

**TRENDS IN CHRONIC BRONCHITIS AND EMPHYSEMA:  
MORBIDITY AND MORTALITY**

**AMERICAN LUNG ASSOCIATION  
EPIDEMIOLOGY & STATISTICS UNIT  
RESEARCH AND SCIENTIFIC AFFAIRS  
NOVEMBER 2004**

## TABLE OF CONTENTS

### **Trends in Chronic Bronchitis and Emphysema Morbidity and Mortality**

COPD Mortality, 1979-1998, 1999-2002

COPD Prevalence, 1982-1996 and 1997-2002

COPD Hospital Discharges, 1979-2001

Economic Cost of COPD

Glossary

References

### **List of Tables**

Table 1: COPD - Number of Deaths by Race and Sex, 1979-1998, 1999-2002

Table 2: COPD - Age Adjusted Mortality Rate by Race and Sex per 100,000 Population, 1979-1998, 1999-2002

Table 3: COPD - Number of Deaths and Age-Adjusted Death Rate per 100,000 Population by Ethnicity and Sex, 1999-2002

Table 4: Chronic Bronchitis - Number of Conditions and Age-Specific Prevalence Rates per 1,000 Persons, 1982-1996, 1997-2002

Table 5: Chronic Bronchitis - Number of Conditions and Rate per 1,000 Persons by Race and Age, 1982-1996, 1997-2002

Table 6: Chronic Bronchitis - Number of Conditions and Rate per 1,000 Persons by Sex, 1982-1996, 1997-2002

Table 7: Emphysema - Number of Conditions and Age-Specific Prevalence Rates per 1,000 Persons, 1982-1996, 1997-2002

Table 8: Emphysema - Number of Conditions and Rate per 1,000 Persons by Race and Age, 1982-1996, 1997-2002

Table 9: Emphysema - Number of Conditions and Rate per 1,000 Persons by Sex, 1982-1996, 1997-2002

Table 10: Chronic Bronchitis and Emphysema - Number of Conditions and Prevalence Rate per 1,000 Persons by Ethnicity, 1997-2002

Table 11: COPD - Number of First-Listed Hospital Discharges and Rate per 10,000 Population by Age, 1979-2002

Table 12: COPD - Number of First-Listed Hospital Discharges and Rate per 10,000 Population by Race, 1988-2002

Table 13: COPD - Number of First-Listed Hospital Discharges and Rate per 10,000 Population by Sex, 1988-2002

### **List of Figures**

Figure 1: COPD - Age-Adjusted Death Rates Based on 1940 and 2000 Standard Populations, 1979-2002

Figure 2: COPD - Number of Conditions in Adults Aged 18 Years and Older, 1997-2002

Figure 3: Percentage Distribution of Chronic Bronchitis by Sex, Age, Ethnicity and Geographic Region, 2002

Figure 4: Percentage Distribution of Emphysema by Sex, Age, Ethnicity and Geographic Region, 2002

Figure 5: COPD - Trend in Hospitalizations by Age, 1979-2002

Figure 6: COPD - Trend in Hospitalizations by Race, 1988-2002

## Introduction

Chronic obstructive pulmonary disease (COPD) is a term which refers to a large group of lung diseases characterized by obstruction to air flow that interferes with normal breathing. Emphysema and chronic bronchitis are the most important conditions that compose COPD and they frequently coexist. Asthma is not included in our definition of COPD.

The following tables delineate information available from national surveys and statistics on the mortality, prevalence, hospitalization and economic costs attributable to COPD. Please note that the following tables and narrative refer exclusively to data on chronic bronchitis, emphysema and other chronic lower respiratory diseases; data on asthma are not included.

## COPD Mortality

Beginning with 1999 mortality data, the population standard used for calculating age-adjusting death rates was changed from the 1940 population to the 2000 population. This change had three important outcomes: (i) provided age-adjusted rates that are less divergent from crude rates (ii) ensured that all government agencies use the same standard and (iii) corrected the public perception that age adjustment to the 1940 population provides out-of-date statistics. Use of the 2000 standard has placed more weight on death rates at older ages and less weight on death rates at younger ages. Because most lung disease rates increase with age, death rates using the new standard are higher than those using the old standard. Figure 1 compares the COPD age-adjusted death rates based on the 1940 and 2000 standard populations from 1979-2002. Age-adjusted death rates for COPD are approximately 2 times greater using the 2000 standard population than those based on the 1940 standard population.

In addition, starting with 1999 data, the tenth revision of International Classification of Diseases (ICD-10) has replaced ICD-9 in coding and classifying mortality data from death certificates. The ICD is periodically revised to incorporate changes in the medical field. This change has several consequences: (i) new cause-of-death titles and corresponding cause-of-death codes, i.e. ICD-10 has alphanumeric categories rather than numeric categories, (ii) breaks in comparability of cause-of-death statistics, and (iii) restructuring of the leading causes of deaths. In order to assess the net effect of the new revision on death statistics, a comparability ratio is derived. The comparability ratio is calculated by dividing the number of deaths for a selected cause of death classified by the new revision by the number of deaths classified to the most nearly comparable cause of death by the previous revision. A comparability ratio of 1 denotes no change between revisions; a ratio of less than 1 signifies a decrease and a ratio of greater than 1 symbolizes an increase in deaths. The comparability ratio for COPD is 1.056, indicating a 6% increase in assignments of deaths due to COPD when using ICD-10.

### *Sex and Race Specific Mortality Rates*

Due to decennial revisions of the International Classification of Diseases (ICD) coding system and the change in age-adjusted standard population, the number and rate of COPD deaths for 1999-2002 are not directly comparable to those reported from 1979-1998.

Table 1 documents the number of deaths by race and sex between 1979 and 2002. In 2002, 120,555 people died of COPD; 51% of the deaths were in females. This was the third consecutive year in which the number of deaths due to COPD was higher among women than men.

Table 2 displays the age-adjusted death rate per 100,000 population by race and sex. COPD is the fourth-ranked cause of death in the United States with an age-adjusted death rate of 42.0 per 100,000 population. The age-adjusted death rate in males was almost 1.5 times greater than the rate seen in females. The age-adjusted death rate in whites (44.2 per 100,000) was 1.6 times greater than the rate in blacks (27.8 per 100,000). COPD is, as of now, the only lung disease in which the white population has higher age-adjusted death rates than blacks. Black women had the lowest age-adjusted death rates in 2002 with 19.2 per 100,000 population.

Table 3 delineates the number of deaths and mortality rate per 100,000 population by Hispanic origin. In 2002, 2,771 Hispanics died of COPD – an age-adjusted mortality rate of 19.3 per 100,000 population. Age-adjusted death rates in Hispanics were significantly lower than other ethnic groups.

Unlike morbidity estimates, which are drawn from sample populations and extrapolated to the overall population, mortality data is obtained from the general population by death certificates. Therefore, the sex- and race-specific numbers and rates denote actual counts, not estimates.

## **COPD Prevalence**

The National Health Interview Survey (NHIS) is a multi-purpose health survey conducted by the National Center for Health Statistics (NCHS), Centers for Disease Control and Prevention (CDC). It is the principal source of information on the health of the civilian, noninstitutionalized, household population of the U.S.

Despite the periodic revision of the NHIS Core questionnaire, Supplements began to play an increasingly important role in the survey as a means of enhancing topic coverage in the Core section. The unintended result was an increasingly unwieldy survey instrument and longer interviewing sessions: recent questionnaires (Core and Supplements combined) ran almost 300 pages, while the interviews averaged two hours. This imposed an unacceptable burden on NCHS staff, US Bureau of Census interviewers, the data collection budget, and on the NHIS respondents. Furthermore, the excessive length of NHIS interviews contributed to declines in both response rate and data quality. For all these reasons, NCHS implemented a redesigned NHIS questionnaire in 1997.

The new questionnaire design has made it impossible to compare current chronic bronchitis and emphysema estimates with those prior to 1997 and to each other. Survey respondents were formerly asked if any family member had chronic bronchitis and/or emphysema in the past 12 months (point prevalence). After the 1997 revision, respondents are asked if they had been diagnosed with chronic bronchitis in the past 12 months (point prevalence) and if they had **ever** been told by a health professional that they had emphysema (period prevalence). In contrast with the prior questionnaire, the redesigned survey measures physician-diagnosed chronic bronchitis and emphysema and produces a more specific estimate than self-report. In addition, the change to the emphysema question will increase estimates but will reflect the true prevalence of the disease since it is incurable. Moreover, since children historically do not suffer from COPD, these questions have been removed from the child questionnaire.

**Data between 1982 and 1996 should not be compared to 1997-2002 estimates.**

## ***COPD***

Figure 2 displays the number of COPD conditions in adults 18 years of age and older from 1997 to 2002. In 2002, 11.2 million U.S. adults aged 18 years and older were estimated to have COPD. There has been tremendous fluctuation in yearly estimates between 1997 and 2002. Therefore overall trends cannot currently be assessed.

## ***Chronic Bronchitis***

Table 4 displays age-specific prevalence estimates for chronic bronchitis. In 2002, it was estimated that 9.1 million Americans reported a physician diagnosis of chronic bronchitis: 3.8 million 18-44 year olds, 3.6 million 45-64 year olds and 1.8 million people over 65. The highest prevalence rate was seen among the 45-64 year olds at 55.1 per 1,000 persons while those 18-44 had the lowest rate estimated at 34.8 per 1,000 persons. The rate in the 18-44 age group was significantly different than another age group.

Race specific trends are displayed in Table 5. In 2002, 7.7 million whites and 1.1 million blacks were diagnosed with chronic bronchitis. The difference between races was not significant. The highest prevalence rate was in the over 65 population (56.6 per 1,000 persons) for whites and in the 45-64 age group (56.3 per 1,000) for blacks.

Table 10 displays the number of conditions and prevalence rates by Hispanic origin. Close to 630,000 Hispanic Americans (27.7 per 1,000 persons) were diagnosed with chronic bronchitis in 2002. The prevalence rate seen in Hispanics was significantly lower than that of Non-Hispanic whites and blacks.

Sex specific prevalence trends are shown in Table 6. Females are more than twice as likely to be diagnosed with chronic bronchitis as men. In 2002, 2.9 million males were diagnosed with chronic bronchitis compared to 6.2 million females. The difference between the prevalence rates for males (29.3 per 1,000) and females (58.1 per 1,000) was statistically significant.

### *Percentage Distribution of Conditions, 2002*

The percentage distribution of chronic bronchitis is displayed in Figure 3. Four pie charts describe the distribution of chronic bronchitis by sex, age, ethnicity and geographic region. The overall percentage of chronic bronchitis sufferers tend to be highest in the South, in Non-Hispanic whites, in 18-44 year olds and in females.

### ***Emphysema***

Age specific prevalence trends are displayed in Table 7. The emphysema prevalence rate is very low in those under age 45. Of the estimated 3.1 million Americans ever diagnosed with emphysema, 91 percent were 45 or older. In 2002, the reported emphysema lifetime prevalence rate was 15.2 per 1,000 population. Rates in all age specific groups were statistically significant different from each other.

Race specific prevalence trends are displayed in Table 8. In 2002, an estimated 2.9 million whites had emphysema; a prevalence rate of 17.1 per 1,000 population. In 2002, the rate in whites over age 65 (48.9 per 1,000 persons) was over two times greater than that in the population between 45 and 64 (22.0 per 1,000). The age specific prevalence rate in blacks is based on the reporting of much smaller numbers, which produces less reliable estimates. In 2002, an estimated 200,000 blacks had emphysema; a prevalence rate of 8.3 per 1,000 population. The difference in the overall rate reported between whites (17.1 per 1,000) and blacks (8.3 per 1,000) was significant.

Table 10 displays the number of conditions and prevalence rates by Hispanic origin. Over 79,000 Hispanic Americans (3.5 per 1,000 persons) have been diagnosed with emphysema. The prevalence rate seen in Hispanics was significantly lower than the non-Hispanic groups.

Sex specific prevalence trends are delineated in Table 9. Men tend to have higher prevalence rates than females. In 2002, over 1.8 million males (18.5 per 1,000 population) had emphysema compared to 1.3 million females (12.2 per 1,000). The difference between these rates was significant.

### *Percentage Distribution of Conditions, 2002*

The percentage distribution of emphysema is displayed in Figure 4. Four pie charts describe the distribution of emphysema by sex, age, ethnicity and geographic region. The overall percentage of emphysema sufferers tends to be highest in the over 65 age group, in males, in non-Hispanic whites and in the South.

### **COPD Hospital Discharges**

Table 11 delineates the number of first-listed hospital discharges and hospital discharge rate by age between 1979-2002. The first listed diagnosis is identified as the principal diagnosis on the medical record. An estimated 675,878 discharges were reported in 2002; a discharge rate of 23.5 per 10,000 population.

Differences may exist between data reported for 1988-2002 and earlier years because of the redesign of the survey in 1988. Also in 1992, a jump in hospital discharges occurred due to a change in the ICD code for chronic bronchitis. A new sub-classification (chronic bronchitis with acute exacerbations, ICD code 491.21) was introduced. It appears that many discharges previously coded as acute bronchitis (ICD code 466) were coded as 491.21 beginning in 1992. Thus the growth seen in 1992 probably does not reflect an increase in COPD morbidity but rather indicates an underestimation in previous years.

Between 1992 and 2002 the overall discharge rate increased by 39.1 percent from 16.9 per 10,000 population to 23.5 per 10,000 population. However, the difference was not significant.

COPD is an important cause of hospitalization in our aged population. More than 65% of discharges were in the 65 years and older population in 2002. The discharge rate for the population over age 65 (123.6 per 10,000) was significantly different than the rate for any other group. For instance, the rate in the over age 65 group was over four times higher than that in the 45-64 age group (30.0 per 10,000). This trend is shown in Figure 5.

The trend in hospital discharges by race is shown in table 12 and figure 6. The 2002 discharge rate for COPD was highest in whites (20.3 per 10,000). In blacks the rate was 15.0 per 10,000. The discharge rate in all other races was reported at 7.0 per 10,000. These rates however, should be used with caution due to the large percentage of discharges (20.2% in 2002) for which race was not reported. It appears that the number of hospital discharges in whites may be disproportionately underestimated, making it difficult to draw comparisons between races using these data.

Table 13 displays the trend in COPD hospital discharges by sex. Between 1988 and 1992, males had slightly higher discharge rates than females. Since 1993, the rate in females has surpassed the rate for males. In 2002 the discharge rates among males and females were 21.1 per 10,000 and 25.9 per 10,000, respectively. The difference between sexes was not significant.

### **Economic Costs**

Chronic bronchitis and emphysema take a heavy toll on our economy. According to estimates made by the National Heart Lung and Blood Institute, in 2004 the annual cost to the nation for COPD was \$37.2 billion. This included \$20.9 billion in direct health care expenditures, \$7.4 billion in indirect morbidity costs and \$8.9 billion in indirect mortality costs.

### **Summary**

COPD is a major cause of morbidity and mortality in the United States. An estimated 11.2 million adults aged 18 and over have reported a physician diagnosis of COPD. However, a recent survey found that 24 million U.S. adults have some evidence of impaired lung function, indicating an under diagnosis of the disease.<sup>1</sup> COPD is the fourth leading cause of death and the number of women dying from the disease has surpassed the number seen in men.

## FOOTNOTE

1 National Center for Health Statistics. National Health & Nutrition Examination Survey, 1988-1994.

## GLOSSARY

Prevalence:	The number of existing cases of a particular condition, disease, or other occurrence (e.g., persons smoking) at a given time.
Period Prevalence:	The proportion of cases that exist within a population at any point during a specified period of time.
Point Prevalence:	The proportion of cases that exist within a population at a single point in time.
Crude Rate:	Cases in a particular population quantity- e.g., per hundred.
Age-Adjusted Rate:	A figure that is statistically corrected to remove the distorting effect of age when comparing populations of different age structures.

## REFERENCES

1. National Center for Health Statistics, Raw Data from the National Health Interview Survey, United States, 1997-2002. (Analysis by the American Lung Association Research and Scientific Affairs Division, Using SPSS and SUDDAN software)
2. National Center for Health Statistics, *Current Estimates of the National Health Interview Survey*, United States, selected years, 1982-1996.
3. National Center for Health Statistics, *Report of Final Mortality Statistics*, 1979-2002.
4. National Center for Health Statistics, *National Hospital Discharge Survey*, 1980-2002 and data provided upon special request to the NCHS.
5. National Center for Health Statistics, *Underreporting of Race in the National Hospital Discharge Survey*, July 1996.
6. National Heart Lung and Blood Institute, *Morbidity and Mortality Chartbook on Cardiovascular, Lung and Blood Diseases*, 2004.

**TABLE 1: COPD - NUMBER OF DEATHS BY RACE AND SEX 1979-1998, 1999-2002 <sup>(1)</sup>**

YEAR	TOTAL			WHITE			ALL OTHER <sup>(2)</sup>					
							TOTAL			BLACK		
	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE
1979 <sup>(3)</sup>	47,335	34,162	13,173	44,597	32,044	12,553	2,738	2,118	620	2,487	1,952	535
1980	53,159	37,333	15,826	50,084	34,969	15,115	3,075	2,364	711	2,823	2,169	654
1981	55,778	38,486	17,292	52,556	36,014	16,542	3,222	2,472	750	2,941	2,264	677
1982	56,715	38,388	18,327	53,437	35,987	17,450	3,278	2,401	877	2,984	2,188	796
1983	62,685	41,664	21,021	58,958	38,894	20,064	3,727	2,770	957	3,336	2,477	859
1984	65,536	42,546	22,990	61,497	39,622	21,875	4,039	2,924	1,115	3,592	2,610	982
1985	70,782	45,045	25,737	66,412	41,934	24,478	4,370	3,111	1,259	3,881	2,783	1,098
1986	72,604	45,474	27,130	68,086	42,163	25,923	4,518	3,311	1,207	4,028	2,942	1,086
1987	74,020	45,309	28,711	69,341	42,046	27,295	4,679	3,263	1,416	4,132	2,891	1,241
1988	78,256	47,117	31,139	73,200	43,528	29,672	5,056	3,589	1,467	4,464	3,184	1,280
1989	79,475	46,330	33,145	74,120	42,694	31,426	5,355	3,636	1,719	4,687	3,159	1,528
1990	81,860	47,531	34,329	76,483	43,876	32,607	5,377	3,655	1,722	4,669	3,168	1,501
1991	85,544	48,558	36,986	80,036	44,928	35,108	5,508	3,630	1,878	4,773	3,149	1,624
1992	86,974	48,596	38,378	81,442	44,993	36,449	5,532	3,603	1,929	4,821	3,136	1,685
1993	95,910	52,443	43,467	89,705	48,428	41,277	6,205	4,105	2,190	5,323	3,448	1,875
1994	96,141	51,628	44,513	89,939	47,734	42,205	6,202	3,894	2,308	5,325	3,332	1,993
1995	97,262	51,859	45,403	90,869	47,866	43,003	6,393	3,993	2,400	5,420	3,379	2,041
1996	100,360	52,410	47,950	93,779	48,396	45,383	6,581	4,014	2,567	5,599	3,388	2,211
1997	103,595	53,998	49,597	96,768	49,801	46,967	6,827	4,197	2,630	5,708	3,468	2,240
1998	107,146	55,018	52,128	100,114	50,806	49,308	7,032	4,212	2,820	5,915	3,503	2,412
1999 <sup>(4)</sup>	119,524	60,795	58,729	111,407	55,954	55,453	8,117	4,841	3,276	6,770	4,019	2,751
2000 <sup>(4)</sup>	117,522	58,372	59,510	109,636	53,759	55,937	7,826	4,613	3,213	6,449	3,757	2,692
2001 <sup>(4)</sup>	118,744	58,218	60,526	110,829	53,624	57,205	7,915	4,594	3,321	6,481	3,728	2,753
2002 <sup>(4)</sup>	120,555	59,133	61,422	112,381	54,392	57,989	8,174	4,741	3,433	6,735	3,844	2,891

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, MONTHLY VITAL STATISTICS REPORT, 1979-1998, 1999-2002

NOTES:

(1) THIS TABLE REFERS EXCLUSIVELY TO DATA ON CHRONIC BRONCHITIS, EMPHYSEMA AND OTHER LOWER CHRONIC OBSTRUCTIVE PULMONARY DISEASES INCLUDING BRONCHIECTASIS. **DATA ON ASTHMA ARE NOT INCLUDED.**

(2) ALL RACES OTHER THAN WHITE.

(3) INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION (ICD-9) CODE 490-492, 494-496.

(4) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J40-J44, J47.

**TABLE 2: COPD - AGE-ADJUSTED MORTALITY RATE BY RACE AND SEX PER 100,000 POPULATION,  
1979-1998, 1999-2002<sup>(1,2,3)</sup>**

YEAR	TOTAL			WHITE			ALL OTHER <sup>(4)</sup>					
							TOTAL			BLACK		
	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE	BOTH SEXES	MALE	FEMALE
1979 <sup>(5)</sup>	14.0	23.8	7.0	14.5	24.7	7.3	8.9	15.7	3.7	9.6	17.2	3.7
1980	14.9	25.1	7.9	15.5	25.9	8.4	9.5	17.1	3.9	10.3	18.7	4.1
1981	15.3	25.2	8.4	15.8	26.0	8.9	9.6	17.4	4.0	10.3	19.0	4.2
1982	15.2	24.5	8.7	15.7	25.4	9.1	9.5	16.4	4.5	10.3	18.1	4.8
1983	16.2	25.9	9.6	17.0	26.7	10.3	10.2	18.0	4.6	10.9	19.4	4.8
1984	16.6	25.9	10.2	17.2	26.7	10.8	10.8	18.6	5.2	11.6	20.3	5.5
1985	17.5	26.8	11.2	18.2	27.6	11.7	11.3	19.1	5.8	12.2	20.9	6.0
1986	17.6	26.5	11.5	18.2	27.2	12.2	11.4	19.7	5.3	12.5	21.7	5.9
1987	17.4	25.7	11.8	18.1	26.4	12.5	11.2	18.7	5.9	12.3	20.7	6.3
1988	18.0	26.3	12.5	18.7	26.8	13.3	11.8	20.0	6.0	13.1	22.5	6.6
1989	18.0	25.2	13.1	18.6	25.8	13.9	12.1	19.6	6.8	13.3	21.7	7.6
1990	18.3	25.9	13.2	18.9	26.4	13.9	12.3	20.6	6.8	13.5	23.0	7.4
1991	18.6	25.7	13.9	19.4	26.4	14.7	12.2	19.8	7.1	13.6	22.4	7.8
1992	18.5	25.2	14.0	19.3	25.9	14.8	11.9	19.0	7.0	13.3	21.7	7.7
1993	20.0	26.5	15.5	20.7	27.2	16.5	13.0	20.8	7.8	14.3	23.3	8.5
1994	19.5	25.5	15.4	20.4	26.3	16.4	12.5	19.5	7.8	14.0	22.1	8.7
1995	19.3	25.0	15.4	20.0	25.6	16.3	12.4	19.4	7.8	13.8	21.8	8.6
1996	19.5	24.6	15.9	20.3	25.3	16.9	12.3	18.6	7.9	13.9	21.2	9.0
1997	19.7	25.9	16.1	20.6	25.5	17.2	12.3	18.8	8.0	13.9	21.3	9.1
1998	19.9	24.7	16.5	20.9	25.5	17.6	12.3	18.1	8.3	14.0	20.9	9.5
1999 <sup>(6)</sup>	44.0	56.8	36.2	46.1	58.6	38.5	16.9	21.1	13.0	29.8	46.5	19.7
2000 <sup>(6)</sup>	42.7	53.6	36.1	44.8	55.3	38.5	25.3	38.4	17.1	27.8	42.5	18.9
2001 <sup>(6)</sup>	42.2	52.8	35.9	44.4	54.6	38.3	24.6	38.1	16.7	27.3	43.1	18.6
2002 <sup>(6)</sup>	42.0	52.3	35.7	44.2	54.0	38.3	24.5	37.6	16.8	27.8	43.0	19.2

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, MONTHLY VITAL STATISTICS REPORT, 1979-1998, 1999-2002

NOTES:

- (1) THIS TABLE REFERS EXCLUSIVELY TO DATA ON CHRONIC BRONCHITIS, EMPHYSEMA AND OTHER LOWER CHRONIC OBSTRUCTIVE PULMONARY DISEASES INCLUDING BRONCHIECTASIS. **DATA ON ASTHMA ARE NOT INCLUDED.**
- (2) RATES FOR THE YEARS 1979-1998 ARE AGE-ADJUSTED TO THE 1940 U.S. STANDARD POPULATION.
- (3) RATES FOR 1999-2002 ARE AGE-ADJUSTED TO THE 2000 U.S. STANDARD POPULATION.
- (4) ALL RACES OTHER THAN WHITE.
- (5) INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION (ICD-9) CODE 490-492, 494-496.
- (6) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J40-J44, J47.

**TABLE 3: COPD-NUMBER OF DEATHS AND AGE-ADJUSTED DEATH RATE PER 100,000 POPULATION BY ETHNIC ORIGIN AND SEX, 1999-2002** <sup>(1,2)</sup>

	TOTAL		HISPANICS		NON HISPANIC (3)		NON HISPANIC WHITE		NON HISPANIC BLACK	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
<i>BOTH SEXES</i>										
1999	119,524	44.1	2,539	18.2	116,644	45.4	108,609	47.5	6,706	30.4
2000	117,522	42.7	2,397	16.2	114,799	44.2	107,065	46.4	6,383	28.4
2001	118,744	42.2	2,558	19.3	115,863	43.4	108,036	45.8	6,412	27.7
2002	120,555	42.0	2,771	19.3	117,474	43.3	109,408	45.7	6,647	28.0
<i>MALE</i>										
1999	60,795	56.7	1,428	26.1	56,863	55.3	54,384	60.3	3,978	47.7
2000	58,372	53.6	1,322	22.3	59,174	58.4	52,311	57.1	3,712	43.5
2001	58,218	52.8	1,379	26.6	56,663	54.2	52,118	56.0	3,693	43.7
2002	59,133	52.3	1,511	26.2	57,448	53.7	52,767	55.6	3,794	43.4
<i>FEMALE</i>										
1999	58,729	36.2	1,111	13.3	57,470	37.4	54,225	39.8	2,728	20.2
2000	59,150	36.1	1,075	12.2	57,936	37.3	54,754	40.0	2,671	19.5
2001	60,526	35.9	1,179	14.8	59,200	36.9	55,918	39.7	2,719	18.7
2002	61,422	35.7	1,260	14.7	60,026	36.9	56,641	39.8	2,853	19.4

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, FINAL MORTALITY STATISTICS REPORT, 1999-2002

NOTES:

- (1) REFERS EXCLUSIVELY TO DATA ON CHRONIC BRONCHITIS, EMPHYSEMA AND OTHER LOWER CHRONIC OBSTRUCTIVE PULMONARY DISEASES INCLUDING BRONCHIECTASIS. DATA ON ASTHMA ARE NOT INCLUDED.
- (2) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J40-J44, J47.
- (3) INCLUDES RACES OTHER THAN WHITE AND BLACK.

**TABLE 4: CHRONIC BRONCHITIS - NUMBER OF CONDITIONS AND AGE-SPECIFIC PREVALENCE RATES  
PER 1,000 PERSONS, 1982-1996, 1997-2002**

YEAR	AGE GROUP									
	TOTAL <sup>(1)</sup>		<18		18-44		45-64		65+	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1982	7,709,000	33.9	2,110,000	33.7	2,324,000	24.5	1,954,000	44.2	1,320,000	52.0
1983	10,864,000	47.4	3,711,000	59.3	3,667,000	37.9	1,976,000	44.7	1,510,000	58.3
1984	10,925,000	47.2	3,097,000	49.5	3,881,000	39.5	2,283,000	51.6	1,664,000	63.0
1985	11,618,000	49.7	3,483,000	55.5	4,022,000	40.5	2,415,000	54.3	1,697,000	62.7
1986	11,379,000	48.1	3,987,000	63.2	3,690,000	36.5	2,049,000	45.8	1,652,000	60.0
1987	12,749,000	53.4	3,927,000	62.1	4,125,000	40.4	2,561,000	56.9	2,136,000	75.9
1988	11,894,000	49.4	3,453,000	54.3	4,024,000	39.0	2,558,000	56.1	1,859,000	64.8
1989	11,974,000	49.2	3,235,000	50.5	4,641,000	44.5	2,476,000	53.7	1,622,000	55.5
1990	12,584,000	51.1	3,447,000	53.3	4,365,000	41.5	2,674,000	57.4	2,098,000	70.4
1991	12,549,000	50.5	3,480,000	53.1	4,938,000	46.7	2,542,000	53.9	1,589,000	52.5
1992	13,494,000	53.7	3,561,000	53.6	4,962,000	47.0	2,828,000	58.3	2,143,000	69.6
1993	13,820,000	54.3	3,997,000	59.3	4,845,000	45.8	3,048,000	61.2	1,930,000	61.7
1994	14,021,000	54.0	3,873,000	55.3	5,047,000	46.7	3,223,000	63.9	1,878,000	60.5
1995	14,533,000	55.5	3,789,000	53.6	5,422,000	50.2	3,305,000	63.9	2,018,000	64.1
1996	14,150,000	53.5	4,087,000	57.3	4,904,000	45.4	3,142,000	59.1	2,017,000	63.5
1997 <sup>(2,3)</sup>	9,667,981	49.5	NA	NA	4,491,715	41.4	3,050,580	55.6	2,125,686	66.4
1998 <sup>(2,3)</sup>	8,977,160	45.5	NA	NA	3,825,345	35.3	3,117,842	55.0	2,033,973	63.1
1999 <sup>(2,3)</sup>	8,847,646	44.3	NA	NA	3,978,344	36.7	2,962,010	50.5	1,907,292	58.7
2000 <sup>(2,3)</sup>	9,354,982	46.4	NA	NA	3,876,505	35.7	3,353,176	55.4	2,125,301	65.0
2001 <sup>(2,3)</sup>	11,198,602	54.9	NA	NA	4,913,277	45.3	4,073,615	65.1	2,211,710	67.3
2002 <sup>(2,3)</sup>	9,113,581	44.3	NA	NA	3,761,235	34.8	3,563,498	55.1	1,788,848	54.1

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, NATIONAL HEALTH INTERVIEW SURVEY, 1982-1996, 1997-2002

NOTES:

(1) DUE TO ROUNDING, NUMBERS ACROSS MAY NOT SUM TO THE TOTAL.

(2) IN 1997, THE NATIONAL HEALTH INTERVIEW SURVEY COMPLETELY REDESIGNED THEIR QUESTIONNAIRE. THEREFORE, ESTIMATES PRIOR TO 1997 CANNOT BE COMPARED WITH LATER ESTIMATES.

(3) THE REVISED QUESTIONNAIRE NOW ASKS RESPONDENTS ABOUT CHRONIC BRONCHITIS DIAGNOSIS OVER THE PAST 12 MONTHS. STARTING IN 1997 ESTIMATES ON CHILDREN UNDER 18 HAVE BEEN ELIMINATED. OVERALL ESTIMATES WILL BE SMALLER.

**TABLE 5: CHRONIC BRONCHITIS - NUMBER OF CONDITIONS AND RATE PER 1,000 PERSONS BY RACE AND AGE, 1982-1996, 1997-2002**

YEAR	WHITE									
	ALL AGES		UNDER 45		18-44		45-64		65+	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1982	6,776,000	34.9	3,848,000	29.1	NA	NA	1,704,000	43.7	1,224,000	53.3
1983	9,903,000	50.4	6,667,000	49.8	NA	NA	1,766,000	45.2	1,470,000	62.8
1984	9,885,000	50.0	6,281,000	46.6	NA	NA	2,021,000	51.6	1,583,000	66.2
1985	10,428,000	52.3	6,627,000	48.8	NA	NA	2,152,000	55.0	1,649,000	67.4
1986	10,320,000	51.5	6,857,000	50.2	NA	NA	1,901,000	48.8	1,562,000	63.1
1987	11,358,000	56.3	7,118,000	51.8	NA	NA	2,298,000	58.7	1,942,000	76.4
1988	10,480,000	51.6	6,501,000	47.2	NA	NA	2,259,000	57.0	1,720,000	66.6
1989	10,705,000	52.1	6,891,000	49.6	NA	NA	2,275,000	56.8	1,539,000	58.5
1990	11,407,000	55.1	7,022,000	50.2	NA	NA	2,409,000	59.7	1,976,000	73.8
1991	11,503,000	53.1	7,322,000	52.2	NA	NA	2,228,000	54.8	1,503,000	55.3
1992	11,908,000	56.8	7,417,000	52.9	NA	NA	2,491,000	59.7	2,000,000	72.6
1993	12,143,000	57.5	7,693,000	54.7	NA	NA	2,660,000	62.1	1,790,000	64.0
1994	12,568,000	58.6	7,800,000	54.3	NA	NA	3,077,000	71.3	1,691,000	60.9
1995	12,651,000	58.2	7,965,000	55.0	NA	NA	2,875,000	65.0	1,811,000	64.4
1996	11,970,000	54.4	7,348,000	50.4	NA	NA	2,810,000	61.4	1,812,000	63.4
1997 <sup>1,2</sup>	8,283,171	50.9	NA	NA	3,833,017	43.8	2,526,463	54.2	1,923,691	67.1
1998 <sup>1,2</sup>	7,878,552	48.2	NA	NA	3,246,698	37.5	2,743,051	56.9	1,888,803	66.2
1999 <sup>1,2</sup>	7,649,714	46.5	NA	NA	3,408,042	39.5	2,493,763	50.4	1,747,909	60.9
2000 <sup>1,2</sup>	8,056,940	49.0	NA	NA	3,277,216	38.6	2,845,300	56.2	1,934,424	66.9
2001 <sup>1,2</sup>	9,488,244	57.1	NA	NA	4,080,695	48.2	3,411,379	65.1	1,996,170	68.9
2002 <sup>1,2</sup>	7,651,391	45.7	NA	NA	3,006,514	35.6	2,999,901	55.5	1,644,976	56.6

YEAR	BLACK									
	ALL AGES		UNDER 45		18-44		45-64		65+	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1982	801,000	29.8	515,000	25.0	NA	NA	202,000	48.1*	84,000	39.7*
1983	920,000	33.7	699,000	33.4	NA	NA	182,000	43.1*	39,000	18.3*
1984	872,000	31.4	633,000	29.7	NA	NA	182,000	42.7*	57,000	26.1*
1985	1,093,000	38.8	782,000	36.4	NA	NA	263,000	59.3	48,000	21.2*
1986	819,000	28.7	659,000	30.3	NA	NA	95,000	21.1*	65,000	28.3*
1987	1,111,000	38.4	773,000	35.1	NA	NA	190,000	41.7	148,000	62.9*
1988	1,159,000	39.4	802,000	35.9	NA	NA	240,000	51.8	117,000	48.7*
1989	996,000	33.3	760,000	33.4	NA	NA	153,000	32.5	83,000	33.8*
1990	1,044,000	34.4	673,000	29.2	NA	NA	264,000	55.2	107,000	42.7*
1991	1,251,000	40.5	906,000	38.6	NA	NA	275,000	56.6	70,000	27.3*
1992	1,231,000	39.1	859,000	36.0	NA	NA	241,000	48.3	131,000	50.0*
1993	1,432,000	44.7	968,000	40.0	NA	NA	324,000	63.1	140,000	52.4*
1994	1,056,000	32.0	825,000	32.5	NA	NA	108,000	21.1*	123,000	48.7*
1995	1,414,000	43.2	963,000	38.5	NA	NA	311,000	59.6	140,000	55.1*
1996	1,672,000	50.4	1,290,000	51.3	NA	NA	280,000	51.7*	102,000	39.1*
1997 <sup>1,2</sup>	1,083,064	48.9	NA	NA	522,663	37.6	402,813	71.8	157,588	59.9
1998 <sup>1,2</sup>	820,345	36.6	NA	NA	427,130	30.6	282,765	48.8	110,450	41.5
1999 <sup>1,2</sup>	810,771	35.7	NA	NA	393,716	28.1	296,919	49.5	120,136	45.3
2000 <sup>1,2</sup>	924,784	40.0	NA	NA	388,925	27.5	398,626	63.5	137,233	51.0
2001 <sup>1,2</sup>	1,232,444	52.5	NA	NA	580,681	40.8	489,330	75.0	162,433	60.0
2002 <sup>1,2</sup>	1,101,118	46.1	NA	NA	590,549	41.2	384,497	56.3	126,072	45.8

SOURCE: NATIONAL HEALTH INTERVIEW SURVEY, 1982-1996, 1997-2002

**NOTES:**

\* ESTIMATE FOR WHICH THE NUMERATOR HAS A RELATIVE STANDARD ERROR OF MORE THAN 30 PERCENT.

NA: NOT AVAILABLE

(1) IN 1997, THE NATIONAL HEALTH INTERVIEW SURVEY COMPLETELY REDESIGNED THEIR QUESTIONNAIRE. THEREFORE, ESTIMATES PRIOR TO 1997 CANNOT BE COMPARED WITH LATER ESTIMATES.

(2) THE REVISED QUESTIONNAIRE NOW ASKS RESPONDENTS ABOUT CHRONIC BRONCHITIS DIAGNOSIS OVER THE PAST 12 MONTHS. STARTING IN 1997 ESTIMATES ON CHILDREN UNDER 18 HAS BEEN ELIMINATED. OVERALL ESTIMATES WILL BE SMALLER.

**TABLE 6: CHRONIC BRONCHITIS - SEX-SPECIFIC NUMBER OF CASES AND PREVALENCE RATE PER 1,000 PERSONS, 1982-1996, 1997-2002 <sup>1</sup>**

YEAR	MALE		FEMALE	
	NUMBER	RATE	NUMBER	RATE
1982	3,438,000	31.4	4,271,000	36.3
1983	4,645,000	42.0	6,218,000	52.4
1984	4,180,000	37.4	6,745,000	56.3
1985	4,326,000	38.3	7,293,000	60.3
1986	4,708,000	41.2	6,671,000	54.7
1987	5,276,000	45.7	7,473,000	60.7
1988	4,763,000	40.8	7,130,000	57.4
1989	4,446,000	37.7	7,528,000	60.0
1990	4,841,000	40.6	7,743,000	61.0
1991	5,160,000	42.7	7,389,000	57.7
1992	5,359,000	43.9	8,135,000	62.9
1993	5,676,000	45.9	8,144,000	62.4
1994	5,624,000	44.5	8,396,000	63.1
1995	5,587,000	43.8	8,945,000	66.6
1996	6,049,000	47.0	8,101,000	59.8
1997 <sup>2</sup>	3,094,373	33.0	6,573,608	64.7
1998 <sup>2</sup>	2,767,839	29.2	6,209,321	60.5
1999 <sup>2</sup>	2,661,435	27.8	6,186,211	59.4
2000 <sup>2</sup>	3,013,616	31.2	6,341,366	60.4
2001 <sup>2</sup>	3,718,647	38.0	7,479,955	70.5
2002 <sup>2</sup>	2,891,596	29.3	6,221,985	58.1

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, NATIONAL HEALTH INTERVIEW SURVEY, 1982-1996, 1997-2002

NOTES:

(1) IN 1997, THE NATIONAL HEALTH INTERVIEW SURVEY REDESIGNED THEIR QUESTIONNAIRE. THEREFORE, ESTIMATES PRIOR TO 1997 CANNOT BE COMPARED WITH LATER ESTIMATES.

(2) THE REVISED QUESTIONNAIRE NOW ASKS RESPONDENTS ABOUT CHRONIC BRONCHITIS DIAGNOSIS OVER THE PAST 12 MONTHS. STARTING IN 1997, ESTIMATES ON CHILDREN UNDER 18 HAS BEEN ELIMINATED. OVERALL ESTIMATES WILL BE SMALLER.

**TABLE 7: EMPHYSEMA - NUMBER OF CONDITIONS AND AGE SPECIFIC PREVALENCE RATES  
PER 1,000 PERSONS, 1982-1996, 1997-2002**

YEAR	AGE GROUP									
	TOTAL <sup>(1)</sup>		<18		18-44		45-64		65+	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1982	2,325,000	10.2	0	-- *	180,000	1.9 *	1,122,000	25.4	1,023,000	40.3
1983	2,038,000	8.9	0	-- *	110,000	1.1 *	911,000	20.6	1,017,000	39.3
1984	2,184,000	9.4	0	-- *	118,000	1.2 *	956,000	21.6	1,110,000	42.0
1985	2,075,000	8.9	0	-- *	161,000	1.6 *	676,000	15.2	1,238,000	45.8
1986	1,998,000	8.5	0	-- *	74,000	0.7 *	822,000	18.4	1,101,000	40.0
1987	2,037,000	8.5	0	-- *	101,000	1.0 *	761,000	16.9	1,174,000	41.7
1988	1,905,000	7.9	0	-- *	64,000	0.6 *	764,000	16.8	1,077,000	37.5
1989	1,993,000	8.2	13,000	0.2 *	123,000	1.2 *	795,000	17.2	1,062,000	36.3
1990	2,017,000	8.2	0	-- *	70,000	0.7 *	595,000	12.8	1,352,000	45.4
1991	1,646,000	6.6	0	-- *	64,000	0.6 *	602,000	12.8	981,000	32.4
1992	1,915,000	7.6	0	-- *	122,000	1.2 *	727,000	15.0	1,066,000	34.6
1993	1,931,000	7.6	45,000	0.7 *	179,000	1.7 *	775,000	15.6	932,000	29.8
1994	2,028,000	7.8	0	-- *	117,000	1.1 *	497,000	9.9	1,413,000	45.5
1995	1,870,000	7.1	0	-- *	127,000	1.2*	671,000	13.0	1,072,000	34.1
1996	1,821,000	6.9	0	--*	90,000	0.8*	701,000	13.2	1,030,000	32.4
1997 <sup>2,3</sup>	3,217,737	16.5	NA	NA	284,160	2.6*	1,228,655	22.4	1,704,922	53.3
1998 <sup>2,3</sup>	2,959,516	15.0	NA	NA	272,158	2.5*	1,058,625	18.7	1,628,733	50.6
1999 <sup>2,3</sup>	2,798,963	14.0	NA	NA	224,033	2.1*	936,939	16.0	1,637,991	50.4
2000 <sup>2,3</sup>	3,124,699	15.5	NA	NA	256,030	2.4*	1,141,600	18.9	1,727,069	52.8
2001 <sup>2,3</sup>	2,983,598	14.6	NA	NA	200,259	1.8*	1,099,638	17.6	1,683,701	51.2
2002 <sup>2,3</sup>	3,131,410	15.2	NA	NA	287,302	2.7*	1,271,992	19.7	1,572,116	47.6

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, NATIONAL HEALTH INTERVIEW SURVEY, 1982-2002

NOTES:

(1) DUE TO ROUNDING, NUMBERS ACROSS MAY NOT SUM UP TO TOTALS.

(2) IN 1997, THE NATIONAL HEALTH INTERVIEW SURVEY COMPLETELY REDESIGNED THEIR QUESTIONNAIRE. THEREFORE, ESTIMATES PRIOR TO 1997 CANNOT BE COMPARED WITH LATER ESTIMATES.

(3) THE REVISED QUESTIONNAIRE NOW ASKS RESPONDENTS ABOUT EMPHYSEMA DIAGNOSIS OVER THEIR LIFETIME. THEREFORE, OVERALL ESTIMATES WILL BE HIGHER.

\* ESTIMATES FOR WHICH THE NUMERATOR HAS A RELATIVE STANDARD ERROR (RSE) OF GREATER THAN 30 PERCENT.

-- NO CASES IN SAMPLE.

NA- NOT AVAILABLE.

**TABLE 8: EMPHYSEMA - NUMBER OF CONDITIONS AND RATE PER 1,000 PERSONS BY RACE AND AGE, 1982-1996, 1997-2002** <sup>1,2</sup>

YEAR	WHITE									
	ALL AGES		UNDER 45		18-44		45-64		65+	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1982	2,209,000	11.4	167,000	1.3*	NA	NA	1,059,000	27.2	983,000	42.8
1983	1,908,000	9.7	78,000	0.6*	NA	NA	851,000	21.8	979,000	41.8
1984	2,047,000	10.3	105,000	0.8*	NA	NA	907,000	23.2	1,035,000	43.3
1985	1,942,000	9.7	134,000	1.0*	NA	NA	626,000	16.0	1,182,000	48.3
1986	1,847,000	9.2	74,000	0.5*	NA	NA	774,000	19.9	999,000	40.4
1987	1,945,000	9.6	95,000	0.7*	NA	NA	732,000	18.7	1,118,000	44.0
1988	1,771,000	8.7	53,000	0.4*	NA	NA	705,000	17.8	1,013,000	39.2
1989	1,896,000	9.2	132,000	0.9*	NA	NA	743,000	18.6	1,021,000	38.8
1990	1,863,000	9.0	70,000	0.5*	NA	NA	557,000	13.8	1,236,000	46.1
1991	1,555,000	7.5	64,000	0.5*	NA	NA	544,000	13.4	947,000	34.8
1992	1,818,000	8.7	108,000	0.8*	NA	NA	675,000	16.2	1,035,000	37.6
1993	1,730,000	8.2	212,000	1.5	NA	NA	684,000	16.0	834,000	29.8
1994	1,918,000	8.9	104,000	0.7*	NA	NA	464,000	10.7	1,350,000	48.7
1995	1,748,000	8.0	110,000	0.8*	NA	NA	643,000	14.5	995,000	35.4
1996	1,685,000	7.7	58,000	0.4*	NA	NA	623,000	13.6	1,004,000	35.2
1997 <sup>1,2</sup>	2,918,108	17.9	NA	NA	237,027	2.7	1,090,690	23.4	1,590,391	55.5
1998 <sup>1,2</sup>	2,709,559	16.6	NA	NA	237,971	2.7	967,893	20.1	1,503,697	52.7
1999 <sup>1,2</sup>	2,619,122	15.9	NA	NA	197,279	2.3	878,758	17.8	1,543,085	53.8
2000 <sup>1,2</sup>	2,863,081	17.4	NA	NA	223,389	2.6	1,037,890	20.5	1,601,802	55.4
2001 <sup>1,2</sup>	2,732,272	16.5	NA	NA	163,230	1.9	1,009,097	19.3	1,559,945	53.9
2002 <sup>1,2</sup>	2,863,277	17.1	NA	NA	254,282	3.0	1,188,007	22.0	1,420,988	48.9

YEAR	BLACK									
	ALL AGES		UNDER 45		18-44		45-64		65+	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1982	92,000	3.4	--	--*	NA	NA	52,000	12.4*	40,000	18.9*
1983	130,000	4.8	32,000	1.5*	NA	NA	60,000	14.2*	38,000	17.8*
1984	124,000	4.5	--	--*	NA	NA	49,000	11.5*	75,000	34.4*
1985	115,000	4.1	9000	0.4*	NA	NA	50,000	11.3*	56,000	24.8*
1986	128,000	4.5	--	--*	NA	NA	48,000	10.7*	80,000	34.8*
1987	58,000	2.0	7000	0.3*	NA	NA	29,000	6.4*	22,000	9.4*
1988	125,000	4.3	11000	0.5*	NA	NA	60,000	12.9*	54,000	22.5*
1989	97,000	3.3	4000	0.2*	NA	NA	52,000	11.0*	41,000	16.7*
1990	121,000	4.0	--	--*	NA	NA	17,000	3.6*	104,000	41.5*
1991	81,000	2.6	--	--*	NA	NA	57,000	11.7*	24,000	9.4*
1992	78,000	2.5	14,000	0.6*	NA	NA	33,000	6.6*	31,000	11.8*
1993	180,000	5.6	12,000	0.5*	NA	NA	70,000	13.6*	98,000	36.7*
1994	60,000	1.8	--	--*	NA	NA	22,000	4.3*	38,000	15.1*
1995	86,000	2.6	17,000	0.7*	NA	NA	14,000	2.7*	55,000	21.7*
1996	105,000	3.2	--	--*	NA	NA	79,000	14.6*	26,000	10.0*
1997 <sup>1,2</sup>	220,753	10.0	NA	NA	44,651	3.2*	86,144	15.4*	89,958	34.2*
1998 <sup>1,2</sup>	194,432	8.7	NA	NA	31,103	2.2*	68,064	11.8*	95,265	35.8*
1999 <sup>1,2</sup>	117,378	5.2	NA	NA	24,796	1.8*	35,889	6.0	56,693	21.4*
2000 <sup>1,2</sup>	212,267	9.2	NA	NA	30,795	2.2*	68,135	10.8*	113,337	42.1*
2001 <sup>1,2</sup>	164,628	7.0	NA	NA	9,682	0.7*	74,530	11.4*	80,416	29.7*
2002 <sup>1,2</sup>	197,404	8.3	NA	NA	27,642	1.9*	38,261	5.6*	131,501	47.8*

**SOURCE: NATIONAL HEALTH INTERVIEW SURVEY, 1982-1996, 1997-2002**

**NOTES:**

\* ESTIMATE FOR WHICH THE NUMERATOR HAS A RELATIVE STANDARD ERROR OF MORE THAN 30 PERCENT.

--\*NO CASES IN SAMPLE.

(1) IN 1997, THE NATIONAL HEALTH INTERVIEW SURVEY COMPLETELY REDESIGNED THEIR QUESTIONNAIRE. THEREFORE, ESTIMATES PRIOR TO 1997 CANNOT BE COMPARED WITH LATER ESTIMATES.

(2) THE REVISED QUESTIONNAIRE NOW ASKS RESPONDENTS ABOUT EMPHYSEMA DIAGNOSIS OVER THEIR LIFETIME. THEREFORE, ESTIMATES WILL BE HIGHER.

**TABLE 9: EMPHYSEMA - SEX-SPECIFIC NUMBER OF CASES AND PREVALENCE RATE PER 1,000 PERSONS, 1982-1996, 1997-2002<sup>1</sup>**

YEAR	MALE		FEMALE	
	NUMBER	RATE	NUMBER	RATE
1982	1,691,000	15.4	633,000	5.4
1983	1,462,000	13.2	576,000	4.9
1984	1,484,000	13.3	700,000	5.8
1985	1,448,000	12.8	627,000	5.2
1986	1,201,000	10.5	797,000	6.5
1987	1,264,000	10.9	772,000	6.3
1988	1,308,000	11.2	597,000	4.8
1989	1,244,000	10.5	749,000	6.0
1990	1,275,000	10.7	743,000	5.9
1991	1,058,000	8.8	588,000	4.6
1992	1,160,000	9.5	754,000	5.8
1993	1,061,000	8.6	870,000	6.7
1994	1,232,000	9.7	796,000	6.0
1995	1,037,000	8.1	833,000	6.2
1996	956,000	7.4	866,000	6.4
1997 <sup>2</sup>	1,890,807	20.2	1,326,930	13.1
1998 <sup>2</sup>	1,693,146	17.9	1,266,370	12.3
1999 <sup>2</sup>	1,637,536	17.1	1,161,367	11.2
2000 <sup>2</sup>	1,690,500	17.5	1,434,199	13.7
2001 <sup>2</sup>	1,678,868	17.2	1,304,730	12.3
2002 <sup>2</sup>	1,821,630	18.5	1,309,780	12.2

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, NATIONAL HEALTH INTERVIEW SURVEY, 1982-1996, 1997-2002

NOTES:

(1) IN 1997, THE NATIONAL HEALTH INTERVIEW SURVEY COMPLETELY REDESIGNED THEIR QUESTIONNAIRE. THEREFORE, ESTIMATES PRIOR TO 1997 CANNOT BE COMPARED WITH LATER ESTIMATES.

(2) THE REVISED QUESTIONNAIRE NOW ASKS RESPONDENTS ABOUT EMPHYSEMA DIAGNOSIS OVER THEIR LIFETIME. THEREFORE, OVERALL ESTIMATES WILL BE HIGHER.

**Table 10: COPD-Number of Conditions and Prevalence Rate Per 1,000 Persons By Race and Ethnic Origin, 1998-2002**

Year		Hispanics	Non-Hispanic White	Non-Hispanic Black	Non-Hispanic Others	Total
<b>CHRONIC BRONCHITIS</b>						
1998	<i>Number</i>	533,770	7,472,640	799,815	170,935	8,977,160
	<i>Rate</i>	26.7	50.6	36.3	22.4	45.5
	<i>CI of Rate</i> <sup>3</sup>	(21.3-32.2)	(47.3-53.9)	(30.0-42.6)	(13.1-31.8)	(42.8-48.2)
1999	<i>Number</i>	531,322	7,272,319	805,128	238,877	8,847,646
	<i>Rate</i>	25.9	48.8	35.8	31.2	44.3
	<i>CI of Rate</i> <sup>3</sup>	(20.3-31.5)	(45.5-52.1)	(29.7-42.0)	(19.4-43.0)	(41.6-47.1)
2000	<i>Number</i>	566,394	7,680,117	922,045	186,426	9,354,982
	<i>Rate</i>	26.7	51.4	40.4	22.4	46.4
	<i>CI of Rate</i> <sup>3</sup>	(21.6-31.7)	(48.2-54.6)	(34-46.8)	(14-30.9)	(43.8-48.9)
2001	<i>Number</i>	679,957	9,066,921	1,193,632	258,092	11,198,602
	<i>Rate</i>	31.0	60.5	51.6	29.0	54.9
	<i>CI of Rate</i> <sup>3</sup>	(25.7-36.2)	(56.9-64.1)	(44.5-58.7)	(18.7-39.3)	(52.0-57.8)
2002	<i>Number</i>	629,579	7,177,946	1,081,002	225,054	9,113,581
	<i>Rate</i>	27.7	47.7	46.1	24.7	44.3
	<i>CI of Rate</i> <sup>3</sup>	(22.7-32.8)	(44.3-51.0)	(38.1-54.1)	(13.9-35.5)	(41.4-47.1)
<b>EMPHYSEMA</b>						
1998	<i>Number</i>	121,731	2,597,223	194,432	46,130	2,959,516
	<i>Rate</i>	6.1	17.6	8.8	6.1	15.0
	<i>CI of Rate</i> <sup>3</sup>	(3.8-8.4)	(15.8-19.4)	(5.6-12.0)	(1.8-10.3)	(13.6-16.4)
1999	<i>Number</i>	89,451	2,539,202	117,378	52,932	2,798,963
	<i>Rate</i>	4.4	17.0	5.2	6.9	14.0
	<i>CI of Rate</i> <sup>3</sup>	(2.3-6.5)	(15.0-19.1)	(2.9-7.5)	(1.3-12.5)	(12.4-15.6)
2000	<i>Number</i>	90,873	2,792,954	208,025	32,847	3,124,699
	<i>Rate</i>	4.3	18.7	9.1	4	15.5
	<i>CI of Rate</i> <sup>3</sup>	(2.5-6.0)	(16.8-20.6)	(6.6-11.6)	(-0.7-8.6)	(14.0-16.9)
2001	<i>Number</i>	130,698	2,632,331	164,628	55,941	2,983,598
	<i>Rate</i>	6.0	17.6	7.1	6.3	14.6
	<i>CI of Rate</i> <sup>3</sup>	(3.0-8.9)	(15.7-19.4)	(4.6-9.7)	(1.6-11.0)	(13.2-16.1)
2002	<i>Number</i>	79,170	2,809,643	197,404	45,193	3,131,410
	<i>Rate</i>	3.5	18.7	8.4	5.0	15.2
	<i>CI of Rate</i> <sup>3</sup>	(2.3-4.6)	(16.7-20.6)	(5.5-11.4)	(1.0-8.9)	(13.7-16.7)

Source: National Center for Health Statistics, National Health Interview Survey, 1998-2002  
 Calculations Performed by the American Lung Association's Epidemiology and Statistics Unit

**Notes:**

- (1) Chronic Bronchitis prevalence was defined as answering "yes" to "Have you been told by a doctor or other health professional that you had chronic bronchitis in the past 12 months?"
- (2) Emphysema prevalence was defined as answering yes to "Have you EVER been told by a doctor or other health professional that you had emphysema?"
- (3) 95% Confidence Interval

**TABLE 11: COPD- NUMBER OF FIRST LISTED HOSPITAL DISCHARGES AND RATE PER 10,000 BY AGE, 1979-2002<sup>(1)</sup>**

YEAR	AGE GROUPS									
	<15		15-44		45-64		65+		TOTAL <sup>(4, 5)</sup>	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1979	53,000	10.5	40,000	4.0	172,000	39.5	255,000	109.1	520,000	24.1
1980	46,000	9.0	40,000	3.8	186,000	42.1	266,000	103.7	539,000	24.0
1981	56,000	10.9	40,000	3.8	189,000	42.5	335,000	127.6	617,000	27.1
1982	28,000	5.5	40,000	3.7	205,000	46.1	332,000	123.9	605,000	26.3
1983	51,000	9.8	32,000	2.9	185,000	41.5	358,000	130.6	625,000	26.9
1984	28,000	5.4	33,000	3.0	159,000	35.5	299,000	106.7	520,000	22.2
1985	29,000	5.5	15,000	1.3	154,000	34.4	285,000	99.8	489,000	20.6
1986	24,000	4.6	17,000	1.5	116,000	25.7	266,000	91.0	416,000	17.4
1987	21,000	4.0	15,000	1.3	105,000	23.3	205,000	68.7	341,000	14.1
1988 <sup>(2)</sup>	12,000	2.3	6,000	0.5	71,000	15.5	129,000	42.2	237,000	9.7
1989	11,000	2.0	8,000	0.7	67,000	14.4	132,000	42.6	234,000	9.5
1990	13,000	2.4	5,000	0.4	70,000	14.7	156,000	49.1	259,000	10.4
1991	10,000	1.8	12,000	1.0	86,000	18.4	173,000	54.5	296,000	11.9
1992 <sup>(3)</sup>	9,000	1.6	7,000	0.6	111,000	23.0	277,000	85.8	428,000	16.9
1993	7,000	1.2	16,000	1.4	130,000	26.2	337,000	102.8	506,000	19.7
1994	6,000	1.0	11,000	0.9	140,000	27.5	378,000	114.0	552,000	21.3
1995	*	*	17,000	1.4	149,000	28.6	371,000	110.6	553,000	21.2
1996	6,000	1.0	21,000	1.8	160,000	29.8	386,000	114.0	573,000	21.7
1997	*	*	24,000	2.0	170,000	30.7	418,000	122.2	635,000	23.5
1998	*	*	27,174	2.2	181,614	31.8	454,633	133.3	668,362	24.5
1999	*	*	28,000	2.3	193,000	32.7	479,000	139.9	713,000	25.9
2000	*	*	18,000	1.5	188,000	30.8	432,000	125.3	661,000	23.8
2001	*	*	21,935	1.8	176,824	27.4	458,242	129.8	662,637	23.4
2002	*	*	30,668	2.5	200,212	30.0	440,185	123.6	675,878	23.5

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, NATIONAL HOSPITAL DISCHARGE SURVEY, 1979-2002

NOTES:

\* FIGURE DOES NOT MEET STANDARD OF RELIABILITY OR PRECISION.

(1) THIS TABLE REFERS EXCLUSIVELY TO DATA ON CHRONIC BRONCHITIS, EMPHYSEMA AND OTHER LOWER CHRONIC OBSTRUCTIVE PULMONARY DISEASES INCLUDING BRONCHIECTASIS. DATA ON ASTHMA ARE NOT INCLUDED.

(2) DATA PRIOR TO 1988 MAY BE DIFFERENT FROM DATA FOLLOWING THAT YEAR DUE TO A REDESIGN OF THE SURVEY.

(3) IN 1992, OBSTRUCTIVE CHRONIC BRONCHITIS (ICD CODE 491.21) WAS INTRODUCED. MANY DISCHARGES PREVIOUSLY CODED AS ACUTE BRONCHITIS (ICD CODE 466) WERE ATTRIBUTED TO THIS NEW CODE IN 1992. THEREFORE, THE LARGE INCREASE IN THE HOSPITAL DISCHARGE RATE MAY BE DUE TO A CHANGE IN THE ICD CODE FOR CHRONIC BRONCHITIS.

(4) THESE ARE SAMPLE ESTIMATES AND MAY DIFFER FROM FIGURES THAT WOULD BE OBTAINED FROM A CENSUS OF THE POPULATION. EACH DATA POINT REPORTED IS SUBJECT TO SAMPLING VARIABILITY.

(5) DUE TO ROUNDING, NUMBERS MAY NOT SUM TO THE TOTAL NUMBER OF HOSPITAL DISCHARGES.

**TABLE 12: COPD - NUMBER OF FIRST-LISTED HOSPITAL DISCHARGES AND RATE PER 10,000 POPULATION BY RACE, 1988-2002 (1)**

YEAR	WHITE		BLACK		ALL OTHER RACES <sup>(2)</sup>		NOT REPORTED <sup>(3)</sup>	TOTAL <sup>(4)</sup>	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE	NUMBER	NUMBER	RATE
1988	187,000	9.1	22,000	7.6	8,000*	9.8	19,000	237,000	9.7
1989	188,000	9.1	22,000	7.4	--	--	23,000	234,000	9.5
1990	202,000	9.7	20,000	6.5	--	--	34,000	259,000	10.4
1991	233,000	11.1	18,000	5.9	--	--	42,000	298,000	11.9
1992 <sup>(5)</sup>	321,000	15.1	28,000	8.9	6,000*	6.0	74,000	428,000	16.9
1993	367,000	17.2	37,000	11.7	8,000*	7.4	94,000	506,000	19.7
1994	405,000	18.8	55,000	16.9	11,000	9.7	82,000	552,000	21.3
1996	418,000	19.1	52,000	15.5	14,000	11.5	108,000	592,000	22.4
1997	463,000	23.2	48,000	13.1	12,000	7.9	112,000	635,000	23.5
1998	479,788	21.4	55,808	15.7	19,645	15.0	113,121	668,362	24.5
1999	507,108	22.2	47,943	12.6	7,418	5.5	132,979	713,000	25.9
2000	447,527	19.7	49,434	13.9	11,737	6.6	152,302	661,000	23.8
2001	465,641	20.3	54,642	15.2	9,677	5.3	132,677	662,637	23.4
2002	471,118	20.3	54,684	15.0	13,278	7.0	136,696	675,878	23.5

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS: NATIONAL HOSPITAL DISCHARGE SURVEY, 1988-2002

NOTES:

-- ESTIMATES OF LESS THAN 5,000 ARE CONSIDERED UNRELIABLE.

\* ESTIMATES OF 5,000-10,000 TO BE USED WITH CAUTION.

(1) THIS TABLE REFERS EXCLUSIVELY TO DATA ON CHRONIC BRONCHITIS, EMPHYSEMA AND OTHER LOWER CHRONIC OBSTRUCTIVE PULMONARY DISEASES INCLUDING BRONCHIECTASIS. DATA ON ASTHMA ARE NOT INCLUDED.

(2) ALL RACES OTHER THAN BLACK AND WHITE.

(3) BETWEEN 1988 AND 2002, THE NUMBER OF DISCHARGES NOT REPORTING RACE INCREASED DRAMATICALLY. IT APPEARS THAT HOSPITAL DISCHARGES IN WHITES MIGHT BE DISPROPORTIONATELY UNDERESTIMATED, ESPECIALLY IN LATER YEARS. FOR THIS REASON COMPARISONS BETWEEN RACES SHOULD BE MADE WITH CAUTION.

(4) DUE TO ROUNDING, NUMBERS MAY NOT SUM TO THE TOTAL NUMBER OF HOSPITAL DISCHARGES.

(5) A NEW CLASSIFICATION, OBSTRUCTIVE CHRONIC BRONCHITIS WITH ACUTE EXACERBATIONS (ICD CODE 491.21) WAS INTRODUCED IN 1992. MANY DISCHARGES PREVIOUSLY CODED AS ACUTE BRONCHITIS (ICD CODE 466) WERE ATTRIBUTED TO THIS NEW CODE BEGINNING IN 1992.

**TABLE 13: COPD - NUMBER OF FIRST-LISTED HOSPITAL DISCHARGES AND RATE PER 10,000 POPULATION, BY SEX, 1988-2002 <sup>1,2</sup>**

YEAR	MALE		FEMALE		TOTAL	
	NUMBER	RATE	NUMBER	RATE	NUMBER	RATE
1988	114,000	9.6	115,000	9.1	237,000	9.7
1989	118,000	9.9	110,000	8.7	234,000	9.5
1990	134,000	11.1	114,000	8.9	259,000	10.4
1991	152,000	12.5	141,000	10.9	298,000	11.9
1992 <sup>(3)</sup>	210,000	17.1	211,000	16.2	428,000	16.9
1993	239,000	19.2	265,000	20.1	506,000	19.7
1994	257,000	20.4	290,000	21.8	552,000	21.3
1995	248,000	19.5	305,000	22.7	553,000	21.2
1996 <sup>(4)</sup>	265,000	20.6	318,000	23.5	583,000	22.1
1997 <sup>(4)</sup>	272,000	20.8	355,000	25.9	635,000	23.5
1998 <sup>(4)</sup>	297,902	22.3	370,460	26.5	668,362	24.5
1999 <sup>(4)</sup>	303,000	22.5	404,000	28.7	713,000	25.9
2000	300,000	22.1	357,000	25.1	661,000	23.8
2001	293,520	21.1	369,117	25.5	662,637	23.4
2002	296,220	21.1	379,658	25.9	675,878	23.5

SOURCE: NATIONAL CENTER FOR HEALTH STATISTICS, NATIONAL HOSPITAL DISCHARGE SURVEY, 1988-2002

NOTES:

- (1) THIS TABLE REFERS EXCLUSIVELY TO DATA ON CHRONIC BRONCHITIS, EMPHYSEMA AND OTHER LOWER CHRONIC OBSTRUCTIVE PULMONARY DISEASES INCLUDING BRONCHIECTASIS. DATA ON ASTHMA ARE NOT INCLUDED.
- (2) DUE TO ROUNDING, NUMBERS MAY NOT SUM TO THE TOTAL HOSPITAL DISCHARGES.
- (3) THE LARGE INCREASE IN DISCHARGES SEEN IN 1992 MAY BE DUE TO ADDITION OF OBSTRUCTIVE CHRONIC BRONCHITIS WITH ACUTE EXACERBATIONS (ICD CODE 491.21). MANY DISCHARGES PREVIOUSLY CODED AS ACUTE BRONCHITIS (ICD CODE 466) WERE ATTRIBUTED TO THIS NEW CODE BEGINNING IN 1992.
- (4) NO ESTIMATE AVAILABLE FOR ICD-9 CODE 495