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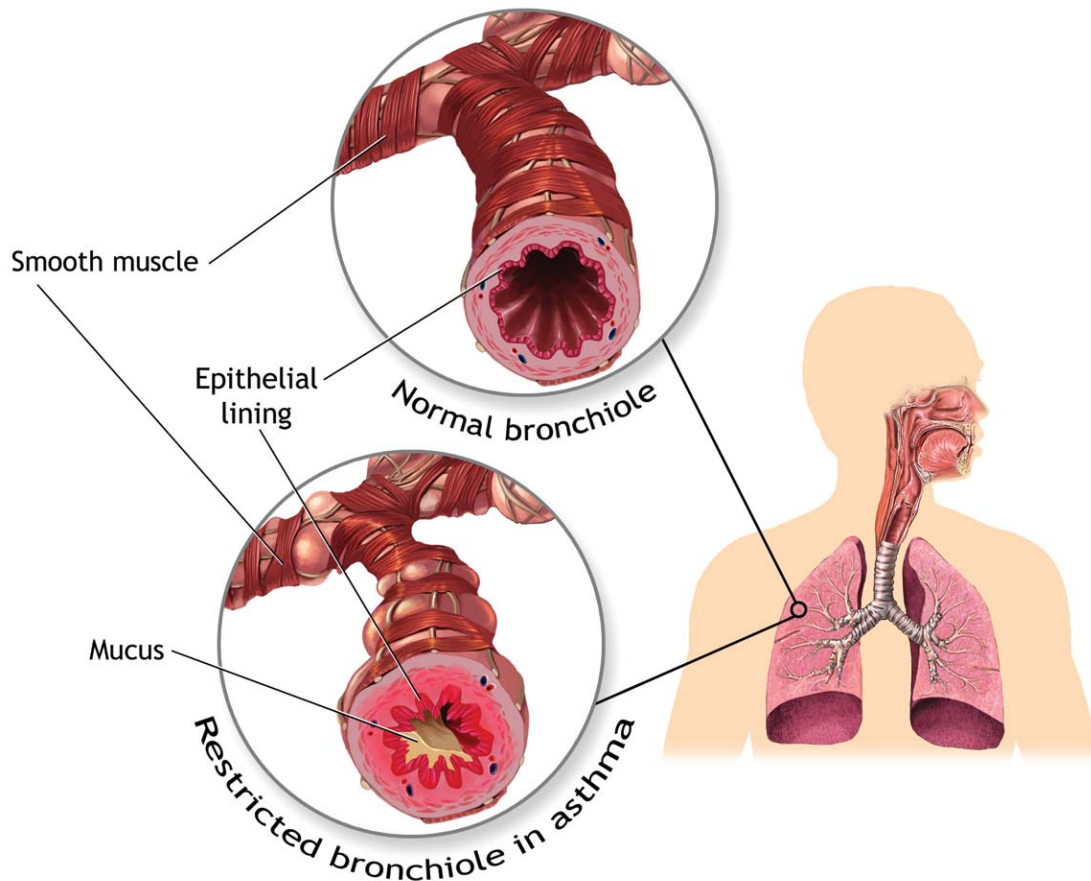
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National Surveillance for Asthma — United States, 1980–2004



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On the cover: Enlargement of a normal bronchiole (top) and a bronchiole when restricted by asthma (bottom). © 2007 A.D.A.M., Inc., Atlanta, GA.

National Surveillance for Asthma — United States, 1980–2004

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Abstract

Problem/Condition: Asthma, a chronic respiratory disease with episodic symptoms, increased in prevalence during 1980–1996 in the United States. Asthma has been the focus of numerous provider interventions (e.g., improving adherence to asthma guidelines) and public health interventions during recent years. Although the etiology of asthma is unknown, adherence to medical treatment regimen and environmental management should reduce the occurrence of exacerbations and lessen the hardship of this disease. CDC has outlined a public health approach to asthma that includes comprehensive analyses of national surveillance data on prevalence, health-care use and mortality, and a strategy to improve the timeliness and geographic specificity of asthma surveillance data.

Reporting Period Covered: This report presents national data on asthma for self-reported prevalence (1980–1996 and 2001–2004); self-reported attacks (1997–2004); visits to physicians' offices (1980–2004), hospital outpatient departments (1992–2004), and emergency departments (1992–2004); hospitalizations (1980–2004); and deaths (1980–2004).

Description of Systems: The National Health Interview Survey includes questions about asthma prevalence and asthma attacks. Physicians' office visit data are collected in the National Ambulatory Medical Care Survey, emergency department and hospital outpatient data in the National Hospital Ambulatory Medical Care Survey, hospitalization data in the National Hospital Discharge Survey, and death data in the Mortality component of the National Vital Statistics System.

Results: From 1980 to 1996, 12-month asthma prevalence increased both in counts and rates, but no discernable change was identified in asthma attack estimates since 1997 or in current asthma prevalence from 2001 to 2004. During the period of increasing prevalence, patient encounters (office visits, emergency department visits, outpatient visits, and hospitalizations) for asthma increased. However, rates for these encounters, when based on the population with asthma, did not increase. Although the rate of asthma deaths increased during 1980–1995, the rate of deaths has decreased each year since 2000.

During 2001–2003, current asthma prevalence was higher in children (8.5%) compared with adults (6.7%), females (8.1%) compared with males (6.2%), blacks (9.2%) compared with whites (6.9%), those of Puerto Rican descent (14.5%) compared with those of Mexican descent (3.9%), those below the federal poverty level (10.3%) compared with those at or above the federal poverty level (6.4% to 7.9%), and those residing in the Northeast (8.1%) compared with those residing in other regions (6.7% to 7.5%).

Among persons with current asthma, whites and blacks were equally likely to report an attack during the preceding 12 months. Women with current asthma were more likely to report asthma attacks than men, and children were more likely than adults. The rate for asthma health-care encounters, regardless of place (physician office, emergency department, outpatient department, or hospital), when based on the population with asthma, did not differ by race. However, whites with current asthma had higher rates for physician offices, and blacks had higher rates for hospital-based sites (e.g., outpatient clinics and emergency departments).

Interpretation: The findings in this report suggest that from 1980 through the mid-1990s, increases in asthma prevalence played a substantial role in the increases in patient encounter measures used in asthma surveillance. Because no primary strategies for preventing asthma have been identified, efforts to control asthma exacerbations through interventions that promote adhering to proper medical regimens and reducing exposures to causes of asthma exacerbations should continue to be pursued.

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interventions that promote adhering to proper medical regimens and reducing exposures to causes of asthma exacerbations should continue to be pursued.

Introduction

Asthma is a chronic inflammatory disorder of the airways characterized by episodic and reversible airflow obstruction and airway hyperresponsiveness. Clinical manifestations include wheezing, coughing, and shortness of breath. Although the pathophysiology of asthma is fairly well understood, the exact etiology is not. Following medical management guidelines and avoiding exposure to environmental allergens and irritants that are known to exacerbate asthma are factors that can contribute to the long-term management of asthma.

The specific measures used to assess asthma morbidity and mortality have changed since the 1960s; however, the findings of previous studies are consistent with an increase in asthma burden (1–3). Estimates of asthma 12-month period prevalence* indicated that approximately 3.0% of the population had asthma in 1970 (1). Estimates from CDC's 2002 Asthma Surveillance Summary indicated that asthma 12-month period prevalence was 5.5% in 1996 (3). Asthma mortality rates increased during 1979–1996, but not during 1996–1998. From 1979 through 1998, deaths were categorized using the *International Classification of Diseases, Ninth Revision* (ICD-9) (4). The tenth revision (ICD-10) was implemented in 1999 (5) after which asthma mortality rates declined. Part of the decline was a result of the coding change.

Information on the burden of asthma is provided from self-reported asthma episodes or attacks, physician office visits or hospital outpatient visits, emergency department visits, and hospital inpatient stays. Expressed as population-based rates, each of the measures used in the 2002 Surveillance Summary indicated either increasing or stable asthma burden, at least through the 1990s (3).

A 1987 report that included asthma surveillance data for 1965–1984 identified a disparate burden in certain demographic subgroups (age, sex, and race) (1). Subsequent asthma surveillance reports confirmed the disparities and documented their persistence over time (2,3). These reports indicated that population-based prevalence rates, emergency department rates, and hospitalization rates were higher in blacks than whites, higher in females than males, and higher in children than adults and that office visit rates were higher in females than males, higher in children than adults, but lower in blacks than in whites. The only measure for which adults exceeded children was asthma mortality rates (1–3). Previous reports also indicated that mortality rates were higher for blacks than whites and higher for women than men. Subsequently, more

detailed analysis of ethnicity data demonstrated that among Hispanics, Puerto Ricans had higher prevalence and death rates than other Hispanics (e.g., Mexicans), non-Hispanic blacks, and non-Hispanic whites (6,7).

Asthma is a key component in the respiratory disease chapter of the *Healthy People 2010* (HP 2010) objectives (8). These objectives include reducing asthma deaths (objective 24-1), reducing hospitalizations for asthma (objective 24-2), reducing hospital emergency department visits for asthma (objective 24-3), reducing activity limitations among persons with asthma (objective 24-4), reducing the number of school or work days missed by persons with asthma because of asthma (objective 24-5), increasing the proportion of persons with asthma who receive formal patient education (objective 24-6), increasing the proportion of persons with asthma who receive appropriate asthma care according to the National Asthma Education and Prevention Program (NAEPP) guidelines (objective 24-7) (9,10), and establishing an asthma surveillance system in at least 25 states (objective 24-8). CDC's National Asthma Control Program (NACP), established by the National Center for Environmental Health (NCEH) in 1999, supports the goals and objectives of HP 2010 by providing funds to 35 states and territories and seven cities to implement asthma interventions that impact these goals and objectives. NACP supports a strategy for a comprehensive public health approach to asthma that includes interventions, partnerships, and surveillance (11).

The surveillance component of the public health approach to asthma includes analyzing national data on prevalence, health-care use, and mortality and improving the detail and geographic specificity of asthma surveillance data. NCEH added asthma-specific questions to the Behavioral Risk Factor Surveillance System (BRFSS) in 1999 (12). NCEH also supports and promotes questions about asthma in the National Longitudinal Survey of Youth, the National Health Interview Survey (NHIS) *Healthy People 2010* supplements, the National Survey of Children's Health (NSCH), and the Youth Risk Behavior Survey. In addition, NCEH developed a detailed asthma survey for state implementation originally piloted as the National Asthma Survey (NAS) through the State and Local Area Integrated Telephone Survey (SLAITS) in 2003 (13). Beginning in 2005, this detailed asthma survey has been administered through BRFSS as a follow-up survey. Respondents who indicate that they have ever had asthma are called back and asked additional questions about their asthma. In 2006, a total of 25 states conducted the Asthma Call-Back Survey, and 35 states are conducting the Asthma Call-Back Survey in 2007. Before NACP development and financing of asthma questions and surveys, no source for detailed state-

* Period prevalence is the prevalence of a disease over a duration of time. During 1980–1996, 12-month asthma prevalence was determined by an affirmative response to the question, "During the past 12 months has anyone in the family had asthma?"

level asthma data existed. However, state-level prevalence estimates from multiple years of data can be calculated from the national-level NHIS with technical assistance from the Research Data Center at the National Center for Health Statistics (NCHS). The state-level data obtained through these surveys can be used for planning and evaluating asthma programs and interventions at the state and local level.

Timeliness has improved in national surveillance data. NCHS releases data from NHIS within 6 months of the end of the survey year. Early releases of asthma prevalence rates also are published quarterly (14). In addition, in 1999, 2002, and 2003, the NHIS included supplements that collected information about the management and control of asthma (15). Data and reports released subsequent to the preparation of this report are available from NCHS[†].

This report is the third in a series of national surveillance summaries on the burden of asthma (2,3). It includes estimates for recent years that are consistent with those presented in the 2002 Surveillance Summary.[§] In this report, data about hospital outpatient visits for asthma are presented separately from ambulatory visits to physicians' offices. In addition, this report expands the content of previous surveillance summaries by providing information for demographic groups not previously included and introduces an at-risk-based rate to complement the population-based rates provided in earlier reports. Historically, outcome data for asthma were presented as population-based rates (the general population was the denominator of the rate). However, the population at risk for outcomes from asthma is persons who have asthma. The at-risk-based rates restrict the denominator of the rates to those with asthma.

Methods

Asthma prevalence and morbidity data were obtained from national health surveys conducted by NCHS. Asthma prevalence data (1980–1996 and 2001–2004) and episode or attack data (1997–2004) were obtained from NHIS. Physician office visit data (1980–2004) were obtained from the National Ambulatory Medical Care Survey (NAMCS). Hospital outpatient visit data (1992–2004) and emergency department data (1992–2004) were obtained from the National Hospital Ambulatory Medical Care Survey (NHAMCS). Hospitalization data (1980–2004) were obtained from the National Hos-

pital Discharge Survey (NHDS). Death data (1980–2004) were taken from the National Vital Statistics System (NVSS) mortality files. Details related to survey methodology, changes over time, and analytic procedures also are presented (Appendix).

In this report, data are presented for selected individual years (1980, 1985, 1990, and 1995) and for each recent year (2000–2004). For emergency department and hospital outpatient visits, data are presented for 1992 because that was the first year those data were collected. Data are also presented for three combined years (2001–2003). These 3 years of survey data were aggregated to provide average annual estimates for detailed demographic subgroups. Combining 3 years of data provided more stable estimates by increasing the sample size and, consequently, reducing the standard errors. Because of time limitations related to differing data file release dates and the processing requirements for producing the combined year estimates, the tables that present the average annual estimates for the three combined years did not extend to 2004. However, tables that include 2004 are available at <http://www.cdc.gov/asthma/asthmadata.htm#mmwr>.

Both counts and rates are provided in this report. The counts provide insight into the burden of the disease on the health-care system and society and provide perspective for the rates. The rates control for population size differences among the demographic groups and give additional insight into varying prevalence of the disease, its severity, management, and control.

Rates were calculated using two methods. The denominator for the first rate (population-based) is the U.S. population appropriate to the particular data source. The denominator for the second rate (at-risk-based) is an estimate of persons with asthma. Rates based on the U.S. population were age-adjusted using the 2000 U.S. population distribution in 11 age categories (aged <1 year and 1–4, 5–14, 15–24, 25–34, 35–44, 45–54, 55–64, 65–74, 75–84, and ≥85 years) when sample size allowed. The at-risk-based rates provide additional understanding of changes over time in attacks, office visits, emergency department visits, hospitalizations, and deaths during a long period of increasing prevalence. These at-risk-based rates can be used to compare the risk for outcomes (e.g., hospitalizations or deaths) among the subgroup controlling for differing levels of prevalence.

The race and ethnicity categories in this report follow the Office of Management and Budget's (OMB) standards for reporting race and ethnicity data to the extent possible. Data collected before 2000 followed OMB's 1977 Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (16). Race groups were categorized as "white," "black," and "other." The "other" category included Asian, American Indian or Alaska Native

[†] Each of the national health surveys and NVSS can be accessed at <http://www.cdc.gov/nchs/express.htm>.

[§] School and work days lost because of asthma are not included in this report because of changes in the survey questions that make the results incomparable to the 2002 Surveillance Summary.

(AIAN), Native Hawaiian or Other Pacific Islander (NHOPI), or an "other" race reported by the respondent. Data collected from 2000 and afterwards followed OMB's 1997 revision of Statistical Policy Directive No. 15 and, in this report, also were presented in the categories of "white," "black," and "other" (17,18). However, under the 1997 revision, the race categories of "white" and "black" include only the respondents who identified as single-race white or single-race black; "other" includes respondents who identified as multiple race, in addition to Asian, AIAN, NHOPI, or an "other" race reported by the respondent.

The 1997 revision of Statistical Policy Directive No. 15 changed the ethnicity category from "Hispanic" to "Hispanic or Latino," but the definition of persons in that category remained the same. In this report, the ethnicity category includes only "Hispanic or Latino" and "Not Hispanic or Latino" because subgroups of Hispanic are not available for most data sources. However, for prevalence estimates from NHIS, Mexican and Puerto Rican subgroups are included.

For the 3-year period 2001–2003, average annual asthma prevalence estimates by poverty status were provided; poverty information was only available for prevalence data. For each of the data sets, estimates also were provided for geographic regions as defined by the U.S. Bureau of the Census.[§]

For all survey data, survey weights were used to calculate population-based estimates. Except for hospital discharge survey data for 1980 and 1985 and death record data, standard errors were calculated using SUDAAN (19) to account for each survey's complex sample design. Standard errors for hospital discharge survey estimates for 1980 and 1985 were calculated using approximation procedures provided by NCHS. Standard errors for the number of deaths were estimated by calculating the square root of the number of deaths, and standard errors for the crude death rates were estimated by dividing the rate by the square root of the number of deaths (20). Standard errors for the age-adjusted population-based rates were calculated as weighted linear combinations, assuming the population denominator was a constant (21). Standard errors for the at-risk-based rates, which used estimates of the number of persons with asthma in the denominator rather than a population constant, were calculated using the formula for ratios and assumed independent observations (covariance = 0) (22). Relative standard errors were calculated by dividing the standard errors by the estimates and multiplying by 100. Standard errors were used in significance tests, and relative standard errors were used to indicate unreliable esti-

mates in the accompanying tables but otherwise were not included in this report.

All stated comparisons (e.g., higher, lower, increased, and decreased) indicate that a nondirectional, 2-tailed z test was significant at the $p < 0.05$ level. Only selected comparisons among the demographic groups were tested. For additional testing, standard error tables are available at <http://www.cdc.gov/asthma/asthmadata.htm>.

For some comparisons, if a sufficient number of years of data were available, standard linear regression was used to evaluate trends over time. Although the tables provided show only 5-year intervals, data for the intervening years were included in the trend assessment.

Prevalence and Attacks

NHIS is conducted using a complex design probability sample of the civilian, noninstitutionalized U.S. population (23). The survey is administered by in-person interview in the sample household. Before 1997, asthma 12-month period prevalence was determined by an affirmative response to the question "During the past 12 months has anyone in the family had asthma?" Since 1997, three new asthma prevalence measures have been introduced, none of which is comparable to asthma 12-month prevalence. These include lifetime asthma prevalence, which is determined by an affirmative response to the question "Has a doctor or other health professional ever told you that you had asthma?" (added in 1997); asthma attack prevalence, which is determined by an affirmative response to the question "During the past 12 months, have you had an episode of asthma or an asthma attack?" (added in 1997); and current asthma prevalence, which is determined by a positive response to the question "Do you still have asthma?" (added in 2001).

In this report, 12-month asthma period prevalence estimates are presented as counts and as a percent of the civilian, noninstitutionalized U.S. population for 5-year intervals during 1980–1995 (1980, 1985, 1990, and 1995). Current asthma prevalence estimates are expressed as average annual counts and as average annual percents of the civilian, noninstitutionalized population for the 3-year period 2001–2003 and as counts and as a percent of the civilian noninstitutionalized U.S. population for single years during 2001–2004. Asthma attack estimates are expressed as average annual counts of persons who had at least one asthma attack during the preceding 12 months, as average annual prevalence in the population, and as average annual percentages of those with current asthma for the 3-year period 2001–2003. Single-year estimates are provided during 1997–2004 for the number of persons reporting an asthma attack during the pre-

[§] Categorization of states in regions is available at http://www.census.gov/geo/www/us_regdiv.pdf.

ceding 12 months, the percentage of the population reporting an asthma attack during the preceding 12 months, and the percentage of those with current asthma reporting an asthma attack during the preceding 12 months.

Physician Office Visits

Physician office visit data were collected through NAMCS during 1973–1981, in 1985, and annually since 1989 (24). NAMCS collects data on patient visits from a random sample of office-based physicians. In this report, average annual estimates of office visits with asthma coded as the first listed diagnosis are presented for detailed demographic groups for the 3-year period 2001–2003. Estimates for physician office visits are presented for 5-year intervals during 1980–1995 and for single years during 2000–2004.

Hospital Outpatient Visits and Emergency Department Visits

NCHS collects both hospital outpatient and emergency department visit data using NHAMCS; this survey has been administered annually since 1992 (25). Information about patient visits is collected from a sample of nonfederal, general, and short-stay hospitals (including children's hospitals) with emergency or outpatient departments. In this report, average annual estimates are presented for the number of asthma visits by detailed demographic groups for the 3-year period 2001–2003. Estimates for asthma hospital outpatient visits and for emergency department visits are presented for 1992, 1995, and for single years during 2000–2004.

Hospital Discharges

NCHS has collected hospital discharge data through NHDS since 1965 (26). Data from discharge records for inpatient stays are collected from a sample of nonfederal, general, and short-stay specialty hospitals. Race information was not reported for a large proportion of hospital discharge records (5%–30%). Consequently, discharge records for which race was not reported were excluded from race-specific calculations but were included otherwise. A study of NHDS race data determined that hospitals that did not report race probably had a higher proportion of white discharges than hospitals that did report race (27). As a result, the differences between race groups might be smaller than the estimates in this report indicate. In this report, average annual estimates for hospital discharges for asthma by detailed demographic groups for the 3-year period 2001–2003 are presented. Estimates for asthma hospital discharges are shown for 5-year in-

tervals during 1980–1995 and for single years during 2000–2004.

Mortality

Death records for which asthma was recorded as the underlying cause of death were obtained from the mortality component of NVSS (21). Under ICD-9, which was used during 1979–1998, asthma was coded as 493 (4). Under ICD-10, which has been used since 1999, asthma is coded as J45 and J46 (5). Changes in ICD affected the comparability of data coded according to the different revisions. The asthma comparability ratio for the entire population was 0.89, which indicated that 11% of the decline in asthma mortality from 1998 to 1999 was a result of the ICD revision (28). In this report, average annual deaths and death rates for the 3-year period 2001–2003 with asthma as the underlying cause are presented for detailed demographic groups. Asthma deaths and death rates are shown for 5-year intervals during 1980–1995 and for single years during 2000–2004.

Results

Asthma Prevalence and Attacks

For the 3-year period 2001–2003, an average annual 20 million persons in the United States had asthma (Table 1). Of these, approximately 6.2 million were children (aged <18 years) and 13.8 million were adults. Approximately 2 million persons were aged ≥ 65 years.

Current asthma prevalence was higher in children (8.5%) than in adults (6.7%) and higher in females (8.1%) than in males (6.2%) (Table 2). Male children (9.6%) had higher prevalence than female children (7.4%), but male adults (4.9%) had lower prevalence than female adults (8.4%). The difference in prevalence between blacks and whites was greater for children (12.5% versus 7.7%) than for adults (7.6% versus 6.7%). In general, Hispanics (5.4%) had lower current asthma prevalence than non-Hispanics (7.4%); however, Hispanics of Puerto Rican ancestry (14.5%) had higher prevalence than Hispanics of Mexican ancestry (3.9%). Asthma prevalence rates were higher in the Northeast (8.1%) than in the other three regions and higher in the Midwest (7.5%) than in the South (6.7%) or West (6.8%). Asthma was more prevalent among persons with family income below the federal poverty threshold (10.3%) than among persons with family income at or above the federal poverty threshold (6.4% to 7.9%).

The estimated number of persons with self-reported asthma during the preceding 12 months increased from approximately

6.8 million (3.1%) in 1980 to 14.9 million (5.6%) in 1995 (Tables 3 and 4). During that period, 12-month asthma prevalence in children increased from 3.5% to 7.5%, and 12-month asthma prevalence in adults increased from 2.9% to 5.0%. On the basis of single-year data, a significant linear increase in the 12-month asthma prevalence rate during 1980–1996 occurred (Figure 1). No significant change was observed in the age-adjusted current asthma prevalence rate during 2001–2004 (7.3%, 7.2%, 6.9%, and 7.1%, respectively) (Table 4).

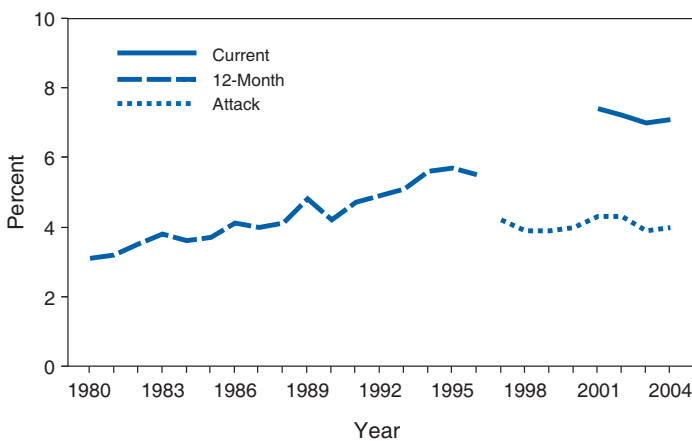
An average annual 11.6 million persons reported at least one asthma attack during the preceding 12 months; 7.5 million were adults and 4.1 million were children (Table 5). Average annual attack prevalence represents asthma attacks in the entire population, not just among those with asthma; therefore, the average annual attack prevalence is affected by varying levels of asthma prevalence among different demographic groups. Children (5.6%) were more likely to experience at least one asthma attack during the preceding 12 months than were adults (3.6%), females (4.8%) were more likely than males (3.5%), and male children (6.5%) were more likely than male adults (2.3%). Female adults and female children were equally likely (4.8%) to experience at least one asthma attack during the preceding 12 months (Table 6). The same general pattern existed within each of the racial and ethnic subgroups; however, the differences were not always statistically significant. The exception to this was among black females: black female children (7.1%) had a higher rate of an attack during the preceding 12 months than black female adults (5.4%). Among regions, the rate of asthma attacks during the preced-

ing 12 months was higher in the Northeast than in the South or West. Among the poverty threshold groups, the rate for asthma attacks during the preceding 12 months was higher in persons with a family income below the federal poverty level.

Among persons with current asthma, 55.6% had one or more asthma attacks during the preceding 12 months (Table 7, Figure 2). In addition to a higher prevalence of asthma, females (56.8%) with current asthma were more likely to have had an attack during the preceding 12 months than males (54.0%), and children (63.1%) were more likely to have had an attack during the preceding 12 months than adults (52.2%). Male children with current asthma were more likely than male adults (64.4% versus 46.2%), and female children with current asthma were more likely than female adults (61.2% versus 55.5%) to have had an attack during the preceding 12 months. No difference was observed in the occurrence of asthma attacks during the preceding 12 months for persons with current asthma among race groups, nor between Hispanics and non-Hispanics. However, among the Hispanic subgroups, persons with current asthma of Puerto Rican descent (62.3%) were more likely to have had an asthma attack during the preceding 12 months than persons of Mexican descent (51.4%). Persons with current asthma and family income at least 4.5 times higher than the federal poverty level (52.9%) were less likely to have had an asthma attack during the preceding 12 months than persons in the lower federal poverty level groups (56.6% to 58.8%).

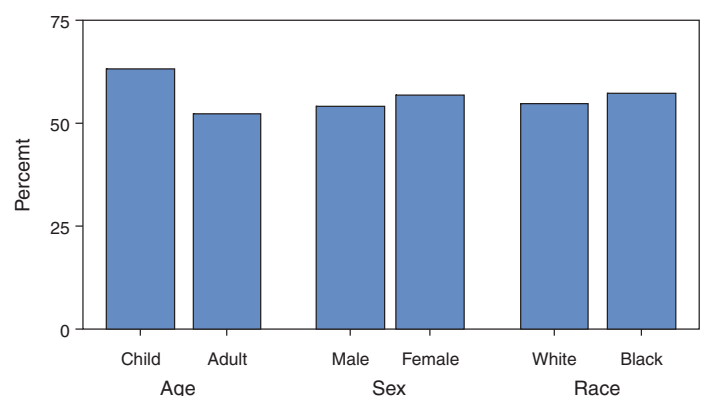
Approximately 11 million persons reported an asthma attack each year during 1997–2004 (Table 8). No discernable trend was observed in the percent of the population reporting an asthma attack during the preceding 12 months (Table 9, Figure 1); however, a significant decline was observed in

FIGURE 1. Estimated prevalence of asthma, by persons who reported an asthma attack during the preceding 12 months, persons who reported having asthma during the preceding 12 months, and persons who reported current asthma — United States, 1980–2004



Source: National Health Interview Survey; National Center for Health Statistics.

FIGURE 2. Estimated percentage of persons with current asthma who reported having had an asthma attack, by age, sex, and race — United States, 2001–2003



Source: National Health Interview Survey; National Center for Health Statistics.

the percent reporting an asthma attack in 2003 (3.9%) when compared with 2002 (4.3%).

In 2001, a total of 55.6% of persons with current asthma reported an attack during the preceding 12 months (Table 10); in 2004, 54.0% reported an attack (decrease not significant). However, a significant decline was observed in reported attacks among those with current asthma in 2003 (53.0%) when compared with 2002 (56.4%).

Physician Office Visits

For the 3-year period 2001–2003, an average annual 12.3 million physician visits for asthma was calculated (Table 11). Adults (7.6 million) had more visits than did children (4.7 million). An average annual 61.2 office visits for asthma per 100 persons with current asthma was calculated for 2001–2003 (Table 12). Adults (54.6 per 100 persons with current asthma) had a lower at-risk–based office visit rate than did children (76.1 per 100 persons with current asthma). The at-risk–based office visit rate for whites (67.8) was higher than the rate for blacks (37.8). The rates for persons aged ≥ 65 years (118.8) and aged ≤ 4 years (164.3) were higher than the rates for each of the other age groups.

An estimated 5.9 million physician office visits for asthma was calculated for 1980 (excluding Alaska and Hawaii), and 13.6 million was calculated for 2004 (including Alaska and Hawaii) (Table 13). No differences were observed in the number of visits between consecutive 5-year periods or between consecutive single years during 2000–2004. Overall, more visits occurred in 2002, 2003, and 2004 than in 1990. For men, during 2000–2004, the number of visits was higher for each year than the number of visits in either 1990 or 1995. For women, only the number of visits for 2002 was higher than the number for 1990. The numbers of visits in 2001, 2002, 2003, and 2004 were higher than the number of visits in 1990 for whites; no increase in the estimated number of visits since 1990 occurred for blacks, despite increases in the estimated number of blacks with asthma (Table 3).

No differences were observed between consecutive 5-year periods in physician office visit rates for asthma per 10,000 population or between consecutive single years during 2000–2004 (Table 14). However, the population-based rates were higher in 2001, 2002, 2003, and 2004 (409.7, 457.5, 448.6, and 468.1, respectively) than they were in 1990 (290.8), indicating a gradual increase in the rate of physician office visits for asthma per 10,000 population. The population-based rates for whites and the rates for males followed the same pattern of gradual increase, but the rates for blacks showed no change since 1990. For women, the rate in 2002 (549.3) and the rate in 2004 (514.8) were higher than the rate in

1990 (358.2). For each of the years during 2002–2004, the rates for children were higher than in 1990, but the rate for adults has not increased since 1990. No differences were observed between population-based rates for recent years and the rate in 1990 in either the Northeast or the West. However, in the South and Midwest, the population-based rates in 2003 (428.0 and 453.8, respectively) and in 2004 (455.6 and 455.2, respectively) were higher than the rates for 1990 (231.0 and 223.0, respectively).

In 1980, a total of 87.6 office visits for asthma per 100 persons with 12-month prevalence (excluding Alaska and Hawaii) was calculated, and in 2004, a total of 66.4 office visits per 100 persons with current asthma (including Alaska and Hawaii) was calculated (Table 15). The survey coverage change in 1989 (Alaska and Hawaii were added), and the definitional change in asthma prevalence in 2001 limited the comparisons that could be made. No changes were observed in at-risk–based physician office visit rates from 1985 to 1990 under the definition of 12-month prevalence, nor between any of the years from 2001 to 2004 under the definition of current asthma prevalence for the total population or for any of the demographic subgroups. Changes over time in the number of office visits (Table 13) and the population-based rate of office visits (Table 14) appear to be a consequence of the increase in asthma prevalence.

Hospital Outpatient Visits

For the 3-year period 2001–2003, an average annual 1.3 million hospital outpatient department visits for asthma was calculated (Table 16). The number of visits did not vary significantly between children (651,700) and adults (689,500) or between males (565,200) and females (502,300). The estimated number of visits for whites (845,800) was higher than for blacks (444,700). Hispanics had fewer visits (231,900) than non-Hispanics (1,109,200).

An average annual 6.7 hospital outpatient visits per 100 with current asthma was calculated for the 3-year period 2001–2003 (Table 17). The at-risk–based rate of hospital outpatient visits was higher for children (10.5 per 100 children with current asthma) than for adults (5.0), and highest for children aged ≤ 4 years (20.9). The rate was higher for blacks (14.2) than for whites (5.5), higher for black children (19.9) than for white children (8.7), and higher for black adults (10) than for white adults (4.3). The black-white difference was not significant in the age group ≤ 4 years but was significant in all other age groups. Although Hispanics appeared to have higher at-risk–based outpatient department rates than non-Hispanics, none of the observed differences was significant. Although the at-risk–based outpatient visit rate was higher in

the Northeast (9.1) than in the West (3.6), other regional comparisons were not different.

In 1992, a total of 644,000 hospital outpatient department visits for asthma occurred (Table 18). By 1995, the number of hospital outpatient department visits for asthma had increased to 1.3 million. The number of outpatient visits increased from 1992 to 1995, but no measurable increase occurred after 1995.

The rate of outpatient visits per 10,000 population was higher in 1995 (49.2) than in 1992 (25.0), with no measurable change since 1995 (Table 19). The rate of outpatient visits per 10,000 population was higher in 2004 than in 1992 for females, for blacks, for non-Hispanics, for children, and in the South. The population-based rate in 2004 was not different from the rate in 1995 for any of the demographic subgroups, except for whites.

In contrast, the at-risk-based rates of outpatient visits per 100 persons with asthma, when calculated using 12-month prevalence counts, indicated no change from 1992 (5.2 per 100 with asthma) to 1995 (8.7 per 100 with asthma) (Table 20). Nor was there any change in the rates between 2001, 2002, 2003, and 2004 when calculated using current prevalence counts (6.3, 6.1, 7.6, and 5.1 per 100 persons with current asthma, respectively). The increase in population-based rates from 1992 to 1995 (Table 19) was a result of the increase in asthma prevalence during this time.

Emergency Department Visits

An average annual 1.8 million emergency department visits for asthma was calculated for the 3-year period 2001–2003 (Table 21); 1.1 million visits were for adults and 696,900 visits were for children. More visits were made by female adults (718,200) than male adults (357,100), but more visits were made by male children (423,800) than female children (273,100).

For the 3-year period 2001–2003, an average annual 8.8 emergency department visits for asthma per 100 persons with current asthma was calculated (Table 22). Children (11.2 per 100 with current asthma) had higher at-risk-based emergency department visit rates than adults (7.8 per 100 with current asthma). Children aged ≤ 4 years had the highest at-risk-based rate of emergency department visits (25.9). No difference was observed in the at-risk-based rate for emergency department visits by sex. Blacks (21.0) had a higher at-risk-based rate of emergency department visits than whites (7.0). Overall, Hispanics (12.4) had higher rates of at-risk-based emergency department visits than did non-Hispanics (8.4). At-risk-based emergency department rates were higher in the Northeast and the South than the West (10.4, 9.6, and 6.7, respectively).

Among children aged ≤ 4 years, none of the sex, race, ethnicity, or regional differences was significant.

In 1992, a total of 1.5 million emergency department visits for asthma occurred (Table 23). The number of visits increased to 1.9 million in 1995, after which no changes were observed through 2004 (1.8 million visits). No increase occurred in the number of visits for men until 2002. For women, an increase occurred in 1995, after which no other changes were observed.

Population-based rates for asthma emergency department visits (Table 24) closely paralleled the number of visits (Table 23). An increase in the rate of emergency department visits for asthma occurred from 1992 to 1995, with no change afterwards. When at-risk-based emergency department visit rates for asthma were calculated (Table 25), no changes were observed.

From 1992 to 1995, the only demographic subgroup that experienced an increase in the at-risk-based emergency department visit rate was the age group 35–64 years. From 2001 to 2004, subgroup comparisons indicated changes for males from 2001 to 2002 and for Hispanics from 2001 to 2003, but the period of time is too brief to discern if these short-term changes will translate into long-term trends. The emergency department visit rates based on persons with current asthma (2001–2004) should not be compared with the rates for previous years because of the change in the definition of asthma prevalence.

Hospital Discharges

For the 3-year period 2001–2003, an average annual 504,000 asthma hospital discharges was calculated; 299,300 of the discharges were for adults and 204,700 were for children (Table 26). Females had more hospital discharges for asthma (299,400) than males (204,500). Female children (75,200) had fewer discharges for asthma than male children (129,400).

For the 3-year period 2001–2003, an average annual 2.5 asthma hospital discharges per 100 persons with current asthma was calculated (Table 27). Adults had a lower at-risk-based hospitalization rate (2.2 per 100 with current asthma) than children (3.3). Among age groups, the highest at-risk-based hospitalization rate occurred in children aged ≤ 4 years (10.0 per 100 children aged ≤ 4 with current asthma). The lowest at-risk-based asthma hospitalization rates occurred in persons aged 20–24 (0.9) and 15–19 years (0.8).

The difference in the at-risk-based hospitalization rates between males (2.4 per 100 with current asthma) and females (2.6) of all ages and between male and female children was not significant. However, the at-risk-based hospitalization rate for female adults (2.5 per 100 with current asthma) was higher

than that for male adults (1.6). In addition, females had higher at-risk–based hospitalization rates than males in the age groups 15–34, 35–64, and ≥ 65 years.

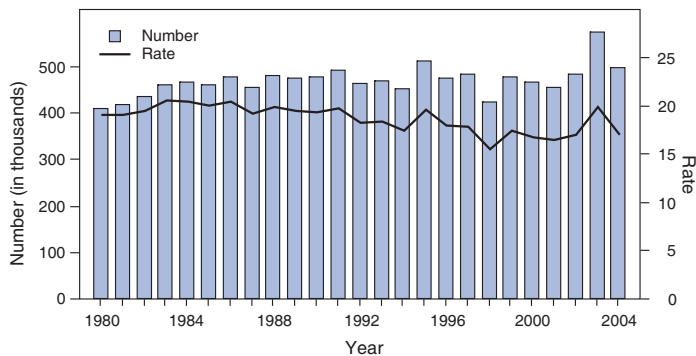
Because of the large number of hospital records for which race was not reported, the at-risk–based hospitalization rates for race groups were underestimated. Most discharges lacking race data represented white persons (27); therefore, the differences between race groups are likely to be smaller than estimated in this report. The at-risk–based hospitalization rate for blacks (4.2 per 100 with current asthma) was 2.5 times that for whites (1.7 per 100 with current asthma). Black males, black females, and black children had higher rates than their white counterparts. Among children aged ≤ 4 years, no significant differences were observed between black and white rates; in the other age groups, differences between black and white rates were significant.

The differences between the at-risk–based hospitalization rates for the four regions (all ages) were not significant. Among adults, the at-risk–based hospital discharge rates in the Northeast (2.7 per 100 with current asthma) and the South (2.2) were higher than in the West (1.7).

Although considerable variation was observed in the number of hospital discharges with asthma as the first listed diagnosis (Table 28), none of the differences between consecutive 5- or 1-year periods was significant. The fewest asthma discharges occurred in 1980, and the most occurred in 2003; the estimated number of asthma discharges was higher only in 1995 (510,600) and 2003 (574,100) than in 1980 (408,300). This slight increase in 2003 probably was not a result of the hospital discharge survey sampling process because a similar increase was observed in state hospital discharge data, which were not based on samples. Using single-year data for the entire 25-year period 1980–2004 (Figure 3), a small but significant increasing trend was observed in the number of hospital discharges for asthma.

For 1985, 1990, 1995, and during 2000–2004, consecutive year-to-year differences in the number of hospitalizations for either males or females were not large enough to be meaningful. No changes were observed in the number of hospitalizations for asthma in adults between any of the years shown. However, for children, more hospitalizations for asthma occurred in 1995, 2000, 2002, 2003, and 2004 than in 1980. Most of the increase in hospitalizations for asthma since 1980 occurred among children aged ≤ 4 years. Differences by race could not be interpreted because of the large and increasing number of discharges for which the race of the patient was not known and because of the addition of the multiple-race category in 2000.

FIGURE 3. Number and rate* of asthma† hospital discharges, by year — United States, 1980–2004



Source: National Hospital Discharge Survey; National Center for Health Statistics.

* Per 10,000 population. Age-adjusted to 2000 U.S. population.

† First-listed diagnosis.

Asthma hospitalizations, expressed as a population-based rate (Table 29), remained stable during 1980–2004. Although asthma hospitalization rates varied from 16.4 per 10,000 population in 2001 to 19.9 in both 1985 and 2003, none of the rates was different from the rate in 1980. Using single-year data for 1980–2004, a small but statistically significant decreasing trend in the population-based rate of hospital discharges for asthma was observed (Figure 3). For most of the demographic subgroups (Table 29), a decline was observed in the population-based hospitalization rate at some point during 1980–2000, followed by a return to the 1980 level in 2003 and a return to a lower rate in 2004. A notable exception to this pattern was observed among children aged ≤ 4 years, among whom rates increased from 1980 to 1985 and remained high through 2004. Because of the change in race categorization and the large number of discharges for which race was not reported, the rates for blacks after 2000 were not comparable to the rates before 2000; however, the effect on trends probably is minimal. Finally, among regions, only the Northeast had a higher rate for asthma hospitalizations in 2003 than in 1980, followed by a decline in 2004.

The at-risk–based hospital discharge rates per 100 persons with 12-month asthma prevalence (Table 30) for 1995 were lower than the rates for 1980 for the total population (3.4 versus 6.0 per 100 persons with 12-month asthma) and for the demographic subgroups with the exception of children, age groups ≤ 4 and 5–14 years, and in the Northeast. The at-risk–based hospitalization rates per 100 persons with current asthma during 2001–2004 could not be compared with the rates for earlier years because of the change in the asthma prevalence definition.

Deaths

For the 3-year period 2001–2003, an average annual 4,210 deaths from asthma occurred (Table 31). Relatively few deaths from asthma occurred in persons aged <18 years (200). Approximately 50% of asthma deaths occurred in persons aged ≥ 65 years. More women (2,693) than men died of asthma (1,517).

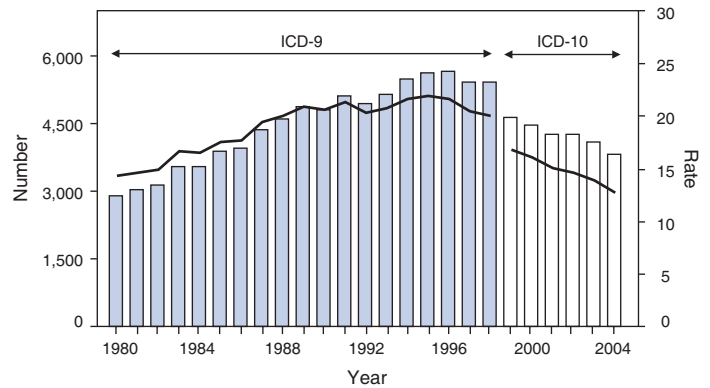
At-risk–based death rates were higher for each older age group (Table 32). For each age group through age 25–34 years, the death rate from asthma was ≤ 1 per 10,000 persons with asthma. The highest at-risk–based death rate was in persons aged ≥ 65 years (10.5 per 10,000 with current asthma). Females had higher at-risk–based death rates than males (2.3 and 1.8, respectively). For most age groups, males had higher rates than females; only for persons aged ≥ 65 years was the rate for females (11.3 per 10,000 with current asthma) higher than for males (9.1). Blacks had higher at-risk–based death rates (3.4) than whites (1.9). This was true for males and females, adults and children, and for each age group. Among regions, the highest asthma death rate per 10,000 with current asthma occurred in the West (2.5).

In 1980, a total of 2,891 deaths occurred with asthma as the underlying cause (Table 33). More deaths occurred at each 5-year interval until 1995. A linear increase occurred in the number of asthma deaths based on single-year data from 1980 to 1998. Although asthma deaths increased from 1980 to 1995, an insufficient number of years remain under ICD-9 coding to determine whether the number of deaths for 1996–1998 reflected a plateau or a decline (3). In 1999, ICD-9 coding was replaced with ICD-10 (4,5). A decline in asthma deaths occurred from 1998 to 1999 in addition to the decline (approximately 11%) resulting from the ICD revision. Under ICD-10 coding, the number of asthma deaths has declined. For each recent year (2001, 2002, 2003, and 2004), the number of asthma deaths was lower than the number of deaths in 2000.

Among virtually all the demographic groups, asthma deaths increased from 1980 to 1995. The only age group for which the number of asthma deaths did not increase from 1980 to 1995 was children aged ≤ 4 years. Although a decline has occurred in asthma deaths among all demographic groups since 2000, the decline was not significant for Hispanics, the “other race” category, or children. The number of deaths in 2004 was lower than in 2000 in each of the regions.

On the basis of single-year data (Figure 4), a linear increase occurred in population-based asthma death rates during 1980–1988, followed by 10 years with no trend. Population-based rates for asthma deaths indicated that some of the increases in the number of asthma deaths before 2000 were a result of

FIGURE 4. Number and rate* of asthma deaths, by year and International Classification of Diseases† (ICD) — United States, 1980–2004



Source: National Vital Statistics System, National Center for Health Statistics.
* Per million population. Age-adjusted to 2000 U.S. population.

† During 1979–1998, ICD-9 was used to classify deaths. In 1999, ICD-10 was implemented.

increases in the population size and distribution among the demographic groups (Table 34). This was particularly true for the changes from 1990 to 1995. The age-adjusted asthma death rates in 2004 were lower than those in 2000 for the total population, for both males and females, all race groups, adults (but not children), and each of the regions.

From 1990 to 1995, both the number of deaths from asthma (Table 33) and the population-based asthma death rates (Table 34) increased. In contrast, from 1990 to 1995, at-risk–based rates decreased from 4.7 deaths per 10,000 with 12-month asthma to 3.8 deaths per 10,000 with 12-month asthma (Table 35). From 1990 to 1995, a decline was observed in males and females, whites, non-Hispanics, adults, and persons in the Northeast and West. No differences occurred between the asthma death rates per 10,000 persons with current asthma in 2003 and the rate in 2001 for any of the groups (Table 35). However, in 2004, at-risk–based rates declined for the total asthma population, males, whites, non-Hispanics, adults aged 35–64 years, and adults aged ≥ 65 years. Because of the definitional change in asthma prevalence in 1997 and the change in ICD coding in 1999, estimates for 1995 and earlier should not be compared with estimates for 2000 and later.

Discussion

This report is the third national surveillance summary on the burden of asthma. Data presented in this report extend the asthma data presented in the two earlier surveillance summaries (2,3). As with previous reports, this report includes

counts and population-based rates for asthma prevalence measures, asthma health-care encounters (office visits, outpatient visits, emergency department visits, and hospitalizations), and asthma deaths. New in this report are expanded demographic detail for those estimates and the inclusion of at-risk-based rates. The denominator for the at-risk-based rate is the underlying population at risk (i.e., persons with asthma) rather than the entire population. These at-risk-based rates provide a clearer picture of asthma trends and disparities within the population of persons with asthma, for asthma attack prevalence, health-care-provider encounters (office visits, outpatient visits, emergency department visits, and hospitalizations), and deaths.

The data in this report indicate that asthma prevalence increased in both counts (Table 3) and rates (Figure 1) under the definition of 12-month prevalence (used during 1980–1996). The increase in prevalence during 1980–1996 is substantiated by a report indicating that asthma incidence also increased during 1980–1996 (29). Determining whether prevalence has continued to increase is complicated by the absence of a prevalence measure from 1997 to 2000 and the change in the definition of asthma prevalence to current asthma in 2001. However, since 2001, no significant change in the current asthma prevalence rate has occurred.

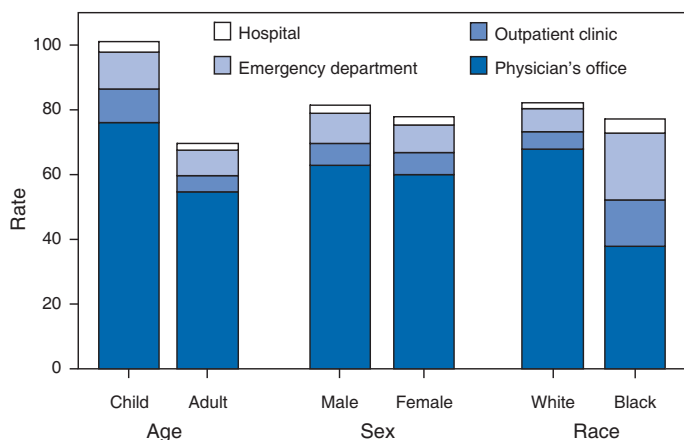
One example of the usefulness of at-risk-based rates is the analysis of asthma-related health-care encounters. Because at-risk-based rates declined or remained stable, it can be inferred that the increase in physician office visits from 1980 to 1995 and the increase in visits to hospital outpatient and emergency departments from 1992 to 1995 were caused by an increase in the prevalence of asthma in the population during 1980–1996. Similarly, at-risk-based rates can be used to clarify the analysis of asthma mortality. During 1980–1995, asthma-related mortality increased, but because at-risk-based mortality rates remained stable from 1980 to 1990 and declined from 1990 to 1995, it can be inferred that rising mortality was caused by the general increase in asthma prevalence.

At-risk-based rates also can be used to clarify differences in asthma outcomes (e.g., attacks and health-care encounters) among various demographic groups. For example, population-based average annual attack prevalence estimates for the 3-year period 2001–2003 indicated that asthma attacks were relatively more prevalent in children than in adults, in females than in males, and in blacks than in whites (Table 6). However, using at-risk-based rates, no significant differences existed between blacks and whites (Table 6, Figure 2). The rate of health-care encounters was not significantly different between blacks and whites with asthma or between men and women with asthma, although differences did exist by site of

encounter (Figure 5). Blacks used emergency departments and hospital outpatient departments more frequently for their asthma than whites. Although this analysis cannot determine the reasons for the place the visit occurred, one study indicated that the number of emergency departments, the convenience of emergency departments (e.g., time and proximity), limited community capacity for physician office visits and outpatient visits, and a “generic preference for emergency departments as a source of care for non-urgent problems” contributed to emergency department use (30). These differences in encounters by site require further study.

The data in this report and in a report on asthma self-management (31) can be used as a measure of the national burden of asthma and by state health departments and other researchers as a comparison against which they can evaluate the populations they study. Adult and child prevalence data are available for all states through BRFSS and NSCH. Annual BRFSS data indicate considerable variation in adult asthma prevalence among the states, and limited data from the BRFSS adult asthma module also document variation in asthma control indicators among states with similar prevalence (32). Detailed asthma data from the BRFSS-administered Asthma Call-Back Survey will allow states to assess more completely the level of control and management in their asthma population. Although BRFSS is subject to all limitations associated with telephone-based surveys, including low response rates, national estimates of asthma prevalence from this state-based survey compare favorably (within 1-percentage point) with those from NHIS, which is conducted by personal interview and has considerably higher response rates.

FIGURE 5. Rate* of encounters for asthma, by site of encounter, age, sex, and race — United States, 2001–2003



*Per 100 persons with current asthma.

NACP funds grantees to implement interventions, develop partnerships, and expand their surveillance systems. Grantees and their partners develop and implement interventions for persons with asthma, starting first with populations with the highest burden or at highest risk for uncontrolled asthma. Improvements made through these state- and city-level interventions are reflected in state- and national-level data. The data presented in this report indicate that increases in prevalence drive increases in patient visits. Because no primary prevention strategies have been identified, NACP grantees and their partners should continue efforts to control asthma through interventions that promote proper medical regimens (e.g., use of appropriate medications and use of asthma action plans) and the reduction of exposures to causes of asthma exacerbations (e.g., diesel exhaust, household exposures such as furry pets, and workplace exposure to chemicals). Efforts to control and manage asthma are necessary to reduce the burden of asthma for persons with the disease.

Limitations

Because no definitive laboratory test for asthma exists, differentiating asthma from other chronic obstructive pulmonary diseases is challenging. To provide some guidance for consistency across asthma studies, in 1998, the Council of State and Territorial Epidemiologists developed a case definition for asthma surveillance that established a framework on the basis of three distinct data sources: administrative databases, survey self-response, and medical records (33). Most of the asthma estimates in this report relied on the physician accurately diagnosing asthma. In addition to the diagnostic challenge, other data-related concerns included conveying the diagnosis to the patient, patient recall of the diagnosis, documenting asthma in patient records, and coding of asthma related events. Asthma estimates for mortality relied on the physician accurately attributing the death to asthma. Some of the data sources used in asthma surveillance (e.g., emergency department visits) are administrative in nature and were originally intended for billing purposes. These data might be influenced by third-party reimbursement practices. In addition, the asthma prevalence measures used in this report relied on self-reported survey data that required individual recall of the physician's diagnosis. The validity of self-reported asthma status in these data is unknown. Either the physician's diagnosis or the patient's recall of that diagnosis might be inaccurate. However, a 1993 review of asthma questionnaires documented a mean sensitivity of 68% (range: 48%–100%) and a mean specificity of 94% (range: 78%–100%) when self-reported asthma was compared with a physician's clinical

diagnosis of asthma (34). Additional limitations associated with survey data include declining response rates, reliability of self-reported information, and the exclusion of households without telephones and the institutionalized population.

The reliability of death certificate data for asthma has been questioned. Asthma mortality rates for older age groups have been assumed to be unreliable because of misreporting the cause of death in older persons with comorbid medical conditions. This assumption is often cited as the reason for limiting asthma analysis and research to persons in younger age groups. Certain studies have supported the assumption that coding asthma as the underlying cause of death results in an overestimation of the number of deaths from asthma in the elderly (35–43). However, a majority of these studies were conducted in countries where asthma mortality rates far exceed that in the United States; studies based within the United States were small and included very limited populations. In contrast, a larger and well-designed study concluded that asthma death coding had very high specificity (99%) and low sensitivity (42%), that asthma as a cause of death was underreported rather than overreported in preference to COPD (58% false negative, 1% false positive), and that no age effect existed (44). This study casts doubt on the assumption that coding of asthma deaths in older persons is unreliable in the United States. However, no representative study of asthma as an underlying cause of death in the NVSS has been reported.

Making definitive conclusions about asthma trends are difficult because of point-in-time problems with asthma data and discrete events during the preceding 10 years. First, the change in the way NCHS conducted NHIS in 1997 and the new wording of the asthma questions affected the historic measure of asthma prevalence. These changes were made to improve data quality and in response to requests by data users. Second, the change from ICD-9 to ICD-10 coding for deaths in 1999 interrupted the mortality trend line. Finally, the 1997 OMB standards on race classification were implemented differently and at different times among the various data sources used in asthma surveillance.

Conclusion

This report identifies significant changes over time in asthma prevalence, patient visit encounters, and deaths. The patterns identified using at-risk-based rates change conclusions resulting from population-based rates in important ways. Increases in asthma prevalence had a substantial role in the increases in patient encounter measures used in asthma surveillance and also accounted for the increases in the number of asthma deaths

and population-based rate of death during 1980–1995. When death rates among those with current asthma are examined during 1980–1995, the rates decreased. In contrast, little change has been observed in at-risk death rates for asthma during 2000–2004, when prevalence did not change. Although some progress has been made in the clinical management and control of asthma, more than half of those with current asthma reported experiencing at least one attack during the preceding 12 months. CDC will continue to monitor national trends in prevalence, patient visit encounters, and mortality while working to increase the availability of data that can be used to measure the control of asthma symptoms at the national, state, and local level.

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Appendix

Technical Notes

National Health Interview Survey

Sampling Frame: The National Health Interview Survey (NHIS) sampling frame covers the civilian noninstitutionalized population in all 50 states and the District of Columbia.

The survey is administered by in-person interview in the sample household. During 1979–1996, a knowledgeable adult provided information on their own health and that of others in the household. A one-sixth subsample (approximately 20,000 of 120,000 persons) that is representative of the whole sample was asked about 17 respiratory conditions, including asthma. Asthma prevalence was determined by an affirmative response to the question “During the past 12 months has anyone in the family had asthma?” As a result, during 1980–1996, prevalence estimates were referred to as 12-month asthma prevalence. The survey methodology changed in 1997. One of the changes eliminated proxy respondents for adult medical information. Since 1997, information collected on the whole family, including sociodemographic data and use of health-care services information, is collected from the primary household respondent. However, medical information (including asthma-related questions) is collected from a single sampled household adult and by adult proxy for a sampled child in households with children. In addition, the question wording was changed to “Has a doctor or other health professional ever told you that you had asthma?” which measured lifetime asthma prevalence. Asthma attack prevalence was measured by responses to the question, “During the past 12 months, have you had an episode of asthma or an asthma attack?”

Beginning in 2001, all persons answering yes to the question, “Has a doctor or other health professional ever told you that you had asthma?” were then asked if they still had asthma. Analysis of the responses to these questions indicates that approximately 5% of persons who stated that they no longer had asthma also reported that they had had an asthma attack during the preceding 12 months. In estimating the number of asthma attacks and the attack prevalence percent with the U.S. population as the denominator, all persons who stated they had an attack during the preceding 12 months were included, regardless of whether they stated they still had asthma. This is consistent with procedures used in other National Center for Health Statistics (NCHS) publications to produce national asthma attack estimates from NHIS. When estimating the percent of asthma attacks per person with asthma,

persons with attacks who stated they no longer had asthma were excluded. This exclusion maintains consistency in determining attack rates only in persons who self-report that they still have asthma and is also consistent with the Council of State and Territorial Epidemiologists (CSTE) case definition for asthma prevalence.

Race categorization and current asthma and asthma attack statistics. In the presentation of NHIS race data in the current asthma and asthma attack tables (Tables 1, 2, 3, 4, 5, 6, 7, 8, 9, 10), data before 1996 is presented using the NHIS race variable that coded race into three categories—white, black, and other. Starting with 1997 data, estimates for race categories are presented using both the new OMB classifications and a race classification that follows the 1977 standards. For 1997 and 1998, 1977-comparable categories were created from the “main race” variable found on the NHIS file. After 1998, the data files already included a 1977-comparable variable. The new OMB race classifications were grouped into categories of single race white, single race black, and all other (which includes respondents indicating multiple races [approximately 1.5% of respondents]).

Poverty Status: Because income information is missing for a large proportion of respondents (23%–26% of sample adults and children, depending on year), estimates should be interpreted with caution.

National Ambulatory Medical Care Survey and National Hospital Ambulatory Medical Care Survey

Sampling Frame: The National Ambulatory Medical Care Survey (NAMCS) samples office-based physicians, primarily in patient care, excluding radiologists, anesthesiologists, and pathologists, from the master files of the American Medical Association and the American Osteopathic Association. Approximately 2,000 randomly selected physicians participate each year by reporting data on a sample of approximately 30,000 patient encounters. The clinical modification to the International Classification of Diseases Ninth revision (ICD9-CM) code 493 has been used to identify asthma office visits since 1979 (<http://www.cdc.gov/nchs/data/ahcd/NAMCS-DATA-ITEMS.pdf>). Before 1989, Alaska and Hawaii were not included in NAMCS. Since 1989, all 50 states, including the District of Columbia, were included in NAMCS.

The National Hospital Ambulatory Medical Care Survey (NHAMCS) sampling frame is nonfederal, general, and short-stay hospitals (including children's hospitals) in the 50 states and the District of Columbia that have an emergency department or an outpatient department (<http://www.cdc.gov/nchs/data/ahcd/NHAMCS-DATA-ITEMS.pdf>). This survey has been administered annually since 1992. Approximately 400 hospitals report data on a sample totaling approximately 30,000 outpatient visits and 30,000 emergency department visits each year. The ICD9-CM code 493 has been used to identify asthma hospital outpatient and emergency department visits since 1979. Estimates with asthma coded as the first listed diagnosis are presented for outpatient visits and for emergency department visits. Because the sampling frame did not control for region in 1980, regional differences for that year should be interpreted with caution.

Race: Before 1999, only one race could be reported per patient record. Beginning with 1999, data reflect standards mandated in 1997 by the (OMB) to promote comparability of data among federal data sources. One of the mandates requires the option to report more than one race per patient, where appropriate. In 1999, the race item on the survey instrument was modified to include a "multiple race" category. In these surveys, race is collected from medical record rather than by personal reporting; as a result, "multiple race" is underreported when compared with census data. Because of small numbers, records with a single category of "Asian" or "Native Hawaiian/other Pacific Islander" or "American Indian" were combined with "multiple race" records and are presented in the table category labeled "other races."

Population figures and rate calculation: The denominators used in calculating physician office visit, hospital outpatient, and emergency department visit rates for sex, race, ethnicity, age, and region are from special tabulations that were developed by the U.S. Bureau of the Census to estimate the civilian, noninstitutionalized population covered in these surveys. The denominator counts used in this report were provided by NCHS. Starting in 2001, both numerator and denominator estimates reflect the transition to multirace reporting. In 1999 and 2000, the numerator counts included "multiple race" in the "other races" category, and the denominator data did not. Before 1999, neither numerator nor denominator allowed for the "multiple race" option. Because "multiple race" is underreported in these surveys, visit counts and rates for the "other race" category (which includes the multiple race group) presented for 2001–2003 are considered underestimates. Because the transition to the 1997 OMB standards was not clearly demarcated as it was in the other data sources, and because the size of the "other races" group is small, the tables for office visits, outpatient visits, and emergency

department visits do not distinguish between the years before and after the transition to "multiple race" coding.

National Hospital Discharge Survey: Hospital inpatient visits

Sampling Frame: The National Hospital Discharge Survey (NHDS) consists of short-stay (average length of stay: <30 days for all patients), general, and children's general hospitals. The survey includes patients discharged from approximately 500 nonfederal general and short-stay specialty hospitals excluding federal, military, and the Department of Veterans Affairs hospitals in the 50 States and the District of Columbia. These hospitals must have six or more beds for patient use. Sampled hospitals produce approximately 275,000 discharge records each year. Before 1988, hospitals with an average length of stay ≥ 30 days were excluded from the survey, regardless of specialty. A hospitalization for asthma is defined as a first-listed discharge diagnosis of asthma (ICD9-CM code 493). Before 1988, a two-stage sample design was used. In 1988, NHDS was redesigned using a three-stage design.

Standard Errors: Before 1988, standard error estimates from NHDS were produced using a computerized routine based on a rigorously unbiased algebraic estimator of the variance. Using approximations, standard errors were prepared that were applicable to a wide variety of statistics. To calculate standard errors for 1980 and 1985 estimates, survey year-specific approximate standard errors of estimated numbers of discharges for first-listed diagnoses by selected patient and hospital characteristics were used. For simplicity, linear interpolation was used to obtain specific relative standard errors (RSE) for each estimate, although the RSE curves are not strictly linear functions.

Underreporting Race: Underreporting of race in NHDS is attributed to the number of hospitals in NHDS samples that do not report race for any of their patients and the number of patients identified as Hispanic with missing race data. Race information is missing for a large proportion of hospital discharge records (5%–30% each year). Hospitals that did not report race probably had a higher proportion of white discharges than hospitals that reported race. Because most discharges with missing race data represent white persons, the differences between racial groups probably are smaller than these estimates indicate.

Race Categorization: Starting in 2000, a "multiple race" category was added to the NHDS data set. The "multiple race" category consists of respondents who identified with two or more races. Because of small numbers, records with a single category of American Indian or Alaska Native, Asian, Native

Hawaiian or Other Pacific Islander, Some Other Race and “multiple race” were grouped together and are presented in the table category labeled “Other Races”.

Population figures for rate calculations: Population-based rates were computed using July 1 estimates of the civilian population of the United States. Starting in 2000, both numerator and denominator estimates include “multiple race” in the “other races” category. The Census population tables contained race categories for three primary racial groups: white, black, and all other races. The denominator for the at-risk–based rates was derived from NHIS, which covers the civilian, noninstitutionalized population rather than the civilian population covered by NHDS. The civilian, noninstitutionalized population represents 99% of the civilian population. Consequently, the at-risk–based hospitalization rates are slight overestimates of the actual rates.

Exclusions: Data for newborns are excluded from this report.

National Vital Statistics System

Race Categorization: Race data are collected on death certificates in accordance with the 1977 OMB standards on race and ethnicity. The 1977 standards specified four race categories (white, black, American Indian or Alaska Native, and Asian or Pacific Islander) and did not permit more than one racial category to be identified for an individual. In 1997 OMB standards were introduced to collect data on ethnicity and five single race categories (white, black, American Indian, and various Asian and Pacific Islander categories) and a multiple race category. However, as of 2003, this format had been introduced in only a few states.

Hispanic ethnicity: Hispanic mortality data were collected from 17 reporting states and published for the first time in 1984. The number of reporting states increased over time as did the quality of the data. Data year 1997 was the first year that mortality data for the Hispanic population were available for all 50 states and the District of Columbia.

Death rates for Hispanic, American Indian or Alaska Native, and Asian or Pacific Islander should be interpreted with caution because of inconsistencies in reporting Hispanic origin or race on the death certificate as compared with race or Hispanic origin on the censuses, surveys, and birth certificates. Studies have documented underreporting on the death certificates of these decedents and undercounts of these groups on the censuses.

Population figures and rate calculation: The denominators used in calculating population-based mortality rates for sex, race, ethnicity, age, and region are prepared by the U.S. Bureau of the Census. Death rates for the United States and individual states are based on the total resident populations for the respective years. These populations exclude members of the Armed Forces stationed abroad but include the members of the Armed Forces stationed domestically, unless noted. The denominator for the at-risk–based rates was derived from NHIS, which covers the civilian, noninstitutionalized population rather than the resident population covered by the National Vital Statistics System. The civilian, noninstitutionalized population represents approximately 98% of the resident population. Consequently, the at-risk–based death rates are slight overestimates of the actual rates.

Population data through the 1990s also were obtained in accordance with the 1977 standards. Race data on the 2000 census were collected in accordance with the 1997 OMB standards on race and ethnicity. The 1997 standards specify five single-race categories (American Indian or Alaska Native, Asian, black, Hawaiian or Other Pacific Islander, and white) and permit the reporting of more than one race. As a result, 31 racial groups were included on the 2000 census (five single-race groups and 26 multiple-race groups). NCHS, in collaboration with the Census Bureau, developed methodology for bridging the multiple-race groups to single-race categories, so that the race categories in the population data would match the race categories in the mortality data. These Census population tables contained race categories for three primary racial groups: white, black, and all other races.

TABLE 1. Estimated average annual number of persons with self-reported current asthma, by age, sex, race, ethnicity, region, and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		<18	≥18	0–4	5–14	15–34
Sex						
Male	8,418,000	3,583,000	4,835,000	682,000	2,321,000	2,393,000
Female	11,630,000	2,616,000	9,013,000	480,000	1,557,000	3,439,000
Race*						
White	15,283,000	4,142,000	11,141,000	636,000	2,674,000	4,375,000
Male	6,273,000	2,366,000	3,907,000	383,000	1,572,000	1,792,000
Female	9,010,000	1,777,000	7,233,000	253,000	1,102,000	2,584,000
Black	3,121,000	1,339,000	1,782,000	351,000	780,000	929,000
Male	1,303,000	757,000	545,000	186,000	474,000	350,000
Female	1,819,000	582,000	1,237,000	165,000	306,000	580,000
Other races NTA	1,643,000	717,000	926,000	174,000	425,000	528,000
Male	842,000	460,000	382,000	112,000	275,000	252,000
Female	801,000	258,000	544,000	62,000	150,000	275,000
Ethnicity[§]						
Hispanic or Latino	1,978,000	885,000	1,093,000	203,000	538,000	603,000
Male	874,000	493,000	381,000	113,000	300,000	251,000
Female	1,104,000	392,000	712,000	90,000	237,000	351,000
Puerto Rican	532,000	226,000	305,000	38,000	145,000	169,000
Male	226,000	122,000	104,000	20,000	84,000	59,000
Female	306,000	104,000	202,000	18,000 [†]	61,000	109,000
Mexican	903,000	417,000	485,000	104,000	257,000	277,000
Male	407,000	239,000	168,000	59,000	141,000	121,000
Female	495,000	178,000	317,000	45,000	116,000	156,000
Not Hispanic or Latino	18,070,000	5,314,000	12,756,000	959,000	3,341,000	5,229,000
Male	7,544,000	3,090,000	4,454,000	569,000	2,021,000	2,142,000
Female	10,526,000	2,224,000	8,302,000	390,000	1,320,000	3,087,000
Region						
Northeast	4,282,000	1,347,000	2,935,000	241,000	852,000	1,141,000
Midwest	5,058,000	1,494,000	3,564,000	311,000	896,000	1,586,000
South	6,890,000	2,210,000	4,680,000	440,000	1,380,000	1,979,000
West	3,818,000	1,148,000	2,670,000	170,000	751,000	1,126,000
Ratio of family income to poverty threshold[¶]						
0–.99	2,697,000	1,014,000	1,683,000	288,000	562,000	851,000
1.00–2.49	4,603,000	1,513,000	3,090,000	346,000	915,000	1,362,000
2.50–4.49	4,249,000	1,287,000	2,962,000	175,000	866,000	1,355,000
≥4.50	4,157,000	1,023,000	3,134,000	124,000	666,000	1,080,000
Total	20,047,000	6,199,000	13,849,000	1,162,000	3,878,000	5,832,000

TABLE 1. (Continued) Estimated average annual number of persons with self-reported current asthma, by age, sex, race, ethnicity, region, and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		15–19	20–24	25–34	35–64	≥65
Sex						
Male	8,418,000	912,000	619,000	862,000	2,371,000	650,000
Female	11,630,000	986,000	925,000	1,528,000	4,850,000	1,304,000
Race*						
White	15,283,000	1,394,000	1,175,000	1,806,000	5,901,000	1,697,000
Male	6,273,000	656,000	490,000	645,000	1,956,000	571,000
Female	9,010,000	738,000	684,000	1,161,000	3,945,000	1,126,000
Black	3,121,000	329,000	257,000	344,000	896,000	165,000
Male	1,303,000	157,000	81,000	112,000	252,000	40,000
Female	1,819,000	172,000	176,000	232,000	644,000	125,000
Other races NTA	1,643,000	175,000	113,000	240,000	424,000	93,000
Male	842,000	100,000	—	105,000	164,000	39,000 [†]
Female	801,000	75,000	65,000	135,000	260,000	54,000
Ethnicity[§]						
Hispanic or Latino	1,978,000	219,000	135,000	249,000	528,000	107,000
Male	874,000	111,000	51,000	89,000	170,000	39,000
Female	1,104,000	107,000	84,000	160,000	358,000	68,000
Puerto Rican	532,000	63,000	41,000	64,000	146,000	35,000
Male	226,000	26,000	18,000 [†]	15,000	53,000	—
Female	306,000	38,000	23,000	48,000	93,000	25,000
Mexican	903,000	93,000	65,000	119,000	226,000	40,000
Male	407,000	47,000	30,000	44,000 [†]	73,000	14,000 [†]
Female	495,000	46,000	35,000	75,000	153,000	26,000
Not Hispanic or Latino	18,070,000	1,679,000	1,409,000	2,141,000	6,693,000	1,848,000
Male	7,544,000	801,000	569,000	773,000	2,201,000	611,000
Female	10,526,000	878,000	840,000	1,368,000	4,492,000	1,237,000
Region						
Northeast	4,282,000	403,000	315,000	422,000	1,628,000	420,000
Midwest	5,058,000	490,000	461,000	635,000	1,760,000	505,000
South	6,890,000	643,000	496,000	839,000	2,435,000	655,000
West	3,818,000	361,000	271,000	494,000	1,397,000	374,000
Ratio of family income to poverty threshold[¶]						
0–.99	2,697,000	314,000	294,000	244,000	783,000	213,000
1.00–2.49	4,603,000	385,000	404,000	573,000	1,356,000	624,000
2.50–4.49	4,249,000	399,000	327,000	629,000	1,554,000	299,000
≥4.50	4,157,000	333,000	198,000	549,000	2,097,000	190,000
Total	20,047,000	1,898,000	1,544,000	2,390,000	7,221,000	1,954,000

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

[†]The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

[§]The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. “Puerto Rican” and “Mexican” are a subset of “Hispanic or Latino”; Mexican includes responses of Mexican and Mexican American.

[¶]Missing income responses were not imputed or included.

TABLE 2. Estimated average annual prevalence percents for self-reported current asthma, by age, sex, race, ethnicity, region and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)									
		<18	≥18	0–4	5–14	15–34	15–19	20–24	25–34	35–64	≥65
Sex											
Male	6.2	9.6	4.9	6.8	11.1	6.3	8.9	6.4	4.7	4.5	4.6
Female	8.1	7.4	8.4	5.0	7.8	8.9	10.0	9.4	8.0	8.7	6.8
Race*											
White	6.9	7.7	6.7	4.4	8.8	7.5	9.2	8.0	6.3	6.6	5.8
Male	5.8	8.6	4.8	5.2	10.1	6.1	8.5	6.6	4.5	4.5	4.6
Female	8.0	6.8	8.4	3.6	7.5	8.9	9.8	9.4	8.1	8.7	6.7
Black	9.2	12.5	7.6	12.4	12.8	9.0	11.2	9.7	7.2	7.4	6.1
Male	8.2	14.0	5.2	12.8	15.4	7.3	10.5	6.9	5.2	4.6	3.8
Female	10.0	11.0	9.5	12.0	10.2	10.4	12.0	11.8	8.8	9.7	7.6
Other races NTA	6.8	8.9	5.7	7.1	9.5	6.6	9.4	5.5	5.8	5.4	6.7
Male	6.9	11.2	4.7	9.1	12.1	6.2	10.0	—	5.1	4.1	6.4 [†]
Female	6.7	6.5	6.7	5.0	6.9	7.0	8.7	6.2	6.6	6.7	7.0
Ethnicity[§]											
Hispanic or Latino	5.4	7.0	4.6	5.2	7.7	4.9	7.3	4.2	4.0	4.8	5.2
Male	4.8	7.6	3.2	5.7	8.4	3.9	7.2	3.0	2.8	3.1	4.5
Female	6.1	6.3	6.0	4.7	6.9	5.9	7.4	5.4	5.4	6.5	5.7
Puerto Rican	14.5	18.7	12.4	10.7	21.5	14.4	21.0	13.2	11.6	12.1	13.0
Male	12.4	18.7	8.8	10.2	23.1	10.1	16.1	11.5 [†]	5.7	9.3	—
Female	16.6	18.7	15.7	11.2 [†]	19.8	18.9	26.6	14.9	17.2	14.6	15.8
Mexican	3.9	4.8	3.3	3.8	5.4	3.3	4.6	2.9	2.9	3.5	3.9
Male	3.4	5.4	2.2	4.3	5.8	2.8	4.5	2.7	2.0 [†]	2.2	3.0 [†]
Female	4.4	4.2	4.5	3.3	4.9	3.9	4.8	3.2	3.9	4.8	4.7
Not Hispanic or Latino	7.4	8.9	7.0	6.1	9.9	8.1	9.9	8.7	6.8	6.8	5.9
Male	6.4	10.1	5.1	7.0	11.7	6.7	9.3	7.2	5.1	4.6	4.6
Female	8.4	7.6	8.7	5.0	8.0	9.4	10.5	10.2	8.5	8.9	6.9
Region											
Northeast	8.1	10.2	7.4	7.1	11.3	8.4	10.8	9.3	6.6	7.6	6.0
Midwest	7.5	8.7	7.1	6.7	9.5	8.3	9.8	9.0	7.0	6.7	6.3
South	6.7	8.3	6.2	6.0	9.4	7.0	8.9	7.0	6.0	6.1	5.4
West	6.8	7.3	6.6	3.9	8.3	7.1	9.0	7.1	6.1	6.6	6.2
Ratio of family income to poverty threshold[¶]											
0–.99	10.3	11.1	9.8	10.2	11.1	9.5	11.6	9.5	7.8	11.2	8.8
1.00–2.49	7.9	8.5	7.6	6.9	9.1	7.9	9.0	8.2	7.1	7.9	7.1
2.50–4.49	6.8	7.7	6.5	3.9	9.2	7.4	8.9	8.0	6.4	6.3	5.2
≥4.50	6.4	8.0	6.0	3.8	9.5	6.9	9.1	7.4	5.9	6.1	4.3
Total	7.2	8.5	6.7	5.9	9.5	7.6	9.5	8.0	6.4	6.6	5.9

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

[†] The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

[§] The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. “Puerto Rican” and “Mexican” are a subset of “Hispanic or Latino”; Mexican includes responses of Mexican and Mexican American.

[¶] Missing income responses were not imputed or included.

TABLE 3. Estimated number of persons with self-reported 12-month or current asthma, by year, sex, race, ethnicity, age, and region — National Health Interview Survey, United States, 1980–2004

Characteristic	12-Month prevalence				2000*	Current prevalence			
	1980	1985	1990	1995		2001	2002	2003	2004
Sex									
Male	3,344,000	3,863,000	4,741,000	6,688,000	NA	8,580,000	8,461,000	8,213,000	8,937,000
Female	3,414,000	4,748,000	5,570,000	8,190,000	NA	11,701,000	11,565,000	11,623,000	11,608,000
Race†									
White	5,795,000	7,425,000	8,544,000	12,199,000	NA	15,868,000	15,458,000	15,175,000	15,855,000
Black	861,000	1,119,000	1,413,000	2,217,000	NA	3,003,000	3,331,000	3,280,000	3,376,000
Other	102,000 [§]	68,000 [§]	353,000	461,000	NA	1,410,000	1,237,000	1,381,000	1,313,000
Race 									
White	NA	NA	NA	NA	NA	15,663,000	15,210,000	14,976,000	15,636,000
Black	NA	NA	NA	NA	NA	2,915,000	3,261,000	3,187,000	3,233,000
Other races NTA	NA	NA	NA	NA	NA	1,702,000	1,555,000	1,673,000	1,676,000
Ethnicity**									
Hispanic or Latino	426,000	559,000	770,000	1,534,000	NA	2,008,000	1,727,000	2,199,000	2,124,000
Not Hispanic or Latino	6,332,000	8,053,000	9,541,000	13,344,000	NA	18,273,000	18,299,000	17,637,000	18,421,000
Age									
<18 yrs	2,185,000	2,997,000	3,725,000	5,294,000	NA	6,320,000	6,063,000	6,213,000	6,187,000
≥18 yrs	4,574,000	5,615,000	6,586,000	9,583,000	NA	13,961,000	13,963,000	13,623,000	14,358,000
Age group (yrs)									
0–4	369,000	661,000	840,000	1,227,000	NA	1,128,000	1,181,000	1,177,000	1,120,000
5–14	1,496,000	1,720,000	2,270,000	3,215,000	NA	4,033,000	3,743,000	3,859,000	3,701,000
15–34	2,148,000	2,855,000	2,898,000	4,467,000	NA	6,048,000	5,761,000	5,687,000	5,616,000
35–64	1,998,000	2,339,000	3,220,000	4,715,000	NA	7,115,000	7,408,000	7,140,000	7,679,000
≥65	747,000	1,036,000	1,082,000	1,253,000	NA	1,957,000	1,933,000	1,972,000	2,429,000
Region									
Northeast	1,426,000	1,861,000	1,929,000	2,942,000	NA	4,373,000	4,336,000	4,136,000	3,903,000
Midwest	1,503,000	1,924,000	2,651,000	3,399,000	NA	4,988,000	4,897,000	5,288,000	5,206,000
South	2,363,000	2,981,000	3,475,000	5,144,000	NA	7,160,000	6,862,000	6,647,000	6,902,000
West	1,466,000	1,845,000	2,257,000	3,393,000	NA	3,760,000	3,931,000	3,765,000	4,534,000
Total	6,758,000	8,612,000	10,311,000	14,878,000	NA	20,281,000	20,026,000	19,836,000	20,545,000

* Asthma prevalence not available (NA) in 2000.

† Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. After 1998, a variable bridging the 1997 standards to the 1977 standards is used.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. All other relative standard errors are <30%.

|| Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above. It is not possible to apply the 1997 revisions to the race categorizations to years before 1997; therefore, data were not available.

** The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 4. Estimated prevalence percent with self-reported 12-month or current asthma, by year, sex, race, ethnicity, age, and region — National Health Interview Survey, United States, 1980–2004

Characteristic	12-Month prevalence					Current prevalence			
	1980	1985	1990	1995	2000*	2001	2002	2003	2004
Sex									
Male	3.1	3.4	4.0	5.0	NA	6.3	6.1	5.8	6.3
Female	3.0	3.9	4.5	6.2	NA	8.3	8.1	7.9	7.8
Race†									
White	3.1	3.7	4.2	5.6	NA	7.2	7.0	6.7	7.0
Black	3.4	3.8	4.6	6.5	NA	8.5	9.2	8.8	9.1
Other	—	1.4§	4.2§	5.1	NA	6.6	5.7	6.0	5.2
Race¶									
White	NA	NA	NA	NA	NA	7.2	6.9	6.6	7.0
Black	NA	NA	NA	NA	NA	8.4	9.2	8.8	8.9
Other races NTA	NA	NA	NA	NA	NA	7.2	6.3	6.4	5.9
Ethnicity**									
Hispanic or Latino	2.5	2.9	3.4	5.2	NA	5.8	4.7	5.4	5.2
Not Hispanic or Latino	3.1	3.7	4.3	5.7	NA	7.6	7.5	7.2	7.5
Age									
<18 yrs	3.5	4.8	5.8	7.5	NA	8.7	8.3	8.5	8.5
≥18 yrs	2.9	3.3	3.6	5.0	NA	6.9	6.8	6.4	6.7
Age group (yrs)									
0–4	2.3	3.7	4.4	6.1	NA	5.7	6.0	5.9	5.6
5–14	4.4	5.1	6.4	8.2	NA	9.9	9.2	9.5	9.1
15–34	2.9	3.6	3.7	5.8	NA	8.0	7.6	7.2	7.1
35–64	2.9	3.1	3.8	5.0	NA	6.7	6.8	6.4	6.8
≥65	3.1	3.8	3.6	4.0	NA	6.0	5.9	5.8	7.0
Region									
Northeast	2.9	3.4	3.9	5.7	NA	8.3	8.2	7.7	7.4
Midwest	2.5	3.4	4.5	5.5	NA	7.5	7.3	7.6	7.6
South	3.3	3.7	4.1	5.4	NA	7.1	6.7	6.3	6.7
West	3.6	4.2	4.5	6.2	NA	6.7	7.1	6.5	7.3
Total	3.1	3.6	4.2	5.6	NA	7.3	7.2	6.9	7.1

*Asthma prevalence not available (NA) in 2000.

†Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. After 1998, a variable bridging the 1997 standards to the 1977 standards is used.

§The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%. Rate or percent is age adjusted to the 2000 standard.

¶Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above. It is not possible to apply the 1997 revisions to the race categorizations to years before 1997; therefore, data were not available.

**The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 5. Estimated average annual number of persons reporting an asthma attack during the preceding 12 months, by age, sex, race, ethnicity, region, and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		<18	≥18	0–4	5–14	15–34
Sex						
Male	4,730,000	2,412,000	2,319,000	528,000	1,563,000	1,236,000
Female	6,916,000	1,698,000	5,219,000	379,000	1,004,000	2,020,000
Race*						
White	8,750,000	2,738,000	6,012,000	510,000	1,773,000	2,434,000
Male	3,459,000	1,593,000	1,866,000	305,000	1,064,000	938,000
Female	5,291,000	1,144,000	4,146,000	206,000	710,000	1,495,000
Black	1,845,000	870,000	975,000	258,000	514,000	507,000
Male	767,000	493,000	274,000	123,000	322,000	179,000
Female	1,079,000	378,000	701,000	135,000	192,000	328,000
Other races NTA	1,051,000	502,000	550,000	139,000	280,000	315,000
Male	505,000	326,000	179,000	101,000	177,000	119,000
Female	547,000	176,000	371,000	39,000	103,000	196,000
Ethnicity†						
Hispanic or Latino	1,190,000	546,000	644,000	142,000	310,000	353,000
Male	511,000	311,000	200,000	78,000	184,000	135,000
Female	679,000	235,000	444,000	64,000	126,000	218,000
Puerto Rican	353,000	144,000	210,000	34,000	83,000	112,000
Male	140,000	73,000	68,000	16,000 [§]	49,000	40,000
Female	213,000	71,000	142,000	17,000 [§]	35,000	72,000
Mexican	500,000	249,000	251,000	65,000	145,000	151,000
Male	230,000	150,000	79,000	38,000	84,000	64,000
Female	271,000	99,000	172,000	28,000 [§]	62,000	87,000
Not Hispanic or Latino	10,457,000	3,564,000	6,893,000	765,000	2,257,000	2,903,000
Male	4,219,000	2,101,000	2,118,000	450,000	1,379,000	1,101,000
Female	6,238,000	1,463,000	4,775,000	315,000	878,000	1,802,000
Region						
Northeast	2,421,000	884,000	1,537,000	190,000	562,000	619,000
Midwest	2,988,000	989,000	1,998,000	249,000	592,000	906,000
South	3,987,000	1,464,000	2,523,000	336,000	925,000	1,063,000
West	2,251,000	772,000	1,479,000	133,000	488,000	668,000
Ratio of family income to poverty threshold¶						
0–.99	1,643,000	655,000	988,000	215,000	349,000	481,000
1.00–2.49	2,686,000	990,000	1,696,000	281,000	580,000	745,000
2.50–4.49	2,618,000	931,000	1,687,000	154,000	638,000	787,000
≥4.50	2,331,000	699,000	1,632,000	100,000	454,000	603,000
Total	11,647,000	4,109,000	7,537,000	907,000	2,567,000	3,256,000

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. “Puerto Rican” and “Mexican” are a subset of “Hispanic or Latino”; Mexican includes responses of Mexican and Mexican American.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

¶ Missing income responses were not imputed or included.

TABLE 5. (Continued) Estimated average annual number of persons reporting an asthma attack during the preceding 12 months, by age, sex, race, ethnicity, region, and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		15–19	20–24	25–34	35–64	≥65
Sex						
Male	4,730,000	500,000	308,000	428,000	1,160,000	243,000
Female	6,916,000	533,000	511,000	976,000	2,890,000	624,000
Race*						
White	8,750,000	766,000	600,000	1,068,000	3,289,000	743,000
Male	3,459,000	375,000	232,000	331,000	939,000	213,000
Female	5,291,000	391,000	368,000	737,000	2,350,000	530,000
Black	1,845,000	152,000	156,000	199,000	487,000	79,000
Male	767,000	67,000	54,000	57,000	128,000	15,000 [§]
Female	1,079,000	85,000	101,000	142,000	359,000	65,000
Other races NTA	1,051,000	115,000	62,000	138,000	273,000	43,000
Male	505,000	58,000	—	40,000	93,000	15,000 [§]
Female	547,000	57,000	41,000	98,000	180,000	29,000
Ethnicity†						
Hispanic or Latino	1,190,000	126,000	79,000	147,000	323,000	61,000
Male	511,000	60,000	27,000 [§]	48,000	97,000	17,000 [§]
Female	679,000	67,000	52,000	99,000	226,000	44,000
Puerto Rican	353,000	36,000	30,000 [§]	47,000	100,000	25,000 [§]
Male	140,000	10,000 [§]	—	12,000 [§]	28,000 [§]	—
Female	213,000	25,000	12,000 [§]	34,000	72,000	16,000 [§]
Mexican	500,000	61,000	28,000	62,000	121,000	18,000
Male	230,000	36,000	9,000 [§]	20,000 [§]	41,000	—
Female	271,000	25,000	20,000 [§]	42,000	80,000	15,000
Not Hispanic or Latino	10,457,000	907,000	739,000	1,257,000	3,727,000	805,000
Male	4,219,000	441,000	281,000	380,000	1,063,000	226,000
Female	6,238,000	466,000	458,000	877,000	2,664,000	579,000
Region						
Northeast	2,421,000	213,000	154,000	253,000	880,000	169,000
Midwest	2,988,000	264,000	256,000	385,000	1,020,000	221,000
South	3,987,000	334,000	266,000	463,000	1,355,000	307,000
West	2,251,000	223,000	142,000	303,000	794,000	169,000
Ratio of family income to poverty threshold¶						
0–.99	1,643,000	159,000	164,000	158,000	496,000	102,000
1.00–2.49	2,686,000	199,000	206,000	340,000	808,000	272,000
2.50–4.49	2,618,000	227,000	196,000	363,000	901,000	138,000
≥4.50	2,331,000	210,000	65,000	329,000	1,085,000	88,000
Total	11,647,000	1,033,000	818,000	1,404,000	4,050,000	866,000

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. “Puerto Rican” and “Mexican” are a subset of “Hispanic or Latino”; Mexican includes responses of Mexican and Mexican American.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

¶ Missing income responses were not imputed or included.

TABLE 6. Estimated average annual prevalence percents for self-reported asthma attacks, by age, sex, race, ethnicity, region, and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)									
		<18	≥18	0–4	5–14	15–34	15–19	20–24	25–34	35–64	≥65
Sex											
Male	3.5	6.5	2.3	5.2	7.5	3.2	4.9	3.2	2.3	2.2	1.7
Female	4.8	4.8	4.8	3.9	5.0	5.2	5.4	5.2	5.1	5.2	3.3
Race*											
White	3.9	5.1	3.6	3.5	5.8	4.1	5.0	4.1	3.7	3.7	2.5
Male	3.2	5.8	2.3	4.1	6.8	3.2	4.9	3.1	2.3	2.1	1.7
Female	4.7	4.3	4.8	2.9	4.8	5.1	5.2	5.1	5.1	5.2	3.2
Black	5.4	8.1	4.2	9.1	8.4	4.9	5.2	5.8	4.1	4.0	2.9
Male	4.8	9.1	2.6	8.5	10.5	3.7	4.5	4.6	2.6	2.4	1.4 [†]
Female	5.9	7.1	5.4	9.8	6.3	5.9	5.9	6.8	5.3	5.4	3.9
Other races NTA	4.3	6.2	3.4	5.6	6.3	3.9	6.2	3.0	3.3	3.4	3.1
Male	4.1	7.9	2.2	8.1	7.8	2.9	5.8	—	1.9	2.3	2.4 [†]
Female	4.5	4.4	4.6	3.1	4.7	4.9	6.6	3.9	4.8	4.6	3.7
Ethnicity[§]											
Hispanic or Latino	3.3	4.3	2.7	3.6	4.4	2.8	4.2	2.5	2.4	2.9	3.0
Male	2.8	4.8	1.7	3.9	5.2	2.1	3.8	1.6 [†]	1.5	1.8	2.0 [†]
Female	3.8	3.8	3.7	3.3	3.7	3.6	4.6	3.4	3.3	4.1	3.8
Puerto Rican	9.6	11.8	8.5	9.5	12.4	9.5	11.8	9.4[†]	8.4	8.3	9.1[†]
Male	7.7	11.1	5.8	8.4 [†]	13.3	6.7	6.4 [†]	10.9 [†]	4.5 [†]	4.8 [†]	—
Female	11.5	12.7	11.0	10.9 [†]	11.3	12.4	17.8	7.9 [†]	12.0	11.3	10.4
Mexican	2.1	2.9	1.7	2.4	3.0	1.8	3.0	1.3	1.5	1.9	1.8
Male	1.9	3.4	1.1	2.7	3.5	1.5	3.4	0.8 [†]	0.9 [†]	1.2	—
Female	2.4	2.3	2.4	2.1 [†]	2.6	2.2	2.7 [†]	1.8 [†]	2.1	2.5	2.7 [†]
Not Hispanic or Latino	4.3	5.9	3.7	4.8	6.7	4.5	5.3	4.6	4.0	3.8	2.6
Male	3.6	6.8	2.4	5.5	8.0	3.4	5.1	3.5	2.5	2.2	1.7
Female	5.0	5.0	5.0	4.1	5.3	5.5	5.6	5.6	5.4	5.3	3.2
Region											
Northeast	4.6	6.7	3.8	5.6	7.4	4.6	5.7	4.5	3.9	4.1	2.4
Midwest	4.4	5.8	3.9	5.3	6.3	4.7	5.2	5.0	4.2	3.9	2.8
South	3.9	5.5	3.3	4.5	6.3	3.7	4.6	3.7	3.3	3.4	2.5
West	4.0	4.9	3.6	3.1	5.4	4.2	5.6	3.7	3.8	3.8	2.8
Ratio of family income to poverty threshold[¶]											
0–.99	6.2	7.1	5.8	7.6	6.9	5.4	5.9	5.2	5.0	7.1	4.2
1.00–2.49	4.6	5.6	4.2	5.6	5.7	4.3	4.6	4.2	4.2	4.7	3.1
2.50–4.49	4.2	5.5	3.7	3.5	6.7	4.3	5.0	4.8	3.7	3.7	2.4
≥4.50	3.6	5.5	3.1	3.1	6.4	3.9	5.7	2.4	3.5	3.1	2.0
Total	4.2	5.6	3.6	4.6	6.3	4.2	5.1	4.2	3.7	3.7	2.6

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

[†]The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

[§]The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. “Puerto Rican” and “Mexican” are a subset of “Hispanic or Latino”; Mexican includes responses of Mexican and Mexican American.

[¶]Missing income responses were not imputed or included.

TABLE 7. Estimated average annual attack percent for those reporting current asthma, by age, sex, race, ethnicity, region and poverty level — National Health Interview Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)									
		<18	≥18	0–4	5–14	15–34	15–19	20–24	25–34	35–64	≥65
Sex											
Male	54.0	64.4	46.2	71.3	65.1	49.6	53.0	48.4	46.7	47.0	37.5
Female	56.8	61.2	55.5	74.5	60.5	55.3	51.0	53.1	59.5	57.4	47.1
Race*											
White	54.8	62.7	51.8	74.7	62.9	52.5	52.0	49.4	54.8	53.9	43.4
Male	52.9	64.3	45.9	73.9	65.1	49.7	54.6	45.8	47.6	46.3	37.5
Female	56.1	60.6	55.0	76.1	59.9	54.4	49.7	52.0	58.8	57.6	46.3
Black	57.3	62.7	53.3	70.4	64.1	53.2	44.7	58.9	57.0	52.3	48.2
Male	57.7	63.4	49.9	63.4	66.3	51.0	42.9	67.0	50.9	50.1	36.7
Female	57.0	61.8	54.8	78.2	60.5	54.5	46.3	55.2	60.0	53.2	51.9
Other races NTA	60.0	66.0	55.3	69.3	63.7	56.6	65.2	53.2	51.9	59.7	45.6
Male	56.4	66.7	43.9	75.4	63.1	46.5	58.4	—	36.4	51.4	38.1†
Female	63.8	64.7	63.3	58.3	64.6	65.8	74.2	59.8	63.9	65.0	51.1
Ethnicity[§]											
Hispanic or Latino	56.2	58.8	54.1	65.1	55.3	54.8	55.9	51.9	55.3	56.0	53.8
Male	54.2	59.8	46.9	63.6	58.4	51.1	52.9	53.5	47.5	48.1	41.9
Female	57.8	57.6	58.0	67.0	51.5	57.4	59.0	51.0	59.6	59.7	60.6
Puerto Rican	62.3	61.0	63.4	79.4	56.7	62.1	53.6	65.4	68.3	62.5	68.2
Male	57.8	57.2	58.6	74.3	56.4	64.2	39.7†	94.7	68.7	42.6	80.4
Female	65.7	65.4	65.8	85.1	57.1	60.9	63.0	42.2†	68.2	73.8	63.2
Mexican	51.4	56.1	47.3	57.1	53.6	50.1	63.2	35.3	48.1	48.7	46.1
Male	51.6	58.8	41.3	57.1	56.5	50.4	73.8	28.6†	40.1†	45.0	—
Female	51.2	52.6	50.5	57.1	50.0	50.0	52.3	41.1†	52.7	50.5	58.5
Not Hispanic or Latino	55.5	63.8	52.1	74.2	64.5	52.8	51.4	51.2	54.8	53.9	43.3
Male	53.9	65.2	46.2	72.8	66.1	49.4	53.0	48.0	46.6	46.9	37.2
Female	56.7	61.9	55.2	76.2	62.1	55.1	50.0	53.3	59.4	57.2	46.3
Region											
Northeast	53.8	62.5	49.8	73.6	62.6	51.4	49.5	47.5	56.0	51.7	39.4
Midwest	56.4	63.3	53.5	75.4	63.8	53.9	51.1	54.8	55.4	55.4	43.1
South	55.8	62.5	52.6	70.3	63.5	51.3	49.5	51.5	52.6	54.7	47.1
West	56.1	64.5	52.5	72.1	62.7	56.1	60.1	49.0	57.0	53.7	44.5
Ratio of family income to poverty threshold[¶]											
0–.99	57.9	61.2	55.9	68.2	60.2	53.0	46.2	53.8	60.8	60.5	48.4
1–2.49	56.6	63.4	53.3	75.8	62.2	53.0	51.6	50.1	56.0	57.9	43.0
2.50–4.49	58.8	68.3	54.6	82.4	69.1	55.2	55.9	58.4	53.2	55.7	46.9
≥4.5	52.9	63.0	49.6	71.1	63.7	51.8	57.5	29.5	56.3	49.7	44.5
Total	55.6	63.1	52.2	72.6	63.2	53.0	52.0	51.3	54.9	54.0	43.9

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

§ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. “Puerto Rican” and “Mexican” are a subset of “Hispanic or Latino”; Mexican includes responses of Mexican and Mexican American.

¶ Missing income responses were not imputed or included.

TABLE 8. Estimated number of persons with a self-reported asthma attack during the preceding 12 months, by year, sex, race, ethnicity, age, and region — National Health Interview Survey, United States, 1997–2004

Characteristic	1997	1998	1999	2000	2001	2002	2003	2004
Sex								
Male	4,592,000	4,550,000	4,310,000	4,567,000	4,894,000	4,863,000	4,434,000	5,164,000
Female	6,522,000	6,063,000	6,178,000	6,413,000	7,092,000	7,045,000	6,612,000	6,520,000
Race*								
White	8,865,000	8,329,000	8,214,000	8,568,000	9,277,000	9,112,000	8,299,000	9,003,000
Black	1,623,000	1,673,000	1,513,000	1,605,000	1,898,000	1,962,000	1,850,000	1,958,000
Other	572,000	581,000	756,000	786,000	787,000	791,000	488,000	686,000
Race†								
White	8,657,000	8,263,000	8,120,000	8,507,000	9,109,000	8,936,000	8,166,000	8,879,000
Black	1,566,000	1,636,000	1,490,000	1,532,000	1,833,000	1,913,000	1,783,000	1,887,000
Other races NTA	837,000	684,000	874,000	920,000	1,019,000	1,015,000	1,097,000	881,000
Ethnicity‡								
Hispanic or Latino	1,082,000	1,117,000	1,089,000	1,087,000	1,164,000	1,087,000	1,318,000	1,242,000
Not Hispanic or Latino	10,031,000	9,470,000	9,392,000	9,892,000	10,822,000	10,821,000	9,728,000	10,442,000
Age								
<18 yrs	3,885,000	3,809,000	3,799,000	3,998,000	4,156,000	4,197,000	3,975,000	3,975,000
≥18 yrs	7,228,000	6,804,000	6,689,000	6,982,000	7,830,000	7,711,000	7,071,000	7,709,000
Age group (yrs)								
0–4	812,000	915,000	825,000	854,000	926,000	958,000	838,000	781,000
5–14	2,391,000	2,321,000	2,288,000	2,470,000	2,666,000	2,576,000	2,460,000	2,400,000
15–34	3,380,000	2,853,000	3,208,000	3,028,000	3,422,000	3,295,000	3,051,000	3,062,000
35–64	3,655,000	3,599,000	3,451,000	3,699,000	4,111,000	4,109,000	3,929,000	4,352,000
≥65	875,000	925,000	717,000	929,000	861,000	970,000	768,000	1,088,000
Region								
Northeast	2,187,000	2,178,000	2,025,000	2,278,000	2,489,000	2,484,000	2,288,000	2,297,000
Midwest	2,757,000	2,431,000	2,702,000	2,581,000	3,084,000	2,987,000	2,892,000	2,841,000
South	3,809,000	3,774,000	3,404,000	3,933,000	4,244,000	4,019,000	3,697,000	3,982,000
West	2,361,000	2,230,000	2,358,000	2,188,000	2,168,000	2,417,000	2,168,000	2,565,000
Total	11,113,000	10,613,000	10,488,000	10,979,000	11,986,000	11,908,000	11,046,000	11,684,000

* Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. After 1998, a variable bridging the 1997 standards to the 1977 standards is used.

† Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

‡ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 9. Estimated prevalence percent of persons with a self-reported asthma attack during the preceding 12 months, by year, sex, race, ethnicity, age, and region — National Health Interview Survey, United States, 1997–2004

Characteristic	1997	1998	1999	2000	2001	2002	2003	2004
Sex								
Male	3.4	3.4	3.2	3.3	3.5	3.5	3.1	3.6
Female	4.8	4.4	4.5	4.6	5.0	4.9	4.5	4.4
Race*								
White	4.1	3.8	3.8	3.9	4.2	4.1	3.7	4.0
Black	4.7	4.7	4.2	4.5	5.3	5.4	4.8	5.2
Other	3.4	3.4	3.9	3.8	3.6	3.6	3.6	2.6
Race†								
White	4.0	3.8	3.7	3.9	4.2	4.1	3.6	4.0
Black	4.6	4.7	4.2	4.4	5.2	5.4	4.8	5.2
Other races NTA	4.6	3.5	4.0	4.0	4.2	4.1	4.1	3.0
Ethnicity§								
Hispanic or Latino	3.5	3.4	3.3	3.3	3.4	2.9	3.3	3.1
Not Hispanic or Latino	4.2	4.0	3.9	4.1	4.5	4.5	4.0	4.2
Age								
<18 yrs	5.4	5.3	5.3	5.5	5.7	5.8	5.4	5.5
≥18 yrs	3.7	3.4	3.4	3.5	3.8	3.7	3.3	3.6
Age group (yrs)								
0–4	4.1	4.6	4.2	4.4	4.7	4.8	4.2	3.9
5–14	6.0	5.8	5.6	6.1	6.5	6.3	6.0	5.9
15–34	4.4	3.8	4.2	4.0	4.5	4.3	3.9	3.9
35–64	3.7	3.6	3.3	3.5	3.8	3.8	3.5	3.8
≥65	2.7	2.9	2.2	2.8	2.6	2.9	2.2	3.2
Region								
Northeast	4.1	4.1	3.9	4.3	4.7	4.7	4.3	4.4
Midwest	4.1	3.5	3.9	3.7	4.6	4.4	4.2	4.1
South	4.0	4.0	3.5	4.0	4.2	3.9	3.5	3.8
West	4.5	4.2	4.4	4.0	3.8	4.3	3.7	4.1
Total	4.1	3.9	3.8	4.0	4.3	4.3	3.9	4.0

* Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. After 1998, a variable bridging the 1997 standards to the 1977 standards is used.

† Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

§ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 10. Estimated percent of those with current asthma reporting an asthma attack during the preceding 12 months, by year, sex, race, ethnicity, age, and region — National Health Interview Survey, United States, 2001–2004*

Characteristic	2001	2002	2003	2004
Sex				
Male	51.0	51.9	48.2	52.9
Female	58.4	58.5	54.8	54.3
Race†				
White	55.6	56.7	52.8	54.6
Black	59.7	56.9	51.0	54.5
Other	50.1	57.7	56.2	46.9
Race§				
White	55.3	56.6	52.7	54.5
Black	59.2	56.7	50.6	55.0
Other races NTA	56.0	60.8	58.0	47.2
Ethnicity¶				
Hispanic or Latino	56.0	54.8	57.4	54.9
Not Hispanic or Latino	56.1	56.6	52.8	54.3
Age				
<18 yrs	61.7	64.9	62.7	61.2
≥18 yrs	53.8	53.0	49.8	51.3
Age group (yrs)				
0–4	70.7	77.3	69.7	65.1
5–14	63.4	63.6	62.7	61.5
15–34	54.0	53.4	51.4	51.8
35–64	55.5	54.0	52.5	54.7
≥65	43.2	49.9	38.8	42.5
Region				
Northeast	53.8	53.9	52.8	54.2
Midwest	58.3	57.9	51.7	53.5
South	55.8	55.5	53.3	54.7
West	53.9	58.8	55.0	53.0
Total	55.6	56.4	53.0	54.0

* Current asthma prevalence not available until 2001.

† Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. After 1998, a variable bridging the 1997 standards to the 1977 standards is used.

§ Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

¶ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 11. Estimated average annual number of physician office visits with asthma as the first listed diagnosis, by age, sex, race, and region — National Ambulatory Medical Care Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)						
		<18	≥18	0–4	5–14	15–34	35–64	≥65
Sex								
Male	5,304,000	2,810,000	2,494,000	1,163,000	1,532,000	674,000	1,237,000	698,000
Female	6,972,000	1,908,000	5,064,000	746,000	878,000	1,177,000	2,548,000	1,624,000
Race*								
White	10,357,000	3,986,000	6,372,000	1,608,000	2,002,000	1,502,000	3,193,000	2,053,000
Male	4,415,000	2,374,000	2,042,000	973,000	1,286,000	539,000	986,000	631,000
Female	5,942,000	1,612,000	4,330,000	636,000	716,000	962,000	2,207,000	1,422,000
Black	1,180,000	417,000	763,000	158,000†	235,000	164,000†	479,000	144,000†
Male	456,000	240,000	217,000†	80,000†	160,000†	—	—	—
Female	723,000	177,000†	546,000	79,000†	75,000†	123,000†	320,000	126,000†
Other races NTA	738,000	315,000	423,000†	143,000†	172,000†	184,000†	—	—
Male	432,000	196,000†	235,000†	111,000†	85,000†	—	—	—
Female	307,000†	118,000†	—	—	87,000†	—	—	—
Region								
Northeast	2,494,000	1,060,000	1,434,000	498,000	515,000	319,000	636,000	527,000†
Midwest	2,404,000	791,000	1,614,000	156,000†	492,000	271,000	902,000	583,000†
South	4,375,000	1,836,000	2,539,000	1,011,000	739,000	589,000	1,374,000	661,000†
West	3,002,000	1,031,000	1,971,000	245,000	664,000	671,000	871,000	551,000
Total	12,276,000	4,718,000	7,558,000	1,910,000	2,409,000	1,850,000	3,784,000	2,323,000

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† If the relative standard error of the estimate is 30%–50%, the estimate is unreliable and marked with an *. For missing estimates (—), the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

TABLE 12. Estimated average annual rate of physician office visits with asthma as the first listed diagnosis per 100 persons with current asthma, by age, sex, race, and region — National Ambulatory Medical Care Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)						
		<18	≥18	0–4	5–14	15–34	35–64	≥65
Sex								
Male	63.0	78.4	51.6	170.5	66.0	28.1	52.1	107.5
Female	60.0	72.9	56.2	155.5	56.4	34.2	52.5	124.5
Race*								
White	67.8	96.2	57.2	252.7	74.9	34.3	54.1	121.0
Male	70.4	100.3	52.2	253.7	81.9	30.1	50.4	110.5†
Female	66.0	90.7	59.9	251.2	64.9	37.2	55.9	126.3
Black	37.8	31.1	42.8	45.0†	30.2	17.6†	53.4	87.3†
Male	35.0	31.6	39.8†	—	33.7†	—	—	—
Female	39.8	30.5†	44.2	47.7†	24.7†	21.2†	49.7	101.5†
Other races NTA	44.9	43.9	45.7†	82.0†	40.5†	35.0†	—	—
Male	51.3	42.7†	61.5†	98.8†	31.1†	—	—	—
Female	38.3†	—	—	—	—	—	—	—
Region								
Northeast	58.3	78.7	48.9	206.3	60.4	27.9	39.1	125.6†
Midwest	47.5	52.9	45.3	50.1†	54.9	17.1	51.3	115.5†
South	63.5	83.1	54.2	229.7	53.6	29.8	56.4	100.9†
West	78.6	89.8	73.8	144.3	88.4	59.6	62.4	147.2
Total	61.2	76.1	54.6	164.3	62.1	31.7	52.4	118.8

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

TABLE 13. Estimated number of physician office visits with asthma as the first listed diagnosis, by year, sex, race, age, and region — National Ambulatory Medical Care Survey, United States, 1980–2004

Characteristic	1980*	1985*	1990	1995	2000	2001	2002	2003	2004
Sex									
Male	2,659,000	2,972,000	2,574,000	2,982,000	4,380,000	5,481,000	4,746,000	5,685,000	5,985,000
Female	3,262,000	3,532,000	4,563,000	6,044,000	4,952,000	5,799,000	7,946,000	7,170,000	7,622,000
Race†									
White	5,234,000	5,663,000	5,386,000	7,450,000	7,456,000	9,542,000	10,513,000	11,017,000	11,191,000
Black	648,000 [§]	702,000 [§]	1,059,000	1,069,000	1,668,000	960,000 [§]	1,382,000	1,197,000	1,750,000
Other	—	—	692,000	—	—	778,000 [§]	797,000 [§]	640,000 [§]	667,000 [§]
Ethnicity¶									
Hispanic or Latino	630,000	367,000 [§]	536,000 [§]	763,000	1,357,000 [§]	853,000 [§]	1,261,000 [§]	1,645,000 [§]	1,993,000
Not Hispanic or Latino	5,291,000	6,136,000	5,626,000	8,263,000	5,804,000	6,320,000	9,855,000	11,210,000	11,614,000
Unknown	0	0	975,000 [§]	0	2,171,000 [§]	4,107,000 [§]	1,577,000	0	0
Age									
<18 yrs	2,673,000	2,258,000	2,447,000	3,210,000	3,988,000	4,400,000	4,361,000	5,392,000	6,540,000
≥18 yrs	3,247,000	4,245,000	4,691,000	5,817,000	5,344,000	6,880,000	8,331,000	7,463,000	7,067,000
Age group (yrs)									
0–4	631,000	556,000	881,000	917,000	1,675,000	2,102,000	1,457,000	2,169,000	2,189,000
5–14	1,704,000	1,520,000	1,271,000	1,855,000	2,105,000	1,914,000	2,588,000	2,727,000	3,330,000
15–34	1,524,000	1,206,000	1,723,000 [§]	1,735,000	2,001,000	1,912,000	1,911,000	1,726,000	2,641,000
35–64	1,384,000	2,275,000	2,012,000	3,219,000	2,588,000	3,131,000	3,858,000	4,363,000	4,099,000
≥65	678,000	945,000	1,251,000	1,301,000	964,000	2,221,000	2,877,000	1,869,000	1,348,000
Region									
Northeast	2,193,000 [§]	1,742,000	1,886,000 [§]	1,556,000	2,373,000	2,267,000	3,249,000	1,966,000	3,634,000 [§]
Midwest	770,000	1,597,000	1,334,000	2,340,000	2,721,000	2,288,000 [§]	1,840,000	3,085,000	3,191,000
South	1,442,000	1,791,000	1,871,000	2,599,000	2,827,000	3,881,000 [§]	4,616,000	4,626,000 [§]	4,690,000
West	1,517,000 [§]	1,374,000	2,047,000	2,532,000	1,411,000	2,843,000 [§]	2,986,000	3,178,000 [§]	2,092,000 [§]
Total	5,921,000	6,503,000	7,137,000	9,026,000	9,332,000	11,280,000	12,692,000	12,855,000	13,607,000

* Alaska and Hawaii were not included in the sample in 1980 or in 1985.

† For 1995 and earlier, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2000–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

¶ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category Name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. If unknown, ethnicity was imputed in 1980, 1985, 1995, 2003 and 2004, but not in other years.

TABLE 14. Estimated rate of physician office visits with asthma as the first listed diagnosis per 10,000 population, by year, sex, race, age, and region — National Ambulatory Medical Care Survey, United States 1980–2004

Characteristic	1980*	1985*	1990	1995	2000	2001	2002	2003	2004
Sex									
Male	247.6	270.0	222.4	228.2	320.4	405.5	344.9	409.9	418.8
Female	286.7	299.0	358.2	450.4	351.9	406.0	549.3	484.2	514.8
Race†									
White	275.4	289.8	259.9	343.0	340.3	434.4	473.4	468.7	476.6
Black	236.4	279.8	356.9	339.2	434.9	299.4§	368.7	349.1	477.1
Other	—	229.5§	1,001.9	460.0	—	294.0§	576.6§	469.6§	421.0§
Ethnicity¶									
Hispanic or Latino	479.9	213.7	—	279.4	—	—	—	460.5	422.9
Not Hispanic or Latino	257.6	294.5	NA	353.9	NA	NA	NA	456.9	472.4
Age									
<18 yrs	434.5	358.3	375.2	456.5	554.9	608.6	600.3	741.3	897.3
≥18 yrs	209.2	250.1	259.3	303.6	264.3	337.0	404.1	349.9	325.3
Age group (yrs)									
0–4	396.2	310.6	461.7	452.2§	854.0	1,064.9	735.0	1092.5	1,095.2
5–14	500.9	451.9	356.6	473.3	516.9	468.5	631.8	667.2	817.8
15–34	205.9	153.2	221.8§	225.5§	263.8	251.2	250.4	218.4	324.3
35–64	202.0	301.1	239.8	342.3	246.1	292.8	355.3	389.6	361.5§
≥65	284.2	350.9	419.9	413.4	294.8	675.9	870.4	545.6	389.7
Region									
Northeast	440.7	362.8	379.1	303.5	457.5	431.1	625.4	377.8	689.6
Midwest	139.9	289.9	223.0	374.4	401.8	353.1	277.4	453.8	455.2
South	197.6	223.6	231.0	282.1	292.6	392.2	455.0	428.0	455.6
West	381.1	318.2	393.9	457.8	240.0	483.7	524.8	551.8	324.4
Total	269.7	285.9	290.8	345.3	338.4	409.7	457.5	448.6	468.1

* Alaska and Hawaii were not included in the sample in 1980 or in 1985.

† For 1995 and earlier, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2000–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%. Except for age groups, rate or percent is age-adjusted to the 2000 standard.

¶ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. Rates were not calculated for years when ethnicity was not imputed.

TABLE 15. Estimated rate of physician office visits with asthma as the first listed diagnosis per 100 persons with asthma, by year, sex, race, age, and region — National Ambulatory Medical Care Survey—United States, 1980–2004

Characteristic	12-Month prevalence				2000†	Current prevalence			
	1980*	1985*	1990	1995		2001	2002	2003	2004
Sex									
Male	79.5	76.9	54.3	44.6	NA	63.9	56.1	69.2	67.0
Female	95.6	74.4	81.9	73.8	NA	49.6	68.7	61.7	65.7
Race§									
White	90.3	76.3	63.0	61.1	NA	60.1	68.0	72.6	70.6
Black	75.3¶	62.7¶	74.9	48.2	NA	32.0¶	41.5	36.5	51.8
Other	—	—	195.8¶	—	NA	55.2¶	64.4¶	46.4¶	50.8¶
Ethnicity**									
Hispanic or Latino	147.8¶	65.6¶	NA	49.8¶	NA	NA	NA	74.8¶	93.8
Not Hispanic or Latino	83.6	76.2	NA	61.9	NA	NA	NA	63.6	63.0
Age									
<18 yrs	122.4	75.4	65.7	60.6	NA	69.6	71.9	86.8	105.7
≥18 yrs	71.0	75.6	71.2	60.7	NA	49.3	59.7	54.8	49.2
Age group (yrs)									
0–4	171.0¶	84.2	104.9	74.7	NA	186.4	123.4	184.2	195.5¶
5–14	113.9	88.4	56.0	57.7	NA	47.5	69.1	70.7	90.0
15–34	71.0	42.2	59.4¶	38.8	NA	31.6	33.2	30.4	47.0
35–64	69.3	97.3	62.5	68.3	NA	44.0	52.1	61.1	53.4
≥65	90.7	91.2	115.6	103.9	NA	113.5¶	148.8	94.8	55.5
Region									
Northeast	153.8¶	93.6	97.8¶	52.9¶	NA	51.9	74.9	47.5¶	93.1¶
Midwest	51.2	83.0	50.3	68.8	NA	45.9¶	37.6	58.3	61.3
South	61.0	60.1	53.8	50.5	NA	54.2¶	67.3	69.6¶	68.0
West	103.5¶	74.4	90.7	74.6	NA	75.6¶	76.0	84.4¶	46.1¶
Total	87.6	75.5	69.2	60.7	NA	55.6	63.4	64.8	66.2

* Alaska and Hawaii were not included in the sample in 1980 or in 1985.

† Asthma prevalence not available in 2000.

§ For 1995 and earlier, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2001–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

¶ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

** The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. Rates were not calculated for years when ethnicity was not imputed.

TABLE 16. Estimated average annual number of outpatient department visits with asthma as the first listed diagnosis, by age, sex, race, ethnicity, and region — National Hospital Ambulatory Medical Care Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)						
		<18	≥18	0–4	5–14	15–34	35–64	≥65
Sex								
Male	565,200	389,500	175,700	152,500	219,300	76,600	88,400	28,400*
Female	775,900	262,100	513,800	90,000	153,000	193,400	258,100	81,300
Race†								
White	845,800	361,800	484,000	140,900	206,200	161,900	253,700	83,200
Male	343,500	210,300	133,200	92,500	115,100	49,700	63,700*	22,400*
Female	502,300	151,500	350,800	48,400	91,100	112,100	189,900	60,800*
Black	444,700	266,000	178,700	95,100	152,400	94,300	80,100	22,800*
Male	201,400	167,100	34,300	54,900	100,500	23,100	19,300*	—
Female	243,200	98,900	144,400	40,200*	52,000	71,200	60,700	19,100*
Other races NTA	50,700	23,800	26,800*	—	13,800*	13,900*	12,800*	—
Male	20,300	12,100*	8,300*	—	3,800*	—	—	—
Female	30,300	11,800*	18,500*	—	10,000*	—	7,500*	—
Ethnicity‡								
Hispanic or Latino	231,900	78,500	153,500*	23,700	50,600	37,400*	80,000*	40,300*
Male	76,800*	39,800	—	15,700	22,500	5,700*	—	—
Female	155,100	38,700	116,400*	8,000*	28,100	31,700*	60,500*	26,800*
Not Hispanic or Latino	1,109,200	573,200	536,000	218,800	321,800	232,700	266,500	69,400
Male	488,400	349,800	138,700	136,800	196,900	70,900	68,900	14,900*
Female	620,800	223,400	397,400	82,000	124,900	161,800	197,600	54,500*
Region								
Northeast	391,200	124,800	266,400	40,700	77,400	76,400	162,700	34,000*
Midwest	320,700	163,900	156,900	59,100	97,200	82,200	50,000	32,200*
South	491,700	289,100	202,600	113,500	161,300	77,600	102,300*	37,000*
West	137,500	73,900	63,700	29,200*	36,500*	33,900	31,400	—
Total	1,341,100	651,700	689,500	242,500	372,400	270,100	346,500	109,700

* The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

† Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

‡ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 17. Estimated average annual rate of outpatient department visits with asthma as the first listed diagnosis per 100 persons with current asthma, by age, sex, race, and region — National Hospital Ambulatory Medical Care Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)						
		<18	≥18	0–4	5–14	15–34	35–64	≥65
Sex								
Male	6.7	10.9	3.6	22.4	9.5	3.2	3.7	4.4*
Female	6.7	10.0	5.7	18.8	9.8	5.6	5.3	6.2
Race†								
White	5.5	8.7	4.3	22.1	7.7	3.7	4.3	4.9
Male	5.5	8.9	3.4	24.1	7.3	2.8	3.3*	3.9*
Female	5.6	8.5	4.9	19.1	8.3	4.3	4.8	5.4*
Black	14.2	19.9	10.0	27.1	19.5	10.1	8.9	13.8*
Male	15.5	22.1	6.3	29.4	21.2	6.6	7.7*	—
Female	13.4	17.0	11.7	24.4*	17.0	12.3	9.4	15.3*
Other races NTA	3.1	3.3	2.9*	—	3.2*	—	3.0*	—
Male	2.4	2.6*	2.2*	—	1.4*	—	—	—
Female	3.8*	4.6*	3.4*	—	—	—	2.9*	—
Ethnicity§								
Hispanic or Latino	11.7	8.9	14.0*	11.7	9.4	6.2*	15.1*	37.8*
Male	8.8*	8.1	—	13.9	7.5	2.3*	—	—
Female	14.0	9.9	16.4*	8.9*	11.9	9.0*	16.9*	39.6*
Not Hispanic or Latino	6.1	10.8	4.2	22.8	9.6	4.4	4.0	3.8
Male	6.5	11.3	3.1	24.0	9.7	3.3	3.1	2.4*
Female	5.9	10.0	4.8	21.0	9.5	5.2	4.4	4.4*
Region								
Northeast	9.1	9.3	9.1	16.8	9.1	6.7	10.0	8.1*
Midwest	6.3	11.0	4.4	19.0	10.9	5.2	2.8	6.4*
South	7.1	13.1	4.3	25.8	11.7	3.9	4.2*	5.6*
West	3.6	6.4*	2.4	17.2*	4.9*	3.0*	2.2	—
Total	6.7	10.5	5.0	20.9	9.6	4.6	4.8	5.6

*The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

†Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

§The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 18. Estimated number of outpatient department visits with asthma as the first listed diagnosis, by year, sex, race, ethnicity, age, and region — National Hospital Ambulatory Medical Care Survey, United States, 1992–2004

Characteristic	1992	1995	2000	2001	2002	2003	2004
Sex							
Male	292,000	525,000	438,000	491,000	588,000	617,000	469,000
Female	352,000	775,000	598,000	796,000	637,000	895,000	586,000
Race*							
White	412,000	792,000	698,000	960,000	723,000	854,000	561,000
Black	184,000	431,000 [†]	302,000	292,000	457,000	584,000	422,000
Other	48,000 [†]	78,000 [†]	36,000 [†]	34,000 [†]	44,000 [†]	74,000 [†]	71,000 [†]
Ethnicity[§]							
Hispanic or Latino	147,000	267,000 [†]	114,000	146,000 [†]	181,000	369,000 [†]	206,000
Not Hispanic or Latino	497,000	1,034,000	922,000	1,141,000	1,044,000	1,143,000	849,000
Age							
<18 yrs	291,000	549,000 [†]	582,000	570,000	635,000	750,000	462,000
≥18 yrs	353,000	752,000 [†]	454,000	716,000	590,000	762,000	593,000
Age group (yrs)							
0–4	120,000	177,000 [†]	183,000 [†]	254,000	220,000	253,000 [†]	210,000
5–14	144,000	308,000	340,000	292,000	390,000	436,000	197,000
15–34	141,000	242,000 [†]	167,000	242,000	270,000	298,000	225,000
35–64	154,000	460,000 [†]	282,000	373,000	268,000	399,000 [†]	319,000
≥65	85,000 [†]	113,000 [†]	63,000 [†]	125,000 [†]	77,000 [†]	127,000 [†]	103,000 [†]
Region							
Northeast	242,000	268,000 [†]	248,000	287,000 [†]	326,000	561,000 [†]	324,000
Midwest	204,000 [†]	336,000	343,000	439,000 [†]	305,000	219,000	291,000
South	64,000 [†]	—	263,000	439,000 [†]	456,000 [†]	580,000 [†]	239,000
West	134,000	146,000 [†]	—	122,000 [†]	139,000	152,000 [†]	201,000 [†]
Total	644,000	1,301,000	1,036,000	1,286,000	1,225,000	1,512,000	1,054,000

* For 1992 and 1995, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2000–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group.

[†] The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

[§] The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 19. Estimated rate of outpatient department visits with asthma as the first listed diagnosis per 10,000 population, by year, sex, race, ethnicity, age, and region — National Hospital Ambulatory Medical Care Survey, United States, 1992–2004

Characteristic	1992	1995	2000	2001	2002	2003	2004
Sex							
Male	22.5	39.9	31.0	34.9	41.4	43.3	32.3
Female	26.9	57.9	42.8	56.2	45.1	61.4	39.6
Race*							
White	19.3	36.3	32.5	43.9	32.9	36.6	24.0
Black	53.7	131.4	83.1	76.1	115.6	152.2	116.4
Other	40.7	64.1 [†]	—	15.3 [†]	19.9 [†]	52.6	45.8 [†]
Ethnicity[§]							
Hispanic or Latino	67.5	92.5	34.8	56.1 [†]	56.2	117.7	59.6
Not Hispanic or Latino	21.3	44.1	38.6	47.8	43.7	47.8	35.3
Age							
<18 yrs	43.5	78.1 [†]	80.9	78.8	87.4	103.1	102.9
≥18 yrs	19.1	39.2 [†]	22.5	35.1	28.6	35.7	35.1
Age groups (yrs)							
0–4	146.3	87.5 [†]	93.5 [†]	128.8	110.9	127.7 [†]	105.1 [†]
5–14	79.1	78.6	83.6	71.5	95.1	106.6	—
15–34	57.5	31.5 [†]	22.0	31.8	35.4	37.7	27.6
35–64	41.0	49.0 [†]	26.8	34.9	24.7	35.6 [†]	28.1 [†]
≥65	28.9 [†]	35.8 [†]	19.2 [†]	38.1 [†]	23.4 [†]	36.9 [†]	29.9 [†]
Region							
Northeast	48.0	51.8	47.4	54.2	61.9	105.3	60.8
Midwest	32.7	54.4	50.0	67.1	45.2	32.4	42.2
South	7.3	58.3	26.9	44.9	44.6	54.2	24.2
West	23.0	26.5	30.2 [†]	19.3	23.4	25.4	31.0
Total	25.0	49.2	37.4	46.4	43.5	52.7	36.6

* For 1992 and 1995, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2000–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

[†] The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%. Except for age groups, rate or percent is age-adjusted to the 2000 standard.

[§] The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 20. Estimated rate of outpatient department visits with asthma as the first listed diagnosis per 100 persons with asthma, by year, sex, race, ethnicity, age, and region — National Hospital Ambulatory Medical Care Survey—United States, 1992–2004

Characteristic	12-Month prevalence		2000*	Current prevalence			
	1992	1995		2001	2002	2003	2004
Sex							
Male	5.3	7.9	NA	5.7	7.0	7.5	5.2
Female	5.1	9.5	NA	6.8	5.5	7.7	5.0
Race†							
White	4.0	6.5	NA	6.1	4.8	5.7	3.6
Black	10.3	19.4 [§]	NA	10.0	14.0	18.3	13.1
Other	17.2 [§]	16.9 [§]	NA	2.0 [§]	2.9 [§]	4.4 [§]	4.3 [§]
Ethnicity¶							
Hispanic or Latino	14.4	17.4 [§]	NA	7.3 [§]	10.5	16.8 [§]	9.7
Not Hispanic or Latino	4.4	7.7	NA	6.2	5.7	6.5	4.6
Age							
<18 yrs	6.9	10.4 [§]	NA	9.0	10.5	12.1	7.5
≥18 yrs	4.3	7.8 [§]	NA	5.1	4.2	5.6	4.1
Age group (yrs)							
0–4	11.9	14.5 [§]	NA	22.5	18.6	21.5 [§]	18.8
5–14	6.0	9.6 [§]	NA	7.2	10.4	11.3	5.3
15–34	4.0	5.4 [§]	NA	4.0	4.7	5.2	4.0
35–64	3.7	9.8 [§]	NA	5.2	3.6	5.6 [§]	4.1
≥65	6.9 [§]	9.0 [§]	NA	6.4 [§]	4.0 [§]	6.4 [§]	4.3 [§]
Region							
Northeast	10.2	9.1 [§]	NA	6.6 [§]	7.5	13.6 [§]	8.3
Midwest	6.7 [§]	9.9 [§]	NA	8.8 [§]	6.2	4.1	5.6
South	1.6 [§]	—	NA	6.1 [§]	6.6 [§]	8.7 [§]	3.5
West	4.6	4.3 [§]	NA	3.2 [§]	3.5	4.0 [§]	4.4 [§]
Total	5.2	8.7	NA	6.3	6.1	7.6	5.1

* Asthma prevalence not available (NA) in 2000.

† For 1992 and 1995, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2001–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

¶ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 21. Estimated average annual number of emergency department visits with asthma as the first listed diagnosis, by age, sex, race, and region — National Hospital Ambulatory Medical Care Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		<18	≥18	0–4	5–14	15–34
Sex						
Male	780,900	423,800	357,100	181,900	202,100	205,200
Female	991,300	273,100	718,200	118,900	113,700	329,800
Race*						
White	1,067,600	373,600	694,000	169,900	163,700	329,000
Male	426,500	212,300	214,200	103,000	96,500	102,600
Female	641,200	161,300	479,800	66,800	67,200	226,400
Black	654,700	294,100	360,600	115,700	142,600	191,600
Male	328,700	193,400	135,300	70,200	98,400	96,000
Female	326,100	100,700	225,300	45,500	44,100	95,700
Other races NTA	49,800	29,100	20,700	15,200†	9,500†	14,400†
Male	25,800	18,100†	7,700†	—	7,100†	6,600†
Female	24,000	11,000†	13,000	—	—	7,700†
Ethnicity[§]						
Hispanic or Latino	246,200	124,400	121,800	62,000†	51,500	61,800
Male	120,800	71,900	48,900	38,800†	28,600†	29,400
Female	125,400	52,500	72,900	23,200†	22,900	32,400
Not Hispanic or Latino	1,526,000	572,500	953,500	238,700	264,300	473,200
Male	660,100	351,900	308,200	143,100	173,500	175,800
Female	865,900	220,600	645,400	95,700	90,800	297,400
Region						
Northeast	447,200	141,700	305,500	48,500	79,100	136,500
Midwest	407,600	171,300	236,200	81,900	63,600	133,700
South	663,300	296,600	366,700	134,400	131,100	173,800
West	254,100	87,200	166,900	36,000	42,000	90,900
Total	1,772,200	696,900	1,075,300	300,800	315,800	535,000

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

§ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 21. (Continued) Estimated average annual number of emergency department visits with asthma as the first listed diagnosis, by age, sex, race, and region — National Hospital Ambulatory Medical Care Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		15–19	20–24	25–34	35–64	≥65
Sex						
Male	780,900	52,000	55,200	98,100	154,500	37,200
Female	991,300	73,500	92,900	163,400	361,200	67,700
Race*						
White	1,067,600	67,800	96,200	165,000	338,000	67,000
Male	426,500	16,500	28,500	57,600	101,500	22,800
Female	641,200	51,400	67,700	107,400	236,500	44,200
Black	654,700	50,100	50,200	91,300	170,100	34,800
Male	328,700	32,100	25,900	38,000	50,900	13,200 [†]
Female	326,100	18,000	24,400	53,300	119,200	21,600
Other races NTA	49,800	7,600[†]	—	5,100[†]	7,600	—
Male	25,800	—	—	—	—	—
Female	24,000	—	—	—	5,500 [†]	—
Ethnicity[§]						
Hispanic or Latino	246,200	12,200[†]	11,900[†]	37,700	57,000	13,900[†]
Male	120,800	—	3,300 [†]	21,200	18,600	5,400 [†]
Female	125,400	7,300 [†]	8,600 [†]	16,500	38,400	8,500 [†]
Not Hispanic or Latino	1,526,000	113,400	136,100	223,700	458,800	90,900
Male	660,100	47,100	51,900	76,800	135,900	31,800
Female	865,900	66,300	84,300	146,900	322,900	59,200
Region						
Northeast	447,200	27,600	32,900	76,100	153,000	30,000
Midwest	407,600	35,400	43,400	54,900	113,800	14,500 [†]
South	663,300	44,500	45,000	84,300	185,300	38,700
West	254,100	18,000 [†]	26,700 [†]	46,200	63,700	21,600 [†]
Total	1,772,200	125,500	148,000	261,500	515,700	104,900

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories "white" and "black" are comprised of persons who indicated only a single race group. "Other races NTA (not tabulated above)" includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

[†] The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

[§] The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from "Hispanic" to "Hispanic or Latino," but the definition of persons in that category remained the same.

Table 22. Estimated average annual rate of emergency department visits with asthma as the first listed diagnosis per 100 persons with current asthma, by age, sex, race, and region — National Hospital Ambulatory Medical Care Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)									
		<18	≥18	0–4	5–14	15–34	15–19	20–24	25–34	35–64	≥65
Sex											
Male	9.3	11.8	7.4	26.7	8.7	8.6	5.7	8.9	11.4	6.5	5.7
Female	8.5	10.4	8.0	24.8	7.3	9.6	7.5	10.0	10.7	7.4	5.2
Race*											
White	7.0	9.0	6.2	26.7	6.1	7.5	4.9	8.2	9.1	5.7	3.9
Male	6.8	9.0	5.5	26.9	6.1	5.7	2.5	5.8	8.9	5.2	4.0
Female	7.1	9.1	6.6	26.4	6.1	8.8	7.0	9.9	9.2	6.0	3.9
Black	21.0	22.0	20.2	32.9	18.3	20.6	15.2	19.6	26.6	19.0	21.1
Male	25.2	25.5	24.8	37.6	20.7	27.4	20.4	31.9 [†]	34.1	20.2	33.0*
Female	17.9	17.3	18.2	27.6	14.4	16.5	10.5	13.9	23.0	18.5	17.3*
Other races NTA	3.0	4.1	2.2	8.7[†]	2.2[†]	2.7[†]	4.4[†]	—	2.1[†]	1.8[†]	—
Male	3.1	3.9 [†]	2.0 [†]	—	2.6 [†]	2.6 [†]	—	—	—	—	—
Female	3.0	4.3 [†]	2.4	—	—	2.8 [†]	—	—	—	2.1 [†]	—
Ethnicity[§]											
Hispanic or Latino	12.4	14.1	11.1	30.6[†]	9.6	10.3	5.6[†]	8.8[†]	15.2	10.8	13.1*
Male	13.8	14.6	12.8	34.3 [†]	9.5 [†]	11.7	—	6.5 [†]	23.8 [†]	10.9	—
Female	11.4	13.4	10.2	25.9 [†]	9.6	9.2	6.8 [†]	—	10.3	10.7	12.5*
Not Hispanic or Latino	8.4	10.8	7.5	24.9	7.9	9.0	6.8	9.7	10.4	6.9	4.9
Male	8.7	11.4	6.9	25.1	8.6	8.2	5.9	9.1	9.9	6.2	5.2
Female	8.2	9.9	7.8	24.5	6.9	9.6	7.5	10.0	10.7	7.2	4.8
Region											
Northeast	10.4	10.5	10.4	20.1	9.3	12.0	6.8	10.4	18.0	9.4	7.2
Midwest	8.1	11.5	6.6	26.4	7.1	8.4	7.2	9.4	8.7	6.5	2.9*
South	9.6	13.4	7.8	30.6	9.5	8.8	6.9	9.1	10.0	7.6	5.9
West	6.7	7.6	6.3	21.2	5.6	8.1	5.1 [†]	9.9 [†]	9.3	4.6	5.8*
Total	8.8	11.2	7.8	25.9	8.1	9.2	6.6	9.6	10.9	7.1	5.4

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

[†]The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

[§]The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 23. Estimated number of emergency department visits with asthma as the first listed diagnosis, by year, sex, race, ethnicity, age, and region — National Hospital Ambulatory Medical Care Survey, United States, 1992–2004

Characteristic	1992	1995	2000	2001	2002	2003	2004
Sex							
Male	667,000	725,000	798,000	656,000	914,000	773,000	894,000
Female	800,000	1,140,000	1,036,000	1,009,000	984,000	981,000	944,000
Race*							
White	925,000	1,018,000	1,301,000	1,048,000	1,026,000	1,128,000	1,010,000
Black	488,000	775,000	499,000	564,000	814,000	586,000	772,000
Other	54,000 [†]	73,000 [†]	34,000 [†]	52,000 [†]	58,000	39,000	55,000
Ethnicity[§]							
Hispanic or Latino	211,000	301,000	213,000	161,000	223,000	354,000	270,000
Not Hispanic or Latino	1,256,000	1,564,000	1,622,000	1,503,000	1,675,000	1,400,000	1,568,000
Age							
<18 yrs	644,000	634,000	729,000	665,000	728,000	697,000	754,000
≥18 yrs	823,000	1,232,000	1,106,000	999,000	1,171,000	1,056,000	1,084,000
Age group (yrs)							
0–4	288,000	248,000	342,000	270,000	317,000	316,000	336,000
5–14	291,000	322,000	343,000	349,000	325,000	274,000	334,000
15–34	438,000	566,000	631,000	478,000	572,000	556,000	586,000
35–64	361,000	630,000	436,000	466,000	579,000	502,000	486,000
≥65	89,000	101,000	83,000 [†]	103,000	106,000	106,000	96,000
Region							
Northeast	346,000	627,000	387,000	452,000	403,000	486,000	483,000
Midwest	418,000	455,000	620,000	440,000	458,000	324,000	509,000
South	398,000	558,000	604,000	551,000	775,000	664,000	631,000
West	305,000	225,000	224,000	222,000	262,000	279,000	215,000
Total	1,467,000	1,865,000	1,835,000	1,665,000	1,898,000	1,753,000	1,838,000

* For 1992 and 1995, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2000–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

[†] The estimate is unreliable because the relative standard error of the estimate is 30%–50%.

[§] The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 24. Estimated rate of emergency department visits with asthma as the first listed diagnosis per 10,000 population, by year, sex, race, ethnicity, age, and region — National Hospital Ambulatory Medical Care Survey, United States, 1992–2004

Characteristic	1992	1995	2000	2001	2002	2003	2004
Sex							
Male	53.3	55.0	57.1	46.6	65.4	55.0	62.0
Female	61.8	86.1	74.1	71.7	69.6	68.1	65.3
Race*							
White	44.4	47.5	60.8	48.2	46.9	48.9	43.6
Black	142.5	228.1	134.2	153.6	218.9	151.8	195.0
Other	46.8	54.5 [†]	17.7 [†]	22.1 [†]	23.7	26.7	39.0
Ethnicity[§]							
Hispanic or Latino	73.7	98.9	54.2	44.1	53.1	89.1	57.5
Not Hispanic or Latino	55.1	67.6	68.1	62.9	69.9	58.3	65.2
Age							
<18 yrs	96.4	90.1	101.4	92.0	100.2	95.9	103.5
≥18 yrs	44.6	64.3	54.7	48.9	56.8	49.5	49.9
Age group (yrs)							
0–4	146.3	122.1	174.3	136.6	159.7	159.1	168.3
5–14	79.1	82.2	84.1	85.4	79.2	67.0	155.1
15–34	57.5	73.5	83.3	62.8	74.9	70.3	79.2
35–64	41.0	66.9	41.5	43.6	53.3	44.8	51.6
≥65	28.9	32.0	25.3 [†]	31.2	32.1	30.8	138.4
Region							
Northeast	70.3	124.1	75.7	86.7	78.2	94.8	93.5
Midwest	64.9	71.7	90.3	66.8	67.3	47.2	73.8
South	46.7	60.7	61.3	54.9	76.7	62.5	61.5
West	54.1	39.6	38.2	37.2	44.7	47.1	33.7
Total	57.3	71.0	66.2	59.8	68.0	61.5	63.4

* For 1992 and 1995, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2000–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

[†] The estimate is unreliable because the relative standard error of the estimate is 30%–50%. Except for age groups, rate or percent is age-adjusted to the 2000 standard.

[§] The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 25. Estimated rate of emergency department visits with asthma as the first listed diagnosis per 100 with asthma, by year, sex, race, ethnicity, age, and region — National Hospital Ambulatory Medical Care Survey, United States, 1992–2004

Characteristic	12-Month prevalence		2000*	Current prevalence			
	1992	1995		2001	2002	2003	2004
Sex							
Male	12.1	10.8	NA	7.6	10.8	9.4	10.0
Female	11.7	13.9	NA	8.6	8.5	8.4	8.1
Race†							
White	9.0	8.3	NA	6.7	6.7	7.5	6.5
Black	27.3	34.9	NA	19.4	25.0	18.4	23.9
Other	19.3 [§]	15.8 [§]	NA	3.1 [§]	3.7	2.3 [§]	3.3
Ethnicity¶							
Hispanic or Latino	20.7	19.6	NA	8.0	12.9	16.1	12.7
Not Hispanic or Latino	11.1	11.7	NA	8.2	9.2	7.9	8.5
Age							
<18 yrs	15.3	12.0	NA	10.5	12.0	11.2	12.2
≥18 yrs	10.1	12.9	NA	7.2	8.4	7.8	7.5
Age group (yrs)							
0–4	28.4	20.2	NA	23.9	26.8	26.8	30.0
5–14	12.0	10.0	NA	8.6	8.7	7.1	9.0
15–34	12.5	12.7	NA	7.9	9.9	9.8	10.4
35–64	8.6	13.4	NA	6.5	7.8	7.0	6.3
≥65	7.3	8.0	NA	5.2	5.5	5.4	4.0
Region							
Northeast	14.5	21.3	NA	10.3	9.3	11.8	12.4
Midwest	13.8	13.4	NA	8.8	9.4	6.1	9.8
South	9.8	10.8	NA	7.7	11.3	10.0	9.1
West	10.5	6.6	NA	5.9	6.7	7.4	4.7
Total	11.9	12.5	NA	8.2	9.5	8.8	8.9

* Asthma prevalence not available in 2000.

† For 1992 and 1995, race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977); for 2001–2004, race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Under the 1997 revision, race categories “white” and “black” are comprised of persons who indicated only a single race group, and “other” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed previously.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. All other relative standard errors are <30%.

¶ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 26. Estimated average annual number of hospital discharges with asthma as the first listed diagnosis, by age, sex, race, and region — National Hospital Discharge Survey, United States, 2001– 2003

Characteristic	Total	Age (yrs)				
		<18	≥18	0–4	5–14	15–34
Sex						
Male	204,500	129,400	75,100	75,700	49,100	20,200
Female	299,400	75,200	224,200	40,500	28,400	38,100
Race*						
White	252,900	95,900	157,000	57,400	33,400	26,700
Male	97,100	60,600	36,500	37,100	20,900	8,700
Female	155,800	35,300	120,500	20,300	12,400	18,000
Black	130,200	65,600	64,600	33,200	28,300	17,000
Male	60,200	42,100	18,100	22,000	18,500	6,400
Female	70,000	23,500	46,500	11,200	9,700	10,600
Other races NTA	24,400	11,100	13,300	7,100	3,700	3,400
Male	11,000	6,700	4,300	4,300	2,200	1,300†
Female	13,400	4,400	9,000	2,800	1,400	2,100
Unknown Race	96,400	32,000	64,400	18,400	12,200	11,200
Male	36,200	20,100	16,100	12,300	7,500	3,700
Female	60,200	12,000	48,300	6,200	4,800	7,400
Region						
Northeast	126,200	47,700	78,500	27,100	17,300	18,000
Midwest	113,300	42,600†	70,700	20,600†	18,900†	14,300
South	174,600	70,000	104,600	40,400	27,400	16,800
West	89,800	44,300†	45,600	28,100†	13,900	9,200
Total	504,000	204,700	299,300	116,200	77,500	58,300

TABLE 26. (Continued) Estimated average annual number of hospital discharges with asthma as the first listed diagnosis, by age, sex, race, and region — National Hospital Discharge Survey, United States, 2001– 2003

Characteristic	Total	Age (yrs)				
		15–19	20–24	25–34	35–64	≥65
Sex						
Male	204,500	6,500	4,100	9,500	38,500	21,000
Female	299,400	8,800	9,100	20,200	125,100	67,300
Race*						
White	252,900	6,300	6,000	14,400	82,300	53,100
Male	97,100	3,200	1,100†	4,500	17,800	12,500
Female	155,800	3,100	5,000	10,000	64,500	40,500
Black	130,200	6,100	3,100	7,900	39,900	11,800
Male	60,200	2,300	1,400	2,800	10,300	3,000
Female	70,000	3,800	1,700	5,100	29,600	8,800
Other races NTA	24,400	500†	1,100	1,800	6,900	3,400
Male	11,000	200†	—	800†	2,400	700
Female	13,400	300†	700†	1,000†	4,500	2,600†
Unknown Race	96,400	2,500	3,000	5,700	34,500	20,100
Male	36,200	900†	1,400†	1,500	8,000	4,700
Female	60,200	1,600	1,600	4,200	26,500	15,400
Region						
Northeast	126,200	5,100	3,800	9,000	42,000	21,900
Midwest	113,300	4,100†	2,900	7,300	38,900	20,700
South	174,600	3,400	4,500	8,900	58,100	31,900
West	89,800	2,700†	1,900†	4,500	24,600	13,900
Total	504,000	15,300	13,200	29,800	163,600	88,300

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

† The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

TABLE 27. Estimated average annual number of hospital discharges with asthma as the first listed diagnosis per 100 persons with current asthma, by age, sex, race, and region — National Hospital Discharge Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		<18	≥18	0–4	5–14	15–34
Sex						
Male	2.4	3.6	1.6	11.1	2.1	0.8
Female	2.6	2.9	2.5	8.4	1.8	1.1
Race*						
White	1.7	2.3	1.4	9.0	1.2	0.6
Male	1.5	2.6	0.9	9.7	1.3	0.5
Female	1.7	2.0	1.7	8.0	1.1	0.7
Black	4.2	4.9	3.6	9.5	3.6	1.8
Male	4.6	5.6	3.3	11.8	3.9	1.8
Female	3.8	4.0	3.8	6.8	3.2	1.8
Other races NTA	1.5	1.5	1.4	4.1	0.9	0.6
Male	1.3	1.4	1.1	3.9	0.8	0.5 [†]
Female	1.7	1.7	1.7	4.5 [†]	1.0	0.7
Unknown Race	NA	NA	NA	NA	NA	NA
Male	NA	NA	NA	NA	NA	NA
Female	NA	NA	NA	NA	NA	NA
Region						
Northeast	2.9	3.5	2.7	11.2	2.0	1.6
Midwest	2.2	2.9 [†]	2.0	6.6 [†]	2.1 [†]	0.9
South	2.5	3.2	2.2	9.2	2.0	0.8
West	2.4	3.9 [†]	1.7	16.5 [†]	1.9	0.8
Total	2.5	3.3	2.2	10.0	2.0	1.0

TABLE 27. (Continued) Estimated average annual number of hospital discharges with asthma as the first listed diagnosis per 100 persons with current asthma, by age, sex, race, and region — National Hospital Discharge Survey, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		15–19	20–24	25–34	35–64	≥65
Sex						
Male	2.4	0.7	0.7	1.1	1.6	3.2
Female	2.6	0.9	1.0	1.3	2.6	5.2
Race*						
White	1.7	0.4	0.5	0.8	1.4	3.1
Male	1.5	0.5	0.2 [†]	0.7	0.9	2.2
Female	1.7	0.4	0.7	0.9	1.6	3.6
Black	4.2	1.8	1.2	2.3	4.5	7.2
Male	4.6	1.4	1.7 [†]	2.5 [†]	4.1	7.6
Female	3.8	2.2	1.0	2.2	4.6	7.0
Other races NTA	1.5	0.3[†]	1.0[†]	0.7[†]	1.6	3.6[†]
Male	1.3	0.2 [†]	—	—	1.5	1.9 [†]
Female	1.7	0.4 [†]	1.1 [†]	0.7 [†]	1.7	4.9 [†]
Unknown Race	NA	NA	NA	NA	NA	NA
Male	NA	NA	NA	NA	NA	NA
Female	NA	NA	NA	NA	NA	NA
Region						
Northeast	2.9	1.3	1.2	2.1	2.6	5.2
Midwest	2.2	0.8 [†]	0.6	1.2	2.2	4.1
South	2.5	0.5	0.9	1.1	2.4	4.9
West	2.4	0.8 [†]	0.7 [†]	0.9	1.8	3.7
Total	2.5	0.8	0.9	1.2	2.3	4.5

* Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above.

[†]The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

TABLE 28. Estimated number of hospital discharges with asthma as the first listed diagnosis, by year, sex, race, age, and region — National Hospital Discharge Survey, United States, 1980–2004

Characteristic	1980	1985	1990	1995	2000	2001	2002	2003	2004
Sex									
Male	180,400	195,400	190,900	209,600	197,800	186,100	195,700	231,800	207,500
Female	227,900	266,300	285,200	301,000	267,100	267,900	288,000	342,300	289,600
Race*									
White	288,000	309,200	262,800	255,700	NA	NA	NA	NA	NA
Black	72,800	91,200	116,400	140,300	NA	NA	NA	NA	NA
Other	5,200	21,600	19,100	24,600	NA	NA	NA	NA	NA
Unknown race	42,300	39,600	77,700	90,200	NA	NA	NA	NA	NA
Race†									
White	NA	NA	NA	NA	233,700	231,200	243,800	283,900	236,100
Black	NA	NA	NA	NA	117,100	114,400	131,400	144,700	126,200
Other races NTA	NA	NA	NA	NA	18,300	22,100	18,700	32,400	34,500
Unknown race	NA	NA	NA	NA	95,900	86,400	89,800	113,100	100,200
Age									
<18 yrs	133,400	158,900	182,200	227,100	213,900	190,100	196,000	227,900	198,200
≥18 yrs	274,900	302,800	293,900	283,500	251,000	264,000	287,700	346,200	298,900
Age group (yrs)									
0–4	61,000	83,700	104,300	118,100	126,000	108,900	115,700	124,000	120,200
5–14	63,200	60,700	64,800	93,800	77,100	73,100	70,800	88,600	69,300
15–34	67,300	77,100	75,200	79,500	58,800	51,400	56,000	67,400	50,300
35–64	132,900	143,000	129,300	142,000	135,400	145,000	161,200	184,600	153,100
≥65	83,900	97,200	102,400	77,200	67,600	75,600	79,900	109,400	104,000
Region									
Northeast	96,800	105,300	114,900	140,700	110,500	102,600	109,600	166,400	129,800
Midwest	113,200	113,300	133,800	134,500	109,200	107,300	103,700	129,000	109,600
South	130,200	165,800	144,400	156,600	167,100	161,100	181,200	181,500	165,500
West	68,100	77,200	83,000	78,800	78,200	83,000	89,200	97,200	92,200
Total	408,300	461,700	476,100	510,600	465,000	454,000	483,800	574,100	497,100

* Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977). Multiple race was not collected in these years. Unknown race was not imputed and is shown separately. After 1999, there is no bridging variable to maintain historic coding therefore data are not available (NA).

† Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above. Unknown race was not imputed and is shown separately. It is not possible to apply the 1997 revisions to the race categorizations to years before 2000; therefore, data were not available.

TABLE 29. Estimated rate of hospital discharges with asthma as the first listed diagnosis per 10,000 population, by year, sex, race, ethnicity, age, and region — National Hospital Discharge Survey, United States 1980–2004

Characteristic	1980	1985	1990	1995	2000	2001	2002	2003	2004
Sex									
Male	16.8	17.4	13.3	15.8	14.3	13.6	13.9	16.5	14.5
Female	19.9	22.0	21.9	18.7	18.7	18.6	19.4	23.0	18.9
Race*									
White	15.1	15.7	12.5	11.6	NA	NA	NA	NA	NA
Black	27.0	31.4	36.6	38.6	NA	NA	NA	NA	NA
Other	—	—	22.3	22.4	NA	NA	NA	NA	NA
Race†									
White	NA	NA	NA	NA	10.2	10.1	10.5	12.2	10.0
Black	NA	NA	NA	NA	31.0	31.2	35.7	39.9	33.5
Other races NTA	NA	NA	NA	NA	12.8	13.3 [§]	10.0	18.1	19.0
Age									
<18 yrs	21.0	25.4	27.5	34.3	29.5	26.9	26.9	31.2	27.4
≥18 yrs	17.0	17.4	15.8	15.8	12.2	12.7	13.4	17.0	10.2
Age group (yrs)									
0–4	37.1	46.9	53.4	58.3	64.0	57.6	59.0	62.7	59.9
5–14	18.2	18.0	17.8	23.9	18.9	18.4	17.3	21.6	17.0
15–34	8.6	9.6	9.3	10.2	7.6	6.8	7.0	8.4	6.2
35–64	19.0	18.8	15.4	15.0	12.7	13.4	14.5	16.4	13.4
≥65	32.6	34.2	33.1	23.2	19.6	21.6	22.5	30.5	28.7
Region									
Northeast	19.6	21.3	22.6	28.2	21.1	20.7	20.6	31.0	23.7
Midwest	19.8	19.7	22.2	22.5	17.1 [§]	16.0	15.9	19.8	16.7
South	17.8	20.8	16.9	17.8	16.8	18.0	17.7	17.4	15.7
West	16.9	17.3	15.4	14.4	12.2	13.9	13.6	14.7	13.8
Total	18.5	19.9	19.0	19.1	16.7	16.4	16.9	19.9	17.0

* Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977). Multiple race was not collected in these years. Unknown race was excluded. After 1999, there is no bridging variable to maintain historic coding therefore data are not available (NA).

† Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above. Unknown race was excluded. It is not possible to apply the 1997 revisions to the race categorizations to years before 2000; therefore, data were not available.

§ The estimates are unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%. Except for age groups, rate is age-adjusted to the 2000 standard.

TABLE 30. Estimated rate of hospital discharges, with asthma as the first listed diagnosis per 100 persons with asthma, by year, sex, race, age, and region — National Hospital Discharge Survey, United States, 1980–2004

Characteristic	12-Month prevalence				2000*	Current prevalence			
	1980	1985	1990	1995		2001	2002	2003	2004
Sex									
Male	5.4	5.1	4.0	3.1	NA	2.2	2.3	2.8	2.3
Female	6.7	5.6	5.1	3.7	NA	2.3	2.5	2.9	2.5
Race†									
White	5.0	4.2	3.1	2.1	NA	NA	NA	NA	NA
Black	8.5	8.2	8.2	6.3	NA	NA	NA	NA	NA
Other	—	31.8 [§]	5.4 [§]	5.3	NA	NA	NA	NA	NA
Race¶									
White	NA	NA	NA	NA	NA	1.5	1.6	1.9	1.5
Black	NA	NA	NA	NA	NA	3.9	4.0	4.5	3.9
Other races NTA	NA	NA	NA	NA	NA	1.3	1.2	1.9	2.1
Age									
<18 yrs	6.1	5.3	4.9	4.3	NA	3.0	3.2	3.7	3.2
≥18 yrs	6.0	5.4	4.5	3.0	NA	1.9	2.1	2.5	2.1
Age group (yrs)									
0–4	16.5	12.7	12.4	9.6	NA	9.7	9.8	10.5	10.7 [§]
5–14	4.2	3.5	2.9	2.9	NA	1.8	1.9	2.3	1.9
15–34	3.1	2.7	2.6	1.8	NA	0.8	1.0	1.2	0.9
35–64	6.6	6.1	4.0	3.0	NA	2.0	2.2	2.6	2.0
≥65	11.2	9.4	9.5	6.2	NA	3.9	4.1	5.5	4.3
Region									
Northeast	6.8	5.7	6.0	4.8	NA	2.3	2.5	4.0	3.3
Midwest	7.5	5.9	5.0	4.0	NA	2.2	2.1	2.4	2.1
South	5.5	5.6	4.2	3.0	NA	2.3	2.6	2.7	2.4
West	4.6	4.2	3.7	2.3	NA	2.2	2.3	2.6	2.0
Total	6.0	5.4	4.6	3.4	NA	2.2	2.4	2.9	2.4

* Asthma prevalence not available (NA) in 2000.

† Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977). Multiple race was not collected in these years. Unknown race was excluded. After 1999, there is no bridging variable to maintain historic coding; therefore, data were not available.

§ The estimates are unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

¶ Race categorized according to the 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting. Race categories “white” and “black” are comprised of persons who indicated only a single race group. “Other races NTA (not tabulated above)” includes Asian, American Indian and Alaskan Native, Native Hawaiian and Other Pacific Islander, persons reporting more than one race, and persons reporting their race as something other than those listed here or above. Unknown race was excluded. It is not possible to apply the 1997 revisions to the race categorizations to years before 2000; therefore, data were not available.

Table 31. Average annual number of deaths with asthma as the underlying cause, by age, sex, race, ethnicity, and region — National Vital Statistics System, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		<18	≥18	0–4	5–14	15–34
Sex						
Male	1,517	128	1,389	31	66	218
Female	2,693	72	2,621	13	45	170
Race*						
White	2,964	86	2,878	18	47	208
Male	972	54	918	13	28	106
Female	1,992	32	1,960	5	19	102
Black	1,078	107	971	24	61	169
Male	467	71	396	17	37	106
Female	611	36	575	7	24	63
Other	168	7	161	2	3	10
Male	79	4	75	1	2	6
Female	89	3	86	1	1	4
Ethnicity†						
Hispanic or Latino	287	23	264	7	12	32
Male	117	16	101	5	8	20
Female	170	7	163	2	4	12
Not Hispanic or Latino	3,923	177	3,746	37	99	356
Male	1,400	111	1,289	26	58	198
Female	2,523	66	2,457	11	41	158
Region						
Northeast	804	41	763	8	25	80
Midwest	985	54	931	9	29	110
South	1,468	76	1,392	19	42	124
West	952	28	924	8	15	72
Total	4,210	200	4,010	44	111	388

Table 31. (Continued) Average annual number of deaths with asthma as the underlying cause, by age, sex, race, ethnicity, and region — National Vital Statistics System, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		15–19	20–24	25–34	35–64	≥65
Sex						
Male	1,517	46	47	124	612	590
Female	2,693	25	37	108	998	1,468
Race*						
White	2,964	34	44	130	982	1,709
Male	972	20	24	62	357	468
Female	1,992	14	20	68	625	1,241
Black	1,078	34	38	97	563	261
Male	467	25	22	59	223	84
Female	611	9	16	38	340	177
Other	168	3	2	6	66	87
Male	79	2	1	4	33	37
Female	89	1	1	2	33	50
Ethnicity†						
Hispanic or Latino	287	6	5	21	128	108
Male	117	4	3	12	53	31
Female	170	2	2	9	75	77
Not Hispanic or Latino	3,923	65	79	211	1,482	1,949
Male	1,400	42	44	112	559	559
Female	2,523	23	35	99	923	1,391
Region						
Northeast	804	11	15	55	345	346
Midwest	985	24	25	61	311	526
South	1,468	25	29	70	591	692
West	952	12	15	45	331	526
Total	4,210	71	84	232	1,610	2,057

* Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. Multiple race is distributed across all three categories. After 1999, a bridging variable is used.

† The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

Table 32. Average annual number of deaths, with asthma as the underlying cause per 10,000 persons with current asthma, by age, sex, race, ethnicity, and region — National Vital Statistics System, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		<18	≥18	0–4	5–14	15–34
Sex						
Male	1.8	0.4	2.9	0.5	0.3	0.9
Female	2.3	0.3	2.9	0.3	0.3	0.5
Race*						
White	1.9	0.2	2.6	0.3	0.2	0.5
Male	1.5	0.2	2.3	0.3	0.2	0.6
Female	2.2	0.2	2.7	0.2	0.2	0.4
Black	3.4	0.8	5.4	0.7	0.7	1.8
Male	3.5	0.9	7.2	0.9	0.7	3.0
Female	3.3	0.6	4.6	0.4	0.7	1.1
Other	1.3	0.1	2.1	0.2 [†]	0.1 [†]	0.2
Male	1.1	0.1 [†]	2.3	—	0.1 [†]	0.3
Female	1.4	0.2 [†]	1.9	—	—	0.2 [†]
Ethnicity						
Hispanic or Latino [§]	1.5	0.3	2.4	0.3	0.2	0.5
Male	1.3	0.3	2.7	0.4	0.3	0.8
Female	1.5	0.2	2.3	0.2 [†]	0.2 [†]	0.3
Not Hispanic or Latino	2.2	0.3	2.9	0.4	0.3	0.7
Male	1.9	0.4	2.9	0.5	0.3	0.9
Female	2.4	0.3	3.0	0.3	0.3	0.5
Region						
Northeast	1.9	0.3	2.6	0.3	0.3	0.7
Midwest	1.9	0.4	2.6	0.3	0.3	0.7
South	2.1	0.3	3.0	0.4	0.3	0.6
West	2.5	0.2	3.5	0.5	0.2	0.6
Total	2.1	0.3	2.9	0.4	0.3	0.7

Table 32. (Continued) Average annual number of deaths, with asthma as the underlying cause per 10,000 persons with current asthma, by age, sex, race, ethnicity, and region — National Vital Statistics System, United States, 2001–2003

Characteristic	Total	Age (yrs)				
		15–19	20–24	25–34	35–64	≥65
Sex						
Male	1.8	0.5	0.8	1.4	2.6	9.1
Female	2.3	0.3	0.4	0.7	2.1	11.3
Race*						
White	1.9	0.2	0.4	0.7	1.6	10.0
Male	1.5	0.3	0.5	0.9	1.8	8.2
Female	2.2	0.2	0.3	0.6	1.6	11.0
Black	3.4	1.0	1.5	2.8	6.2	15.3
Male	3.5	1.6	2.7	5.2	8.8	20.8
Female	3.3	0.5	0.9	1.6	5.2	13.6
Other	1.3	0.2 [†]	0.2 [†]	0.3	1.9	11.2
Male	1.1	0.2 [†]	—	0.4 [†]	2.4	10.2 [†]
Female	1.4	—	—	0.2 [†]	1.5	12.1
Ethnicity						
Hispanic or Latino [§]	1.5	0.3	0.4	0.8	2.4	10.1
Male	1.3	0.4 [†]	0.6 [†]	1.3	3.1	8.0
Female	1.5	0.2 [†]	0.2 [†]	0.6	2.1	11.4
Not Hispanic or Latino	2.2	0.4	0.6	1.0	2.2	10.5
Male	1.9	0.5	0.8	1.4	2.5	9.2
Female	2.4	0.3	0.4	0.7	2.1	11.2
Region						
Northeast	1.9	0.3	0.5	1.3	2.1	8.2
Midwest	1.9	0.5	0.5	1.0	1.8	10.4
South	2.1	0.4	0.6	0.8	2.4	10.6
West	2.5	0.3	0.6	0.9	2.4	14.0
Total	2.1	0.4	0.5	1.0	2.2	10.5

* Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. Multiple race is distributed across all three categories. After 1999, a bridging variable is used.

[†] The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

[§] The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 33. Number of deaths with asthma as the underlying cause, by year, sex, race, ethnicity, age, and region — National Vital Statistics System, United States, 1980–2004

Characteristic	ICD-9*				ICD-10*				
	1980	1985	1990	1995	2000	2001	2002	2003	2004
Sex									
Male	1,292	1,551	1,884	2,079	1,632	1,479	1,580	1,493	1,386
Female	1,599	2,329	2,934	3,558	2,851	2,790	2,680	2,606	2,430
Race†									
White	2,291	3,026	3,696	4,208	3,141	2,990	3,014	2,888	2,658
Black	557	778	985	1,247	1,157	1,108	1,096	1,030	1,008
Other	43	76	137	182	185	171	150	181	150
Ethnicity§									
Hispanic or Latino	NA	137	228	328	292	274	287	299	281
Not Hispanic or Latino	NA	3,743	4,590	5,309	4,160	3,976	3,973	3,800	3,535
Age									
<18 yrs	111	160	185	236	212	187	217	195	186
≥18 yrs	2,780	3,720	4,633	5,401	4,271	4,082	4,043	3,904	3,630
Age group (yrs)									
0–4	29	27	36	34	40	41	47	44	36
5–14	61	98	102	130	129	99	123	110	105
15–34	235	338	397	522	416	373	404	385	356
35–64	983	1,364	1,572	1,946	2,011	1,611	1,616	1,605	1,458
≥65	1,583	2,053	2,711	3,005	2,287	2,145	2,070	1,955	1,861
Region									
Northeast	654	826	979	1,062	842	819	791	803	727
Midwest	677	930	1,140	1,376	1,079	996	1,048	912	877
South	903	1,230	1,569	1,932	1,575	1,500	1,459	1,444	1,340
West	657	894	1,130	1,267	987	954	962	940	872
Total	2,891	3,880	4,818	5,637	4,483	4,269	4,260	4,099	3,816

* During 1979–1998, the Ninth Revision of the *International Classification of Diseases* (ICD-9) was used to classify deaths. In 1999, use of the Tenth Revision (ICD-10) was implemented. Between 1998 and 1999, asthma deaths decreased, but because the asthma comparability ratio for the entire population is 0.89, 11% of the decline in asthma mortality is due to the coding change. Caution should be used when comparing rates between the two coding schemes.

† Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. Multiple race is distributed across all three categories. After 1999, a bridging variable is used.

§ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same.

TABLE 34. Rate of death* with asthma as the underlying cause per million population, by year, sex, race, ethnicity, age, and region — National Vital Statistics System, United States, 1980–2004

Characteristic	ICD-9†				ICD-10‡				
	1980	1985	1990	1995	2000	2001	2002	2003	2004
Sex									
Male	14.9	16.5	19.0	18.7	13.3	11.8	12.3	11.4	10.4
Female	14.1	18.8	22.1	24.6	18.2	17.5	17.2	15.9	14.5
Race§									
White	12.8	15.5	17.9	18.8	13.1	12.2	12.1	11.4	10.4
Black	27.4	34.7	41.8	46.8	38.7	35.9	34.1	31.4	30.6
Other	15.4	20.3	26.2	25.1	19.3	17.4	13.7	16.0	13.1
Ethnicity¶									
Hispanic or Latino	NA	15.1	10.2	11.9	15.7	13.2	13.2	13.0	11.4
Not Hispanic or Latino	NA	17.1	20.5	22.3	15.8	15.3	15.0	14.2	13.0
Age									
<18 yrs	1.7	2.6	2.9	2.7	2.9	2.6	3.0	2.7	2.5
≥18 yrs	17.1	21.2	25.9	30.3	20.4	19.3	18.8	17.9	16.5
Age group (yrs)									
0–4	1.8	1.5	1.9	1.7	2.1	2.1	2.5	2.2	1.8
5–14	1.8	2.9	2.9	3.4	3.1	2.4	3.4	2.7	2.6
15–34	3.0	4.1	5.0	6.6	5.3	4.7	4.8	4.8	4.4
35–64	14.0	17.9	20.3	20.4	15.0	14.7	14.8	14.2	12.7
≥65	62.0	72.3	87.2	89.0	65.4	60.8	76.5	54.4	51.3
Region									
Northeast	14.5	16.8	19.5	19.9	15.0	14.4	13.7	13.7	12.2
Midwest	12.8	16.8	19.6	22.2	16.6	15.0	15.7	13.4	12.8
South	13.3	16.5	19.6	22.5	16.0	15.0	14.3	13.9	12.7
West	18.8	22.3	25.7	24.8	17.2	16.2	15.9	15.0	13.7
Total	14.3	17.7	20.9	20.6	16.1	15.1	14.7	13.9	12.8

* Except for age groups, the rates are age-adjusted to the 2000 standard.

† During 1979–1998, the Ninth Revision of the *International Classification of Diseases* (ICD-9) was used to classify deaths. In 1999, use of the Tenth Revision (ICD-10) was implemented. Between 1998 and 1999, asthma deaths decreased, but because the asthma comparability ratio for the entire population is 0.89, 11% of the decline in asthma mortality is due to the coding change. Caution should be used when comparing rates between the two coding schemes.

§ Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. Multiple race is distributed across all three categories. After 1999, a bridging variable is used.

¶ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. Ethnicity was not available (NA) in 1980.

TABLE 35. Rate of deaths with asthma as the underlying cause per 10,000 with asthma, by year, sex, race, age, and region — National Vital Statistics System, United States, 1980–2004

Characteristic	12-Month prevalence					Current prevalence			
	1980	1985	1990	1995	2000*	2001	2002	2003	2004
Sex									
Male	3.9	4.0	4.0	3.1	NA	1.7	1.9	1.8	1.6
Female	4.7	4.9	5.3	4.3	NA	2.4	2.3	2.2	2.1
Race†									
White	4.0	4.1	4.3	3.4	NA	1.9	2.0	1.9	1.7
Black	6.5	7.0	7.0	5.6	NA	3.8	3.4	3.2	3.1
Other	—	11.2 [§]	3.9	3.9	NA	1.0	1.0	1.1	0.9
Ethnicity¶									
Hispanic or Latino	NA	2.5	3.0	2.1	NA	1.4	1.7	1.4	1.3
Not Hispanic or Latino	NA	4.6	4.8	4.0	NA	2.2	2.2	2.2	1.9
Age									
<18 yrs	0.5	0.5	0.5	0.4	NA	0.3	0.4	0.3	0.3
≥18 yrs	6.1	6.6	7.0	5.6	NA	2.9	2.9	2.9	2.5
Age group (yrs)									
0–4	0.8	0.4	0.4	0.3	NA	0.4	0.4	0.4	0.3
5–14	0.4	0.6	0.4	0.4	NA	0.2	0.3	0.3	0.3
15–34	1.1	1.2	1.4	1.2	NA	0.6	0.7	0.7	0.6
35–64	4.9	5.8	4.9	4.1	NA	2.3	2.2	2.2	1.9
≥65	21.2	19.8	25.0	24.0	NA	11.0	10.7	9.9	7.7
Region									
Northeast	4.6	4.4	5.1	3.6	NA	1.9	1.8	1.9	1.9
Midwest	4.5	4.8	4.3	4.0	NA	2.0	2.1	1.7	1.7
South	3.8	4.1	4.5	3.8	NA	2.1	2.1	2.2	1.9
West	4.5	4.8	5.0	3.7	NA	2.5	2.4	2.5	1.9
Total	4.3	4.5	4.7	3.8	NA	2.1	2.1	2.1	1.9

* Asthma prevalence not available (NA) in 2000.

† Race categorized according to Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting (1977) to maintain historic coding. Multiple race is distributed across all three categories. After 1999, a bridging variable is used.

§ The estimate is unreliable because the relative standard error of the estimate is 30%–50%. For missing estimates, the relative standard error of the estimate exceeded 50% and the estimate was suppressed. All other relative standard errors are <30%.

¶ The 1997 revision of Statistical Policy Directive No. 15, Race and Ethnic Standards for Federal Statistics and Administrative Reporting changed the ethnicity category name from “Hispanic” to “Hispanic or Latino,” but the definition of persons in that category remained the same. Ethnicity was not available in 1980.

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