



THE STATE OF ASTHMA IN NASSAU, QUEENS, AND SUFFOLK COUNTIES



ASSESSING TRENDS IN ASTHMA HOSPITALIZATIONS AND EMERGENCY DEPARTMENT VISITS





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The Asthma Coalition of Long Island and the Asthma Coalition of Queens are a program of the American Lung Association of the Northeast funded by the New York State Department of Health.



A MESSAGE FROM THE ASTHMA COALITIONS



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When asthma is properly managed, most hospitalizations and emergency department visits can be avoided. In 1999 Governor George Pataki became aware of the high number of hospitalizations and emergency department visits for asthma across New York State. The Governor authorized grants to be offered by the New York State Department of Health called "A Systems Approach to Reducing the Burden of Asthma." The New York State Department of Health continues to fund eight regional asthma coalitions that are charged with reducing the burden of asthma in New York State.

The coalitions implement interventions in communities with high rates of asthma-related hospitalizations and emergency department visits; they identify and focus services on high-risk populations within their regions, convening and engaging local stakeholders; and they apply a population-based systems change approach that translates the National Asthma Education and Prevention Program (NAEPP) Expert Panel Report 3 Guidelines into practice. The goals of these interventions are to increase the quality of life among individuals living with asthma and to decrease the number of asthma-related hospitalizations, emergency department visits, urgent care visits and school or work days lost.

The Asthma Coalition of Long Island and the Asthma Coalition of Queens, programs of the American Lung Association of the Northeast, are guided by a strategic plan that helps promote systems changes within hospitals, primary care, and schools. Some examples of this work include:

- Project BREATHE (Bringing Resources for Effective Asthma Treatment through Health Education): a systems and culture change implemented for patients from Queens, Nassau and Suffolk counties. The program brings a multi-disciplinary approach to integrating NAEPP Guidelines-based care for patients admitted to the hospital or in the emergency department.
- Integration of the NAEPP Guidelines into primary care practices: building asthma care templates into the electronic medical records, embedding Guidelines into the daily workflow and educating each patient at every office visit about asthma.
- School Asthma Management: with the help of college nursing students, we implement evidence-based asthma management programs for children with asthma in high-needs school districts.

The team of experts from the Krasnoff Quality Management Institute (KQMI) has provided a comprehensive analysis of data about asthma hospitalizations, emergency department visits and intensive care admissions which heighten awareness of the regional problem of asthma. This report has the potential to identify the most vulnerable demographic subgroups and to promote discussion on addressing life-threatening asthma and its prevention. The data from this report can help enhance our current work and expand our reach in the future.

INTRODUCTION TO THE REPORT

What is Asthma?

Asthma is a chronic lung disease that causes inflammation and narrowing of the airways. Symptoms of asthma include recurring periods of wheezing, chest tightness, shortness of breath, and coughing. Asthma affects people of all ages but most often starts in childhood. In the United States more than 25 million people are known to have asthma; 7 million are children.

Exposures to triggers can cause asthma symptoms. Triggers include colds and infections, mold, dust, pet dander, pollen, tobacco smoke, and cockroaches. To prevent or minimize asthma symptoms, the National Asthma Education and Prevention Program Guidelines recommend that people with asthma avoid their triggers and if indicated be treated with controller agents such as inhaled corticosteroids.

When asthma is uncontrolled, urgent or emergency care may be needed. A severe exacerbation can lead to hospitalization and sometimes turn life-threatening, necessitating an intensive care unit admission and in some cases, invasive or non-invasive ventilation of the lungs.

Anyone with asthma can have a severe exacerbation. In the United States there were 1.8 million emergency department visits with asthma as a primary diagnosis (2011¹), 439,000 hospital discharges (2010²) and 3,651 asthma-related deaths (2014³).

Although asthma's impact does not discriminate, some groups are at higher risk for morbidity and mortality than others: children less than four years of age, ethnic and regional groups, such as Blacks/African Americans and Puerto Ricans, and low income populations living in environmentally compromised housing/neighborhoods.



¹ National Hospital Ambulatory Medical Care Survey; Emergency Department Summary Table 12

² National Hospital Discharge Survey

³ CDC Wonder

In the United States, uncontrolled asthma leads to:

1,800,000 annual Emergency Department Visits

439,000 annual Hospitalizations

3,651 annual Asthma-Related Deaths

Goals of the Asthma Report

- Identify the numbers of life-threatening cases of asthma, including the need for intensive care unit admission or assisted/invasive or non-invasive ventilation
- Focus attention on the frequency of serious and life-threatening asthma exacerbations in the Queens and Long Island communities
- Highlight subgroups of the population that are most vulnerable to severe asthma exacerbations
- Identify communities with the highest asthma burden
- Provide a call for action to search for solutions to decrease the asthma burden on individuals, families and society
- Trend the patterns of asthma-related emergency department visits and hospitalizations over time



How Can Data Help Reduce the Burden?

Controlling asthma to reduce morbidity and mortality is a global priority. On a national and local level organizations link together to coordinate resources in order to reduce the burden of asthma. The Asthma Coalition of Long Island and the Asthma Coalition of Queens, programs of the American Lung Association, work with local stakeholders to develop comprehensive and collaborative strategies to decrease the burden of asthma in the counties of Nassau, Queens, and Suffolk. The Asthma Coalitions leverage data to develop strategies and allocate resources. While national and state reports define the larger problem, community and health organizations can use regional data to help identify areas of highest asthma burden, create local awareness of asthma severity, and establish benchmarks for success of ongoing initiatives.

It is important to review data that includes severe asthma events such as Emergency Department (ED) visits and hospitalizations. Assessing data trends helps to identify whether efforts to reduce asthma event severity are successful. Tracking asthma events by town of residence helps pinpoint the 'hotspots' where regional needs are the greatest. Analyzing data by age, race and gender enables more vulnerable demographic subgroups to be targeted. Data analysis also provokes discussion to find out 'why' these events are occurring, leading to new interventions.

Finally, identifying life-threatening cases of asthma, which require Intensive Care Unit (ICU) admission or assisted ventilation, are of great concern to patients, families and the medical community. While this data is often not found in national or statewide reporting, we feel that more attention needs to be directed to these critical events. We include this data in the report with the goal of increasing awareness of life-threatening asthma and ultimately leading to its prevention.



Data covers the years 2000 to 2014



METHODOLOGY

Data was obtained from the Statewide Planning and Research Cooperative System (SPARCS), which collects administrative claims information on hospital services in New York State. Inpatient asthma data covers the period January 1, 2000 through December 31, 2014, and Emergency Department (ED) asthma data, January 1, 2006 through December 31, 2014. Data includes patient characteristics, coded diagnoses, procedures and services.

The asthma population in the following report was defined by a principal ICD-9 discharge diagnosis for hospitalized patients and treat-and-release emergency department visits. ED patients admitted to the hospital were defined by an admitting ICD-9 diagnosis of asthma.

Descriptive analyses include patient location, age, race and ethnicity, and insurance status. County and zip code data reflect the patient's residence. Intensive Care Unit (ICU) admission and invasive or non-invasive ventilation were also reported, identified by revenue codes and ICD-9 procedure codes, respectively.

County level rates per ten thousand were constructed using the U.S. Census Bureau's annual population estimates, with each year's estimate used for each year reported. These rates represent the number of occurrences among 10,000 residents of the area, and allow comparison across areas with varying population densities or within a geographic area over time when the population density may have changed.*

Since changes in reporting data on race and ethnicity occurred in 2005, we present specific race/ethnicity data starting from January 1st, 2006. For this report, race and ethnicity is presented either as Hispanic, Black/African American, White, Asian or Pacific Islander or Other/Unknown, which includes Multi-Racial, Native American (Native American or Inuit), other race, or missing. When ethnicity was indicated as Spanish or Hispanic origin, data was collapsed into the category termed Hispanic.

Methods of payment are based on the primary payor, such as Medicare, Medicaid, third-party payors, self-pay, or other. The category 'Other' includes payors such as Corrections, No Fault or Worker's Comp, Other Gov and Other forms of payment. Payment data reported for the inpatient population begins on January 1st, 2000. Emergency department payment data is reported starting January 1st, 2006 due to possible incomplete or missing data before that date.

*In addition, town-level analysis using the 2010 U.S. Census zip code level data was performed.

Technical Notes

Asthma Population

Hospitalizations, Treat and Release Emergency Department Visits, and Emergency Department Visits Admitted Inpatient, identified by any one of the following admitting ICD-9 diagnoses: 493.00, 493.01, 493.02, 493.10, 493.11, 493.12, 493.20, 493.21, 493.22, 493.80, 493.81, 493.82, 493.90, 493.91 or 493.92.

ICU Admission

Identified by any one of the following revenue codes (also referred to as location or accommodation codes): 0200 (General ICU), 0201 (Surgical ICU), 0202 (Medical ICU), 0203 (Pediatric ICU), 0206 (Intermediate ICU) or 0209 (Other ICU). Patients with multiple ICU codes are counted once.

Ventilation

Identified by any one of the following ICD-9 procedure codes: 96.04 (endotracheal intubation), 96.70, 96.71 and 96.72 (invasive ventilation), or 93.90 and 93.91 (non-invasive ventilation).

EMERGENCY DEPARTMENT VISITS



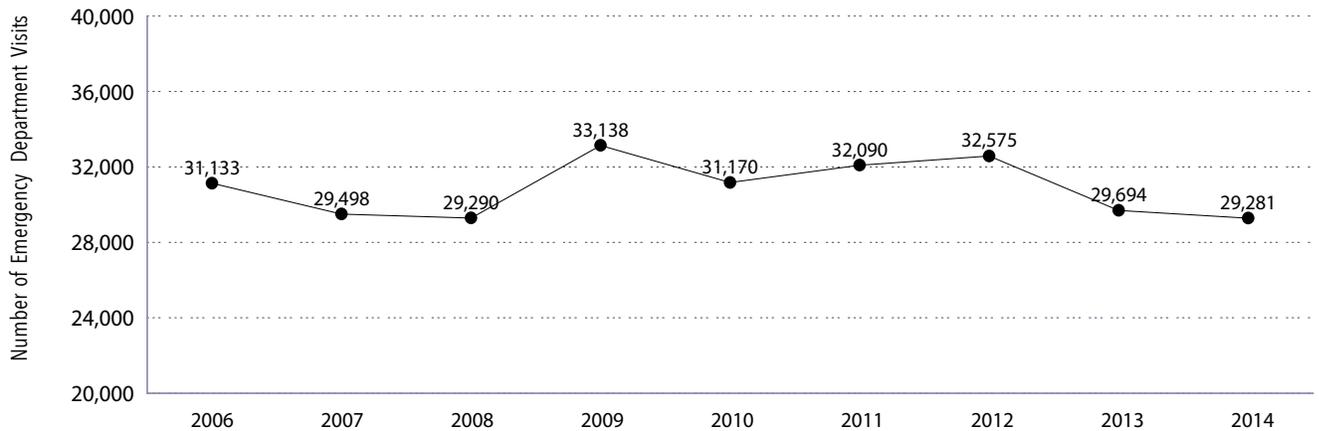
There were 277,869 ED visits for asthma in Nassau, Suffolk, and Queens Counties during the nine-year period: 2006-2014.

The top figure shows the total number of Emergency Department (ED) visits per year for the combined three counties.

The bottom figure shows rates per 10,000 population per year. Rates take population shifts into account, allowing year to year comparisons. For example, in 2006 there were 62.6 asthma ED visits for every 10,000 people residing in Nassau, Suffolk, and Queens Counties that year.

Number of Asthma Emergency Department Visits by Year

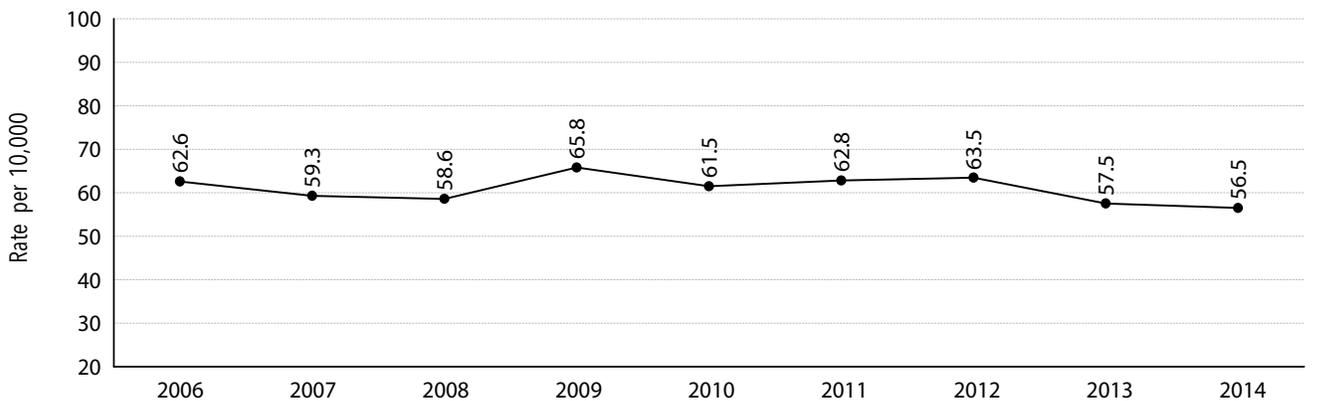
Nassau, Queens & Suffolk, 2006-2014



Source: New York State SPARCS Database.

Rate of Asthma Emergency Department Visits by Year

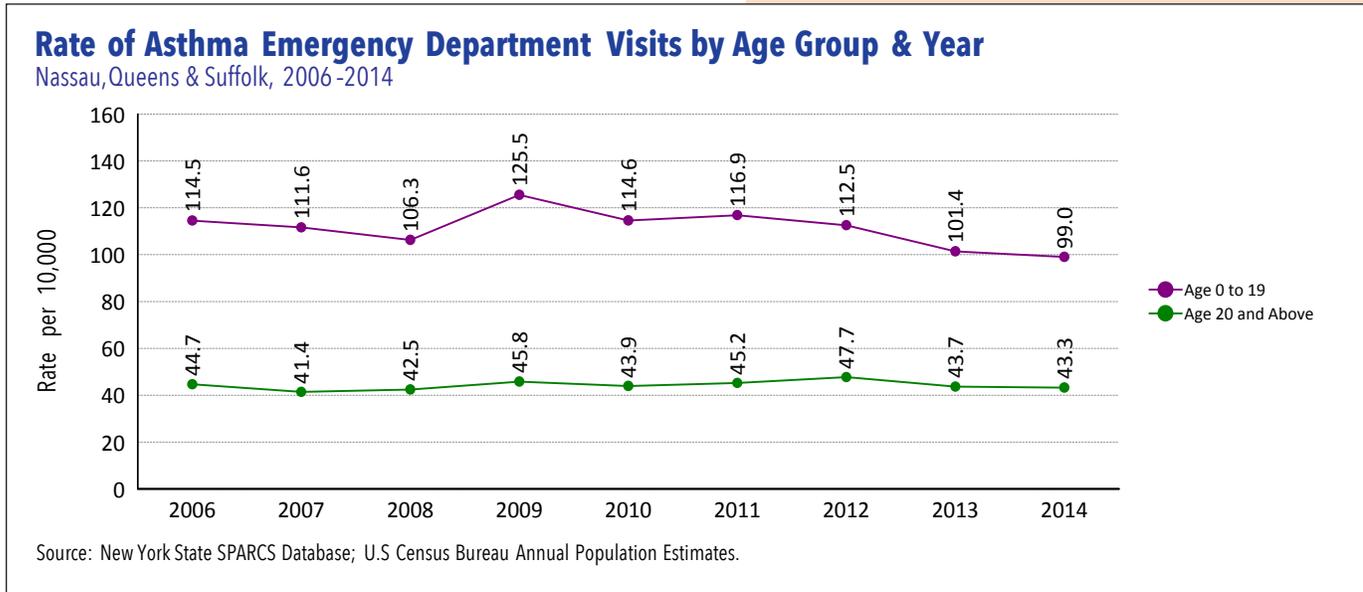
Nassau, Queens & Suffolk, 2006-2014



Source: New York State SPARCS Database; U.S. Census Bureau Annual Population Estimates.

Although there is yearly fluctuation in the numbers of ED visits for asthma, there were no clear changes over time. This pattern is similar to National and State trends where the numbers of ED visits for asthma did not change substantially over the past decade.

This figure compares pediatric (age 0-19 years, top line) to adult (bottom line) yearly asthma Emergency Department (ED) visit rates.



Among children (top line) there appears to be a downward trend in ED asthma visits in recent years. There does not appear to be much change in ED visit rates over time among adults.

Pediatric ED asthma visits are 2-3 times more common than those of adults (ages 20 and older).



Emergency Department (ED) rates decrease as age increases.

The table shows data grouped into three-year intervals and specific age ranges. Boxes show the total number of visits and the visit rate per 10,000 population.

For example, in the years 2006-2008 there were 17,233 ED asthma visits for children age 0-4 years, and the rate was 193.2 for 10,000 population.

The bottom row, labeled "Total by Age," summarizes the distribution of asthma ED visits by age. For example, for the 9 year observation period, 49,963 of the 277,869 asthma ED visits occurred in children 0-4 years.

The last column, labeled "All Years," indicates the total number of visits for that time period. For example, there were 89,921 asthma ED visits for all ages in the years 2006-2008.

Dividing data into specific age ranges allows clearer and more precise estimates of trends in age-related morbidity.

Asthma Emergency Department Visits by Age Group and Year

Nassau, Queens & Suffolk, 2006-2014

		0-4	5-9	10-14	15-19	20-44	45-64	65+	All Years
2006-2008	Number of ED Visits	17,233	11,652	7,557	5,746	26,973	15,684	5,076	89,921
	Rate per 10,000 Population	193.2	129.2	75.9	56.5	52.0	39.7	25.4	
2009-2011	Number of ED Visits	18,072	12,811	8,117	5,932	27,416	18,635	5,415	96,398
	Rate per 10,000 Population	205.2	140.4	83.8	58.4	53.1	44.5	25.9	
2012-2014	Number of ED Visits	14,658	12,003	6,872	5,249	27,015	19,871	5,882	91,550
	Rate per 10,000 Population	163.6	133.3	72.8	53.8	52.0	46.0	26.2	
Total by Age	Number of ED Visits	49,963	36,466	22,546	16,927	81,404	54,190	16,373	277,869

Sources: New York State SPARCS Database.

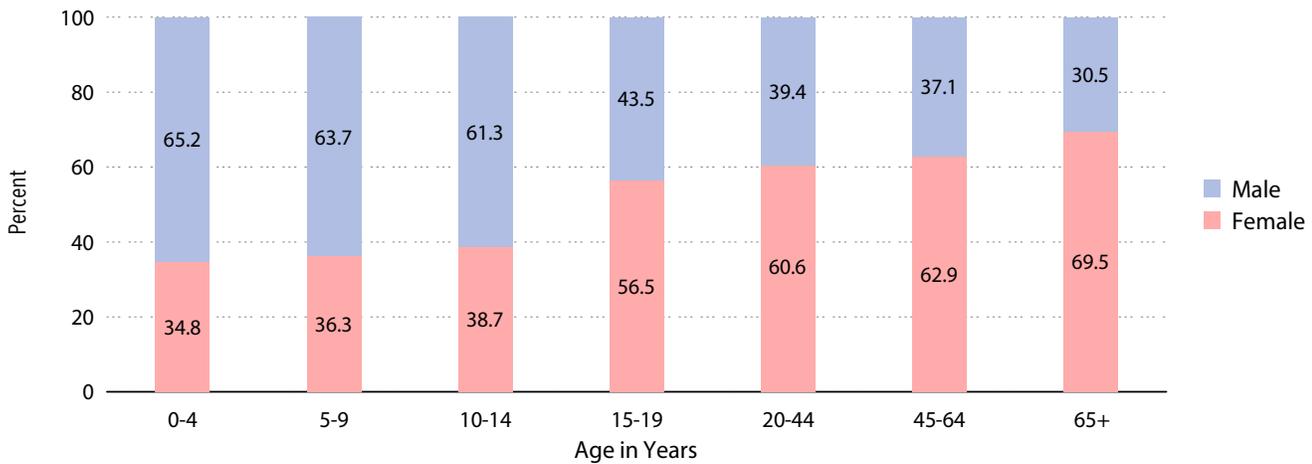
Rates are highest in the youngest age groups and lowest in the oldest age groups. Because there are more countable years in the adult age range, the majority of asthma ED visits occur in those 20 years and older.

Among children, downward trends in asthma ED visits occur in most but not all ages. In contrast, among adults, asthma ED visits appear constant or are increasing over time.

Caution should be used in interpreting data among the very youngest (age 0-2 years) and the older populations where correct classification of asthma diagnosis is more challenging.

Percentage of Asthma Emergency Department Visits by Gender

Nassau, Queens & Suffolk, 2006-2014



Source: New York State SPARCS Database

This figure shows the percentage of males and females who present to the Emergency Department (ED) for asthma for each age grouping. For example, of those age 0-4 years, 65.2% are male.

As the figure indicates, in the younger age groups, most ED asthma visits occur in boys. This pattern begins to reverse in adolescence. With increasing age, most patients in the ED with asthma are female.

It is well known that asthma susceptibility is gender- and age-related. There is a greater proportion of ED visits associated with asthma in males when young, and in females when older.



Asthma Emergency Department Visits by County

Nassau, Queens & Suffolk, 2006-2014

ED Visits per 10,000 Population				
	Nassau	Queens	Suffolk	All Counties
2006-2008	40.3	78.1	51.4	60.2
2009-2011	43.7	81.6	53.7	63.4
2012-2014	40.5	76.3	49.6	59.2
All Years	41.5	78.7	51.6	60.9
% Change	+0.5	-2.3	-3.5	-1.7

Percent Change = Difference between 2006-2008 and 2012-2014.

Number of Asthma Emergency Department Visits 2006-2014

	Nassau	Queens	Suffolk	All Counties
Number of ED Visits	50,067	158,595	69,207	277,869

Source: New York State SPARCS database.

Queens has higher asthma ED visit rates than Nassau or Suffolk Counties.

The table compares asthma Emergency Department (ED) visit rates by county over time. Data is grouped into three-year periods to allow for easier comparison.

The row labeled “% change” compares the change in visit rates for the years 2006-2008 to the years 2012-2014 for each of the three counties as well as for the three counties combined.

Queens has the highest asthma ED visit rates (78.7) when compared to Nassau (41.5) or Suffolk (51.6).

When the earlier time periods are compared to the later time periods, there is little change in asthma ED visit rates for any of the three counties. For example, in Nassau County, there was only a 0.5% change over time.





HOSPITAL DISCHARGE RATES

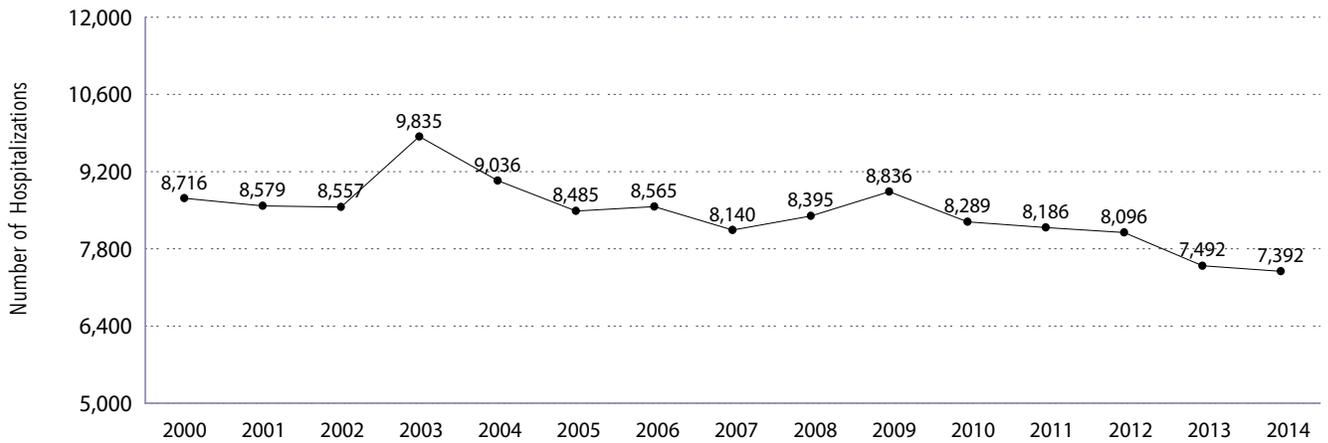
There were 126,599 asthma hospitalizations in Nassau, Queens, and Suffolk Counties during the 15-year period 2000-2014.

The top figure presents the yearly number of asthma hospitalizations for the three counties. The bottom figure presents the annual rate of asthma hospitalizations per 10,000 for the three counties.

While there was yearly fluctuation in the number and rates of asthma hospitalizations, the overall yearly averages appear to trend downward over time. This pattern is similar to national trends where the rates of asthma hospitalizations appear to be decreasing over time (www.cdc.gov/asthma/most_recent_data.htm).

Number of Asthma Hospitalizations by Year

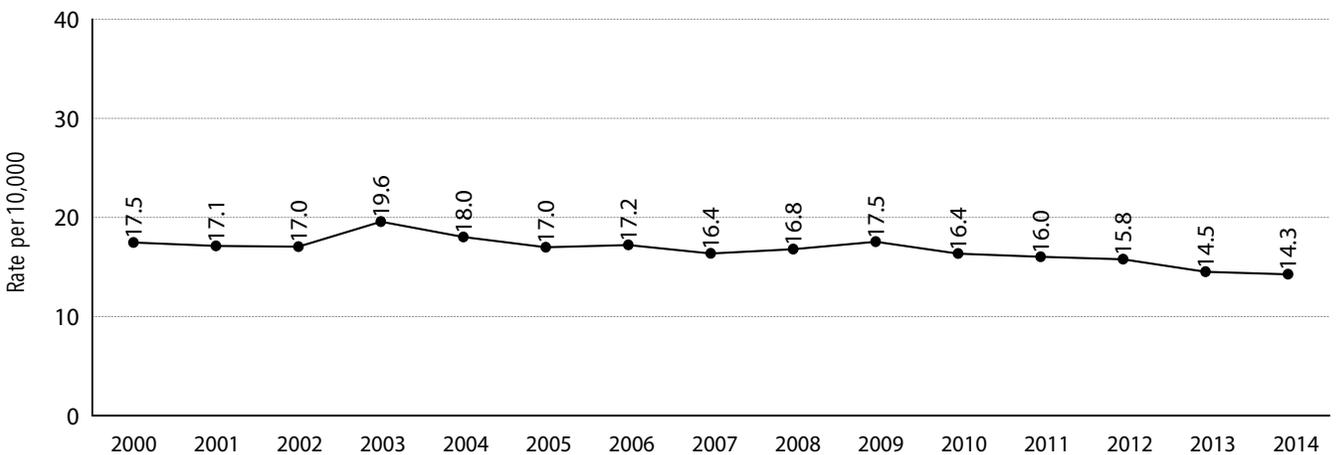
Nassau, Queens & Suffolk, 2000-2014



Source: New York State SPARCS Database.

Rate of Asthma Hospitalizations by Year

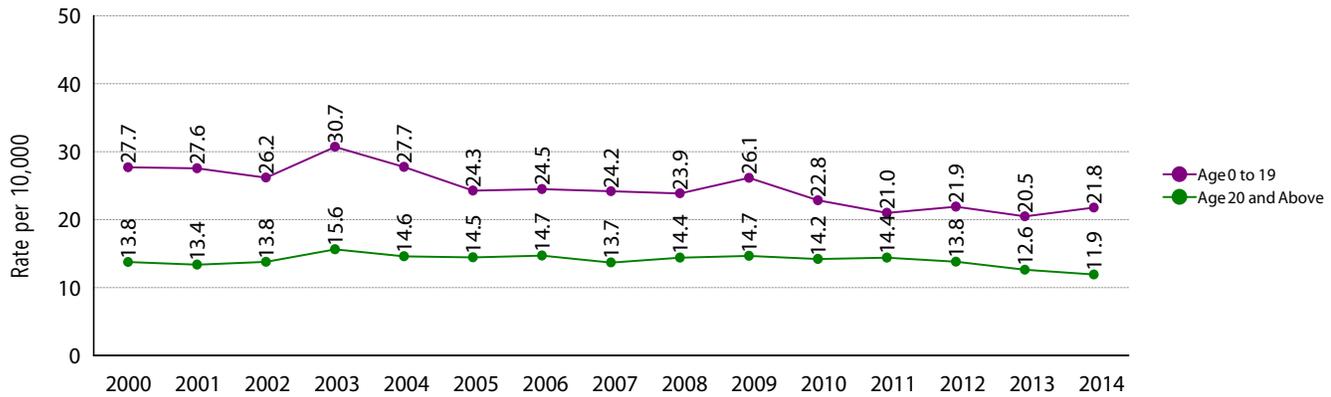
Nassau, Queens & Suffolk, 2000-2014



Source: New York State SPARCS Database; U.S. Census Bureau Annual Population Estimates.

Rate of Asthma Hospitalizations by Age Group & Year

Nassau, Queens & Suffolk, 2000-2014



Source: New York State SPARCS Database; U.S. Census Bureau Annual Population Estimates.

This figure compares pediatric (0-19 years [top line]) with adult asthma hospitalization rates over time.

Similar to patterns of Emergency Department (ED) visits, pediatric asthma hospitalization rates are higher than adult asthma hospitalization rates.

Over time there appears to be a downward trend in both pediatric and adult asthma hospitalization rates.



Asthma Hospitalizations by Age Group and Year

Nassau, Queens & Suffolk, 2000-2014

		0-4	5-9	10-14	15-19	20-44	45-64	65+	All Years
2000-2004	Number of Hospitalizations	10,241	4,372	2,538	1,264	9,125	9,746	7,437	44,723
	Rate per 10,000	63.8	26.2	14.6	8.0	9.9	16.3	22.6	
2005-2009	Number of Hospitalizations	8,606	3,883	2,089	1,059	7,037	10,308	9,439	42,421
	Rate per 10,000	57.6	25.7	12.6	6.3	8.1	15.6	28.2	
2010-2014	Number of Hospitalizations	7,026	3,581	1,876	974	5,331	10,738	9,929	39,455
	Rate per 10,000	47.3	23.7	11.8	5.9	6.2	15.1	27.2	
Total by Age	Number of Hospitalizations	25,873	11,836	6,503	3,297	21,493	30,792	26,805	126,599

Sources: New York State SPARCS Database.

Drilling down into specific age groups reveals asthma hospitalization rates highest in the youngest and the oldest age groups and lowest in adolescence and in younger adults.

The table shows the number of hospitalizations grouped into 5-year intervals and further broken down by selected age groups (rather than pediatric versus adult).

The age-related patterns in hospitalizations for asthma indicate the highest rates in the youngest and oldest age groups.

This pattern contrasts with Emergency Department (ED) visits, where rates are highest in the youngest age groups and lowest in the oldest age groups.

Hospitalization rates seem to be increasing over time in the oldest age group and decreasing in every other age group. As the row "Total by Age" indicates, the majority of hospitalizations occurs in individuals over 20 years of age.





Queens has a higher asthma hospitalization rate (20.1) than Nassau (14.3) or Suffolk (13.8) Counties.

The table compares trends in asthma hospitalization admission rates over time among the three counties.

Asthma Hospitalizations by County of Residence

Hospitalization Rates per 10,000 Population				
	Nassau	Queens	Suffolk	All Counties
2000-2004	14.5	22.7	13.6	17.8
2005-2009	14.4	20.6	14.0	17.0
2010-2014	14.1	17.2	13.8	15.4
All Years	14.3	20.1	13.8	16.7
% Change	-2.8	-24.2	+1.4	-13.5

Percent Change = Difference between 2000-2004 and 2010-2014.

Number of Asthma Hospitalizations, 2000 - 2014

	Nassau	Queens	Suffolk	All Counties
Number of Hospitalizations	28,723	67,344	30,532	126,599

Source: New York State SPARCS Database.

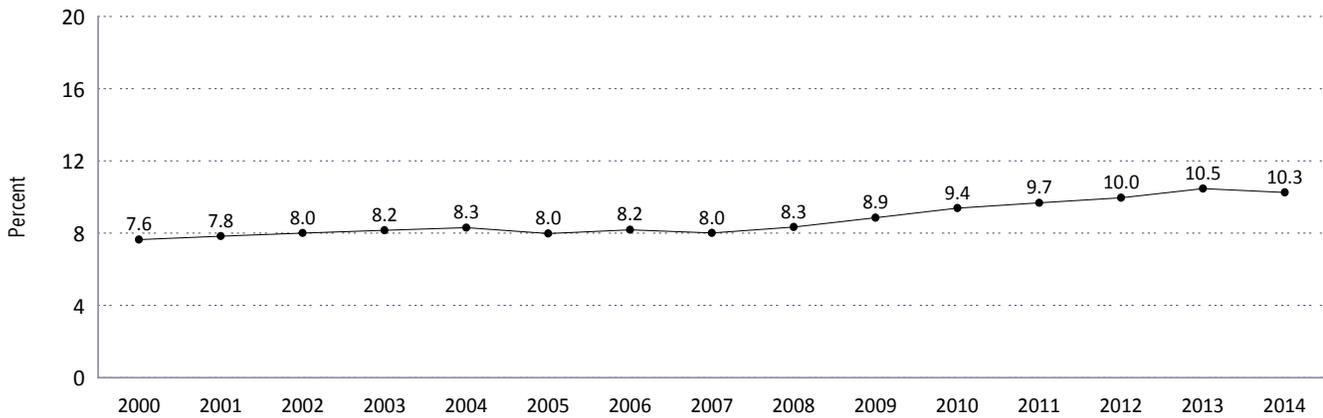
For the three counties combined, there is a 13.5% decrease in asthma hospitalization rates when years 2000-2004 are compared to more recent rates (see the last column). However, the decrease appears to be driven by the 24.2% drop in Queens County; rates changed little for Nassau and Suffolk Counties.

A photograph of a woman with long blonde hair lying in a hospital bed, looking up. In the background, a male doctor in a white lab coat and blue scrubs is holding a clipboard and looking at it. The scene is set in a hospital room with medical equipment visible.

INTENSIVE CARE UNIT ADMISSIONS FOR ASTHMA

Percentage of Asthma Hospitalizations Admitted to the ICU by Year

Nassau, Queens & Suffolk, 2000-2014



Source: New York State SPARCS Database.

This figure shows the percent (%) of individuals hospitalized for asthma who were admitted to the Intensive Care Unit (ICU).

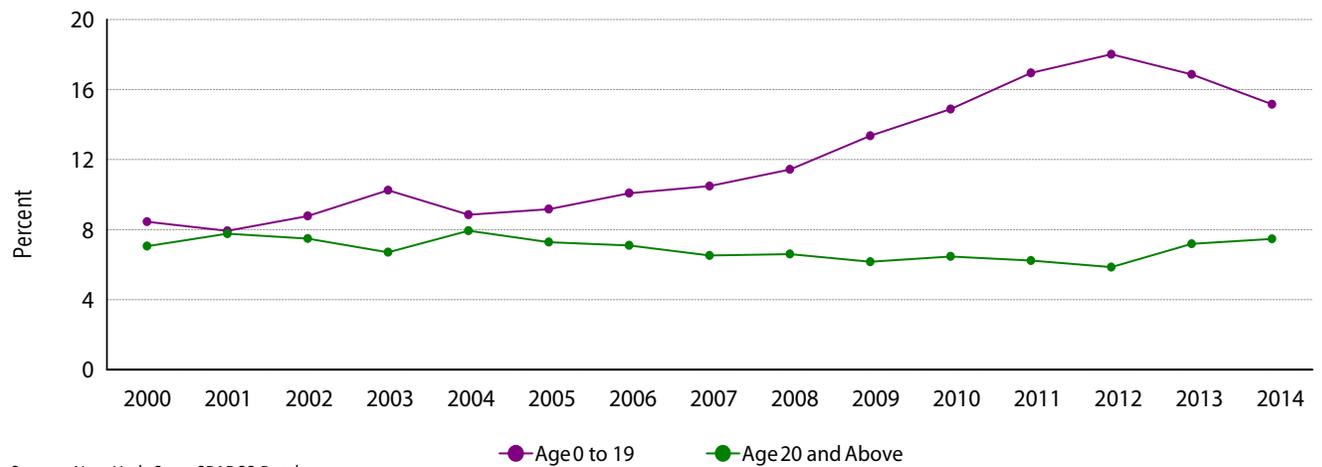
In 2000, 7.6% of those hospitalized for asthma were admitted to the ICU. In 2014, ICU admissions rose to 10.3%.

Among those hospitalized for asthma, ICU admissions are increasing over time.



Percentage of Asthma Hospitalizations Admitted to the ICU by Age Group and Year

Nassau, Queens & Suffolk, 2000-2014



Source: New York State SPARCS Database.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Age 0-19 Percent	8.4	7.9	8.8	10.2	8.8	9.2	10.1	10.5	11.4	13.4	14.9	16.9	18.0	16.9	15.2
Age 20 and Above Percent	7.1	7.8	7.5	6.7	7.9	7.3	7.1	6.5	6.6	6.2	6.5	6.2	5.9	7.2	7.5

ICU admission rates for asthma have substantially increased in children.

This figure shows the percent of individuals hospitalized for asthma who were admitted to the Intensive Care Unit (ICU). Pediatric (0-19 years) trends are compared to adult trends.

There is a marked increase in the proportion of hospitalized children with asthma who were admitted to the ICU. Among adults, ICU admission rates for asthma appear to be unchanged.



In the table the column labeled “All Years” represents Intensive Care Unit (ICU) asthma admission averages for the 15-year period. For example, 13.7% of children age 10-14 years who were hospitalized for asthma were admitted to the ICU.

The column, “% change,” presents the proportional change in ICU admissions when comparing the earlier years, 2000-2004, to the later years, 2010-2014. For example, children age 15-19 years had a 99.1% increase in proportion of ICU admissions for asthma between 2000-2004 and 2010-2014.

Percentage of Asthma Hospitalizations Admitted to the ICU by Age Group

Nassau, Queens & Suffolk, 2000 - 2014

Age in Years	2000-2004	2005-2009	2010-2014	AllYears	% Change
0 to 4	8.0	9.7	13.7	10.1	+71.3
5 to 9	9.5	12.6	18.2	13.2	+91.6
10 to 14	10.2	12.3	20.0	13.7	+96.1
15 to 19	10.8	12.0	21.5	14.3	+99.1
20 to 44	7.2	6.6	7.9	7.2	+9.7
45 to 64	6.8	6.2	6.1	6.3	-10.3
65+	8.4	7.5	6.4	7.3	-23.8
All Ages	8.0	8.3	9.9	8.7	+23.8

Percent Change = Difference between 2000-2004 and 2010-2014.

Source: New York State SPARCS database.

Children and young adults experienced an increase in ICU admissions among patients hospitalized for asthma; middle aged and older adults experienced a decrease.

Similar to Emergency Department (ED) visits and hospitalizations for asthma, patterns in ICU age-related asthma admissions provide more meaningful information when divided into specific age groups.



Percentage of Asthma Hospitalizations Admitted to the ICU by Patient County

Nassau, Queens & Suffolk, 2000 - 2014

Percent Admitted to the ICU			
	Nassau	Queens	Suffolk
2000-2004	10.5	6.6	9.2
2005-2009	12.3	6.3	8.9
2010-2014	14.0	7.5	10.8
All Years	12.3	6.7	9.7
% Change	+33.3	+13.6	+17.4

Percent Change = Difference between 2000-2004 and 2010-2014.

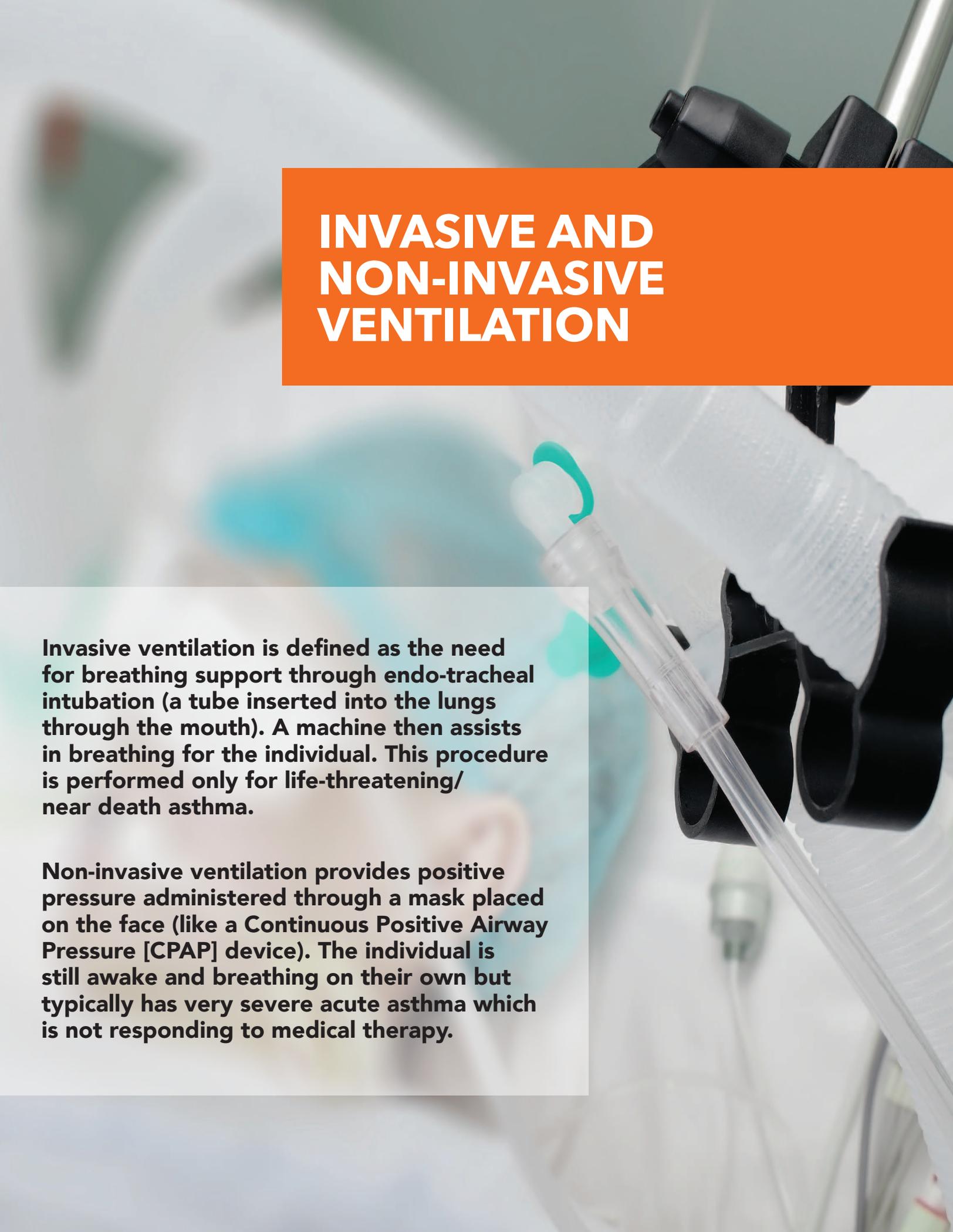
Source: New York State SPARCS database.

The greatest increase in ICU asthma admissions over time was in Nassau County.

The table presents data on those admitted to the hospital for asthma who were admitted to the Intensive Care Unit (ICU). The row labeled "All Years" indicates the percent (%) admitted to the ICU for each county for all years. For example, in Queens 6.7% of those hospitalized for asthma were admitted to the ICU.

Nassau County had the highest ICU asthma admission rate of 12.3% and Queens had the lowest ICU asthma admission rate of 6.7%. The greatest increase in asthma ICU admission rates over time were seen in Nassau County (33.3% rise) although Queens and Suffolk Counties also experienced relatively large increases.



The background of the entire page is a blurred photograph of medical equipment, likely a ventilator. It shows various tubes, connectors, and components in shades of white, grey, and black, with some teal accents. The focus is soft, emphasizing the clinical setting.

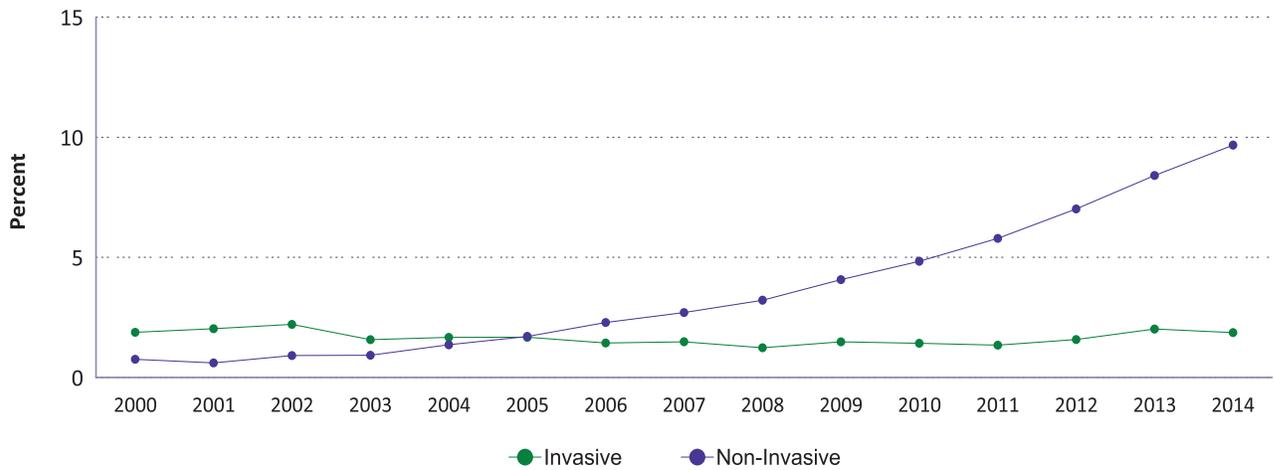
INVASIVE AND NON-INVASIVE VENTILATION

Invasive ventilation is defined as the need for breathing support through endo-tracheal intubation (a tube inserted into the lungs through the mouth). A machine then assists in breathing for the individual. This procedure is performed only for life-threatening/ near death asthma.

Non-invasive ventilation provides positive pressure administered through a mask placed on the face (like a Continuous Positive Airway Pressure [CPAP] device). The individual is still awake and breathing on their own but typically has very severe acute asthma which is not responding to medical therapy.

Percentage of Asthma Hospitalizations with Invasive & Non-Invasive Ventilation by Year

Nassau, Queens & Suffolk, 2000 - 2014



Source: New York State SPARCS Database.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Percent with Non-Invasive Ventilation	0.8	0.6	0.9	0.9	1.4	1.7	2.3	2.7	3.2	4.1	4.8	5.8	7.0	8.4	9.7
Percent with Invasive Ventilation	1.9	2.0	2.2	1.6	1.7	1.7	1.4	1.5	1.2	1.5	1.4	1.3	1.6	2.0	1.9

Percentage of Asthma Hospitalizations with Invasive Ventilation by Patient County

Nassau, Queens & Suffolk, 2000-2014

Percent with Invasive Ventilation				
	Nassau	Queens	Suffolk	All Counties
2000-2004	1.8	2.1	1.3	1.9
2005-2009	1.5	1.5	1.3	1.5
2010-2014	1.5	1.8	1.4	1.6
All Years	1.6	1.8	1.3	1.6
% Change	-16.6	-14.3	+7.7	-15.8

Percent Change = Difference between 2000-2004 and 2010-2014.
Source: New York State SPARCS database.

The data on the graph presents the proportion of patients hospitalized for asthma who received non-invasive compared to invasive ventilation.

The table presents the proportion of those hospitalized for asthma who received invasive ventilation. In the table, data is presented by county and 5-year time periods.

As the figure indicates, the frequency of invasive ventilation used to treat asthma has remained within a narrow range between the years 2000-2014.

Between 2000-2014, about 1 in 62 people hospitalized for asthma during that period were invasively ventilated (1.6% of all hospitalizations).

As shown in the table (see row labeled "All Years"), the frequency for invasive ventilation is slightly higher in Queens County than Nassau and Suffolk Counties.

In contrast, the use of non-invasive ventilation has substantially increased over the same time period. In 2014 nearly 1 in 10 of those hospitalized for asthma required non-invasive ventilation to treat their asthma.

The use of non-invasive ventilation for asthma has skyrocketed over time.



DEMOGRAPHICS

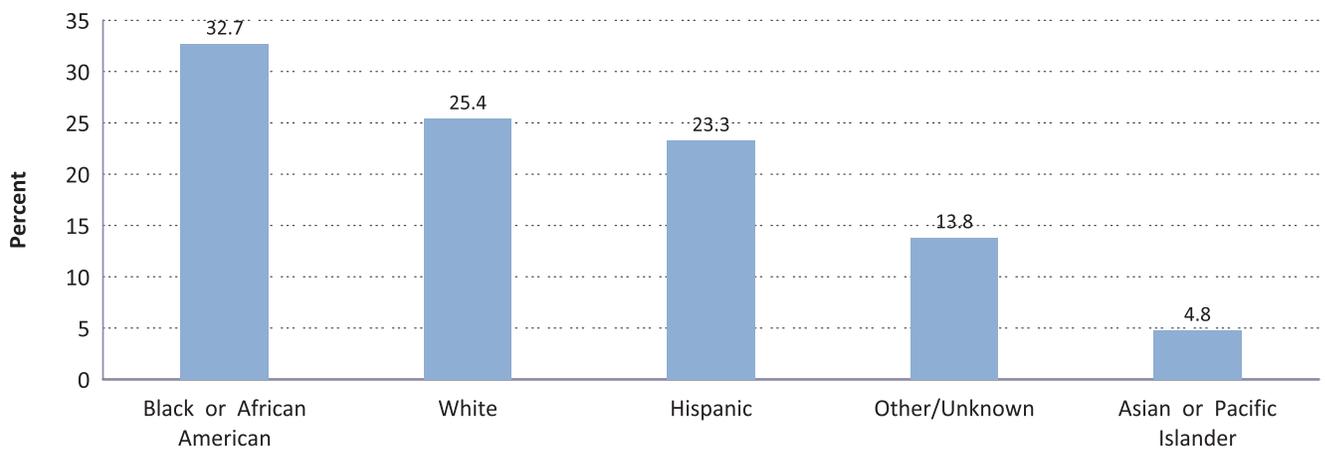
Black/African Americans represent the largest proportion of ED visits for asthma by race/ethnic group. Whites had the largest proportion of hospitalizations for asthma.

The figures show the proportions of Emergency Department (ED) visits and hospitalizations for asthma by race/ethnicity. For each figure, the proportions add up to 100%.

Of the individuals treated for asthma in the ED, 32.7% were Black/African American. In contrast to the ED, the largest race/ethnic group for hospitalizations were White (36.7%) followed by Black/African American (26.7%).*

Percentage of Asthma Emergency Department Visits by Race/Ethnicity

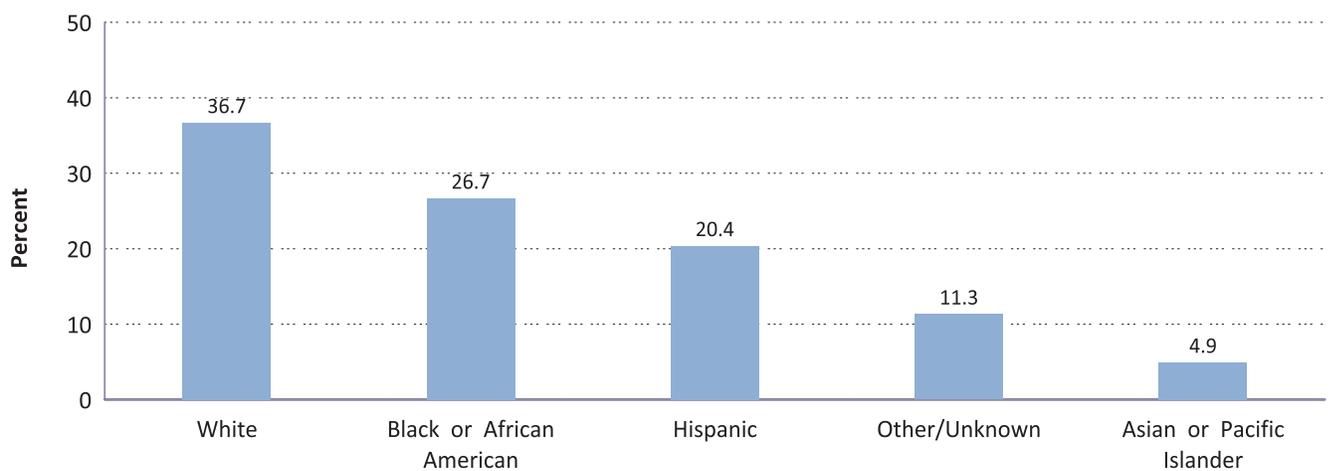
Nassau, Queens & Suffolk, 2006-2014



Source: New York State SPARCS Database.

Percentage of Asthma Hospitalizations by Race/Ethnicity

Nassau, Queens & Suffolk, 2000-2014

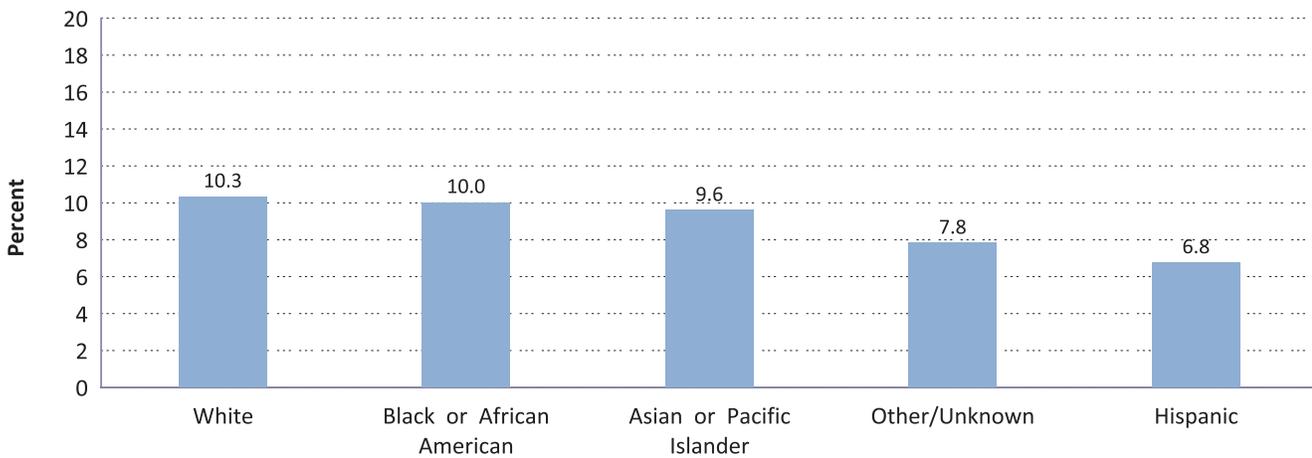


Source: New York State SPARCS Database.

*Note: Designation of race/ethnicity is assigned by the individual hospitals and may not have been formally validated.

Percentage of Asthma Hospitalizations Admitted to the ICU by Race/Ethnicity

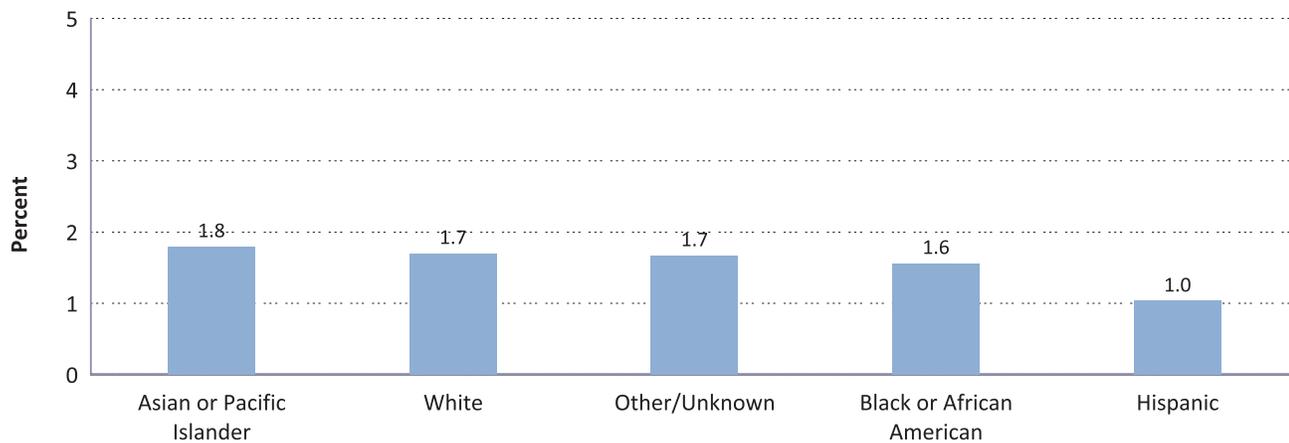
Nassau, Queens & Suffolk, 2000-2014



Source: New York State SPARCS Database.

Percentage of Asthma Hospitalizations with Invasive Ventilation by Race/Ethnicity

Nassau, Queens & Suffolk, 2000-2014



Source: New York State SPARCS Database.

The top figure presents the percentage of hospitalized individuals who were admitted to the Intensive Care Unit (ICU) for asthma. For example, 10.3% of White patients were admitted to the ICU.

The bottom figure presents the percentage of hospitalized patients who were admitted to the ICU and who were invasively ventilated.

Patients who were White, Black/African American, or Asian/Pacific Islander had the highest proportion of ICU admissions for asthma.

Hispanics had the lowest proportion of ICU admission for asthma. Hispanics also appear to have the lowest proportion of invasive ventilation.

There are racial/ethnic differences in the use of ICU and invasive ventilation for asthma.

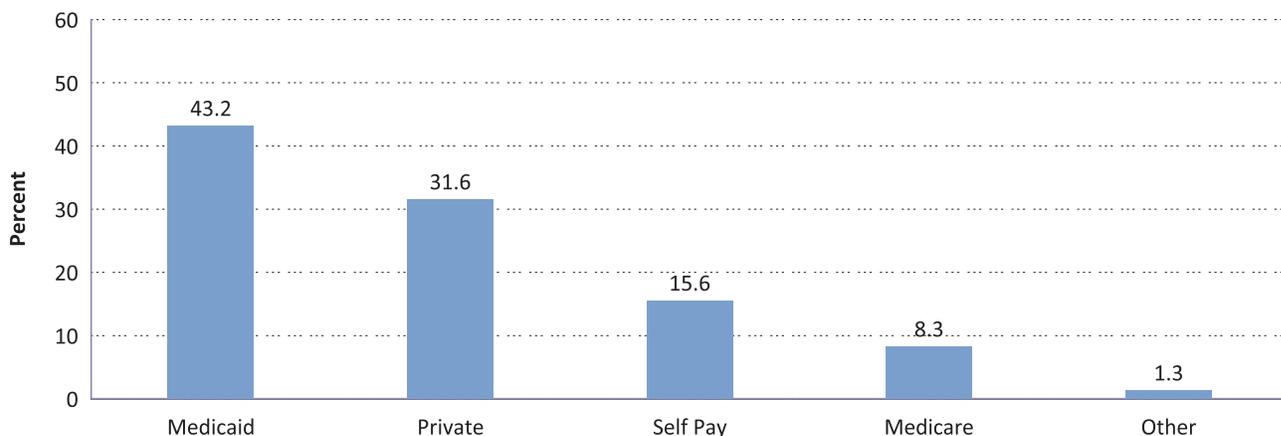
Among those who presented to the ED with asthma, Medicaid insurance was the most common form of payment.

These figures show the proportion of payment methods for asthma Emergency Department (ED) visits and hospitalizations. For example, 43.2% of those presenting to the ED had Medicaid insurance.

Medicaid insurance was the most common form of payment for an asthma ED visit. Private and Medicaid insurance were the most common forms of payment for asthma hospitalizations.

Percentage of Asthma Emergency Department Visits by Payor

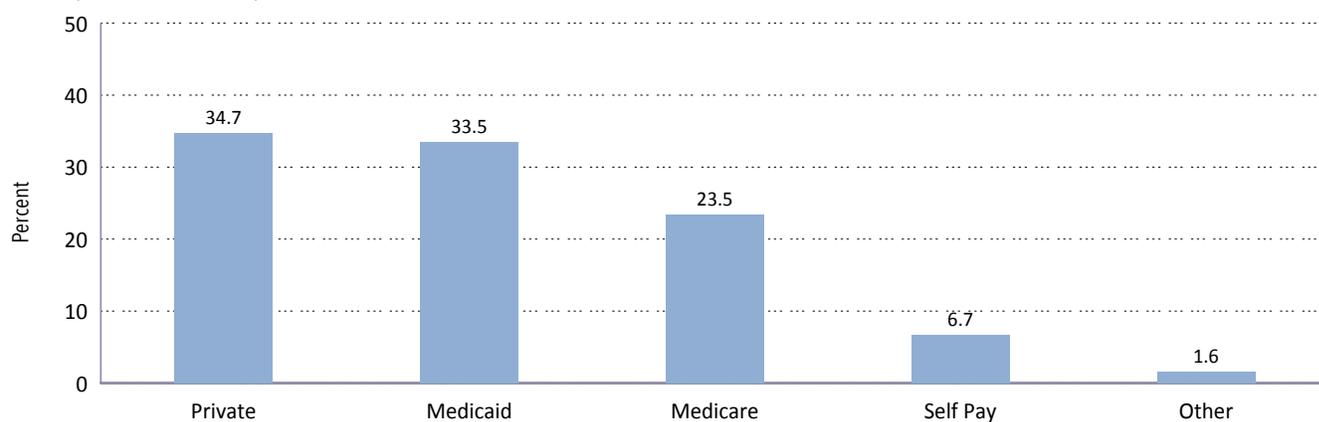
Nassau, Queens & Suffolk, 2008 -2014



Source: New York State SPARCS Database.

Percentage of Asthma Hospitalizations by Payor

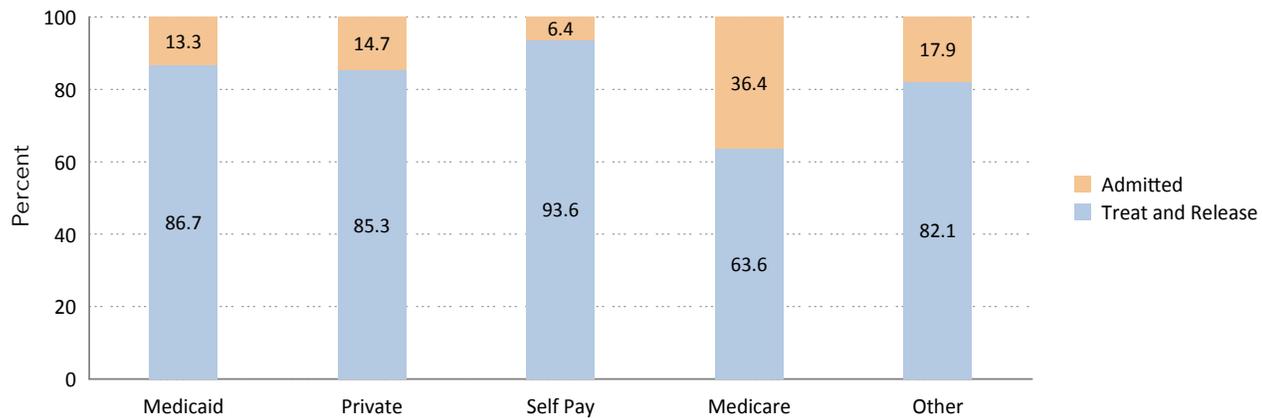
Nassau, Queens & Suffolk, 2000 - 2014



Source: New York State SPARCS Database.

Percentage of Asthma Emergency Department Visits by Disposition & Payor

Nassau, Queens & Suffolk, 2008-2014



Source: New York State SPARCS Database.

This figure shows the proportion of individuals who present to the Emergency Department (ED) and are admitted to the hospital for asthma. Data is presented by payment type. For example, of all ED patients with asthma who pay with Medicaid insurance, 13.3% are hospitalized for asthma.

Those individuals in the ED with asthma who self-pay for services are the least likely to be hospitalized for asthma, even when compared to those with Medicaid or private insurance. In contrast, those in the ED with asthma who have Medicare insurance, typically an older population, have the highest chance of being admitted for asthma.

Those who self-pay have the lowest hospitalization rates for asthma from the ED.





**NASSAU
COUNTY**

Nassau County

Emergency Department Visits by Town - Towns with Highest Rates/10,000: Year 2014

Nassau Average Rate: 92.8 Ages 0-19 Years			Nassau Average Rate: 44.4 Ages 20 Years and Above		
Town	Rate per 10,000	ED Visits #	Town	Rate per 10,000	ED Visits #
Hempstead	216.0	368	Inwood	90.6	53
Uniondale	175.8	129	Hempstead	88.3	374
Roosevelt	150.0	72	Roosevelt	87.2	100
Elmont	128.8	141	Elmont	58.5	178
Westbury	121.0	137	Freeport	55.5	177
Inwood	112.1	28	West Hempstead	55.3	94
Freeport	107.6	123	Uniondale	51.9	97
Baldwin	97.2	86	Valley Stream	44.6	133
Valley Stream	97.0	100	Glen Cove	43.5	93
Mineola	86.2	35	Westbury	42.7	147
Glen Cove	81.3	51	Bethpage	37.0	64
West Hempstead	68.0	45	Baldwin	35.9	87
Hicksville	64.0	59	Hicksville	31.3	95
So Valley Stream	56.6	31	Port Washington	28.2	63
Bethpage	52.3	28	Long Beach	25.6	78
Long Beach	51.0	35	Mineola	25.2	38
Levittown	50.6	55	So Valley Stream	24.7	38
Woodmere	50.3	21	Levittown	22.2	71
Rockville Ctr	46.3	33	Farmingdale	20.3	49
Franklin Square	43.0	24	East Meadow	18.7	55

The two tables list the top 20 towns by asthma Emergency Department (ED) rates in Nassau County for the year 2014. Table 1 presents asthma ED visits for ages 0-19; table 2 for ages 20 and above.

The third column of each table lists the actual numbers of visits for that town. As noted, a small town may have a high asthma ED visit rate but relatively few actual visits. This may be related to the lower population in the smaller towns.



Nassau County

Hospital Discharges by Town - Towns with Highest Rates/10,000: Year 2014

Nassau Average Rate: 28.7			Nassau Average Rate: 14.7		
Ages 0-19 Years			Ages 20 Years and Above		
Town	Rate per 10,000	Hospital Discharges #	Town	Rate per 10,000	Hospital Discharges #
Hempstead	62.8	107	Hempstead	29.1	123
Roosevelt	60.4	29	West Hempstead	23.5	40
Uniondale	50.4	37	Freeport	23.5	75
Elmont	32.9	36	Roosevelt	19.2	22
Westbury	30.9	35	Lynbrook	18.5	32
Valley Stream	30.1	31	Glen Cove	17.3	37
Baldwin	23.7	21	Uniondale	15.5	29
Freeport	23.6	27	Westbury	15.4	53
West Hempstead	22.7	15	Long Beach	13.5	41
Lynbrook	22.5	12	Valley Stream	12.1	36
Floral Park	20.6	14	Elmont	11.8	36
Levittown	20.3	22	Bethpage	11.6	20
Rockville Ctr	18.2	13	Hicksville	11.2	34
New Hyde Park	15.3	15	East Meadow	10.9	32
Farmingdale	15.2	12	Oceanside	10.8	25
East Meadow	14.9	13	Levittown	10.3	33
			Baldwin	10.3	25
			Rockville Ctr	10.2	20
			New Hyde Park	9.5	30
			Wantagh	9.0	21

The two tables list up to the top 20 towns by asthma visit rate in Nassau County for the year 2014.

Table 1 presents hospitalization visit data for ages 0 - 19 years, and table 2 presents ages 20 and older.

The third column in each table lists the actual numbers of visits for that town. As noted, a small town may have high rates, but relatively fewer visits than larger towns.

Data provided by towns with more than ten hospitalizations in the year 2014.

Counties were identified using the patient's county of residence as recorded in the SPARCS data. Town-level analyses are based on the patient's zip code of residence, also recorded in the SPARCS data, aggregated to the town level. Towns with age-group (0-19 or 20+) populations of fewer than 200 were excluded.



**QUEENS
COUNTY**

Queens County

Emergency Department Visits by Town - Towns with Highest Rates/10,000: Year 2014

Queens Average Rate: 176.2 Ages 0-19 Years			Queens Average Rate: 91.3 Ages 20 Years and Above		
Town	Rate per 10,000	ED Visits #	Town	Rate per 10,000	ED Visits #
Jamaica	251.9	984	Far Rockaway	163.9	663
Rochdale Village	209.1	334	Rochdale Village	138.6	598
St Albans	200.8	184	Arverne	136.3	172
Richmond Hill	199.8	196	St Albans	109.6	282
Rockaway Beach	198.8	62	Jamaica	103.7	1,121
Arverne	197.6	117	Springfield Gdns	102.1	295
So Ozone Park	180.5	308	Long Island City	99.6	551
Far Rockaway	178.1	349	So Ozone Park	91.5	414
Long Island City	175.5	220	Rockaway Beach	87.5	77
So Richmond Hill	175.1	224	Richmond Hill	87.0	230
Woodhaven	172.2	181	Hollis	81.3	185
Ozone Park	171.2	257	Woodhaven	79.7	228
Ridgewood	170.8	430	Ozone Park	78.1	303
Springfield Gdns	169.7	170	Cambria Heights	76.3	109
Corona	155.3	476	Rosedale	72.9	161
Rosedale	153.3	128	So Richmond Hill	72.6	250
Kew Gardens	144.1	55	Ridgewood	64.8	476
Hollis	141.2	102	Astoria	62.7	366
Cambria Heights	140.4	60	Queens Village	59.4	305
Queens Village	138.0	228	Rockaway Park	59.3	94

The two tables list the top 20 towns by asthma visit rate in Queens County for the year 2014.

Table 1 presents Emergency Department (ED) visit data for all ages, table 2 for ages 0-19 years, and table 2 presents ages 20 years and older.

The third column in each table lists the actual numbers of visits for that town. As noted, a small town may have high rates, but relatively fewer visits than larger towns.

Counties were identified using the patient's county of residence as recorded in the SPARCS data. Town-level analyses are based on the patient's zip code of residence, also recorded in the SPARCS data, aggregated to the town level. Towns with age-group (0-19 or 20+) populations of fewer than 200 were excluded.

Queens County

Hospital Discharges by Town - Towns with Highest Rates/10,000: Year 2014

Queens Average Rate: 34.8 Ages 0-19 Years			Queens Average Rate: 18.1 Ages 20 Years and Above		
Town	Rate per 10,000	Hospital Discharges #	Town	Rate per 10,000	Hospital Discharges #
Cambria Heights	44.4	19	Arverne	26.1	33
Rosedale	44.3	37	Long Island City	25.7	142
Woodhaven	42.8	45	Rockaway Beach	25.0	22
Rochdale Village	41.9	67	Far Rockaway	23.0	93
Rockaway Beach	41.7	13	Rochdale Village	22.5	97
St Albans	40.4	37	Astoria	20.9	122
Queens Village	40.0	66	Springfield Gdns	19.0	55
So Ozone Park	36.9	63	Hollis	18.4	42
Jamaica	36.1	141	Jamaica	17.8	192
Ozone Park	34.0	51	Corona	16.9	134
Far Rockaway	33.7	66	Rockaway Park	16.4	26
Long Island City	33.5	42	So Ozone Park	16.1	73
Springfield Gdns	32.9	33	Ozone Park	16.0	62
Arverne	32.1	19	St Albans	15.9	41
Kew Gardens	28.8	11	Richmond Hill	15.1	40
Corona	27.4	84	So Richmond Hill	14.5	50
So Richmond Hill	27.4	35	Woodhaven	14.3	41
Howard Beach	27.0	14	Ridgewood	13.2	97
Ridgewood	25.8	65	East Elmhurst	12.7	76
Linden Hill	25.6	24	Queens Village	12.7	65

The three tables list the top 20 towns by asthma visit rate in Queens County for the year 2014.

Table 1 presents hospitalization data for 0-19, and table 2 presents ages 20 years and older.

The third column in each table lists the actual numbers of visits for that town. As noted, a small town may have high rates, but relatively fewer visits than larger towns.





**SUFFOLK
COUNTY**

Suffolk County

Emergency Department Visits by Town - Towns with Highest Rates/10,000: Year 2014

Suffolk Average Rate: 116.2			Suffolk Average Rate: 70.8		
Ages 0-19 Years			Ages 20 Years and Above		
Town	Rate per 10,000	ED Visits #	Town	Rate per 10,000	ED Visits #
Bellport	180.0	55	Bellport	148.4	109
Wyandanch	178.5	90	Wyandanch	112.6	116
Brentwood	165.9	305	Mastic	112.5	125
Central Islip	149.9	157	Mastic Beach	92.5	87
Amityville	136.3	94	Shirley	91.3	170
Patchogue	134.1	147	Central Islip	84.2	208
Bay Shore	126.0	219	Medford	77.5	162
Copiague	123.9	64	Coram	69.3	153
Medford	121.1	92	Middle Island	66.0	69
Middle Island	119.6	37	Brentwood	60.9	258
Riverhead	119.4	72	Patchogue	57.3	194
Mastic	99.0	51	Bay Shore	54.5	246
Coram	97.6	68	Riverhead	54.4	115
Mastic Beach	96.0	41	Port Jefferson Station	52.4	93
Shirley	94.1	75	Amityville	51.0	103
Selden	86.1	58	Selden	50.2	90
Farmingville	85.8	49	Southampton	48.9	44
Huntington Station	77.5	145	Centereach	48.1	102
Bohemia	69.0	18	Farmingville	43.2	66
Ronkonkoma	63.5	63	Bohemia	40.8	33

The three tables list the top 20 towns by asthma visit rate in Suffolk County for the year 2014.

Table 1 presents Emergency Department (ED) visit data for 0-19 years, and table 2 presents ages 20 years and older.

The third column in each table lists the actual numbers of visits for that town. As noted, a small town may have high rates, but relatively fewer visits than larger towns.



Suffolk County

Hospital Discharges by Town - Towns with Highest Rates/10,000: Year 2014

Suffolk Average Rate: 28.5			Suffolk Average Rate: 16.8		
Ages 0-19 Years			Ages 20 Years and Above		
Town	Rate per 10,000	Hospital Discharges #	Town	Rate per 10,000	Hospital Discharges #
Amityville	47.8	33	Wyandanch	33.0	34
Wyandanch	39.7	20	Bellport	29.9	22
Central Islip	36.3	38	Mastic	25.2	28
Copiague	34.9	18	North Babylon	21.0	26
Brentwood	34.3	63	Mastic Beach	18.1	17
Medford	32.9	25	Central Islip	17.4	43
Bay Shore	29.9	52	Brentwood	16.8	71
Shirley	28.9	23	Riverhead	16.6	35
Selden	26.7	18	Medford	15.3	32
Patchogue	26.5	29	Deer Park	14.4	30
Holbrook	25.6	18	Bay Shore	14.2	64
Farmingville	24.5	14	Coram	13.6	30
Coram	24.4	17	Amityville	13.4	27
			West Babylon	13.3	40
			Copiague	12.9	19
			Kings Park	12.9	18
			Centereach	12.7	27
			Ronkonkoma	12.6	36
			Port Jefferson Station	11.8	21
			West Islip	11.7	22

The two tables list up to the top 20 towns by asthma visit rate in Suffolk County for the year 2014.

Table 1 presents hospitalization visit data for ages 0-19 years, and table 2 presents ages 20 years and older.

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SUMMARY OF DATA

SUMMARY

- The rates of asthma Emergency Department (ED) visits and hospitalizations are highest in the youngest age groups.
- There has been a decrease over time in asthma hospitalizations but not ED visits. Most of the decline in hospitalizations is attributed to reduction in pediatric hospitalizations.
- In contrast to hospitalizations, the proportion of asthma Intensive Care Unit (ICU) admissions has markedly increased over time. This is driven by the marked increase in pediatric ICU admissions since ICU adult admissions have not changed much.
- The number of invasive ventilations for life-threatening asthma has remained the same over time, while the number of non-invasive ventilations has risen substantially.
- Among insurance status, those who are self-pay are the least likely to be admitted, and those with Medicare are the most likely to be hospitalized from the ED.

CONCLUSION

- Data provides a window that allows the extent of severe or uncontrolled asthma and its trends over time in Queens and Long Island to be understood.
- This report identifies populations who appear most vulnerable to asthma worsening and who are suffering the most from asthma.
- This data can be used to target interventions and allocate preventive resources and asthma programs.
- We recommend that asthma trends be monitored with goals of reducing ED visits, hospitalizations, and life-threatening asthma, in all age groups.





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Additional information supplied by the Asthma Coalition of Long Island and the Asthma Coalition of Queens.

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**The State of Asthma In Nassau, Queens, and Suffolk Counties:
Assessing Trends in Asthma Hospitalizations and Emergency Department Visits**



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