



**Trends in Pneumonia and Influenza
Morbidity and Mortality**

**American Lung Association
Research and Program Services
Epidemiology and Statistics Unit
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INTRODUCTION¹

Pneumonia and influenza are significant causes of morbidity and mortality. Together these conditions are ranked as the eighth leading cause of death in the United States.¹ Along with other respiratory conditions, such as the common cold and acute bronchitis, these disorders are substantial contributors to days lost from work and school. The following tables delineate information available from national surveys and statistics on trends in morbidity and mortality attributed to pneumonia and influenza. In addition, vaccine recommendations to prevent pneumonia and influenza are included.

MORTALITY

Effective with 1999 mortality data, the population standard used for calculating age-adjusted death rates was changed from the 1940 population to the 2000 population. This change has 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use the same standard and (iii) corrected the public perception that age-adjustment to the 1940 population provides out-of-date statistics.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 population standard places greater 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 previous (1940) standard.

The tenth revision of International Classification of Diseases (ICD-10) replaced ICD-9 in coding and classifying mortality data from death certificates. The ICD is periodically revised to reflect changes in the medical field. This change has had 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 death.

A direct sequel rule applies to the tenth revision ICD code which states: If a person dies of pneumonia but had an underlying condition of which pneumonia was a result, then that underlying disease is considered the cause of death on the death certificate, not pneumonia. Therefore, deaths classified as pneumonia in ICD-9 are classified in ICD-10 to other causes. As a result of the new ICD-10 code, fewer deaths are attributable directly to pneumonia. Influenza was largely unaffected by the ICD-10 revision.

Please note the discrepancy in years of data reported for each measure of disease magnitude is due to limited availability of national data. Complete mortality data is available for 2005. This trend report contains the latest statistics and research findings available at the time of publication.

Sex and Race Specific Mortality Rates

Figures 1 and 2 compare the pneumonia and influenza age-adjusted death rates between 1979 and 2005 based on the 1940 and 2000 standard populations, respectively. Age-adjusted death rates are approximately 2.5 times greater for pneumonia and 3 times greater for influenza using

¹ Unless otherwise noted, terms such as higher or less are not intended to indicate statistical significance.

the 2000 standard population than the 1940 standard population.²

Table 1 shows the number of pneumonia and influenza deaths between 1979 and 2005 by race and sex. The overall number of deaths attributed to pneumonia and influenza in 2005 was 63,001; a 5.6% increase from the previous year. For the second year in a row, pneumonia and influenza together remained the eighth leading cause of death in the U.S. in 2005.³ The 30% decrease seen in the number of overall deaths between 1998 and later years is predominantly due to the revision of the ICD codes.

Pneumonia consistently accounts for the overwhelming majority of these deaths. In 2005, 61,189 people died from pneumonia and 1,812 people died from influenza.⁴

Table 2 displays age-adjusted death rates for pneumonia and influenza between 1979 and 2005 by sex and race. In 2005, the age-adjusted death rate for pneumonia and influenza was 20.3 per 100,000 persons. Separately, the age-adjusted death rate was 19.7 per 100,000 for pneumonia and 0.6 per 100,000 for influenza. Due to the change in age-adjusted standard populations from the year 1940 to the year 2000, age-adjusted death rates for 1999 to 2005 are approximately 2 times greater than those seen in 1979 to 1998.⁵

The number of deaths due to pneumonia and influenza has been higher among females since the mid-1980s. However, females have age-adjusted death rates close to 30% lower than that in men because the female population in the U.S. is larger than the male population. In 2005, the age-adjusted death rates for females and males were 17.9 and 23.9 per 100,000, respectively.⁶

Figure 3 displays this trend.

In 2005, black men were 14% more likely to die from pneumonia and influenza than white men (26.9 per 100,000 vs. 23.6 per 100,000) where as black and white women were almost equally likely to die from pneumonia and influenza (18.4 per 100,000 and 18.0 per 100,000). **Figure 4** display these trends.⁷

Table 3 describes the number of deaths and the age-adjusted death rate per 100,000 population due to pneumonia and influenza among people of Hispanic origin. In 2005, 3,085 Hispanics died from pneumonia and influenza; 3,030 of these deaths were from pneumonia. Age-adjusted death rates for pneumonia and influenza in Hispanics (16.8 per 100,000) were 18% lower than non-Hispanic whites (20.4 per 100,000) and 24% lower than non-Hispanic blacks (22.1 per 100,000).⁸

Age-Specific Mortality

For the 65 and over population, pneumonia and influenza are the sixth leading cause of death.⁹ Close to 90% of deaths due to these diseases occur in this age group.¹⁰ **Tables 4 and 5** delineate the number of deaths and age-specific death rates for pneumonia and influenza between 1979 and 2005.

Very few deaths are attributed to influenza in the population under age 55. As seen in the 2005 mortality statistics, the highest death rate for influenza is in those over age 85 (19.3 per

100,000).¹¹

INFLUENZA INCIDENCE

From 1982 to 1996, annual data on the incidence of pneumonia, influenza and other acute respiratory infections was collected by the National Health Interview Survey (NHIS), a multi-purpose health survey on the health of the civilian, non-institutionalized, household population of the U.S. However, when the National Center for Health Statistics revised the NHIS questionnaire in 1997, questions on pneumonia, influenza and acute respiratory conditions were eliminated due to data inconsistencies. The 2007 NHIS questionnaire contained a question on influenza and pneumonia morbidity for the first time in a decade. Since this question differed significantly from those on previous surveys, data from earlier years are not displayed as the data are not comparable. **Table 6** shows influenza and pneumonia prevalence cases and rates per thousand population for youth and adults in 2007. The data is also broken down by race, sex and age. In 2007, influenza and pneumonia rates were generally higher among youths compared to adults and higher among whites compared to blacks.¹²

INFLUENZA SURVEILLANCE

Although estimates on influenza incidence are not collected regularly, the Centers for Disease Control and Prevention (CDC) monitors seasonal and geographic influenza patterns through isolation of viral strains and through reports from selected, strategically located physicians. Low, but increasing, levels of influenza activity were reported from October through early December 2007. Influenza activity increased more rapidly during January and early February 2008, and was listed as an underlying or contributing cause of death for 7.6% of deaths for the week ending February 9, 2008. The percentage was above the epidemic threshold^{II} of 7.2% for the same week.¹³

Since the beginning of the 2007–2008 influenza surveillance season, World Health Organization (WHO) and National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories in the U.S. reported testing 94,502 specimens for influenza viruses, and 10,568 (11%) tested positive. Of the laboratory tested positive specimens, 8,889 (84%) were influenza A viruses and 1,679 (16%) were influenza B viruses.¹⁴

HOSPITAL DISCHARGES

Throughout the year, persons with weak immune systems and/or underlying health problems are at increased risk for complications from influenza infection and are more likely to be hospitalized. One major complication is pneumonia. The National Hospital Discharge Survey provides hospitalization data for pneumonia and influenza annually. Complete hospitalization data is available through 2006.

^{II} The epidemic threshold is 1.654 standard deviations above the seasonal baseline. The seasonal baseline is projected using a robust regression procedure in which a periodic regression model is applied to observed percentages of deaths from pneumonia and influenza over the previous 5 years.

Table 7 delineates the most recent data on hospital discharges by diagnosis, sex, age and region of the United States for 2006. The majority of hospitalizations attributed to pneumonia were due to unspecified organisms (85.5%). Approximately 2.1 percent of discharges were attributed to pneumococcal pneumonia while other bacterial pneumonia was responsible for 8.6 percent of hospital discharges. Viral pneumonia was responsible for 2.3 percent of pneumonia discharges. When examined on a regional basis, the number of pneumonia discharges was highest in the South (438,000) and lowest in the West (210,000).¹⁵

Overall, an estimated 37,000 hospital discharges were attributed to influenza in 2006. When examined regionally, the greatest number of influenza discharges occurred in the South (14,000).¹⁶

Sex-Specific Hospital Discharges

Table 8 displays the number and rate of hospital discharges attributed to pneumonia and influenza by sex from 1988 to 2006. An estimated 589,000 discharges (40.2 per 10,000) in males and 643,000 discharges (42.4 per 10,000) in females were attributable to pneumonia in 2006. During 2006, an estimated 12,000 discharges in males (0.9 per 10,000) and 25,000 discharges (1.6 per 10,000) in females were attributed to influenza, respectively.¹⁷

Age-Specific Hospital Discharges

Table 9 delineates the age-specific trend in hospital discharges attributed to pneumonia and influenza from 1988 to 2006. In 2006, those 65 and older accounted for approximately 57% of the total number of pneumonia discharges. This trend is evident in **Figure 6**. The hospital discharge rate for pneumonia was lowest for those 15–44 years of age (8.5 per 10,000) followed by those under 15 (28.3 per 10,000) and those 45–64 years (33.4 per 10,000). Those over 65 had the highest hospital discharge rate at 189.0 per 10,000.¹⁸

The hospital discharge rate for influenza could not be calculated reliably for those 15–44 and 45–64 years of age due to the relatively small number of influenza discharges within these age groups. Those over 65 had the highest number of discharges (18,000) and the highest discharge rate of 4.9 per 10,000 persons.¹⁹

Race-Specific Hospital Discharges

Table 10 displays the trend in hospital discharges attributed to pneumonia by race from 1988 to 2006. The 2006 discharge rate was highest in whites (32.9 per 10,000) and lowest in all other races (19.2 per 10,000). The rate in blacks was 30.5 per 10,000. These rates, however, should be interpreted with caution due to the large percentage of discharges for which race was not reported. **Figure 7** also displays this race-specific trend.²⁰

Hospital discharges due to influenza by race are unreliable and are therefore not shown in this report.

VACCINATION RATES^{III}

Influenza is largely preventable by annual vaccination, and the major form of pneumonia is controllable by vaccination as well. Raw data from the Behavioral Risk Factor Surveillance System is analyzed by the American Lung Association to produce estimates of annual vaccination rates at the state level. **Figure 8** displays the percentage of persons aged 65 and older that reported ever having received a pneumococcal vaccination in 2007. Percentages ranged from a low of 55.9% in the District of Columbia to a high of 74.0% in Oregon. The United States average was 67.3%.²¹

Vaccination with the flu shot has been associated with reductions in influenza-related respiratory illness and physician visits among all age groups, hospitalization and death among the elderly, young children and people at high risk, otitis media among children and work absenteeism among adults.

Although vaccination with the flu shot has increased substantially during the 1990's, further improvements in vaccine coverage levels are needed, chiefly among persons aged 65 years and older, whom are at higher risk of serious illness and death compared with all other age groups.

A national objective for the year 2010 is to increase influenza and pneumococcal vaccination levels above 90% among persons aged 65 years and older.²² To monitor the states' progress towards achieving this objective, data from the 2007 Behavioral Risk Factor Surveillance System (BRFSS) were analyzed. Nationwide the percentage of influenza vaccinations among persons aged 65 years and older was 72.0%. However, there was wide variation among the states; the District of Columbia reported the lowest percentage (60.2%), while Rhode Island reported the highest percentage (80.0%). **Table 11** shows the state-specific percentages for those aged 65 and older who have ever received a pneumococcal vaccination and those who reported receiving a flu shot in the last year for 1997 to 2007.²³

Vaccination against influenza is a Medicare (Part B) reimbursable service. **Table 12** shows the percentage of fee-for-service Medicare beneficiaries aged 65 and older who received flu shots paid for by Medicare from 2000 to 2004. Percentages ranged from a low of 60.4% in DC to a high of 80.8% in Iowa in 2004. The United States average was 74.9%.²⁴ **Figure 9** displays this data.

With clear and striking evidence of the effectiveness of the flu vaccine in reducing hospitalizations and deaths and in producing direct cost savings, providers and patients alike should take steps to ensure that people at high risk receive the flu shot each year. This recommendation also encompasses people with asthma. It had long been postulated that many asthma exacerbations were precipitated by influenza infection; yet vaccination rates among people with asthma were low due to the speculation by both medical professionals and the public that receiving the flu shot may worsen or exacerbate asthma. However, a study conducted by the

III The CDC's Advisory Committee on Immunization Practices (ACIP) issues recommendations which include who should be vaccinated, when, how often and contraindications among other important information. Influenza vaccination is recommended annually; pneumonia vaccination is only required once for most people, although certain groups may need a second booster shot.

American Lung Association Asthma Clinical Research Centers network found that the opposite was true — receiving the flu shot was safe for people with asthma and did not cause higher rates of side effects compared with those who received a placebo.²⁵

Despite the results of this study, the percentage of people with asthma receiving the flu shot remains low. Currently, there is no surveillance system in place which provides state specific data on flu vaccination among children with asthma. Studies indicate that only about 10% of children with asthma receive the flu shot. The percent of adults with asthma who receive the flu shot is higher at approximately 46.1%. **Table 13** displays the percent of adults with asthma who have received the flu shot between 2003 and 2007. The percent of adults with asthma receiving the flu shot ranged from a low of 35.6% in Nevada to a high of 57.0% in Rhode Island in 2007. The United States average is 46.1%.²⁶ **Figure 10** displays this data.

Additional analysis by the American Lung Association found that if 100% of people with asthma received a flu shot, then close to 156,000 hospitalizations could be prevented each year.^{27,28}

VACCINATION RECOMMENDATIONS

Medicare (Part B) will pay 100 percent for pneumococcal vaccination and its administration, if ordered by a physician. The emergence of serious drug-resistant pneumococci accentuates the urgent need for pneumococcal immunization. Most adults need to receive the pneumococcal vaccination only once. Those patients at high risk should consult their physicians to find out if they need a second vaccination.

The greatest risk of pneumococcal pneumonia is usually among people who:²⁹

- Have chronic illnesses such as lung disease, heart disease, kidney disorders, sickle cell anemia, or diabetes.
- Are recovering from severe illness
- Reside in nursing homes or other chronic care facilities
- Are age 65 or older

There are two vaccine options available in the United States for influenza. One option is the nasal spray, Flu Mist, which is approved to prevent influenza illness in healthy people ages 2–49. The safety and effectiveness of Flu Mist in children under 2 years of age, persons 50 years of age and over, and people with asthma or other reactive airway diseases has not been established. Flu Mist should not be given for any reason to people with immune suppression or to people with chronic underlying medical conditions that may predispose them to severe flu infections. For all of the aforementioned people, the flu shot is indicated.³⁰

The Advisory Committee on Immunization Practices (ACIP) recommends annual influenza vaccination for:³¹

- All adults who want to reduce the risk of becoming ill with influenza or of transmitting influenza to others;
- All children aged 6 months through 18 years;
- All persons aged ≥ 50 years;
- women who will be pregnant during the influenza season;

- Adults who have chronic pulmonary (including asthma), cardiovascular (except hypertension), renal, hepatic, hematological or metabolic disorders (including diabetes mellitus);
- Adults who have immunosuppression (including immunosuppression caused by medications or by human immunodeficiency virus);
- Adults who have any condition (e.g., cognitive dysfunction, spinal cord injuries, seizure disorders, or other neuromuscular disorders) that can compromise respiratory function or the handling of respiratory secretions or that can increase the risk for aspiration;
- Residents of nursing homes and other chronic-care facilities;
- Healthcare personnel;
- Healthy household contacts and caregivers of children aged <5 years and adults aged ≥50 years, with particular emphasis on vaccinating contacts of children aged <6 months; and
- Healthy household contacts and caregivers of persons with medical conditions that put them at higher risk for severe complications from influenza.

The major change to the guidelines for the 2008–09 influenza season is the annual vaccination recommendation for all children 6 months through 18 years. Previously only children 6 months to 59 months and those with conditions that place them at increased risk for complications from influenza were included in the recommendations. While vaccination for these children should continue, all children aged 6 months through 18 years should be vaccinated during the 2008–09 influenza season, if feasible, but should be vaccinated no later than the 2009–10 influenza season.³²

Currently the influenza vaccination season begins in October and runs into January and beyond. However, full implementation of CDC recommendations will require expansion of the flu vaccination season from early in the fall to March or even May of the following year. Lengthening the vaccination season would allow for more opportunities for at-risk individuals to be vaccinated, even after influenza has become active in a community.³³ Influenza activity may not peak until April or May, so late vaccination still provides protection.³⁴

ANTIVIRAL DRUGS

Vaccination is the primary means of preventing morbidity and mortality associated with influenza. Antiviral drugs are also important for the prevention and control of influenza. Two classes are available: adamantanes and neuraminidase inhibitors. Adamantanes are only active against influenza A viruses, but recently their effectiveness has decreased. Preliminary data from the 2007–08 influenza season indicates that 99% of influenza A (H3N2) and 10% of influenza A (H1N1) strains were resistant to adamantanes during this period. The CDC recommends the use of neuraminidase inhibitors for treatment and chemoprophylaxis of influenza A instead of the adamantane antiviral drugs until susceptibility to adamantanes drugs is reestablished among circulating influenza A viruses.³⁵

ECONOMIC COSTS^{IV}

IV Economic costs are divided into direct and indirect costs. Direct costs are expenditures for hospital care, physician and other professional care, nursing home care and drugs. Indirect costs represent lost earnings due to illness and lost future earnings by those who died from given illness.

Together, pneumonia and influenza represented a cost to the U.S. economy in 2005 of \$40.2 billion, \$6.0 billion due to indirect costs and \$34.2 billion in direct costs.³⁶ In 2007, the economic costs of all lung diseases were approximately \$154 billion — \$95 billion in direct health expenditures and \$59 billions in indirect cost.³⁷

Glossary

Mortality is the term used to refer to death. Mortality rates are per 100,000 population and are usually age-adjusted to the 2000 U.S. standard population.

Age-Adjusted Mortality Rate: a figure that is statistically adjusted to remove the distorting effect of age when comparing populations with different age structures. Most rates are age-adjusted to the 2000 U.S. standard population.

Morbidity is defined as illness and is the term used to refer to measures of illness, such as hospitalizations or emergency room visits.

Prevalence: number of existing cases of a particular conditions, disease or other occurrence (e.g. persons smoking) at a given time. Prevalence rates are the number of existing cases in a particular population quantity at a given time (e.g. 10 cases per 100,000). Chronic disease prevalence is reported per 1,000 population.

Incidence: number of new cases in a population during a particular period of time (e.g. 100 cases of tuberculosis from 1998 to 2002). Incidence rates are reported per 100 or 100,000 population.

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TABLE 1: PNEUMONIA AND INFLUENZA - NUMBER OF DEATHS, BY RACE AND SEX, 1979-1998, 1999-2005

| CAUSE OF DEATH | ALL OTHER RACES ⁽¹⁾ | | | | | | | | | | | |
|----------------------------------|--------------------------------|--------|--------|--------|--------|--------|--------|-------|--------|-------|-------|--------|
| | ALL RACES | | | WHITE | | | TOTAL | | | BLACK | | |
| | BOTH | MALE | FEMALE | BOTH | MALE | FEMALE | BOTH | MALE | FEMALE | BOTH | MALE | FEMALE |
| PNEUMONIA & INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽²⁾ | 45,030 | 23,725 | 21,305 | 39,803 | 20,544 | 19,259 | 5,227 | 3,181 | 2,046 | 4,740 | 2,884 | 1,856 |
| 1981 | 53,731 | 27,059 | 26,672 | 47,919 | 23,531 | 24,388 | 5,812 | 3,528 | 2,284 | 5,276 | 3,201 | 2,075 |
| 1983 | 55,854 | 28,007 | 27,847 | 49,996 | 24,463 | 25,533 | 5,858 | 3,544 | 2,314 | 5,234 | 3,190 | 2,044 |
| 1985 | 67,615 | 33,159 | 34,456 | 60,508 | 29,028 | 31,480 | 7,107 | 4,131 | 2,976 | 6,338 | 3,664 | 2,674 |
| 1987 | 69,225 | 33,562 | 35,663 | 61,811 | 29,284 | 32,527 | 7,414 | 4,278 | 3,136 | 6,565 | 3,795 | 2,770 |
| 1989 | 76,550 | 35,701 | 40,849 | 67,853 | 30,892 | 36,961 | 8,697 | 4,809 | 3,888 | 7,585 | 4,168 | 3,417 |
| 1991 | 77,860 | 36,214 | 41,646 | 69,276 | 31,589 | 37,687 | 8,584 | 4,625 | 3,959 | 7,372 | 3,938 | 3,434 |
| 1993 | 82,820 | 37,996 | 44,824 | 73,720 | 33,151 | 40,569 | 9,100 | 4,845 | 4,255 | 7,724 | 4,051 | 3,673 |
| 1995 | 82,923 | 37,787 | 45,136 | 73,641 | 32,948 | 40,693 | 9,282 | 4,839 | 4,443 | 7,803 | 4,019 | 3,784 |
| 1996 | 83,727 | 37,991 | 45,736 | 74,194 | 32,924 | 41,270 | 9,533 | 5,067 | 4,466 | 7,963 | 4,170 | 3,793 |
| 1997 | 86,449 | 39,284 | 47,165 | 76,875 | 34,386 | 42,489 | 9,574 | 4,898 | 4,676 | 7,920 | 3,978 | 3,848 |
| 1998 | 91,871 | 40,979 | 50,892 | 81,659 | 35,795 | 45,864 | 10,212 | 5,184 | 5,028 | 8,326 | 4,178 | 4,148 |
| 1999 ⁽³⁾ | 63,730 | 27,718 | 36,012 | 56,694 | 24,281 | 32,413 | 7,036 | 3,437 | 3,599 | 5,876 | 2,825 | 3,051 |
| 2000 | 65,313 | 28,658 | 36,655 | 57,914 | 25,002 | 32,912 | 7,399 | 3,656 | 3,743 | 5,990 | 2,915 | 3,075 |
| 2001 | 62,034 | 27,342 | 34,692 | 54,774 | 23,744 | 31,030 | 7,260 | 3,598 | 3,662 | 5,771 | 2,813 | 2,958 |
| 2002 | 65,681 | 28,918 | 36,763 | 58,346 | 25,381 | 32,965 | 7,335 | 3,537 | 3,798 | 5,871 | 2,768 | 3,103 |
| 2003 | 65,163 | 28,778 | 36,385 | 57,645 | 25,009 | 32,636 | 7,518 | 3,769 | 3,749 | 5,872 | 2,906 | 2,966 |
| 2004 | 59,664 | 26,861 | 32,803 | 52,430 | 23,348 | 29,082 | 7,234 | 3,513 | 3,721 | 5,700 | 2,775 | 2,925 |
| 2005 | 63,001 | 28,052 | 34,949 | 55,540 | 24,425 | 31,115 | 7,461 | 3,627 | 3,834 | 5,780 | 2,729 | 3,051 |
| PNEUMONIA | | | | | | | | | | | | |
| 1979 ⁽²⁾ | 44,426 | 23,493 | 20,933 | 39,253 | 20,340 | 18,913 | 5,173 | 3,153 | 2,020 | 4,697 | 2,862 | 1,835 |
| 1981 | 50,725 | 25,954 | 24,771 | 45,079 | 22,498 | 22,581 | 5,646 | 3,456 | 2,190 | 5,130 | 3,137 | 1,993 |
| 1983 | 54,423 | 27,464 | 26,959 | 48,616 | 23,943 | 24,673 | 5,807 | 3,521 | 2,286 | 5,194 | 3,171 | 2,023 |
| 1985 | 65,561 | 32,422 | 33,139 | 58,561 | 28,347 | 30,214 | 7,000 | 4,075 | 2,925 | 6,247 | 3,616 | 2,631 |
| 1987 | 68,593 | 33,310 | 35,283 | 61,216 | 29,048 | 32,168 | 7,414 | 4,278 | 3,136 | 6,565 | 3,795 | 2,770 |
| 1989 | 74,957 | 35,151 | 39,806 | 66,344 | 30,379 | 35,965 | 8,613 | 4,772 | 3,841 | 7,521 | 4,141 | 3,380 |
| 1991 | 76,723 | 35,781 | 40,942 | 68,207 | 31,187 | 37,020 | 8,516 | 4,594 | 3,922 | 7,320 | 3,915 | 3,405 |
| 1993 | 81,776 | 37,607 | 44,169 | 72,728 | 32,785 | 39,943 | 9,048 | 4,822 | 4,226 | 7,677 | 4,028 | 3,649 |
| 1995 | 82,317 | 37,565 | 44,752 | 73,075 | 32,742 | 40,333 | 9,242 | 4,823 | 4,419 | 7,772 | 4,008 | 3,764 |
| 1996 | 82,982 | 37,722 | 45,260 | 73,499 | 32,678 | 40,821 | 9,483 | 5,044 | 4,439 | 7,929 | 4,156 | 3,773 |
| 1997 | 85,729 | 39,013 | 46,716 | 76,194 | 34,135 | 42,059 | 9,535 | 4,878 | 4,657 | 7,894 | 3,965 | 3,929 |
| 1998 | 90,147 | 40,395 | 49,752 | 79,992 | 35,235 | 44,757 | 10,155 | 5,160 | 4,995 | 8,293 | 4,165 | 4,128 |
| 1999 ⁽³⁾ | 62,065 | 27,116 | 34,949 | 55,120 | 23,712 | 31,408 | 6,945 | 3,404 | 3,541 | 5,810 | 2,801 | 3,009 |
| 2000 | 63,548 | 27,994 | 35,554 | 56,252 | 24,385 | 31,867 | 7,296 | 3,609 | 3,687 | 5,909 | 2,880 | 3,029 |
| 2001 | 61,777 | 27,241 | 34,536 | 54,545 | 23,656 | 30,889 | 7,232 | 3,585 | 3,647 | 5,771 | 2,813 | 2,958 |
| 2002 | 64,954 | 28,629 | 36,325 | 57,660 | 25,111 | 32,549 | 7,294 | 3,518 | 3,776 | 5,841 | 2,753 | 3,088 |
| 2003 | 63,371 | 28,079 | 35,292 | 55,992 | 24,369 | 31,623 | 7,379 | 3,710 | 3,669 | 5,775 | 2,869 | 2,906 |
| 2004 | 58,564 | 26,440 | 32,124 | 51,397 | 22,960 | 28,437 | 7,167 | 3,480 | 3,687 | 5,650 | 2,750 | 2,900 |
| 2005 | 61,189 | 27,395 | 33,794 | 53,830 | 23,816 | 30,014 | 7,359 | 3,579 | 3,780 | 5,711 | 2,697 | 3,014 |
| INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽²⁾ | 604 | 232 | 372 | 550 | 204 | 346 | 54 | 28 | 26 | 43 | 22 | 21 |
| 1981 | 3,006 | 1,105 | 1,901 | 2,840 | 1,033 | 1,807 | 166 | 72 | 94 | 146 | 64 | 82 |
| 1983 | 1,431 | 543 | 888 | 1,380 | 520 | 860 | 51 | 23 | 28 | 40 | 19 | 21 |
| 1985 | 2,054 | 737 | 1,317 | 1,947 | 681 | 1,266 | 107 | 56 | 51 | 91 | 48 | 43 |
| 1987 | 632 | 252 | 380 | 595 | 236 | 359 | 37 | 16 | 21 | 22 | 10 | 12 |
| 1989 | 1,593 | 550 | 1,043 | 1,509 | 513 | 996 | 84 | 37 | 47 | 64 | 27 | 37 |
| 1991 | 1,137 | 433 | 704 | 1,069 | 402 | 667 | 68 | 31 | 37 | 52 | 23 | 29 |
| 1993 | 1,044 | 389 | 655 | 992 | 366 | 626 | 52 | 23 | 29 | 47 | 23 | 24 |
| 1995 | 606 | 222 | 384 | 566 | 206 | 360 | 40 | 16 | 24 | 31 | 11 | 20 |
| 1996 | 745 | 269 | 476 | 695 | 246 | 449 | 50 | 23 | 27 | 34 | 14 | 20 |
| 1997 | 720 | 271 | 449 | 681 | 251 | 430 | 39 | 20 | 19 | 26 | 13 | 13 |
| 1998 | 1,724 | 584 | 1,140 | 1,667 | 560 | 1,107 | 57 | 24 | 33 | 33 | 13 | 20 |
| 1999 ⁽³⁾ | 1,665 | 602 | 1,063 | 1,574 | 569 | 1,005 | 91 | 33 | 58 | 66 | 24 | 42 |
| 2000 | 1,765 | 664 | 1,101 | 1,662 | 617 | 1,045 | 103 | 47 | 56 | 81 | 35 | 46 |
| 2001 | 257 | 101 | 156 | 229 | 88 | 141 | 28 | 13 | 15 | 20 | 10 | 10 |
| 2002 | 727 | 289 | 438 | 686 | 270 | 416 | 41 | 19 | 22 | 30 | 15 | 15 |
| 2003 | 1,792 | 699 | 1,093 | 1,653 | 640 | 1,013 | 139 | 59 | 80 | 97 | 37 | 60 |
| 2004 | 1,100 | 421 | 679 | 1,033 | 388 | 645 | 67 | 33 | 34 | 50 | 25 | 25 |
| 2005 | 1,812 | 657 | 1,155 | 1,710 | 609 | 1,101 | 102 | 48 | 54 | 69 | 32 | 37 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. National Vital Statistics Report. Deaths: Final Data for 2005. April 24, 2008. Vol 56 No 10.

NOTES:

- (1) ALL RACES OTHER THAN WHITE
- (2) INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION (ICD-9) CODE 480-487
- (3) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J10-J18

TABLE 2: PNEUMONIA & INFLUENZA - AGE-ADJUSTED DEATH RATES PER 100,000 POPULATION, BY SEX AND RACE, 1979-1998, 1999-2005 ^(1,2)

| CAUSE OF DEATH | ALL OTHER RACES ⁽³⁾ | | | | | | | | | | | |
|----------------------------------|--------------------------------|------|--------|-------|------|--------|-------|------|--------|-------|------|--------|
| | ALL RACES | | | WHITE | | | TOTAL | | | BLACK | | |
| | SEXES | MALE | FEMALE | SEXES | MALE | FEMALE | SEXES | MALE | FEMALE | SEXES | MALE | FEMALE |
| PNEUMONIA & INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽⁴⁾ | 11.4 | 15.6 | 8.4 | 10.7 | 14.6 | 8.0 | 16.1 | 22.8 | 10.8 | 17.2 | 24.6 | 11.4 |
| 1981 | 12.3 | 16.6 | 9.2 | 11.6 | 15.6 | 9.0 | 16.3 | 24.0 | 10.5 | 17.7 | 26.4 | 11.3 |
| 1983 | 11.8 | 16.2 | 8.8 | 11.3 | 15.3 | 8.6 | 14.9 | 22.1 | 9.6 | 16.2 | 24.3 | 10.2 |
| 1985 | 13.4 | 18.2 | 10.1 | 12.8 | 17.4 | 9.8 | 16.8 | 24.2 | 11.4 | 18.5 | 26.8 | 12.4 |
| 1987 | 13.1 | 17.7 | 10.0 | 12.5 | 16.8 | 9.7 | 16.4 | 23.5 | 11.1 | 18.2 | 26.4 | 12.2 |
| 1989 | 13.7 | 17.9 | 10.7 | 13.0 | 16.9 | 10.3 | 17.8 | 24.9 | 12.5 | 19.8 | 27.9 | 13.8 |
| 1991 | 13.4 | 17.5 | 10.6 | 12.8 | 16.6 | 10.2 | 16.8 | 23.2 | 12.2 | 18.7 | 26.2 | 13.5 |
| 1993 | 13.5 | 17.5 | 10.7 | 12.9 | 16.6 | 10.4 | 16.8 | 23.3 | 12.3 | 18.6 | 25.9 | 13.5 |
| 1995 | 12.9 | 16.5 | 10.4 | 12.4 | 15.7 | 10.1 | 16.1 | 22.0 | 12.0 | 17.8 | 24.5 | 13.2 |
| 1996 | 12.8 | 16.2 | 10.4 | 12.2 | 15.2 | 10.1 | 15.9 | 22.0 | 11.6 | 17.8 | 24.8 | 12.9 |
| 1997 | 12.9 | 16.2 | 10.5 | 12.4 | 15.5 | 10.2 | 15.4 | 20.6 | 11.8 | 17.2 | 23.0 | 13.1 |
| 1998 | 13.2 | 16.3 | 11.0 | 12.7 | 15.5 | 10.7 | 15.6 | 20.9 | 11.9 | 17.4 | 23.5 | 13.2 |
| 1999 ⁽⁵⁾ | 23.6 | 28.0 | 20.8 | 23.4 | 27.7 | 20.8 | 23.3 | 29.2 | 19.5 | 25.6 | 32.4 | 21.3 |
| 2000 | 23.7 | 28.1 | 20.9 | 23.5 | 27.7 | 20.9 | 24.0 | 30.2 | 19.9 | 25.8 | 32.7 | 21.4 |
| 2001 | 22.0 | 26.6 | 19.2 | 21.7 | 26.0 | 19.1 | 22.8 | 30.1 | 18.4 | 24.1 | 32.3 | 19.4 |
| 2002 | 22.6 | 27.0 | 19.9 | 22.6 | 26.7 | 19.9 | 22.2 | 28.4 | 18.5 | 24.0 | 30.8 | 20.0 |
| 2003 | 22.0 | 26.1 | 19.4 | 21.9 | 25.7 | 19.5 | 21.8 | 28.5 | 17.6 | 23.3 | 30.9 | 18.7 |
| 2004 | 19.8 | 23.7 | 17.3 | 19.6 | 23.3 | 17.2 | 20.4 | 25.9 | 17.0 | 22.3 | 29.1 | 18.1 |
| 2005 | 20.3 | 23.9 | 17.9 | 20.2 | 23.6 | 18.0 | 20.0 | 25.1 | 16.8 | 21.7 | 26.9 | 18.4 |
| PNEUMONIA | | | | | | | | | | | | |
| 1979 ⁽⁴⁾ | 11.2 | 15.4 | 8.2 | 10.5 | 14.5 | 7.8 | 16.0 | 22.6 | 10.7 | 17.1 | 24.4 | 11.3 |
| 1981 | 11.6 | 16.0 | 8.6 | 11.0 | 14.9 | 8.4 | 15.9 | 23.5 | 10.1 | 17.3 | 25.9 | 10.9 |
| 1983 | 11.5 | 15.9 | 8.6 | 11.0 | 15.0 | 8.3 | 14.8 | 22.0 | 9.5 | 16.1 | 24.2 | 10.1 |
| 1985 | 13.0 | 17.8 | 9.8 | 12.5 | 17.0 | 9.5 | 16.6 | 23.9 | 11.2 | 18.3 | 26.5 | 12.2 |
| 1987 | 13.0 | 17.6 | 9.9 | 12.4 | 16.7 | 9.6 | 16.3 | 23.4 | 11.0 | 18.1 | 26.4 | 12.1 |
| 1989 | 13.4 | 17.7 | 10.4 | 12.7 | 16.6 | 10.0 | 17.6 | 24.7 | 12.4 | 19.7 | 27.7 | 13.7 |
| 1991 | 13.2 | 17.3 | 10.4 | 12.5 | 16.4 | 10.0 | 16.7 | 23.1 | 12.1 | 18.5 | 26.0 | 13.4 |
| 1993 | 13.3 | 17.3 | 10.6 | 12.7 | 16.3 | 10.2 | 16.7 | 23.2 | 12.2 | 18.4 | 25.8 | 13.4 |
| 1995 | 12.8 | 16.4 | 10.3 | 12.3 | 15.6 | 10.0 | 16.0 | 21.9 | 11.9 | 17.8 | 24.5 | 13.2 |
| 1996 | 12.7 | 16.0 | 10.3 | 12.1 | 15.1 | 10.0 | 15.8 | 21.9 | 11.5 | 17.7 | 24.7 | 12.8 |
| 1997 | 12.8 | 16.1 | 10.4 | 12.3 | 15.4 | 10.1 | 15.3 | 20.5 | 11.8 | 17.1 | 22.9 | 13.1 |
| 1998 | 13.0 | 16.1 | 10.7 | 12.4 | 15.3 | 10.4 | 15.6 | 20.8 | 11.9 | 17.4 | 23.5 | 13.1 |
| 1999 ⁽⁵⁾ | 22.9 | 27.4 | 20.2 | 22.8 | 27 | 20.2 | 23 | 29 | 19.2 | 25.3 | 32.1 | 21.1 |
| 2000 | 23.0 | 27.5 | 20.2 | 22.8 | 27.0 | 20.2 | 23.7 | 29.9 | 19.6 | 25.5 | 32.3 | 21.0 |
| 2001 | 21.9 | 26.5 | 19.1 | 21.6 | 25.9 | 19.0 | 22.7 | 30.0 | 18.4 | 24.1 | 32.2 | 19.4 |
| 2002 | 22.4 | 26.7 | 19.6 | 22.3 | 26.4 | 19.7 | 22.1 | 28.2 | 18.4 | 23.9 | 30.7 | 19.9 |
| 2003 | 21.4 | 25.5 | 18.8 | 21.3 | 25.0 | 18.9 | 21.4 | 28.2 | 17.2 | 23.0 | 30.6 | 18.4 |
| 2004 | 19.4 | 23.3 | 16.9 | 19.2 | 22.9 | 16.8 | 20.2 | 25.7 | 16.8 | 22.1 | 28.9 | 18.0 |
| 2005 | 19.7 | 23.3 | 17.3 | 19.6 | 23.0 | 17.4 | 19.7 | 24.8 | 16.5 | 21.5 | 26.6 | 18.2 |
| INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽⁴⁾ | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 |
| 1981 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.6 | 0.4 | 0.4 | 0.4 | 0.5 | 0.5 | 0.4 |
| 1983 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 | 0.3 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 1985 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 |
| 1987 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 1989 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 | 0.1 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 |
| 1991 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 |
| 1993 | 0.2 | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| 1995 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.0 | * | 0.1 | 0.1 | * | 0.1 |
| 1996 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | * | 0.1 |
| 1997 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | * | 0.1 | * | * |
| 1998 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | * | 0.0 |
| 1999 ⁽⁵⁾ | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 |
| 2000 | 0.6 | 0.6 | 0.6 | 0.6 | 0.7 | 0.7 | 0.3 | 0.4 | 0.3 | 0.3 | 0.4 | 0.3 |
| 2001 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | * | * | 0.1 | * | * |
| 2002 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2* | 0.1 | * | 0.1 | 0.1 | * | * |
| 2003 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.8 | 0.3 | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 |
| 2004 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| 2005 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.6 | 0.3 | 0.3 | 0.2 | 0.2 | 0.3 | 0.2 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. National Vital Statistics Report. Deaths: Final Data for 2005. April 24, 2008. Vol 56 No 10.

NOTES:

- (1) RATES FOR THE YEARS 1979-1998 ARE AGE-ADJUSTED TO THE 1940 U.S. STANDARD POPULATION
- (2) RATES FOR THE YEARS 1999-2005 ARE AGE ADJUSTED TO THE 2000 U.S. STANDARD POPULATION
- (3) ALL RACES OTHER THAN WHITE
- (4) INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION (ICD-9) CODE 480-487
- (5) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J10-J18
- * FIGURE DOES NOT MEET STANDARD OF RELIABILITY OR PRECISION

TABLE 3: PNEUMONIA AND INFLUENZA - NUMBER OF DEATHS AND AGE-ADJUSTED DEATH RATES PER 100,000 POPULATION BY RACE AND HISPANIC ORIGIN, 1999-2005^(1,2)

| CAUSE OF DEATH | HISPANIC | | NON-HISPANIC | | NON-HISPANIC WHITE | | NON-HISPANIC BLACK | |
|----------------------------------|----------|------|--------------|------|--------------------|------|--------------------|------|
| | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE |
| PNEUMONIA & INFLUENZA | | | | | | | | |
| 1999 | 2,246 | 15.6 | 61,218 | 23.9 | 54,280 | 23.7 | 5,794 | 26.1 |
| 2000 | 2,625 | 17.0 | 62,440 | 23.9 | 55,135 | 23.7 | 5,920 | 26.4 |
| 2001 | 2,722 | 20.5 | 59,103 | 22.0 | 51,952 | 21.7 | 5,686 | 24.3 |
| 2002 | 2,824 | 19.2 | 62,657 | 22.7 | 55,419 | 22.6 | 5,803 | 24.3 |
| 2003 | 2,948 | 18.4 | 62,042 | 22.2 | 54,617 | 22.0 | 5,798 | 23.6 |
| 2004 | 2,912 | 19.6 | 56,581 | 22.5 | 49,456 | 17.1 | 5,620 | 19.9 |
| 2005 | 3,085 | 16.8 | 59,804 | 20.5 | 52,431 | 20.4 | 5,716 | 22.1 |
| PNEUMONIA | | | | | | | | |
| 1999 | 2,201 | 15.3 | 59,606 | 23.2 | 52,758 | 23.0 | 5,729 | 25.8 |
| 2000 | 2,578 | 16.7 | 60,724 | 23.3 | 53,522 | 23.0 | 5,839 | 26.0 |
| 2001 | 2,709 | 20.4 | 58,859 | 21.9 | 51,736 | 21.6 | 5,666 | 24.3 |
| 2002 | 2,805 | 19.2 | 61,953 | 22.5 | 54,756 | 22.4 | 5,773 | 24.2 |
| 2003 | 2,873 | 18.1 | 60,328 | 21.6 | 53,039 | 21.4 | 5,703 | 23.2 |
| 2004 | 2,886 | 19.2 | 55,510 | 22.3 | 48,452 | 17.0 | 5,570 | 19.5 |
| 2005 | 3,030 | 16.6 | 58,052 | 19.9 | 50,777 | 19.7 | 5,649 | 21.8 |
| INFLUENZA | | | | | | | | |
| 1999 | 45 | 0.3 | 1,612 | 0.6 | 1,522 | 0.6 | 65 | 0.3 |
| 2000 | 47 | 0.3 | 1,716 | 0.6 | 1,613 | 0.7 | 81 | 0.4 |
| 2001 | 13 | * | 244 | 0.1 | 216 | 0.1 | 20 | 0.1 |
| 2002 | 19 | * | 704 | 0.2 | 663 | 0.3 | 30 | 0.1 |
| 2003 | 75 | 0.3 | 1,714 | 0.6 | 1,578 | 0.7 | 95 | 0.3 |
| 2004 | 26 | 0.4 | 1,071 | 0.2 | 1,004 | 0.1 | 50 | 0.5 |
| 2005 | 55 | 0.2 | 1,752 | 0.6 | 1,654 | 0.6 | 67 | 0.2 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. National Vital Statistics Report. Deaths: Final Data for 2005. April 24, 2008. Vol 56 No 10.

NOTES:

(1) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J10-J18.

(2) RATES ARE AGE ADJUSTED TO THE 2000 U.S. STANDARD POPULATION.

TABLE 4: PNEUMONIA AND INFLUENZA - NUMBER OF DEATHS BY 10-YEAR AGE GROUPS, 1979-1998, 1999-2005

| CAUSE OF DEATH | TOTAL | < 1 | 1 - 4 | 5-14 | 15-24 | 25 - 34 | 35 - 44 | 45 - 54 | 55 - 64 | 65 - 74 | 75 - 84 | 85+ |
|----------------------------------|--------|-------|-------|------|-------|---------|---------|---------|---------|---------|---------|--------|
| PNEUMONIA & INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽¹⁾ | 45,030 | 1,129 | 258 | 212 | 341 | 524 | 813 | 1,634 | 3,511 | 7,337 | 13,995 | 15,266 |
| 1981 | 53,731 | 809 | 240 | 161 | 327 | 571 | 864 | 1,677 | 4,033 | 8,349 | 16,751 | 19,935 |
| 1983 | 55,854 | 769 | 232 | 130 | 270 | 577 | 816 | 1,498 | 3,743 | 8,438 | 17,293 | 22,073 |
| 1985 | 67,615 | 705 | 219 | 130 | 251 | 630 | 1,047 | 1,623 | 4,130 | 9,828 | 21,296 | 27,705 |
| 1987 | 69,225 | 674 | 199 | 94 | 268 | 759 | 1,177 | 1,626 | 3,879 | 10,026 | 21,777 | 28,739 |
| 1989 | 76,550 | 636 | 228 | 122 | 271 | 881 | 1,415 | 1,707 | 3,880 | 10,418 | 24,022 | 32,955 |
| 1991 | 77,860 | 607 | 207 | 135 | 256 | 759 | 1,444 | 1,738 | 3,738 | 10,223 | 24,595 | 34,144 |
| 1993 | 82,820 | 530 | 182 | 135 | 251 | 724 | 1,551 | 1,879 | 3,704 | 10,823 | 25,859 | 37,171 |
| 1995 | 82,923 | 492 | 156 | 128 | 207 | 622 | 1,480 | 2,079 | 3,458 | 10,737 | 25,985 | 37,575 |
| 1996 | 83,727 | 496 | 168 | 136 | 203 | 568 | 1,461 | 2,093 | 3,613 | 10,597 | 26,355 | 38,027 |
| 1997 | 86,449 | 421 | 180 | 141 | 220 | 534 | 1,394 | 2,233 | 3,759 | 10,535 | 27,358 | 39,668 |
| 1998 | 91,871 | 441 | 146 | 121 | 215 | 531 | 1,400 | 2,167 | 3,856 | 11,005 | 28,857 | 43,127 |
| 1999 ⁽²⁾ | 63,730 | 320 | 130 | 93 | 179 | 339 | 1,063 | 1,697 | 2,625 | 6,861 | 19,192 | 31,229 |
| 2000 | 65,313 | 289 | 103 | 87 | 189 | 364 | 1,068 | 1,774 | 2,879 | 7,189 | 19,821 | 31,547 |
| 2001 | 62,034 | 299 | 112 | 92 | 181 | 339 | 983 | 1,801 | 2,704 | 6,650 | 18,677 | 30,191 |
| 2002 | 65,681 | 263 | 110 | 91 | 167 | 345 | 971 | 1,918 | 2,987 | 6,847 | 19,984 | 31,995 |
| 2003 | 65,163 | 322 | 163 | 147 | 224 | 373 | 992 | 2,140 | 3,130 | 6,831 | 19,442 | 31,397 |
| 2004 | 59,664 | 273 | 119 | 82 | 185 | 303 | 891 | 1,897 | 3,154 | 6,382 | 18,066 | 28,312 |
| 2005 | 63,001 | 265 | 110 | 106 | 172 | 354 | 934 | 2,183 | 3,422 | 6,623 | 18,563 | 30,267 |
| PNEUMONIA | | | | | | | | | | | | |
| 1979 ⁽¹⁾ | 44,426 | 1,120 | 250 | 204 | 332 | 516 | 807 | 1,624 | 3,483 | 7,253 | 13,826 | 15,001 |
| 1981 | 50,725 | 796 | 232 | 149 | 309 | 540 | 845 | 1,629 | 3,886 | 7,950 | 15,812 | 18,563 |
| 1983 | 54,423 | 763 | 224 | 127 | 263 | 568 | 802 | 1,479 | 3,676 | 8,255 | 16,893 | 21,358 |
| 1985 | 65,561 | 698 | 213 | 123 | 244 | 622 | 1,032 | 1,592 | 4,040 | 9,614 | 20,698 | 26,637 |
| 1987 | 68,593 | 666 | 193 | 93 | 262 | 751 | 1,161 | 1,609 | 3,842 | 9,962 | 21,622 | 28,425 |
| 1989 | 74,957 | 624 | 220 | 108 | 255 | 866 | 1,384 | 1,676 | 3,808 | 10,246 | 23,591 | 32,164 |
| 1991 | 76,723 | 591 | 192 | 124 | 246 | 744 | 1,423 | 1,712 | 3,684 | 10,086 | 24,304 | 33,603 |
| 1993 | 81,776 | 520 | 168 | 122 | 243 | 716 | 1,532 | 1,857 | 3,658 | 10,709 | 25,601 | 36,639 |
| 1995 | 82,317 | 485 | 149 | 121 | 201 | 621 | 1,466 | 2,061 | 3,427 | 10,657 | 25,850 | 37,275 |
| 1996 | 82,982 | 481 | 165 | 128 | 195 | 560 | 1,447 | 2,072 | 3,575 | 10,513 | 26,172 | 37,664 |
| 1997 | 85,729 | 409 | 170 | 128 | 216 | 527 | 1,376 | 2,215 | 3,728 | 10,457 | 37,196 | 39,301 |
| 1998 | 90,147 | 435 | 143 | 107 | 205 | 530 | 1,383 | 2,146 | 3,795 | 10,853 | 28,344 | 42,201 |
| 1999 ⁽²⁾ | 62,065 | 307 | 118 | 82 | 168 | 330 | 1,047 | 1,671 | 2,554 | 6,697 | 18,741 | 30,348 |
| 2000 | 63,548 | 280 | 93 | 76 | 176 | 351 | 1,046 | 1,726 | 2,786 | 6,990 | 19,329 | 30,692 |
| 2001 | 61,777 | 292 | 106 | 80 | 174 | 329 | 977 | 1,786 | 2,683 | 6,629 | 18,621 | 30,095 |
| 2002 | 64,954 | 256 | 105 | 79 | 160 | 341 | 963 | 1,901 | 2,957 | 6,791 | 19,807 | 31,591 |
| 2003 | 63,317 | 291 | 104 | 101 | 194 | 360 | 968 | 2,079 | 3,045 | 6,648 | 18,985 | 30,594 |
| 2004 | 58,564 | 255 | 101 | 69 | 178 | 299 | 875 | 1,872 | 3,099 | 6,283 | 17,775 | 27,758 |
| 2005 | 61,189 | 246 | 91 | 86 | 160 | 343 | 915 | 2,138 | 3,356 | 6,486 | 18,081 | 29,285 |
| INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽¹⁾ | 604 | 9 | 8 | 8 | 9 | 8 | 6 | 10 | 28 | 84 | 169 | 265 |
| 1981 | 3,006 | 13 | 8 | 12 | 18 | 31 | 19 | 48 | 147 | 399 | 939 | 1,372 |
| 1983 | 1,431 | 6 | 8 | 3 | 7 | 9 | 14 | 19 | 67 | 183 | 400 | 715 |
| 1985 | 2,054 | 7 | 6 | 7 | 7 | 8 | 15 | 31 | 90 | 214 | 598 | 1,068 |
| 1987 | 632 | 8 | 6 | 1 | 6 | 8 | 16 | 17 | 37 | 64 | 155 | 314 |
| 1989 | 1,593 | 12 | 8 | 14 | 16 | 15 | 31 | 31 | 72 | 172 | 431 | 791 |
| 1991 | 1,137 | 16 | 15 | 11 | 10 | 15 | 21 | 26 | 54 | 137 | 291 | 541 |
| 1993 | 1,044 | 10 | 14 | 13 | 8 | 8 | 19 | 22 | 46 | 114 | 258 | 532 |
| 1995 | 606 | 7 | 7 | 7 | 6 | 1 | 14 | 18 | 31 | 80 | 135 | 300 |
| 1996 | 745 | 15 | 3 | 8 | 8 | 8 | 14 | 21 | 38 | 84 | 183 | 363 |
| 1997 | 720 | 12 | 10 | 13 | 4 | 7 | 18 | 18 | 31 | 78 | 162 | 367 |
| 1998 | 1,724 | 6 | 3 | 14 | 10 | 1 | 17 | 21 | 61 | 152 | 513 | 926 |
| 1999 ⁽²⁾ | 1,665 | 13 | 12 | 11 | 11 | 9 | 16 | 26 | 71 | 164 | 451 | 881 |
| 2000 | 1,765 | 9 | 10 | 11 | 13 | 13 | 22 | 48 | 93 | 199 | 492 | 855 |
| 2001 | 257 | 7 | 6 | 12 | 7 | 10 | 6 | 15 | 21 | 21 | 56 | 96 |
| 2002 | 727 | 7 | 5 | 12 | 7 | 4 | 8 | 17 | 30 | 5.6 | 177 | 404 |
| 2003 | 1,792 | 31 | 59 | 46 | 30 | 13 | 24 | 61 | 85 | 183 | 457 | 803 |
| 2004 | 1,100 | 18 | 18 | 13 | 7 | 4 | 16 | 25 | 55 | 99 | 291 | 554 |
| 2005 | 1,812 | 19 | 19 | 20 | 12 | 11 | 19 | 45 | 66 | 137 | 482 | 982 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. National Vital Statistics Report. Deaths: Final Data for 2005. April 24, 2008. Vol 56 No 10.

NOTES:

- (1) INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION (ICD-9) CODE 480-487
- (2) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J10-J18

TABLE 5: PNEUMONIA & INFLUENZA - AGE-ADJUSTED, AGE-SPECIFIC MORTALITY RATE PER 100,000 POPULATION, 1979-1998, 1999-2005

| CAUSE OF DEATH | TOTAL | < 1 | 1 - 4 | 5-14 | 15-24 | 25 - 34 | 35 - 44 | 45 - 54 | 55 - 64 | 65 - 74 | 75 - 84 | 85+ |
|----------------------------------|-------|------|-------|------|-------|---------|---------|---------|---------|---------|---------|---------|
| PNEUMONIA & INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽¹⁾ | 20.0 | 32.3 | 2.0 | 0.6 | 0.8 | 1.5 | 3.2 | 7.1 | 16.4 | 47.8 | 184.2 | 649.9 |
| 1981 | 23.4 | 22.3 | 1.8 | 0.5 | 0.8 | 1.5 | 3.3 | 7.4 | 18.4 | 52.5 | 209.9 | 848.6 |
| 1983 | 23.9 | 21.1 | 1.7 | 0.4 | 0.7 | 1.4 | 2.8 | 6.7 | 16.9 | 51.4 | 205.2 | 876.5 |
| 1985 | 28.4 | 18.7 | 1.5 | 0.4 | 0.6 | 1.5 | 3.3 | 7.2 | 18.7 | 58.3 | 239.5 | 1,038.7 |
| 1987 | 28.6 | 17.7 | 1.4 | 0.3 | 0.7 | 1.8 | 3.4 | 7.0 | 17.8 | 57.5 | 232.3 | 1,018.0 |
| 1989 | 31.0 | 15.7 | 1.6 | 0.4 | 0.7 | 2.0 | 3.9 | 6.9 | 18.3 | 58.3 | 243.9 | 1,110.4 |
| 1991 | 30.9 | 14.8 | 1.4 | 0.4 | 0.7 | 1.8 | 3.7 | 6.8 | 17.8 | 55.9 | 238.5 | 1,080.5 |
| 1993 | 32.1 | 13.2 | 1.2 | 0.4 | 0.7 | 1.7 | 3.8 | 6.6 | 17.7 | 58.1 | 241.2 | 1,089.0 |
| 1995 | 31.6 | 12.6 | 1.0 | 0.3 | 0.6 | 1.5 | 3.5 | 6.7 | 16.4 | 57.2 | 233.2 | 1,035.7 |
| 1996 | 31.5 | 12.7 | 1.1 | 0.4 | 0.6 | 1.4 | 3.4 | 6.5 | 16.9 | 56.8 | 230.6 | 1,010.9 |
| 1997 | 32.3 | 10.8 | 1.2 | 0.4 | 0.6 | 1.3 | 3.2 | 6.6 | 17.2 | 57.0 | 233.7 | 1,024.7 |
| 1998 | 34.0 | 11.2 | 1.0 | 0.3 | 0.6 | 1.4 | 3.1 | 6.3 | 17.0 | 59.8 | 241.4 | 1,063.9 |
| 1999 ⁽²⁾ | 23.4 | 8.4 | 0.9 | 0.2 | 0.5 | 0.9 | 2.4 | 4.7 | 11.2 | 37.7 | 158.0 | 748.0 |
| 2000 | 23.7 | 7.5 | 0.7 | 0.2 | 0.5 | 1.0 | 2.4 | 4.8 | 12.0 | 39.6 | 161.0 | 734.4 |
| 2001 | 21.8 | 7.4 | 0.7 | 0.2 | 0.5 | 0.9 | 2.2 | 4.6 | 10.7 | 36.3 | 148.5 | 685.6 |
| 2002 | 22.8 | 65.5 | 0.7 | 0.2 | 0.4 | 0.9 | 2.2 | 4.8 | 11.2 | 37.5 | 156.9 | 696.6 |
| 2003 | 22.4 | 8.0 | 1.0 | 0.4 | 0.5 | 0.9 | 2.2 | 5.2 | 11.2 | 37.3 | 151.1 | 666.1 |
| 2004 | 19.8 | 6.7 | 0.7 | 0.2 | 0.4 | 0.8 | 2.0 | 4.6 | 10.9 | 34.6 | 139.3 | 582.6 |
| 2005 | 20.3 | 6.5 | 0.7 | 0.3 | 0.4 | 0.9 | 2.1 | 5.1 | 11.3 | 35.5 | 142.2 | 593.9 |
| PNEUMONIA | | | | | | | | | | | | |
| 1979 ⁽¹⁾ | 19.8 | 32.1 | 2.0 | 0.6 | 0.8 | 1.4 | 3.2 | 7.1 | 16.2 | 47.3 | 181.9 | 682.7 |
| 1981 | 22.1 | 21.9 | 1.7 | 0.4 | 0.7 | 1.4 | 3.2 | 7.2 | 17.7 | 50.0 | 198.0 | 790.2 |
| 1983 | 23.3 | 21.0 | 1.6 | 0.4 | 0.6 | 1.4 | 2.7 | 6.6 | 16.6 | 50.3 | 200.4 | 848.2 |
| 1985 | 27.6 | 18.6 | 1.5 | 0.4 | 0.6 | 1.5 | 3.3 | 7.1 | 18.3 | 57.0 | 232.8 | 998.7 |
| 1987 | 28.3 | 17.5 | 1.3 | 0.3 | 0.7 | 1.8 | 3.4 | 7.0 | 17.7 | 57.2 | 230.6 | 1,006.0 |
| 1989 | 30.4 | 15.4 | 1.5 | 0.3 | 0.7 | 2.0 | 3.8 | 6.8 | 17.9 | 57.4 | 239.5 | 1,083.0 |
| 1991 | 30.8 | 14.4 | 1.3 | 0.3 | 0.7 | 1.7 | 3.6 | 6.7 | 17.5 | 55.2 | 235.6 | 1,063.0 |
| 1993 | 31.1 | 13.0 | 1.1 | 0.3 | 0.7 | 1.7 | 3.8 | 6.5 | 17.5 | 57.5 | 238.8 | 1,073.0 |
| 1995 | 31.3 | 12.4 | 0.9 | 0.3 | 0.6 | 1.5 | 3.5 | 6.6 | 16.2 | 56.8 | 231.9 | 1,027.0 |
| 1996 | 31.3 | 12.8 | 1.1 | 0.3 | 0.5 | 1.4 | 3.3 | 6.4 | 16.7 | 56.3 | 229.0 | 1,001.3 |
| 1997 | 32.0 | 10.7 | 1.1 | 0.3 | 0.6 | 1.3 | 3.1 | 6.6 | 17.0 | 56.5 | 232.3 | 1,015.2 |
| 1998 | 33.4 | 11.5 | 0.9 | 0.3 | 0.6 | 1.4 | 3.1 | 6.2 | 16.7 | 59.0 | 237.1 | 1,041.1 |
| 1999 ⁽²⁾ | 22.8 | 8.0 | 0.8 | 0.2 | 0.4 | 0.9 | 2.3 | 4.7 | 10.9 | 36.8 | 154.3 | 726.9 |
| 2000 | 23.1 | 7.3 | 0.6 | 0.2 | 0.5 | 0.9 | 2.3 | 4.6 | 11.6 | 38.5 | 157.0 | 714.5 |
| 2001 | 21.7 | 7.2 | 0.7 | 0.2 | 0.4 | 0.8 | 2.2 | 4.6 | 10.6 | 36.2 | 148.1 | 683.4 |
| 2002 | 22.5 | 6.3 | 0.7 | 0.2 | 0.4 | 0.9 | 2.1 | 4.7 | 11.1 | 37.2 | 155.5 | 687.8 |
| 2003 | 21.8 | 7.3 | 0.7 | 0.2 | 0.5 | 0.9 | 2.2 | 5.1 | 10.9 | 36.3 | 147.5 | 649.1 |
| 2004 | 19.4 | 6.3 | 0.6 | 0.2 | 0.4 | 0.8 | 2.0 | 4.5 | 10.7 | 34.0 | 137.0 | 571.2 |
| 2005 | 19.7 | 6.0 | 0.6 | 0.2 | 0.4 | 0.9 | 2.1 | 5.0 | 11.1 | 34.8 | 138.5 | 574.7 |
| INFLUENZA | | | | | | | | | | | | |
| 1979 ⁽¹⁾ | 0.3 | * | * | * | * | * | * | * | 0.1 | 0.5 | 2.2 | 12.1 |
| 1981 | 1.3 | * | * | * | * | 0.1 | * | 0.2 | 0.7 | 2.5 | 11.8 | 58.4 |
| 1983 | 0.6 | * | * | * | * | * | * | * | 0.3 | 1.1 | 4.7 | 28.4 |
| 1985 | 0.9 | * | * | * | * | * | * | 0.1 | 0.4 | 1.3 | 6.7 | 40.0 |
| 1987 | 0.3 | * | * | * | * | * | * | * | 0.2 | 0.4 | 1.7 | 11.1 |
| 1989 | 0.6 | * | * | * | * | * | 0.1 | 0.1 | 0.3 | 1.0 | 4.4 | 26.7 |
| 1991 | 0.5 | * | * | * | * | * | 0.1 | 0.1 | 0.3 | 0.7 | 2.8 | 17.1 |
| 1993 | 0.4 | * | * | * | * | * | * | 0.1 | 0.2 | 0.6 | 2.4 | 15.6 |
| 1995 | 0.2 | * | * | * | * | * | * | * | 0.1 | 0.4 | 1.2 | 8.3 |
| 1996 | 0.3 | * | * | * | * | * | * | 0.6 | 0.2 | 0.5 | 1.6 | 9.7 |
| 1997 | 0.3 | * | * | * | * | * | * | * | 0.1 | 0.4 | 1.4 | 9.5 |
| 1998 | 0.6 | * | * | * | * | * | * | 0.1 | 0.3 | 0.8 | 4.3 | 22.8 |
| 1999 ⁽²⁾ | 0.6 | * | * | * | * | * | * | 0.1 | 0.3 | 0.9 | 3.7 | 21.1 |
| 2000 | 0.6 | * | * | * | * | * | 0.0 | 0.1 | 0.4 | 1.1 | 4.0 | 19.9 |
| 2001 | 0.1 | * | * | * | * | * | * | * | 0.1 | 0.1 | 0.4 | 2.2 |
| 2002 | 0.3 | * | * | * | * | * | * | * | 0.1 | 0.3 | 1.4 | 8.8 |
| 2003 | 0.6 | 0.8 | 0.4 | 0.1 | 0.1 | * | 0.1 | 0.1 | 0.3 | 1.0 | 3.6 | 17.0 |
| 2004 | 0.4 | * | * | * | * | * | * | 0.1 | 0.2 | 0.5 | 2.2 | 11.4 |
| 2005 | 0.6 | * | * | 0.0 | * | * | * | 0.1 | 0.2 | 0.7 | 3.7 | 19.3 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. National Vital Statistics Report. Deaths: Final Data for 2005. April 24, 2008. Vol 56 No 10.

NOTES:

* FIGURE DOES NOT MEET STANDARD OF RELIABILITY OF PRECISION- ESTIMATE IS BASED ON FEWER THAN 20 DEATHS

(1) INTERNATIONAL CLASSIFICATION OF DISEASES, 9TH REVISION (ICD-9) CODE 480-48

(2) INTERNATIONAL CLASSIFICATION OF DISEASES, 10TH REVISION (ICD-10) CODE J10-J1

TABLE 6: INFLUENZA AND PNEUMONIA - NUMBER OF CASES AND RATE PER 1,000 POPULATION AMONG YOUTH AND ADULTS BY RACE, SEX AND AGE, 2007⁽¹⁾

| Race/Age | Total | | Male | | Female | |
|----------------|------------|------|-----------|------|-----------|------|
| | Number | Rate | Number | Rate | Number | Rate |
| Total | | | | | | |
| Under 18 Total | 4,447,893 | 64.6 | 2,170,938 | 61.7 | 2,276,955 | 67.6 |
| <5 | 1,153,817 | 60.5 | 545,564 | 56.0 | 608,253 | 65.1 |
| 5-17 | 3,294,076 | 66.2 | 1,625,374 | 63.8 | 1,668,702 | 68.6 |
| Over 18 Total | 11,021,357 | 63.1 | 4,845,737 | 56.2 | 6,175,620 | 69.8 |
| 18-44 | 4,986,690 | 48.4 | 2,254,218 | 43.9 | 2,732,472 | 52.9 |
| 45-65 | 4,458,288 | 62.2 | 1,939,938 | 55.6 | 2,518,350 | 68.3 |
| 65+ | 1,576,379 | 45.4 | 651,581 | 44.0 | 924,798 | 46.5 |
| White | | | | | | |
| Under 18 Total | 4,107,538 | 72.6 | 2,057,665 | 70.8 | 2,049,873 | 74.4 |
| <5 | 1,081,009 | 69.3 | 504,687 | 63.0 | 576,322 | 75.8 |
| 5-17 | 3,026,529 | 73.9 | 1,552,978 | 73.8 | 1,473,551 | 73.9 |
| Over 18 Total | 10,259,485 | 56.2 | 4,563,343 | 51.3 | 5,696,142 | 60.9 |
| 18-44 | 4,605,240 | 52.5 | 2,132,574 | 48.1 | 2,472,666 | 56.9 |
| 45-65 | 4,147,225 | 65.7 | 1,793,406 | 57.8 | 2,353,819 | 73.3 |
| 65+ | 1,507,020 | 47.7 | 637,363 | 46.9 | 869,657 | 48.4 |
| Black | | | | | | |
| Under 18 Total | 340,355 | 27.7 | 113,273 | 18.4 | 227,082 | 37.0 |
| <5 | 72,808 | 20.9 | 40,877 | 23.7 | 31,931 | 18.2 |
| 5-17 | 267,547 | 30.4 | 72,396 | 16.3 | 195,151 | 44.5 |
| Over 18 Total | 761,872 | 28.3 | 282,394 | 23.4 | 479,478 | 32.2 |
| 18-44 | 381,450 | 25.1 | 121,644 | 17.4 | 259,806 | 31.6 |
| 45-65 | 311,063 | 36.2 | 146,532 | 38.1 | 164,531 | 34.7 |
| 65+ | 69,359 | 22.2 | 14,218 | 11.7 | 55,141 | 28.8 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. National Health Interview Survey 2007. Analysis by the American Lung Association, Research and Program Services Division using SPSS and SUDAAN software.

Notes:

(1) Adults were asked "During the past twelve months have you had influenza or pneumonia?"; data on children was obtained by asking parents or guardians "During the past twelve months, has a doctor or other health professional told you that [child] had influenza or pneumonia?" Youth and adult data should not be compared due to these two different questions.

TABLE 7: PNEUMONIA & INFLUENZA - NUMBER OF FIRST-LISTED HOSPITAL DISCHARGES BY DIAGNOSIS, SEX, AGE, & GEOGRAPHIC REGION, 2006

| DIAGNOSIS | TOTAL ⁽¹⁾ | SEX | | AGE | | | | GEOGRAPHIC REGION | | | |
|--|----------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|
| | | MALE | FEMALE | <15 | 15-44 | 45-64 | 65+ | NORTH- EAST | MID- WEST | SOUTH | WEST |
| PNEUMONIA (480-486), TOTAL DISCHARGES ⁽³⁾ | 1,232 | 589 | 643 | 172 | 107 | 250 | 704 | 233 | 351 | 438 | 210 |
| <i>(NUMBER IN THOUSANDS)</i> | | | | | | | | | | | |
| VIRAL PNEUMONIA (480) ⁽³⁾ | 28 | 14 | 14 | 19 | -- | -- | 5 ⁽²⁾ | -- | 10 | 10 | 5 ⁽²⁾ |
| DUE TO RESPIRATORY SYNCYTIAL VIRUS (480.1) | 13 | 7 ⁽²⁾ | 6 ⁽²⁾ | 11 | -- | -- | -- | -- | -- | 5 ⁽²⁾ | -- |
| UNSPECIFIED (480.9) | 13 | 6 ⁽²⁾ | 7 ⁽²⁾ | 7 ⁽²⁾ | -- | -- | 5 ⁽²⁾ | -- | 5 ⁽²⁾ | -- | -- |
| PNEUMOCOCCAL PNEUMONIA (481) | 26 | 11 | 15 | -- | -- | 8 ⁽²⁾ | 14 | -- | 7 ⁽²⁾ | 12 | -- |
| OTHER BACTERIAL PNEUMONIA (482) ⁽³⁾ | 106 | 57 | 49 | 9 ⁽²⁾ | 9 ⁽²⁾ | 22 | 66 | 18 | 28 | 32 | 28 |
| DUE TO PSEUDOMONAS (482.1) | 17 | 8 ⁽²⁾ | 9 ⁽²⁾ | -- | -- | 5 ⁽²⁾ | 9 ⁽²⁾ | -- | -- | 7 ⁽²⁾ | 6 ⁽²⁾ |
| DUE TO HEMOPHILUS INFLUENZAE (482.2) | 8 | -- | -- | -- | -- | -- | 6 ⁽²⁾ | -- | -- | -- | -- |
| DUE TO STREPTOCOCCUS (482.3) | 6 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| DUE TO STAPHYLOCOCCUS (482.4) | 39 | 21 | 18 | -- | -- | 6 ⁽²⁾ | 28 | 6 ⁽²⁾ | 12 | 11 | 11 |
| DUE TO OTHER SPECIFIED BACTERIA (482.8) | 14 | 9 ⁽²⁾ | 5 ⁽²⁾ | -- | -- | -- | 10 | -- | 5 ⁽²⁾ | 6 ⁽²⁾ | -- |
| UNSPECIFIED (482.9) | 17 | 8 ⁽²⁾ | 9 ⁽²⁾ | 5 ⁽²⁾ | -- | -- | 8 ⁽²⁾ | -- | -- | -- | 6 ⁽²⁾ |
| PNEUMONIA DUE TO OTHER SPECIFIED ORGANISM (483) | 7 ⁽²⁾ | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| BRONCHOPNEUMONIA, ORGANISM UNSPECIFIED (485) | 13 | 7 ⁽²⁾ | 5 ⁽²⁾ | 6 ⁽²⁾ | -- | -- | -- | -- | -- | 6 ⁽²⁾ | -- |
| PNEUMONIA, ORGANISM UNSPECIFIED (486) | 1,053 | 496 | 557 | 132 | 91 | 216 | 615 | 205 | 302 | 376 | 170 |
| INFLUENZA (487), TOTAL DISCHARGES ⁽³⁾ | 37 | 12 | 25 | 10 | -- | -- | 18 | -- | -- | 14 | -- |
| WITH PNEUMONIA (487.0) | 12 | -- | 7 ⁽²⁾ | -- | -- | -- | 6 ⁽²⁾ | -- | -- | -- | -- |
| WITH OTHER RESPIRATORY MANIFESTATIONS (487.1) | 23 | 7 ⁽²⁾ | 16 | 5 ⁽²⁾ | -- | -- | 12 | -- | -- | 8 ⁽²⁾ | -- |

Source: Centers for Disease Control and Prevention. National Center For Health Statistics. National Hospital Discharge Survey, 2006. Unpublished Data provided by NCHS upon special request.

NOTES:

(1) DUE TO ROUNDING, TOTAL PNEUMONIA DISCHARGES (ICD CODES 480-486) SHOWN IN THIS TABLE MAY DIFFER FROM THOSE SHOWN IN TABLE 9 AND 10

(2) ESTIMATES OF 5,000-10,000 TO BE USED WITH CAUTION

(3) TOTAL MAY DIFFER DUE TO ESTIMATES OF LESS THAN 5,000 NOT BEING SHOWN

-- ESTIMATES OF LESS THAN 5,000 ARE NOT SHOWN

TABLE 8: PNEUMONIA & INFLUENZA - NUMBER AND RATE PER 10,000 POPULATION OF FIRST-LISTED HOSPITAL DISCHARGES, BY TYPE AND SEX, 1988-2006

| YEAR | PNEUMONIA ⁽¹⁾ | | | | | | INFLUENZA ⁽²⁾ | | | | | |
|------|--------------------------|------|---------|------|---------|------|--------------------------|------|----------------------|--------------------|----------------------|--------------------|
| | TOTAL ⁽³⁾ | | MALES | | FEMALES | | TOTAL ⁽³⁾ | | MALES | | FEMALES | |
| | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE |
| 1988 | 924,000 | 37.9 | 472,000 | 40.0 | 452,000 | 35.9 | 45,000 | 1.8 | 16,000 | 1.4 | 29,000 | 2.3 |
| 1989 | 1,033,000 | 41.9 | 544,000 | 45.6 | 489,000 | 38.5 | 45,000 | 1.8 | 17,000 | 1.4 | 28,000 | 2.2 |
| 1990 | 1,052,000 | 42.2 | 530,000 | 43.8 | 522,000 | 40.6 | 44,000 | 1.8 | 15,000 | 1.2 | 29,000 | 2.3 |
| 1991 | 1,089,000 | 43.5 | 545,000 | 44.3 | 544,000 | 42.2 | 26,000 | 1.0 | 12,000 | 1.0 | 15,000 | 1.2 |
| 1992 | 1,059,000 | 41.8 | 535,000 | 43.5 | 524,000 | 40.1 | 13,000 | 0.5 | 5,000 ⁽⁴⁾ | 0.4 ⁽⁴⁾ | 8,000 ⁽⁴⁾ | 0.6 ⁽⁴⁾ |
| 1993 | 1,184,000 | 46.2 | 598,000 | 48.0 | 586,000 | 44.5 | 25,000 | 1.0 | 12,000 | 1.0 | 14,000 | 1.1 |
| 1994 | 1,191,000 | 46.0 | 599,000 | 47.6 | 591,000 | 44.4 | 31,000 | 1.2 | 14,000 | 1.1 | 17,000 | 1.3 |
| 1995 | 1,246,000 | 47.6 | 610,000 | 48.0 | 636,000 | 47.4 | 19,000 | 0.7 | 7,000 ⁽⁴⁾ | 0.6 ⁽⁴⁾ | 12,000 | 0.9 |
| 1996 | 1,202,000 | 45.5 | 574,000 | 44.6 | 628,000 | 46.4 | 21,000 | 0.8 | 9,000 ⁽⁴⁾ | 0.7 ⁽⁴⁾ | 12,000 | 0.9 |
| 1997 | 1,304,000 | 48.2 | 634,000 | 47.9 | 665,000 | 48.2 | 19,000 | 0.7 | 11,000 | 0.8 | 7,000 ⁽⁴⁾ | 0.5 ⁽⁴⁾ |
| 1998 | 1,328,000 | 48.6 | 638,000 | 47.8 | 690,000 | 49.4 | 34,000 | 1.2 | 16,000 | 1.2 | 18,000 | 1.3 |
| 1999 | 1,379,000 | 50 | 668,000 | 49.6 | 707,000 | 50.2 | 37,000 | 1.3 | 14,000 | 1.0 | 23,000 | 1.6 |
| 2000 | 1,282,000 | 46.1 | 583,000 | 42.9 | 699,000 | 49.2 | 39,000 | 1.4 | 16,000 | 1.2 | 23,000 | 1.6 |
| 2001 | 1,300,000 | 45.8 | 641,000 | 46.2 | 659,000 | 45.5 | 15,000 | 0.5 | 9,000 ⁽⁴⁾ | 0.6 ⁽⁴⁾ | 6,000 ⁽⁴⁾ | 0.4 ⁽⁴⁾ |
| 2002 | 1,312,000 | 45.7 | 618,000 | 44 | 694,000 | 47.3 | 28,000 | 1.0 | 12,000 | 0.9 | 15,000 | 1.0 |
| 2003 | 1,393,000 | 48.1 | 678,000 | 47.7 | 715,000 | 48.5 | 70,000 | 2.4 | 34,000 | 2.4 | 36,000 | 2.5 |
| 2004 | 1,329,000 | 45.5 | 637,000 | 44.4 | 692,000 | 46.5 | 20,000 | 0.7 | 9000 ⁽⁴⁾ | 0.7 ⁽⁴⁾ | 11,000 | 0.7 |
| 2005 | 1,368,000 | 46.3 | 651,000 | 44.9 | 717,000 | 47.7 | 62,000 | 2.1 | 29,000 | 2.0 | 33,000 | 2.2 |
| 2006 | 1,232,000 | 41.3 | 589,000 | 40.2 | 643,000 | 42.4 | 37,000 | 1.2 | 12,000 | 0.9 | 25,000 | 1.6 |

Source: Centers for Disease Control and Prevention. National Center For Health Statistics. National Hospital Discharge Survey, 1988-2006. Unpublished Data provided by NCHS upon special request.

NOTES:

(1) ICD-9-CM CODES 480-486

(2) ICD-9-CM CODE 487

(3) TOTAL NUMBER OF DISCHARGES MAY NOT EQUAL THE SUM OF MALE AND FEMALE DISCHARGES DUE TO ROUNDING AND THE EXCLUSION OF ESTIMATES THAT DO NOT MEET THE STANDARD OF RELIABILITY OR PRECISION

(4) ESTIMATES OF 5,000-10,000, AND CORRESPONDING RATES, SHOULD BE USED WITH CAUTION

TABLE 9: PNEUMONIA & INFLUENZA - NUMBER AND RATE PER 10,000 POPULATION OF FIRST-LISTED HOSPITAL DISCHARGES BY TYPE AND AGE, 1988-2006

| YEAR | PNEUMONIA ⁽¹⁾ | | | | | | | | INFLUENZA ⁽¹⁾ | | | | | | | |
|------|--------------------------|------|---------|------|---------|------|---------|-------|--------------------------|--------------------|----------------------|---------------------|----------------------|--------------------|----------------------|--------------------|
| | <15 | | 15-44 | | 45-64 | | 65+ | | <15 | | 15-44 | | 45-64 | | 65+ | |
| | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE | NUMBER | RATE |
| 1988 | 184,000 | 34.7 | 111,000 | 9.7 | 139,000 | 30.3 | 490,000 | 161.3 | * | * | 8,000 ⁽³⁾ | 0.7 ⁽³⁾ | 10,000 | 2.2 | 22,000 | 7.2 |
| 1989 | 220,000 | 40.9 | 136,000 | 11.8 | 145,000 | 31.2 | 532,000 | 171.8 | * | * | 14,000 | 1.2 | 7,000 ⁽³⁾ | 1.5 ⁽³⁾ | 19,000 | 6.1 |
| 1990 | 211,000 | 38.5 | 141,000 | 12.1 | 153,000 | 32.7 | 546,000 | 172.9 | * | * | 10,000 | 0.9 | 6,000 ⁽³⁾ | 1.3 ⁽³⁾ | 23,000 | 7.3 |
| 1991 | 207,000 | 37.5 | 126,000 | 10.8 | 141,000 | 30.2 | 582,000 | 183.3 | 6,000 ⁽³⁾ | 1.1 ⁽³⁾ | 8,000 ⁽³⁾ | 0.7 ⁽³⁾ | 6,000 ⁽³⁾ | 1.3 ⁽³⁾ | 7,000 ⁽³⁾ | 2.2 ⁽³⁾ |
| 1992 | 208,000 | 37.2 | 135,000 | 11.5 | 161,000 | 33.2 | 556,000 | 172.1 | * | * | * | * | * | * | 6,000 ⁽³⁾ | 1.9 ⁽³⁾ |
| 1993 | 209,000 | 36.9 | 142,000 | 12.1 | 191,000 | 38.5 | 642,000 | 195.9 | * | * | 8,000 ⁽³⁾ | 0.7 | * | * | 11,000 | 3.4 |
| 1994 | 199,000 | 34.7 | 147,000 | 12.5 | 191,000 | 37.6 | 627,000 | 189.1 | * | * | * | * | 7,000 ⁽³⁾ | 1.4 ⁽³⁾ | 15,000 | 4.5 |
| 1995 | 243,000 | 42.1 | 154,000 | 13.0 | 161,000 | 30.9 | 687,000 | 205.0 | * | * | * | * | * | * | 7,000 ⁽³⁾ | 2.1 ⁽³⁾ |
| 1996 | 190,000 | 33.0 | 140,000 | 11.8 | 173,000 | 32.3 | 699,000 | 206.3 | * | * | 6,000 ⁽³⁾ | 1.0 ⁽³⁾ | * | * | 9,000 ⁽³⁾ | 2.7 ⁽³⁾ |
| 1997 | 194,000 | 32.5 | 124,000 | 10.2 | 179,000 | 32.4 | 780,000 | 230.9 | * | * | * | * | * | * | 10,000 | 3.0 |
| 1998 | 211,000 | 35.2 | 131,000 | 10.7 | 226,000 | 39.6 | 760,000 | 223.0 | 9,000 ⁽³⁾ | 1.5 ⁽³⁾ | 7,000 ⁽³⁾ | 0.6 ⁽³⁾ | 9,000 ⁽³⁾ | 1.6 ⁽³⁾ | 13,000 | 3.8 |
| 1999 | 208,000 | 34.5 | 123,000 | 10.1 | 218,000 | 36.9 | 810,000 | 236.6 | 6,000 ⁽³⁾ | 1.0 ⁽³⁾ | 6,000 ⁽³⁾ | 0.5 ⁽³⁾ | 6,000 ⁽³⁾ | 1.0 ⁽³⁾ | 18,000 | 5.3 |
| 2000 | 173,000 | 28.6 | 128,000 | 10.5 | 218,000 | 35.8 | 763,000 | 221.2 | 6,000 ⁽³⁾ | 1.0 ⁽³⁾ | * | * | 6,000 ⁽¹⁾ | 1.0 ⁽³⁾ | 23,000 | 6.7 |
| 2001 | 192,000 | 31.8 | 118,000 | 9.6 | 212,000 | 32.9 | 756,000 | 214.2 | 7,000 ⁽³⁾ | 1.2 ⁽³⁾ | * | * | * | * | * | * |
| 2002 | 203,000 | 33.5 | 117,000 | 9.4 | 216,000 | 32.4 | 776,000 | 218.0 | 12,000 | 2.0 | * | * | 6,000 ⁽³⁾ | 0.9 ⁽³⁾ | 7,000 ⁽³⁾ | 2.0 ⁽³⁾ |
| 2003 | 198,000 | 32.6 | 124,000 | 10.0 | 265,000 | 38.6 | 806,000 | 224.4 | 35,000 | 5.8 | 7,000 ⁽³⁾ | 0.6 ⁽³⁾ | 9,000 ⁽³⁾ | 1.5 ⁽³⁾ | 19,000 | 5.4 |
| 2004 | 182,000 | 29.8 | 104,000 | 8.3 | 244,000 | 34.5 | 800,000 | 220.4 | 6,000 ⁽³⁾ | 1.0 | * | 0.03 ⁽³⁾ | * | 0.4 ⁽³⁾ | 11,000 | 3.2 |
| 2005 | 193,000 | 31.9 | 110,000 | 8.8 | 251,000 | 34.5 | 814,000 | 221.3 | 14,000 | 2.4 | * | 0.27 | 8,000 ⁽³⁾ | 1.2 | 36,000 | 9.8 |
| 2006 | 172,000 | 28.3 | 107,000 | 8.5 | 250,000 | 33.4 | 704,000 | 189.0 | 10,000 | 1.6 | * | * | * | * | 18,000 | 4.9 |

Source: Centers for Disease Control and Prevention. National Center For Health Statistics. National Hospital Discharge Survey, 1988-2006. Unpublished Data provided by NCHS upon special request.

NOTES:

(1) ICD-9-CM CODES 480-486

(2) ICD-9-CM CODE 487

(3) ESTIMATES OF 5,000-10,000, AND CORRESPONDING RATES, SHOULD BE USED WITH CAUTION

* ESTIMATES LESS THAN 5,000 ARE NOT SHOWN

TABLE 10: PNEUMONIA - NUMBER AND RATE PER 10,000 POPULATION OF FIRST-LISTED HOSPITAL DISCHARGES BY RACE, 1988-2006 ⁽¹⁾

| YEAR | NUMBER OF DISCHARGES | | | RATE PER 10,000 | | |
|------|----------------------|---------|----------------------|----------------------|-------|----------------------|
| | WHITE ⁽²⁾ | BLACK | OTHER ⁽³⁾ | WHITE ⁽²⁾ | BLACK | OTHER ⁽³⁾ |
| 1988 | 713,000 | 111,000 | 32,000 | 34.6 | 36.7 | 37.7 |
| 1989 | 760,000 | 144,000 | 28,000 | 36.6 | 47.6 | 44.3 |
| 1990 | 748,000 | 124,000 | 26,000 | 35.7 | 40.3 | 29.0 |
| 1991 | 749,000 | 129,000 | 34,000 | 35.7 | 41.6 | 34.1 |
| 1992 | 687,000 | 132,000 | 34,000 | 32.4 | 42.2 | 32.5 |
| 1993 | 756,000 | 143,000 | 38,000 | 35.4 | 44.9 | 35.1 |
| 1994 | 771,000 | 146,000 | 45,000 | 35.8 | 45.1 | 40.3 |
| 1995 | 829,000 | 171,000 | 33,000 | 38.2 | 52.0 | 29.2 |
| 1996 | 786,000 | 149,000 | 49,000 | 35.8 | 44.5 | 40.7 |
| 1997 | 868,000 | 153,000 | 50,000 | 39.0 | 43.4 | 39.8 |
| 1998 | 890,000 | 154,000 | 53,000 | 39.7 | 43.3 | 40.1 |
| 1999 | 891,000 | 153,000 | 61,000 | 39.4 | 42.4 | 45.1 |
| 2000 | 839,000 | 137,000 | 31,000 | 36.9 | 38.4 | 17.7 |
| 2001 | 853,000 | 138,000 | 40,000 | 37.2 | 38.3 | 22.2 |
| 2002 | 842,000 | 151,000 | 40,000 | 36.3 | 41.4 | 21.2 |
| 2003 | 894,000 | 138,000 | 51,000 | 38.3 | 37.5 | 26.5 |
| 2004 | 855,000 | 123,000 | 45,000 | 36.4 | 33.0 | 22.7 |
| 2005 | 888,000 | 138,000 | 36,000 | 37.5 | 36.6 | 17.7 |
| 2006 | 787,000 | 116,000 | 41,000 | 32.9 | 30.5 | 19.2 |

Source: Centers for Disease Control and Prevention. National Center For Health Statistics. National Hospital Discharge Survey, 1988-2006. Unpublished Data provided by NCHS upon special request.

NOTES:

(1) ICD-9-CM CODES 480-486

(2) BETWEEN 1988 AND 2004, THE NUMBER OF DISCHARGES NOT REPORTING RACE INCREASED DRAMATICALLY. IT APPEARS THAT HOSPITAL DISCHARGES IN WHITES MIGHT BE DISPROPORTIONATELY UNDERESTIMATED. FOR THIS REASON, COMPARISONS BETWEEN RACES SHOULD BE MADE WITH CAUTION.

(3) ALL RACES OTHER THAN WHITES AND BLACKS

TABLE 11: PERCENTAGE OF ADULTS 65 YEARS AND OLDER WHO REPORTED EVER RECEIVING A PNEUMOCOCCAL VACCINATION OR RECEIVING A FLU SHOT WITHIN THE PAST YEAR BY STATE, 1997-2007

| STATE | Influenza Shot | | | | | | | | | % Difference 1997-2007 | Pneumococcal Vaccination | | | | | | | | | % Difference 1997-2007 |
|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|--------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|---------------------------|
| | 1997% | 1999% | 2001% | 2002% | 2003% | 2004% | 2005% | 2006% | 2007% | | 1997% | 1999% | 2001% | 2002% | 2003% | 2004% | 2005% | 2006% | 2007% | |
| Alabama | 62.6 | 64.6 | 65.9 | 64.8 | 70.2 | 66.1 | 60.8 | 62.0 | 69.0 | 10.2 | 47.5 | 53.9 | 60.3 | 58.5 | 61.4 | 60.1 | 61.9 | 59.7 | 65.3 | 37.5 |
| Alaska | 58.3 | 59.8 | 62.8 | 69.5 | 66.5 | 64.1 | 61.1 | 62.5 | 64.4 | 10.5 | 39.2 | 43.8 | 65.3 | 59.8 | 59.6 | 57.2 | 61.1 | 59.9 | 66.0 | 68.4 |
| Arizona | 72.9 | 71.3 | 61.8 | 69.7 | 68.9 | 66.1 | 62.5 | 65.4 | 69.0 | -5.3 | 59.4 | 53.4 | 65.6 | 68.0 | 65.5 | 68.5 | 65.4 | 66.5 | 67.2 | 13.1 |
| Arkansas | 61.1 | 67.3 | 63.2 | 69.0 | 71.0 | 68.7 | 65.2 | 68.6 | 70.5 | 15.4 | 39.1 | 50.2 | 59.0 | 58.7 | 61.8 | 62.0 | 57.4 | 64.4 | 63.9 | 63.4 |
| California | 65.5 | 72.2 | 68.9 | 71.5 | 72.5 | 70.9 | 65.9 | 66.9 | 69.3 | 5.8 | 49.8 | 57.0 | 59.6 | 66.7 | 65.2 | 63.5 | 61.3 | 60.0 | 60.4 | 21.3 |
| Colorado | 74.4 | 74.8 | 77.4 | 73.3 | 74.2 | 78.8 | 74.2 | 75.9 | 76.4 | 2.7 | 53.3 | 62.7 | 68.6 | 68.1 | 69.1 | 70.1 | 70.2 | 72.9 | 72.5 | 36.0 |
| Connecticut | 67.2 | 64.8 | 69.1 | 71.4 | 74.3 | 73.0 | 71.1 | 71.1 | 74.7 | 11.2 | 43.0 | 49.0 | 63.3 | 64.5 | 64.5 | 67.7 | 69.3 | 68.1 | 64.9 | 50.9 |
| Delaware | 68.6 | 67.7 | 67.6 | 71.5 | 70.0 | 69.2 | 65.7 | 70.3 | 73.8 | 7.6 | 52.6 | 66.5 | 68.9 | 64.3 | 67.4 | 66.2 | 65.9 | 65.6 | 72.2 | 37.3 |
| DC | 54.3 | 55.8 | 55.5 | 58.7 | 63.0 | 54.8 | 54.7 | 61.2 | 60.2 | 10.9 | 32.3 | 35.3 | 49.0 | 48.0 | 50.1 | 51.3 | 51.6 | 52.0 | 55.9 | 73.1 |
| Florida | 62.3 | 63.3 | 54.9 | 57.0 | 65.9 | 65.1 | 55.6 | 61.5 | 64.7 | 3.9 | 45.5 | 53.5 | 58.1 | 57.2 | 64.4 | 64.3 | 62.4 | 62.9 | 63.0 | 38.5 |
| Georgia | 58.5 | 57.0 | 62.2 | 59.3 | 67.0 | 64.4 | 60.8 | 64.8 | 67.6 | 15.6 | 48.5 | 49.7 | 57.9 | 57.3 | 60.5 | 59.4 | 62.5 | 63.1 | 63.6 | 31.1 |
| Hawaii | 71.1 | 74.1 | 79.0 | 73.9 | 67.0 | n/a | 72.1 | 75.7 | 78.5 | 10.4 | 51.7 | 55.8 | 63.7 | 59.5 | 69.4 | n/a | 65.9 | 68.8 | 69.4 | 34.2 |
| Idaho | 66.4 | 69.0 | 65.1 | 65.1 | 70.3 | 66.1 | 63.9 | 65.2 | 69.1 | 4.1 | 50.2 | 55.2 | 60.3 | 57.5 | 67.2 | 60.1 | 61.6 | 62.8 | 66.1 | 31.7 |
| Illinois | 67.8 | 67.5 | 62.2 | 61.1 | 76.4 | 65.3 | 55.9 | 66.4 | 68.1 | 0.4 | 44.7 | 47.4 | 56.7 | 56.7 | 57.0 | 58.2 | 57.0 | 60.0 | 61.4 | 37.4 |
| Indiana | 62.5 | 66.2 | 65.7 | 66.3 | 66.1 | 64.2 | 64.0 | 65.3 | 71.9 | 15.0 | 38.0 | 51.6 | 60.2 | 61.2 | 61.5 | 62.0 | 65.3 | 63.8 | 68.4 | 80.0 |
| Iowa | 69.7 | 69.6 | 72.8 | 73.5 | 77.5 | 74.0 | 71.7 | 73.6 | 74.6 | 7.0 | 51.5 | 61.2 | 65.9 | 66.2 | 71.4 | 68.1 | 69.1 | 71.1 | 69.3 | 34.6 |
| Kansas | 61.5 | 67.0 | 68.5 | 68.6 | 70.8 | 68.1 | 65.9 | 72.5 | 73.5 | 19.5 | 43.7 | 55.1 | 62.9 | 62.1 | 60.3 | 62.5 | 66.8 | 69.5 | 68.7 | 57.2 |
| Kentucky | 61.2 | 68.4 | 60.9 | 65.7 | 69.1 | 64.2 | 62.4 | 66.0 | 73.2 | 19.6 | 38.6 | 52.0 | 55.1 | 56.6 | 59.6 | 57.7 | 62.9 | 64.6 | 66.0 | 71.0 |
| Louisiana | 58.4 | 60.3 | 56.1 | 57.3 | 68.3 | 68.6 | 62.4 | 64.4 | 68.4 | 17.1 | 32.2 | 40.4 | 49.5 | 56.3 | 64.2 | 67.3 | 71.4 | 66.4 | 66.6 | 106.8 |
| Maine | 72.1 | 73.7 | 71.5 | 73.8 | 74.8 | 72.1 | 67.7 | 72.0 | 77.2 | 7.1 | 50.0 | 57.3 | 65.0 | 66.8 | 64.8 | 65.6 | 64.4 | 67.9 | 71.1 | 42.2 |
| Maryland | 63.4 | 62.6 | 67.3 | 65.9 | 68.4 | 64.6 | 59.3 | 66.1 | 71.3 | 12.5 | 41.0 | 54.1 | 62.3 | 63.4 | 62.0 | 64.0 | 62.0 | 66.0 | 65.6 | 60.0 |
| Massachusetts | 66.0 | 69.4 | 70.6 | 72.6 | 74.9 | 70.5 | 69.8 | 73.1 | 77.9 | 18.0 | 52.7 | 56.8 | 63.5 | 63.4 | 69.4 | 65.2 | 64.8 | 70.8 | 71.2 | 35.1 |
| Michigan | 63.6 | 70.0 | 60.4 | 67.7 | 67.5 | 66.9 | 67.1 | 71.3 | 70.9 | 11.5 | 45.6 | 57.7 | 56.6 | 63.0 | 62.7 | 59.9 | 66.2 | 67.6 | 63.5 | 39.3 |
| Minnesota | 69.0 | 64.0 | 70.1 | 76.6 | 80.3 | 78.2 | 78.1 | 73.8 | 79.6 | 15.4 | 48.3 | 51.9 | 62.9 | 70.4 | 73.0 | 67.9 | 71.1 | 71.1 | 70.9 | 46.8 |
| Mississippi | 61.1 | 62.8 | 61.8 | 63.0 | 69.0 | 66.8 | 61.5 | 65.4 | 69.6 | 13.9 | 45.9 | 50.4 | 55.7 | 58.9 | 61.7 | 64.5 | 65.7 | 68.7 | 65.3 | 42.3 |
| Missouri | 70.3 | 68.4 | 67.5 | 68.7 | 69.9 | 69.1 | 61.7 | 72.2 | 69.5 | -1.1 | 44.3 | 52.8 | 56.0 | 60.8 | 61.1 | 67.0 | 64.8 | 67.8 | 66.4 | 49.9 |
| Montana | 68.4 | 72.9 | 73.1 | 67.6 | 72.8 | 72.1 | 69.5 | 72.6 | 72.8 | 6.4 | 50.8 | 61.2 | 67.9 | 67.3 | 69.1 | 71.6 | 69.9 | 71.5 | 72.6 | 42.9 |
| Nebraska | 65.8 | 69.2 | 70.1 | 68.2 | 73.6 | 75.8 | 72.6 | 73.3 | 76.8 | 16.7 | 49.8 | 54.8 | 61.2 | 61.3 | 64.8 | 65.7 | 67.9 | 68.3 | 71.8 | 44.2 |
| Nevada | 56.5 | 62.2 | 63.3 | 60.3 | 60.0 | 59.0 | 53.0 | 57.7 | 61.9 | 9.6 | 53.5 | 61.0 | 66.3 | 65.0 | 63.2 | 66.7 | 69.8 | 69.1 | 66.7 | 24.7 |
| New Hampshire | 64.6 | 65.1 | 69.4 | 72.3 | 73.9 | 70.7 | 70.2 | 71.9 | 77.6 | 20.1 | 49.6 | 60.4 | 62.7 | 63.8 | 69.3 | 66.7 | 69.8 | 68.4 | 71.9 | 45.0 |
| New Jersey | 60.7 | 65.3 | 64.5 | 69.1 | 67.2 | 67.5 | 63.4 | 66.3 | 70.6 | 16.3 | 33.9 | 55.1 | 58.9 | 63.1 | 62.4 | 64.2 | 64.0 | 66.4 | 63.4 | 87.0 |
| New Mexico | 72.8 | 68.8 | 70.0 | 66.6 | 72.4 | 72.3 | 68.0 | 67.6 | 70.0 | -3.8 | 50.1 | 53.2 | 62.7 | 62.7 | 63.9 | 64.6 | 64.7 | 64.5 | 63.2 | 26.1 |
| New York | 64.5 | 63.8 | 62.5 | 64.7 | 68.0 | 65.9 | 61.8 | 64.7 | 70.5 | 9.3 | 38.9 | 50.0 | 55.9 | 62.4 | 61.7 | 62.9 | 62.0 | 61.0 | 63.4 | 63.0 |
| North Carolina | 64.6 | 64.2 | 66.1 | 68.1 | 68.8 | 66.9 | 65.5 | 69.6 | 71.3 | 10.4 | 50.6 | 58.5 | 65.8 | 63.0 | 66.6 | 64.2 | 66.2 | 68.5 | 69.2 | 36.8 |
| North Dakota | 64.8 | 67.2 | 70.0 | 73.9 | 73.0 | 74.2 | 70.1 | 71.4 | 72.4 | 11.7 | 40.8 | 55.0 | 64.2 | 72.5 | 71.2 | 70.3 | 71.7 | 69.4 | 70.5 | 72.8 |
| Ohio | 65.4 | 68.8 | 63.4 | 66.6 | 68.0 | 67.5 | 64.7 | 68.2 | 72.5 | 10.9 | 38.5 | 55.0 | 59.3 | 63.7 | 64.7 | 61.0 | 61.5 | 68.5 | 69.9 | 81.6 |
| Oklahoma | 69.3 | 71.8 | 72.7 | 72.7 | 75.8 | 74.9 | 73.2 | 70.6 | 76.1 | 9.8 | 40.4 | 53.7 | 66.1 | 65.5 | 68.6 | 69.9 | 71.1 | 70.2 | 71.7 | 77.5 |
| Oregon | 69.8 | 65.2 | 71.7 | 68.0 | 70.5 | 71.0 | 68.9 | 71.3 | 73.1 | 4.7 | 55.9 | 56.2 | 70.9 | 65.0 | 71.7 | 69.3 | 71.4 | 74.7 | 74.0 | 32.4 |
| Pennsylvania | 65.8 | 63.1 | 63.8 | 70.5 | 69.1 | 63.8 | 59.3 | 68.3 | 72.6 | 10.3 | 47.1 | 52.2 | 59.5 | 63.5 | 66.1 | 63.9 | 67.2 | 68.8 | 69.7 | 48.0 |
| Rhode Island | 67.7 | 75.8 | 72.6 | 73.7 | 76.2 | 73.0 | 67.2 | 74.7 | 80.0 | 18.2 | 43.0 | 56.9 | 67.0 | 67.6 | 69.3 | 70.0 | 71.5 | 72.5 | 72.4 | 68.4 |
| South Carolina | 74.3 | 69.9 | 66.2 | 69.4 | 69.3 | 66.0 | 60.9 | 62.9 | 70.2 | -5.5 | 41.6 | 56.1 | 57.9 | 64.9 | 63.0 | 63.9 | 65.6 | 61.5 | 64.2 | 54.3 |
| South Dakota | 65.6 | 73.6 | 74.1 | 74.2 | 77.9 | 76.8 | 76.3 | 74.1 | 77.4 | 18.0 | 40.6 | 50.4 | 59.2 | 56.7 | 63.7 | 66.1 | 66.3 | 65.0 | 63.7 | 56.9 |
| Tennessee | 69.1 | 65.5 | 65.6 | 71.6 | 69.1 | 66.3 | 61.6 | 70.4 | 70.1 | 1.4 | 45.0 | 54.3 | 55.4 | 61.4 | 60.8 | 63.5 | 63.8 | 66.5 | 65.3 | 45.1 |
| Texas | 68.0 | 69.8 | 61.8 | 61.0 | 67.7 | 67.0 | 61.6 | 66.4 | 66.7 | -1.9 | 44.4 | 55.9 | 58.0 | 56.9 | 62.0 | 61.3 | 62.2 | 63.7 | 63.4 | 42.8 |
| Utah | 66.1 | 75.1 | 68.7 | 71.1 | 74.8 | 75.4 | 69.6 | 72.1 | 76.2 | 15.3 | 48.5 | 61.3 | 67.3 | 65.0 | 66.2 | 65.7 | 66.4 | 65.9 | 68.8 | 41.9 |
| Vermont | 69.5 | 73.4 | 71.5 | 73.6 | 74.1 | 66.6 | 66.3 | 72.8 | 74.7 | 7.5 | 51.6 | 56.5 | 67.3 | 66.3 | 66.1 | 65.6 | 66.7 | 66.9 | 69.8 | 35.3 |
| Virginia | 67.7 | 65.7 | 65.3 | 65.3 | 69.6 | 68.6 | 66.8 | 69.1 | 75.3 | 11.2 | 53.6 | 55.2 | 60.1 | 60.8 | 65.2 | 61.6 | 66.5 | 66.8 | 69.7 | 30.0 |
| Washington | 70.3 | 68.9 | 72.5 | 65.1 | 73.4 | 67.9 | 67.8 | 70.6 | 72.0 | 2.4 | 51.6 | 55.8 | 66.8 | 63.0 | 68.6 | 65.7 | 66.9 | 69.6 | 70.7 | 37.0 |
| West Virginia | 58.2 | 62.9 | 61.7 | 65.8 | 69.1 | 67.8 | 63.6 | 66.4 | 70.7 | 21.5 | 41.3 | 54.3 | 61.3 | 61.2 | 63.8 | 64.7 | 68.2 | 65.4 | 67.3 | 63.0 |
| Wisconsin | 66.1 | 64.9 | 70.4 | 74.0 | 72.1 | 74.2 | 71.8 | 72.0 | 74.1 | 12.1 | 42.6 | 53.7 | 65.6 | 70.6 | 66.7 | 70.3 | 65.7 | 71.9 | 69.4 | 62.9 |
| Wyoming | 72.4 | 73.8 | 69.6 | 70.6 | 72.6 | 73.8 | 72.9 | 70.8 | 76.3 | 5.4 | 50.9 | 61.5 | 68.4 | 68.2 | 70.4 | 70.6 | 71.2 | 69.7 | 72.2 | 41.8 |
| Range | 41.5-74.4 | 55.8-75.8 | 54.9-79.0 | 57.0-76.6 | 60.0-80.3 | 54.8-78.8 | 54.7-78.1 | 57.7-75.9 | 60.2-80.0 | | 32.2-59.4 | 35.3-52.6 | 49.0-70.9 | 48.0-72.5 | 50.1-73.0 | 51.3-71.6 | 51.6-71.7 | 52.0-74.7 | 55.9-74.0 | |
| Median | 65.9 | 67.4 | 67.3 | 68.7 | 69.9 | 67.8 | 65.7 | 69.6 | 72.0 | | 45.8 | 54.9 | 62.3 | 63.0 | 64.4 | 64.5 | 65.9 | 66.9 | 67.3 | |

Source: Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System. Prevalence Data, 1997-2007

TABLE 12: INFLUENZA VACCINATION OF FEE-FOR-SERVICE MEDICARE BENEFICIARIES AGED 65+ PAID BY MEDICARE BY STATE, 2000-2004

| STATE | 2000 | 2001 | 2002 | 2003 | 2004 | % Change |
|-------------------------|-------------|-------------|-------------|-------------|-------------|------------------|
| | % | % | % | % | % | 2000-2004 |
| Alabama | 70.7 | 67.2 | 69.2 | 71.5 | 72.3 | 2.3 |
| Alaska | 74.3 | 67.4 | 71.6 | 69.2 | 71.8 | -3.3 |
| Arizona | 77.7 | 67.1 | 70.1 | 69.9 | 73.5 | -5.5 |
| Arkansas | 73.6 | 72.6 | 70.8 | 72.8 | 74.4 | 1.1 |
| California | 72.5 | 69.0 | 69.4 | 71.1 | 71.9 | -0.8 |
| Colorado | 80.2 | 76.6 | 75.6 | 78.4 | 79.5 | -0.9 |
| Connecticut | 73.6 | 73.3 | 72.5 | 74.3 | 76.9 | 4.4 |
| Delaware | 72.4 | 73.4 | 73.7 | 72.6 | 79.8 | 10.2 |
| District of Columbia | 58.6 | 61.8 | 64.1 | 65.1 | 60.4 | 3.1 |
| Florida | 70.4 | 64.5 | 67.8 | 68.3 | 70.6 | 0.3 |
| Georgia | 70.1 | 65.4 | 67.4 | 68.7 | 70.9 | 1.0 |
| Hawaii | 74.2 | 77.8 | 74.9 | 79.2 | 80.3 | 8.2 |
| Idaho | 75.6 | 68.2 | 71.8 | 73.8 | 73.1 | -3.4 |
| Illinois | 71.0 | 64.6 | 68.4 | 70.0 | 70.9 | -0.2 |
| Indiana | 73.1 | 69.2 | 71.5 | 69.9 | 72.2 | -1.2 |
| Iowa | 79.1 | 77.2 | 78.1 | 79.7 | 80.8 | 2.1 |
| Kansas | 80.2 | 74.6 | 75.7 | 73.6 | 77.3 | -3.6 |
| Kentucky | 69.1 | 68.9 | 67.5 | 71.6 | 70.3 | 1.6 |
| Louisiana | 65.8 | 67.6 | 70.4 | 74.9 | 75.7 | 15.0 |
| Maine | 76.6 | 78.9 | 77.4 | 78.2 | 79.1 | 3.2 |
| Maryland | 73.8 | 70.2 | 73.0 | 71.5 | 73.9 | 0.1 |
| Massachusetts | 75.7 | 69.1 | 75.5 | 72.4 | 73.5 | -3.0 |
| Michigan | 73.2 | 67.7 | 70.1 | 70.5 | 73.5 | 0.4 |
| Minnesota | 77.6 | 76.0 | 78.2 | 78.1 | 78.9 | 1.7 |
| Mississippi | 70.5 | 70.7 | 71.3 | 71.3 | 71.4 | 1.2 |
| Missouri | 74.6 | 69.8 | 74.0 | 75.0 | 76.2 | 2.1 |
| Montana | 79.5 | 72.8 | 77.2 | 75.0 | 74.9 | -5.8 |
| Nebraska | 78.0 | 77.9 | 76.2 | 76.6 | 78.0 | 0.0 |
| Nevada | 65.6 | 58.9 | 62.8 | 62.9 | 66.8 | 1.9 |
| New Hampshire | 76.0 | 74.8 | 73.8 | 75.5 | 79.7 | 4.8 |
| New Jersey | 68.3 | 64.6 | 69.6 | 71.3 | 72.9 | 6.8 |
| New Mexico | 73.6 | 71.0 | 69.9 | 71.7 | 75.9 | 3.2 |
| New York | 70.4 | 69.2 | 71.7 | 71.7 | 73.2 | 4.0 |
| North Carolina | 71.8 | 70.6 | 72.2 | 73.4 | 74.9 | 4.3 |
| North Dakota | 79.4 | 72.5 | 72.8 | 75.9 | 79.2 | -0.3 |
| Ohio | 74.4 | 69.4 | 70.6 | 72.5 | 73.3 | -1.5 |
| Oklahoma | 77.7 | 75.8 | 78.6 | 78.9 | 78.6 | 1.1 |
| Oregon | 74.7 | 73.3 | 74.0 | 73.6 | 77.4 | 3.7 |
| Pennsylvania | 73.2 | 70.0 | 73.0 | 72.4 | 74.2 | 1.4 |
| Rhode Island | 76.5 | 74.1 | 76.9 | 78.6 | 77.0 | 0.7 |
| South Carolina | 71.6 | 71.0 | 72.1 | 71.8 | 73.1 | 2.1 |
| South Dakota | 75.0 | 74.5 | 78.3 | 77.0 | 79.2 | 5.6 |
| Tennessee | 73.2 | 70.0 | 72.3 | 74.7 | 76.0 | 3.8 |
| Texas | 72.4 | 68.5 | 69.7 | 71.5 | 74.6 | 3.0 |
| Utah | 76.4 | 75.3 | 74.7 | 79.2 | 78.8 | 3.1 |
| Vermont | 77.1 | 74.0 | 80.9 | 78.7 | 75.7 | -1.9 |
| Virginia | 74.9 | 69.9 | 74.2 | 74.5 | 74.5 | -0.4 |
| Washington | 77.6 | 72.2 | 73.9 | 72.4 | 77.4 | -0.3 |
| West Virginia | 72.4 | 70.3 | 72.9 | 72.9 | 72.2 | -0.3 |
| Wisconsin | 74.9 | 72.0 | 75.1 | 75.2 | 78.2 | 4.4 |
| Wyoming | 76.3 | 74.0 | 74.2 | 76.3 | 75.6 | -0.9 |
| NATIONAL AVERAGE | 73.8 | 70.9 | 72.7 | 73.4 | 74.9 | 1.5 |

SOURCE: CENTERS FOR MEDICARE AND MEDICAID SERVICES. CONSUMER ASSESSMENT OF HEALTH PROVIDERS AND SYSTEMS (CAHPS), 2000-2004.

TABLE 13: PERCENT OF ADULTS WITH ASTHMA WHO RECEIVED THE FLU SHOT, 2003-2007⁽¹⁾

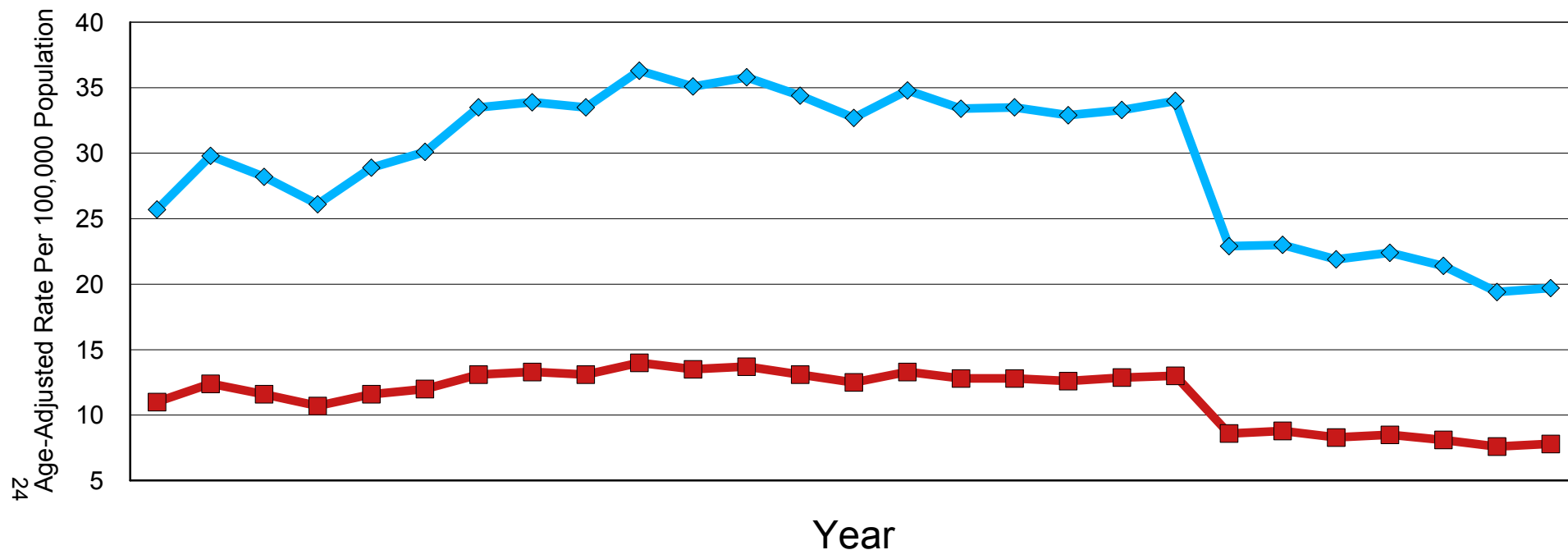
| State | 2003 | | 2004 | | 2005 | | 2006 | | 2007 | | % Change 2003-2007 |
|----------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-------------|--------------------|-----------------------|
| | % | CI of % | % | CI of % | % | CI of % | % | CI of % | % | CI of % | |
| Alabama | 41.3 | (34.3-48.3) | 42.5 | (38.0-47.0) | 35.1 | (30.8-39.5) | 35.9 | (29.9-42.0) | 46.5 | (41.4-51.7) | 12.6 |
| Alaska | 45.8 | (40.5-51.0) | 45.7 | (40.9-50.5) | 42.7 | (36.5-48.9) | 37.9 | (32.3-43.6) | 46.7 | (38.6-54.8) | 2.0 |
| Arizona | 42.5 | (37.0-48.0) | 45.0 | (38.3-51.7) | 33.9 | (30.2-37.6) | 45.7 | (37.2-54.2) | 45.8 | (37.9-53.8) | 7.8 |
| Arkansas | 46.8 | (41.5-52.0) | 44.3 | (40.1-48.5) | 42.2 | (39.2-45.1) | 40.3 | (36.3-44.4) | 51.7 | (46.0-57.5) | 10.5 |
| California | 37.0 | (33.0-40.9) | 44.5 | (39.4-49.6) | 35.8 | (31.3-40.3) | 37.3 | (32.7-42.0) | 39.0 | (34.2-43.7) | 5.4 |
| Colorado | 43.8 | (39.0-48.6) | 51.5 | (47.4-55.5) | 41.7 | (37.8-45.6) | 46.1 | (41.8-50.4) | 53.0 | (49.6-56.5) | 21.0 |
| Connecticut | 45.7 | (42.1-49.2) | 43.8 | (40.7-47.2) | 37.0 | (33.0-41.1) | 44.4 | (41.6-47.2) | 49.6 | (45.6-53.7) | 8.5 |
| D.C. | 31.8 | (24.6-38.9) | 37.1 | (30.7-43.6) | 36.0 | (30.7-41.3) | 39.9 | (35.8-43.9) | 42.2 | (37.9-46.4) | 32.7 |
| Delaware | 39.6 | (34.2-44.8) | 41.5 | (36.8-46.2) | 40.3 | (35.8-44.8) | 43.0 | (38.5-47.6) | 51.2 | (45.5-56.8) | 29.3 |
| Florida | 41.6 | (35.1-47.9) | 34.2 | (30.0-38.3) | 36.5 | (33.0-40.0) | 36.5 | (33.4-39.6) | 39.3 | (36.8-41.9) | -5.5 |
| Georgia | 36.1 | (39.0-48.6) | 38.2 | (32.0-44.0) | 34.2 | (30.2-38.3) | 33.9 | (29.4-38.4) | 41.5 | (38.1-44.9) | 15.0 |
| Hawaii | 44.2 | (31.4-40.6) | N/A | N/A | 42.5 | (37.6-47.5) | 45.3 | (39.5-51.0) | 48.3 | (43.3-53.3) | 9.3 |
| Idaho | 37.5 | (33.6-41.3) | 44.6 | (39.9-49.3) | 30.6 | (27.1-34.1) | 35.5 | (32.3-38.6) | 45.7 | (42.2-49.2) | 21.9 |
| Illinois | 36.5 | (32.6-40.4) | 40.2 | (36.1-44.3) | 35.4 | (32.6-38.3) | 40.7 | (36.7-44.6) | 44.8 | (40.6-48.9) | 22.7 |
| Indiana | 40.1 | (37.1-43.1) | 41.1 | (56.3-65.7) | 39.5 | (35.6-43.5) | 39.7 | (36.9-42.6) | 45.9 | (41.9-49.9) | 14.5 |
| Iowa | 40.5 | (34.9-46.0) | 50.4 | (45.6-55.2) | 37.8 | (33.5-42.1) | 47.5 | (44.0-51.1) | 50.8 | (45.7-55.8) | 25.4 |
| Kansas | 37.5 | (32.5-42.4) | 41.0 | (37.8-44.3) | 35.2 | (32.4-38.1) | 41.6 | (39.0-44.2) | 47.5 | (44.2-50.7) | 26.7 |
| Kentucky | 37.7 | (34.9-40.4) | 37.8 | (32.6-42.9) | 32.4 | (29.1-35.8) | 39.0 | (35.8-42.1) | 46.8 | (41.1-52.5) | 24.1 |
| Louisiana | 43.1 | (37.7-48.3) | 44.0 | (39.4-48.6) | 32.4 | (25.1-39.8) | 48.6 | (43.4-53.8) | 43.6 | (37.9-49.3) | 1.2 |
| Maine | 46.6 | (42.5-50.5) | 45.7 | (41.6-49.8) | 38.3 | (34.9-41.8) | 48.5 | (44.8-52.3) | 52.6 | (48.8-56.4) | 12.9 |
| Maryland | 43.7 | (38.1-49.2) | 45.5 | (39.5-51.5) | 34.9 | (31.9-37.8) | 37.5 | (33.5-41.5) | 50.4 | (46.9-53.9) | 15.3 |
| Massachusetts | 43.4 | (39.8-46.9) | 45.4 | (41.7-49.0) | 39.2 | (36.7-41.7) | 49.1 | (46.6-51.5) | 51.1 | (48.6-53.6) | 17.7 |
| Michigan | 39.5 | (36.1-42.8) | 40.5 | (36.1-44.9) | 32.9 | (30.7-35.2) | 42.8 | (39.0-46.6) | 44.4 | (41.1-47.8) | 12.4 |
| Minnesota | 45.8 | (40.3-51.1) | 49.6 | (44.8-54.3) | 47.0 | (42.6-51.5) | 49.3 | (45.8-52.9) | 55.5 | (51.0-60.0) | 21.2 |
| Mississippi | 35.7 | (31.3-39.9) | 39.3 | (35.0-43.6) | 39.4 | (35.5-43.3) | 42.7 | (38.6-46.7) | 47.4 | (41.5-53.4) | 32.8 |
| Missouri | 38.9 | (34.2-43.6) | 51.0 | (46.7-55.4) | 37.4 | (33.7-41.2) | 38.2 | (34.2-42.2) | 44.3 | (39.7-48.9) | 13.9 |
| Montana | 53.4 | (48.1-58.5) | 48.0 | (43.6-52.4) | 42.2 | (38.0-46.5) | 45.2 | (41.4-48.9) | 53.5 | (49.6-57.5) | 0.2 |
| Nebraska | 51.6 | (47.1-55.9) | 45.8 | (42.2-49.5) | 41.1 | (37.0-45.3) | 46.8 | (43.0-50.5) | 48.8 | (44.6-53.0) | -5.4 |
| Nevada | 32.7 | (25.8-39.5) | 40.9 | (34.2-47.6) | 22.3 | (16.4-28.2) | 31.3 | (25.4-37.1) | 35.6 | (29.1-42.2) | 8.9 |
| New Hampshire | 43.5 | (39.9-47.0) | 38.6 | (35.5-41.8) | 41.5 | (38.7-44.3) | 49.1 | (45.0-53.1) | 53.3 | (49.4-57.2) | 22.5 |
| New Jersey | 37.9 | (35.3-40.5) | 44.7 | (42.1-47.2) | 32.7 | (30.2-35.3) | 38.8 | (35.6-41.9) | 48.6 | (44.9-52.3) | 28.2 |
| New Mexico | 46.6 | (42.4-50.7) | 41.7 | (38.0-45.4) | 38.4 | (34.7-42.2) | 43.6 | (39.3-47.8) | 52.0 | (48.1-55.9) | 11.6 |
| New York | 44.3 | (40.4-48.1) | 41.0 | (37.9-44.1) | 37.0 | (34.4-39.7) | 41.4 | (37.6-45.1) | 44.9 | (40.6-49.1) | 1.4 |
| North Carolina | 41.4 | (37.2-45.5) | 41.8 | (38.7-44.9) | 35.4 | (33.2-37.6) | 44.7 | (41.9-47.5) | 47.2 | (44.3-50.1) | 14.0 |
| North Dakota | 49.6 | (45.1-54.1) | 47.3 | (41.8-52.8) | 41.2 | (37.3-45.2) | 47.4 | (41.5-53.4) | 50.0 | (45.6-54.3) | 0.8 |
| Ohio | 36.9 | (32.6-41.2) | 41.7 | (37.2-46.2) | 33.5 | (30.3-36.7) | 39.5 | (35.6-43.3) | 43.1 | (40.1-46.2) | 16.8 |
| Oklahoma | 44.8 | (41.1-48.5) | 48.8 | (45.0-52.6) | 44.3 | (41.7-46.9) | 47.9 | (44.4-51.4) | 54.1 | (49.6-58.6) | 20.8 |
| Oregon | 40.5 | (36.6-44.4) | 45.4 | (41.2-49.5) | 35.9 | (34.0-37.7) | 43.4 | (39.7-47.1) | 51.4 | (47.5-55.3) | 26.9 |
| Pennsylvania | 40.4 | (36.5-44.1) | 40.5 | (37.2-43.8) | 33.2 | (30.3-36.1) | 44.3 | (40.7-47.9) | 51.7 | (48.4-55.0) | 28.0 |
| Rhode Island | 46.1 | (41.3-50.8) | 52.6 | (47.6-57.6) | 38.4 | (34.7-42.0) | 47.0 | (43.3-50.7) | 57.0 | (51.8-62.2) | 23.6 |
| South Carolina | 48.7 | (43.8-53.5) | 46.3 | (42.6-49.9) | 35.4 | (31.2-39.6) | 40.6 | (37.5-43.6) | 44.6 | (41.0-48.1) | -8.4 |
| South Dakota | 56.0 | (51.2-60.6) | 61.9 | (56.9-66.9) | 43.5 | (39.3-47.6) | 49.7 | (45.8-53.6) | 53.6 | (48.5-58.7) | -4.3 |
| Tennessee | 37.1 | (32.9-41.2) | 42.9 | (38.0-47.8) | 35.8 | (30.1-41.1) | 45.0 | (41.1-48.8) | 55.9 | (51.1-60.7) | 50.7 |
| Texas | 38.4 | (34.4-42.2) | 44.6 | (40.2-49.0) | 36.2 | (32.6-39.9) | 50.0 | (39.9-60.1) | 43.0 | (40.0-45.9) | 12.0 |
| Utah | 35.7 | (31.3-40.1) | 44.9 | (40.0-49.8) | 41.8 | (37.7-46.0) | 38.0 | (33.6-42.5) | 55.6 | (47.2-64.0) | 55.7 |
| Vermont | 36.9 | (33.1-40.7) | 41.4 | (37.1-45.7) | 36.0 | (33.0-39.0) | 43.4 | (40.5-46.2) | 54.0 | (50.1-57.8) | 46.3 |
| Virginia | 39.4 | (34.0-44.7) | 47.5 | (42.3-52.8) | 37.5 | (33.0-42.0) | 37.2 | (32.8-41.6) | 50.5 | (45.6-55.5) | 28.2 |
| Washington | 41.9 | (39.7-44.0) | 40.2 | (38.1-42.4) | 32.1 | (30.5-33.8) | 41.8 | (39.8-43.8) | 45.2 | (43.1-47.2) | 7.9 |
| West Virginia | 45.9 | (41.4-50.3) | 40.5 | (36.1-44.8) | 34.3 | (30.3-38.3) | 47.3 | (43.4-51.1) | 46.3 | (42.9-49.6) | 0.9 |
| Wisconsin | 43.5 | (38.4-48.4) | 46.0 | (42.8-49.2) | 42.3 | (38.1-46.5) | 44.8 | (41.4-48.2) | 52.3 | (48.0-56.6) | 20.2 |
| Wyoming | 55.4 | (51.1-59.6) | 46.7 | (41.7-51.7) | 40.2 | (35.9-44.5) | 45.5 | (40.7-50.4) | 45.7 | (40.3-51.1) | -17.5 |
| United States | 40.4 | (39.5-41.2) | 43.0 | (42.1-43.9) | 36.3 | (35.6-37.1) | 41.7 | (40.7-42.8) | 46.1 | (45.2-47.0) | 14.1 |

Source: Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance Survey raw data, 2003-2007. Analysis by the Research and Program Services Division of the American Lung Association.

Note:

(1) Data for earlier years is available by request.

FIGURE 1: PNEUMONIA - AGE-ADJUSTED DEATH RATES BASED ON THE 1940 AND 2000 STANDARD POPULATIONS, 1979-2005 ⁽¹⁾



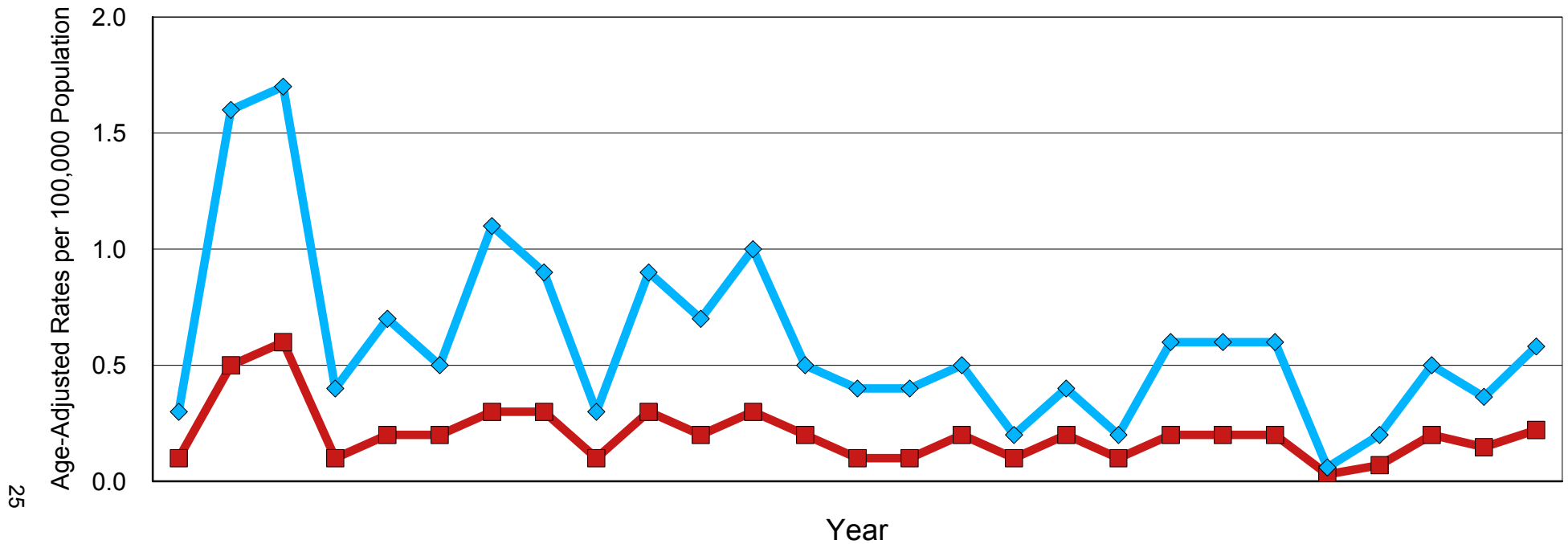
| | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ■ 1940 | 11.0 | 12.4 | 11.6 | 10.7 | 11.6 | 12.0 | 13.1 | 13.3 | 13.1 | 14.0 | 13.5 | 13.7 | 13.1 | 12.5 | 13.3 | 12.8 | 12.8 | 12.6 | 12.9 | 13.0 | 8.6 | 8.8 | 8.3 | 8.5 | 8.1 | 7.6 | 7.8 |
| ◆ 2000 | 25.7 | 29.8 | 28.2 | 26.1 | 28.9 | 30.1 | 33.5 | 33.9 | 33.5 | 36.3 | 35.1 | 35.8 | 34.4 | 32.7 | 34.8 | 33.4 | 33.5 | 32.9 | 33.3 | 34.0 | 22.9 | 23.0 | 21.9 | 22.4 | 21.4 | 19.4 | 19.7 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. CDC WONDER On-line Database, compiled from Compressed Mortality File 1999-2005 Series 20 No. 2K, 2008. Accessed on April 10, 2008.

Note:

(1) 1979-1998 rates reflect the International Classification of Diseases, 9th Revision (ICD-9) Codes 480-486. 1999-2005 rates reflect the International Classification of Diseases, 10th Revision (ICD-10) Codes J12-J18.

FIGURE 2: INFLUENZA- AGE-ADJUSTED DEATH RATES BASED ON THE 1940 AND 2000 STANDARD POPULATION, 1979-2005 ⁽¹⁾



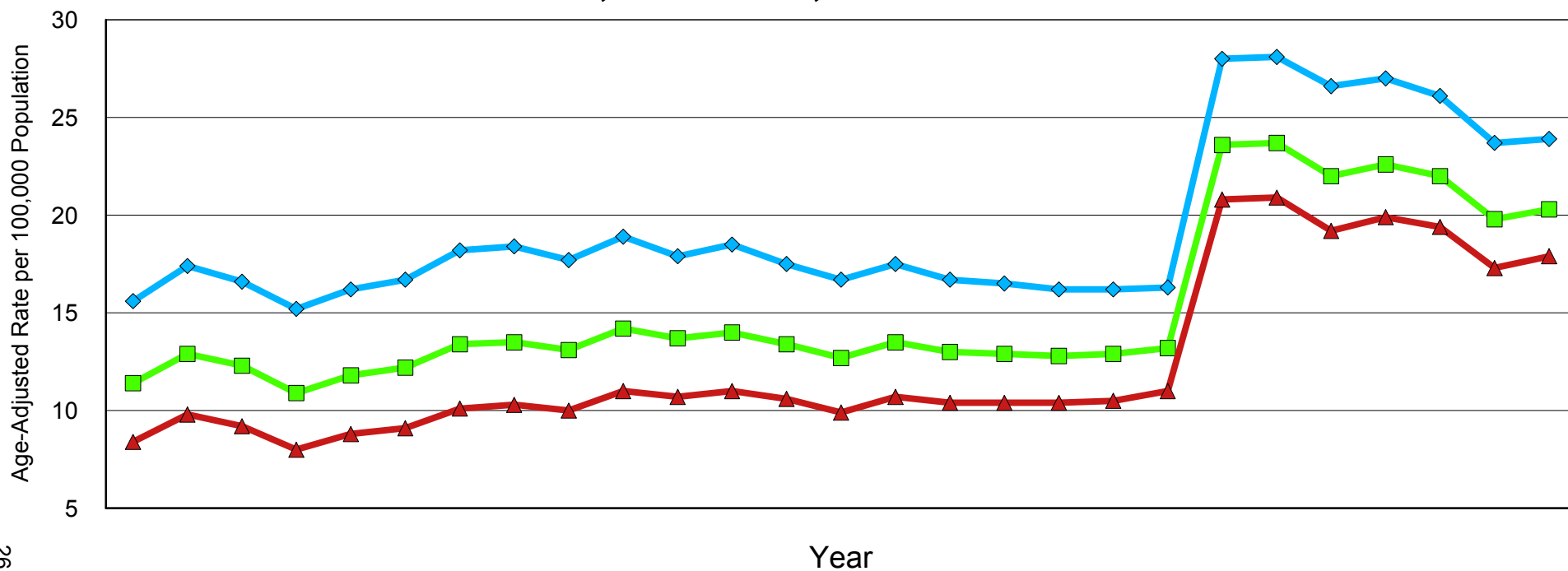
| | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|--------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ■ 1940 | 0.1 | 0.5 | 0.6 | 0.1 | 0.2 | 0.2 | 0.3 | 0.3 | 0.1 | 0.3 | 0.2 | 0.3 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 | 0.2 | 0.2 | 0.2 | 0.0 | 0.1 | 0.2 | 0.1 | 0.2 |
| ◆ 2000 | 0.3 | 1.6 | 1.7 | 0.4 | 0.7 | 0.5 | 1.1 | 0.9 | 0.3 | 0.9 | 0.7 | 1.0 | 0.5 | 0.4 | 0.4 | 0.5 | 0.2 | 0.4 | 0.2 | 0.6 | 0.6 | 0.6 | 0.1 | 0.2 | 0.5 | 0.4 | 0.6 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. CDC WONDER On-line Database, compiled from Compressed Mortality File 1999-2005 Series 20 No. 2K, 2008. Accessed on April 10, 2008

Note:

(1) 1979-1998 rates reflect the International Classification of Diseases, 9th Revision (ICD-9) Code 487. 1999-2005 rates reflect the International Classification of Diseases, 10th Revision (ICD-10) Codes J10-J11.

FIGURE 3: PNEUMONIA AND INFLUENZA - AGE-ADJUSTED DEATH RATE BY SEX, 1979-1998, 1999-2005 ^(1,2)



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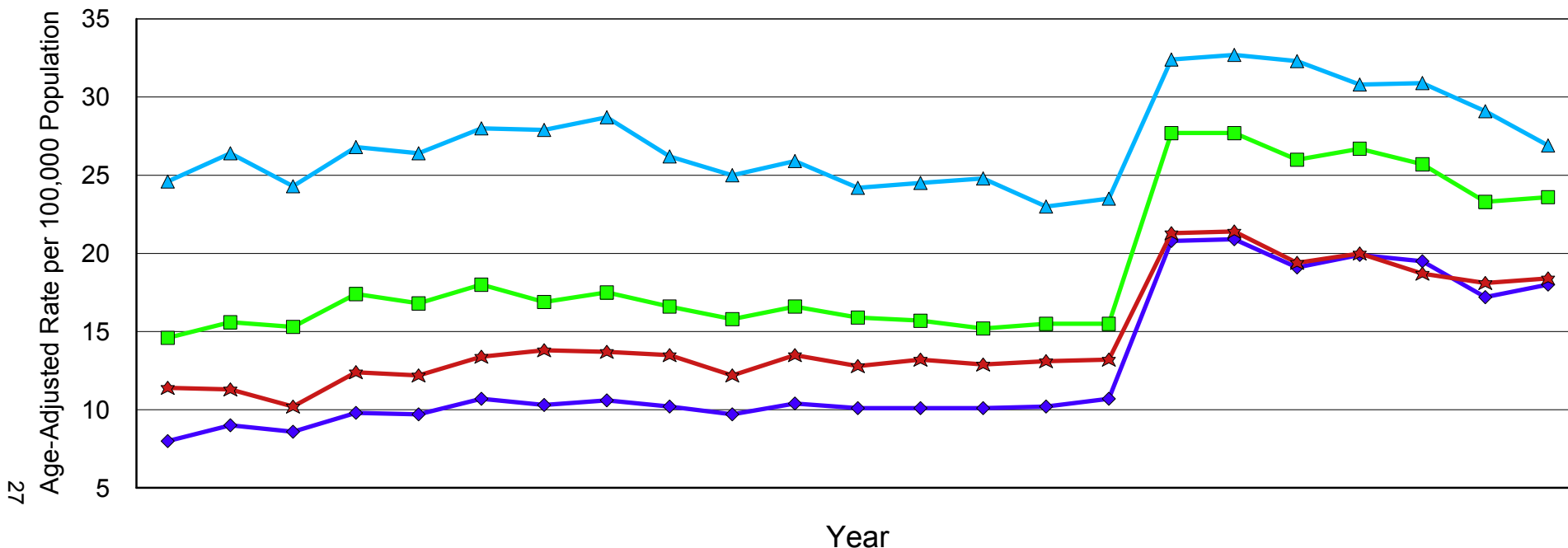
| | 1979 | 1980 | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ■ Total | 11.4 | 12.9 | 12.3 | 10.9 | 11.8 | 12.2 | 13.4 | 13.5 | 13.1 | 14.2 | 13.7 | 14.0 | 13.4 | 12.7 | 13.5 | 13.0 | 12.9 | 12.8 | 12.9 | 13.2 | 23.6 | 23.7 | 22.0 | 22.6 | 22.0 | 19.8 | 20.3 |
| ◆ Male | 15.6 | 17.4 | 16.6 | 15.2 | 16.2 | 16.7 | 18.2 | 18.4 | 17.7 | 18.9 | 17.9 | 18.5 | 17.5 | 16.7 | 17.5 | 16.7 | 16.5 | 16.2 | 16.2 | 16.3 | 28.0 | 28.1 | 26.6 | 27.0 | 26.1 | 23.7 | 23.9 |
| ▲ Female | 8.4 | 9.8 | 9.2 | 8.0 | 8.8 | 9.1 | 10.1 | 10.3 | 10.0 | 11.0 | 10.7 | 11.0 | 10.6 | 9.9 | 10.7 | 10.4 | 10.4 | 10.4 | 10.5 | 11.0 | 20.8 | 20.9 | 19.2 | 19.9 | 19.4 | 17.3 | 17.9 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. CDC WONDER On-line Database, compiled from Compressed Mortality File 1999-2005 Series 20 No. 2K, 2008. Accessed on April 10, 2008.

Notes:

- (1) The increase seen between 1998 and 1999 was a result of the change in the age-adjusted standard U.S. population from 1940 to 2000, not an actual increase in the number of deaths for pneumonia and influenza.
- (2) 1979-1998 rates reflect the International Classification of Diseases, 9th Revision (ICD-9) Codes 480-487. 1999-2005 rates reflect the International Classification of Diseases, 10th Revision (ICD-10) Codes J10-J18.

FIGURE 4: PNEUMONIA AND INFLUENZA - AGE-ADJUSTED DEATH RATE BY SEX AND RACE, 1979-1998, 1999-2005 ^(1,2)

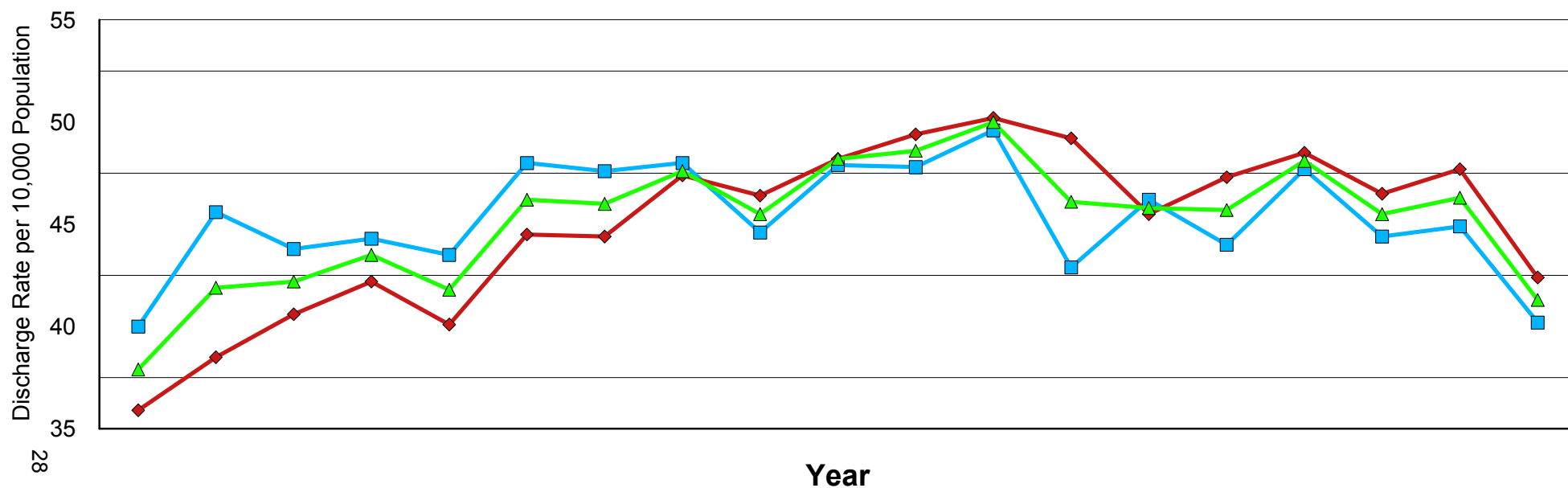


| | 1979 | 1981 | 1983 | 1985 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| White Males | 14.6 | 15.6 | 15.3 | 17.4 | 16.8 | 18.0 | 16.9 | 17.5 | 16.6 | 15.8 | 16.6 | 15.9 | 15.7 | 15.2 | 15.5 | 15.5 | 27.7 | 27.7 | 26.0 | 26.7 | 25.7 | 23.3 | 23.6 |
| White Females | 8.0 | 9.0 | 8.6 | 9.8 | 9.7 | 10.7 | 10.3 | 10.6 | 10.2 | 9.7 | 10.4 | 10.1 | 10.1 | 10.1 | 10.2 | 10.7 | 20.8 | 20.9 | 19.1 | 19.9 | 19.5 | 17.2 | 18.0 |
| Black Males | 24.6 | 26.4 | 24.3 | 26.8 | 26.4 | 28.0 | 27.9 | 28.7 | 26.2 | 25.0 | 25.9 | 24.2 | 24.5 | 24.8 | 23.0 | 23.5 | 32.4 | 32.7 | 32.3 | 30.8 | 30.9 | 29.1 | 26.9 |
| Black Females | 11.4 | 11.3 | 10.2 | 12.4 | 12.2 | 13.4 | 13.8 | 13.7 | 13.5 | 12.2 | 13.5 | 12.8 | 13.2 | 12.9 | 13.1 | 13.2 | 21.3 | 21.4 | 19.4 | 20.0 | 18.7 | 18.1 | 18.4 |

Source: Centers for Disease Control and Prevention. National Center for Health Statistics. CDC WONDER On-line Database, compiled from Compressed Mortality File 1999-2005 Series 20 No. 2K, 2008. Accessed on April 10, 2008.

- Notes:
- (1) The increase seen between 1998 and 1999 was a result of the change in the age-adjusted standard U.S. population from 1940 to 2000, not an actual increase in the number of deaths for pneumonia and influenza.
 - (2) 1979-1998 rates reflect the International Classification of Diseases, 9th Revision (ICD-9) Codes 480-487. 1999-2005 rates reflect the International Classification of Diseases, 10th Revision (ICD-10) Codes J10-J18.

**FIGURE 5: PNEUMONIA - FIRST-LISTED HOSPITAL DISCHARGE RATE
BY SEX, 1988-2006 ^(1,2)**



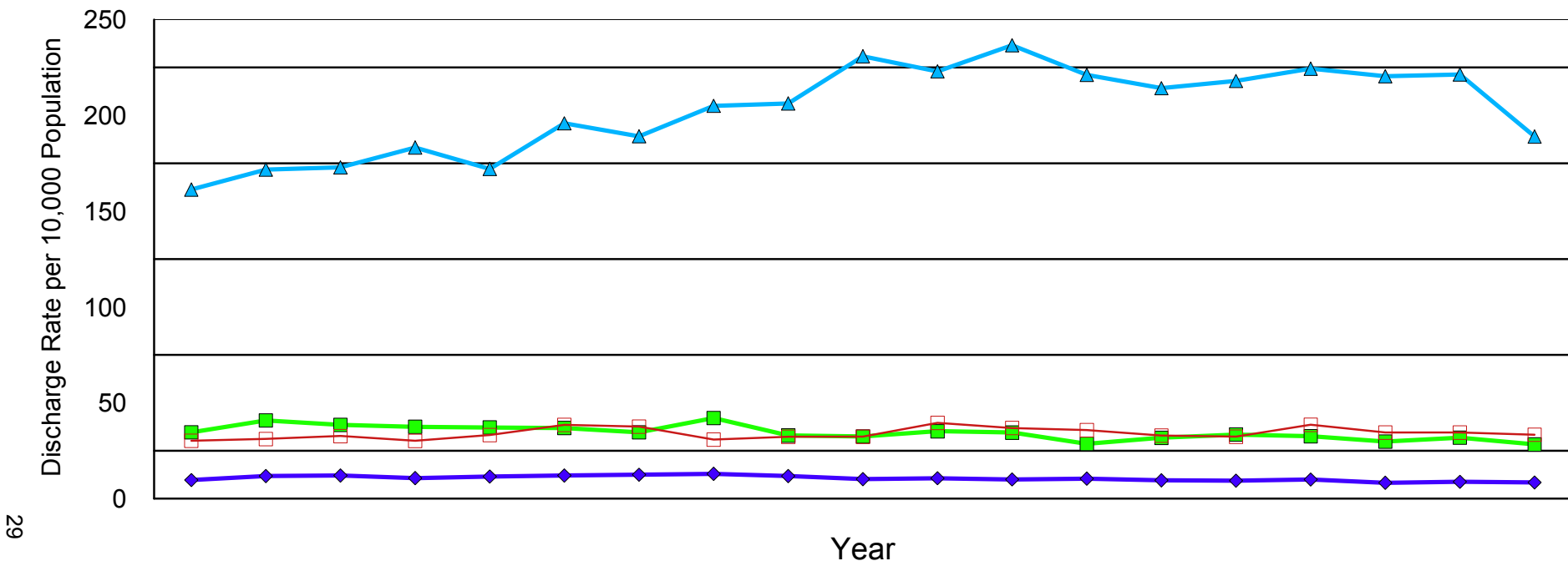
| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ■ Male | 40.0 | 45.6 | 43.8 | 44.3 | 43.5 | 48.0 | 47.6 | 48.0 | 44.6 | 47.9 | 47.8 | 49.6 | 42.9 | 46.2 | 44.0 | 47.7 | 44.4 | 44.9 | 40.2 |
| ◆ Female | 35.9 | 38.5 | 40.6 | 42.2 | 40.1 | 44.5 | 44.4 | 47.4 | 46.4 | 48.2 | 49.4 | 50.2 | 49.2 | 45.5 | 47.3 | 48.5 | 46.5 | 47.7 | 42.4 |
| ▲ Total | 37.9 | 41.9 | 42.2 | 43.5 | 41.8 | 46.2 | 46.0 | 47.6 | 45.5 | 48.2 | 48.6 | 50.0 | 46.1 | 45.8 | 45.7 | 48.1 | 45.5 | 46.3 | 41.3 |

Source: Centers for Disease Control and Prevention. National Center For Health Statistics. National Hospital Discharge Survey, 1988-2006. Unpublished Data provided by NCHS upon special request.

Notes:

- (1) Data from 1988-2006 may not be comparable to earlier years, due to the redesign of the survey.
- (2) Because these estimates are based on a sample, they may differ from figures that would be obtained from a census of the population. Each data point reported is an estimate of the true population value and subject to sampling variability.

FIGURE 6: PNEUMONIA - FIRST-LISTED HOSPITAL DISCHARGE RATE BY AGE, 1988-2006 ^(1,2)



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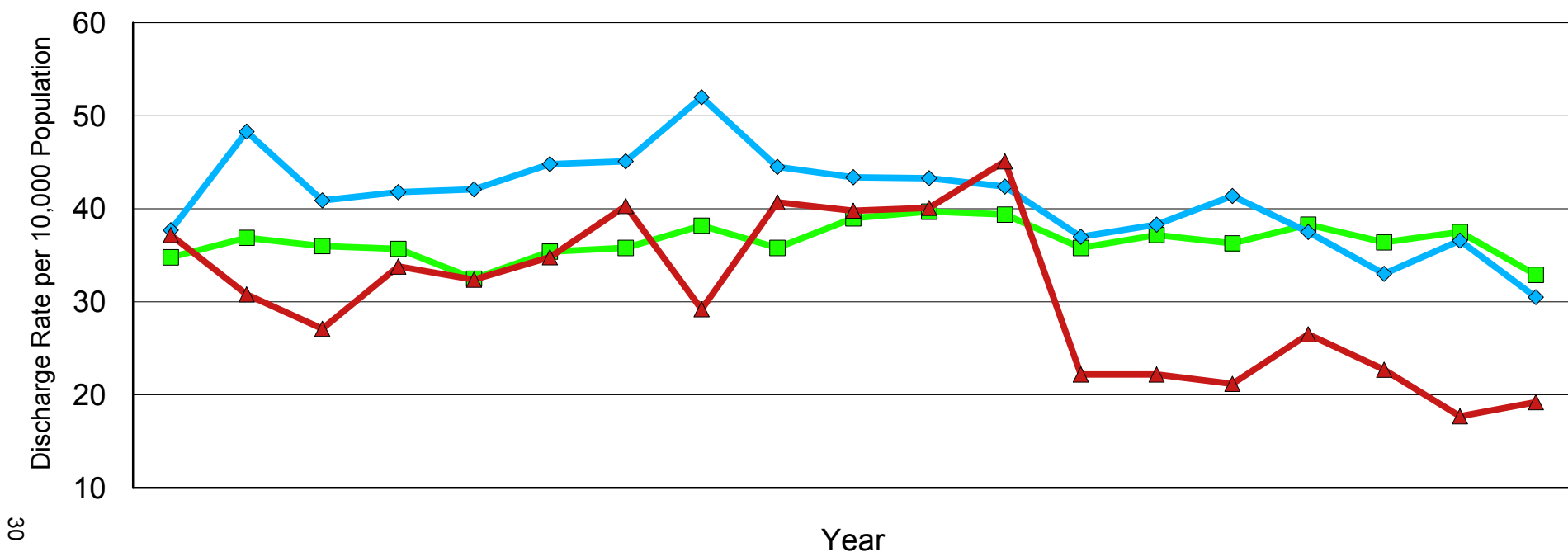
| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| ■ <15 | 34.7 | 40.9 | 38.5 | 37.5 | 37.2 | 36.9 | 34.7 | 42.1 | 33.0 | 32.5 | 35.2 | 34.5 | 28.6 | 31.8 | 33.5 | 32.6 | 29.8 | 31.9 | 28.3 |
| ◆ 15-44 | 9.7 | 11.8 | 12.1 | 10.8 | 11.5 | 12.1 | 12.5 | 13.0 | 11.8 | 10.2 | 10.7 | 10.1 | 10.5 | 9.6 | 9.4 | 10.0 | 8.3 | 8.8 | 8.5 |
| □ 45-64 | 30.3 | 31.2 | 32.7 | 30.2 | 33.2 | 38.5 | 37.6 | 30.9 | 32.3 | 32.4 | 39.6 | 36.9 | 35.8 | 32.9 | 32.4 | 38.6 | 34.5 | 34.5 | 33.4 |
| ▲ 65+ | 161.3 | 171.8 | 172.9 | 183.3 | 172.1 | 195.9 | 189.1 | 205.0 | 206.3 | 230.9 | 223.0 | 236.6 | 221.2 | 214.2 | 218.0 | 224.4 | 220.4 | 221.3 | 189.0 |

Source: Centers for Disease Control and Prevention. National Center For Health Statistics. National Hospital Discharge Survey, 1988-2006. Unpublished Data provided by NCHS upon special request.

Notes:

- (1) Data from 1988-2006 may not be comparable to earlier years, due to the redesign of the survey.
- (2) Because these estimates are based on a sample, they may differ from figures that would be obtained from a census of the population. Each data point reported is an estimate of the true population value and subject to sampling variability.

FIGURE 7: PNEUMONIA - FIRST- LISTED HOSPITAL DISCHARGE RATES BY RACE, 1988-2006 ^(1,2,3)

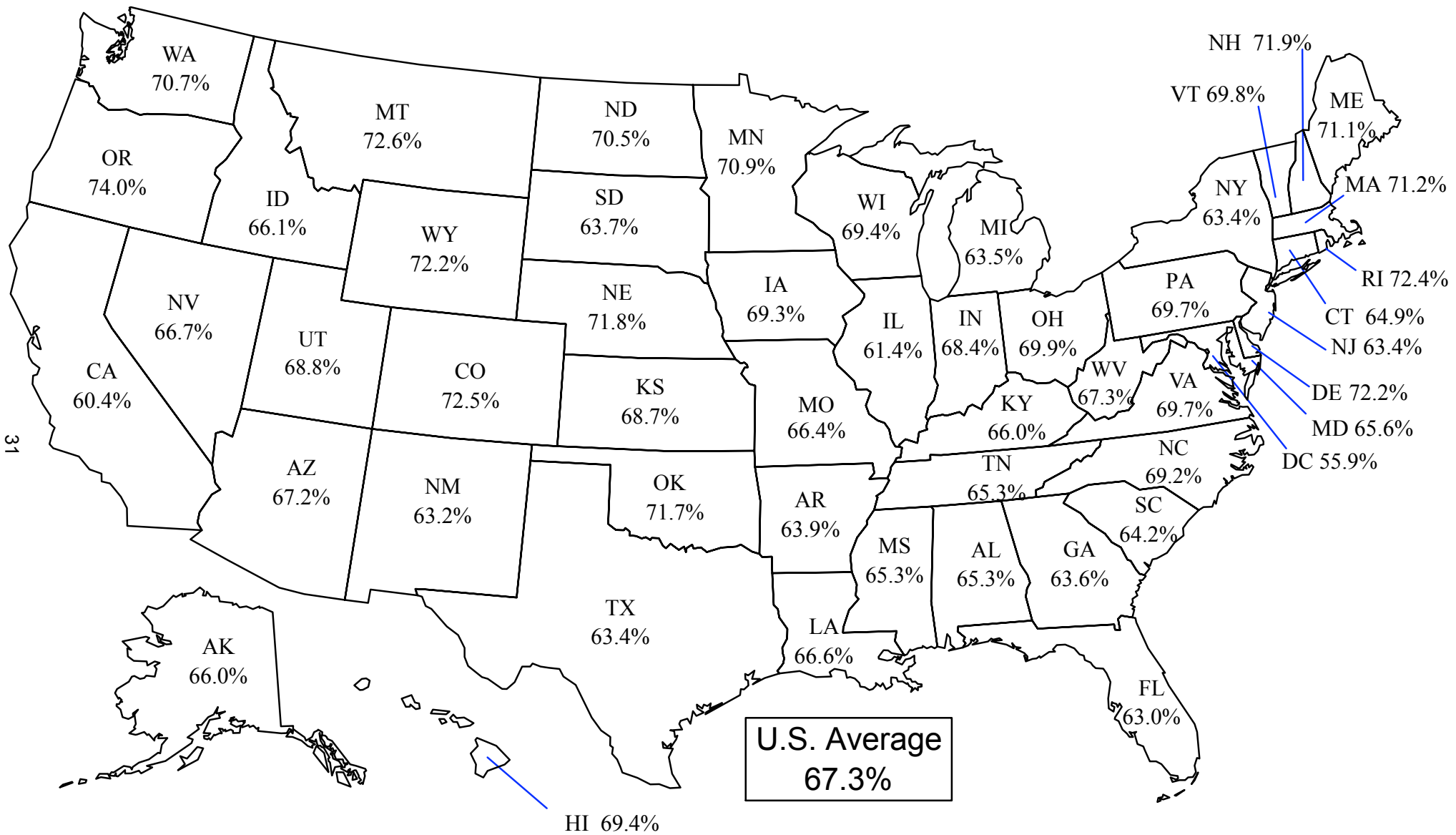


| | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ■ White | 34.8 | 36.9 | 36.0 | 35.7 | 32.5 | 35.4 | 35.8 | 38.2 | 35.8 | 39.0 | 39.7 | 39.4 | 35.8 | 37.2 | 36.3 | 38.3 | 36.4 | 37.5 | 32.9 |
| ◆ Black | 37.7 | 48.3 | 40.9 | 41.8 | 42.1 | 44.8 | 45.1 | 52.0 | 44.5 | 43.4 | 43.3 | 42.4 | 37.0 | 38.3 | 41.4 | 37.5 | 33.0 | 36.6 | 30.5 |
| ▲ Other | 37.2 | 30.8 | 27.1 | 33.8 | 32.4 | 34.8 | 40.3 | 29.2 | 40.7 | 39.8 | 40.1 | 45.1 | 22.2 | 22.2 | 21.2 | 26.5 | 22.7 | 17.7 | 19.2 |

Source: Centers for Disease Control and Prevention. National Center For Health Statistics. National Hospital Discharge Survey, 1988-2006. Unpublished Data provided by NCHS upon special request.

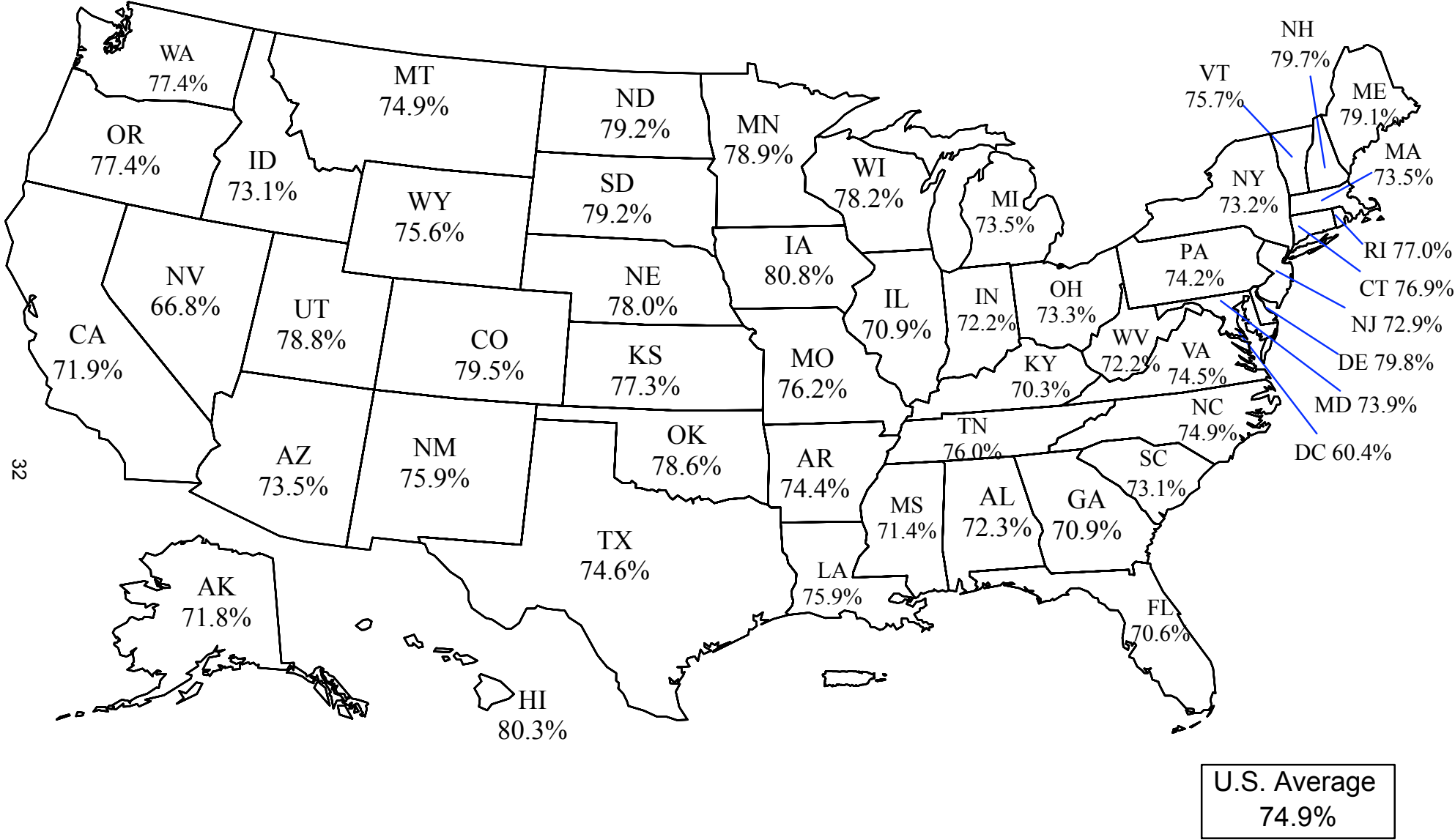
- Notes:
- (1) Between 1988 and 2006, the number of discharges not reporting race increased dramatically. It appears that hospital discharges in whites might be disproportionately underestimated, particularly in later years. For this reason, comparisons between races should be made with caution.
 - (2) Data from 1988-2006 may not be comparable to earlier years, due to the redesign of the survey.
 - (3) Because these estimates are based on a sample, they may differ from figures that would be obtained from a census of the population. Each data point reported is an estimate of the true population value and subject to sampling variability.

FIGURE 8: PERSONS AGE 65 OR OLDER EVER RECEIVING PNEUMOCOCCAL VACCINATION, 2007



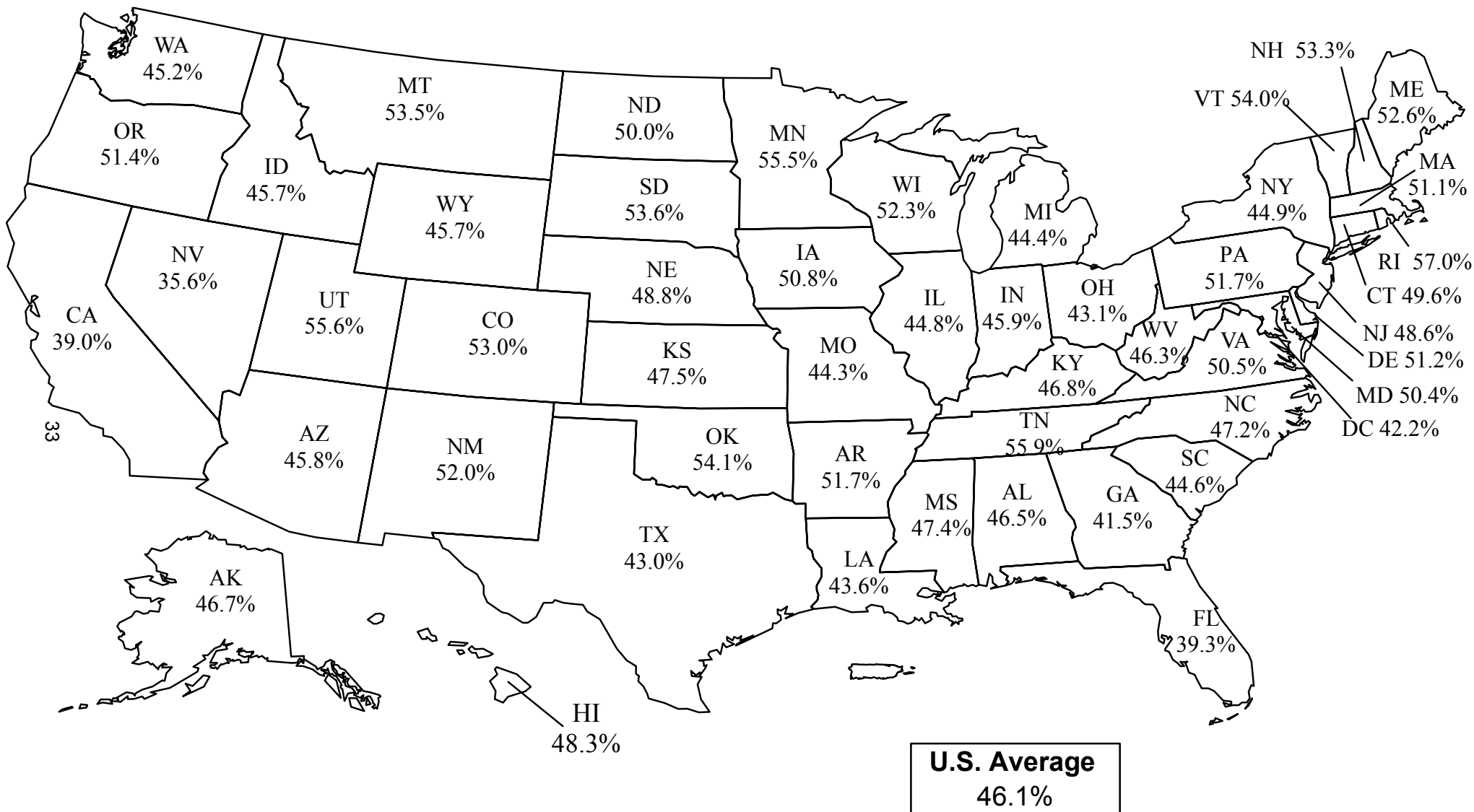
Source: Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance System. Prevalence Data, 2007.

FIGURE 9: 2004 FEE-FOR-SERVICE MEDICARE BENEFICIARIES, AGE 65 OR OLDER RECEIVING A FLU SHOT



SOURCE: CENTERS FOR MEDICARE AND MEDICAID SERVICES. CONSUMER ASSESSMENT OF HEALTH PROVIDERS AND SYSTEMS (CAHPS)

FIGURE 10: PERCENTAGE OF ADULTS WITH ASTHMA WHO RECEIVED THE FLU SHOT, 2007



Source: Centers for Disease Control and Prevention. Behavioral Risk Factor Surveillance Survey raw data, 2007. Analysis by the Research and Program Services Division of the American Lung Association.