0
	1993	601	2,214,376	27.1	22.6	20.7	24.5
	1992	572	2,192,451	26.1	21.2	19.3	23.0
	1991	553	2,147,691	25.7	21.4	19.5	23.3
	1990	485	2,105,207	23.0	20.2	18.3	22.1
	1989	620	2,061,823	30.1	26.3	24.1	28.4
	1988	498	2,024,779	24.6	22.2	20.1	24.2
	1987	478	1,992,361	24.0	21.9	19.9	24.0
	1986	408	1,958,844	20.8	18.7	16.8	20.6
	1985	357	1,923,209	18.6	17.0	15.2	18.8
<b>HISPANIC</b>							
	1996	972	9,330,740	10.4	11.0	10.3	11.8
	1995	892	9,100,994	9.8	11.2	10.4	12.0
	1994	828	8,882,966	9.3	10.8	10.0	11.6
	1993	940	8,658,118	10.9	13.0	12.1	13.9
	1992	801	8,421,133	9.5	11.7	10.8	12.5
	1991	766	8,097,870	9.5	11.8	10.9	12.7
	1990	730	7,774,789	9.4	12.4	11.5	13.3
	1989	772	7,419,574	10.4	13.9	12.8	14.9
	1988	646	7,077,579	9.1	12.0	11.0	13.0
	1987	549	6,754,398	8.1	10.7	9.7	11.6
	1986	467	6,428,436	7.3	9.8	8.9	10.7
	1985	517	6,103,662	8.5	11.6	10.6	12.7
<b>WHITE</b>							
	1996	8,905	17,131,672	52.0	16.7	16.3	17.2
	1995	8,500	17,180,485	49.5	16.3	15.9	16.8
	1994	8,272	17,245,625	48.0	16.3	15.9	16.8
	1993	8,392	17,320,246	48.5	17.0	16.6	17.5
	1992	7,910	17,363,576	45.6	16.2	15.8	16.6
	1991	7,912	17,249,291	45.9	16.5	16.1	17.0
	1990	8,065	17,131,831	47.1	17.4	16.9	17.8
	1989	8,673	16,886,542	51.4	19.4	18.9	19.9
	1988	7,928	16,674,150	47.5	17.9	17.5	18.4
	1987	6,949	16,504,967	42.1	16.2	15.7	16.6
	1986	6,476	16,351,870	39.6	15.4	15.0	15.9
	1985	6,931	16,216,876	42.7	16.5	16.0	16.9

Note : Rates are per 100,000 population. ICD-9 codes 480-487.

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 PNEUMONIA AND INFLUENZA**  
**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	MAI F	FFMAI F	TOTAL	MAI F	FFMAI F	TOTAL		MALE		FEMALE	
								LOWER	UPPER	LOWER	UPPER	LOWER	UPPER
<b>TOTAL</b>													
	Under 1	70	40	30	12.9	14.5	11.4	9.9	16.0	10.0	18.9	7.3	15.4
	1 to 4	18	8	10	0.8	0.7 *	0.9 *	0.4	1.1	0.2	1.2	0.3	1.4
	5 to 14	18	9	9	0.4	0.4 *	0.4 *	0.2	0.5	0.1	0.6	0.1	0.6
	15 to 24	14	8	6	0.3	0.4 *	0.3 *	0.2	0.5	0.1	0.6	0.1	0.5
	25 to 34	59	24	35	1.1	0.8	1.4	0.8	1.4	0.5	1.2	0.9	1.8
	35 to 44	136	84	52	2.5	3.1	2.0	2.1	2.9	2.4	3.7	1.4	2.5
	45 to 54	218	139	79	5.7	7.4	4.1	5.0	6.5	6.1	8.6	3.2	5.0
	55 to 64	417	249	168	17.7	21.7	13.9	16.0	19.4	19.0	24.4	11.8	15.9
	65 to 74	1,377	767	610	70.5	87.2	56.8	66.7	74.2	81.0	93.3	52.3	61.3
	75 to 84	3,752	1,898	1,854	407.5	475.5	266.4	312.6	333.3	389.2	425.9	254.3	278.5
	85 & Older	5,053	1,781	3,272	1,361.6	1,586.5	1,264.0	1,324.0	1,399.1	1,512.8	1,660.2	1,220.7	1,307.3
	Unknown	2	2	0									
	Total	11,134	5,009	6,125	34.4	30.9	37.9	33.7	35.0	30.0	31.7	37.0	38.9
<b>ASIAN/OTHER</b>													
	Under 1	7	5	2	11.5 *	16.0 *	6.8 *	3.0	20.1	2.0	30.0	0.0	16.2
	1 to 4	0	0	0	0.0 +	0.0 +	0.0 +	-	-	-	-	-	-
	5 to 14	1	1	0	0.2 *	0.3 *	0.0 +	0.0	0.5	0.0	1.0	-	-
	15 to 24	1	1	0	0.2 *	0.4 *	0.0 +	0.0	0.6	0.0	1.1	-	-
	25 to 34	5	3	2	0.8 *	1.0 *	0.7 *	0.1	1.6	0.0	2.1	0.0	1.6
	35 to 44	7	5	2	1.1 *	1.6 *	0.6 *	0.3	1.9	0.2	3.1	0.0	1.5
	45 to 54	16	7	9	3.7	3.4 *	3.9 *	1.9	5.4	0.9	5.9	1.4	6.5
	55 to 64	26	20	6	10.1	16.6	4.4 *	6.2	14.0	9.3	23.8	0.9	7.9
	65 to 74	110	67	43	58.4	81.9	40.3	47.5	69.3	62.3	101.5	28.3	52.3
	75 to 84	237	140	97	256.5	353.2	183.9	223.9	289.2	294.7	411.7	147.3	220.5
	85 & Older	231	120	111	877.1	1,068.5	734.9	764.0	990.2	877.3	1,259.6	598.1	871.6
	Total	641	369	272	17.6	20.6	14.7	16.2	18.9	18.5	22.7	12.9	16.4
<b>BLACK</b>													
	Under 1	10	8	2	26.8 *	42.2 *	10.9 *	10.2	43.5	13.0	71.5	0.0	26.0
	1 to 4	2	2	0	1.2 *	2.3 *	0.0 +	0.0	2.8	0.0	5.5	-	-
	5 to 14	2	1	1	0.5 *	0.5 *	0.5 *	0.0	1.2	0.0	1.5	0.0	1.5
	15 to 24	3	1	2	0.9 *	0.5 *	1.2 *	0.0	1.8	0.0	1.6	0.0	2.9
	25 to 34	7	2	5	1.8 *	1.0 *	2.6 *	0.5	3.1	0.0	2.3	0.3	4.9
	35 to 44	23	13	10	6.2	7.2	5.2 *	3.7	8.7	3.3	11.1	2.0	8.4
	45 to 54	29	21	8	11.9	18.4	6.2 *	7.6	16.3	10.5	26.3	1.9	10.5
	55 to 64	39	29	10	25.6	40.7	12.4 *	17.6	33.6	25.9	55.4	4.7	20.0
	65 to 74	118	67	51	115.5	153.5	87.1	94.6	136.3	116.7	190.2	63.2	111.0
	75 to 84	199	97	102	372.4	493.0	302.2	320.7	424.2	394.9	591.1	243.5	360.8
	85 & Older	184	66	118	1,158.5	1,413.6	1,052.3	991.1	1,325.9	1,072.5	1,754.6	862.4	1,242.1
	Total	616	307	309	27.1	27.4	26.8	24.9	29.2	24.3	30.4	23.8	29.8
<b>HISPANIC</b>													
	Under 1	35	17	18	13.9	13.2	14.5	9.3	18.4	6.9	19.5	7.8	21.2
	1 to 4	10	5	5	1.0 *	0.9 *	1.0 *	0.4	1.6	0.1	1.8	0.1	1.8
	5 to 14	9	3	6	0.5 *	0.3 *	0.7 *	0.2	0.8	0.0	0.7	0.1	1.2
	15 to 24	4	3	1	0.3 *	0.4 *	0.1 *	0.0	0.6	0.0	0.9	0.0	0.4
	25 to 34	4	3	1	0.2 *	0.3 *	0.1 *	0.0	0.4	0.0	0.6	0.0	0.4
	35 to 44	23	14	9	1.7	1.9	1.4 *	1.0	2.4	0.9	3.0	0.5	2.3
	45 to 54	28	21	7	3.7	5.6	1.9 *	2.4	5.1	3.2	8.0	0.5	3.3
	55 to 64	55	31	24	13.2	15.5	11.1	9.7	16.7	10.0	20.9	6.7	15.6
	65 to 74	159	85	74	56.8	67.2	48.2	47.9	65.6	52.9	81.5	37.2	59.1
	75 to 84	262	137	125	214.5	284.9	168.8	188.5	240.5	237.2	332.6	139.2	198.4
	85 & Older	383	159	224	868.4	1,028.9	781.9	781.4	955.4	868.9	1,188.8	679.5	884.3
	Total	972	478	494	10.4	9.9	11.0	9.8	11.1	9.0	10.8	10.0	11.9
<b>WHITE</b>													
	Under 1	18	10	8	9.5	10.2 *	8.7 *	5.1	13.8	3.9	16.6	2.7	14.7
	1 to 4	6	1	5	0.7 *	0.2 *	1.2 *	0.1	1.3	0.0	0.7	0.2	2.3
	5 to 14	6	4	2	0.3 *	0.4 *	0.2 *	0.1	0.5	0.0	0.7	0.0	0.5
	15 to 24	6	3	3	0.3 *	0.3 *	0.3 *	0.1	0.6	0.0	0.6	0.0	0.7
	25 to 34	43	16	27	1.7	1.2	2.2	1.2	2.2	0.6	1.8	1.4	3.0
	35 to 44	83	52	31	2.7	3.4	2.1	2.2	3.3	2.5	4.3	1.3	2.8
	45 to 54	145	90	55	6.1	7.6	4.6	5.1	7.1	6.0	9.1	3.4	5.9
	55 to 64	297	169	128	19.4	22.4	16.4	17.2	21.6	19.0	25.8	13.6	19.3
	65 to 74	990	548	442	71.6	87.3	58.5	67.1	76.0	80.0	94.6	53.1	64.0
	75 to 84	3,054	1,524	1,530	341.7	425.3	285.8	329.6	353.8	403.9	446.7	271.4	300.1
	85 & Older	4,255	1,436	2,819	1,494.1	1,774.9	1,382.6	1,449.2	1,538.9	1,683.1	1,866.7	1,331.6	1,433.6
	Unknown	2	2	0									
	Total	8,905	3,855	5,050	52.0	45.4	58.4	50.9	53.1	44.0	46.9	56.8	60.0

Note : Rates are per 100,000 population. ICD-9 codes 480-487.

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 not counted for zero

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 PNEUMONIA AND INFLUENZA  
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	10,639.7	100.0	32,062,912	33.2	15.6	15.3	16.0
ALAMEDA	420.0	3.9	1,347,739	31.2	15.1	13.5	16.8
ALPINE	0.7	a	1,185	56.3 *	52.7 *	0.0	181.7
AMADOR	19.3	0.2	32,572	59.4	15.5	7.3	23.7
BUTTE	91.7	0.9	196,108	46.7	15.3	11.0	19.5
CALAVERAS	12.7	0.1	36,907	34.3	10.5	3.6	17.3
COLUSA	5.7	0.1	17,799	31.8 *	12.6 *	0.4	24.9
CONTRA COSTA	285.7	2.7	867,315	32.9	15.0	13.0	16.9
DEL NORTE	12.0	0.1	27,597	43.5	16.2	5.3	27.2
EL DORADO	49.3	0.5	144,158	34.2	15.1	10.5	19.7
FRESNO	213.3	2.0	754,045	28.3	14.2	12.0	16.5
GLENN	8.0	0.1	26,523	30.2 *	13.3 *	2.3	24.2
HUMBOLDT	37.3	0.4	124,481	30.0	13.2	8.2	18.3
IMPERIAL	22.7	0.2	137,445	16.5	10.1	5.4	14.8
INYO	12.0	0.1	18,571	64.6	15.6	4.1	27.2
KERN	235.0	2.2	616,701	38.1	21.0	18.0	23.9
KINGS	26.3	0.2	114,902	22.9	15.2	8.6	21.7
LAKE	41.7	0.4	54,984	75.8	20.1	12.4	27.8
LASSEN	6.7	0.1	28,678	23.2 *	13.0 *	1.3	24.8
LOS ANGELES	2,935.0	27.6	9,352,192	31.4	15.6	15.0	16.3
MADERA	28.3	0.3	106,429	26.6	13.3	7.6	19.0
MARIN	95.3	0.9	238,981	39.9	13.8	10.7	16.9
MARIPOSA	9.7	0.1	15,903	60.8 *	16.4 *	2.4	30.3
MENDOCINO	40.3	0.4	84,269	47.9	19.6	12.5	26.8
MERCED	55.3	0.5	198,522	27.9	17.3	12.3	22.3
MODOC	8.7	0.1	10,064	86.1 *	23.7 *	3.1	44.2
MONO	1.0	a	10,624	9.4 *	6.1 *	0.0	18.6
MONTEREY	100.7	0.9	361,840	27.8	14.5	11.3	17.7
NAPA	85.7	0.8	117,735	72.8	20.2	14.8	25.6
NEVADA	38.7	0.4	86,506	44.7	12.0	7.4	16.5
ORANGE	712.7	6.7	2,614,851	27.3	14.1	12.9	15.2
PLACER	83.7	0.8	203,454	41.1	15.9	12.0	19.8
PLUMAS	8.7	0.1	20,484	42.3 *	12.5 *	2.4	22.7
RIVERSIDE	420.3	4.0	1,370,338	30.7	13.0	11.5	14.4
SACRAMENTO	550.7	5.2	1,117,748	49.3	24.3	22.1	26.5
SAN BENITO	16.0	0.2	42,604	37.6	15.9	6.9	25.0
SAN BERNARDINO	388.3	3.6	1,581,620	24.6	14.3	12.8	15.9
SAN DIEGO	847.7	8.0	2,669,280	31.8	14.7	13.6	15.9
SAN FRANCISCO	399.7	3.8	751,532	53.2	17.5	15.4	19.7
SAN JOAQUIN	163.3	1.5	524,611	31.1	14.5	11.9	17.1
SAN LUIS OBISPO	71.0	0.7	228,401	31.1	12.5	8.8	16.2
SAN MATEO	280.0	2.6	689,731	40.6	15.3	13.3	17.4
SANTA BARBARA	120.0	1.1	391,425	30.7	11.9	9.3	14.5
SANTA CLARA	497.7	4.7	1,603,340	31.0	17.5	15.8	19.1
SANTA CRUZ	96.3	0.9	241,510	39.9	14.5	10.9	18.0
SHASTA	83.7	0.8	160,877	52.0	21.6	16.2	26.9
SIERRA	1.3	a	3,410	39.1 *	9.6 *	0.0	29.9
SISKIYOU	17.0	0.2	44,616	38.1	11.8	4.8	18.9
SOLANO	94.7	0.9	370,556	25.5	16.2	12.7	19.6
SONOMA	183.0	1.7	419,459	43.6	15.5	12.8	18.3
STANISLAUS	227.0	2.1	413,806	54.9	27.3	23.2	31.4
SUTTER	37.7	0.4	73,721	51.1	21.5	13.4	29.6
TEHAMA	19.0	0.2	54,195	35.1	13.2	5.8	20.6
TRINITY	4.7	a	13,363	34.9 *	9.5 *	0.7	18.3
TULARE	116.7	1.1	349,860	33.3	18.7	14.8	22.7
TUOLUMNE	27.0	0.3	51,516	52.4	16.2	8.4	23.9
VENTURA	179.7	1.7	712,762	25.2	12.8	10.7	14.9
YOLO	72.0	0.7	150,812	47.7	24.4	18.0	30.9
YUBA	21.7	0.2	62,255	34.8	19.3	10.1	28.4

Note : Rates are per 100,000 population. ICD-9 codes 480-487.

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

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

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 pneumonia and influenza death data presented in this report are ICD-9 codes 480-487.

The term “significant” within the text indicates either statistically significant based on the slope of a least-squares line not equal to zero ( $p < .05$ ), 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 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 30 percent are indicated with an “\*” (asterisk). Also, three-year averages were used in **Table 4** 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.<sup>6</sup>

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.<sup>7</sup> 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*.<sup>4</sup> Another source of information is the Department of Health Services, Center for Health Statistics Home Page [[www.dhs.ca.gov](http://www.dhs.ca.gov)].

## References

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