

New York State Asthma Surveillance Summary Report

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Public Health Information Group
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Introduction

Nationwide, more than 20.3 million Americans, or 7.3% of the U.S. population, have indicated that they currently have asthma, with the prevalence increasing steadily over the past decade.¹ Since 1995, the rate of outpatient visits and emergency department visits for asthma increased, whereas the rates of hospitalization and death decreased. Blacks continue to have higher rates of asthma emergency department visits, hospitalizations, and deaths than do whites.² In 2002, asthma accounted for 4,261 deaths, 484,000 hospitalizations, 1.9 million asthma-related emergency department visits, and 13.9 million outpatient visits among persons of all ages. Children 5 to 17 years of age missed 14.7 million school days due to asthma while adults 18 years and older, who were currently employed, missed 11.8 million days of work due to asthma.³

In 2003, in New York State (NYS), asthma affected over 1.6 million adults and 387,000 children. During 2000-2002 an average of 338 deaths occurred per year due to asthma, including 17 deaths in children aged 0 to 14 years. New York State residents averaged over 39,000 asthma hospitalizations per year during 2000-2002. There was an average of almost 14,000 asthma hospitalizations for children between ages 0 to 14 for a rate of 36.1 per 10,000 population. Asthma hospitalization rates are generally higher among poor inner-city populations. Medicaid enrollees accounted for 43% and Medicare enrollees accounted for 17%, of the asthma hospitalizations. Asthma hospitalization costs for 2002 were approximately 395 million dollars. Over 116.4 million dollars were spent for asthma-specific services for the Medicaid Fee-for-Service population in 2001. New York's Comprehensive Statewide Asthma Plan to reduce the burden of asthma has contributed to some improvements.

To further assist in understanding the burden of asthma in New York State, an *Asthma Surveillance Summary Report* has been created. The *Asthma Surveillance Summary Report* provides asthma-related information on a state-wide and, where appropriate, county level, to assist public health programs, policy makers, and other healthcare providers in their efforts to identify the problem and design solutions to reduce the burden of asthma in New York State. These data include population-based, adult prevalence and risk behaviors, mortality, hospitalizations; and program-based Medicaid Fee-for-Service, Medicaid managed care, and occupational health clinic data.

How to Use this Report

The data presented in this report are useful in characterizing the population(s) affected by asthma. The following table summarizes the source(s) of data used for each asthma indicator:

| Asthma Indicator | Source(s) of Data |
|--|--|
| Self-Reported Asthma Prevalence and Health-Related Risk Behaviors | New York State Behavioral Risk Factor Surveillance System (BRFSS) and a county/county-grouping level from the 2002-2003 Expanded BRFSS |
| Asthma-Related Hospitalizations | Statewide Planning and Research Cooperative System (SPARCS) |
| Asthma-Related Deaths | New York State Death Certificates |
| Work-Related Asthma | NYS Occupational Health Clinic Network and the Occupational Lung Disease Registry |
| Use of Appropriate Medications for Adults and Children With Asthma | Office of Managed Care Quality Assurance Reporting Requirements (QARR) Indicators |
| Asthma Prevalence and Costs | Medicaid Management Information System, Medicaid Encounter Data System (MEDS) |

Executive Summary

This report compares New York State to United States 2001 and *Healthy People 2010* objectives. In addition, this report provides information regarding asthma prevalence and risk behaviors, asthma hospitalizations, asthma mortality, program-based surveillance, work-related asthma, and asthma costs.

Healthy People 2010

- Compared to the nation (United States 2001 data), New York State has higher asthma hospitalization rates for all age groups. The State's rates are roughly two times higher than the levels targeted in the *Healthy People 2010* objectives.
- New York State has higher asthma mortality rates than the nation for all age groups except the 65+ year age group. New York meets the Healthy People 2010 objectives for the 65+ year age group; for all other age groups, New York is 2 to 5 times higher than the national objectives.

Prevalence and Risk Behaviors

- Approximately 1.6 million adults (11.3% of the NYS population) were told by a health professional that they had asthma; about 1.1 million adults (7.6%) have current diagnosed asthma, a rate comparable to the national estimate of current asthma.
- Similar to national findings, the prevalence of current asthma among NYS women (9.5%) is nearly double the prevalence in men (5.5%).
- The prevalence of current asthma in New York differs by race/ethnicity with non-Hispanic black (8.7%), and Hispanic (8.3%) New Yorkers having higher prevalence compared to non-Hispanic white (7.2%) New Yorkers.
- Current asthma prevalence was inversely related to annual household income.
- Current smoking behavior differed only slightly between asthmatic (26%) and non-asthmatic (23%) New Yorkers.
- The prevalence of obesity is higher among those with asthma (33.6%) compared to non-asthmatic adult New Yorkers (19.4%).
- Current asthma prevalence varies at the local level, from a low of 5.9% (Suffolk County) to a high of 12.7% (Fulton/Montgomery Counties).

Asthma Hospitalizations

- The number of hospitalizations due to asthma in New York State has gone down approximately 30% in the last decade from 56,600 in 1993 to 39,000 in 2002.
- Asthma hospitalization rates showed a 34% decline from 30.9 in 1993 to 20.4 per 10,000 in 2002.
- The 0-14 year age group had the highest asthma hospitalization rate followed by the 65+ year age group.
- Female New Yorkers had higher crude and age-adjusted asthma hospitalization rates than males.
- Black New Yorkers had higher crude and age-adjusted asthma hospitalization rates than white New Yorkers.
- Asthma hospitalizations show a seasonal pattern with peaks in the fall and troughs in the summer.

Asthma Mortality

- Annually, about 338 people died from asthma in New York State during 2000-2002.
- In the past decade, the New York State asthma mortality rate decreased 26% from 23.0 in 1993 to 17.3 per 1,000,000 in 2002.
- Black non-Hispanic New Yorkers had an age-adjusted mortality rate (48.4 per 1,000,000) which is about 5 times higher than the white non-Hispanic mortality rate (9.8 per 1,000,000). Hispanic New Yorker's age-adjusted mortality rate (33.7 per 1,000,000) is almost 3.5 times higher than white non-Hispanic residents.

Program-Based Surveillance

- For New Yorkers served by managed care plans, the percent of persistent asthmatics who received appropriate medication improved between 1999 and 2003. Improvement was seen for both childhood and adult asthmatics served by both commercial and Medicaid managed care plans.
- For individuals continuously enrolled in Medicaid managed care for 12 months or more as of December 1, 2001, more than 53,000 enrollees, 0-64 years of age had asthma (11.7%), with almost 39,000 enrollees having persistent asthma (7.6%).
- More than 138,000 Medicaid Fee-for-Service enrollees, continuously enrolled for 12 months or more as of December 1, 2001, had asthma (12.9%), with almost 100,000 enrollees having persistent asthma (9.3%).

Work-Related Asthma

- Approximately 113,000 adult asthmatics in New York State indicated that either a health professional had told them they had work-related asthma, or they had informed a health professional of such.

Asthma Costs

- The total cost of asthma hospitalizations in New York State for 2002 was approximately \$395 million, a 23% increase in cost since 1993.
- The average cost per asthma hospitalization was \$10,000 in 2002, a 78% increase from 1993. This occurred despite a decrease in average length of stay for asthma hospitalizations from 4.9 days in 1993 to 3.8 days in 2002.
- The average cost per asthma hospitalization increased with age. Females had higher average costs than males. Residents of New York City had higher average costs than residents from the rest of New York State.
- Asthma-specific costs are available for the Medicaid Fee-for-Service population. For asthmatics 0-64 years of age, continuously enrolled in Medicaid Fee-for-Service for 12 months or more as of December 1, 2001: More than \$116.4 million dollars were spent for asthma-related services in 2001. The average cost was \$842 per recipient.

NYSDOH Asthma Plan and Asthma Initiatives

Overview of NYSDOH Asthma Plan and Asthma Initiatives

The New York State Department of Health (NYSDOH) is committed to improving the quality of life for individuals with asthma as well as their families. New York's comprehensive statewide action plan "Asthma Plan for New York State: Translating Science into Good Public Health Practice", is designed to:

- Reduce the burden of asthma among those who live in New York.
- Provide a framework for addressing asthma from a systems perspective.
- Maintain and expand asthma surveillance to track the disease and assess the effectiveness of asthma programs.
- Improve the quality of care for people living with asthma.
- Educate individuals, families, health care professionals, schools and communities about asthma.
- Support community interventions to combat asthma.
- Determine environmental factors that affect asthma and develop interventions to reduce or eliminate those factors.

Working in close collaboration with our statewide partners and New York City health officials, where asthma rates are the highest, initiatives in the city, as well as across the State, are well underway. The NYS Asthma Plan has four focus areas. Surveillance and Program Evaluation, Health Care, Community-Based Initiatives and Environmental and Occupational Health. A selection of New York's initiatives include:

SURVEILLANCE AND PROGRAM EVALUATION

- **Emergency Department Surveillance:** Legislation was passed that requires hospitals in NYS to report Emergency Department (ED) data as of January 1, 2005. ED data are being collected statewide and summarized as part of the NYSDOH SPARCS Outpatient data file. Asthma surveillance will utilize these data and produce asthma ED visit information at the aggregate level such as zip code, county, region and state levels for different age groups.
- **National Asthma Survey (NAS):** New York is one of five states that participated in the National Asthma Survey to better understand the issues surrounding asthma in New Yorkers. Reports describing results and specific analyses will be produced.

HEALTH CARE

- **Child Health Plus:** Child Health Plus provides coverage to children residing in NYS under the age of 19 with a limited family income who do not have health insurance. <http://www.health.state.ny.us/nysdoh/chplus/>
- **Family Health Plus:** Family Health Plus is available to adults between the ages of 19 and 64 who are residents of New York State and are United States citizens or fall under one of many immigration categories and who do not have health insurance and have incomes too high to qualify for Medicaid. <http://www.health.state.ny.us/nysdoh/fhplus/>
- **Healthy New York:** Healthy NY is a unique program designed for uninsured small employers, uninsured employed individuals and students who are aging off their parents' policy to purchase health insurance coverage. <http://www.ins.state.ny.us/website2/hny/english/hny.htm>
- **Medicaid Program:** Medicaid recipients have access to a benefit package that includes services necessary to manage asthma, including medications/prescription drugs, spacers, peak flows meters, nebulizers, pulmonary diagnostic tests, doctors' visits and hospital care. http://www.health.state.ny.us/health_care/medicaid/index.htm

- **Medicaid Asthma Disease Management and Quality Improvement Initiative:** The New York State Medicaid Program is promoting disease management interventions in the treatment of asthma. The purpose of these interventions is to improve health outcomes for Medicaid recipients through practitioner/patient education and assuring the delivery of quality care. http://www.health.state.ny.us/health_care/medicaid/index.htm
- **Quality Assurance Reporting Requirements (QARR) Report:** The QARR report measures the effectiveness of Medicaid managed care plans in treating asthma. The most recent version (2004) of this DOH report identifies how Medicaid and commercial managed care plans perform on specific health measures, including asthma. The report represents one of the most comprehensive report cards for managed care in the nation. http://www.health.state.ny.us/nysdoh/managed_care/qarrfull/qarintro.htm
- **New York State Asthma Guideline:** Based on national standards, an expert panel was convened and produced a decision support tool that established a common standard of care for providers and health plans. The resultant guideline tool entitled "Clinical Guideline for the Diagnosis, Evaluation, and Management of Adults and Children with Asthma – 2003" has been endorsed by professional societies, associations and health plans and distributed to over 20,000 physicians in NYS. http://www.health.state.ny.us/nysdoh/asthma/pdf/clinical_guidelines_2003.pdf
- **Best Clinical and Administrative Practices (BCAP) Collaborative: Improving Asthma Care in New York State:** The New York State Department of Health's Office of Managed Care is partnering with the Center for Health Care Strategies (CHCS) and 13 Medicaid managed care organizations in a 21-month quality improvement collaborative. The goal of the collaborative is to improve care of individuals with asthma by implementing the recommendations from the State's "Clinical Guideline for the Diagnosis, Evaluation, and Management of Adults and Children with Asthma – 2003".

COMMUNITY-BASED INITIATIVES

- **Asthma Web site:** The NYSDOH launched an asthma website <http://www.health.state.ny.us/nysdoh/asthma/index.htm> for all New Yorkers to obtain current information on asthma surveillance, interventions, asthma care and educational materials.
- **Treatment of Students with Asthma:** The Governor signed legislation in 1998 that requires schools and

BOCES to allow students, who have been diagnosed by a physician with a severe asthmatic condition, to carry and use prescribed inhalers during the school day.

- **School-Based Health Centers:** There are 189 school-based health centers that play a critical role in providing primary and preventive care to children, including quality asthma care and management. <http://www.health.state.ny.us/nysdoh/school/index.htm>
- **Regional Asthma Coalitions:** Nine regional asthma coalitions work to mobilize community resources to reduce morbidity and mortality through advocacy, education, partnerships and interventions. Program results indicate this is an effective mechanism for addressing asthma regionally. <http://www.health.state.ny.us/nysdoh/asthma/contact.htm>
- **DOH Minority Health grants:** New York has awarded grants to 4 community-based organizations to reduce the burden of asthma in racial and ethnic minority communities. These coalitions work with schools, physicians, hospitals, the American Lung Association, local health departments, insurance plans and other community organizations to ensure that not only are children receiving the best care, but that they also are receiving coordinated care. The coalitions' core strategies include: peer education, outreach, training, and education.
- **Asthma Peer Leader Projects:** Three school-based health centers are funded to develop and implement Asthma Peer Leader projects. These projects use principles of positive youth development to expand and enhance the existing asthma services provided in the areas of education, identification and overall management of asthma. Youth serve as mentors, educators and counselors.
- **Environmental Education and Outreach Project:** A statewide asthma educational needs assessment was conducted to determine key messages and best practice educational materials on environmental and occupational triggers of asthma. This project highlights lack of communication and disconnects between providers and patients. Three new brochures intend to bridge the communication gap.
- **School Environment Assessment Project:** Childhood asthma, in relation to school environmental conditions, is being examined across the State in all public elementary schools. The purpose of this evaluation is to better understand the problem of asthma in the school setting and develop and implement targeted, evidence-based interventions.
- **Air Quality Health Advisories:** The NYSDOH and Department of Environmental Conservation commissioners issue a joint press release when ozone and fine particle air pollution levels are forecast to be of concern, especially for people with health conditions such as asthma. In addition to media outlets, local health units are notified of advisories in their region and reminded of Department of Health Web pages that provide advice on ways to reduce exposures and steps citizens can take to reduce air pollution. <http://www.health.state.ny.us/nysdoh/environ/ozone.htm>
- **Environmental Public Health Tracking (EPHT)–Asthma Demonstration Project:** The NYSDOH, with the NYS Department of Environmental Conservation, is conducting a demonstration project of the EPHT system to link and track environmental and health data. The demonstration project focuses on childhood asthma and criteria air pollutants, and includes a surveillance and research component.

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

- **Healthy Neighborhoods Program:** The Healthy Neighborhoods program is an eight-county, in-home asthma, lead and safety assessment intervention program. Evaluation results from 1997 to 2000 demonstrate reduced hospitalizations and cost effectiveness. Interventions include: asthma trigger education; dust and pest control measures; installing pillow and mattress covers; mold remediation; and eliminating or restricting smoking from housing units. http://www.health.state.ny.us/nysdoh/asthma/ny_action.htm
- **Occupational Lung Disease Toolkit:** A health care provider toolkit for improving the recognition and reporting of occupational lung diseases, including work-related asthma has been developed and distributed and is available on the department's web site. <http://www.health.state.ny.us/nysdoh/lung/toolkit/toolkit.htm>

Asthma Surveillance in New York State

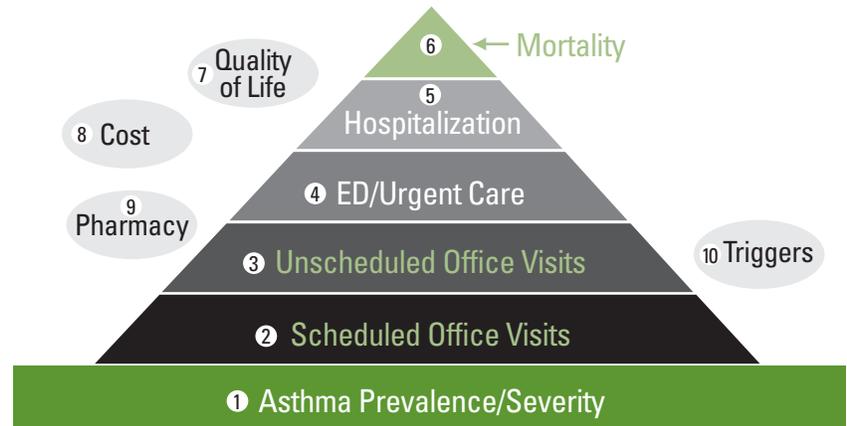
The Centers for Disease Control and Prevention (CDC) defines surveillance as “ongoing, systematic collection, analysis, and interpretation of health-related data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those re-

sponsible for prevention and control.” There are various existing and new databases that are being utilized to assess the burden of asthma in New York State.

The New York State Department of Health is striving to acquire information on all aspects of asthma as depicted in the surveillance pyramid.

Figure 3-1
The Asthma Surveillance Pyramid

Source: Centers for Disease Control and Prevention. “A Public Health Response to Asthma” PHTN Satellite Broadcast, Course Materials 2001



① **Asthma Prevalence/Severity:** Asthma prevalence and severity are being assessed through the Behavioral Risk Factor Surveillance System (BRFSS), the Expanded BRFSS, National Asthma Survey-NYS, and program-based data including Medicaid Fee-for-Service, Medicaid managed care, NYS Occupational Health Clinics and the Occupational Disease Lung Registry.

②③ **Scheduled and Unscheduled Office Visits:** The Medicaid managed care Quality Assurance Reporting Requirements (QARR) consist of measures from the National Committee for Quality Assurance’s (NCQA) Health Plan Employer Data Information Set (HEDIS®) and NYS-specific measures. This version of QARR incorporates measures from HEDIS®. The major areas of performance included in 2003 QARR are: Effectiveness of Care, Access to/Availability of Care, Satisfaction with the Experience of Care, Health Plan Stability, Use of Services, and Health Plan Descriptive Information. The National Asthma Survey-NYS also has information on scheduled and unscheduled office visits.

④ **Emergency Department/Urgent Care:** New legislation requires hospitals to collect information on emergency room visits and to report this information to the NYSDOH beginning in 2005. This new reporting system will enhance our understanding of the impact of asthma. Medicaid Fee-for-Service data include emergency room visit information. The National Asthma Survey-NYS also has information on ED and urgent care visits.

⑤ **Hospitalizations:** Hospitalization data are available through the Statewide Planning and Research Cooperative System (SPARCS) database. Medicaid Fee-for-Service data include information about hospitalizations. The National Asthma Survey-NYS also has self-report information on hospitalizations.

⑥ **Mortality:** Information on asthma mortality is available through the Vital Statistics database.

⑦ **Quality of Life:** BRFSS is used to assess the quality of life of adults suffering from asthma. The National Asthma Survey-NYS also collects several measures for quality of life in both children and adults with asthma.

⑧ **Cost:** Hospitalization billing data is available through the SPARCS database. Medicaid Fee-for-Service has detailed cost information for ED visits, hospitalizations, office visit and pharmacy. Medicaid managed care has capitated and Fee-for-Service costs available.

⑨ **Pharmacy:** Medicaid Fee-for-Service has detailed information about pharmacy use and cost.

⑩ **Triggers:** The National Asthma Survey-NYS collects information on possible asthma triggers and allows for a comparison of households with asthma patients to a sub-sample of households without asthma.

Healthy People 2010 Objectives

Sponsored by the U.S. Department of Health and Human Services, the *Healthy People 2010* initiative is a comprehensive set of disease prevention and health promotion objectives for the nation to achieve over the first decade of the new century. Created by scientists both inside and outside of government, it identifies a wide range of public health priorities and specific, measurable objectives. It can be used by many different people, states, communities, professional organizations, and others to help them develop programs to improve health.⁴

The *Healthy People 2010* objectives are national benchmarks. They are used widely at the national, state, and community level. In utilizing these objectives for asthma, New York can direct its efforts toward achieving national goals, compare its asthma burden to others, and measure progress over time in achieving the objectives.

Asthma Hospitalizations

Table 4-1

Asthma Hospitalization Rate per 10,000 Residents Compared to Healthy People 2010 Objectives for Asthma, New York State (1994–2002) and United States (2001)

| Age Group (Years) | New York | | | | United States | Healthy People |
|-------------------|-----------|-----------|-----------|-----------|---------------|----------------|
| | 1994-1996 | 1996-1998 | 1998-2000 | 2000-2002 | 2001 | 2010 |
| 0-4 | 86.8 | 75.5 | 72.1 | 66.1 | 56.2 | 25.0 |
| 5-14 | 35.9 | 29.0 | 25.5 | 22.3 | — | — |
| 0-17 | 28.0 | 43.3 | 35.7 | 31.2 | 21.4 | 17.3 |
| 5-64 | 22.9 | 21.0 | 18.7 | 16.3 | 11.8 | 7.7 |
| 65+ | 26.4 | 25.3 | 25.8 | 24.8 | 21.4 | 11.0 |

Compared to the Nation, New York State asthma hospitalization rates are higher across all age groups. The 2000-

2002 figures show that New York is still roughly two times the Healthy People 2010 objectives for each age grouping.

Asthma Mortality

Table 4-2

Asthma Mortality Rate per 1,000,000 Residents Compared to Healthy People 2010 Objectives for Asthma, New York State (1996–2002) and United States (2001)

| Age Group (Years) | New York | | | United States | Healthy People |
|-------------------|-----------|-----------|-----------|---------------|----------------|
| | 1996-1998 | 1998-2000 | 2000-2002 | 2001 | 2010 |
| 0-4 | 3.6 | 1.3 | 3.8 | 2.1 | 1.0 |
| 5-14 | 4.0 | 3.8 | 5.2 | 2.4 | 1.0 |
| 0-17 | 6.8 | 6.9 | 6.1 | 4.7 | 2.0 |
| 5-64 | 28.2 | 23.2 | 22.2 | 14.7 | 9.0 |
| 65+ | 66.6 | 59.9 | 49.9 | 60.8 | 60.0 |

Compared to the Nation, New York State mortality rates, with cause of death as asthma, are lower for the 65 year and older age group. However, these rates are higher for all other age groups. Table 4-2 shows that

New York State meets the *Healthy People 2010* objectives for the 65+ age group. New York State mortality rates, however, are 2 to 5 times higher for all other age groups.

Prevalence of Asthma and Risk Behaviors in New York State

The Behavioral Risk Factor Surveillance System (BRFSS)

The BRFSS is a statewide random-digit-dialing telephone survey of the non-institutionalized adult population aged 18 years and older. The BRFSS began in New York State in 1983 and has been conducted annually since 1985 following procedures established by the Centers for Disease Control and Prevention. Data are collected from a representative sample of about 5,000 adults each year, and then weighted to adjust for the selection probabilities and the estimates of age-sex-race distribution of adults in New York State for each calendar year. This survey provides state-specific information on behaviors and risk factors for chronic diseases, infectious diseases, and other health conditions for New York State adults.

The 1996 and 1997 NYS BRFSS questionnaires included one question for assessing the prevalence of **current asthma** among the adult population:

“Have you been told by a doctor that you currently have asthma?” In the 1998 BRFSS questionnaires, this question was not included.

The 1999 and 2000 NYS BRFSS questionnaires included two questions for assessing both **lifetime prevalence and current prevalence** of asthma:

“Did a doctor ever tell you that you have asthma?”

“{If Yes} “Do you still have asthma?”

In the 2001, 2002, 2003, 2004 and 2005 questionnaires, those two questions were modified:

“Have you ever been told by a doctor, nurse, or other health professional that you had asthma?”

“{If Yes} “Do you still have asthma?”

From responses to these questions prevalence estimates of lifetime and current asthma were determined for each survey year and tested for trends over time. The survey responses represent only self-report of diagnosed cases. Therefore, true prevalence may have been underestimated. Successive years of data were combined to permit the calculation of two-year averages and more stable estimates for subgroup comparisons. The 95% confidence intervals (CIs) were calculated to measure the precision of all prevalence estimates as well as to facilitate comparisons between subgroups.

Highlights: Prevalence of Asthma and Risk Behaviors in New York State

TRENDS IN PREVALENCE OF CURRENT ASTHMA

- In 2003, approximately 1.6 million adults (11.3% of the NYS population) were told by a health professional that they had asthma; about 1.1 million adults (7.6%) have current diagnosed asthma, which is similar to the national estimate of current asthma.
- There has been an overall upward trend in the prevalence of current asthma for NYS residents from 1996 through 2003.
- There was no significant difference in current asthma prevalence between New York City (7.6%) and the Rest of State (7.6%) in 2001–2002.

PREVALENCE BY SOCIODEMOGRAPHIC CHARACTERISTICS

- Similar to national findings, the 2001–2002 prevalence of current asthma among NYS women (9.5%) was nearly twice the prevalence in men (5.5%).
- The 2001–2002 prevalence of current asthma varied by race/ethnicity with non-Hispanic black (8.7%), and Hispanic (8.3%) New Yorkers having higher prevalence compared to white non-Hispanic (7.2%) New Yorkers.
- Current asthma prevalence in 2001–2002 was inversely related to income.

TREATMENT AND PREVENTION

- During 1999, more than 22% of adult asthmatic New Yorkers indicated they utilized an emergency room in the past year due to asthma.

HEALTH RISK BEHAVIORS

- **Smoking**
 - In 2001–2002, the prevalence of current smoking behavior differed slightly between asthmatic (26%) and non-asthmatic (23%) New Yorkers.
- **Physical Activity**
 - In 2001–2002, 33.2% of adults with asthma reported no leisure time physical activity during the past month, compared to 26.4% of those without asthma.
- **Obesity**
 - In 2001–2002, 33.6% of asthmatics were considered obese compared to 19.4% for non-asthmatic New Yorkers.

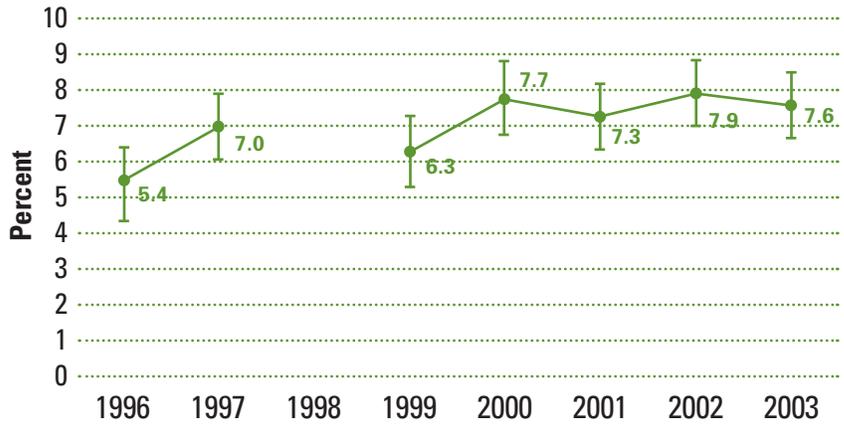
EXPANDED BRFSS

- Current asthma prevalence varies at a local level from 12.7% in Fulton/Montgomery Counties to 5.9% in Suffolk County.

TRENDS IN PREVALENCE OF CURRENT ASTHMA

Figure 5-1
Prevalence of Current Asthma
by Survey Year

* Prevalence Rates are presented with
95% Confidence Intervals

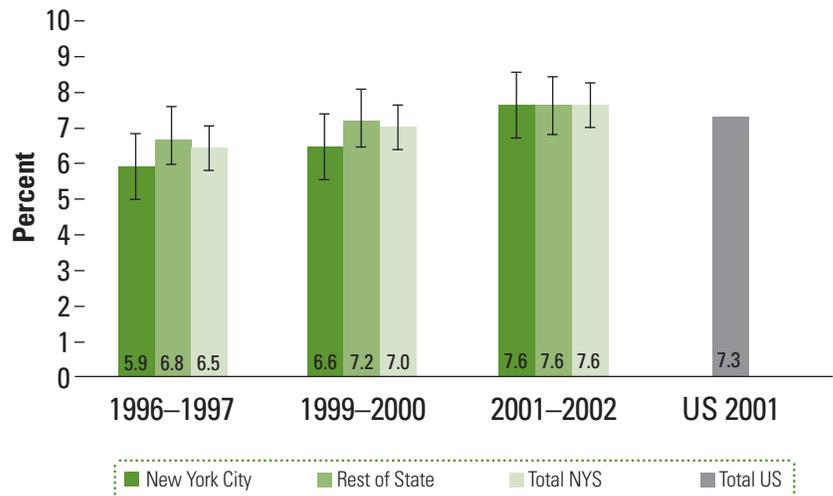


The prevalence of current asthma in adult New Yorkers ranged from a low of 5.4% (95% CI, 4.3-6.4) in 1996 to a high of 7.9% (95% CI, 7.0-8.8) in 2002 (Figure 5-1).

An overall upward trend in prevalence is evident during this time period (test for trend significant, $p < 0.0001$).

Figure 5-2
Prevalence of Current Asthma by
Region (New York City and Rest of
State) by Combined Survey Years
and 2001 US Comparison

* Prevalence Rates are presented with
95% Confidence Intervals



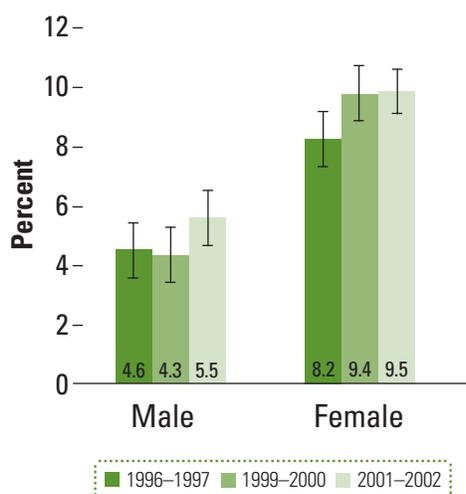
According to the combined data 2001 - 2002 BRFSS, about 1.6 million New York adults (11.3% of the non-institutionalized population) were told by a doctor, nurse, or other health professional that they have asthma. Among adults with a history of asthma, nearly 1.1 mil-

lion (7.6%) had current, diagnosed asthma, a rate that is similar to the 2001 national estimate (Figure 5-2). There was no significant difference in asthma prevalence between New York City and the Rest of State.

PREVALENCE BY SOCIODEMOGRAPHIC CHARACTERISTICS

Figure 5-3
Prevalence of Current Asthma by Gender and Combined Survey Years

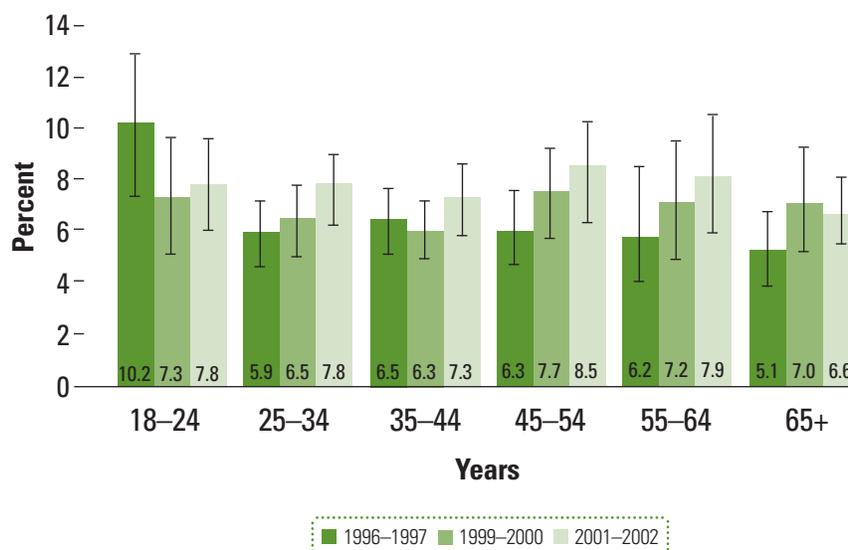
* Prevalence Rates are presented with 95% Confidence Intervals



The rate among women was nearly double that among men. (Figure 5-3).

Figure 5-4
Prevalence of Current Asthma by Age Group and Combined Survey Years

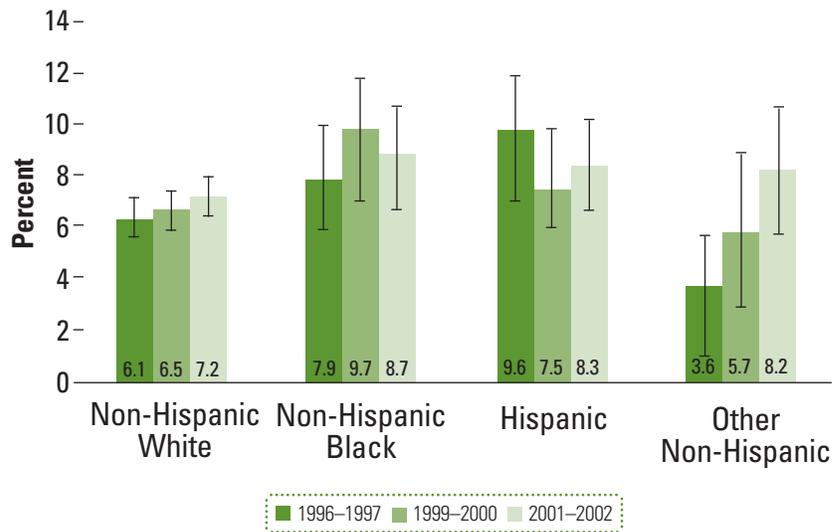
* Prevalence Rates are presented with 95% Confidence Intervals



Asthma prevalence is not substantially different across age groups throughout the three time periods.

Figure 5-5
Prevalence of Current Asthma
by Race/Ethnicity and Combined
Survey Years

* Prevalence Rates are presented with
95% Confidence Intervals

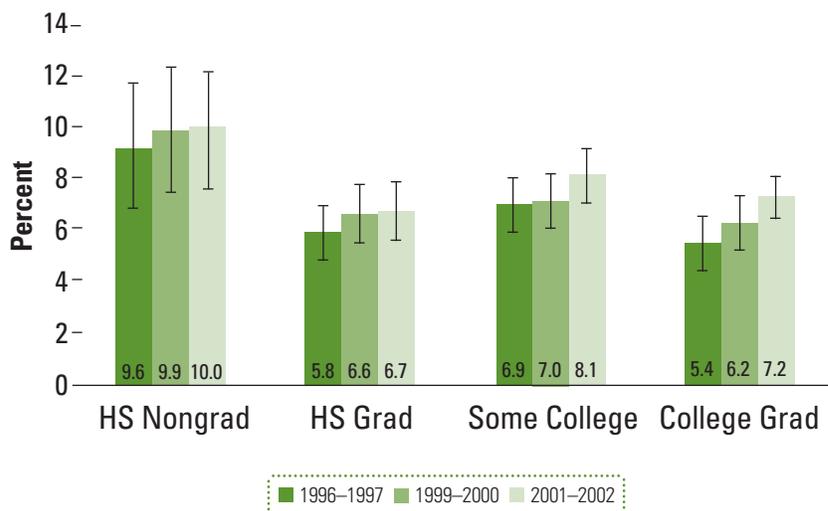


The prevalence of current asthma is highest in non-Hispanic black respondents in both 1999-2000 and 2001-2002 (9.6% [95% CI, 7.0-12.4] and 8.7% [95% CI, 6.4-11.0],

respectively). Hispanic respondents reported the highest prevalence in 1996-1997 (9.6% [95% CI, 6.7-13.5]) (Figure 5-5).

Figure 5-6
Prevalence of Current Asthma
by Educational Attainment and
Combined Survey Years

* Prevalence Rates are presented with
95% Confidence Intervals

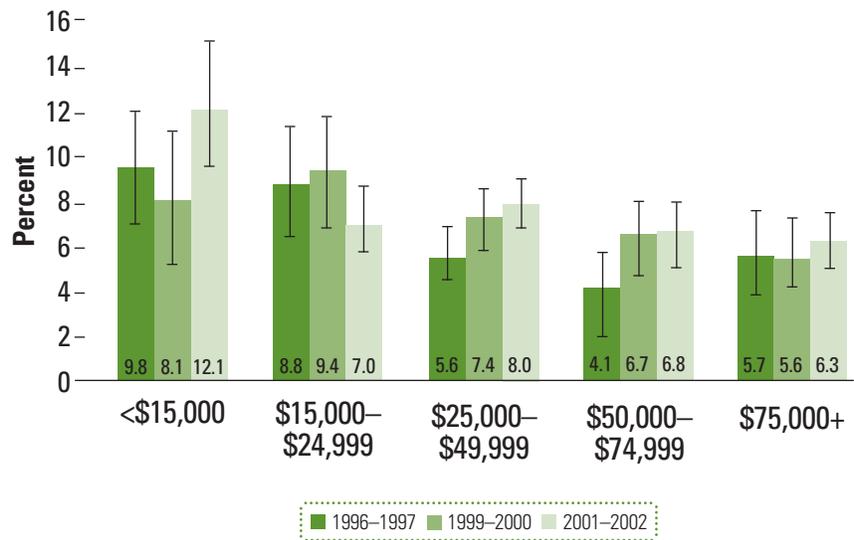


Asthma prevalence varied by reported educational attainment of respondents (Figure 5-6). In all three sur-

vey periods, the highest prevalence was found in adults who had not graduated from high school.

Figure 5-7
Prevalence of Current Asthma by
Annual Household Income and
Combined Survey Years

* Prevalence Rates are presented with
 95% Confidence Intervals



Asthma prevalence generally decreased as reported annual household income increased (Figure 5-7). Comparisons of annual income categories across years

should be made with caution, as 1996-1997 and 1999-2000 income levels were not adjusted to 2001-2002 dollar amounts.

TREATMENT AND PREVENTION

The 1999 BRFSS Asthma Module included six questions that assessed treatment and prevention among respondents with current asthma (Table 5-

1). Two of these questions (emergency room visits, home cleaning advice) were also a part of the 1996 and 1997 modules.

Table 5-1

Treatment and Prevention Behaviors Among Adults with Current Asthma by Survey Years

| Question | 1996-1997 | | 1999 | |
|---|-----------|-----------|------|-----------|
| | % | 95%CI | % | 95%CI |
| Emergency room or urgent care clinic visit past 12 months because of asthma? | 21.8 | 16.9-26.6 | 22.5 | 14.7-30.3 |
| Asthma ever made worse by tobacco smoke? | — | — | 60.1 | 51.2-68.9 |
| Formulated with health provider an action plan for asthma attack? | — | — | 70.0 | 62.4-77.7 |
| Got advice from health professional on home cleaning to reduce asthma problems? | 67.9 | 62.4-73.3 | 55.1 | 46.0-64.1 |
| Currently take asthma medications? | | | | |
| 18-54 yr. | — | — | 69.3 | 59.3-79.2 |
| 55+ yr. | — | — | 82.6 | 71.3-93.9 |
| All ages | — | — | 74.0 | 66.4-81.6 |
| [If take medication] Asthma medications taken daily? | | | | |
| 18-54 yr. | — | — | 44.1 | 30.3-58.0 |
| 55+ yr. | — | — | 80.1 | 67.8-93.3 |
| All ages | — | — | 58.4 | 48.1-68.6 |

In 1999, 22.5% of adult New Yorkers with current asthma reported that during the previous 12 months, they had at least one visit to an emergency room or urgent care clinic because of their asthma, essentially unchanged from 1996-1997 (21.8%). In 1999, 60.1% reported a history of having had their asthma made worse by tobacco smoke. Seventy percent indicated working with a doctor or other health care provider to formulate an action plan in case of an attack. Slightly more than half (55.1%) reported getting advice from a doctor, nurse, or other health professional about ways to clean or modify their homes to reduce asthma problems. This percent-

age was substantially less than that estimated from the 1996-1997 survey data (67.9%). Nearly three-fourths (74.0%) reported that they currently took medications for their asthma. However, this behavior varied by age, as 69.3% of those aged 18 to 54 years were on medications, compared to 82.6% of those aged 55 years and older. Among people taking medications, 58.4% reported taking these medications daily, regardless of whether or not they were having trouble breathing. This practice also differed by age. Among those aged 18 to 54 years, only 44.1% took the medication every day, compared to 80.1% among those aged 55 years and older.

HEALTH RISK BEHAVIORS

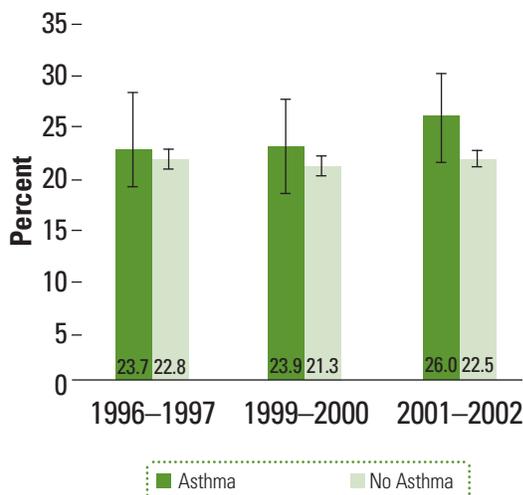
Smoking

Among BRFSS respondents, a “current smoker” is defined as a person who has smoked at least 100

cigarettes in his/her lifetime and now smokes everyday or some days.

Figure 5-8
Percentage of Adult New Yorkers Who Currently Smoke by Asthma Status and Combined Survey Years

* Prevalence Rates are presented with 95% Confidence Intervals



Results showed that current smoking behavior differed only slightly by asthma status (Figure 5-8). In 2001-2002, 26.0% (95% CI, 21.9-30.1) of adults with asthma reported that they were current cigarette

smokers, compared to 22.5% (95% CI, 21.4-23.7) of those without asthma. These prevalence estimates were consistent with both the 1996-1997 and 1999-2000 results.

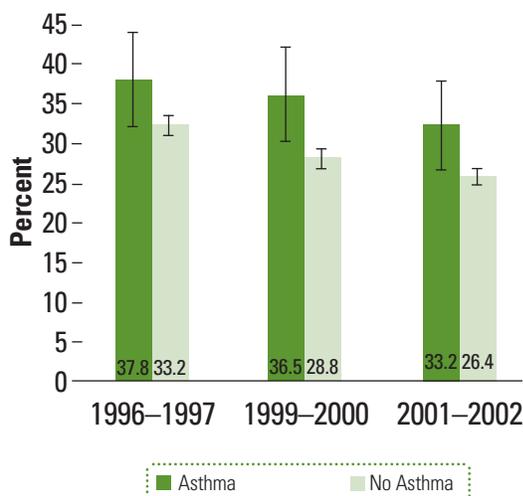
Physical Activity

Among BRFSS respondents, “leisure time activity” is defined as a respondent who answered “yes” when asked “During the past month, other than your regular

job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?”

Figure 5-9
Percentage of Adult New Yorkers Who Have Not Participated in Recent (Past Month) Leisure-Time Physical Activity by Asthma Status and Combined Survey Years

* Prevalence Rates are presented with 95% Confidence Intervals



Results from the three survey periods showed that, in general, persons with asthma were more likely than those without asthma to report no leisure-time physical activity (Figure 5-9). In 2001-2002, 33.2% (95% CI, 28.7-37.5) of adults with asthma reported no leisure

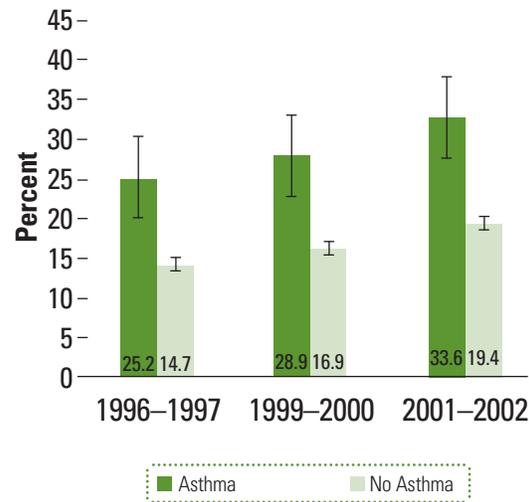
time physical activity during the past month, compared to 26.4% (95% CI, 25.2-27.6) of those without asthma. The comparable numbers for 1999-2000 were 36.5% (95% CI, 29.6-43.3) and 28.8% (95% CI, 26.8-30.7), respectively.

Obesity

Among BRFSS respondents, “Obesity” is defined as an individual who has a body mass index greater than or equal to 30.0 kg/m².

Figure 5-10
Percentage of Adult New Yorkers
Who are Obese (BMI \geq 30.0 kg/m²)
by Asthma Status and
Combined Survey Years

* Prevalence Rates are presented with
95% Confidence Intervals



The NYS BRFSS data showed an increasing trend for obesity in both persons with and persons without asthma from 1996-1997 through 2001-2002 (Figure 5-

10). Overall, the percent of respondents who reported that they were obese was consistently greater among asthmatics than among non-asthmatics.

Expanded BRFSS

The Expanded BRFSS (EBRFSS) project was conducted in New York from July 2002 through July 2003 for 38 localities including individual counties and county groupings. EBRFSS followed the random-digit-dialing protocol of the BRFSS, collecting information on behavioral risk factors and utilization of preventive care services that would be representative of the adult population for each locality. The target sample size for each locality was 640 completed interviews.

A common set of core questions and modules was chosen to be part of the questionnaire for all 38 localities. The two questions utilized by the BRFSS to quantify “lifetime” and “current” asthma were part of the EBRFSS core questionnaire. Tables 5-2 through 5-5 and Figure 5-11 summarize the EBRFSS findings for “lifetime” and “current” asthma by sociodemographic groups and by locality.

Table 5–2

Prevalence of Lifetime Asthma by Demographic Groups, New York State Expanded BRFSS, 2003

¹Weighted Percent

²95% Confidence Interval

| Demographic Groups | Yes | | No | | C.I. ² | |
|---------------------|--------------------|----------------|--------|--------|-------------------|------|
| | n | % ¹ | n | % | | |
| Total | 2,980 | 11.5 | 21,191 | 88.5 | 0.7 | |
| Gender | Male | 882 | 9.4 | 8,597 | 90.6 | 1.1 |
| | Female | 2,098 | 13.4 | 12,594 | 86.6 | 0.9 |
| Age | 18–24 | 306 | 15.1 | 1,323 | 84.9 | 2.6 |
| | 25–34 | 503 | 13.5 | 3,141 | 86.5 | 1.8 |
| | 35–44 | 600 | 10.1 | 4,521 | 89.9 | 1.4 |
| | 45–54 | 581 | 11.5 | 4,176 | 88.5 | 1.6 |
| | 55–64 | 464 | 11.9 | 3,053 | 88.1 | 1.9 |
| | ≥65 | 491 | 8.6 | 4,670 | 91.4 | 1.4 |
| | Race/ Ethnicity | White | 2,365 | 11.0 | 17,517 | 89.0 |
| Black | 214 | 14.5 | 1,112 | 85.5 | 2.7 | |
| Hispanic | 211 | 11.9 | 1,205 | 88.1 | 2.1 | |
| Other | 144 | 9.5 | 1,069 | 90.5 | 3.0 | |
| Education | <High School | 387 | 13.6 | 1,996 | 86.4 | 2.5 |
| | High School | 926 | 10.8 | 6,793 | 89.2 | 1.2 |
| | >High School | 1,663 | 11.6 | 12,316 | 88.4 | 0.9 |
| Household Income | <\$10,000 | 274 | 19.5 | 1,000 | 80.5 | 4.1 |
| | \$10,000–\$24,999 | 741 | 12.4 | 4,516 | 87.6 | 1.7 |
| | \$25,000–\$49,999 | 764 | 11.6 | 5,915 | 88.4 | 1.5 |
| | ≥\$50,000 | 829 | 10.3 | 6,948 | 89.7 | 1.1 |

Table 5-2 describes the prevalence of lifetime asthma by demographic groups. Statewide, 11.5% of New York residents have lifetime asthma. Females have a higher prevalence rate (13.4%) compared to males (9.4%). The 18 to 24 year age group had the highest prevalence rate (15.1%) followed by 25 to 34 year olds at 13.5%. Blacks (14.5%)

and Hispanics (11.9%) have a higher prevalence rate compared to Whites (11.0%) or Other (9.5%). When looking at educational attainment, residents with less than a high school education had the highest lifetime prevalence rate of 13.6%. For income, we see that the prevalence rates for lifetime asthma are inversely proportional to income.

Table 5-3 describes the prevalence of lifetime asthma by locality.

Table 5-3
Prevalence of Lifetime Asthma by Locality, New York State Expanded BRFSS, 2003

¹Weighted Percent
²95% Confidence Interval

| Locality | Yes | | No | | C.I. ² |
|--------------------------------|-----|----------------|-----|------|-------------------|
| | n | % ¹ | n | % | |
| Albany | 91 | 14.6 | 552 | 85.4 | 3.4 |
| Allegany, Wyoming | 71 | 10.6 | 565 | 89.4 | 2.7 |
| Broome | 60 | 8.9 | 581 | 91.1 | 2.5 |
| Cattaraugus, Chautauqua | 67 | 10.1 | 567 | 89.9 | 2.6 |
| Cayuga, Seneca, Wayne | 73 | 10.9 | 573 | 89.1 | 2.8 |
| Chemung, Schuyler, Tioga | 79 | 12.9 | 556 | 87.1 | 3.0 |
| Chenango, Madison | 90 | 14.4 | 574 | 85.6 | 3.3 |
| Clinton, Essex, Franklin | 83 | 11.3 | 566 | 88.7 | 2.7 |
| Columbia, Greene | 83 | 12.0 | 552 | 88.0 | 2.7 |
| Cortland, Tompkins | 88 | 13.9 | 551 | 86.1 | 3.2 |
| Delaware, Otsego, Schoharie | 78 | 12.9 | 555 | 87.1 | 3.2 |
| Dutchess, Putnam | 78 | 13.2 | 549 | 86.8 | 3.0 |
| Erie | 67 | 10.2 | 564 | 89.8 | 2.6 |
| Fulton, Montgomery | 97 | 16.2 | 533 | 83.8 | 3.5 |
| Genesee, Ontario | 87 | 13.7 | 550 | 86.3 | 3.0 |
| Hamilton, Herkimer | 69 | 10.7 | 549 | 89.3 | 2.9 |
| Jefferson, Lewis, St. Lawrence | 75 | 13.0 | 568 | 87.0 | 3.4 |
| Livingston, Ontario | 81 | 11.9 | 556 | 88.1 | 2.8 |
| Monroe | 77 | 12.1 | 547 | 87.9 | 2.9 |
| Nassau | 58 | 9.3 | 560 | 90.7 | 2.7 |
| Niagara | 82 | 12.3 | 551 | 87.7 | 2.8 |
| Oneida, Oswego | 75 | 12.0 | 576 | 88.0 | 3.0 |
| Onondaga | 82 | 11.6 | 563 | 88.4 | 2.7 |
| Orange | 86 | 13.5 | 552 | 86.5 | 3.2 |
| Rensselaer | 86 | 13.1 | 553 | 86.9 | 2.9 |
| Rockland | 61 | 8.3 | 572 | 91.7 | 2.2 |
| Saratoga | 86 | 12.2 | 558 | 87.8 | 2.9 |
| Schenectady | 89 | 14.7 | 545 | 85.3 | 3.3 |
| Steuben, Yates | 77 | 10.6 | 576 | 89.4 | 2.6 |
| Suffolk | 71 | 9.7 | 571 | 90.3 | 2.5 |
| Sullivan, Ulster | 85 | 14.0 | 557 | 86.0 | 3.3 |
| Warren, Washington | 95 | 15.4 | 553 | 84.6 | 3.3 |
| Westchester | 65 | 10.5 | 554 | 89.5 | 2.8 |
| Bronx | 93 | 14.0 | 539 | 86.0 | 3.2 |
| Kings (Brooklyn) | 81 | 11.4 | 561 | 88.6 | 2.7 |
| New York (Manhattan) | 77 | 12.7 | 539 | 87.3 | 3.1 |
| Queens | 69 | 11.0 | 545 | 89.0 | 2.9 |
| Richmond (Staten Island) | 68 | 10.5 | 558 | 89.5 | 2.8 |

Of the 38 localities, for lifetime asthma, Fulton and Montgomery Counties ranked the highest (16.2%) and Rockland County ranked the lowest (8.3%).

Table 5-4 describes the prevalence of current asthma by demographic groups.

Table 5-4
Prevalence of Current Asthma by Demographic Groups, New York State Expanded BRFSS, 2003

¹Weighted Percent

²95% Confidence Interval

| Demographic Groups | Yes | | No | | C.I. ² | |
|---------------------|-------------------|----------------|--------|--------|-------------------|-----|
| | n | % ¹ | n | % | | |
| Total | 2,149 | 7.9 | 21,956 | 92.1 | 0.6 | |
| Gender | Male | 553 | 5.6 | 8,903 | 94.4 | 0.9 |
| | Female | 1,596 | 10.0 | 13,053 | 90.0 | 0.8 |
| Age | 18–24 | 194 | 9.6 | 1,426 | 90.4 | 2.2 |
| | 25–34 | 331 | 8.3 | 3,302 | 91.7 | 1.5 |
| | 35–44 | 440 | 7.4 | 4,673 | 92.6 | 1.3 |
| | 45–54 | 438 | 8.2 | 4,309 | 91.8 | 1.3 |
| | 55–64 | 349 | 9.2 | 3,157 | 90.8 | 1.8 |
| | ≥65 | 374 | 6.0 | 4,770 | 94.0 | 1.2 |
| | | | | | | |
| Race/ Ethnicity | White | 1,710 | 7.4 | 18,119 | 92.6 | 0.6 |
| | Black | 154 | 10.1 | 1,169 | 89.9 | 2.3 |
| | Hispanic | 147 | 8.1 | 1,263 | 91.9 | 1.7 |
| | Other | 104 | 6.5 | 1,106 | 93.5 | 2.7 |
| Education | <High School | 316 | 10.7 | 2,056 | 89.3 | 2.2 |
| | High School | 702 | 7.9 | 6,998 | 92.1 | 1.0 |
| | >High School | 1,127 | 7.5 | 12,816 | 92.5 | 0.8 |
| Household Income | <\$10,000 | 227 | 16.4 | 1,043 | 83.6 | 3.9 |
| | \$10,000–\$24,999 | 573 | 9.1 | 4,670 | 90.9 | 1.4 |
| | \$25,000–\$49,999 | 551 | 8.0 | 6,112 | 92.0 | 1.2 |
| | ≥\$50,000 | 539 | 6.2 | 7,223 | 93.8 | 0.8 |

In 2003, statewide, 7.9% of New York residents had current asthma. Females had a higher prevalence rate (10.0%) compared to males (5.6%). The 18 to 24 year age group had the highest current asthma prevalence rate (9.6%). Blacks (10.1%) and Hispanics (8.1%) had a higher current asthma prevalence rate compared to

whites (7.4%) or other (6.5%). When looking at educational attainment, residents with less than a high school education had a current asthma prevalence rate of 10.7% compared to 7.5% for residents with greater than high school education. For income, prevalence rates for current asthma were inversely proportional to income.

Table 5-5 and Figure 5-11 describe the prevalence of current asthma by locality.

Table 5-5

Prevalence of Current Asthma by Locality, New York State Expanded BRFSS, 2003

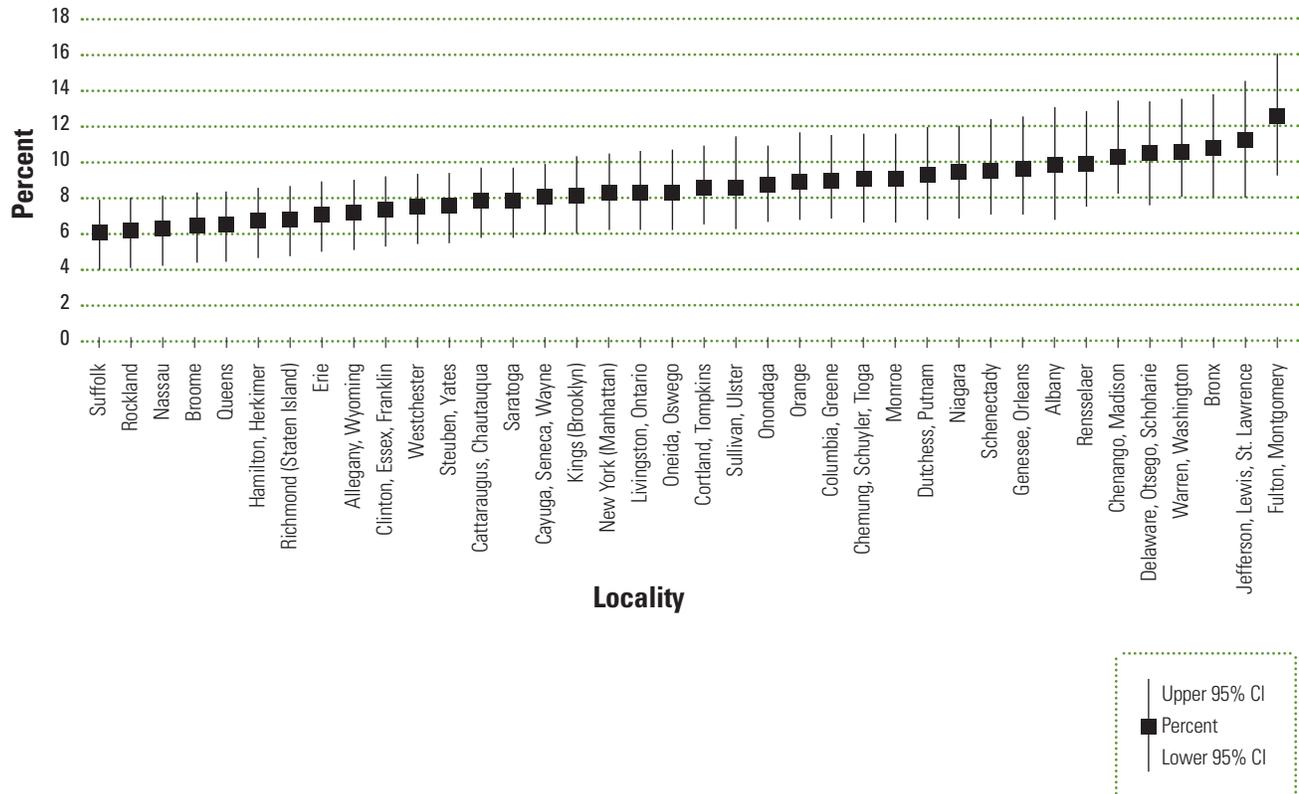
¹Weighted Percent

²95% Confidence Interval

| Locality | Yes | | No | | C.I. ² |
|--------------------------------|-----|----------------|-----|------|-------------------|
| | n | % ¹ | n | % | |
| Albany | 60 | 9.8 | 580 | 90.2 | 2.9 |
| Allegany, Wyoming | 50 | 7.1 | 583 | 92.9 | 2.3 |
| Broome | 43 | 6.5 | 597 | 93.5 | 2.2 |
| Cattaraugus, Chautauqua | 52 | 7.7 | 581 | 92.3 | 2.3 |
| Cayuga, Seneca, Wayne | 55 | 7.9 | 589 | 92.1 | 2.4 |
| Chemung, Schuyler, Tioga | 58 | 9.2 | 577 | 90.8 | 2.5 |
| Chenango, Madison | 70 | 10.4 | 594 | 89.6 | 2.7 |
| Clinton, Essex, Franklin | 59 | 7.4 | 588 | 92.6 | 2.1 |
| Columbia, Greene | 64 | 9.1 | 569 | 90.9 | 2.4 |
| Cortland, Tompkins | 59 | 8.6 | 575 | 91.4 | 2.5 |
| Delaware, Otsego, Schoharie | 63 | 10.4 | 569 | 89.6 | 2.9 |
| Dutchess, Putnam | 57 | 9.3 | 570 | 90.7 | 2.5 |
| Erie | 47 | 7.0 | 583 | 93.0 | 2.1 |
| Fulton, Montgomery | 75 | 12.7 | 551 | 87.3 | 3.2 |
| Genesee, Ontario | 62 | 9.6 | 574 | 90.4 | 2.6 |
| Hamilton, Herkimer | 47 | 6.8 | 569 | 93.2 | 2.2 |
| Jefferson, Lewis, St. Lawrence | 61 | 11.2 | 580 | 88.8 | 3.2 |
| Livingston, Ontario | 56 | 8.1 | 579 | 91.9 | 2.3 |
| Monroe | 59 | 9.2 | 562 | 90.8 | 2.5 |
| Nassau | 40 | 6.3 | 578 | 93.7 | 2.3 |
| Niagara | 61 | 9.4 | 567 | 90.6 | 2.6 |
| Oneida, Oswego | 55 | 8.1 | 594 | 91.9 | 2.4 |
| Onondaga | 61 | 8.8 | 582 | 91.2 | 2.4 |
| Orange | 60 | 9.0 | 577 | 91.0 | 2.6 |
| Rensselaer | 66 | 10.0 | 572 | 90.0 | 2.6 |
| Rockland | 43 | 6.1 | 588 | 93.9 | 2.0 |
| Saratoga | 58 | 7.8 | 584 | 92.2 | 2.4 |
| Schenectady | 61 | 9.5 | 570 | 90.5 | 2.6 |
| Steuben, Yates | 58 | 7.6 | 591 | 92.4 | 2.1 |
| Suffolk | 46 | 5.9 | 596 | 94.1 | 1.9 |
| Sullivan, Ulster | 55 | 8.6 | 585 | 91.4 | 2.7 |
| Warren, Washington | 70 | 10.8 | 578 | 89.2 | 2.7 |
| Westchester | 46 | 7.5 | 572 | 92.5 | 2.4 |
| Bronx | 70 | 10.9 | 562 | 89.1 | 2.9 |
| Kings (Brooklyn) | 59 | 7.9 | 582 | 92.1 | 2.2 |
| New York (Manhattan) | 50 | 8.0 | 564 | 92.0 | 2.6 |
| Queens | 43 | 6.7 | 569 | 93.3 | 2.4 |
| Richmond (Staten Island) | 50 | 6.9 | 575 | 93.1 | 2.1 |

Figure 5-11
Prevalence of Current Asthma by
Locality, New York State Expanded
BRFSS, 2003

* Prevalence Rates are presented with
 95% Confidence Intervals



Of the 38 localities, for current asthma, Fulton and Montgomery counties ranked the highest (12.7%) and Suffolk County ranked the lowest (5.9%).

Hospitalizations for Asthma

Asthma hospitalization information has been generated from the SPARCS database. An asthma hospitalization is defined as having a principal diagnosis with an International Classification Disease 9th Revision (ICD-9CM) code of 493.

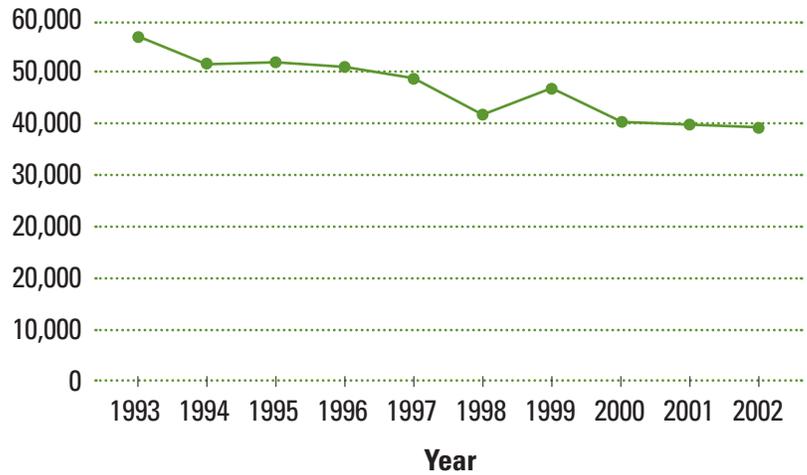
Highlights: Hospitalizations for Asthma

- The number of hospitalizations due to asthma in New York State has gone down approximately 30% in the last decade from 56,600 in 1993 to 39,000 in 2002.
- Asthma hospitalization rates also showed a 34% decline from a high of 30.9 in 1993 to 20.4 per 10,000 in 2002.
- For the years 2000–2002, the 0-14 year age group had the highest asthma hospitalization rate of 36.0/10,000, followed by the 65+ year and older age group with a rate of 24.7/10,000.
- During 2000–2002, female New Yorkers had higher crude and age-adjusted asthma hospitalization rates (23.2/10,000; 23.1) compared to males (17.6/10,000; 17.9).
- For the period 2000–2002, black New Yorkers had higher crude and age adjusted asthma hospitalization rates (46.1/10,000; 46.4) compared to white New Yorkers (12.1/10,000; 12.1).
- New York City residents had higher crude and adjusted asthma hospitalization rates (33.0/10,000; 33.9) in 2000-2002 compared to residents of the Rest of State (11.4/10,000; 11.5).
- For 2000–2002 asthma hospitalizations in New York State: 35.6% were for children 0-14 years of age, 15.5% were for adults 65 years of age and older; 58.5% were for females; and 67.4% were for New York City residents.
- Males had a higher percentage of asthma hospitalizations compared to females in the 0-4 and 5-14 age groups. However, males had lower percentages for all remaining age groups.
- When reviewing payment source for asthma hospitalizations in 2000–2002: 42.5% were by Medicaid; 31.2% by private insurance; 17.2% by Medicare; and 9.6% were self-pay.
- When reviewed by date of admission, asthma hospitalizations show a seasonal pattern with peaks in the fall and troughs in the summer.
- Asthma hospitalization rates for 2000–2002 vary across New York State with New York City residents of the Bronx having a rate of 59.8/10,000, while Tioga residents have a rate of 2.9/10,000.

Trends in Asthma Hospitalizations

Analysis of asthma hospitalizations for years 1993-2002 was conducted to examine trends in hospitalizations by age, gender, geographic region and source of payment.

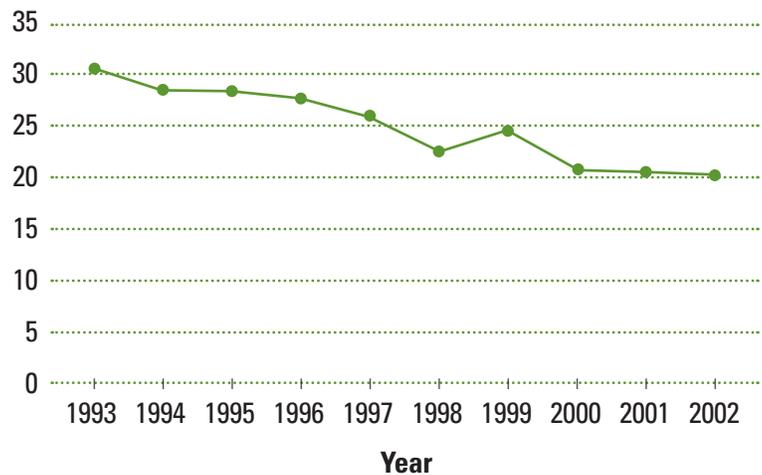
Figure 6-1
Annual Asthma Hospitalizations
for New York State Residents,
1993-2002



| Year | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Hospitalizations | 56,601 | 50,729 | 50,921 | 50,665 | 48,234 | 42,392 | 46,320 | 39,661 | 39,205 | 39,192 |

From 1993 to 2002, the number of annual asthma hospitalizations among New York State residents decreased approximately 30% in the last decade from 56,601 to 39,192 (Figure 6-1).

Figure 6-2
Annual Asthma Hospitalization
Rate per 10,000 Residents,
New York State, 1993-2002



| Year | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------|------|------|------|------|------|------|------|------|------|------|
| Rate | 30.9 | 27.9 | 27.8 | 27.5 | 26.2 | 22.7 | 24.7 | 21.0 | 20.4 | 20.4 |

The annual asthma hospitalization rate in New York State went down 34% from 30.9 hospitalizations per 10,000 residents in 1993 to 20.4 hospitalizations per 10,000 residents in 2002 (Figure 6-2).

Figure 6-3
 Asthma Hospitalizations for
 New York State Residents
 by Month, 2000–2002

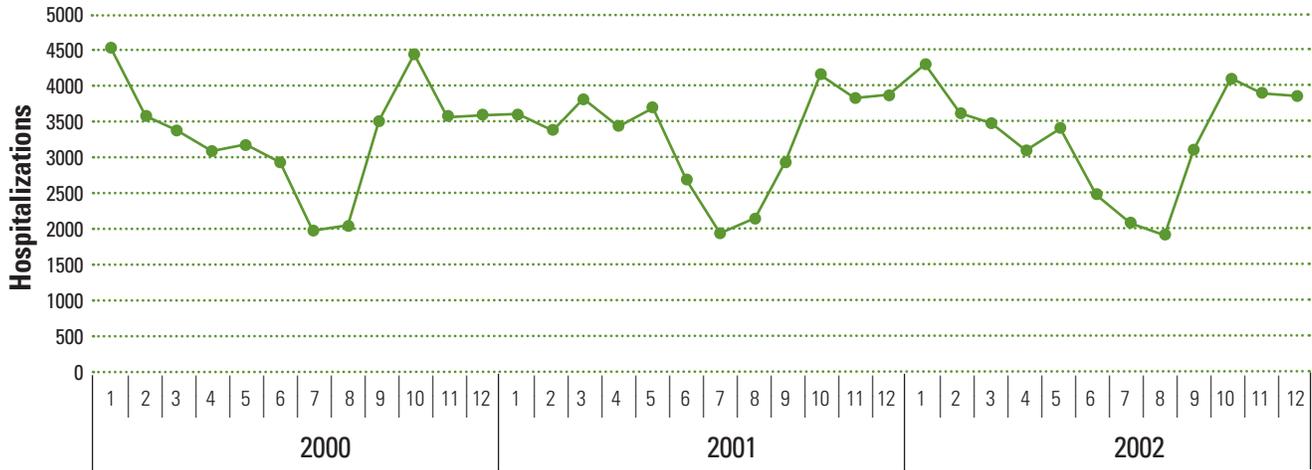
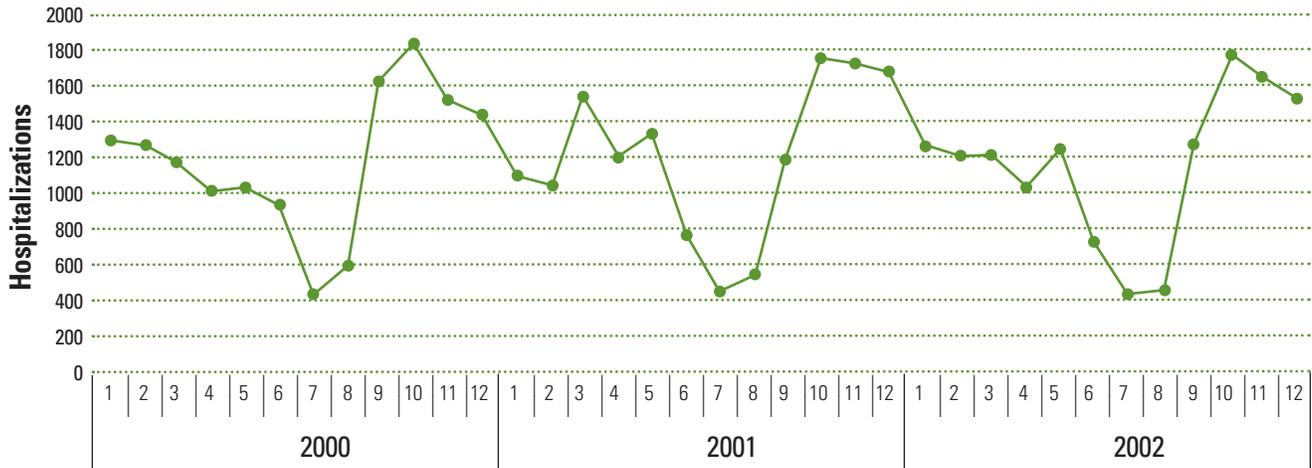


Figure 6-4
 Asthma Hospitalizations for
 New York State Residents,
 Ages 0–14 by Month, 2000–2002



When reviewed by date of admission, asthma hospitalizations show a seasonal pattern with peaks in the fall and troughs in the summer (Figure 6-3 and Figure 6-4).

Asthma Hospitalizations by Sociodemographic Characteristics

Analysis of asthma hospitalizations for years 2000 to 2002 was conducted to examine crude and age-adjusted

asthma hospitalization rates per 10,000 by gender, race and region (Table 6–1).

Table 6–1
Crude and Age-Adjusted* Asthma Hospitalization Rate per 10,000 Residents by Gender, Race, and Region, New York State, 2000–2002

* The standard population used for age-adjustment was the 2000 U.S. population.

| | | Crude | Adjusted |
|--------|---------------|-------|----------|
| Gender | Male | 17.6 | 17.9 |
| | Female | 23.2 | 23.1 |
| Race | White | 12.1 | 12.1 |
| | Black | 46.1 | 46.4 |
| | Other | 27.1 | 30.3 |
| Region | Rest of State | 11.4 | 11.5 |
| | New York City | 33.0 | 33.9 |

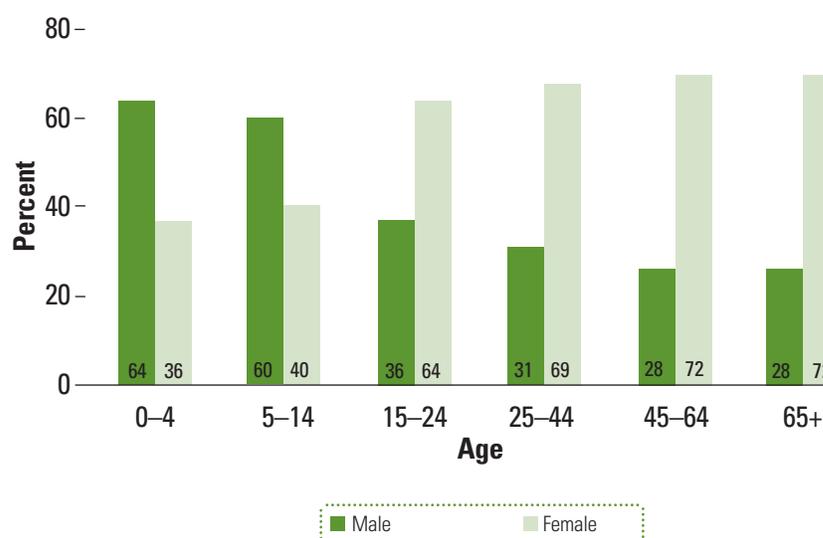
During 2000–2002, female New Yorkers had higher crude and age-adjusted asthma hospitalization rates (23.2/10,000; 23.1) compared to males (17.6/10,000; 17.9).

For the period 2000–2002, black New Yorkers had higher crude and age-adjusted asthma hospitalization

rates (46.1/10,000; 46.4) compared to white New Yorkers (12.1/10,000; 12.1).

New York City residents had higher crude and age-adjusted asthma hospitalization rates (33.0/10,000; 33.9) in 2000–2002 compared to residents of the Rest of State (11.4/10,000; 11.5).

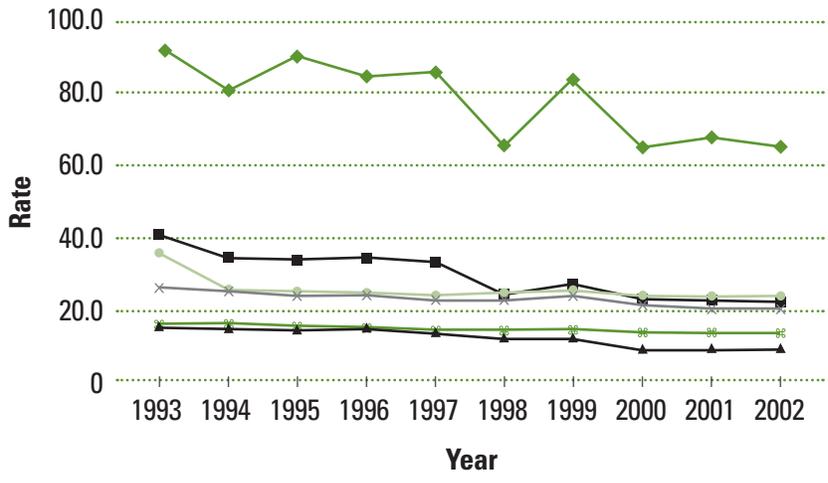
Figure 6–5
Percent of Asthma Hospitalizations by Age and Gender, New York State, 2000–2002



In 2000 to 2002, males younger than 14 years of age comprise a higher percentage of the total asthma hospitalizations when compared to females. For all adult age

groupings, females have a higher percentage of all asthma hospitalizations compared to males (Figure 6–5).

Figure 6-6
Asthma Hospitalization Rate per 10,000 Residents by Age Group, New York State, 1993-2002

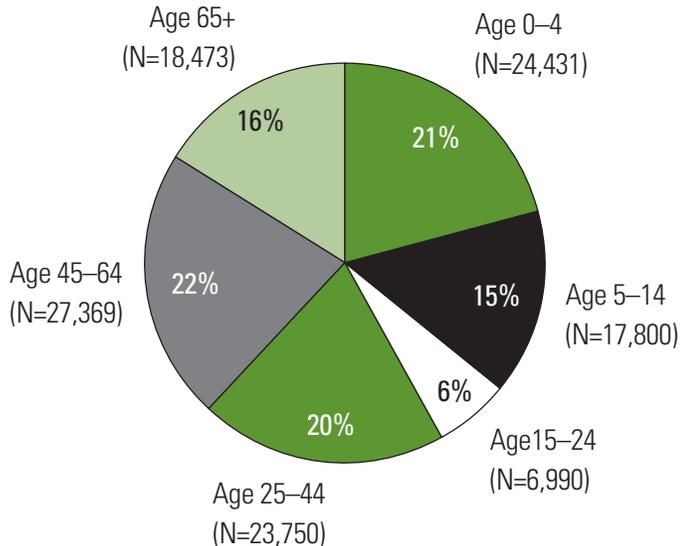


| Age | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-------|------|------|------|------|------|------|------|------|------|------|
| 0-4 | 92.3 | 80.6 | 90.9 | 84.7 | 86.9 | 65.9 | 83.3 | 64.6 | 68.4 | 65.8 |
| 5-14 | 40.4 | 35.1 | 34.8 | 35.9 | 34.2 | 24.9 | 28.2 | 23.6 | 22.1 | 21.6 |
| 15-24 | 17.9 | 16.9 | 16.5 | 17.6 | 14.7 | 12.2 | 12.4 | 9.0 | 9.0 | 9.1 |
| 25-44 | 18.7 | 18.1 | 17.8 | 17.6 | 16.4 | 15.8 | 15.5 | 14.0 | 13.3 | 13.2 |
| 45-64 | 26.6 | 26.3 | 24.2 | 24.4 | 22.8 | 22.9 | 24.4 | 21.1 | 20.3 | 20.5 |
| 65+ | 37.3 | 26.7 | 25.6 | 25.7 | 24.4 | 25.0 | 26.3 | 24.6 | 24.5 | 25.3 |

During 1993 to 2002, the 0 to 4 age group had the highest hospitalization rate compared to all other age

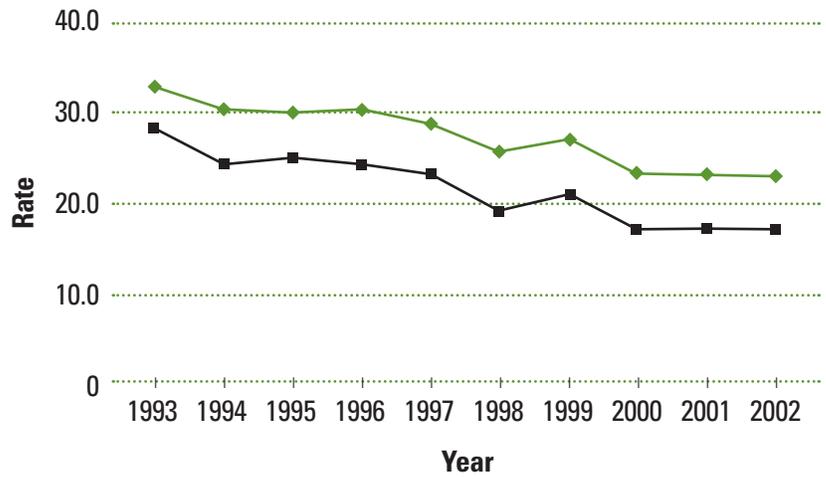
groups. Each age group shows a downward trend over time (Figure 6-6).

Figure 6-7
Asthma Hospitalizations by Age Group, New York State Residents, 2000-2002



During 2000 to 2002, 36% of the asthma hospitalizations were for children ages 0 to 14; 16% of the hospitalizations were for the 65 and older age group (Figure 6-7).

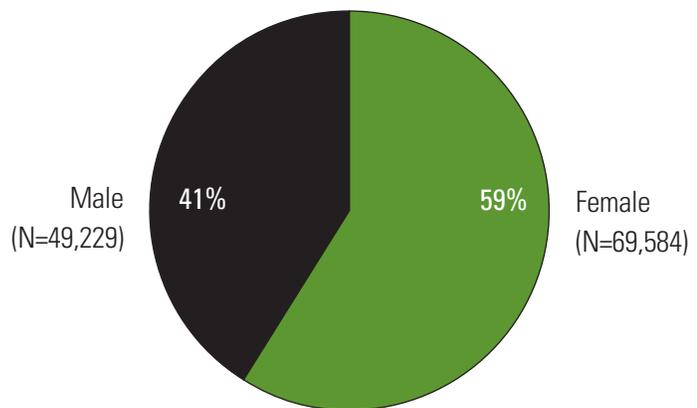
Figure 6-8
Asthma Hospitalization Rate per 10,000 Residents by Gender, New York State, 1993-2002



| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--------|------|------|------|------|------|------|------|------|------|------|
| Female | 33.1 | 30.5 | 30.0 | 30.3 | 28.3 | 26.1 | 27.9 | 23.7 | 23.0 | 23.2 |
| Male | 28.6 | 24.5 | 25.1 | 24.2 | 23.4 | 19.2 | 21.4 | 17.8 | 17.9 | 17.5 |

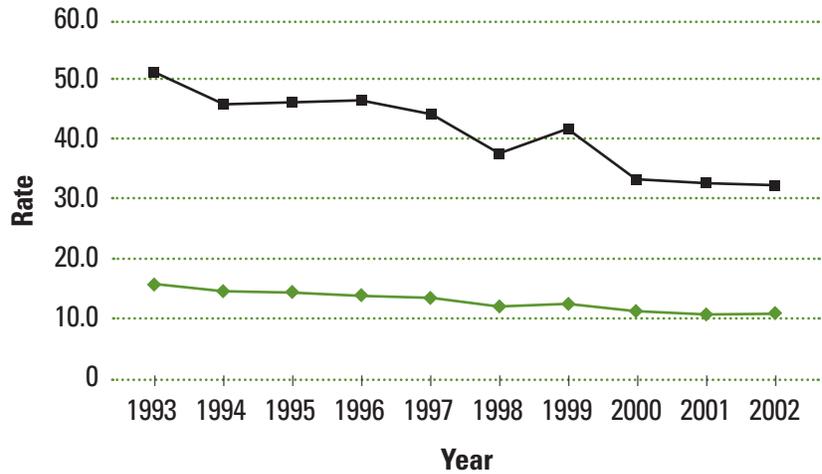
There was a decline of asthma hospitalization rates from 1993 to 2002 for both males (39%) and females (30%) (Figure 6-8).

Figure 6-9
Asthma Hospitalizations by Gender, New York State Residents, 2000-2002



During 2000 to 2002, 59% of asthma hospitalizations were for female New Yorkers (Figure 6-9).

Figure 6-10
Asthma Hospitalization Rate per 10,000 Residents by Region, New York State, 1993-2002

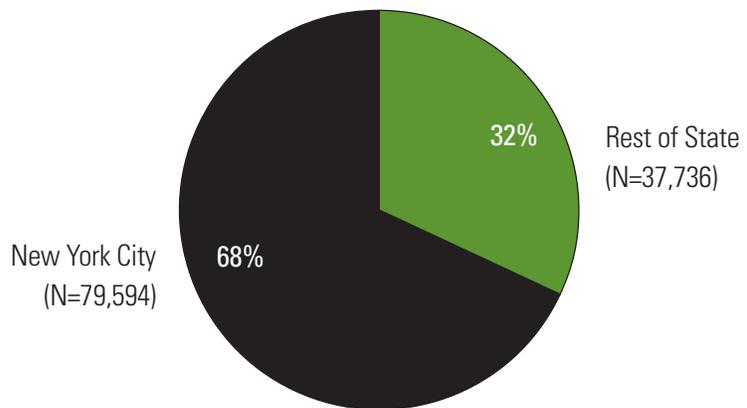


| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---------------|------|------|------|------|------|------|------|------|------|------|
| Rest of State | 16.9 | 14.9 | 14.7 | 13.9 | 13.5 | 12.4 | 12.9 | 11.5 | 11.3 | 11.4 |
| New York City | 51.3 | 46.2 | 46.5 | 47.0 | 44.1 | 37.7 | 41.9 | 33.3 | 32.8 | 32.6 |

There was a 36% decline in asthma hospitalization rates per 10,000 residents in New York City and a 33% decline among Rest of State residents. New York City residents

had consistently higher asthma hospitalization rates when compared to their counterparts in the Rest of State (Figure 6-10).

Figure 6-11
Asthma Hospitalizations by Region, New York State Residents, 2000-2002



During 2000 to 2002, New York City residents accounted for 68% of all asthma hospitalizations (Figure 6-11).

Asthma Hospitalization Rates by County

Table 6-2 and Figure 6-12 below present county-specific asthma hospital discharge rates for New York State residents from 2000 to 2002. The source of discharge data is the Statewide Planning and Research Cooperative System (SPARCS), a database that

contains information about all hospitalizations in New York State. Discharges were selected if the principal diagnosis was an ICD-9CM code of 493. The source of the population data is the Bureau of Biometrics, New York State Department of Health.

Table 6-2

Asthma Hospitalization Rate per 10,000 Residents by Region and County, New York State, 2000-2002

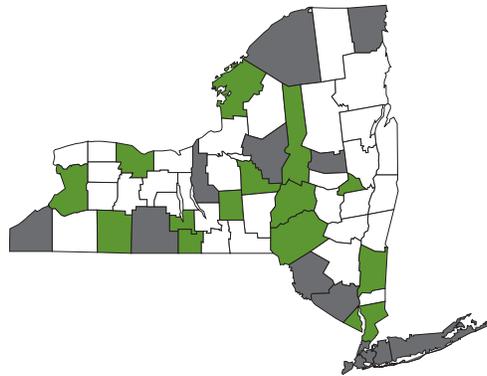
Source: 2000-2002 SPARCS Data as of August, 2004

| Region | County | Discharges | | | | Population 2001 | Rate |
|---------------------|---------------------|--------------|--------------|--------------|--------------|--------------------|------------------|
| | | 2000 | 2001 | 2002 | Total | | |
| Region 1 | Allegany | 57 | 46 | 66 | 169 | 50,298 | 11.2 |
| Western | Cattaraugus | 70 | 86 | 72 | 228 | 83,399 | 9.1 |
| New York | Chautauqua | 181 | 160 | 168 | 509 | 138,718 | 12.2 |
| | Erie | 961 | 958 | 1,034 | 2,953 | 946,625 | 10.4 |
| | Genesee | 54 | 60 | 46 | 160 | 59,967 | 8.9 |
| | Niagara | 235 | 193 | 198 | 626 | 218,635 | 9.6 |
| | Orleans | 59 | 42 | 35 | 136 | 43,940 | 10.3 |
| | Wyoming | 51 | 42 | 39 | 132 | 43,070 | 10.2 |
| | Region Total | | 1,668 | 1,587 | 1,658 | 4,913 | 1,584,652 |
| Region 2 | Chemung | 94 | 105 | 128 | 327 | 90,704 | 12.0 |
| Finger Lakes | Livingston | 56 | 64 | 67 | 187 | 64,710 | 9.6 |
| | Monroe | 788 | 804 | 829 | 2,421 | 736,215 | 11.0 |
| | Ontario | 67 | 80 | 62 | 209 | 100,898 | 6.9 |
| | Schuyler | 16 | 30 | 18 | 64 | 19,277 | 11.1 |
| | Seneca | 13 | 14 | 14 | 41 | 34,845 | 3.9 |
| | Steuben | 151 | 129 | 125 | 405 | 99,196 | 13.6 |
| | Wayne | 63 | 49 | 59 | 171 | 93,902 | 6.1 |
| | Yates | 14 | 11 | 14 | 39 | 24,525 | 5.3 |
| Region Total | | 1,262 | 1,286 | 1,316 | 3,864 | 1,264,272 | 10.2 |
| Region 3 | Cayuga | 121 | 102 | 100 | 323 | 81,412 | 13.2 |
| Central | Cortland | 68 | 46 | 54 | 168 | 48,639 | 11.5 |
| New York | Herkimer | 70 | 97 | 64 | 231 | 64,170 | 12.0 |
| | Jefferson | 134 | 121 | 123 | 378 | 110,212 | 11.4 |
| | Lewis | 23 | 39 | 19 | 81 | 26,941 | 10.0 |
| | Madison | 96 | 71 | 85 | 252 | 69,795 | 12.0 |
| | Oneida | 455 | 394 | 460 | 1,309 | 234,635 | 18.6 |
| | Onondaga | 471 | 376 | 350 | 1,197 | 459,288 | 8.7 |
| | Oswego | 121 | 126 | 111 | 358 | 122,639 | 9.7 |
| | St. Lawrence | 176 | 161 | 187 | 524 | 111,385 | 15.7 |
| | Tompkins | 50 | 65 | 50 | 165 | 97,998 | 5.6 |
| Region Total | | 1,785 | 1,598 | 1,603 | 4,986 | 1,427,114 | 11.7 |

| Region | County | Discharges | | | | Population 2001 | Rate |
|-----------------------------|---------------------|---------------|---------------|---------------|------------------|--------------------|-------------|
| | | 2000 | 2001 | 2002 | Total | | |
| Region 4 | Broome | 169 | 210 | 181 | 560 | 200,243 | 9.3 |
| New York–Penn | Chenango | 30 | 47 | 49 | 126 | 51,192 | 8.2 |
| | Tioga | 17 | 13 | 15 | 45 | 51,535 | 2.9 |
| | Region Total | 216 | 270 | 245 | 731 | 302,970 | 8.0 |
| Region 5 | Albany | 256 | 286 | 279 | 821 | 294,865 | 9.3 |
| Northeastern New York | Clinton | 91 | 117 | 113 | 321 | 80,358 | 13.3 |
| | Columbia | 28 | 9 | 27 | 64 | 63,097 | 3.4 |
| | Delaware | 48 | 63 | 55 | 166 | 47,615 | 11.6 |
| | Essex | 19 | 21 | 18 | 58 | 38,725 | 5.0 |
| | Franklin | 57 | 30 | 60 | 147 | 51,025 | 9.6 |
| | Fulton | 124 | 107 | 90 | 321 | 54,896 | 19.5 |
| | Greene | 22 | 22 | 25 | 69 | 48,373 | 4.8 |
| | Hamilton | 2 | 6 | 6 | 14 | 5,330 | 8.8 |
| | Montgomery | 48 | 61 | 42 | 151 | 49,474 | 10.2 |
| | Otsego | 74 | 77 | 74 | 225 | 61,741 | 12.2 |
| | Rensselaer | 146 | 139 | 153 | 438 | 152,820 | 9.6 |
| | Saratoga | 134 | 128 | 134 | 396 | 204,276 | 6.5 |
| | Schenectady | 154 | 182 | 152 | 488 | 146,247 | 11.1 |
| | Schoharie | 21 | 22 | 9 | 52 | 31,747 | 5.5 |
| | Warren | 68 | 52 | 51 | 171 | 63,572 | 9.0 |
| | Washington | 43 | 45 | 63 | 151 | 61,081 | 8.2 |
| Region Total | 1,335 | 1,367 | 1,351 | 4,053 | 1,455,242 | 9.3 | |
| Region 6 | Dutchess | 287 | 285 | 336 | 908 | 284,270 | 10.7 |
| Hudson Valley | Orange | 711 | 678 | 698 | 2,087 | 349,480 | 19.9 |
| | Putnam | 85 | 70 | 58 | 213 | 97,125 | 7.3 |
| | Rockland | 243 | 341 | 324 | 908 | 289,430 | 10.5 |
| | Sullivan | 111 | 101 | 108 | 320 | 74,048 | 14.4 |
| | Ulster | 209 | 197 | 145 | 551 | 178,372 | 10.3 |
| | Westchester | 1,089 | 1,076 | 1,111 | 3,276 | 932,748 | 11.7 |
| | Region Total | 2,735 | 2,748 | 2,780 | 8,263 | 2,205,473 | 12.5 |
| Region 7 | Bronx | 7,822 | 7,870 | 8,412 | 24,104 | 1,343,698 | 59.8 |
| New York City | Kings | 8,721 | 8,599 | 8,213 | 25,533 | 2,479,923 | 34.3 |
| | New York | 4,853 | 4,446 | 4,206 | 13,505 | 1,549,009 | 29.1 |
| | Queens | 4,883 | 4,788 | 4,797 | 14,468 | 2,238,024 | 21.6 |
| | Richmond | 793 | 791 | 778 | 2,362 | 451,373 | 17.4 |
| | Region Total | 27,072 | 26,494 | 26,406 | 79,972 | 8,062,027 | 33.1 |
| Region 8 | Nassau | 1,784 | 1,798 | 1,806 | 5,388 | 1,339,301 | 13.4 |
| Nassau-Suffolk | Suffolk | 1,978 | 1,862 | 1,858 | 5,698 | 1,443,299 | 13.2 |
| Region Total | 3,762 | 3,660 | 3,664 | 11,086 | 2,782,600 | 13.3 | |
| New York State Total | | 39,835 | 39,010 | 39,023 | 117,868 | 19,084,350 | 20.6 |

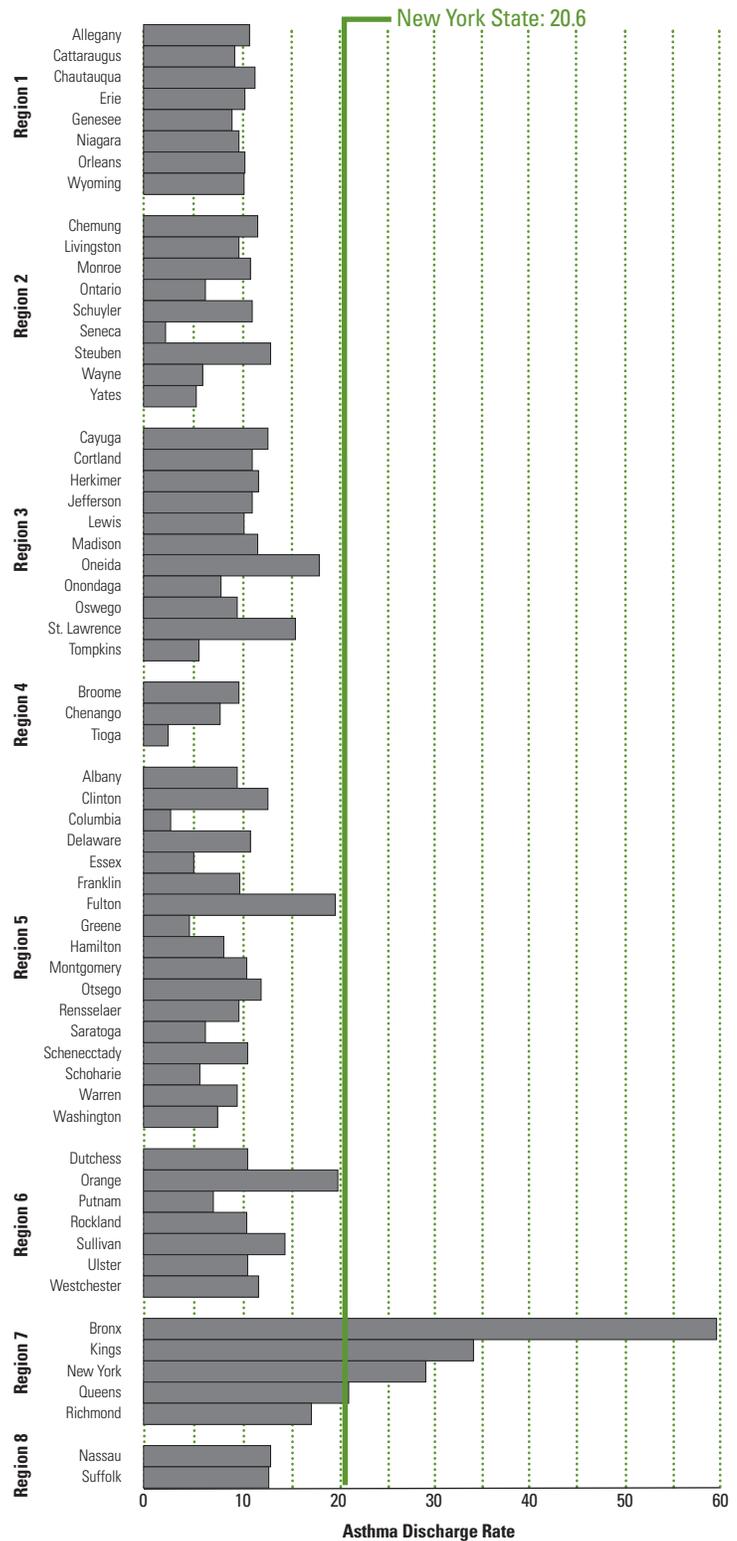
Figure 6-12
Asthma Hospitalization Rate per
10,000 Residents by County, New
York State, 2000-2002

Source: SPARCS



□ 2.9 – <10.35: Q1 & Q2
 ■ 10.35 – <12.2: Q3
 ■ 12.2 – 59.8: Q4

Quartile (Q) Distribution of
 Asthma Discharge Rate



The 2000-2002 asthma hospitalization discharge rate for New York State residents was 20.6 per 10,000. There was variation by region and county.

For New York City residents, Bronx had the highest asthma hospitalization rate of 59.8 per 10,000 residents followed by Kings County with a rate of 34.3 per 10,000

residents. For counties in Rest of State New York, rates range from highs of 19.9 per 10,000 residents (Orange) and 19.5 per 10,000 residents (Fulton) to 2.9 per 10,000 residents (Tioga) and 3.4 per 10,000 residents (Columbia) (Figure 6-12).

Asthma Mortality

There are relatively few deaths due to asthma each year compared to hospitalizations. However, asthma deaths can be prevented with proper care and management.

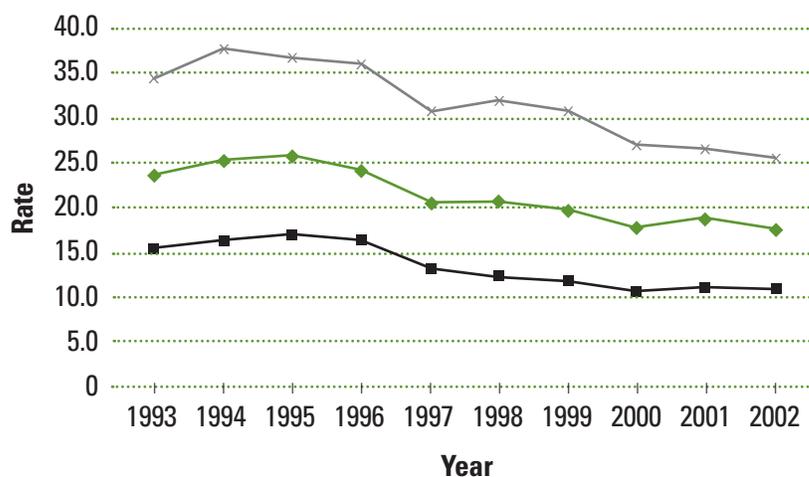
The source of the asthma mortality data is from the New York State Department of Health's Bureau of Biometrics and Health Statistics death files. Until 1998, asthma deaths were defined as having a primary cause of death with ICD-9CM of 493. Since 1999, asthma deaths were defined as having a primary cause of death with ICD-10 of J45 to J46.

Highlights: Asthma Mortality

- An average of 338 deaths occurred each year due to asthma in New York during 2000–2002, which is a rate of 17.7 deaths per 1,000,000 residents.
- Asthma mortality increased with age. New York State children 0-14 years of age had a 2000–2002 asthma mortality rate of 4.5 per 1,000,000 residents, while New Yorkers 65 years of age and older had a mortality rate of 49.9 per 1,000,000 residents.
- In the past decade, the New York State asthma mortality rate decreased 26% from 23.0 per 1,000,000 in 1993 to 17.3 in 2002. Similar decreases were seen for residents of Rest of State and New York City.
- New York State women have a higher age-adjusted asthma mortality rate for 2000–2002 with 18.3 per 1,000,000 residents compared to males at 15.8 per 1,000,000 residents.
- Black non-Hispanic (48.4 per 1,000,000) and Hispanic (33.7 per 1,000,000) residents have much higher age-adjusted mortality rates compared to White non-Hispanic residents (9.8 per 1,000,000).

Trends in Asthma Mortality

Figure 7-1
Asthma Mortality Rate
per 1,000,000 Residents,
New York State, 1993–2002



| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|------------------|------|------|------|------|------|------|------|------|------|------|
| ◆ New York State | 23.5 | 25.3 | 26.1 | 24.5 | 20.4 | 20.8 | 19.8 | 17.9 | 18.4 | 17.7 |
| ■ Rest of State | 15.9 | 16.3 | 18.0 | 16.6 | 13.9 | 13.0 | 12.4 | 11.1 | 11.6 | 11.4 |
| × New York City | 34.5 | 38.4 | 37.8 | 36.1 | 31.3 | 32.2 | 31.3 | 27.1 | 26.8 | 25.2 |

In the past decade, the New York State asthma mortality rate decreased 26% from 23.5 per 1,000,000 in 1993 to 17.7 in 2002. Similar decreases were seen for residents of Rest of State and New York City (Figure 7-1).

Asthma Mortality by Sociodemographic Characteristics

Analysis of asthma deaths for years 2000 to 2002 was conducted to examine asthma mortality rates per 1,000,000 by age groupings among New York State residents (Table 7-1).

Asthma mortality rates increased with age. New York State children 0-14 years of age had a 2000-2002 asthma mortality rate of 4.5 per 1,000,000, while New Yorkers 65 years of age and older had a mortality rate of 49.5 per 1,000,000.

Table 7-1

Asthma Mortality Rate per 1,000,000 by Age, New York State Residents, 2000–2002

*There were an average of 338 deaths per year due to asthma in New York during 2000-2002, for a rate of 17.7 per 1,000,000 population.

| Age | Number | Rate |
|-------|--------|------|
| 0–14 | 52 | 4.5 |
| 15–34 | 97 | 6.1 |
| 35–64 | 497 | 22.2 |
| 65+ | 369 | 49.9 |
| Total | 1015 | 17.7 |

Table 7-2 presents crude and age-adjusted asthma mortality rates per 1,000,000 by gender, race and region.

Table 7-2

Crude and Age-Adjusted* Asthma Mortality Rate per 1,000,000 by Gender, Race/Ethnicity, and Region, New York State Residents, 2000–2002

*The standard population used for age-adjustment was the 2000 U.S. population.

| | | Crude | Adjusted |
|-----------------------|--------------------|-------|----------|
| Gender | Male | 15.1 | 15.8 |
| | Female | 20.1 | 18.3 |
| Race/Ethnicity | White non-Hispanic | 11.4 | 9.8 |
| | Black non-Hispanic | 42.9 | 48.4 |
| | Hispanic | 22.8 | 33.7 |
| Region | Rest of State | 11.4 | 10.7 |
| | New York City | 26.4 | 27.1 |

New York State women have a higher age-adjusted asthma mortality rate for 2000 to 2002 (18.3 per 1,000,000) compared to males (15.8 per 1,000,000).

Black non-Hispanic New Yorkers have an age-adjusted mortality rate of 48.4 per 1,000,000 which is almost 5 times higher than the white non-Hispanic mortality

rate of 9.8 per 1,000,000. Hispanic New Yorkers have an age-adjusted asthma mortality rate of 33.7 per 1,000,000 which is almost 3.5 times higher than white non-Hispanic residents.

New York City’s age-adjusted asthma mortality rate for 2000 to 2002 is 2.5 times higher the Rest of State.

Asthma Mortality by County

Table 7-3 presents both the crude and age-adjusted county-specific asthma mortality rates for New York State residents in 2000-2002. The mortality rates were adjusted using the 2000 US Standard Population.

The New York State crude asthma mortality rate per 1,000,000 population based on 2000 to 2002 Vital Statistics data was 17.7 and the age-adjusted death rate was 17.3. Asthma mortality rates vary by region and county of residence.

Table 7-3

Crude and Age-Adjusted* Asthma Mortality Rate per 1,000,000 Residents by Region and County, New York State Residents, 2000–2002

Source: 2000-2002 Vital Statistics data as of August, 2004. *The standard population used for age-adjustment was the 2000 US population.

| Region | County | Deaths | | | | Population 2001 | Crude Rate | Adjusted Rate |
|----------|--------------|--------|------|------|-------|-----------------|------------|---------------|
| | | 2000 | 2001 | 2002 | Total | | | |
| Region 1 | Allegany | 0 | 0 | 0 | 0 | 50,298 | 0 | 0 |
| Western | Cattaraugus | 0 | 0 | 0 | 0 | 83,399 | 0 | 0 |
| New York | Chautauqua | 2 | 1 | 1 | 4 | 138,718 | 9.6 | 7.7 |
| | Erie | 14 | 13 | 12 | 39 | 946,625 | 13.7 | 12.3 |
| | Genesee | 1 | 0 | 1 | 2 | 59,967 | 11.1 | 9.4 |
| | Niagara | 1 | 1 | 1 | 3 | 218,635 | 4.6 | 4.7 |
| | Orleans | 0 | 1 | 1 | 2 | 43,940 | 15.2 | 15.4 |
| | Wyoming | 2 | 1 | 0 | 3 | 43,070 | 23.2 | 22.6 |
| | Region Total | | 20 | 17 | 16 | 53 | 1,584,652 | 11.1 |

| Region | County | Deaths | | | | Population 2001 | Crude Rate | Adjusted Rate |
|--------------------------|---------------------|----------|-----------|-----------|-----------|--------------------|------------------|------------------|
| | | 2000 | 2001 | 2002 | Total | | | |
| Region 2 | Chemung | 0 | 1 | 0 | 1 | 90,704 | 3.7 | 3.8 |
| Finger Lakes | Livingston | 2 | 2 | 1 | 5 | 64,710 | 25.8 | 28.0 |
| | Monroe | 9 | 8 | 9 | 26 | 736,215 | 11.8 | 11.2 |
| | Ontario | 1 | 0 | 0 | 1 | 100,898 | 3.3 | 3.1 |
| | Schuyler | 0 | 1 | 0 | 1 | 19,277 | 17.3 | 14.3 |
| | Seneca | 0 | 0 | 1 | 1 | 34,845 | 9.6 | 8.8 |
| | Steuben | 1 | 4 | 1 | 6 | 99,196 | 20.2 | 18.6 |
| | Wayne | 0 | 1 | 2 | 3 | 93,902 | 10.6 | 10.8 |
| | Yates | 0 | 0 | 0 | 0 | 24,525 | 0 | 0 |
| | Region Total | | 13 | 17 | 14 | 44 | 1,264,272 | 11.6 |
| Region 3 | Cayuga | 0 | 1 | 0 | 1 | 81,412 | 4.1 | 4.5 |
| Central New York | Cortland | 1 | 1 | 1 | 3 | 48,639 | 20.6 | 21.0 |
| | Herkimer | 2 | 0 | 1 | 3 | 64,170 | 15.6 | 13.5 |
| | Jefferson | 0 | 2 | 2 | 4 | 110,212 | 12.1 | 11.8 |
| | Lewis | 0 | 1 | 1 | 2 | 26,941 | 24.7 | 24.3 |
| | Madison | 2 | 0 | 0 | 2 | 69,795 | 9.6 | 9.6 |
| | Oneida | 6 | 3 | 5 | 14 | 234,635 | 19.9 | 16.9 |
| | Onondaga | 6 | 9 | 4 | 19 | 459,288 | 13.8 | 13.1 |
| | Oswego | 1 | 0 | 0 | 1 | 122,639 | 2.7 | 2.6 |
| | St. Lawrence | 1 | 2 | 2 | 5 | 111,385 | 15.0 | 14.4 |
| | Tompkins | 2 | 1 | 0 | 3 | 97,998 | 10.2 | 11.7 |
| | Region Total | | 21 | 20 | 16 | 57 | 1,427,114 | 13.3 |
| Region 4 | Broome | 8 | 7 | 4 | 19 | 200,243 | 31.6 | 25.8 |
| New York–Penn | Chenango | 1 | 1 | 0 | 2 | 51,192 | 13.0 | 9.9 |
| | Tioga | 0 | 1 | 1 | 2 | 51,535 | 12.9 | 11.3 |
| Region Total | | 9 | 9 | 5 | 23 | 302,970 | 25.3 | 21.0 |
| Region 5 | Albany | 4 | 2 | 4 | 10 | 294,865 | 11.3 | 10.5 |
| Northeastern New York | Clinton | 0 | 2 | 2 | 4 | 80,358 | 16.6 | 17.9 |
| | Columbia | 1 | 0 | 0 | 1 | 63,097 | 5.3 | 4.2 |
| | Delaware | 0 | 0 | 4 | 4 | 47,615 | 28.0 | 19.3 |
| | Essex | 0 | 0 | 0 | 0 | 38,725 | 0 | 0 |
| | Franklin | 1 | 0 | 0 | 1 | 51,025 | 6.5 | 6.6 |
| | Fulton | 0 | 1 | 2 | 3 | 54,896 | 18.2 | 19.6 |
| | Greene | 0 | 0 | 0 | 0 | 48,373 | 0 | 0 |
| | Hamilton | 1 | 0 | 1 | 2 | 5,330 | 125.1 | 81.1 |
| | Montgomery | 0 | 2 | 1 | 3 | 49,474 | 20.2 | 21.5 |
| | Otsego | 0 | 0 | 1 | 1 | 61,741 | 10.8 | 10.4 |
| | Rensselaer | 2 | 3 | 2 | 7 | 152,820 | 15.3 | 14.3 |
| | Saratoga | 0 | 2 | 2 | 4 | 204,276 | 6.5 | 6.6 |
| | Schenectady | 3 | 0 | 1 | 4 | 146,247 | 9.1 | 6.9 |
| | Schoharie | 0 | 1 | 0 | 1 | 31,747 | 10.5 | 11.7 |
| | Warren | 0 | 0 | 0 | 0 | 63,572 | 0 | 0 |

| Region | County | Deaths | | | | Population 2001 | Crude Rate | Adjusted Rate |
|----------------|----------------------|--------|------|------|-------|--------------------|---------------|------------------|
| | | 2000 | 2001 | 2002 | Total | | | |
| | Washington | 1 | 0 | 2 | 3 | 61,081 | 16.4 | 15.2 |
| | Region Total | 13 | 13 | 22 | 48 | 1,455,242 | 11.2 | 10.2 |
| Region 6 | Dutchess | 0 | 4 | 3 | 7 | 284,270 | 8.2 | 8.0 |
| Hudson Valley | Orange | 6 | 4 | 4 | 14 | 349,480 | 13.4 | 14.6 |
| | Putnam | 0 | 0 | 2 | 2 | 97,125 | 6.9 | 5.8 |
| | Rockland | 2 | 3 | 3 | 8 | 289,430 | 9.2 | 8.8 |
| | Sullivan | 2 | 1 | 0 | 3 | 74,048 | 13.5 | 12.9 |
| | Ulster | 1 | 4 | 1 | 6 | 178,372 | 11.2 | 10.3 |
| | Westchester | 10 | 7 | 18 | 35 | 932,748 | 12.5 | 11.7 |
| | Region Total | 21 | 23 | 31 | 75 | 2,205,473 | 11.3 | 10.9 |
| Region 7 | Bronx | 68 | 69 | 55 | 192 | 1,343,698 | 47.6 | 53.1 |
| New York City | Kings | 55 | 64 | 60 | 179 | 2,479,923 | 24.1 | 25.3 |
| | New York | 48 | 42 | 52 | 142 | 1,549,009 | 30.8 | 30.4 |
| | Queens | 40 | 37 | 28 | 105 | 2,238,024 | 15.6 | 15.6 |
| | Richmond | 6 | 4 | 9 | 19 | 451,373 | 14.0 | 13.9 |
| | Region Total | 2178 | 216 | 204 | 637 | 8,062,027 | 26.4 | 27.1 |
| Region 8 | Nassau | 8 | 17 | 12 | 37 | 1,339,301 | 9.2 | 8.2 |
| Nassau-Suffolk | Suffolk | 17 | 12 | 10 | 39 | 1,443,299 | 9.0 | 9.1 |
| | Region Total | 25 | 29 | 22 | 76 | 2,782,600 | 9.1 | 8.7 |
| | New York State Total | 339 | 344 | 330 | 1,013 | 19,084,350 | 17.7 | 17.3 |

The Nassau-Suffolk region had the lowest crude (9.1) and adjusted (8.7) mortality rate. New York City had the highest crude (26.4) and adjusted (27.1) asthma mortality rate.

Program-Based Surveillance

Program-based surveillance is not representative of the general population. However, these data provide useful information about asthmatics served by public health programs. These data are routinely collected for asthmatics participating in public health programs in low-income populations. The following information represents New York State residents served by managed care organizations and Medicaid Fee-for-Service programs.

Highlights: Program-Based Surveillance

MANAGED CARE QUALITY ASSURANCE REPORTING REQUIREMENTS (QARR)

- For New Yorkers served by managed care providers, the percent of children ages 5–17 with persistent asthma who received appropriate medications improved between 1999 and 2003. Commercial plans showed a 48% improvement (48% in 1999 to 71% in 2003); Medicaid a 28% improvement (50% to 64%); and Child Health Plus a 34% improvement (53% to 71%).
- Similar improvements were also seen for adult New Yorkers, ages 18–56, served by managed care. There was a 30% improvement for commercial plans (57% in 1999 to 74% in 2003) and a 16% improvement for adults in Medicaid managed care (61% to 71%).

MEDICAID ASTHMA PREVALENCE

- For individuals continuously enrolled in Medicaid managed care for 12 months or more as of December 1, 2001, more than 53,000 recipients 0-64 years of age had asthma (11.7%), with almost 35,000 recipients having persistent asthma (7.6%).
- More than 138,000 Medicaid Fee-for-Service recipients continuously enrolled for 12 months or more as of December 1, 2001 had asthma (12.9%), with almost 100,000 recipients having persistent asthma (9.3%).

Managed Care Quality Assurance Reporting Requirements (QARR)

QARR consists of measures from the National Committee for Quality Assurance's (NCQA), Health Plan Employer Data Information Set (HEDIS®) and NYS-

specific measures. This version of QARR incorporates measures from HEDIS® 2000 through 2004.

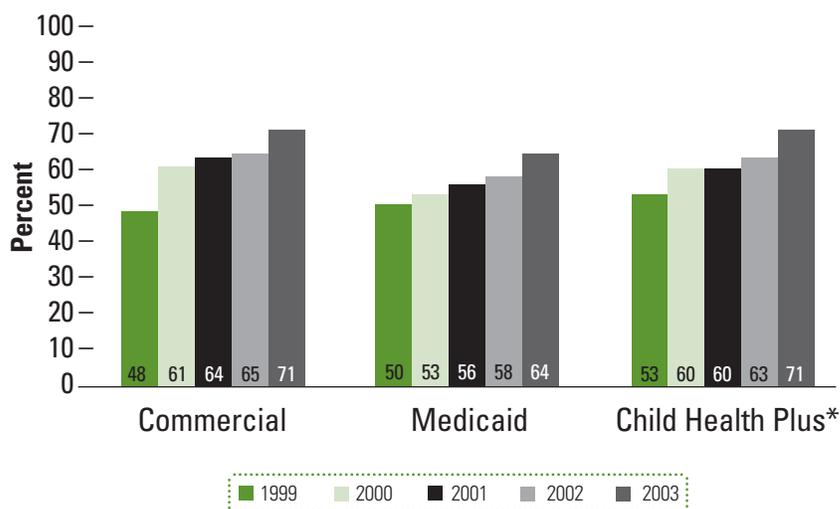
Asthma specific QARR indicators

Use of appropriate medications for asthma is reported by Medicaid, Child Health Plus and commercial payers through the NYS Data Submission System. The QARR measure is the percentage of enrollees with persistent asthma who have received appropriate medications (e.g. at least one filled prescription for an anti-inflammatory medication within the measurement year). Individuals with persistent asthma are defined as those who have had at least four asthma medication dispensing events (i.e., an asthma

medication was dispensed on four occasions); at least one emergency department (ED) visit with asthma (ICD-9CM code 493) as the principal diagnosis; at least one acute inpatient discharge with asthma (ICD-9CM code 493) as the principal diagnosis; or at least four outpatient asthma visits (ICD-9CM code 493) as the listed diagnosis and at least two asthma medication dispensing events. For more details see: <http://www.health.state.ny.us/nysdoh/eqarr/2004/index.htm>.

Figure 8-1
Percent of Children 5-17 Years with Persistent Asthma Who Received Appropriate Medications by Type of Plan, New York State 1999-2003

* Child Health Plus is for children ages 5 to 18.



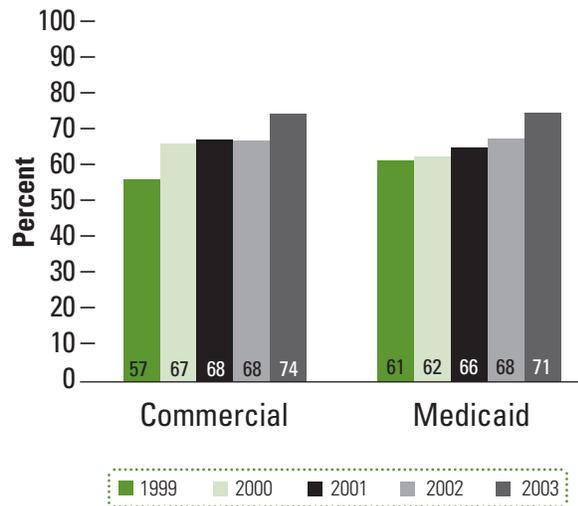
The percent of children ages 5 to 17 with persistent asthma who received appropriate medications improved between 1999 and 2003. Commercial plans showed a 48% improvement; Medicaid a 28% improvement; and

Child Health Plus had a 34% improvement.

Child Health Plus is comparable to commercial plans with Medicaid having a slightly lower percentage for the asthma-related QARR (Figure 8-1).

Figure 8-2
Percent of Adults 18-56
Years with Persistent Asthma
who Received Appropriate
Medications by Type of Plan,
New York State 1999-2003

* Child Health Plus is for children ages 5 to 18.



Managed care enrollees, ages 18-56, showed improvement in the asthma-related QARR indicator between 1999 to 2003. There was a 30% improvement

in commercial plans and a 16% improvement for adults under Medicaid managed care (Figure 8-2).

Medicaid Asthma Prevalence

The NYSDOH has initiated asthma surveillance activities utilizing Medicaid data to monitor asthma prevalence.

Standardized asthma definitions (asthma universe

and persistent asthma) were developed based on HEDIS criteria.

Asthma Universe

Individuals are identified as asthma patients during calendar year 2001 if they had at least:

- one outpatient asthma visit (ICD-9CM code 493) ; or
- one emergency department (ED) visit with a principle diagnosis of asthma (ICD-9CM code 493); or
- one acute inpatient discharge with a principle diagnosis of asthma (ICD-9CM code 493); or
- four asthma medication dispensing events.*

Persistent Asthma

Using the HEDIS definition, individuals are identified as asthma patients during calendar year 2001 if they have at least:

- four outpatient asthma visits (ICD-9CM code 493) and at least two asthma medication dispensing events; or
- one emergency department (ED) visit with a principle diagnosis of asthma (ICD-9CM code 493); or
- one acute inpatient discharge with a principle diagnosis of asthma (ICD-9CM code 493); or
- four asthma medication dispensing events.*

*A dispensing event is one prescription of an amount lasting 30 days or less.

MEDICAID MANAGED CARE ASTHMA PREVALENCE

Medicaid managed care (MMC) asthma prevalence data were analyzed using the definitions for asthma universe and persistent asthma. These data include all

enrollees of Medicaid managed care, ages 0 to 64, who were continuously enrolled for 12 months or more as of December 1, 2001.

Figure 8-3
Asthma Prevalence by Age
for New York State Medicaid
Managed Care Population, 2001

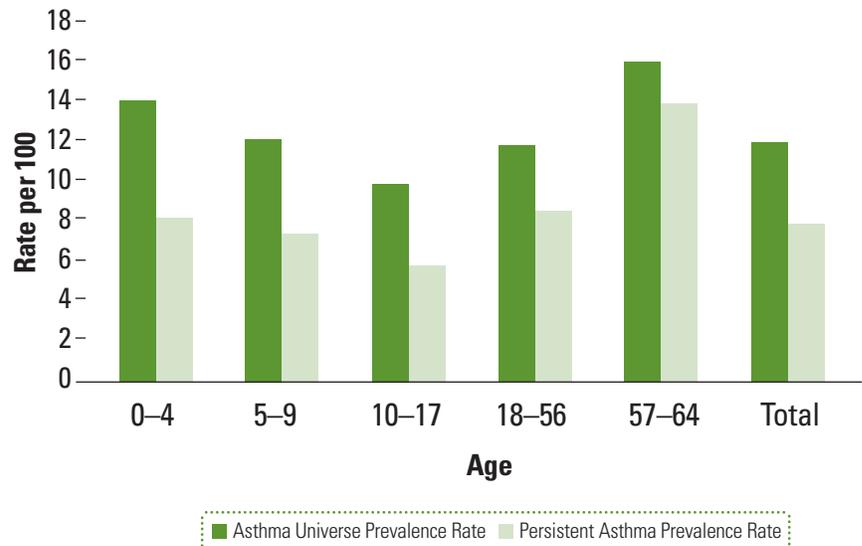


Table 8-1

Asthma Prevalence by Age
for New York State Medicaid
Managed Care Population, 2001

| Age Group | Asthma Universe | Persistent Asthmatics | Medicaid Managed Care Enrollees | Asthma Universe Prevalence Rate per 100 | Persistent Asthmatic Prevalence Rate per 100 |
|-----------|-----------------|-----------------------|---------------------------------|---|--|
| 0-4 | 11,817 | 6,826 | 85,433 | 13.8 | 8.0 |
| 5-9 | 11,615 | 7,042 | 97,879 | 11.9 | 7.2 |
| 10-17 | 10,652 | 6,346 | 112,514 | 9.5 | 5.6 |
| 18-56 | 16,683 | 12,369 | 145,008 | 11.5 | 8.5 |
| 57-64 | 2,546 | 2,200 | 16,273 | 15.7 | 13.5 |
| Total | 53,313 | 34,783 | 457,107 | 11.7 | 7.6 |

Figure 8-3 and Table 8-1 show persistent asthmatics make up a greater percentage of total asthmatics with increasing age; there was a low of 58% of all asthmatics in the 0-4 year age group to a high of 86% for the 57-64

year age group. Almost 35,000 MMC enrollees are persistent asthmatics (7.6%). Persistent asthmatics make up 65% of all MMC asthmatics (asthma universe).

MEDICAID FEE-FOR-SERVICE ASTHMA PREVALENCE

Medicaid Fee-for-Service asthma prevalence data were analyzed using the definitions for asthma universe and persistent asthma. These data include all enrollees

of Medicaid Fee-for-Service, ages 0 to 64, who were continuously enrolled for 12 months or more as of December 1, 2001.

Figure 8-4
Asthma Prevalence by Age for
New York State Medicaid
Fee-for-Service Population, 2001

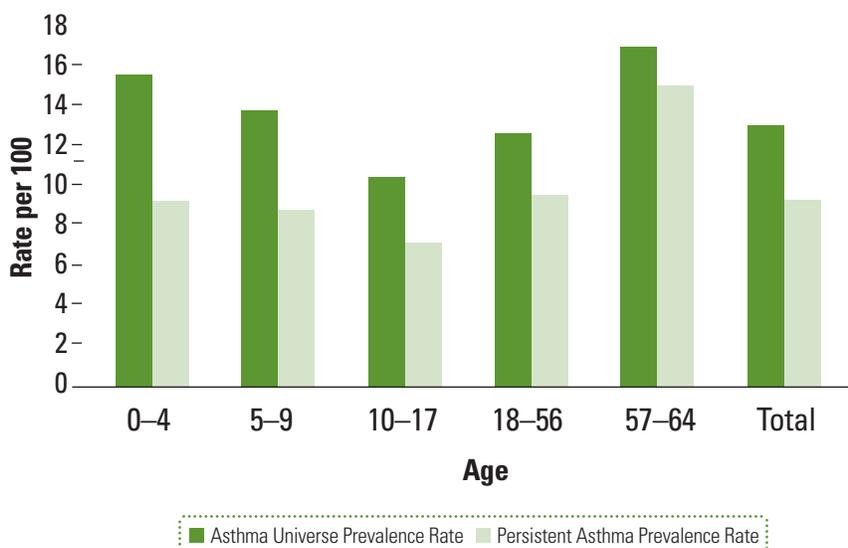


Table 8-2
Asthma Prevalence by Age for
New York State Medicaid
Fee-for-Service Population, 2001

| Age Group | Asthma Universe | Persistent Asthmatics | Medicaid Managed Care Enrollees | Asthma Universe Prevalence Rate per 100 | Persistent Asthmatic Prevalence Rate per 100 |
|-----------|-----------------|-----------------------|---------------------------------|---|--|
| 0-4 | 21,647 | 12,873 | 139,183 | 15.5 | 9.3 |
| 5-9 | 19,145 | 12,007 | 139,161 | 13.7 | 8.6 |
| 10-17 | 20,973 | 13,226 | 207,279 | 10.1 | 6.4 |
| 18-56 | 59,837 | 47,105 | 491,004 | 12.2 | 9.6 |
| 57-64 | 16,701 | 14,586 | 98,745 | 16.9 | 14.8 |
| Total | 138,303 | 99,797 | 1,075,372 | 12.8 | 9.3 |

Figure 8-4 and Table 8-2 show persistent asthmatics make up a greater percentage of total asthmatics with increasing age, from 59% for the 0 to 4 year age group to 87% for the 57 to 64 year age group. Persistent asth-

matics comprise 72% of all Medicaid Fee-for-Service asthmatics (asthma universe). Table 8-2 shows almost 100,000 Medicaid Fee-for-Service enrollees are persistent asthmatics (9.3%).

Work-Related Asthma

In the United States, as in other industrialized countries, asthma of occupational etiology causes a largely unrecognized burden of preventable disease and disability.⁵ Work-related asthma (WRA) has ascended in the past decade to be the most frequently diagnosed occupational respiratory disease in developed countries, and estimates of the proportion of asthma in the adult population that is work-related range from 2% to 26%.⁶ It is estimated that in the US, there are more than 20 million workers potentially exposed to occupational asthmagens.⁷ WRA can present as a de novo condition or it can be work-aggravated asthma. It can be triggered by either irritants or sensitizers, of which more than 350 have been documented.^{8,9} Cases identified as WRA most likely represent only a small proportion of all cases of WRA. A definitive work-related asthma diagnosis can be complicated in distinguishing it from asthma of a non-occupational origin.

The prognosis for a case of WRA depends on the severity and duration at the time of diagnosis. The most effective clinical approach is to cease or modify exposure to the offending agent(s) and optimally, industrial hygiene measures can prevent exposures from occurring in the first place.

Highlights: Work-Related Asthma

PREVALENCE ESTIMATES—BRFSS

- During 2002, approximately 113,000 adult asthmatics in New York State indicated that either a health professional had informed them they had work-related asthma, or they had informed a health professional of such.

WORK-RELATED ASTHMA HOSPITALIZATIONS

- During 1996 to 2003, WRA hospitalizations range from 45 to 70 per year in New York State.
- The mean length of stay decreases over time from 5.1 to 4.1 days while the average cost increases from \$6,506 to \$11,393.
- The 2003 total WRA hospitalization cost was approximately \$800,000.

NEW YORK STATE OCCUPATIONAL HEALTH CLINIC NETWORK

- The number of WRA patients seen by the NYS Occupational Health Clinic Network, by year of first visit, increased from 46 in 1988 to 651 in 2003.

NEW YORK STATE OCCUPATIONAL LUNG DISEASE REGISTRY

- Work-related asthma cases reported to the Occupational Lung Disease Registry ranged from 29 to 93 during the 1996-2003 period.

Prevalence Estimates — Behavioral Risk Factor Surveillance System (BRFSS)

In 2002, two questions related to WRA were included in the Behavioral Risk Factor Surveillance System (BRFSS). The 2002 NYS BRFSS questionnaire included two questions for assessing both lifetime prevalence and current prevalence of asthma:

- “Have you ever been told by a doctor, nurse or other health professional that you had asthma?”
- [If “yes”] “Do you still have asthma?”

If an individual responded affirmatively to both of those questions, then two questions were asked to de-

termine if the asthma was work-related:

- “Were you ever told by a doctor, nurse or other health professional that your asthma was related to any job you ever had?”
- “Did you ever tell a doctor, nurse or other health professional that your asthma was related to any job you ever had?”

A positive response to either of these questions was used to classify the respondent as having WRA.

Table 9-1

Percent of Adult Asthmatics with Work-Related Asthma by Gender, New York State BRFSS, 2002

| | Male | | Female | | Total | |
|------------------------------|------|----------|--------|----------|-------|----------|
| | % | 95% CI | % | 95% CI | % | 95% CI |
| Dr. ever tell you have WRA | 13.2 | 3.5–17.6 | 5.7 | 3.2–10.2 | 8.1 | 4.6–11.2 |
| Ever tell a Dr. you have WRA | 10.5 | 5.2–21.1 | 6.7 | 2.4–8.9 | 7.9 | 4.7–11.4 |
| Yes to Either Question | 15.0 | 6.8–23.2 | 9.0 | 4.9–13.1 | 10.9 | 7.1–14.8 |

Table 9-1 displays the percent of adults in NYS with current asthma who indicated they have WRA. Overall, approximately 113,000 adult asthmatics in NYS have indicated that either a health professional has informed them they have WRA or they have informed a health professional of such. However, true prevalence may have been underestimated as these totals represent only individuals who have spoken to a health care provider about the potential for an occupational etiology.

Work-Related Asthma Hospitalizations

Inpatient hospital records were reviewed from 1996 through 2003 to identify hospitalizations related to WRA as defined by a principal diagnosis code of asthma (ICD-9CM code = 493) and a primary expected payer of Worker’s Compensation. The data in Table 9-2 reflect

the total number of hospitalizations per year. It is possible that the same patient may be counted more than once in these numbers.

The majority of individuals with work-related illnesses do not file for Workers’ Compensation. Additionally, self-employed individuals such as farmers and independent contractors, federal employees, railroad or long-shore and maritime workers are not covered by state Workers’ Compensation systems. The attribution of payer in the hospital discharge dataset may not be accurate – this represents suspected payer at time of admission and may not actually be the payment source. Therefore, the numbers in Table 9-2 are considered an under-representation of the actual number of individuals hospitalized with WRA.

Table 9-2

Hospitalizations and Costs Due to
Work-Related Asthma, New York
State Residents, 1996-2003

| Year | Hospitalizations | Length of Stay (days) | | Total Costs | |
|------|------------------|--------------------------|-------|-------------|-----------|
| | | Mean | Total | Mean | Total |
| 1996 | 60 | 5.12 | 307 | \$6,506 | \$390,375 |
| 1997 | 57 | 4.07 | 232 | \$6,109 | \$348,238 |
| 1998 | 53 | 4.28 | 227 | \$7,203 | \$381,777 |
| 1999 | 52 | 4.35 | 226 | \$7,422 | \$385,925 |
| 2000 | 47 | 5.19 | 244 | \$9,798 | \$460,496 |
| 2001 | 45 | 4.20 | 189 | \$8,762 | \$394,269 |
| 2002 | 58 | 4.38 | 254 | \$10,922 | \$633,451 |
| 2003 | 70 | 4.07 | 285 | \$11,393 | \$797,535 |

During 1996 to 2003, WRA hospitalizations ranged from 45 to 70 per year. The mean length of stay decreased over time from 5.1 to 4.1 while the average cost increased from \$6,506 to \$11,393. The 2003 total WRA hospitalization cost was approximately \$800,000.

New York State Occupational Health Clinic Network

The NYS Occupational Health Clinic Network includes seven regionally based clinics (plus seven satellite locations) along with an agricultural medicine clinic, the New York Center for Agricultural Medicine and Health (NYCAMH) in Cooperstown. Each clinic is run independently with partial funding from the State. The clinics are mandated to: provide objective diagnosis of suspected work-related medical problems; conduct medical screenings for groups of workers who are at increased risk of occupational illness; make referrals for

treatment to other medical specialists, if necessary; perform industrial hygiene evaluation of workplaces of concern; and provide education and prevention programs. In aggregate, the eight clinics see approximately 5,000 workers each year, from hundreds of workplaces. The clinics all use the same patient data software and patient data is collected and maintained in a central database in the NYSDOH Bureau of Occupational Health.

Patient records were analyzed for those with a diagnosis of asthma that was determined to be definitely work-related according to the clinician. Table 9-3 describes the number of cases seen by all of the clinics, based on the year of the first visit by the patient. It is recognized that clinic-based reporting suffers from problems with referral bias; therefore, it is unknown whether the patients seen by the clinic network are representative of the State's working population.

Table 9-3

Number of Work-Related Asthma Patients Seen by the New York State Occupational Health Clinic Network, by Year of First Visit, 1988-2003

| Year | Patients |
|------|----------|
| 1988 | 9 |
| 1989 | 46 |
| 1990 | 67 |
| 1991 | 55 |
| 1992 | 68 |
| 1993 | 84 |
| 1994 | 107 |
| 1995 | 77 |
| 1996 | 71 |
| 1997 | 78 |
| 1998 | 80 |
| 1999 | 125 |
| 2000 | 145 |
| 2001 | 104 |
| 2002 | 210 |
| 2003 | 651 |

The number of WRA patients seen by the NYS Occupational Health Clinic Network, by year of first visit, increased from 9 in 1988 to 651 in 2003.

New York State Occupational Lung Disease Registry

The Occupational Lung Disease Registry was originally established in 1981 in order to assist with the reduction of the morbidity and mortality of New York residents due to exposure to respirable toxic materials in the work environment. All physicians, health facilities and laboratories are mandated to report any cases of occupational lung disease to the NYSDOH.

Table 9-4

Number of Work-Related Asthma Patients Reported to the New York State Occupational Lung Disease Registry by Year of First Report, 1996-2003

| Year | Patients |
|------|----------|
| 1996 | 48 |
| 1997 | 57 |
| 1998 | 30 |
| 1999 | 29 |
| 2000 | 80 |
| 2001 | 68 |
| 2002 | 37 |
| 2003 | 93 |

Table 9-4 displays the number of definite work-related asthma cases reported to the Occupational Lung Disease Registry since 1996. The number of definite work-related asthma cases reported to the Occupational Lung Disease Registry ranges from 29 to 93 during the period of 1996-2003.

The Occupational Lung Disease Registry has had problems with underreporting. Starting in 2003, New York State utilized National Institute for Occupational Safety and Health (NIOSH) Core Occupational Health Surveillance funding to enhance reporting to this registry. As can be seen in Table 9-4, these efforts have substantially increased reports received by the registry. These cases are not mutually exclusive from the hospital discharge cases or from the NYS Occupational Health Clinic Network.

Asthma Costs

Information on asthma costs are presented for asthma hospitalizations and Medicaid Fee-for-Service.

Highlights: Asthma Costs

ASTHMA HOSPITALIZATION COSTS—TOTAL

- The total cost of asthma hospitalizations in New York State for 2002 was approximately \$395 million, a 23% increase in the cost since 1993 (\$321 million).
- The average cost per asthma hospitalization increased 78% from \$5,662 in 1993 to \$10,076 in 2002. This occurred despite the average length of stay for asthma decreasing 22% from 4.9 days to 3.8 days during the same time period.
- The average cost per asthma hospitalization increased with age.

ASTHMA HOSPITALIZATION COSTS— SOCIODEMOGRAPHIC CHARACTERISTICS

- Females had consistently higher average asthma hospitalization costs (\$11,060) compared to males (\$8,674) in 2002.
- Residents of New York City had consistently higher average costs per asthma hospitalization (\$10,645) in 2002 than residents from the Rest of State (\$8,902).
- When reviewing source of payment for 2002 asthma hospitalizations, Medicare had the highest average cost of \$15,366. This was followed by Medicaid \$9,409, third party/private \$8,649 and self-pay \$7,440.

ASTHMA MEDICAID COSTS

- Asthma-specific costs are available for the Medicaid fee-for-service population. For asthmatics 0-64 years of age, continuously enrolled in Medicaid Fee-for-Service for 12 months or more as of December 1, 2001:
 - over \$116.4 million dollars were spent for asthma-related services in 2001 for this population;
 - the average cost was \$842 per recipient
- When reviewing Medicaid Fee-for-Service cost by type of asthma-related service, hospitalizations comprise 46% of the total costs, with an average cost of \$7,065 per recipient. Pharmacy costs comprise 35% of the total, with an average of \$492 per recipient.

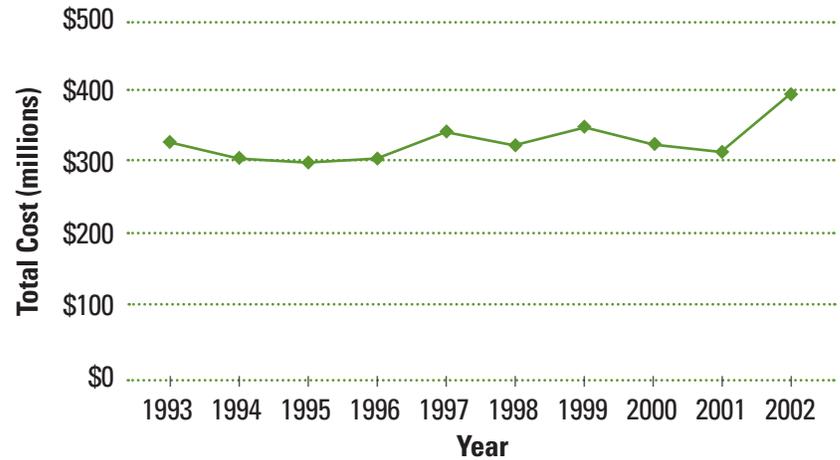
Asthma Hospitalization Costs

Hospital costs were calculated by adding the Accommodation Charge and the Ancillary Charge. The Accommodation Charge is defined as the Accommodation Rate charged per day for a specific type of accommodation multiplied by the length of stay in patient days. The rate charged per day depends on type of room (e.g. private, semi-private or within a ward), type of care (e.g. general, medical, rehabilitation, etc.) and level of care.

The Ancillary Charge is the sum of all ancillary costs (e.g. nursing, pharmacy, laboratory, respiratory therapy, pulmonary function, etc.).

The source of hospital cost data is the Statewide Planning and Research Cooperative System (SPARCS), a database that contains information about all hospitalizations in New York State. Discharges were selected if the principal diagnosis was ICD-9CM = 493.

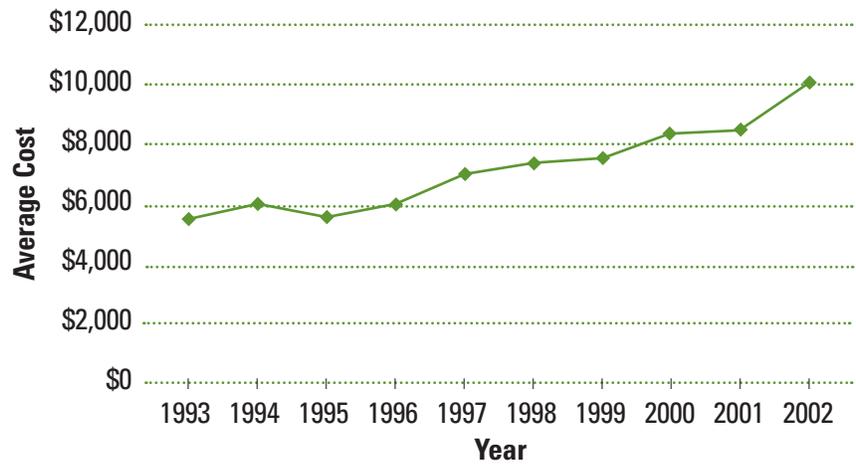
Figure 10-1
Total Cost of Asthma Hospitalizations, New York State Residents, 1993-2002



| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Cost (millions) | \$321 | \$308 | \$299 | \$305 | \$342 | \$314 | \$353 | \$327 | \$312 | \$395 |

The total cost of asthma hospitalizations has increased 23%, from \$321 million in 1993 to \$395 million in 2002 (Figure 10-1).

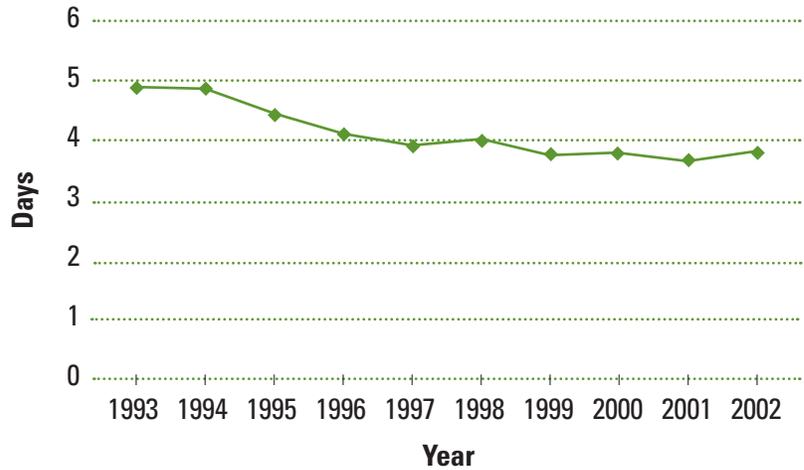
Figure 10–2
Average Cost per Asthma Hospitalization, New York State Residents, 1993–2002



| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Average Cost | \$5,662 | \$6,074 | \$5,869 | \$6,029 | \$7,092 | \$7,406 | \$7,624 | \$8,270 | \$8,448 | \$10,076 |

From 1993 to 2002, the average cost per asthma hospitalization increased 78% from \$5,662 in 1993 to \$10,076 in 2002.

Figure 10–3
Average Length of Stay (LOS) for Asthma Hospitalizations, New York State Residents, 1993–2002



| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--------------------|------|------|------|------|------|------|------|------|------|------|
| Average LOS (days) | 4.9 | 4.9 | 4.4 | 4.1 | 3.9 | 4.0 | 3.8 | 3.8 | 3.7 | 3.8 |

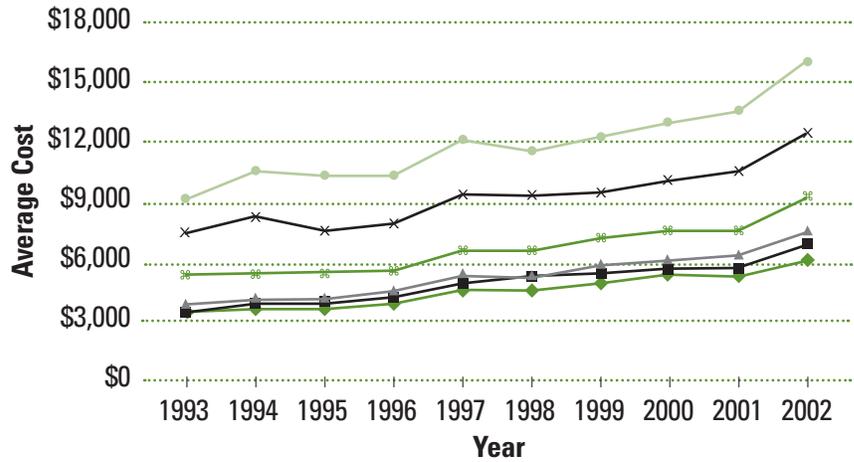
From 1993 to 2002, the average length of stay for these asthma hospitalizations went down 22% from 4.9 days to 3.8 days.

ASTHMA HOSPITALIZATION COSTS BY SOCIODEMOGRAPHIC CHARACTERISTICS

For Figures 10-4 to 10-11, distribution of total asthma hospitalization cost and average cost per asthma hospitalization are presented. First, the trend over time for average cost per asthma hospitalization by sociodemographic characteristics (age group, gender, source of payment,

and region) was calculated from 1993 to 2002. Then, a comparison of the number of asthma hospitalizations to cost incurred was conducted by the same sociodemographic characteristics from 2000 to 2002.

Figure 10-4
Average Cost per Asthma Hospitalization by Age Group, New York State Residents, 1993-2002



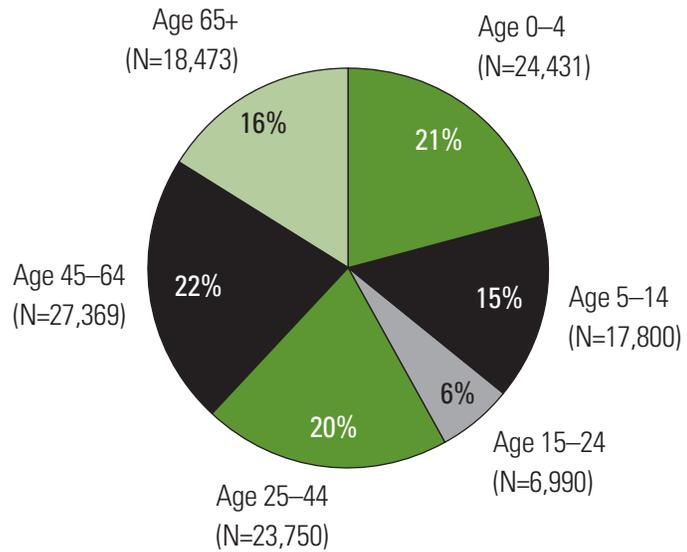
| Age | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 0-4 | \$3,671 | \$3,874 | \$3,870 | \$4,054 | \$4,868 | \$4,854 | \$5,042 | \$5,407 | \$5,333 | \$6,260 |
| 5-14 | \$3,694 | \$3,994 | \$4,162 | \$4,226 | \$5,031 | \$5,425 | \$5,621 | \$5,780 | \$5,830 | \$7,006 |
| 15-24 | \$4,064 | \$4,316 | \$4,312 | \$4,711 | \$5,672 | \$5,631 | \$6,079 | \$6,238 | \$6,428 | \$7,884 |
| 25-44 | \$5,671 | \$5,673 | \$5,794 | \$5,860 | \$6,869 | \$6,841 | \$7,374 | \$7,854 | \$7,844 | \$9,351 |
| 45-64 | \$7,644 | \$8,498 | \$7,863 | \$8,006 | \$9,460 | \$9,440 | \$9,521 | \$10,195 | \$10,603 | \$12,475 |
| 65+ | \$9,266 | \$10,784 | \$10,444 | \$10,454 | \$12,062 | \$11,757 | \$12,340 | \$12,985 | \$13,703 | \$15,964 |

Figure 10-4 shows from 1993 to 2002, the average cost per asthma hospitalization increased with age. In 2002, the

average cost for the 0 to 4 years age group was \$6,260; the 65 and older age group had an average cost of \$15,964.

Figure 10-5
 Comparison of Number of Asthma Hospitalizations to Cost Incurred by Age Group, New York State Residents, 2000-2002

TOTAL ASTHMA HOSPITALIZATIONS BY AGE GROUP, NEW YORK STATE RESIDENTS, 2000-2002



TOTAL ASTHMA HOSPITALIZATION COST BY AGE GROUP, NEW YORK STATE RESIDENTS, 2000-2002

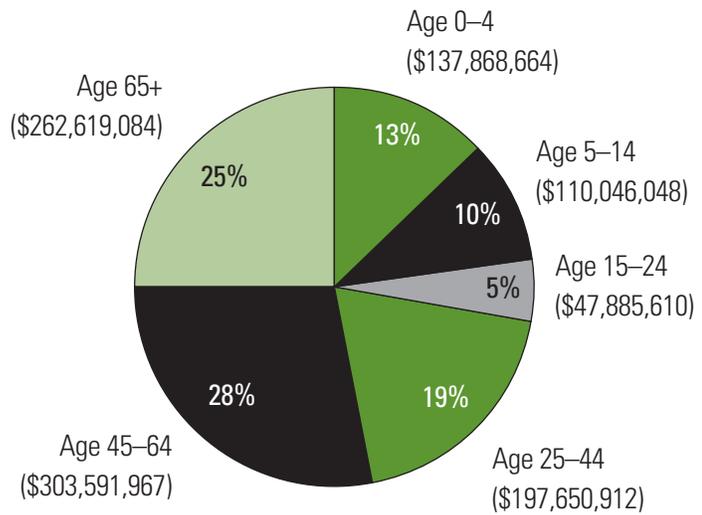
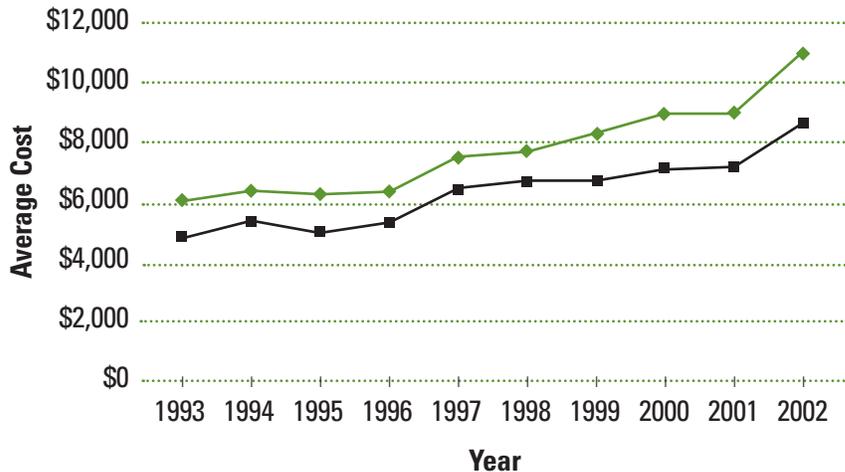


Figure 10-5 shows during 2000 to 2002, asthma hospitalizations were second highest in the age groups 0-4 (21%), yet contributed only 13% to the total cost. Con-

versely, the 65 and older age group comprised 16% of the hospitalizations yet 25% of the total cost.

Figure 10-6
Average Cost per Asthma Hospitalization by Gender, New York State Residents, 1993-2002

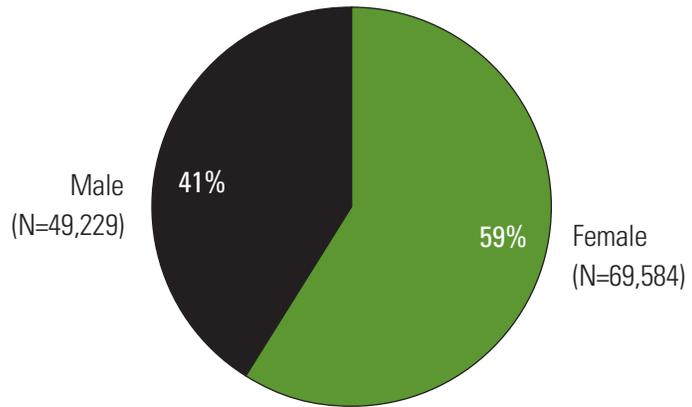


| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| Female | \$6,172 | \$6,537 | \$6,474 | \$6,572 | \$7,667 | \$7,955 | \$8,281 | \$8,978 | \$9,205 | \$11,060 |
| Male | \$5,026 | \$5,457 | \$5,091 | \$5,300 | \$6,350 | \$6,610 | \$6,716 | \$7,256 | \$7,402 | \$8,674 |

Figure 10-6 shows during 1993 to 2002, females had consistently higher average asthma hospitalization costs compared to males; in 2002 females had an average cost of \$11,060 compared to the male cost of \$8,674.

Figure 10-7
Comparison of Number of Asthma Hospitalizations to Cost Incurred by Gender, New York State Residents, 2000-2002

**ASTHMA HOSPITALIZATIONS
BY GENDER, NEW YORK STATE RESIDENTS, 2000-2002**



**TOTAL ASTHMA HOSPITALIZATION COST
BY GENDER, NEW YORK STATE RESIDENTS, 2000-2002**

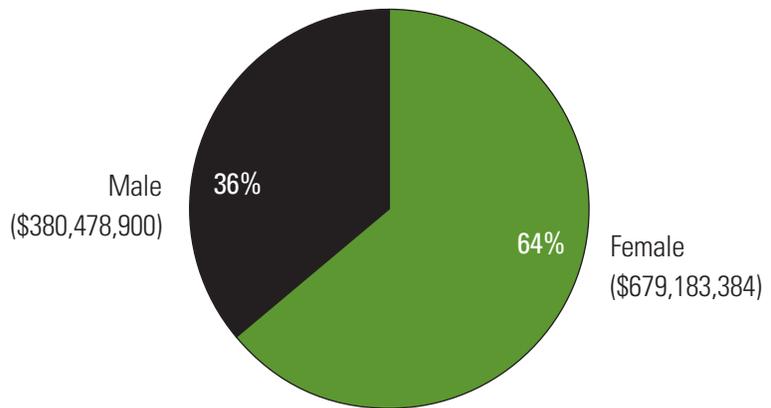
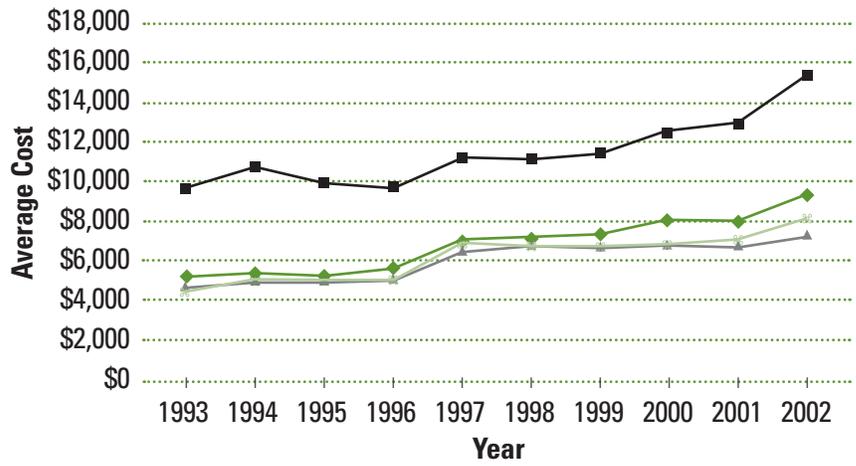


Figure 10-7 shows from 2000 to 2002, females comprise 59% of the asthma hospitalizations and incurred 64% of the total hospitalization costs.

Figure 10-8
Average Cost per Asthma Hospitalization by Source of Payment, New York State Residents, 1993-2002



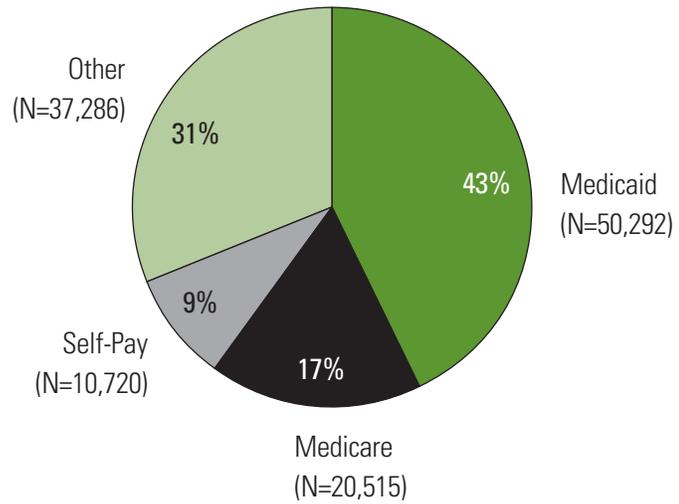
| Source of Payment | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-------------------|---------|----------|----------|---------|----------|----------|----------|----------|----------|----------|
| Medicaid | \$5,351 | \$5,659 | \$5,539 | \$5,815 | \$7,025 | \$7,250 | \$7,501 | \$8,170 | \$8,022 | \$9,409 |
| Medicare | \$9,737 | \$10,615 | \$10,056 | \$9,756 | \$11,322 | \$11,276 | \$11,625 | \$12,261 | \$13,035 | \$15,366 |
| Self-pay | \$4,595 | \$4,710 | \$4,755 | \$4,984 | \$6,377 | \$6,540 | \$6,521 | \$6,634 | \$6,644 | \$7,440 |
| 3rd Party/Private | \$4,514 | \$4,913 | \$4,869 | \$5,007 | \$5,573 | \$5,596 | \$6,297 | \$6,689 | \$7,072 | \$8,649 |

Figure 10-8 shows that the average asthma hospitalization costs were consistently the highest for the Medicare population. The percent increase between

1993 and 2002 was highest for third party/private payer (92%) and lowest for the Medicare population (58%).

Figure 10-9
 Comparison of Number of Asthma Hospitalizations to Cost Incurred by Source of Payment, New York State Residents, 2000-2002

ASTHMA HOSPITALIZATIONS BY SOURCE OF PAYMENT, NEW YORK STATE RESIDENTS, 2000-2002



TOTAL ASTHMA HOSPITALIZATION COST BY SOURCE OF PAYMENT, NEW YORK STATE RESIDENTS, 2000-2002

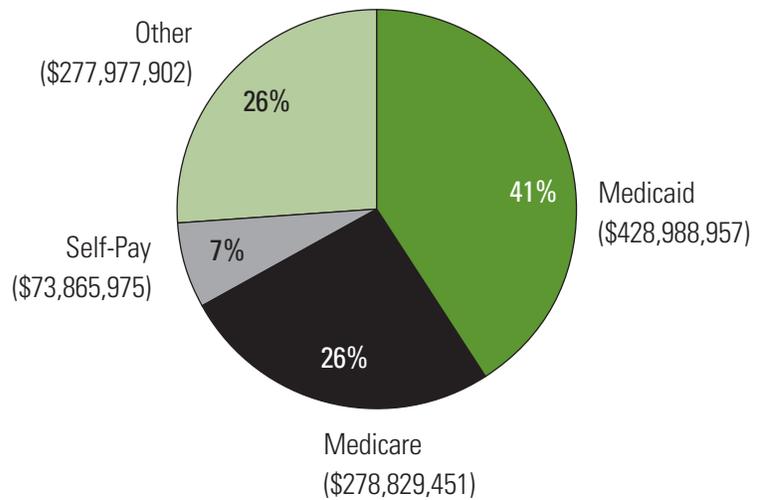
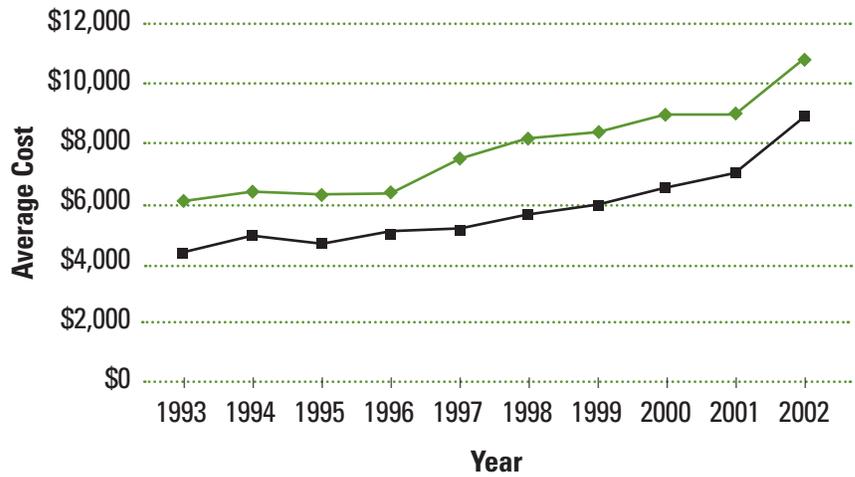


Figure 10-9 shows from 2000 to 2002, Medicaid accounted for 43% of the total asthma hospitalizations and incurred 41% of the total asthma hospitalization costs.

Medicare, on the other hand, accounted for 17% of the total asthma hospitalizations and incurred 26% of the total asthma hospitalization costs.

Figure 10-10
Average Cost per Asthma Hospitalization by Region, New York State Residents, 1993-2002

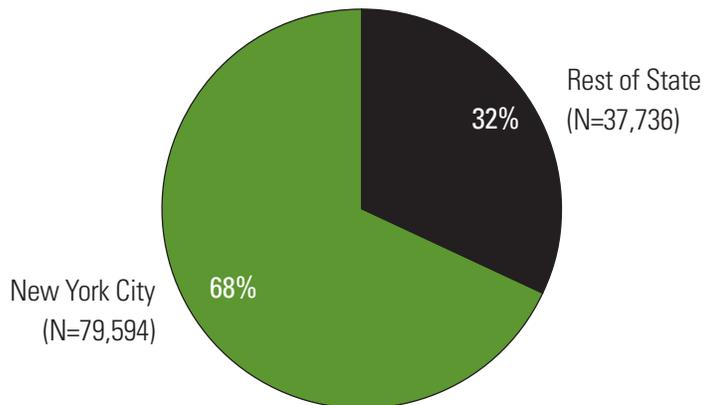


| | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|-----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| ◆ New York City | \$6,259 | \$6,539 | \$6,316 | \$6,395 | \$7,869 | \$8,123 | \$8,308 | \$8,984 | \$9,094 | \$10,645 |
| ■ Rest of State | \$4,423 | \$5,085 | \$4,895 | \$5,175 | \$5,338 | \$5,897 | \$6,088 | \$6,653 | \$7,063 | \$8,902 |

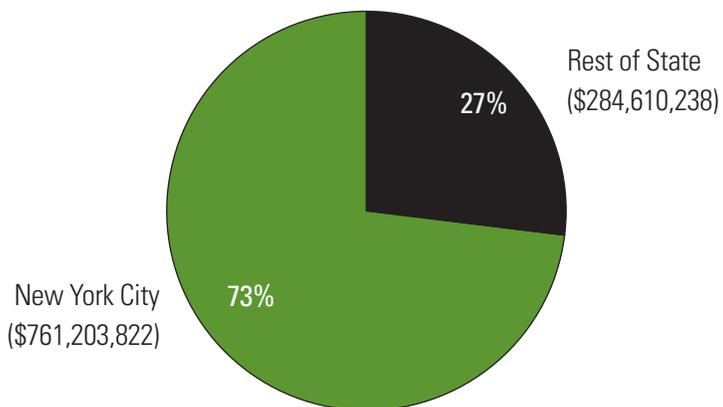
Figure 10-10 shows from 1993 to 2002, residents of New York City had consistently higher average costs per asthma hospitalization (\$10,645 in 2002) than residents from the Rest of State (\$8,902).

Figure 10–11
 Comparison of Number of Asthma
 Hospitalizations to Cost Incurred
 by Region, New York State
 Residents, 2000–2002

**ASTHMA HOSPITALIZATIONS
 BY REGION, NEW YORK STATE RESIDENTS, 2000–2002**



**TOTAL ASTHMA HOSPITALIZATION COST
 BY REGION, NEW YORK STATE RESIDENTS, 2000–2002**



For Figure 10-11, from 2000 to 2002, New York City contributed 68% of the total number of asthma hospitalizations and incurred 73% of the asthma hospitalization costs.

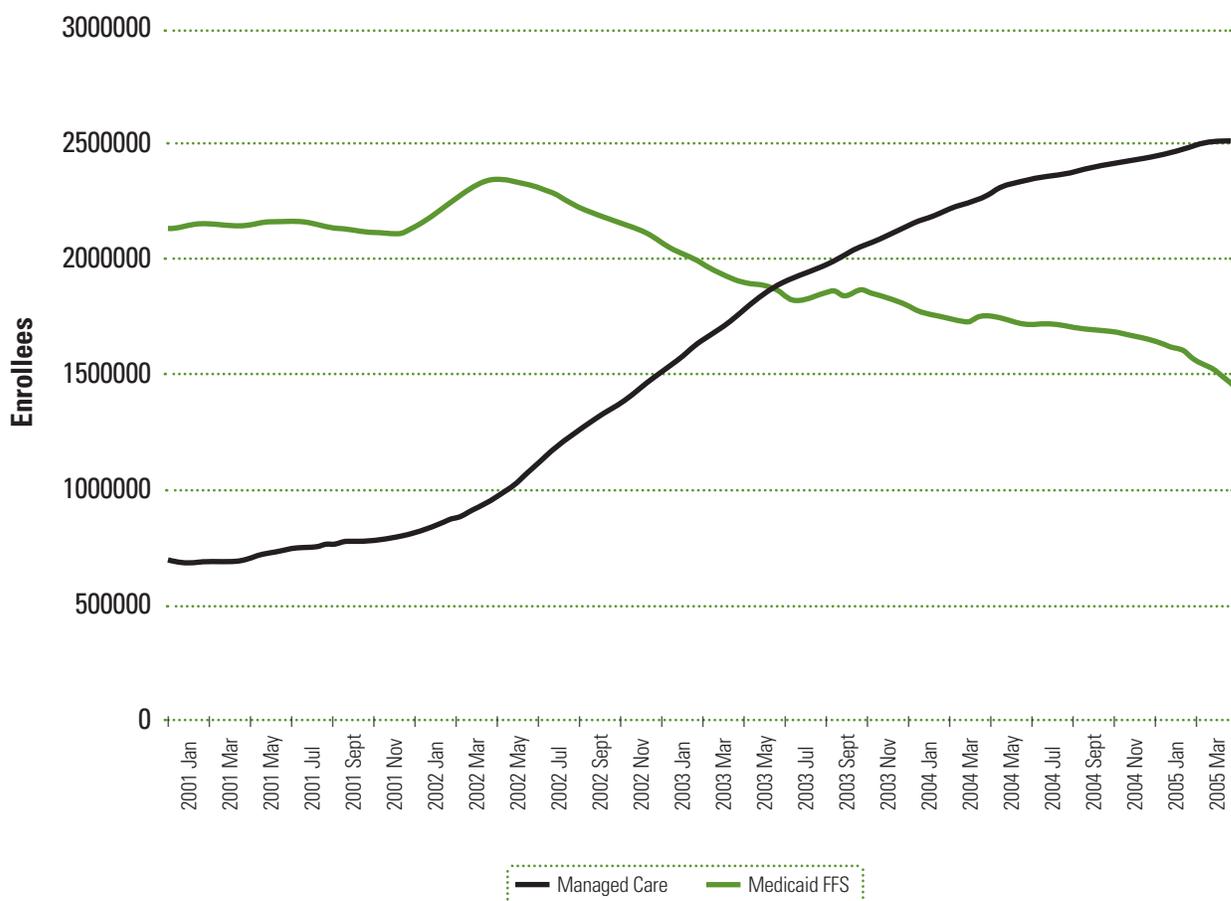
Asthma Medicaid Costs

In presenting cost information for Medicaid Fee-for-Service (FFS), it is important to note that some program and policy decisions were made to cause a shift in enrollment from Medicaid FFS to Medicaid managed care.

On August 9, 1999, the State Health Commissioner announced that NYS would be initiating mandatory enroll-

ment of 1.5 million New York City Medicaid enrollees into managed care plans to provide them with medical homes and access to high quality primary and preventive care services. This enrollment shift from Medicaid Fee-for-Service to Medicaid managed care is illustrated in the figure below.

Figure 10-12
New York State Medicaid Managed Care and Medicaid Fee-for-Service Enrollees, January 2001 through March 2005



In January 2001, roughly 75% (2,110,662 out of 2,809,920) of the Medicaid enrollees were from Fee-for-Service. In May 2003, the Medicaid enrollees for Fee-for-Service and managed care were about even (man-

aged care enrollees at 1,888,942 and Fee-for-Service at 1,831,173). In March 2005, roughly 63% (2,496,346 out of 3,934,453) of the Medicaid enrollees were from managed care (Figure 10-12).

MEDICAID FEE-FOR-SERVICE ASTHMA COSTS

Medicaid Fee-for-Service cost information corresponds to asthmatics 0-64 years of age continuously

enrolled in Medicaid Fee-for-Service for 12 months or more as of December 1, 2001.

Table 10-1
Medicaid Fee-for-Service Costs*,
New York State Residents, 2001

*Includes only asthma-related costs.

| | All Fee-for-Service | Asthmatics | % Asthmatic |
|----------------------------|---------------------|-----------------|-------------|
| Number of Enrollees | 2,085,127 | 138,303 | 6.6% |
| Costs | \$1.76 billion | \$116.4 million | 6.6% |

Over \$116.4 million dollars were spent for asthma-related services in 2001 for this population. A total of 6.6% of the to-

tal Fee-for-Service dollars were spent for 6.6% of the enrollees. The average cost was \$842 per enrollee (Table 10-2).

Table 10-2
New York State Medicaid Fee-for-Service, December 2001,
Total and Average Asthma Costs by Type of Asthma-Related Service

| Type of Asthma-Related Service | Cost | % Total | # of Recipients | Average Cost per Recipient |
|--------------------------------|----------------------|-------------|-----------------|----------------------------|
| MD visit | \$3,965,179 | 3.4% | 61,919 | \$64 |
| Outpatient | \$13,694,064 | 11.8% | 53,252 | \$257 |
| ER | \$4,449,155 | 3.8% | 23,183 | \$192 |
| Hospitalization | \$53,846,426 | 46.2% | 7,621 | \$7,065 |
| Pharmacy | \$40,460,902 | 34.8% | 82,280 | \$492 |
| Total Costs | \$116,415,727 | 100% | 138,303 | \$842 |

When reviewing Medicaid Fee-for-Service cost by type of asthma-related service, hospitalizations comprise 46% of the total costs, with an average cost of \$7,065 per

recipient. Pharmacy costs comprise 35% of the total, with an average of \$492 per recipient (Table 10-2).

Table 10-3

New York State Medicaid Fee-for-Service, December 2001,
Average Asthma Costs by Age and Type of Asthma-Related Service

| Type of Asthma-Related Service | 0-4 | 5-9 | 10-17 | 18-56 | 57-64 | Average Cost per Recipient |
|--------------------------------|---------|---------|---------|---------|---------|----------------------------|
| MD visit | \$66 | \$67 | \$66 | \$62 | \$60 | \$64 |
| Outpatient | \$241 | \$266 | \$260 | \$257 | \$267 | \$257 |
| ER | \$169 | \$174 | \$169 | \$215 | \$202 | \$192 |
| Hospitalization | \$5,359 | \$4,945 | \$5,993 | \$8,440 | \$8,627 | \$7,065 |
| Pharmacy | \$336 | \$370 | \$364 | \$526 | \$697 | \$492 |
| Total Costs | \$737 | \$598 | \$592 | \$962 | \$1,140 | \$842 |

Average hospitalization and pharmacy costs increased with age for Medicaid Fee-for-Service enrollees, with average hospitalization costs rising from \$5,359 in the 0-4 year age group to \$8,627 in the 57-64 year age

group, and pharmacy costs increasing from \$336 in the 0-4 year age group to \$697 for asthmatics 57-64 years of age. For doctor, outpatient and ER visits, there was no difference in costs by age group (Table 10-3).

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Appendices

1. Glossary of Terms

2. Technical Notes

Appendix 1 – Glossary of Terms

Age-adjustment – A statistical process applied to rates of death, hospitalizations, disease, or other health outcomes which allows areas with different age structures to be compared (See technical notes).

Asthma – A lung disease characterized by airway constriction, mucus secretion, and chronic inflammation, resulting in reduced airflow and wheezing, coughing, chest tightness, and difficulty breathing.

BRFSS – Behavioral Risk Factor Surveillance System (BRFSS) monitors modifiable risk behaviors and other factors contributing to the leading causes of morbidity and mortality in the population (see technical notes).

Confidence Interval (95%) – Range where the true prevalence is likely to fall with a 95% degree of assurance.

EBRFSS – Expanded Behavioral Risk Factor Surveillance System (See technical notes).

ICD-9CM – The International Classification of Diseases, 9th revision Clinical Modification.

ICD-10 – The International Classification of Diseases, 10th revision.

Incidence – The number of new cases of the disease or condition within a specified period of time.

Incidence rate – Cases of disease or condition in the year(s) population at risk in given year(s).

Morbidity – Being sick with the disease or condition in question.

Mortality – Death due to the disease or condition in question.

Mortality rate – Total number of deaths from the
$$\frac{\text{disease or condition in given year(s)}}{\text{population at risk in given year(s)}}$$

Prevalence – The number of existing cases of the disease or condition in a specified time period.

Prevalence rate – The number of existing cases with
$$\frac{\text{disease/condition in given year(s)}}{\text{population at risk in given year(s)}}$$

QARR – Quality Assurance Reporting Requirements (QARR) is a public reporting system for monitoring managed care plan performance. QARR is largely based on measures published by the National Committee for Quality Assurance (NCQA) Health Plan Employer Data and Information Set (HEDIS) and is collected annually from managed care plans.

SPARCS – Statewide Planning and Research Cooperative System (SPARCS) (See technical notes)

Surveillance – The ongoing, systematic collection, analysis, and interpretation of health-related data essential to the planning, implementation and evaluation of public health practice, closely integrated with the timely dissemination of these data to those responsible for prevention and control (Centers for Disease Control and Prevention)

Weighted percent – Results that have been adjusted to compensate for the respondents' probability of selection, disproportionate selection of population subgroups relative to EBRFSS localities population distribution, or nonresponse.

Appendix 2 – Technical Notes

Age-adjustment

Age-adjustment is a statistical process applied to rates of death, hospitalization, disease or other health outcomes which allows areas with different age structures to be compared. Age confounding occurs when the two populations being compared have different age distributions, and the risk of the outcome varies across age groups. The process of age adjustment (Direct Method) used for this report changes the amount that each age group contributes to the average rate in each area, so that the overall rates are based on the same age structure. Rates based on the same age distribution can be compared to each other without the presence of confounding by age. Adjustment was accomplished by first multiplying the age-specific rates of death or hospitalization by age-specific weights. The weights used in the age adjustment of asthma data are the proportion of the Standard Population (the US population as enumerated by the Bureau of the Census, 2000) within each age group. The weighted rates are then summed across the age groups to give the age-adjusted rate.

Behavioral Risk Factor Surveillance System

The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing statewide telephone-based surveillance system designed by the Centers for Disease Control and Prevention (CDC). BRFSS monitors modifiable risk behaviors and other factors contributing to the leading causes of morbidity and mortality in the population. New York State's BRFSS sample represents the non-institutionalized adult household population, aged 18 years and older.

Expanded Behavioral Risk Factor Surveillance System

The Expanded BRFSS project was conducted from July 2002 through July 2003 in 38 localities (individual counties and county groupings) comprising the entire state. Administration of the random digit dialed telephone survey closely adhered to the annual BRFSS survey protocol procedures developed by CDC. The target sample size for each locality was 640 completed interviews, with the final number varying according to local sampling variability and response rates.

Statewide Planning and Research Cooperative System

The Statewide Planning and Research Cooperative System (SPARCS) is a comprehensive patient data system established in 1979 as a result of cooperation between the health care industry and government. In April 1983 and June 1985, the State Hospital Review and Planning Council adopted additional regulations regarding the reporting of ambulatory surgery data to the New York State Department of Health.

The enabling regulations for SPARCS are located under Section 400.18 of Title 10 (Health) of the Official Compilation of Codes, Rules, and Regulations of the State of New York (NYCRR), with additional specifications for Outpatient Ambulatory Surgery in Section 755.10 and Ambulatory Surgery Definition in Section 755.1. The regulations require that inpatient data be submitted by all Article 28 facilities certified for inpatient and that outpatient data be submitted by all hospital-based ambulatory surgery services and all other facilities providing ambulatory surgery services. All data has to be submitted according to a designated format and schedule.

Each year, SPARCS collects detailed records on 2.4 million discharges from hospitals located in New York State, 1.5 million patients of ambulatory surgery, and beginning in 2005, on approximately 6.5 million Emergency Department visits.

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