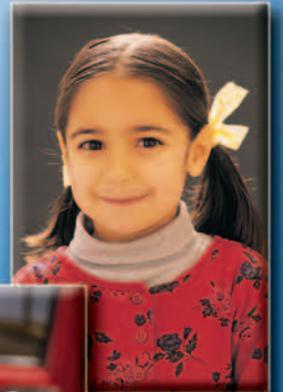


Asthma in New Jersey



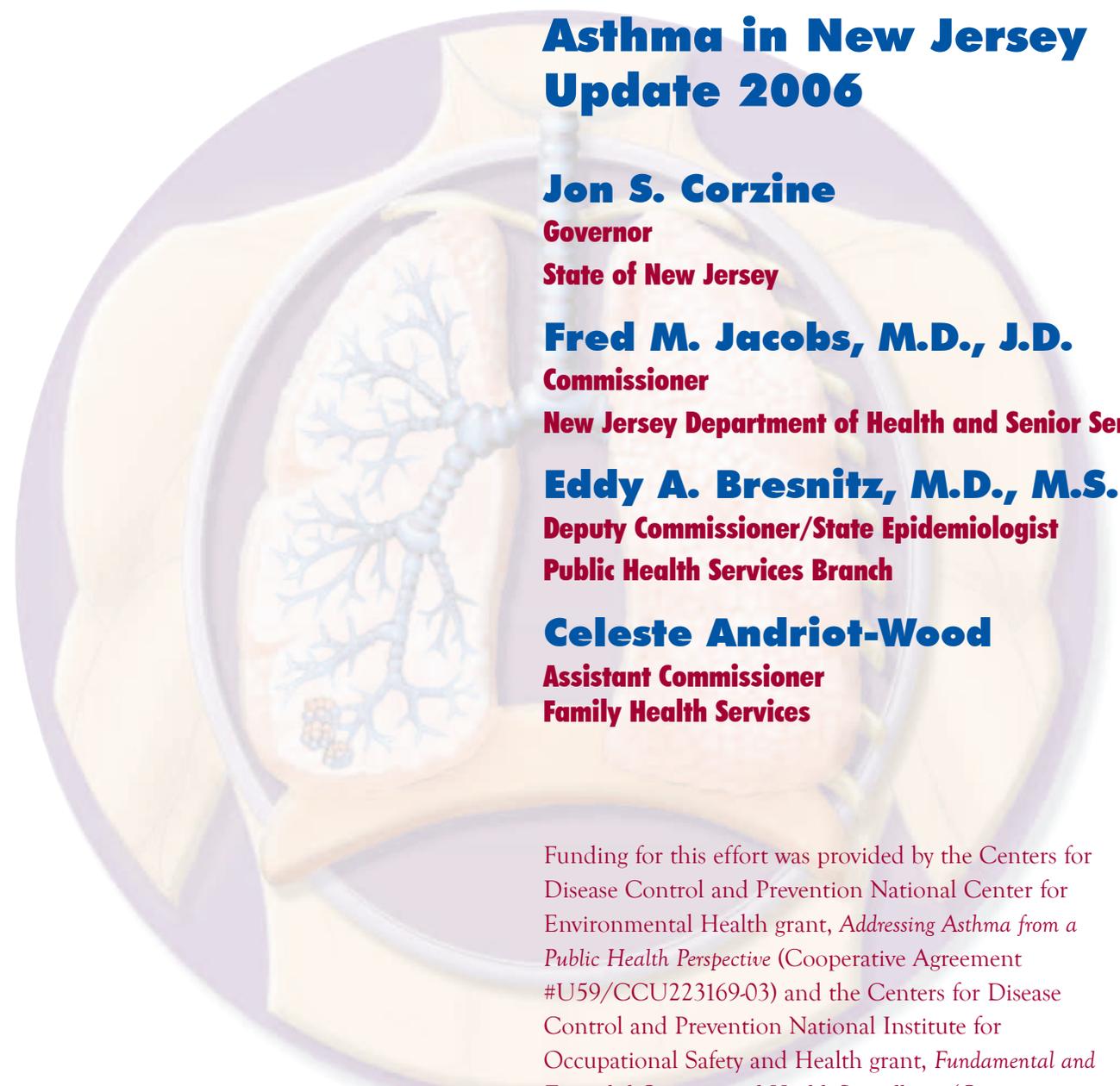
Update 2006



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Governor



Fred M. Jacobs, M.D., J.D.
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Asthma in New Jersey Update 2006

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**New Jersey Asthma Program
August 2006**



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Introduction

Asthma is a chronic respiratory disease that is characterized by inflammation of the airways. People with asthma can experience acute episodes where the small airways constrict. These episodes may result in symptoms such as shortness of breath, coughing, wheezing, chest pain, and chest tightness. Asthma places a tremendous burden on the state of New Jersey as evidenced by its inclusion in “Healthy New Jersey 2010”, which serves as a key public health agenda for the state. This document emphasizes the need to reduce asthma related mortality, hospital admissions, and emergency department visits while reducing the disparities experienced by minority populations.¹ The purpose of this report is to provide statewide surveillance data to assist individuals and organizations in their efforts to meet these goals and to reduce the burden of asthma in New Jersey.

“Asthma in New Jersey Update 2006” presents the most recent statewide data on asthma. It is the third in a series of planned annual updates to the information and data first presented in the report, “Asthma in New Jersey”.² This updated report is divided into two sections. Part 1 presents data on asthma prevalence, risk factors, health care utilization, disease burden, morbidity and mortality. This data represents the efforts of the New Jersey Department of Health and Senior Services (NJDHSS) staff working under the Centers for Disease Control and Prevention cooperative agreement, “Addressing Asthma from a Public Health Perspective.” Part 2 of this report presents occupational asthma data that was collected by NJDHSS staff within the Occupational Health Surveillance Program.

Part 1 Asthma

Prevalence

Asthma History and Prevalence Among New Jersey Adults

The New Jersey Behavioral Risk Factor Survey (NJBRFS) is an annual telephone survey that is partially funded by the Centers for Disease Control and Prevention. Respondents include adults aged 18 years and over who live at home.³ NJBRFS data is derived from surveys that rely on self reported information collected through telephone interviews. Asthma cases reflect only those that have been diagnosed by a health care professional, as reported by respondents.

Since 2000, respondents to the NJBRFS have been asked if they were ever told by a doctor, nurse, or other health professional that they had asthma. According to data from the 2002-2004 NJBRFS, approximately 792,372 New Jersey adults (12% of the adult population) have ever been told by a doctor, nurse, or other health professional that they had asthma.

Respondents, who reported having a history of asthma, were then asked if they still had asthma. The response to this question provides the following information regarding asthma prevalence in New Jersey:

- Approximately 66% of adults, who report a lifetime history of asthma, still have asthma.



- An estimated 509,641 New Jersey adults (8% of the adult population) currently have asthma.
- The estimated number of women with asthma is almost double the estimated number of men with asthma (Table 1).

Table 1

**Estimated Current Prevalence of Asthma Among Adults,
by Age and Gender, New Jersey, 2002-2004**

Gender	Age				Total
	18-34	35-49	50-64	65+	
Male					
Population	920,806	994,123	693,133	458,053	3,091,929
Number Diagnosed	65,528	52,176	30,367	25,692	173,907
Percent Diagnosed	7.1	5.2	4.4	5.6	5.6
95% Confidence Interval	(5.6 – 9.0)	(4.4 – 6.3)	(3.4 – 5.6)	(4.5 – 7.0)	(5.0 – 6.3)
Female					
Population	897,447	1,020,025	738,894	684,057	3,389,518
Number Diagnosed	101,358	100,588	72,415	55,114	335,734
Percent Diagnosed	11.3	9.9	9.8	8.1	9.9
95% Confidence Interval	(9.9 – 12.9)	(8.8 – 11.0)	(8.7 – 11.1)	(6.9 – 9.3)	(9.3 – 10.6)
New Jersey Total					
Population	1,818,253	2,014,148	1,432,027	1,142,111	6,481,447
Number Diagnosed	166,886	152,765	102,781	80,806	509,641
Percent Diagnosed	9.2	7.6	7.2	7.1	7.9
95% Confidence Interval	(8.1 – 10.4)	(6.9 – 8.3)	(6.4 – 8.1)	(6.2 – 8.0)	(7.4 – 8.3)

Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

- In women, asthma prevalence estimates decline with age, from a high of around 11% among those aged 18-34 years to a low of around 8%, among those aged 65 years and over (Table 1).
- Although total self-reported asthma prevalence declines with age, this varies by race/ethnicity. For instance, prevalence increases with age in the Hispanic population (Table 2).
- Asian non-Hispanic adults report the lowest total prevalence rate followed by white non-Hispanic adults (Table 2).

In discussing race/ethnicity, it is important to note that results from the National Health Interview Survey (NHIS) suggest that Puerto Ricans have the highest nationwide prevalence of asthma, with a rate that is 80% higher when compared to non-Hispanic whites. The NHIS data also suggests that Mexicans have the lowest nationwide prevalence of asthma when compared to all other groups. Due to data limitations, “Asthma in New Jersey Update 2006” classifies Puerto Ricans and Mexicans as “Hispanic”, which may conceal important differences among these groups of people. Population size also limits the ability to present data on the American Indian population in New Jersey, which is of note considering that the national data suggests this group has a 30% higher prevalence when compared to non-Hispanic whites.

Table 2
**Estimated Current Prevalence of Asthma Among Adults,
by Age and Race/Ethnicity, New Jersey, 2002-2004**

Race/Ethnicity	Age				Total
	18-34	35-49	50-64	65+	
White, Non-Hispanic					
Population	964,575	1,286,607	997,638	926,656	4,216,635
Number Diagnosed	95,251	92,863	63,989	62,275	317,205
Percent Diagnosed	9.9	7.2	6.4	6.7	7.5
95% Confidence Interval	(8.5 – 11.5)	(6.4 – 8.1)	(5.8 – 7.1)	(5.9 – 7.7)	(7.0 – 8.0)
Black, Non-Hispanic					
Population	236,888	216,943	160,039	95,888	717,153
Number Diagnosed	27,828	23,777	14,584	7,867	74,867
Percent Diagnosed	11.7	11.0	9.1	8.2	10.4
95% Confidence Interval	(8.7 – 15.7)	(8.6 – 13.8)	(6.9 – 11.9)	(5.7 – 11.7)	(9.0 – 12.1)
Asian/Pacific Islander, Non-Hispanic					
Population	155,920	110,140	70,291	17,854	361,641
Number Diagnosed	9,034	2,675	5,231	1,013	18,188
Percent Diagnosed	5.8	2.4	7.4	5.7	5.0
95% Confidence Interval	(3.7 – 8.9)	(1.3 – 4.6)	(2.4 – 20.8)	(1.1 – 24.2)	(3.3 – 7.5)
Other, Non-Hispanic					
Population	44,615	44,121	34,065	18,788	144,643
Number Diagnosed	9,901	4,926	2,614	903	18,600
Percent Diagnosed	22.2	11.2	7.7	4.8	12.9
95% Confidence Interval	(10.1 – 42.1)	(6.2 – 19.2)	(4.0 – 14.3)	(1.2 – 17.0)	(7.9 – 20.1)
Hispanic					
Population	396,629	330,880	150,606	68,772	949,339
Number Diagnosed	24,690	26,978	15,061	6,868	73,649
Percent Diagnosed	6.2	8.2	10.0	10.0	7.8
95% Confidence Interval	(4.6 – 8.4)	(6.3 – 10.4)	(6.5 – 15.0)	(5.5 – 17.4)	(6.5 – 9.2)
NJ Total					
Population	1,798,627	1,988,691	1,412,639	1,127,958	6,389,410
Number Diagnosed	166,703	151,219	101,478	78,927	502,510
Percent Diagnosed	9.3	7.6	7.2	7.0	7.9
95% Confidence Interval	(8.2 – 10.5)	(6.9 – 8.4)	(6.4 – 8.1)	(6.2 – 7.9)	(7.4 – 8.3)

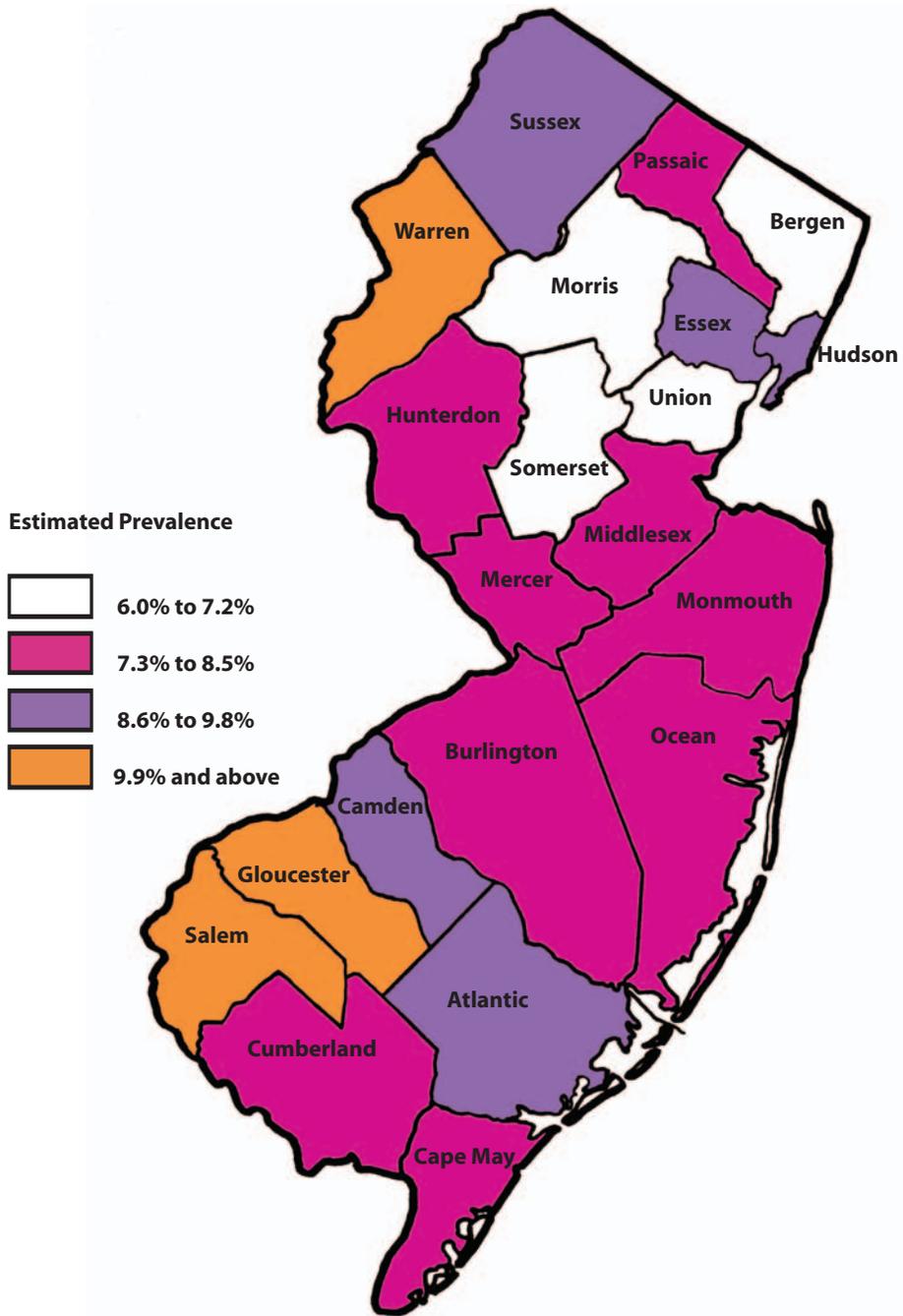
Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics



Adult prevalence estimates by county range from about 6% (Morris County) to about 11% (Warren County) (Figure 1).

Figure 1

**Estimated Current Prevalence of Asthma
Among Adults, by County, New Jersey, 2002 – 2004**

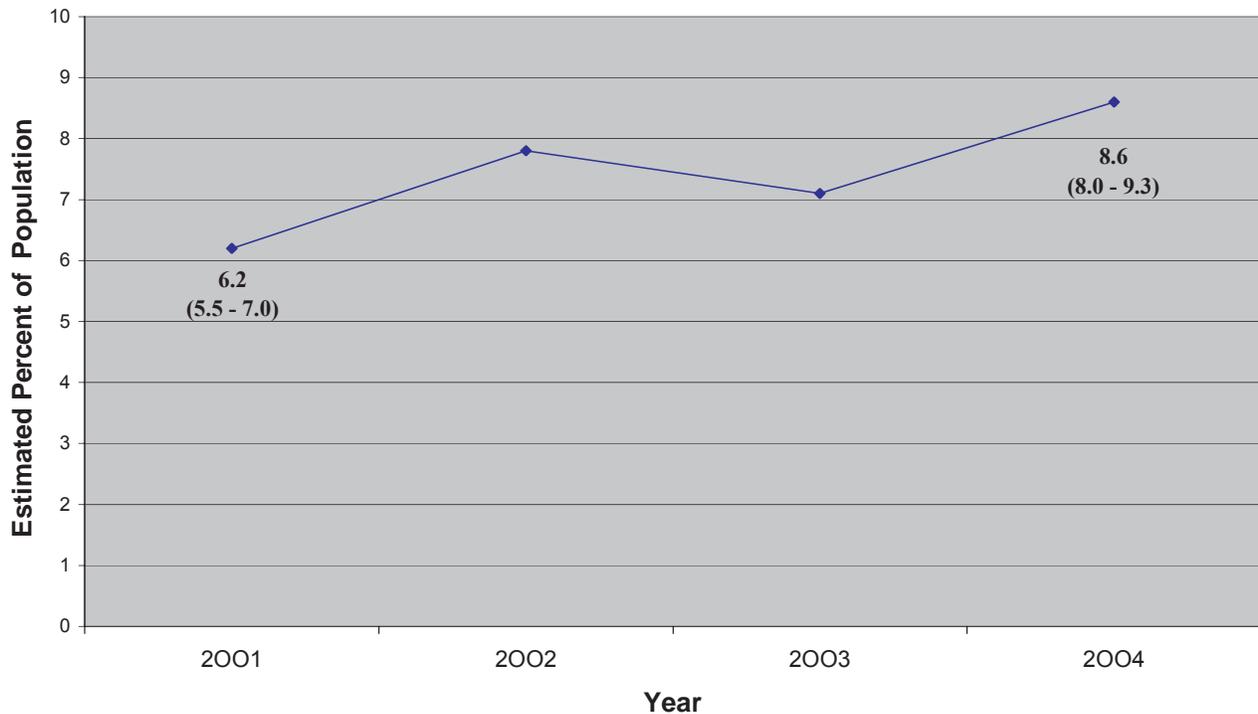


Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

Prevalence estimates for New Jersey adults suggest an overall increase from 2001 to 2004 (Figure 2).

Figure 2

Estimated Current Prevalence of Asthma Among Adults, by Year, New Jersey, 2001-2004



Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

Asthma History and Prevalence Among New Jersey Children

Childhood asthma questions have been included in the NJBRFS since 2002. According to 2002-2004 NJBRFS data:

- Approximately 7% of New Jersey adults live in a household with at least one child who has a history of asthma.
- Approximately 5% of New Jersey adults live in a household with at least one child who currently has asthma.

Unfortunately, pediatric data from NJBRFS is limited. The National Survey of Children's Health (NSCH) was conducted in 2003 and provides some additional information on the health status of children with asthma from 0-17 years of age. This survey was funded by the Maternal and Child Health Bureau of the Health Resources and Services Administration, U.S. Department of Health and Human Services.⁵ Like NJBRFS, this survey relies on self reported information collected through telephone interviews.



Respondents to the 2003 NSCH survey were asked if they were ever told by a doctor or health professional that their child has asthma. The results suggest that about 255,484 New Jersey children (12% of the pediatric population) have a history of asthma.

NSCH respondents who reported having a child with a history of asthma were then asked if their child still has asthma. Approximately 72% of children with a history of asthma still have asthma. This indicates that an estimated 180,159 New Jersey children (about 9% of the pediatric population) currently suffer from asthma, although prevalence varies by gender. Unlike adults, asthma is more common in male children as compared to female children (Table 3).

Table 3		
Estimated Current Prevalence of Asthma Among Children, by Gender, New Jersey, 2003		
Gender	Children With Current Asthma	
	Percent	95% CL
Both Genders	8.5	7.1 – 9.9
Male	10.1	7.9 – 12.3
Female	6.9	5.0 – 8.7

Source: National Survey of Children’s Health, National Center for Health Statistics

Childhood asthma prevalence also varies by race/ethnicity. Hispanic and black children appear to have the highest prevalence of asthma while white children appear to have the lowest prevalence (Table 4).

Table 4		
Estimated Current Prevalence of Asthma Among Children, by Race/Ethnicity, New Jersey, 2003		
Race/Ethnicity	Children With Current Asthma	
	Percent	95% CL
Hispanic	*10.4	6.8 – 14.0
White	7.4	5.7 – 9.0
Black	*12.8	7.4 – 18.2

Source: National Survey of Children’s Health, National Center for Health Statistics

*Sample size <50 interpret with caution

Risk Factors for Asthma

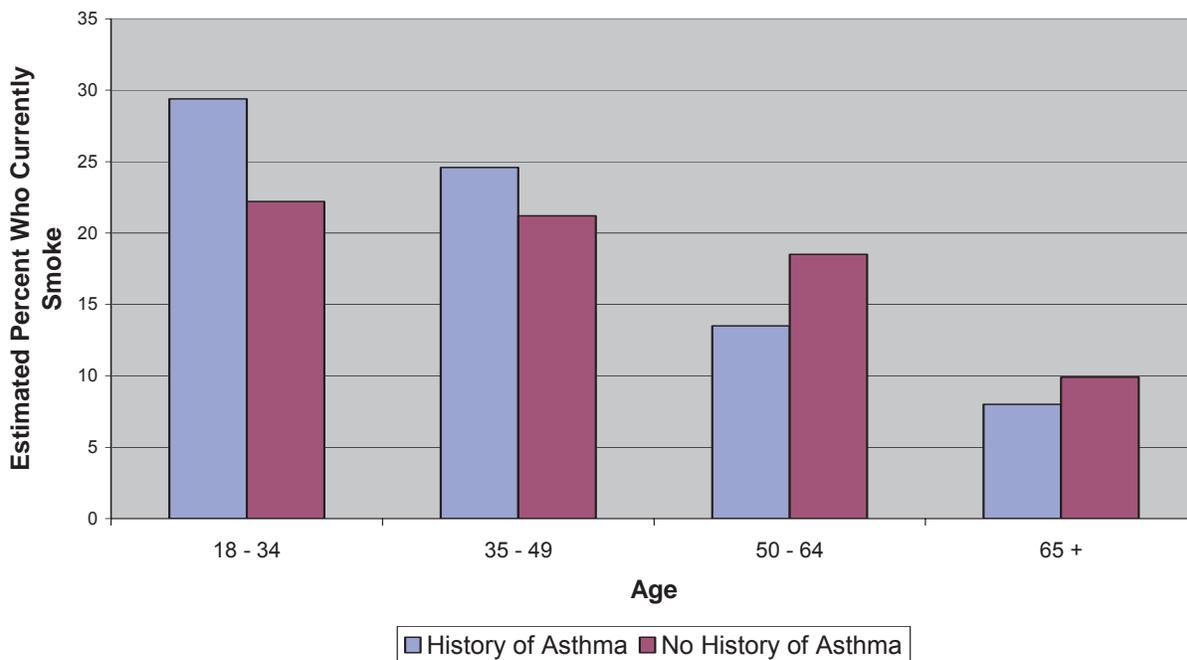
Smoking

Smoking is an environmental factor that can make asthma worse. Despite the medical recommendation that people with asthma stop smoking, there is little difference in the overall rates of smoking between those adults who have a history of asthma and those who do not. The 2002–2004 NJBRFS results indicate that approximately 22% of adults with a history of asthma currently smoke. This compares to about 19% of adults without a history of asthma who currently smoke.

The prevalence of smoking decreases with age regardless of asthma history, although the rate of decline appears to be greater in those people with asthma. Smoking rates are higher in adults 18–49 years with a history of asthma when compared to adults 18–49 years without a history of asthma; however, smoking rates are lower in adults 50 years and older with a history of asthma when compared to adults 50 years and older without a history of asthma (Figure 3).

Figure 3

**Estimated Smoking Prevalence Among Adults
With a History of Asthma and Without a History of Asthma,
by Age, New Jersey, 2002-2004**



Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

The 2002–2004 NJBRFS respondents who reported seeing a health provider in the past 12 months were asked to provide information on the number of visits at which they were advised to quit smoking. The results suggest that people with asthma are counseled significantly more often on smoking than those people without asthma. Approximately 81% of adults with asthma were advised to quit smoking as compared to 69% of adults without asthma (Table 5).



Table 5

**Smoking Cessation Counseling Received by Adults
With Current Asthma and Without Current Asthma, New Jersey, 2002–2004**

Asthma Status	Advised to Quit Smoking in Past Year	
	Percent	95% CL
With Current Asthma	81.4	75.6 – 86.1
Without Current Asthma	69.3	67.1 – 71.4

Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

For people who smoke at home, their children have a greater chance of developing and having exacerbations of asthma. The 2002–2004 NJBRFS results indicate that adults living with a child who has asthma are less likely to allow smoking in the home. About 81% of adults living with a child who has asthma do not allow smoking anywhere in the house as compared to about 72% of adults, who do not live with a child who has asthma.

Flu Immunization

The CDC considers people with asthma as a priority population for flu immunization since asthma increases the risk of flu related complications.⁶ According to the 2002–2004 NJBRFS, annual flu immunization rates in New Jersey are higher among adults with asthma when compared to adults without asthma. However, the estimated percentage of adults with asthma who were immunized in the prior year was only around 41%. This immunization rate increases according to age with the lowest rate of about 29% found among adults with asthma 18–34 years and with the highest rate of about 76% found among adults with asthma 65 years and older (Table 6).

Table 6

**Flu Vaccination in the Past Year Among Adults With Current Asthma
and Without Current Asthma, by Age, New Jersey, 2002-2004**

Age Group	Adults With Current Asthma		Adults Without Asthma	
	Percent	95% CL	Percent	95% CL
All Adults	40.8	37.8 – 43.8	30.8	30.0 – 31.5
18 – 34	28.5	22.5 – 35.3	16.1	14.7 – 17.6
35 – 49	30.0	25.9 – 34.4	19.9	18.8 – 21.2
50 – 64	49.4	43.5 – 55.3	35.2	33.5 – 36.8
65 and Over	75.5	69.3 – 80.7	67.0	65.4 – 68.6

Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

Flu vaccination rates among adults with asthma also vary according to race/ethnicity. Asian/Pacific Islanders report the highest vaccination rate followed by “Other” non-Hispanics. Blacks report the lowest vaccination rate followed by Hispanics (Table 7).

Table 7

Flu Vaccination History Among Adults Who Currently Have Asthma and Adults Without Asthma by Race/Ethnicity, New Jersey, 2002-2004

Race/Ethnicity	Adults With Current Asthma		Adults Without Asthma	
	Percent	95% CL	Percent	95% CL
All Race/Ethnic Groups	40.8	37.8 – 43.8	30.8	30.0 – 31.5
White, Non-Hispanic	42.6	39.2 – 46.0	33.9	33.1 – 34.8
Black, Non-Hispanic	32.8	26.4 – 39.8	24.9	22.4 – 27.5
Asian/Pacific Islander, Non-Hispanic	56.4	36.7 – 74.3	27.6	24.2 – 31.3
Other, Non-Hispanic	50.7	26.9 – 74.3	27.0	21.3 – 33.5
Hispanic	33.6	26.2 – 41.8	22.6	20.4 – 25.0

Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

Weight

A significant association exists between asthma and obesity, but the nature and causality of this relationship are unclear. Results from the 2002-2004 NJBRFS indicate that approximately 34% of New Jersey adults with asthma are obese as compared to approximately 19% of New Jersey adults without asthma who are obese (Table 8).

Table 8

Prevalence of Obesity Among Adults With Current Asthma and Without Current Asthma, New Jersey, 2002–2004

Asthma Status	*Meets NIH Definition of Obese ⁷	
	Percent	95% CL
With Current Asthma	34.4	31.4 – 37.6
Without Current Asthma	19.4	18.7 – 20.1

Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

*Body Mass Index greater than or equal to 30 kg/m²

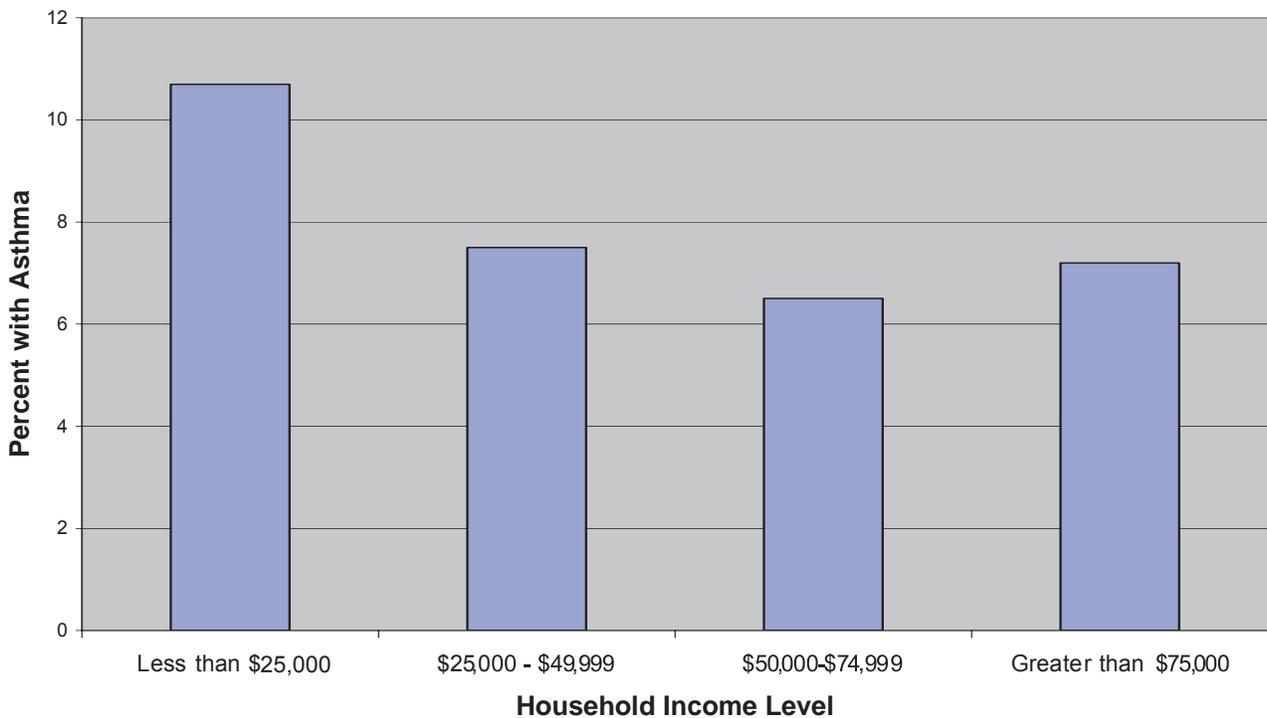
Socioeconomic Status

An association also exists between asthma and socioeconomic status. Self reported asthma prevalence is highest among adults with a reported household income of less than \$25,000 (Figure 4).



Figure 4

Prevalence of Asthma Among Adults by Household Income Level, New Jersey, 2002-2004



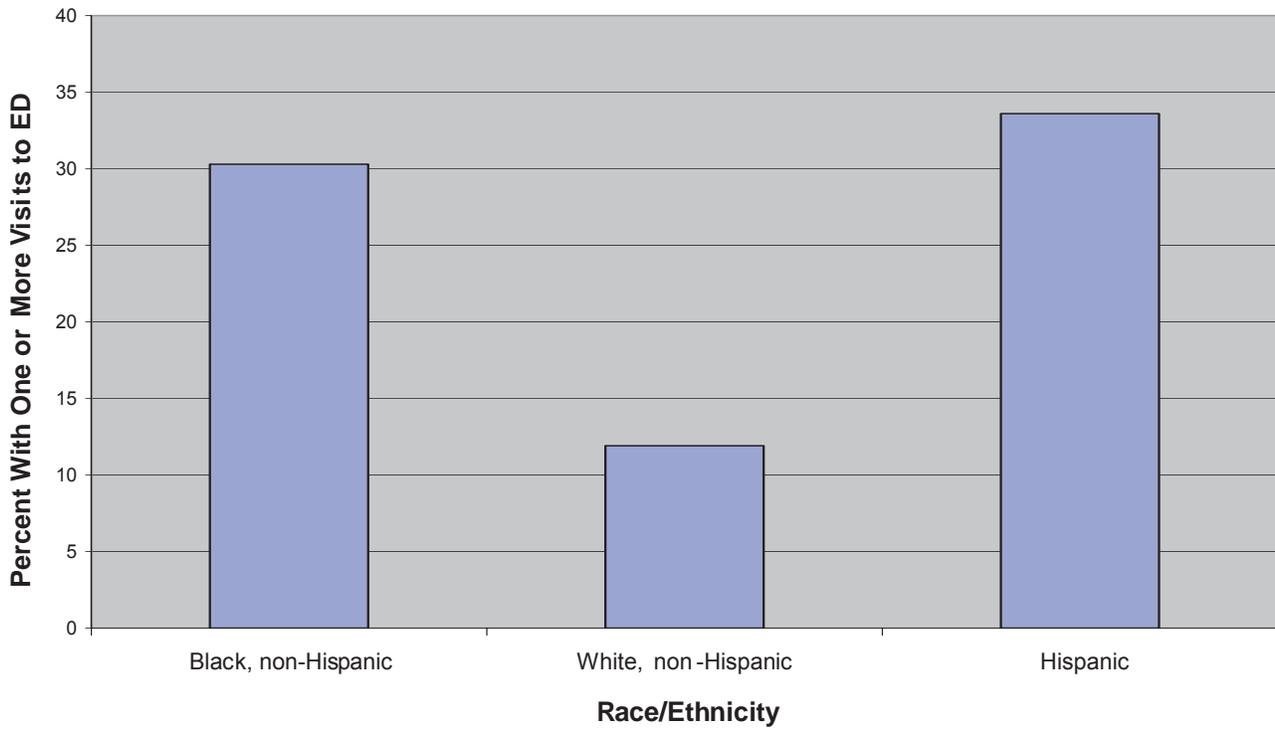
Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

Health Care Utilization

With appropriate management, asthma attacks can be prevented making visits to the emergency department unnecessary. According to data from the 2002-2004 NJBRFS, an estimated 18% of adults with asthma had one or more asthma-related visit to an emergency department in the past year. This estimate varies by race/ethnicity. Black non-Hispanic adults and Hispanic adults with asthma were most likely to report visiting an emergency department while white non-Hispanic adults were least likely to report visiting an emergency department (Figure 5).

Figure 5

Asthma-Related Visits to an ED Among Adults With Current Asthma, by Race/Ethnicity, New Jersey, 2002-2004



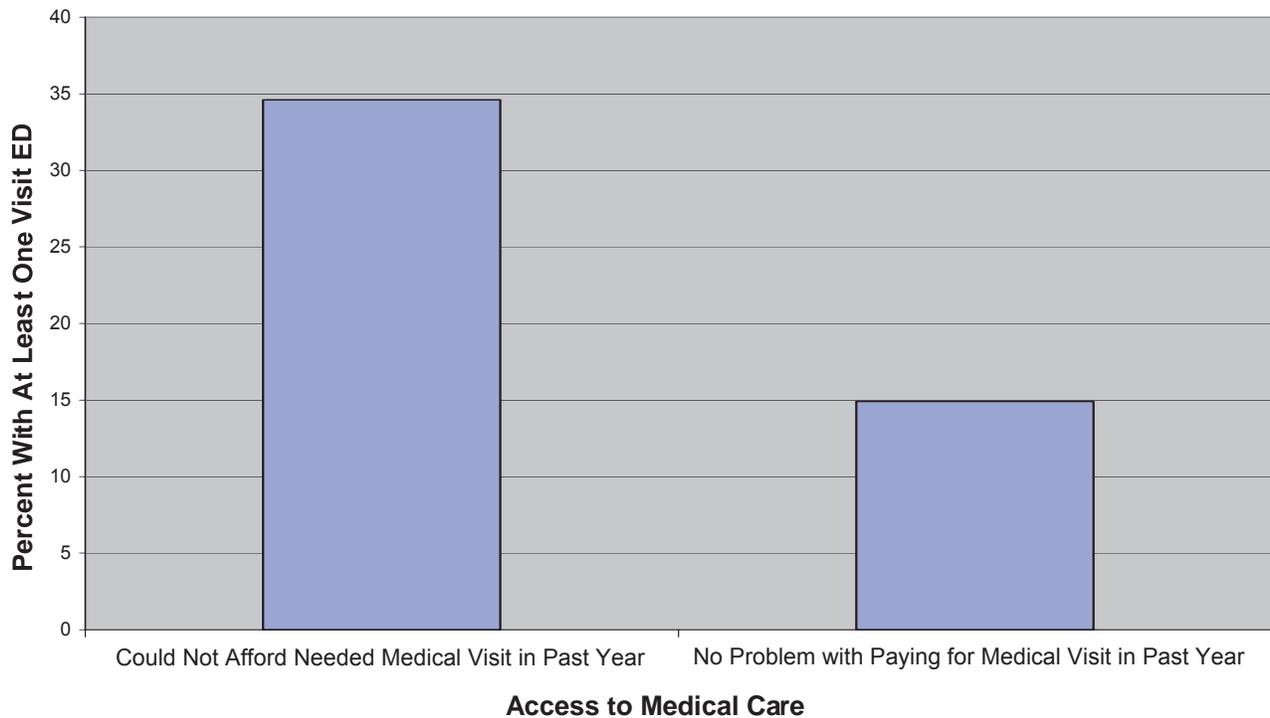
Source: *New Jersey Behavioral Risk Factor Survey*
New Jersey Department of Health and Senior Services, Center for Health Statistics

Respondents of the 2002–2004 NJBRFS were asked if there was a time in the past 12 months when they needed to see a doctor but could not because of cost. Adults with asthma who answered yes to this question were more likely to report having asthma-related visits to an emergency department (Figure 6).



Figure 6

**Adult Use of an Emergency Department for Asthma,
by Access to Medical Care, New Jersey, 2002-2004**

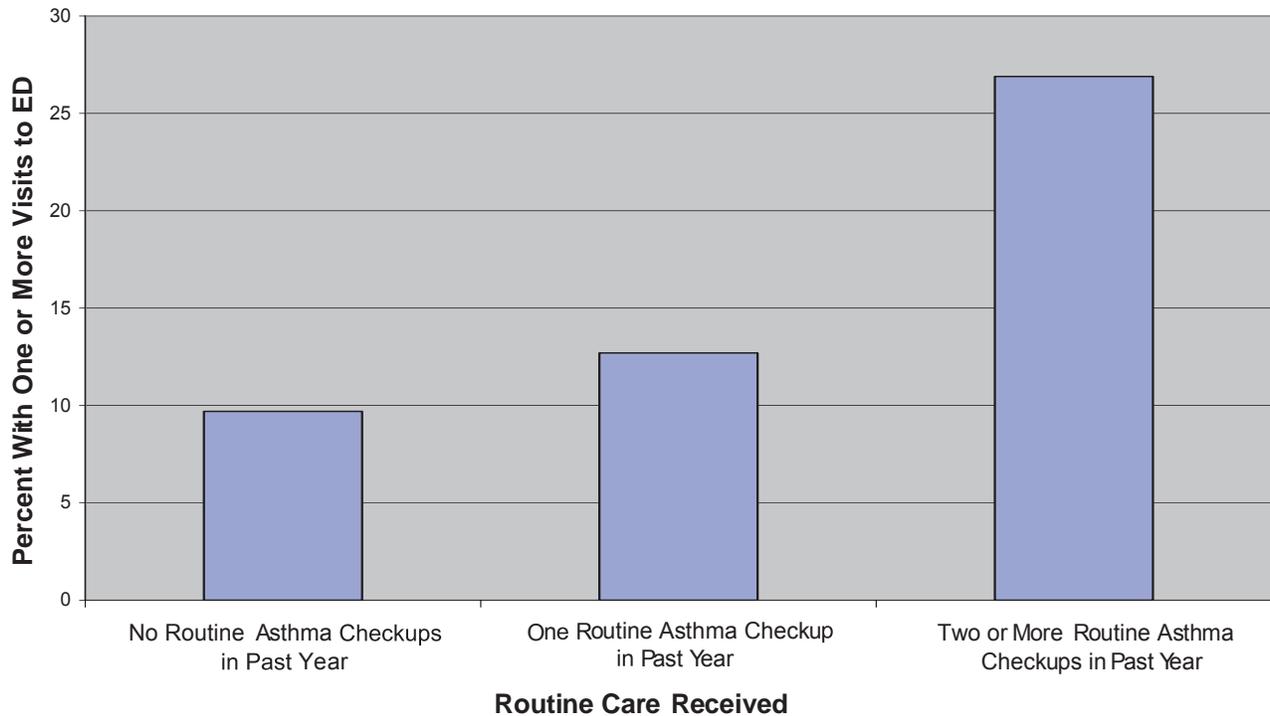


Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

The 2002–2004 NJBRFS results indicate a positive association between the number of routine asthma checkups and visiting an ED for asthma. Adults who did not receive routine care for asthma were less likely to visit an emergency department as compared to adults who received routine care for asthma (Figure 7). The nature and causality of this relationship are unclear.

Figure 7

Asthma-Related Visits to an ED Among Adults With Current Asthma, by Routine Care Received, New Jersey, 2002 - 2004



Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

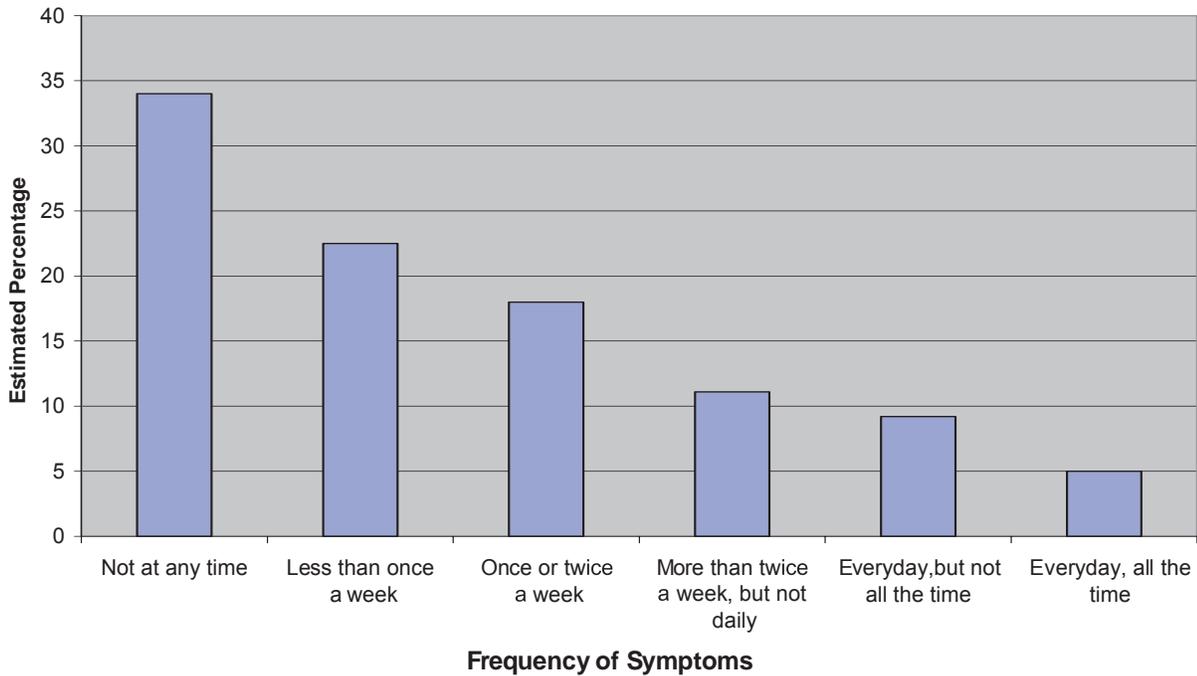
Disease Burden

Symptoms of asthma include coughing, wheezing, shortness of breath, chest tightness and phlegm production in the absence of a respiratory infection. The 2002–2004 NJBRFS asked people with asthma how often they experienced symptoms of asthma in the past 30 days. The results indicate that about 66% of adults with current asthma experience asthma symptoms at least once a month and approximately 43% of adults with current asthma experience asthma related symptoms at least once a week (Figure 8).



Figure 8

Frequency of Asthma Symptoms in the Past 30 Days for Adults With Current Asthma, New Jersey, 2002-2004



Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

Respondents on the 2002–2004 NJBRFS with asthma were also asked if they had an episode of asthma or asthma attack in the past year. About half of the adults with asthma indicated that they experienced such an episode or attack. This rate was significantly lower in those 65 years and older (Table 9).

Table 9		
Asthma Episodes/Asthma Attacks in Past Year Among Adults Who Currently Have Asthma, by Age, New Jersey, 2002-2004		
Age	Adults With Current Asthma	
	Percent	95% CL
All Age Groups	50.2	47.0 – 53.3
18 – 34	51.8	45.1 – 58.5
35 – 49	57.9	52.8 – 62.8
50 – 64	50.0	43.8 – 56.2
65 +	32.1	26.4 – 38.3

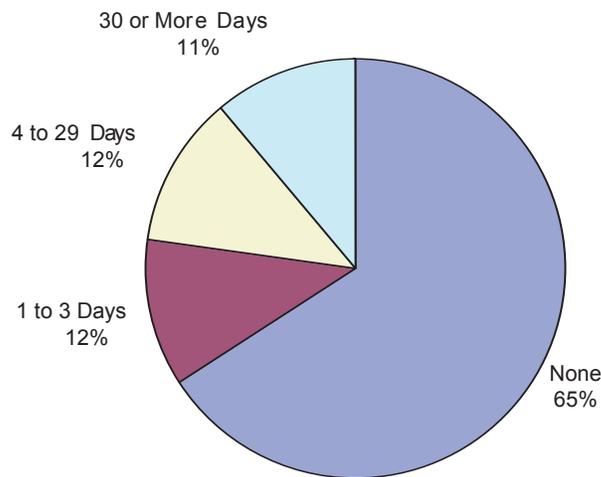
Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

The 2002–2004 NJBRFS asked adults with asthma how many days in the past year they were unable to work or carry out usual activities because of asthma. The results indicate that about 34% of adults with asthma

experienced asthma-related disability for at least one day in the prior year and 11% of adults with asthma experienced asthma-related disability for 30 or more days in the prior year (Figure 9).

Figure 9

**Asthma Related Disability in the Past Year,
Among Adults With Current Asthma,
New Jersey, 2002-2004**



Source: New Jersey Behavioral Risk Factor Survey
New Jersey Department of Health and Senior Services, Center for Health Statistics

Respondents to the 2003 NSCH survey who reported having a child with a history of asthma were asked if their child had an episode of asthma or an asthma attack during the past year. Approximately 46% reported that their child experienced such an episode or attack. The respondents were also asked to describe the burden that their child's asthma placed on the family. About 23% indicated that the child's asthma affects the family a great deal or a medium amount (Table 10).

Table 10		
Disease Burden Among Children With Asthma, New Jersey, 2003		
Burden of Child's Asthma on the Family	Estimated Percent	95% CL
Great deal or medium amount	*23.0	15.4 – 30.7
Little or not at all	77.0	69.3 – 84.6

Source: National Survey of Children's Health, National Center for Health Statistics

*Sample size <50 interpret with caution

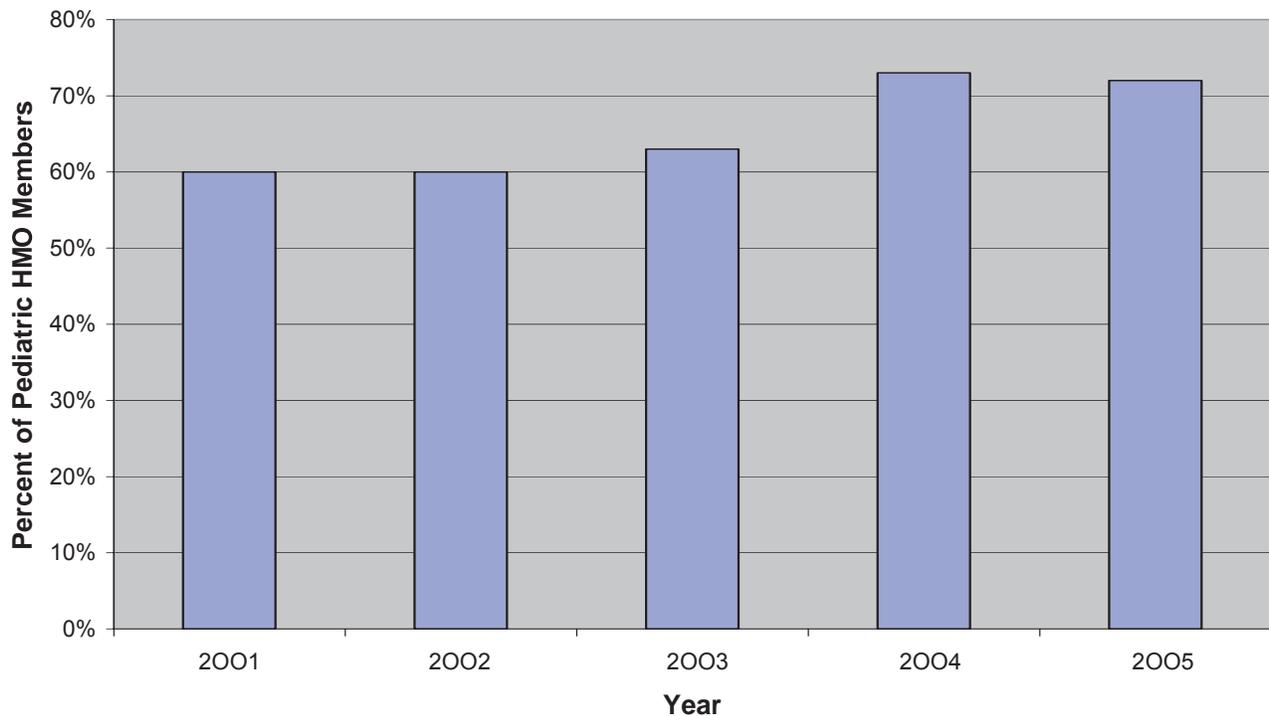


Morbidity

With appropriate therapies, long term control of persistent asthma can be achieved, resulting in a decrease in hospitalizations and emergency department visits for treatment. NJDHSS annually issues the New Jersey HMO Report Card. In order to measure the quality of care provided by HMOs to children with asthma, this report looks at the percent of pediatric members aged 5-17 years with persistent asthma who received appropriate therapy in the past year. Appropriate therapy is defined as receiving at least one dispensed prescription for asthma medication. The annual report cards suggest that the quality of care is improving for pediatric HMO members with asthma. The 2005 HMO Report Card indicates that 72% of pediatric HMO members with persistent asthma received appropriate therapy for asthma. This represents a 20% overall improvement from the 2001 HMO Report Card, which indicated that only 60% of pediatric HMO members with persistent asthma received appropriate therapy for asthma (Figure 10).⁵

Figure 10

Pediatric HMO Members With Persistent Asthma Who Received Appropriate Medication for Asthma, New Jersey, 2001-2005



Source: New Jersey HMO Performance Reports, 2001-2005
New Jersey Department of Health and Senior Services, Office of Health Care Quality Assessment

An Asthma Action Plan is a written plan that is developed by the doctor and a person with asthma (or the parent of a child with asthma) to guide the day-to-day management of asthma and its symptoms. Having an Asthma

Action Plan may help prevent asthma emergencies, reduce emergency department visits, and prevent hospitalizations by educating patients to recognize and respond to the early warning signs of an impending asthma episode and to avoid "triggers" or environmental factors that make asthma worse. The New Jersey Administrative Code (N.J.S.A. 18A:40-12.3) calls for an Asthma Action Plan to be present in school health records when a child has asthma. According to the Childhood Weight Status Survey Background Report, the estimated percentage of children with asthma who also have an Asthma Action Plan is 49%.⁹ An Asthma Action Plan form can be obtained from the Pediatric Adult Asthma Coalition of New Jersey (PACNJ) website www.pacnj.org or by calling 866-PACNJ-88 (866-722-6588).

In New Jersey, the primary source of statewide population-based information regarding asthma morbidity has been hospital discharge data.¹⁰ In this report, the terms hospital discharge and hospitalization are used interchangeably. The data presented here includes information on the number of hospitalizations rather than the number of individuals who are hospitalized. This is important to note considering that repeat admissions account for a considerable percentage of all asthma hospitalizations.¹¹

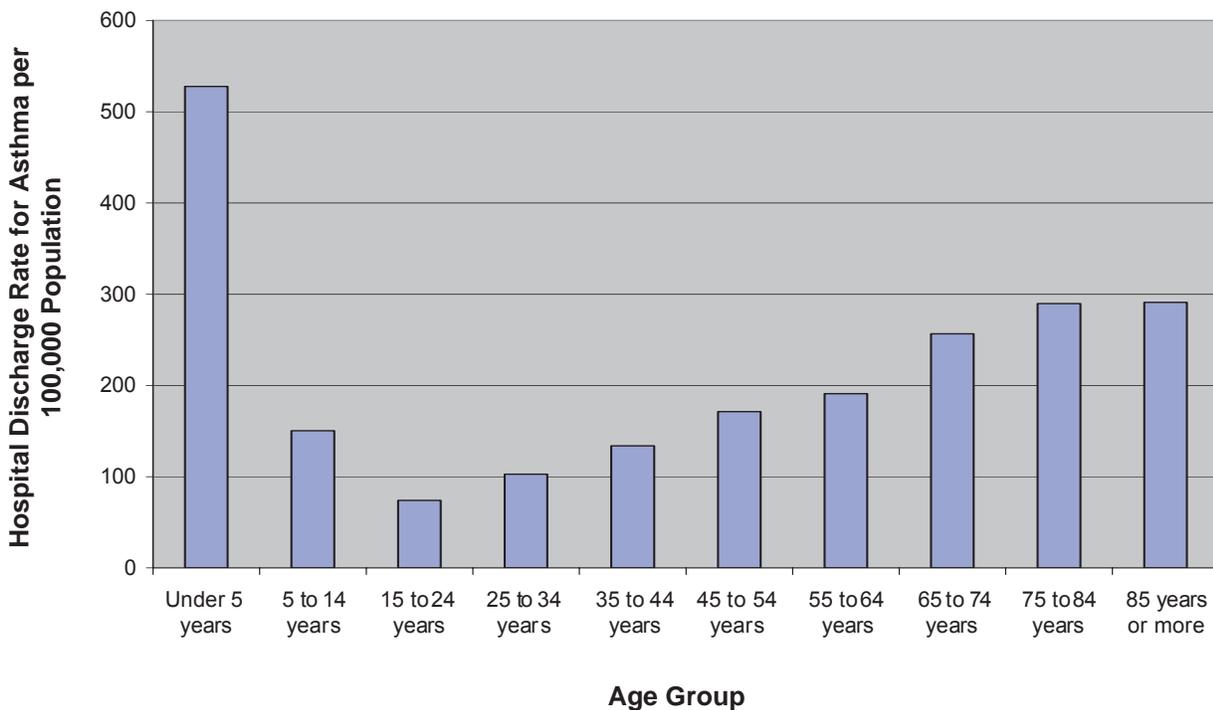
Hospital discharge data have been collected and released annually from 1985 through 2004. During that time, hospitalizations with a primary diagnosis of asthma have annually represented roughly 1 of every 100 hospitalizations, or approximately 14,000 per year. The 2004 hospital discharge data demonstrate that:

- Patients without health care coverage represent about 14% of asthma hospitalizations while patients without health care coverage represent about 9% of all hospitalizations.
- Children are more likely to be hospitalized with asthma than adults.
- The highest hospitalization rate for asthma by age is for children under five years of age.
- Rates for asthma hospitalizations by age are at their lowest point for the 15 to 24 year age group, but rise for each consecutive age grouping thereafter (Figure 11).



Figure 11

**Hospital Discharge Rates for Asthma by Age Group,
New Jersey, 2004**



Source: New Jersey Department of Health and Senior Services, 2004 New Jersey Hospital Discharge File (UB-92). ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

In the pediatric population, males 0–13 years of age have higher hospitalization rates for asthma when compared to females 0–13 years of age. This trend shifts in the 14–17 year age grouping where males have lower hospitalization rates for asthma when compared to females. Black children and American Indian/Alaskan Native children have the highest hospitalization rates for asthma while white children and Asian/Pacific Islander children have the lowest hospitalization rates for asthma. Hispanic children are more than one and a half times more likely than non-Hispanic children to be hospitalized for asthma (Table 11).

In adults, women continue to have higher hospitalization rates for asthma when compared to men. This is not surprising considering that asthma is much more prevalent among female adults. As is the case with children, black and American Indian/Alaskan Native adults have the highest hospitalization rates for asthma while white and Asian/Pacific Islander adults have the lowest hospitalization rates for asthma. Hispanic adults are more than one and a half times as likely as non-Hispanic adults to be hospitalized for asthma (Table 12, page 22).

Table 11

**Pediatric Hospital Discharge Rates for Asthma,
by Race, Ethnicity, Gender and Age, New Jersey, 2004**

Race/Ethnicity	Males				Females				Total
	Under 5	5 to 9	10 to 13	14 to 17	Under 5	5 to 9	10 to 13	14 to 17	
White									
Discharges	983	309	159	71	474	189	105	99	2,389
Population	215,097	222,684	189,762	188,936	206,618	211,566	180,172	179,350	1,594,185
Rate	457.0	138.8	83.8	37.6	229.4	89.3	58.3	55.2	149.9
Black									
Discharges	627	280	157	71	353	154	112	90	1,844
Population	56,437	52,205	46,192	45,108	54,617	50,249	44,766	43,940	393,514
Rate	1,111.0	536.3	339.9	157.4	646.3	306.5	250.2	204.8	468.6
Asian/Pac. Islander									
Discharges	47	13	**	**	25	7	7	**	105
Population	24,087	22,907	17,835	16,944	23,275	22,751	16,862	15,635	160,296
Rate	195.1	56.8	**	**	107.4	30.8	41.5	**	65.5
American Indian /Alaskan Native									
Discharges	36	5	**	**	9	**	**	**	60
Population	641	1,288	1,073	996	695	1,299	1,087	985	8,064
Rate	5,616.2	388.2	**	**	1,295.0	**	**	**	744.0
Other									
Discharges	297	80	36	12	141	51	21	17	655
Population	N/A								
Rate	N/A								
Unknown									
Discharges	58	13	8	**	18	11	6	5	122
Population	N/A								
Rate	N/A								
*Ethnicity									
Non-Hispanic									
Discharges	1,258	481	248	111	650	275	185	149	3,357
Population	232,010	246,215	212,646	211,982	223,960	235,280	202,767	201,372	1,766,232
Rate	542.2	195.4	116.6	52.4	290.2	116.9	91.2	74.0	190.1
Hispanic									
Discharges	529	147	79	36	256	95	34	42	1,218
Population	64,252	52,869	42,216	40,002	61,245	50,585	40,120	38,538	389,827
Rate	823.3	278.0	187.1	90.0	418.0	187.8	84.7	109.0	312.4
Unknown									
Discharges	261	72	37	14	114	44	33	25	600
Population	N/A								
Rate	N/A								
Total Discharges	2,048	700	364	161	1,020	414	252	216	5,175
Total Population	296,262	299,084	254,862	251,984	285,205	285,865	242,887	239,910	2,156,059
Total Rate	691.3	234.0	142.8	63.9	357.6	144.8	103.8	90.0	240.0

Source: New Jersey Department of Health and Senior Services, 2004 New Jersey Hospital Discharge File (UB-92).

ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis, Rates per 100,000 population.

Hospital discharge events may include subsequent readmissions for the same individual.

A Hispanic person may be of any race.

*Due to a coding error, a significant number of non-Hispanics were counted as Hispanics in New Jersey hospital discharge statistics starting in 2001 or 2002. The ethnicity-specific statistics in this table are therefore subject to revision.

**Rates are not calculated when sample size <5



Table 12

**Adult Hospital Discharge Rates for Asthma
by Race, Ethnicity, Gender and Age, New Jersey, 2004**

Race/Ethnicity	Males			Females			Total
	18 to 34	35 to 64	65 +	18 to 34	35 to 64	65 +	
White							
Discharges	287	789	555	571	2,228	1,615	6,045
Population	687,825	1,392,496	395,971	652,488	1,437,829	579,763	5,146,372
Rate	41.7	56.7	140.2	87.5	155.0	278.6	117.5
Black							
Discharges	214	614	129	361	1,328	360	3,006
Population	157,108	216,258	41,032	162,486	259,026	66,124	902,034
Rate	136.2	283.9	314.4	222.2	512.7	544.4	333.2
Asian/Pac. Islander							
Discharges	9	19	28	5	34	40	135
Population	84,615	127,846	18,206	85,201	132,162	22,671	470,701
Rate	10.6	14.9	153.8	5.9	25.7	176.4	28.7
American Indian /Alaskan Native							
Discharges	**	14	7	5	30	16	76
Population	5,135	6,192	977	4,093	5,919	1,397	23,713
Rate	**	226.1	716.5	122.2	506.8	1,145.3	320.5
Other							
Discharges	66	179	67	92	394	174	972
Population	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Unknown							
Discharges	10	47	28	32	93	65	275
Population	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
*Ethnicity							
Non-Hispanic							
Discharges	409	1,166	636	716	2,812	1,711	7,450
Population	728,948	1,519,874	425,598	727,949	1,609,243	626,613	5,638,225
Rate	56.1	76.7	149.4	98.4	174.7	273.1	132.1
Hispanic							
Discharges	132	320	100	232	875	306	1,965
Population	205,735	222,918	30,588	176,319	225,693	43,342	904,595
Rate	64.2	143.6	326.9	131.6	387.7	706.0	217.2
Unknown							
Discharges	49	176	78	118	420	253	1,094
Population	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Rate	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Discharges	590	1,662	814	1,066	4,107	2,270	10,509
Total Population	934,683	1,742,792	456,186	904,268	1,834,936	669,955	6,542,820
Total Rate	63.1	95.4	178.4	117.9	223.8	338.8	160.6

Source: New Jersey Department of Health and Senior Services, 2004 New Jersey Hospital Discharge File (UB-92).

ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis, Rates per 100,000 population.

Hospital discharge events may include subsequent readmissions for the same individual.

A Hispanic person may be of any race.

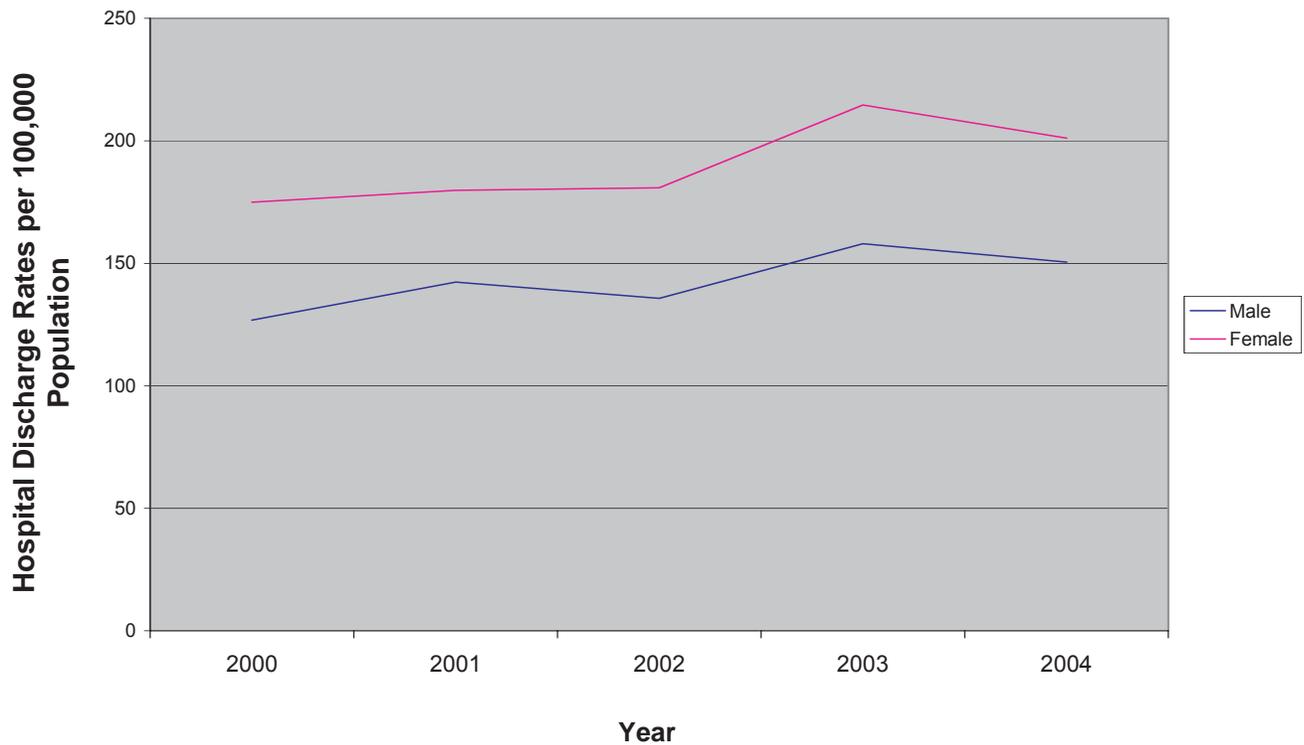
*Due to a coding error, a significant number of non-Hispanics were counted as Hispanics in New Jersey hospital discharge statistics starting in 2001 or 2002. The ethnicity-specific statistics in this table are therefore subject to revision.

**Rates are not calculated when sample size <5

Hospitalizations for asthma have demonstrated an overall increase during the past four years, which may be partially attributable to the increase in prevalence that was observed during this time period (Figure 12).

Figure 12

**Age Adjusted Hospital Discharge Rates for Asthma,
by Gender, New Jersey, 2000-2004**



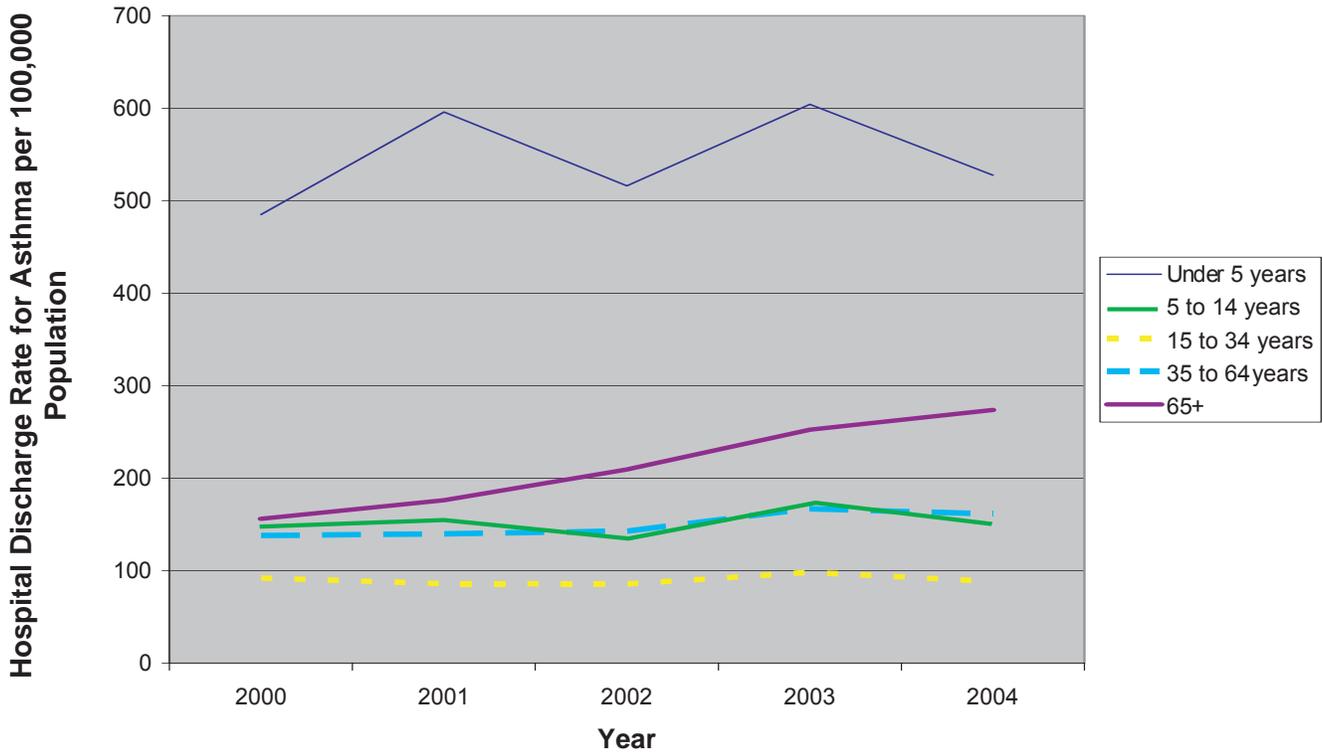
Source: New Jersey Department of Health and Senior Services, 2000-2004 New Jersey Hospital Discharge File (UB-92). ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

From 2000 to 2004, the largest overall increase in asthma hospitalization rates was observed in residents aged 65 years and older (Figure 13).



Figure 13

Age Specific Hospitalization Rates for Asthma, New Jersey 2000-2004

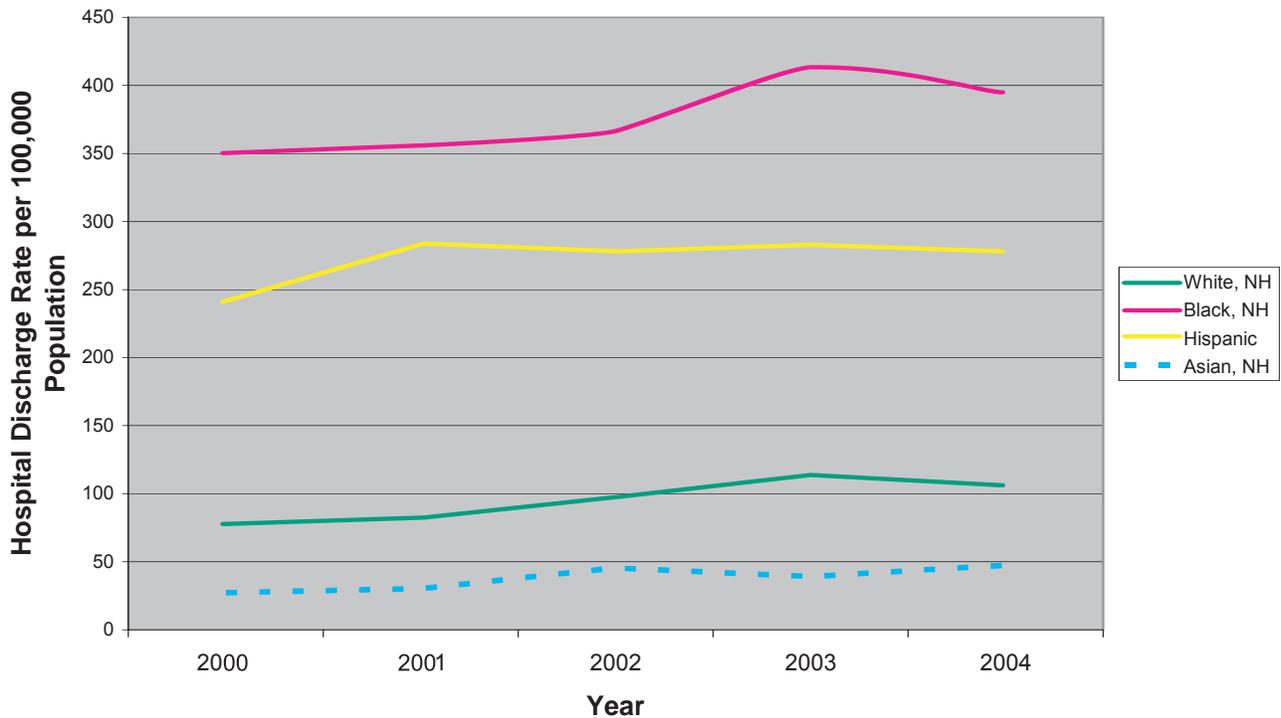


Source: New Jersey Department of Health and Senior Services, 2000-2004 New Jersey Hospital Discharge File (UB-92). ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

An overall increase in asthma hospitalizations was observed among all racial/ethnic groups from 2000 to 2004. Hispanic and black residents continued to experience disproportionate hospitalization rates for asthma during this time period (Figure 14).

Figure 14

Age Adjusted Hospital Discharge Rates for Asthma, by Race/Ethnicity, New Jersey, 2000-2004



Source: New Jersey Department of Health and Senior Services, 2000-2004 New Jersey Hospital Discharge File (UB-92). ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

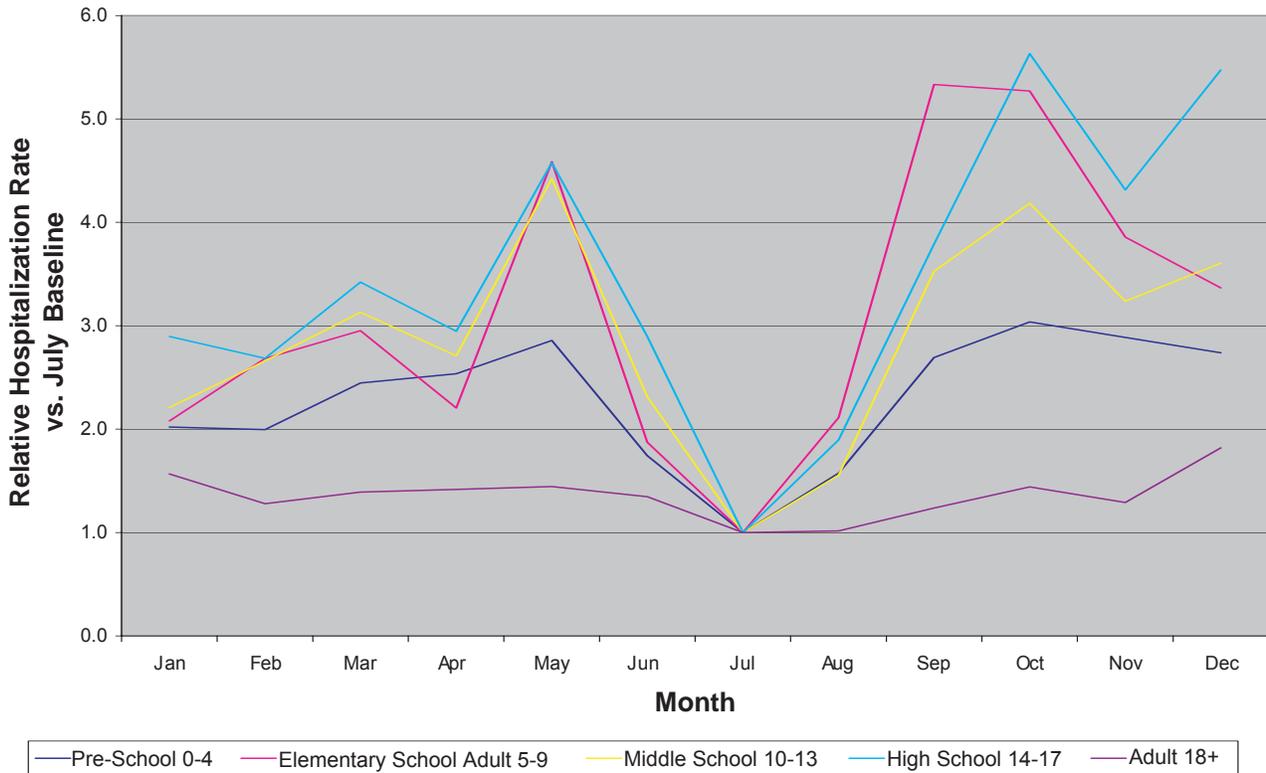
*Due to a coding error, a significant number of non-Hispanics were counted as Hispanics in New Jersey hospital discharge statistics starting in 2001 or 2002. The ethnicity-specific statistics in this table are therefore subject to revision.

A review of the hospital discharge data by month reveals that the number of overnight hospital stays for asthma is lowest for all age groups in July. The seasonal peak for asthma is demonstrably higher for children than for adults. In figure 15, each line shows the relative average 2003–2004 hospitalization rate for each month versus the July average for that age group. This approach allows us to compare the monthly patterns for each age group on the same graph. For example, in elementary school children, the August discharge rate is about twice as high and the September rate is almost five and a half times as high when compared to the July rate.



Figure 15

Seasonal Hospital Discharges for Asthma, New Jersey 2003-2004

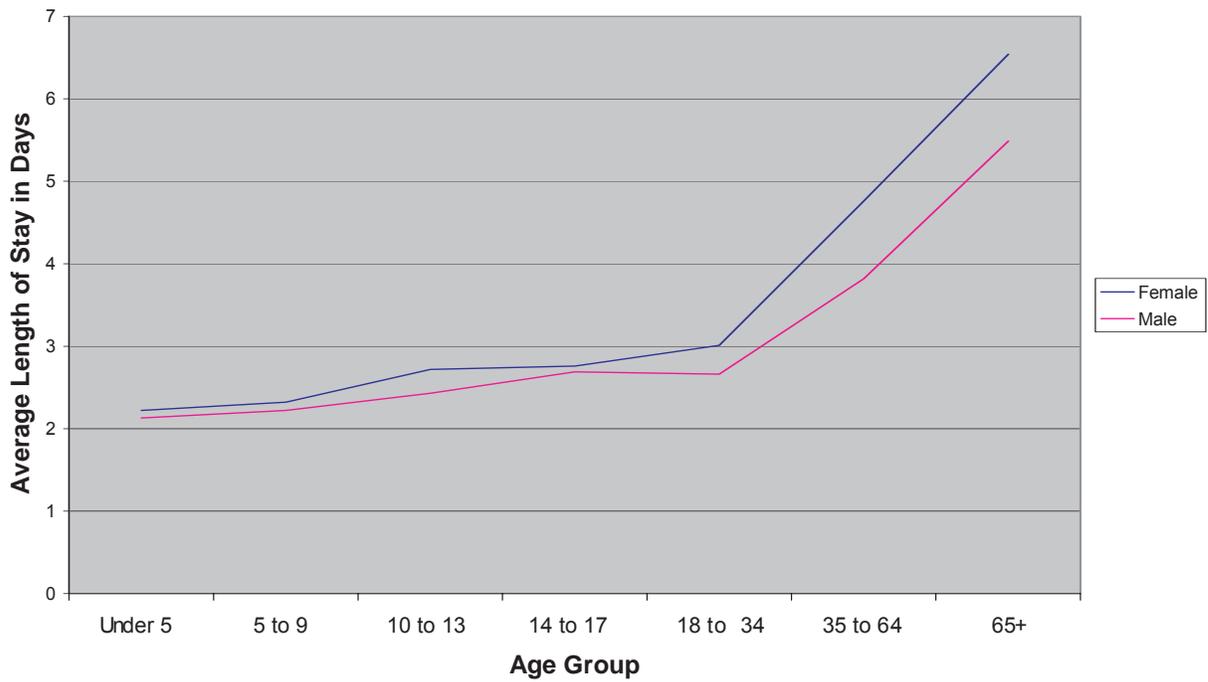


Source: New Jersey Department of Health and Senior Services, 2003-2004 New Jersey Hospital Discharge File (UB-92). ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

Length of stay for asthma hospitalizations varies by age and gender. Children under 5 years have the shortest hospital stay on average (about 2 days) while adults 65 years and over have the longest average hospital stay (about 6 days). Among all age groups, females have a longer average length of stay when compared to men (Figure 16).

Figure 16

**Average Length of Stay for Asthma Hospitalizations,
by Age and Gender, New Jersey, 2004**



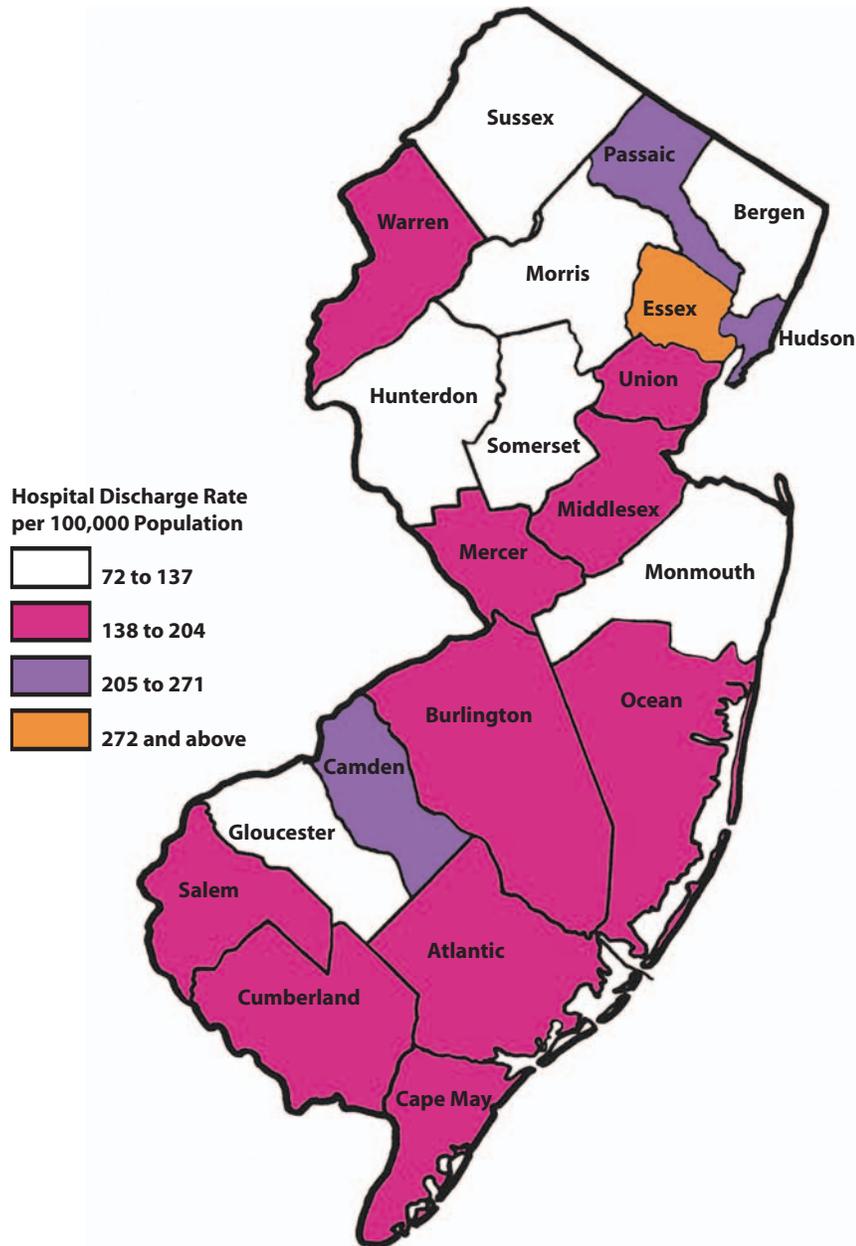
Source: New Jersey Department of Health and Senior Services, 2004 New Jersey Hospital Discharge File (UB-92). ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

Asthma hospital discharge rates vary widely among the 21 counties of New Jersey. The highest age adjusted rates are seen in Essex, Hudson, Camden, and Passaic counties (Figure 17). The rates reflected in Figure 17 are not adjusted for race or ethnicity, which may account for some of the geographical differences observed.



Figure 17

Average Age Adjusted Hospital Discharge Rates for Asthma, by County, New Jersey, 2001-2004



Source: New Jersey Department of Health and Senior Services, 2001-2004 New Jersey Hospital Discharge File (UB-92). ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

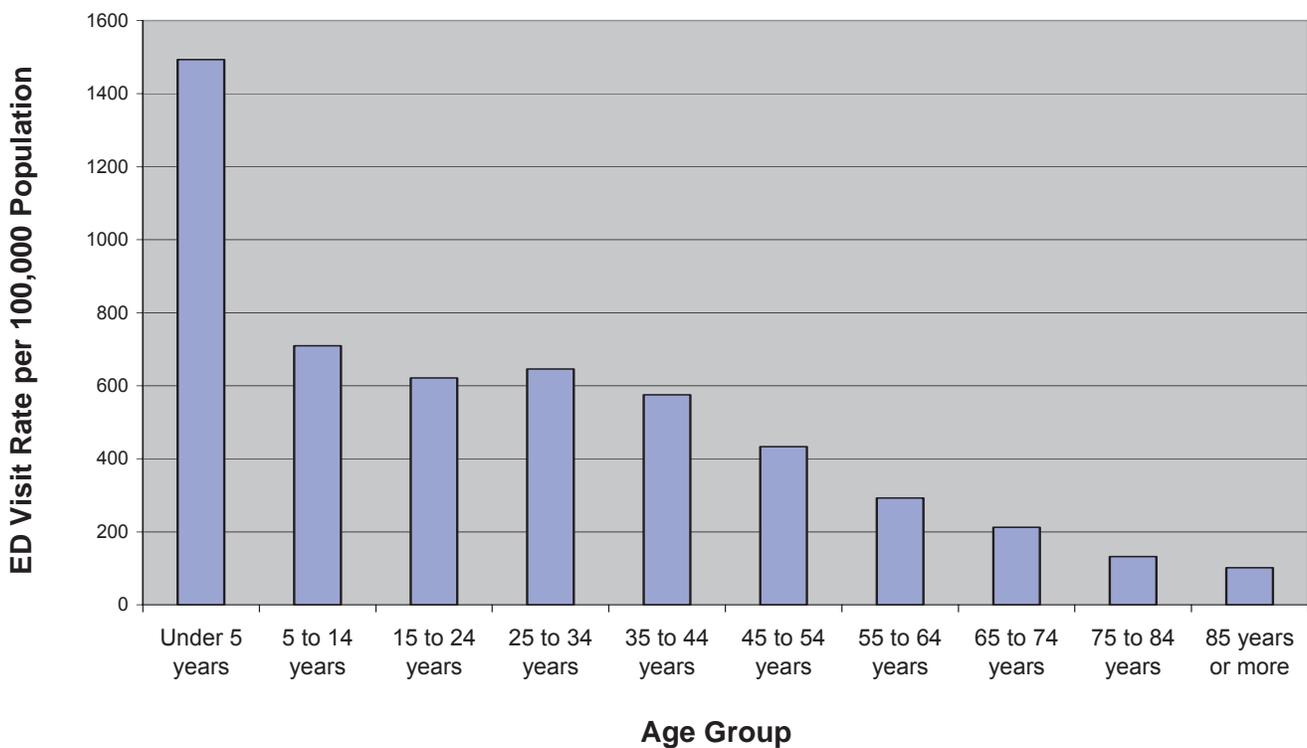
In 2004, New Jersey began collecting data for emergency department visits.¹² Like hospital discharge data, emergency department data is presented on the number of visits rather than the number of individuals who visit the emergency department. The initial year of ED visit reporting indicates that there were 49,366 annual

emergency department visits with a primary diagnosis of asthma representing about 567 visits per 100,000 population. The data demonstrate that:

- Similar to all emergency department visits, patients without health care coverage represent about 25% of asthma emergency department visits.
- Asthma accounts for about 2% of all ED visits among the total population and asthma accounts for about 3% of all ED visits among the pediatric population.
- The highest ED visit rate for asthma by age is for children under five years.
- Asthma ED visit rates decrease with age (Figure 18).

Figure 18

**Emergency Department Visits for Asthma,
by Age Group, New Jersey, 2004**



Source: New Jersey Department of Health and Senior Services, 2004 New Jersey Emergency Department File.
ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary discharge diagnosis.

Similar to hospitalization trends, males 0–13 years of age have higher ED visit rates for asthma when compared to females 0–13 years of age, while in the 14–17 year age grouping males have lower ED visit rates for asthma when compared to females 14–17 years. Black and American Indian/Alaskan Native children have the highest ED visit rates for asthma while white and Asian/Pacific Islander children have the lowest ED visit rates for asthma. Hispanic children are more than one and a half times as likely as non-Hispanic children to visit the emergency department for asthma (Table 13).



Table 13
Pediatric ED Visits for Asthma, by Race, Ethnicity, Gender, and Age,
New Jersey, 2004

Race/Ethnicity	Males				Females				Total
	Under 5	5 to 9	10 to 13	14 to 17	Under 5	5 to 9	10 to 13	14 to 17	
White									
Visits	2,419	1,388	897	515	1,244	761	582	722	8,528
Population	215,097	222,684	189,762	188,936	206,618	211,566	180,172	179,350	1,594,185
Rate	1,124.6	623.3	472.7	272.6	602.1	359.7	323.0	402.6	534.9
Black									
Visits	1,881	1,044	640	405	1,134	648	418	432	6,602
Population	56,437	52,205	46,192	45,108	54,617	50,249	44,766	43,940	393,514
Rate	3,332.9	1,999.8	1,385.5	897.8	2,076.3	1,289.6	933.7	983.2	1,677.7
Asian/Pacific Islander									
Visits	70	45	19	9	40	24	7	6	220
Population	24,087	22,907	17,835	16,944	23,275	22,751	16,862	15,635	160,296
Rate	290.6	196.4	106.5	53.1	171.9	105.5	41.5	38.4	137.2
American Indian/Alaskan Native									
Visits	105	27	20	**	38	20	8	11	233
Population	641	1,288	1,073	996	695	1,299	1,087	985	8,064
Rate	16,380.7	2,096.3	1,863.9	**	5,467.6	1,539.6	736.0	1,116.8	2,889.4
Other									
Visits	693	400	172	118	388	197	102	97	2,167
Population	NA								
Rate	NA								
Unknown									
Visits	388	195	157	65	281	143	80	101	1,410
Population	NA								
Rate	NA								
Ethnicity									
Non-Hispanic									
Visits	3,350	1,933	1,184	725	1,854	1,144	786	911	11,887
Population	232,010	246,215	212,646	211,982	223,960	235,280	202,767	201,372	1,766,232
Rate	1443.9	785.1	556.8	342.0	827.8	486.2	387.6	452.4	673.0
Hispanic									
Visits	1,329	722	407	226	740	388	227	254	4,293
Population	64,252	52,869	42,216	40,002	61,245	50,585	40,120	38,538	389,827
Rate	2068.4	1365.6	964.1	565.0	1208.3	767.0	565.8	659.1	1101.3
Unknown									
Visits	877	444	314	165	531	261	184	204	2,980
Population	NA								
Rate	NA								
Total Visits	5,556	3,099	1,905	1,116	3,125	1,793	1,197	1,369	19,160
Total Population	296,262	299,084	254,862	251,984	285,205	285,865	242,887	239,910	2,156,059
Total Rate	1,875.4	1,036.2	747.5	442.9	1,095.7	627.2	492.8	570.6	888.7

Source: New Jersey Department of Health and Senior Services, 2004 Emergency Department File.

ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary diagnosis.

Rates per 100,000 population.

Visits may include subsequent events for the same individual.

A Hispanic person may be of any race.

**Rates are not calculated when sample size <5

Similar to hospitalization trends, women have higher ED visit rates for asthma when compared to men. Black and American Indian/Alaskan Native adults have the highest ED visit rates for asthma while white and Asian/Pacific

Islander adults have the lowest ED visit rates for asthma. Hispanic adults are about two times as likely as non-Hispanic adults to visit the emergency department for asthma (Table 14).

Table 14							
Adult ED Visits for Asthma, by Race, Ethnicity, Gender, and Age, New Jersey, 2004							
Race/Ethnicity	Males			Females			Total
<i>Race</i>	18 to 34	35 to 64	65 +	18 to 34	35 to 64	65 +	
White							
Visits	2,152	2,403	361	3,730	4,867	729	14,242
Population	687,825	1,392,496	395,971	652,488	1,437,829	579,763	5,146,372
Rate	312.9	172.6	91.2	571.7	338.5	125.7	276.7
Black							
Visits	1,665	2,385	160	2,491	3,536	260	10,497
Population	157,108	216,258	41,032	162,486	259,026	66,124	902,034
Rate	1,059.8	1,102.8	389.9	1,533.1	1,365.1	393.2	1,163.7
Asian /Pacific Islander							
Visits	35	47	13	53	77	24	249
Population	84,615	127,846	18,206	85,201	132,162	22,671	470,701
Rate	41.4	36.8	71.4	62.2	58.3	105.9	52.9
American Indian /Alaskan Native							
Visits	45	57	6	51	63	9	231
Population	5,135	6,192	977	4,093	5,919	1,397	23,713
Rate	876.3	920.5	614.1	1,246.0	1,064.4	644.2	974.1
Other							
Visits	479	672	88	685	1,041	113	3,078
Population	NA	NA	NA	NA	NA	NA	NA
Rate	NA	NA	NA	NA	NA	NA	NA
Unknown							
Visits	222	492	41	456	627	71	1,909
Population	NA	NA	NA	NA	NA	NA	NA
Rate	NA	NA	NA	NA	NA	NA	NA
<i>Ethnicity</i>							
Non-Hispanic							
Visits	2,986	3,872	415	4,896	6,571	764	19,504
Population	728,948	1,519,874	425,598	727,949	1,609,243	626,613	5,638,225
Rate	409.6	254.8	97.5	672.6	408.3	121.9	345.9
Hispanic							
Visits	1,050	1,183	156	1,540	2,171	296	6,396
Population	205,735	222,918	30,588	176,319	225,693	43,342	904,595
Rate	510.4	530.7	510.0	873.4	961.9	682.9	707.1
Unknown							
Visits	562	1,001	98	1,030	1,469	146	4,306
Population	NA	NA	NA	NA	NA	NA	NA
Rate	NA	NA	NA	NA	NA	NA	NA
Total Visits	4,598	6,056	669	7,466	10,211	1,206	30,206
Total Population	934,683	1,742,792	456,186	904,268	1,834,936	669,955	6,542,820
Total Rate	491.9	347.5	146.7	825.6	556.5	180.0	461.7

Source: New Jersey Department of Health and Senior Services, 2004 Emergency Department File. ICD-9-CM Code: Asthma 493.0 – 493.9 as the primary diagnosis. Rates per 100,000 population.



Asthma ED visit rates vary widely among the 21 counties of New Jersey. The highest age adjusted visit rate in 2004 was in Essex County (about 1,370 visits per 100,000 population) while the lowest age adjusted visit rate was observed in Hunterdon County (about 215 visits per 100,000 population).

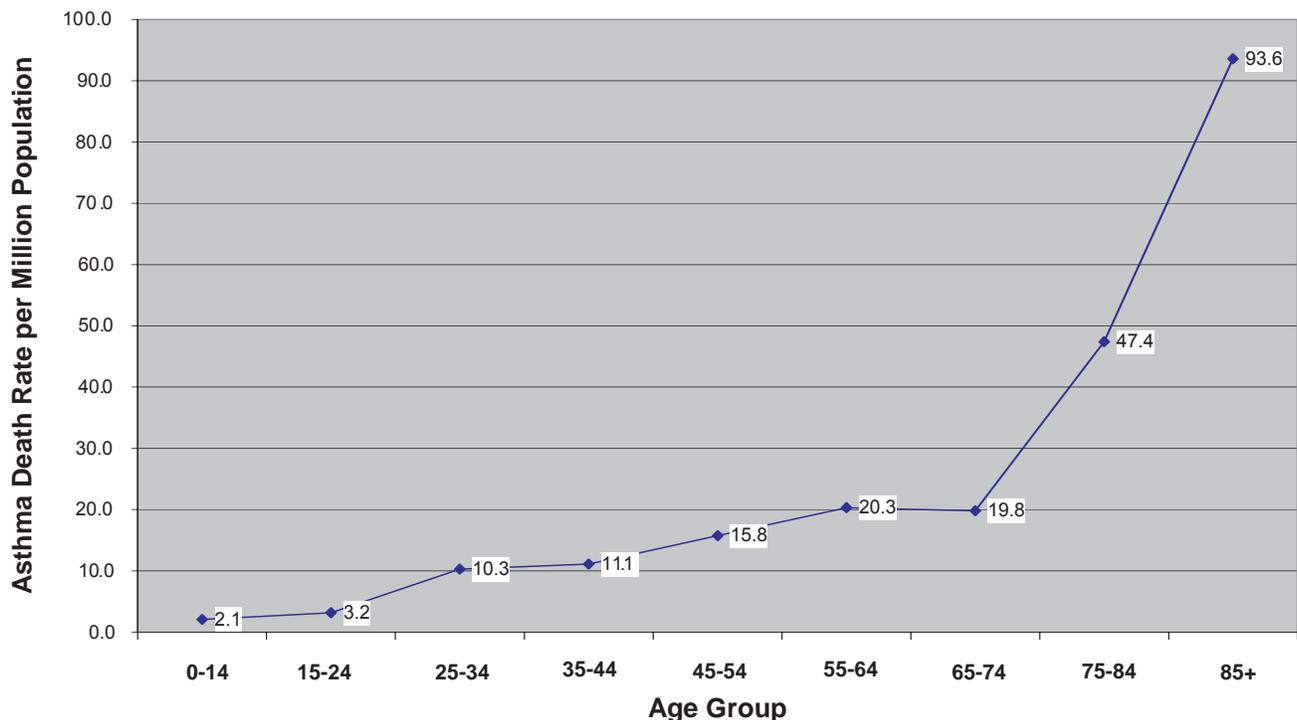
Mortality

Death from asthma is uncommon. In New Jersey, the numbers of deaths and death rates have decreased gradually during the last decade. There were 1,838 deaths due to asthma between 1989 and 2003 (about 15 per 1,000,000 population, annualized). For the years 2001 through 2003, the age-adjusted asthma mortality rate for New Jersey was about 13 per 1,000,000 population.

- Although asthma prevalence rates decline with age, the risk of death from asthma increases substantially with age, with the 85-plus population having the highest rates (Figure 19).

Figure 19

Rate of Deaths with Asthma as Underlying Cause, by Age Group, New Jersey, 2001-2003

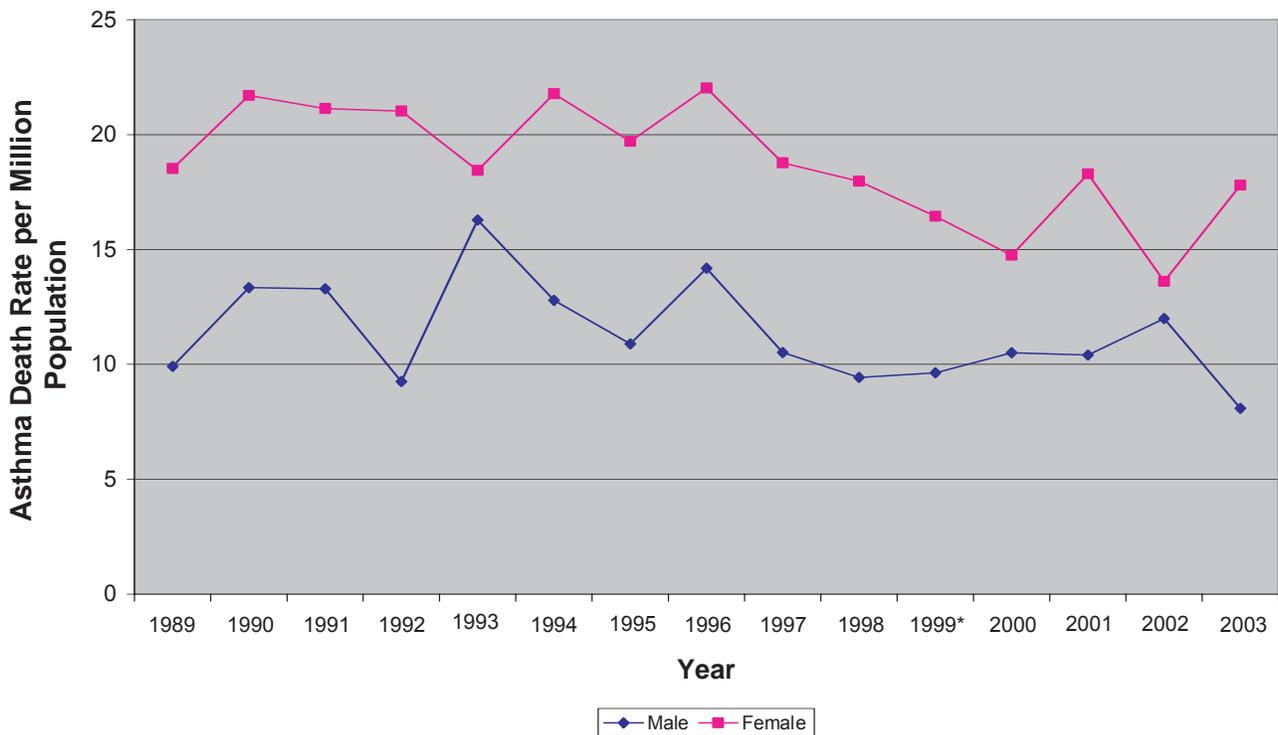


Source: New Jersey Multiple Cause of Death Files 2001-2003¹³ as provided by the National Center for Health Statistics to the New Jersey Department of Health and Senior Services, Center for Health Statistics
 Rates represent deaths of New Jersey residents
 A death from asthma is defined as a death with an underlying cause of death code in the ICD-10 range J45-46

- Between 1989 and 2003, the New Jersey death rate for asthma was higher among females than among males for most years (Figure 20). This difference is likely attributable to deaths due to asthma primarily occurring in adults and asthma being much more prevalent among female adults as compared to male adults.

Figure 20

Rates of Death with Asthma as Underlying Cause by Gender, New Jersey, 1989-2003



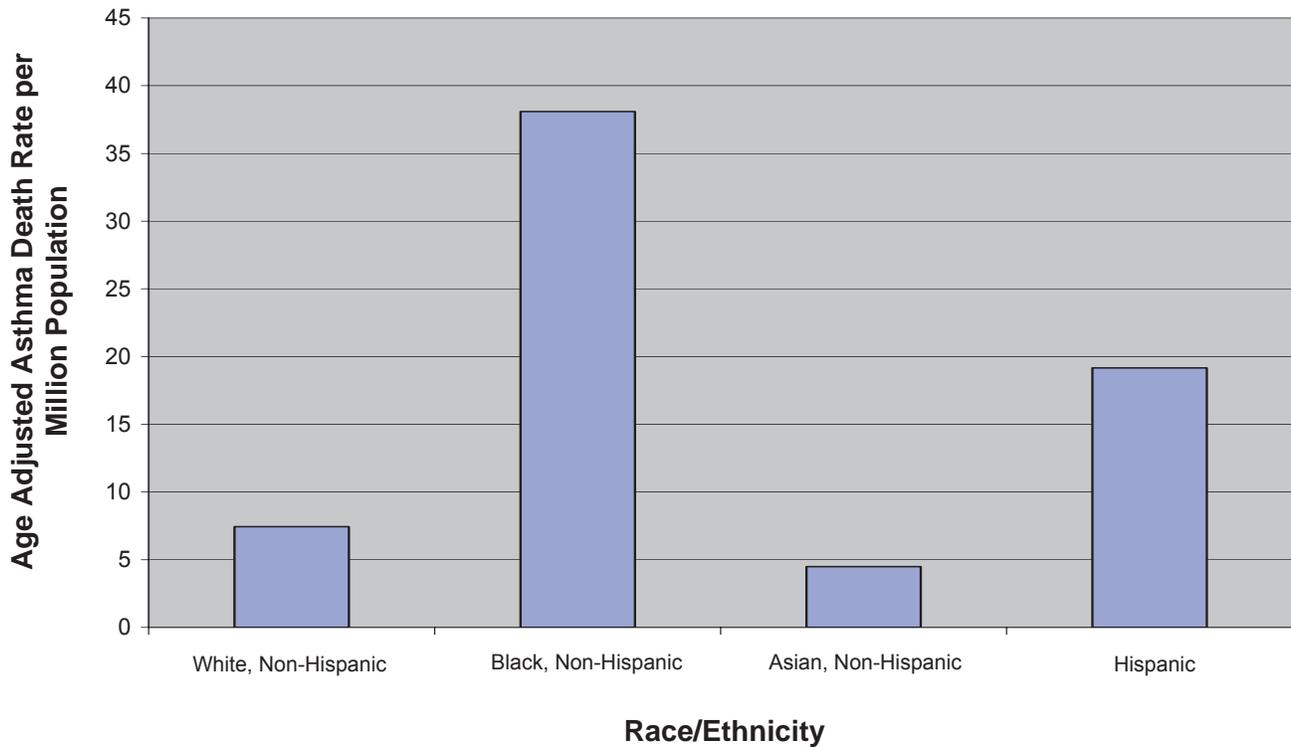
Source: New Jersey Multiple Cause of Death Files 1989-2003¹³ as provided by the National Center for Health Statistics to the New Jersey Department of Health and Senior Services, Center for Health Statistics
 Rates represent deaths of New Jersey residents
 A death from asthma is defined as a death with an underlying cause of death code in the range 493.0 – 493.9 (ICD-9) or J45-46 (ICD-10).
 *Deaths through 1998 were coded using ICD-9 while deaths occurring during and after 1999 were coded using ICD-10. Use caution when interpreting trends.

Even though the number of deaths from asthma is relatively small, black non-Hispanic New Jersey residents have an asthma mortality rate more than five times as high as their white non-Hispanic counterparts (Figure 21).



Figure 21

Age Adjusted Rates of Death with Asthma as an Underlying Cause, by Race/Ethnicity, New Jersey, 2001-2003



Source: New Jersey Multiple Cause of Death Files 2001-2003¹³ as provided by the National Center for Health Statistics to the New Jersey Department of Health and Senior Services, Center for Health Statistics
 Rates represent deaths of New Jersey residents
 A death from asthma is defined as a death with an underlying cause of death code J45-46 (ICD-10).

Part 2 Work-related Asthma

Prevalence

Work-related asthma has become the most common work-related lung disease in the United States.¹⁴

- Nationally, an estimated 15% of adult asthma is attributable to occupational factors.¹⁵
- Based on this estimate, approximately 69,364 adults in New Jersey may have asthma caused or aggravated by their job.

Currently, the most reliable estimate of the prevalence of work-related asthma in New Jersey is derived from the New Jersey Behavioral Risk Factor Survey (NJBRFS).

Two new standardized questions on work-related asthma (WRA) were included in the NJBRFS in 2003 and 2004. The following two questions were asked of adult respondents who reported having ever had asthma:

Q1. Were you ever told by a doctor or other medical person that your asthma was related to any job you ever had?

Q2. Did you ever tell a doctor or other medical person that your asthma was related to any job you ever had?

According to the estimates derived from both 2003 and 2004 NJBRFS survey data, among adults with current asthma in New Jersey, 49,458 (10.7%) of these asthma cases may be work-related (See Table 15). The proportion of asthma estimated to be attributable to work is higher among Hispanic adults (17.3%) than white non-Hispanic adults (9.2%). The estimated prevalence of work-related asthma cases is higher among females (31,365) than males (18,092).

Table 15						
Estimated Prevalence of Work-Related Asthma* Among New Jersey Adults With Asthma by Gender and Race						
NJBRFS 2003-2004						
	Asian	Black	White	Other	Hispanic	All Races
Male						
No. with Asthma	6,288	16,367	99,089	5,217	18,990	147,501
Number Work-related*	0	2,071	9,477	613	5,221	18,092
Percent Work-related*	0	11.4	9.6	11	24.9	12.6
95 % CI		(5.6, 21.8)	(6.8, 13.5)	(1.4, 55.1)	(14.3, 39.6)	(9.5, 16.5)
Female						
No. with Asthma	8,982	47,309	199,168	8,818	47,686	314,926
Number Work-related*	291	6,157	18,178	974	4,964	31,365
Percent Work-related*	4.6	13.0	9.3	12.8	10.7	9.8
95 % CI	(.6, 26.7)	(8.2, 20.0)	(7.3, 11.9)	(4.6, 31.1)	(6.0, 18.4)	(8.1, 11.8)
NJ Total						
No. with Asthma	15,270	63,676	298,258	14,036	66,676	462,427
Number Work-related*	291	8,228	27,655	1,587	10,185	49,458
Percent Work-related*	2.5	13.5	9.2	13.6	17.3	10.7
Estimated 95 % CI	(0.3, 15.6)	(9.4, 19.2)	(7.5, 11.2)	(5.5, 29.8)	(11.4, 25.5)	(9.1, 12.6)
<p>*Adult asthma related to work (responded affirmatively to either or both of the two NJBRFS questions: see pg. 35)</p> <p>Note: - Age adjusted to the 2000 U.S. Standard Population</p> <p>- Prevalence estimates by racial/ethnic category are based on small samples and should be interpreted cautiously.</p> <p>Source: New Jersey Behavioral Risk Factor Survey, New Jersey Department of Health and Senior Services, Center for Health Statistics</p>						

Background

Work-related asthma can be a debilitating lung disease with symptoms of chest tightness, cough, shortness of breath, and/or wheezing that develop in reaction to exposures to chemicals or other substances at work.¹⁶



- Work-related asthma is an increasingly important cause of respiratory impairment and it can persist for years, even after cessation of workplace exposures.
- The primary treatment for work-related asthma is prevention from exposure to the causative agent, either by removal or by effective engineering controls.
- Several deaths due to asthma have been reported when workplace exposures continued to occur.¹⁷
- The majority of people who develop work-related asthma fail to fully recover, even after several years without exposure.¹⁸
- Identification of work-related asthma can also lead to the recognition of affected coworkers, the identification and correction of inadequate workplace exposure control measures, and the discovery of new causes of work-related asthma.

There are two general types of new-onset work-related asthma:

- allergic, or immunologically mediated, asthma which develops after a period of exposure to a sensitizing agent, and
- reactive airways dysfunction syndrome (RADS), or irritant-induced asthma, which is a nonimmunologic asthma that is typically caused by a single exposure to high levels of an irritating vapor, gas, fume, or smoke.

Work-related asthma also includes work-aggravated asthma, which is pre-existing asthma exacerbated by workplace exposures.

The number of agents that have been shown to cause work-related asthma is large and continually growing. More than 400 substances have been associated with work-related asthma, affecting workers in a variety of industries and occupations,¹⁹ including:

- Chemical dusts or vapors from plasticizers, polyurethane paints, insulation, foam products, and other materials used in manufacturing and processing operations.
- Animal substances such as hair, dander, mites, small insects, and bacterial or protein dusts. Exposed workers at risk include farmers, animal handlers, shepherds, grooms, jockeys, veterinarians, and pet shop and kennel workers.
- Organic dusts such as flour, cereals, grains, coffee dust, tea dust, and papain dust from meat tenderizer. These substances can cause asthma in millers, bakers, and other food processors.
- Metals such as platinum, chromium, and nickel, as well as soldering fumes. Workers are exposed in refining and manufacturing operations.
- Microbial agents such as mold, fungus, and bacteria found in damp or poorly maintained buildings.
- Latex products and cleaning/disinfection agents used by janitorial workers and others in health-care facilities and office environments.

Diagnosis of Work-related Asthma

Work-related asthma is suspected on the basis of temporal associations between symptoms and time spent at and away from work. The following patterns of association between asthma symptoms and work are used to suggest the diagnosis of work-related asthma:

- Asthma symptoms develop or worsen with a new job or introduction of new materials.
- Asthma symptoms develop within minutes of specific activities or exposures at work.
- Delayed symptoms occur hours after exposure or during the evening on work days.
- No symptoms or fewer symptoms occur on days away from work and on vacation.
- Symptoms worsen on return to work after being away.

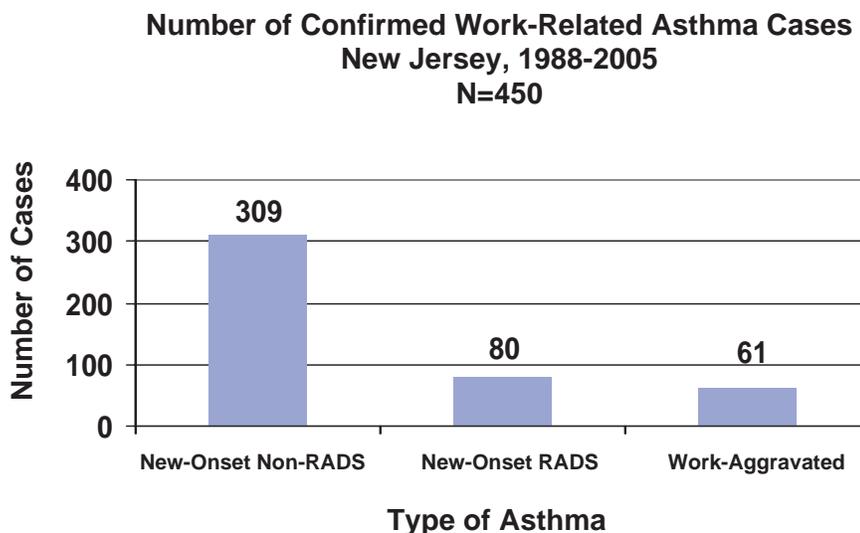
Surveillance for Work-related Asthma

The Occupational Health Surveillance Program (OHS) within NJDHSS conducts surveillance for work-related asthma under an occupational health surveillance grant funded by the National Institute for Occupational Safety and Health (NIOSH). The components of the New Jersey work-related asthma surveillance project include case ascertainment and follow-up, worksite intervention, summary data analysis, and broad-based prevention activities. Cases of work-related asthma are identified primarily through physician reports, hospital discharge data, and emergency department data.

The New Jersey work-related asthma surveillance project identified and confirmed 450 cases of work-related asthma between the years 1988 to 2005. The large discrepancy between prevalence estimates and number of identified cases is attributable to underrecognition and/or underreporting. Figure 22 shows the number of confirmed cases of work-aggravated asthma, new-onset reactive airways dysfunction syndrome (RADS), and new-onset non-RADS asthma.

The number of confirmed work-related asthma cases, by type, is shown in Figure 22.

Figure 22

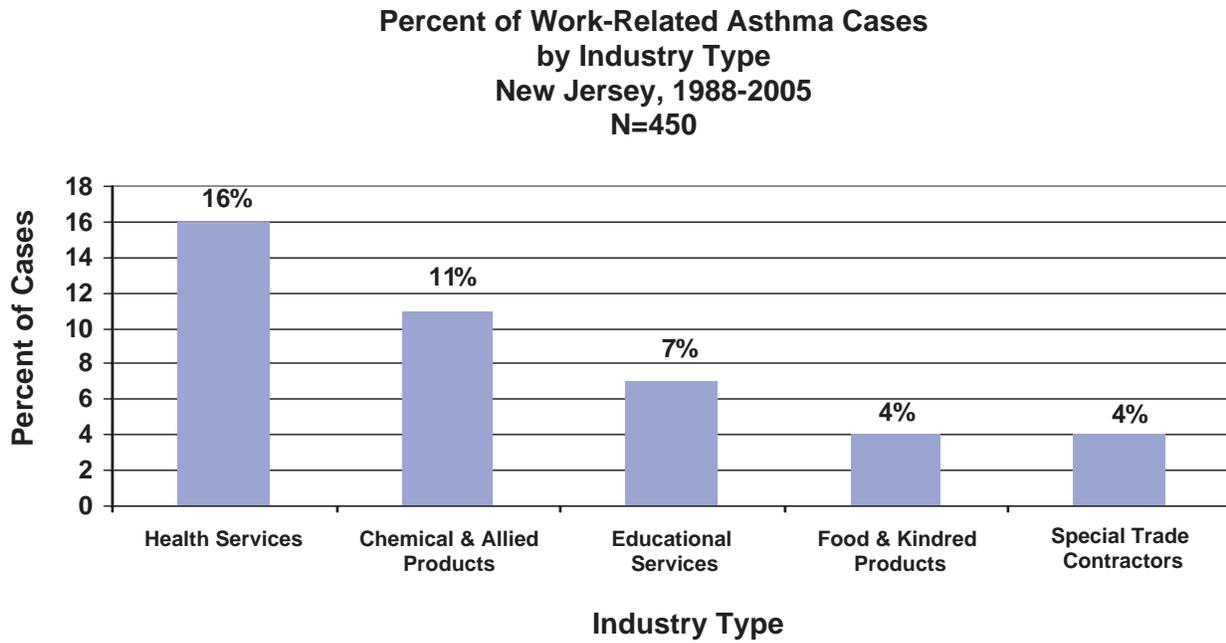


Source: New Jersey Work-related Asthma Surveillance Project
New Jersey Department of Health and Senior Services
Division of Epidemiology, Environmental and Occupational Health
Occupational Health Surveillance Program



Cases of work-related asthma were identified in all industry types. Figure 23 shows the industries in which more than 15 cases were identified.

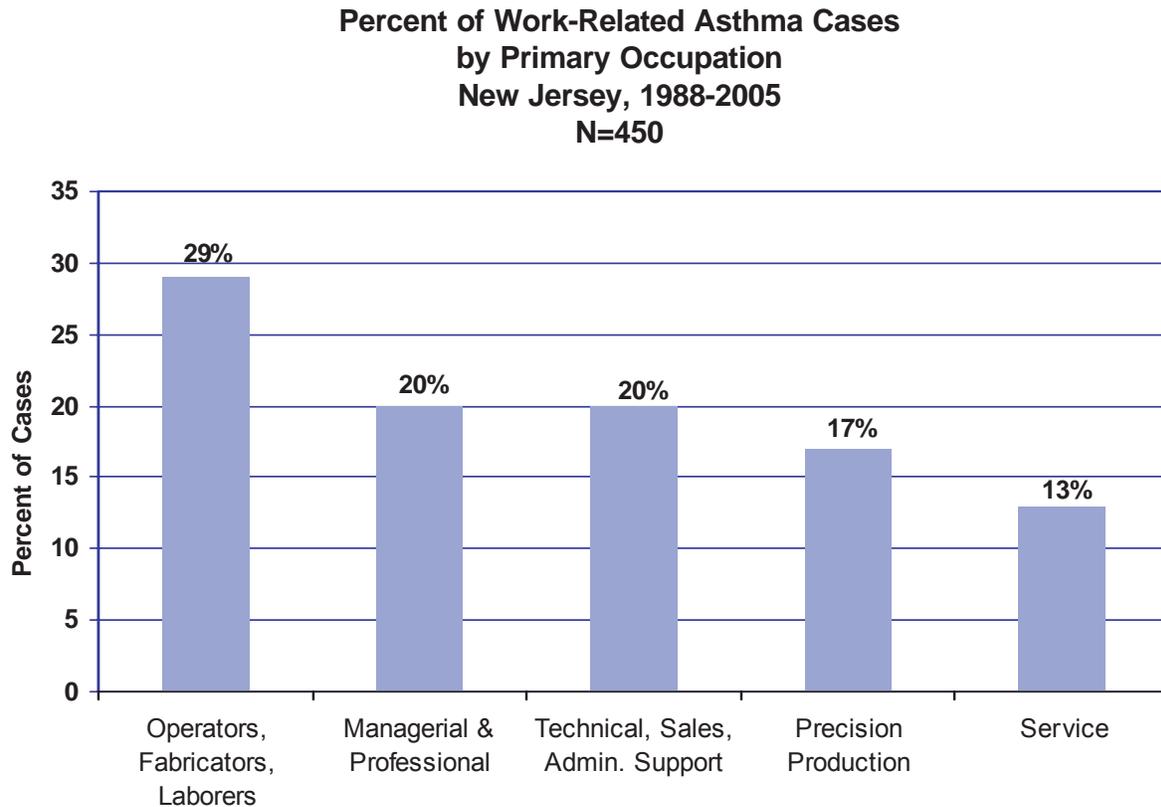
Figure 23



Source: New Jersey Work-related Asthma Surveillance Project
New Jersey Department of Health and Senior Services
Division of Epidemiology, Environmental and Occupational Health
Occupational Health Surveillance Program

The occupational categories most frequently identified for cases of work-related asthma are shown in Figure 24.

Figure 24

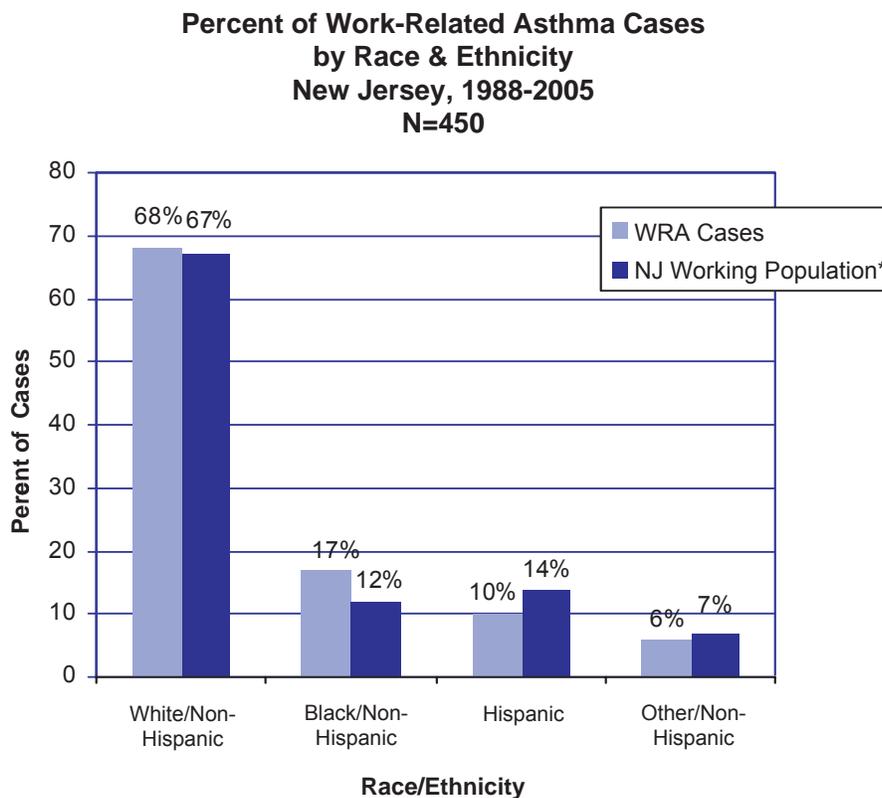


Source: New Jersey Work-related Asthma Surveillance Project
New Jersey Department of Health and Senior Services
Division of Epidemiology, Environmental and Occupational Health
Occupational Health Surveillance Program



The percentages of identified work-related asthma cases by race and ethnicity compared to the racial/ethnic distribution of all New Jersey residents are presented in Figure 25.

Figure 25



* 2000 NJ Census estimates; includes all ages.

Source: New Jersey Work-related Asthma Surveillance Project
New Jersey Department of Health and Senior Services
Division of Epidemiology, Environmental and Occupational Health
Occupational Health Surveillance Program

The most frequently identified causative agents that account for 50% of all confirmed cases of work-related asthma are shown in Table 16.

Table 16 Agents Most Commonly Associated with Confirmed Cases of Work-Related Asthma in New Jersey	
Agent	
Chemicals, NOS*	
Indoor Air Pollutants	
Diesel Engine Exhaust	
Formaldehyde	
Dust, NOS	
Soluble Platinum Salts	
Latex	
Mold, NOS	
Toluene Diisocyanate	
Glutaraldehyde	
Smoke, NOS	
Epoxy Resins	
Chlorine	
Diisocyanates, NOS	
Oil, NOS	
Solvent, NOS	
Papain	
Flour	
Wood Dust, NOS	
Polyvinyl Chloride Thermal Decomposition Products	
Cleaning Materials, NOS	
Welding Fumes	
Methyl Methacrylate	
Benzalkonium Chloride	
Malathion	

*NOS = not otherwise specified

Source: New Jersey Work-related Asthma Surveillance Project
 New Jersey Department of Health and Senior Services
 Division of Epidemiology, Environmental and Occupational Health
 Occupational Health Surveillance Program



Conclusion

The information presented in “Asthma in New Jersey Update 2006” confirms the substantial burden that asthma places on New Jersey residents. Part 1 of this report describes a chronic condition affecting a considerable number of people in the state with a disproportionate influence on minorities and the poor. When it is not controlled, the disease may result in disability, emergency department visits, hospitalization, and even death.

- ❖ About 12% of adults have a history of asthma and about 8% of adults currently have asthma in New Jersey.
- ❖ Around 12% of children have a history of asthma and around 9% of children currently have asthma in New Jersey.
- ❖ In children, asthma is more prevalent among males; while in adults, asthma is more prevalent among females.
- ❖ The prevalence of asthma has increased over the past 4 years.
- ❖ Black and Hispanic residents have higher prevalence rates when compared to white residents.
- ❖ Asthma is more prevalent among residents with an annual household income of less than \$25,000.
- ❖ Around 22% of adults with a history of asthma continue to smoke.
- ❖ Children under 5 years of age are most likely to visit the emergency department for asthma and are most likely to be hospitalized for asthma.
- ❖ Hospital discharge rates for asthma demonstrate distinct seasonal patterns, particularly in children. Rates are lowest during the summer and they are highest during the spring and fall months.
- ❖ Black and Hispanic residents are more likely to be hospitalized and to visit the emergency department for asthma as compared to white residents.
- ❖ In 2004, about 49,366 emergency department visits and 15,684 hospitalizations were reported with a primary diagnosis of asthma.
- ❖ Although death from asthma is relatively uncommon, black and Hispanic residents experienced higher mortality rates from asthma during 2001–2003.

Work-related asthma is the most common work-related lung disease in New Jersey. Highlights from Part 2 of this report describe a preventable condition that affects a large segment of the New Jersey workforce.

- ❖ Work-related asthma includes new-onset asthma and reactive airways dysfunction syndrome caused by exposures at work, as well as pre-existing asthma that is aggravated by workplace conditions.
- ❖ NJBRFS data suggest that 10.7% (49,458) of adult asthma cases in New Jersey are work-related.
- ❖ Only 450 cases of work-related asthma were identified since 1988, indicating that work-related asthma may be greatly underreported.
- ❖ About 23% of identified cases of work-related asthma occurred in the non-industrial work environments of health services and educational services.
- ❖ More than 50% of identified cases of work-related asthma occurred among occupations in managerial & professional, technical sales & administrative support, and service industries.

- ❖ The agents most commonly associated with identified cases of work-related asthma are non-specific chemicals, indoor air pollutants, diesel engine exhaust, formaldehyde, dust, soluble platinum salts, and latex.

Early recognition of asthma and its connection to the workplace is crucial in directing intervention efforts to reduce and eliminate exposure to asthma-causing agents.

For further information, please visit the Asthma web page on the NJDHSS Internet site:

<http://www.state.nj.us/health/fhs/asthma/index.shtml>, or the Work-Related Asthma web page at:
www.nj.gov/health/eoh/survweb/wra.



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Your opinion is very important to us. So please help us to improve this and other publications by taking a few minutes of your time to answer the following questions.

This form can also be submitted electronically at: http://www.state.nj.us/health/fhs/asthma/asthma_feedback_2006.shtml

A little bit about you

1. Please indicate your work setting or reason for interest in the report.

- State/local health department
- Hospital clinic/private practice/FQHC
- Non-profit organization
- Other public health setting
- Academic institution
- Personal interest in asthma
- Acute care hospital
- Health maintenance organization
- Other: _____

2. Which best describes your professional or personal asthma-related activities? (Please check all that apply)

- Public health
- Health promotion
- Volunteer activities
- Administration and planning
- Outreach and advocacy
- Personal experience managing asthma
- Research/data analysis/evaluation
- Patient care and education
- Other: _____

3. I plan to use this information as reference for the development of: (Please check all that apply)

- Health education materials
- Proposal writing/planning
- Practice guidelines
- Advocacy efforts
- Public policies
- Other: _____
- Personal knowledge

4. Are you familiar with the Pediatric/Adult Asthma Coalition of New Jersey (PACNJ)?

- Yes
- No

5. Do you know where to go for additional information on asthma?

- Yes
- No

Your opinion of the report

6. Overall, what do you think of the writing style?

- Too technical
- About right
- Too simplistic
- No opinion

7. What do you think of the data presented in the tables and charts?

- Too technical
- About right
- Too simplistic
- No opinion

8. What do you think of the format of the report in terms of organization and order of appearance of topics and subtopics?

- Format makes report easy to read and understand
- Format makes report difficult to read and understand
- No opinion

Final opinion

9. After reading this report, do you feel that you are more informed about:

- The prevalence of asthma in New Jersey (i.e. number of people who have asthma)? Yes No
- Asthma hospitalization rates? Yes No
- Asthma mortality rates? Yes No
- Occupational asthma prevalence, types, and cases? Yes No

10. Overall, the report met my asthma data needs.

- Strongly agree Agree No opinion
- Disagree Strongly disagree

11. Comments or Suggestions:  _____

For more information on asthma, asthma surveillance in New Jersey, or the Pediatric/Adult Asthma Coalition of New Jersey (PACNJ), please visit these Internet websites:

- <http://www.state.nj.us/health/fhs/asthma.shtml>
- <http://www.pacnj.org/>

**Please complete this survey and return it to:
Melissa Vezina, Fax: (609) 292-3580
New Jersey Department of Health and Senior Services, Asthma Control Program
P.O. Box 364, Trenton, NJ 08625-0364**