

**DATA SUMMARY**REPORT REGISTER NO. DS00-12001  
(February 2001)**CHRONIC OBSTRUCTIVE  
PULMONARY DISEASE  
DEATHS  
CALIFORNIA, 1998****Introduction**

This report presents data on chronic obstructive pulmonary disease (COPD) for 1998 with analysis of crude and age-adjusted death rates for California residents by sex, age, race/ethnicity, county and three city health departments. The definition of chronic obstructive pulmonary disease used in this report is based on the ICD-9 codes 490-496 as traditionally presented in National Center for Health Statistics reports.<sup>1</sup>

Chronic obstructive pulmonary disease was the 4<sup>th</sup> leading cause of death overall nationally (114,381 deaths), and the 5<sup>th</sup> leading cause of death in California in 1998 (12,261 deaths).<sup>2,3</sup> Whites had the highest number of deaths at 10,419 or 85.0 percent of the total COPD deaths in 1998. Hispanics followed with 674 deaths or 5.5 percent, Blacks with 651 deaths or 5.3 percent and Asian/Others with 517 deaths or 4.2 percent, **Table 1** (page 6). Chronic obstructive pulmonary disease is a clinical term applied to persons with a permanent airflow obstruction. The majority of deaths from COPD are caused by cigarette smoking and predominantly affect those over the age of 55, and Whites.<sup>4</sup>

Cigarette smoking is the leading cause of preventable disease and death in the United States. Due to the prevalence of smoking-related morbidity and mortality in our nation, the U.S. Public Health Service has established a number of health objectives, including one for COPD, which are published in Healthy People 2000.<sup>5</sup> California's progress in meeting the COPD objective is presented in this report.

**Methodological Approach**

The methods used to analyze vital statistics data are 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 show the actual rate of dying in a given population, but because of the age compositions of various populations, they 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. 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 comparisons of different race/ethnic groups, sexes, and geographic areas and measuring death rates over time. The 1940 United States (standard million) population was used as the basis for age-adjustments in this report.

**Chronic Obstructive Pulmonary Disease Crude Death Rates**

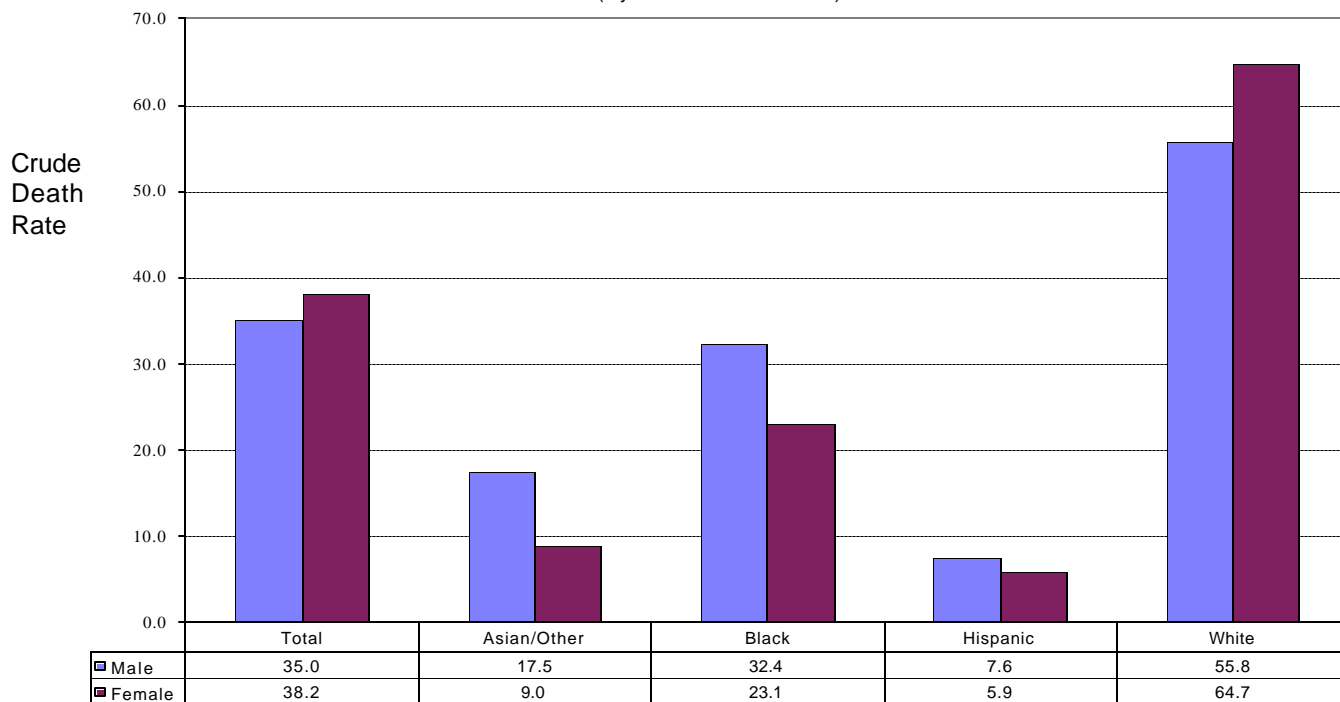
As shown in **Table 1** (page 7), California's crude death rate due to COPD for 1998 was 36.6 per 100,000 population, about a three percent increase from the 1997 rate of 35.6.<sup>6</sup>

As shown in **Figure 1** (page 2) Females experienced a higher crude death rate from COPD in 1998 at 38.2 per 100,000 population than males (35.0), which is a statistically significant difference.

Whites had the highest crude death rate for COPD (60.3 per 100,000 population), double the next highest rate and a statistically significant difference from Blacks at 27.7, followed by Asian/Others at 13.2, again a statistically significant difference, and Hispanics at 6.8 per 100,000 population also a statistically significant difference in rates.

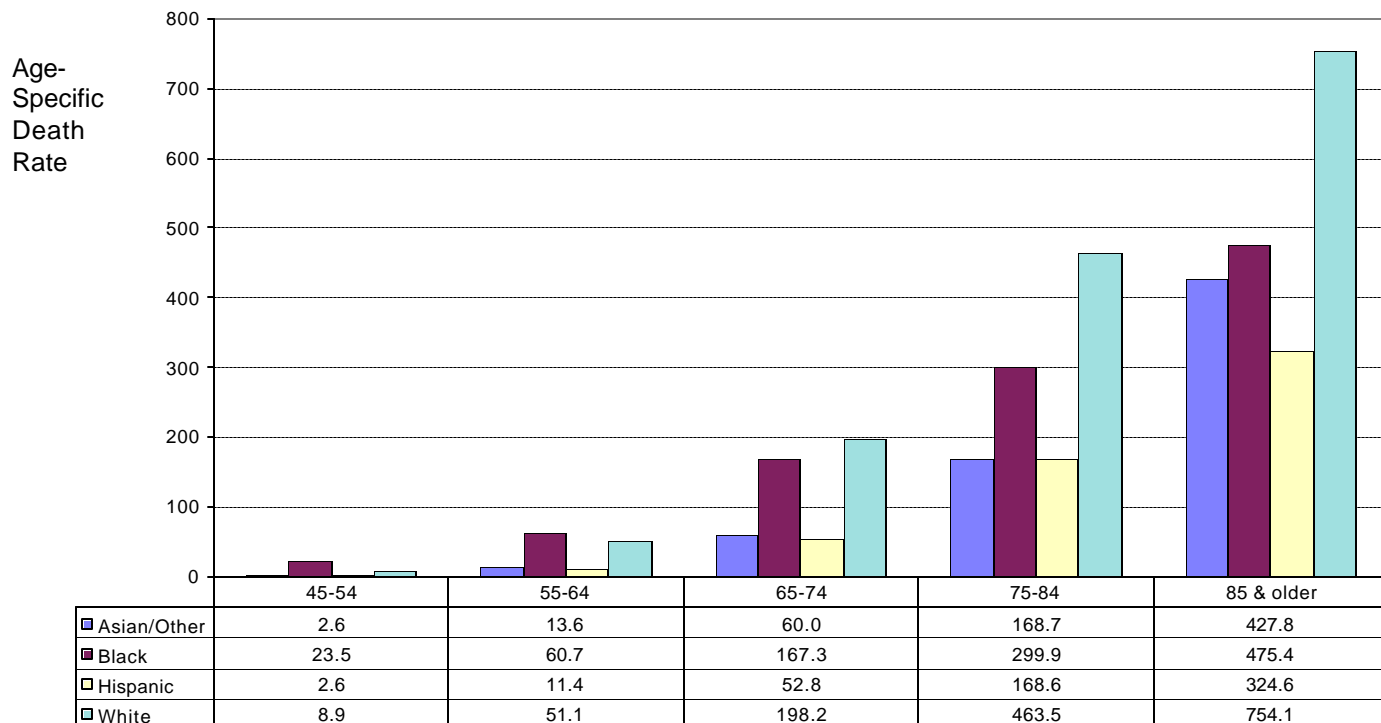
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**FIGURE 1**  
**CHRONIC OBSTRUCTIVE PULMONARY DISEASE**  
**CRUDE DEATH RATES BY RACE/ETHNICITY**  
**CALIFORNIA, 1998**  
**(By Place of Residence)**



Source: Table 1

**Figure 2**  
**CHRONIC OBSTRUCTIVE PULMONARY DISEASE**  
**DEATH RATES BY RACE/ETHNICITY AND AGE**  
**California, 1998**  
**(By Place of Residence)**



Source: Table 1

Males had the highest crude death rates from COPD among all race/ethnic categories except among Whites where females had the higher crude death rate. White males had the highest crude rate (55.8 per 100,000 population) while Hispanic males had the lowest (7.6). Among females, Whites had the highest crude rate (64.7), and Hispanics had the lowest (5.9). The differences in gender rates among the four race/ethnic groups were statistically significant.

### **Chronic Obstructive Pulmonary Disease Age-Specific Death Rates**

**Table 1** (page 6) displays age-specific rates for all groups combined and the four major race/ethnic groups. Reliable age-specific rates indicate that males had higher COPD death rates than females overall and for each race/ethnic group, except for White females who had a slightly higher rate than White males in the 35-64 age groups. **Figure 2** (page 2) displays the age-specific COPD death rates by age and race/ethnicity for age groups 45 years and older. Blacks had the highest age-specific death rate in the 45 to 54 age group at 23.5 per 100,000 population, significantly higher than the rate among Whites (8.9), Asian/Others (2.6) and Hispanics (2.6). Blacks also had the highest age-specific rate among those aged 55 to 64 (60.7), followed by Whites (51.1), Asian/Others (13.6) and Hispanics (11.4). Whites had the highest COPD death rates in the 65 to 74, 75 to 84 and 85 plus age groups, followed by Blacks, Asian/Others and Hispanics respectively.

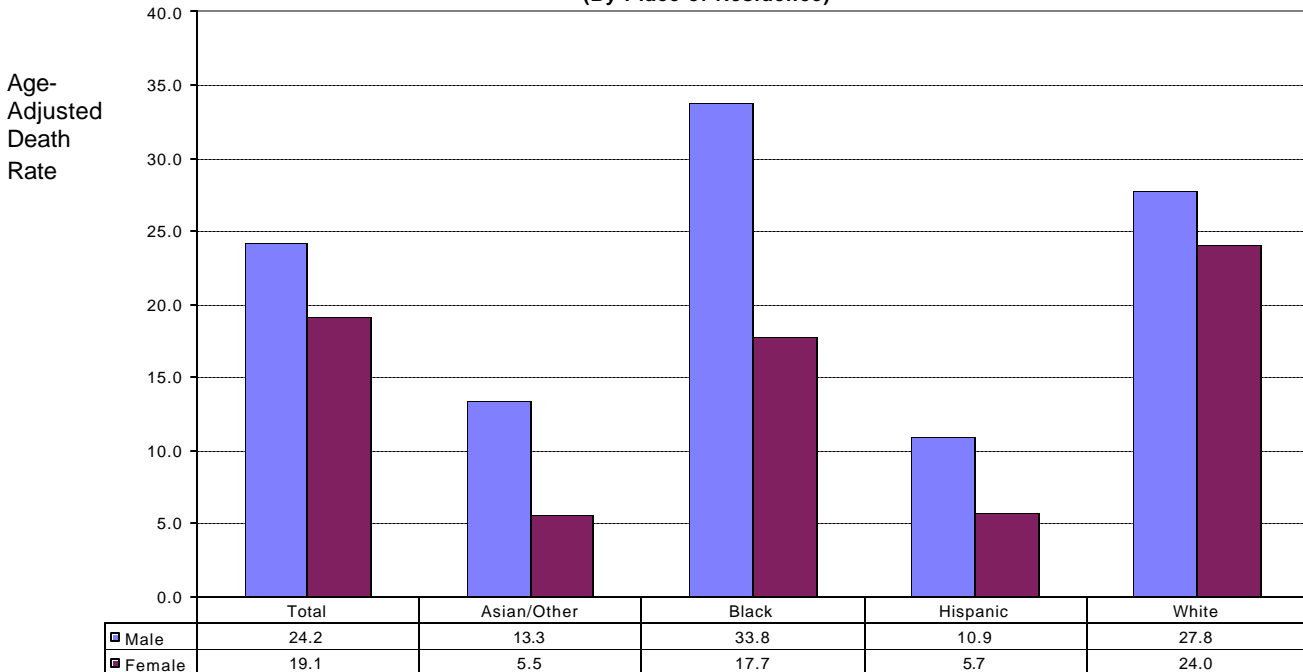
### **Chronic Obstructive Pulmonary Disease Age-Adjusted Death Rates**

**Table 1** (page 7) displays age-adjusted death rates for the total population and the four major race/ethnic groups. The 1998 California age-adjusted rate of 21.2 deaths per 100,000 population increased slightly from 20.8 in 1997.

The national healthy people 2000 objective for COPD is an age-adjusted 25 deaths per 100,000 population. The objective has been met by California for many years. Although the COPD rates have been gradually increasing since 1980, statistical projection indicates California will meet the healthy people objective for the year 2000. Department of Health Services programs to reduce smoking prevalence will be increasingly important if the COPD upward trend is to be reversed.<sup>7</sup>

The difference between COPD age-adjusted death rates for males and females in California is statistically significant. As shown in **Figure 3**, the male rate for 1998 is 24.2 per 100,000 population and the rate for females is 19.1. Long term trends show male COPD rates trending lower since 1985 while female rates are trending higher since 1980, so are therefore converging.<sup>7</sup>

**Figure 3**  
**CHRONIC OBSTRUCTIVE PULMONARY DISEASE**  
**DEATH RATES BY RACE/ETHNICITY AND SEX**  
**California, 1998**  
**(By Place of Residence)**



Source: Table 1

**TABLE 3**  
**DEATHS DUE TO CHRONIC OBSTRUCTIVE PULMONARY DISEASE**  
**AMONG THE LOCAL HEALTH JURISDICTIONS**  
**CALIFORNIA, 1996-1998**  
**(By Place of Residence)**

LOCAL HEALTH JURISDICTION	NUMBER OF DEATHS (Average)	1997 POPULATION	CRUDE DEATH RATE	95% CONFIDENCE LIMITS	
				LOWER	UPPER
BERKELEY	26.3	106,300	24.7	15.3	34.2
LONG BEACH	200.3	440,900	45.4	39.1	51.7
PASADENA	63.7	138,700	45.9	34.6	57.2

Note: Rates are per 100,000 population; ICD-9 codes 490-496.

Source: State of California, Department of Finance, City/County Population Estimates with Annual Percent Change, January 1, 1997 and 1998, May 1998.  
 State of California, Department of Health Services, Death Records.

Whites had the highest age-adjusted COPD death rate at 25.4 per 100,000 population followed by Blacks at 24.4, Asian/Others at 8.9 and Hispanics at 7.9, **Table 1** (page 7).

**Figure 3** (page 3) shows age-adjusted COPD death rates by gender and race/ethnicity. Male age-adjusted COPD death rates were significantly higher than female rates in all race/ethnic groups. The larger gender difference occurred among the Asian/Other, Black and Hispanic groups where the male rates were approximately double that of female rates. Whites had the lowest gender difference of all the race/ethnic groups.

### **Chronic Obstructive Pulmonary Disease Death Rates among California Counties**

**Table 2** (page 8) displays the number of deaths, crude death rates and age-adjusted death rates by county, averaged over a three-year period, 1996 to 1998.

The highest and lowest reliable crude death rates due to COPD were in Lake County (120.5 per 100,000 population) and Imperial County (23.3) respectively.

Of the counties with reliable age-adjusted death rates due to COPD, Yuba County had the highest rate (36.4 per 100,000 population) while Imperial County had the lowest rate (14.1). California counties meeting the year 2000 national healthy people objective numbered 30 with reliable rates and 6 counties with unreliable rates.

### **Chronic Obstructive Pulmonary Disease Death Data among City Health Departments**

**Table 3** (page 4) shows the 1996-1998 average numbers of deaths and crude death rates for COPD for three of California's city health departments. Among the city health departments, Berkeley had 26.3 deaths due to COPD with a crude death rate of 24.7 per 100,000 population, while Long Beach had 200.3 deaths with a crude death rate of 45.4, and Pasadena had 63.7 deaths with a crude death rate of 45.9, the highest of the three city health departments.

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

### **Technical Notes:**

In accordance with the National Center for Health Statistics, the COPD data presented in this report are based on ICD-9 codes 490-496.

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 substantial variation from one year to the next. Consequently, **Tables 2 and 3** present three-year annual average death data to increase the reliability of the data by county and local health jurisdiction. Also, 95 percent confidence intervals and an indicator, "\*" (asterisk), denoting rates that have a relative standard error (coefficient of variation) greater than or equal to 23 percent are provided in the data tables as a tool for measuring the reliability of the death rates.

The four race/ethnic groups displayed in **Table 1** are mutually exclusive. White, Black, and Asian/Others exclude Hispanic ethnicity, while Hispanic includes any race/ethnic group. In order to remain consistent with the population data obtained from the Department of Finance, the "White race/ethnic group" includes: White, Other (specified), Not Stated, and Unknown; and the "Asian/Other race/ethnic group" includes: Aleut, American Indian, Asian Indian, Asian (specified/unspecified), Cambodian, Chinese, Eskimo, Filipino, Guamanian, Hawaiian, Japanese, Korean, Vietnamese, other Pacific Islander, Samoan, Thai, and Laotian. In addition, caution should be exercised in the interpretation of mortality data by race/ethnicity. Misclassification of race/ethnicity on the death certificate may contribute to death rates that may be underestimated among Hispanics and Asian/Other.<sup>8</sup>

For a more complete explanation of the age-adjusting methodology see the *Healthy People 2000 Statistical Notes* publication.<sup>9</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*. Another source of information is the Department of Health Services, Center for Health Statistics Home Page:

[[www.dhs.ca.gov/org/hisp/chs/chsindex.htm](http://www.dhs.ca.gov/org/hisp/chs/chsindex.htm)].

The Department of Finance utilizes different methodologies in estimating the populations of cities versus counties, therefore the population data used to calculate the crude rates in **Table 3** differ from the population data used to calculate the crude rates in **Table 2**. Consequently, caution should be exercised when comparing the crude rates among the three local health jurisdictions with the rates among the 58 California counties.

#### References:

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8. 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.
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