The Prevalence and Cost of Asthma in New York State

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Executive Summary

Asthma is a major public health problem in New York State and nationally. Data collected for the federal Centers for Disease Control and Prevention (CDC) show a steady increase in the prevalence of the chronic lung disease nationally in recent years. In New York, however, while the numbers of overall deaths from asthma and asthma-related hospitalizations have declined, the public health and financial consequences of asthma in the State remain significant.

The CDC describes asthma as "common, deadly, disruptive, and expensive." The disease places thousands of adults and children at higher risk of missing work or school, as well as of emergency room visits, hospitalizations and even death. New York's $55 billion Medicaid program, which enrolls approximately one in four New Yorkers, is responsible for a major portion of the State's annual asthma costs. An analysis by the Office of the State Comptroller (OSC) of Medicaid expenditure data found that asthma-related Medicaid costs for recipients diagnosed with the disease exceeded $532 million in State Fiscal Year (SFY) 2012-13, an increase of more than 26 percent from five years earlier. Prescription drugs made up more than half of that total, at nearly $307 million.

The cost of asthma goes well beyond the direct expense that taxpayers bear through the Medicaid program. The disease also drives higher insurance premiums for New Yorkers with privately paid health coverage. Including Medicaid costs, the State Department of Health (DOH) recently estimated the annual overall cost of asthma in New York at $1.3 billion in direct medical costs and lost productivity. Hospitalizations account for $660 million of these costs, a 61 percent increase since 2002.

As of 2012, an estimated 1.4 million adult New Yorkers suffered from asthma, according to CDC data. Some 315,000 children had asthma in 2010, the latest year for which figures are available, CDC estimates.

The number of New York Medicaid recipients with an asthma diagnosis rose by more than 30 percent over the five years ending in State Fiscal Year 2012-13. Much of this increase – but not all – reflects a sharp increase in the State's Medicaid population over the period. The prevalence of asthma among Medicaid recipients rose by 8.6 percent over the five years. Increases in asthma prevalence were especially significant among Medicaid recipients older than 55, while the rate of prevalence among children dropped by 12 percent.

Among the State's Medicaid recipients diagnosed with asthma in SFY 2012-13, the highest prevalence rates were in the Bronx and four upstate counties:

- Schenectady, with 131.3 people with asthma per thousand enrollees;
- The Bronx, with 130.2 people with asthma per thousand enrollees;
- Clinton and Fulton, each with 129.9 people with asthma per thousand enrollees; and

- Rensselaer, with 123.2 people with asthma per one thousand enrollees.

Among New York City's five boroughs, asthma prevalence rates among Medicaid recipients were especially high in certain neighborhoods: Hunts Point and Longwood-Morrisania in the Bronx; East Harlem in Manhattan; Carroll Gardens-Red Hook in Brooklyn; and Arverne in Queens.

Asthma death rates in New York have fallen significantly in recent years. According to DOH figures, the average annual death toll from the disease fell by 18.1 percent for the three years ending in 2011, compared to the similar period ending in 2004. The highest numbers of asthma deaths in 2011 occurred in the Bronx and Brooklyn. For the three years ending in 2011, average annual hospitalizations in New York due to asthma were 8.3 percent lower than during the analogous period ending in 2004.

Over the past 10 to 15 years, initiatives by CDC, DOH and the broader health community have expanded epidemiological, educational and treatment programs to address asthma. DOH's efforts to reduce the State's asthma burden include Medicaid coverage of prescription drugs and self-management education, in-home assessments and interventions for the disease, promotion of evidence-based care to reduce asthma emergency room visits and hospitalizations, and increased dispensing of appropriate asthma control medications for persons with persistent asthma. DOH included two asthma-specific initiatives in the State's recently approved application for a federal Medicaid waiver amendment. These initiatives are designed to expand the State's Medicaid home-based asthma assessment and education program, and enlist providers and health plans in referring at-risk children to home evaluation services offered by public health authorities.

Academics and health professionals have not reached consensus on the reasons for current trends in asthma prevalence, and research continues. The recent declines in overall asthma deaths, hospitalizations and asthma prevalence among children in the Medicaid program in New York demonstrate that progress against the disease is possible. Yet further progress remains essential. In addition, the dramatic variation in asthma rates across communities points to the need for further analysis to determine whether initiatives to attack the disease are working more effectively in some locations than in others.

While the Department of Health has undertaken a variety of initiatives to address asthma in recent years, and plans additional steps, efforts to analyze and report on potential causes of recent trends in the prevalence of the disease have been more limited. DOH needs to work with academic experts, health-care providers and others to gain a better understanding of trends in asthma prevalence for adults and children, and within varied communities, to ensure that publicly funded initiatives to address the disease are targeted as effectively as possible.

Asthma in New York State

Prevalence of Asthma in New York

This report presents two primary measures of asthma prevalence in New York. First, CDC's Behavioral Risk Factor Surveillance System (BRFSS) monitors and reports on major health-related risks among adults and children – including asthma – based on landline and cellphone surveys.[1] (While BRFSS reports only national and state-level data, DOH has produced some limited regional figures on asthma prevalence using CDC data, as cited later in this report.) Second, to assess the variation of asthma prevalence rates across New York State, the Office of the State Comptroller analyzed data on Medicaid payments for individuals diagnosed with the disease.

BRFSS data indicate that 9.3 percent of adult New Yorkers, or about 1.4 million individuals, had self-reported asthma in 2012.[2] In 2010, the most recent year for which BRFSS data on childhood asthma in New York is available, CDC estimates that 7.4 percent of New Yorkers under 18 years of age, or about 315,000 children, had asthma.[3]

Asthma Death Rates in New York State

Over the most recent ten years for which data are available, annual deaths due to asthma in the State have decreased by 22.7 percent, from 330 in 2002 to 255 in 2011.[4] However, the number of such deaths fluctuates from year to year, as shown in Figure 1. For the three years ending in 2011, average annual asthma deaths of 258 per year reflect a decrease of 57 deaths, or 18.1 percent, from the level of average annual asthma deaths for the three years ending in 2004.[5]

In New York State, the rate of asthma deaths per million residents (including New York City) declined by 23.8 percent from 17.2 deaths per million in 2002 to 13.1 deaths per million in 2011.[6] The rate of asthma deaths is higher in New York City than statewide, at 20.9 per million residents in 2011, as compared to 13.1 deaths per million, as shown in Figure 2.

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[1] See www.cdc.gov/asthma/brfss/2012/brfsstechinfo.htm. Due to the nature of the survey, the BRFSS numbers are somewhat imprecise, suggesting a range of likely prevalence numbers and rates rather than definitive counts and percentages. The 2012 BRFSS data continues to reflect changes initially made in 2011 in weighting methodology and the addition of cellphone only respondents. For data analysis, the CDC indicates that the 2011 BRFSS data should be considered a baseline year and, along with the 2012 data, not directly comparable to previous years of data.

[2] See www.cdc.gov/asthma/brfss/2012/tableC1.htm. In 2012, the true number of adult New Yorkers self-reporting asthma, as well as the prevalence rate associated with this number, is likely to fall within a 95 percent confidence interval ranging from 1.2 million to 1.5 million New Yorkers and 8.3 percent to 10.3 percent, respectively.

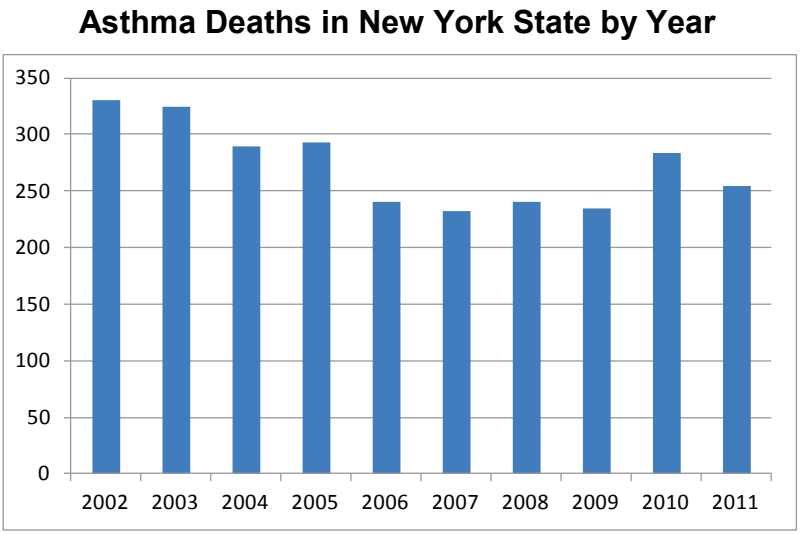
[3] See www.cdc.gov/asthma/brfss/2010/child/current/tableC1.htm. In 2010, the true number of New Yorkers under age 18 reported to have asthma, as well as the prevalence rate associated with this number, is likely to fall within a 95 percent confidence interval ranging from 205,000 children to nearly 426,000 children and 5.2 percent to 10.3 percent, respectively.

[4] See www.health.ny.gov/statistics/ny_asthma/index.htm and Draft NYS Asthma Surveillance Report 2013, Chapter 8.

[5] See www.health.ny.gov/statistics/ny_asthma/ for DOH Asthma Surveillance Summary Reports for 2005, 2007 and 2009; and Department of Health, Draft New York State Asthma Surveillance Report 2013, Chapter 8.

[6] Department of Health, Draft New York State Asthma Surveillance Report 2013, Chapter 8.

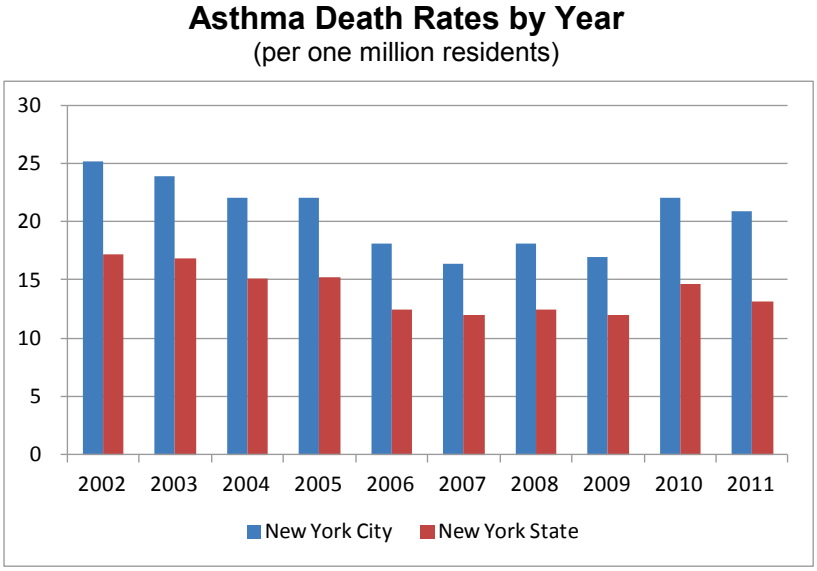
Figure 1



Sources: DOH Asthma Surveillance Summary Reports for 2005, 2007 and 2009, and the draft DOH Asthma Surveillance Summary Report for 2013.

While the asthma death rate in the City fell over the decade ending in 2011, the decline of 17.1 percent was more modest than the statewide decline of 23.8 percent.[7] In areas of the State outside of New York City, the rate of deaths due to asthma dropped sharply – by 35.1 percent from 11.4 deaths per million residents in 2002 to 7.4 per million in 2011.[8]

Figure 2



Sources: DOH Asthma Surveillance Summary Reports for 2005, 2007 and 2009, and the draft DOH Asthma Surveillance Summary Report for 2013

While such decreases are positive, the number of deaths due to asthma and the death rate relative to the population remain comparatively high in certain areas. Such

[7] See Department of Health Draft NYS Asthma Surveillance Report 2013 Chapter 8.
[8] Ibid.

rates in the Bronx are consistently among the highest in the State. Data from the DOH Bureau of Biometrics and Health Statistics for the most recent reporting period, from 2009 through 2011, show that the Bronx had the highest number of average annual deaths (57.7), as well as the highest age-adjusted asthma death rate by far (43.5 deaths per million residents), among all counties in the State.[9]

DOH data also show that asthma death rates increased with age in New York. From 2009 through 2011, children aged up to 14 had an asthma death rate of 3.5 per million residents, while the rate among New Yorkers 65 years of age and older was 36.9 deaths per million residents.[10]

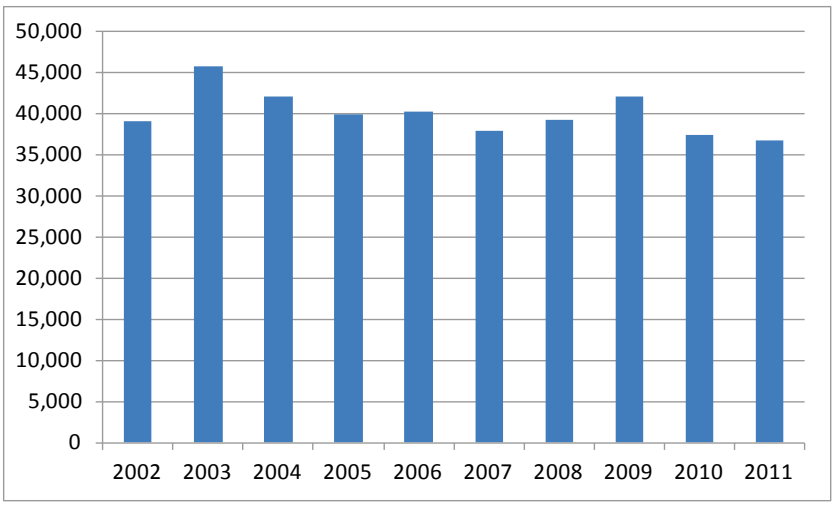
Non-Hispanic blacks and Hispanics had significantly higher age-adjusted asthma mortality rates than non-Hispanic whites from 2009 through 2011: 31.7 deaths per million residents for non-Hispanic blacks and 22.1 deaths per million residents for Hispanics versus 6.7 deaths per million residents for non-Hispanic whites.[11]

Asthma Hospitalizations in New York State

Like asthma deaths, asthma-related hospitalizations in New York have declined over the last ten years, as shown in Figure 3.

Figure 3

Asthma Hospitalizations in New York State by Year



Sources: DOH Asthma Surveillance Summary Reports for 2005, 2007 and 2009, and the draft DOH Asthma Surveillance Summary Report for 2013.

According to DOH, average annual asthma hospitalizations fell by 8.3 percent, from nearly 39,000 for the three years ending in 2011, compared to over 42,000 hospitalizations for the three years ending in 2004.[12]

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[9] Ibid.
[10] Ibid.
[11] Ibid.
[12] See www.health.ny.gov/statistics/ny_asthma/ for DOH Asthma Surveillance Summary Reports for 2005, 2007 and 2009; and Department of Health, Draft New York State Asthma Surveillance Report 2013.

Asthma Prevalence in New York Adults

In 2012, CDC data indicate that about 9.3 percent of adult New Yorkers suffered from asthma, while the 2011 estimate was 9.7 percent. (It is unclear whether this change is statistically significant.) DOH analysis of 2011 CDC surveillance data indicates that adults living in New York City had a higher asthma prevalence rate (10.2 percent) than adults living in other areas of the State (9.3 percent).[13] DOH also found that adults aged 18–24 years had the highest adult asthma prevalence in the State (11.2 percent), with adults aged 35–44 and above 65 years having the lowest prevalence (8.9 and 8.7 percent, respectively). In addition, DOH found that asthma prevalence among adult women in the State (12.3 percent) was higher than among men (6.9 percent) in 2011.[14]

Asthma Prevalence in New York Children

In 2010, the most recent year for which data are available, the number of children with asthma in New York was 315,000, or one in fourteen children, according to CDC.[15] New York's asthma prevalence rate for children was 7.4 percent in 2010.[16] The national asthma prevalence rate for children in 2010 was 8.4 percent, or one in eleven children.[17]

Prevalence of Asthma Among New York's Medicaid Recipients

Both the number of New York Medicaid recipients with an asthma diagnosis, and the costs for their asthma-related care, rose faster than the overall Medicaid population and total Medicaid expenditures during the five years ending in SFY 2012-13. Analysis of five years of Medicaid fee-for-service claims and managed care encounter data through SFY 2012-13 by the Office of the State Comptroller shows that the number of Medicaid recipients with an asthma diagnosis grew by more than 130,000, or 30.4 percent, to nearly 559,000 recipients in SFY 2012-13.[18] Asthma-related expenditures increased by $111.7 million, or 26.5 percent, to $532.7 million from SFY 2008-09 to SFY 2012-13.

Overall enrollment in New York's Medicaid program increased by about 20.1 percent to nearly 5.7 million New Yorkers over the five-year period, while total New York Medicaid spending (including federal, State and local expenditures) grew by about $9 billion, or 20 percent, from $45 billion in SFY 2008-09 to $54 billion in SFY 2012-13. The overall prevalence of asthma among Medicaid recipients also increased over the

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[13] Department of Health, Draft New York State Asthma Surveillance Report 2013, Chapter 5.
[14] Ibid.
[15] See www.cdc.gov/asthma/brfss/archive.htm and www.health.ny.gov/statistics/ny_asthma/asthmaprevchild10.htm.
[16] See www.cdc.gov/asthma/brfss/archive.htm.
[17] Ibid and see www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf and www.cdc.gov/asthma/brfss/archive.htm.
[18] The Office of the State Comptroller extracted and analyzed Medicaid data used for this report from the DOH Medicaid data warehouse. For the purposes of this report, the population of Medicaid asthma recipients for SFY 2008-09 and SFY 2012-13 includes members who have a fee-for-service claim or managed care encounter at any time during the year and whose files contained a diagnosis code indicating asthma in diagnosis codes 1 through 10. All asthma diagnosis codes beginning with 493 (representing asthma) were considered, except for diagnosis code 49381 (representing exercise-induced bronchospasm). The overall population of Medicaid recipients includes members who have a claim or encounter at any time during the year.

five-year period. The prevalence rate grew by 7.8 recipients, or 8.6 percent, to 98.7 people with asthma per thousand Medicaid enrollees in SFY 2012-13.

Statewide in SFY 2012-13, the asthma prevalence rate among Medicaid recipients was highest in Schenectady County, which had 131.3 people diagnosed with the disease per thousand Medicaid enrollees, as shown in Figure 4. While other counties with the highest prevalence rates were mostly in upstate regions, the second-highest asthma rate was in the Bronx, at 130.2 people with asthma per thousand Medicaid recipients.

Figure 4

Top Ten Asthma Prevalence Rates Among Medicaid Recipients by County
(per thousand Medicaid enrollees)

	SFY 2012-13	
	Recipients	**Prevalence Rate**
Schenectady	4,803	131.3
Bronx	103,654	130.2
Clinton	2,349	129.9
Fulton	1,962	129.9
Rensselaer	3,870	123.2
Montgomery	1,757	118.5
Columbia	1,339	115.0
Sullivan	2,333	113.6
Niagara	5,137	113.2
Chautauqua	4,037	113.0
Statewide	**558,956**	**98.7**

Source: OSC analysis of Medicaid fee-for-service claims and managed care encounter data from DOH.
Note: Except for the Bronx, recipient counts and prevalence rates reflect Medicaid data corresponding to each county's local social services district code; e.g., Albany County's district code is 01, Allegany County's district code is 02, etc. The Bronx's recipient count and prevalence rate reflect Medicaid data for Bronx zip codes corresponding to local social services district code 66, which is the district code for the City of New York. The Bronx's recipient count and prevalence rate also reflect Medicaid recipients living in Manhattan's Marble Hill neighborhood assigned Bronx zip code 10463, but do not reflect Medicaid recipients living in the Bronx neighborhood of Riker's Island assigned Queens zip code 11370.

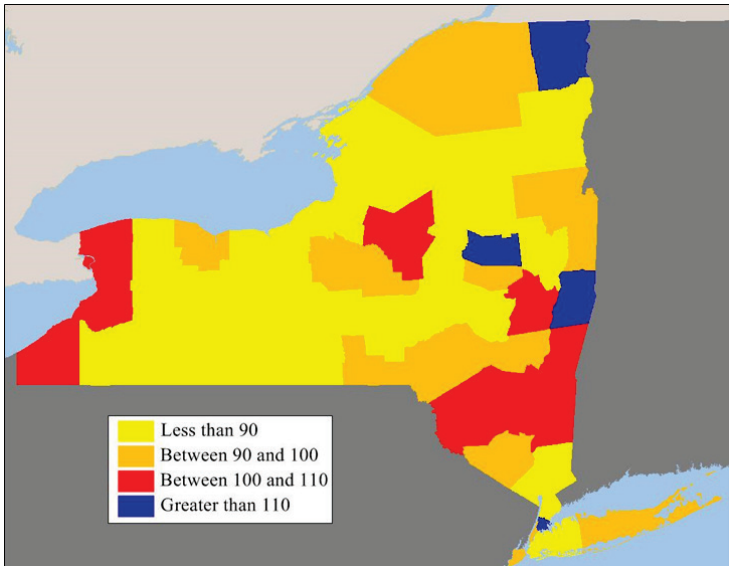
In SFY 2012-13, a total of 27 counties had Medicaid asthma prevalence rates above the statewide average of 98.7 recipients of asthma-related services per one thousand Medicaid enrollees. In addition to those listed in Figure 3, counties with above-average Medicaid asthma prevalence rates in SFY 2012-13 included Albany (111.0), Ulster (109.8), Erie (108.9), Monroe (103.8) and Oneida (100.7) counties. The counties with the lowest Medicaid asthma prevalence rates in SFY 2012-13 were Yates (67.5), Rockland (71.6) and Wyoming (74.9). Information on asthma prevalence in all New York counties appears in the Appendices to this report.

The maps in Figures 5 and 6 depict increasing asthma prevalence rates among Medicaid recipients in many areas of the State from SFY 2008-09 to SFY 2012-13.[19] Many counties with lower prevalence rates, shown in colors of yellow or light brown in SFY 2008-09, turn red or blue, indicating higher asthma prevalence rates, in SFY 2012-13.

[19] Data used to generate statewide asthma prevalence rate maps for SFYs 2008-09 and 2012-13 do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health or the State Office for People With Developmental Disabilities.

Figure 5

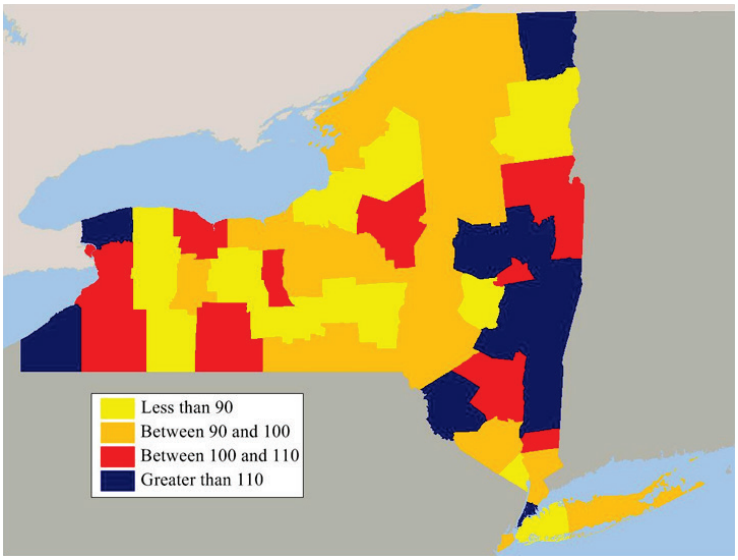
SFY 2008-09 Asthma Prevalence Rates Among New York Medicaid Recipients
(per thousand Medicaid enrollees)



Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.

Figure 6

SFY 2012-13 Asthma Prevalence Rates Among New York Medicaid Recipients
(per thousand Medicaid enrollees)

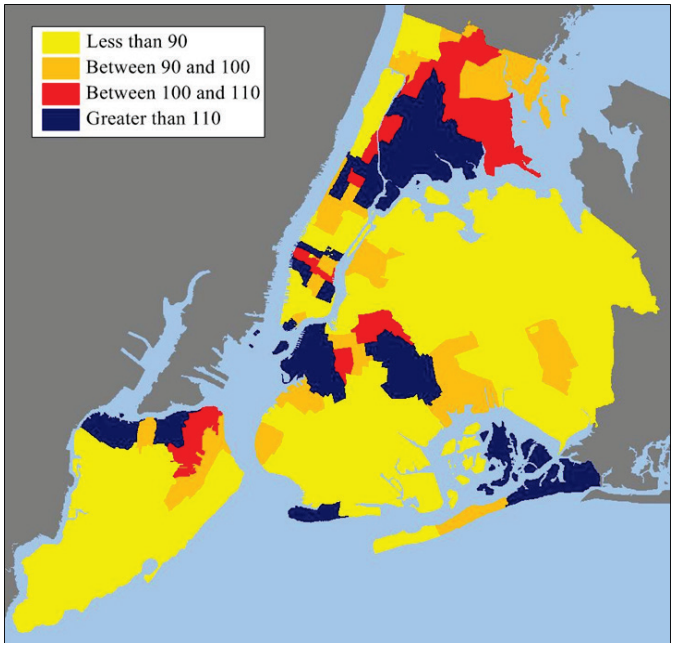


Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.

Asthma prevalence rates also increased among Medicaid recipients living in New York City from SFY 2008-09 to SFY 2012-13, as shown in Figures 7 and 8.

Figure 7

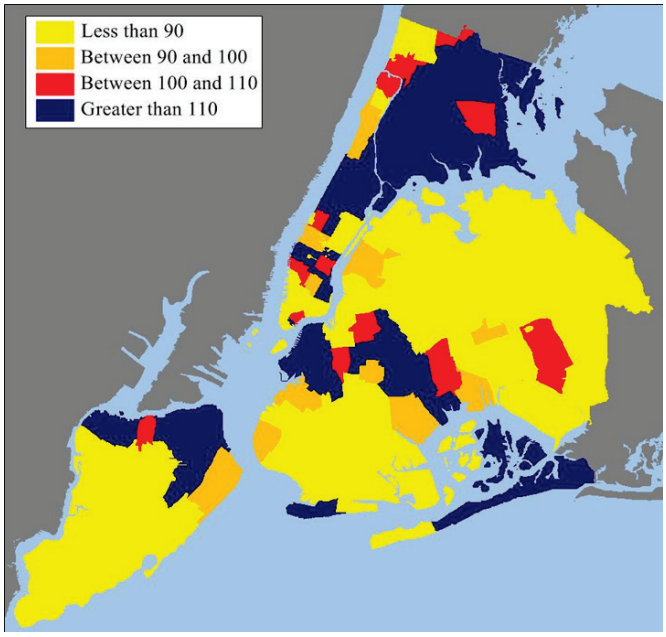
SFY 2008-09 Asthma Prevalence Rates Among New York City Medicaid Recipients
(per thousand Medicaid enrollees)



Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.

Figure 8

SFY 2012-13 Asthma Prevalence Rates Among New York City Medicaid Recipients
(per thousand Medicaid enrollees)



Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.

As shown in Figures 5 and 6, over the five-year period, the number of counties with prevalence rates above 110 Medicaid recipients with asthma per thousand enrollees, reflecting the highest-rate-category shown on the maps (in blue), increased from four in SFY 2008-09 – Fulton, Rensselaer, Clinton and the Bronx – to fourteen in SFY 2012-13. The fourteen include the four counties in the highest category in SFY 2008-09, plus Schenectady, Montgomery, Columbia, Sullivan, Niagara, Chautauqua, Dutchess, New York (Manhattan), Albany and Greene.

As seen in Figures 7 and 8, over the five-year period, the number of New York City zip codes with rates above 110 Medicaid recipients with asthma per thousand enrollees, reflecting the highest rate category shown on the maps (in blue), increased from 34 in SFY 2008-09 to 54 in SFY 2012-13, an increase of 58.8 percent. In the Bronx, only four out of 24 zip codes had Medicaid prevalence rates at or below 110 Medicaid recipients per thousand enrollees in SFY 2012-13.[20]

Among the City's five boroughs, the Bronx had the highest prevalence rates of asthma-diagnosed Medicaid recipients in both SFY 2008-09 and SFY 2012-13, and experienced significant increases in recipients and in its prevalence rate over the five-year period, as shown in Figure 9. In addition to the Bronx, Manhattan and Staten Island also had prevalence rates above the City-wide average in both years.

Figure 9

Asthma Prevalence Rates among New York City Medicaid Recipients
(per thousand Medicaid enrollees)

	SFY 2008-09		SFY 2012-13		Five-Year Percentage Change	
	Recipients	Prevalence Rate	Recipients	Prevalence Rate	Recipients	Prevalence Rate
Bronx	82,279	118.9	103,654	130.2	26.0%	9.5%
Brooklyn	88,045	83.0	107,729	90.0	22.4%	8.4%
Manhattan	41,923	96.2	50,536	111.6	20.5%	16.0%
Queens	53,939	71.3	69,460	78.1	28.8%	9.5%
Staten Island	9,393	91.9	12,172	99.4	29.6%	8.2%
Citywide	279,079	90.1	347,029	98.5	24.3%	9.3%

Source: OSC analysis of Medicaid fee-for-service claims and managed care encounter data drawn from DOH data.

[20] Data used to generate New York City prevalence maps, as well as the information presented in Figure 9, do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health, the State Office for People With Developmental Disabilities or a county outside of New York City, recipients whose claiming or encounter data contained invalid zip codes, recipients whose claiming or encounter data omitted zip code information, recipients no longer residing in the City of New York, and homeless recipients. Zip codes for which there was no data were assigned a value of zero and included in the data range of "less than 90," as was the zip code for the John F. Kennedy International Airport. Bronx zip code 10463 includes Medicaid recipients in Manhattan's Marble Hill neighborhood assigned the same zip code. Queens zip code 11370 includes Medicaid recipients in the Bronx neighborhood of Riker's Island assigned the same zip code. In calculating the number of New York City zip codes with asthma prevalence rates above 110 Medicaid recipients per thousand enrollees in SFYs 2008-09 and SFY 2012-13, zip codes with fewer than 100 Medicaid recipients diagnosed with asthma were excluded.

Excluding New York City, the State's five largest cities – Buffalo, Rochester, Yonkers, Syracuse and Albany – all had higher Medicaid asthma prevalence rates than their respective counties in both SFY 2008-09 and SFY 2012-13, as shown in Figure 10. Most of these cities and counties saw their asthma prevalence rates increase over the five years; only Onondaga County and Syracuse saw such rates decline.

Figure 10

Asthma Prevalence Rates Among Medicaid Recipients in the State's Five Largest Cities and Their Corresponding Counties
(excluding New York City, per thousand Medicaid enrollees, populations in thousands)

County / City	SFY 2008-09 Pop/1,000	SFY 2008-09 Recipients	SFY 2008-09 Prevalence Rate	SFY 2012-13 Pop/1,000	SFY 2012-13 Recipients	SFY 2012-13 Prevalence Rate	Five-Year Percentage Change Recipients	Five-Year Percentage Change Prevalence Rate
Erie	910	16,577	100.5	919	21,920	108.9	32.2%	8.4%
Buffalo	263	14,225	106.8	259	18,521	114.9	30.2%	7.6%
Monroe	733	13,081	98.6	748	17,396	103.8	33.0%	5.3%
Rochester	191	11,627	103.2	211	15,295	109.1	31.5%	5.7%
Westchester	954	10,239	86.7	962	15,723	98.4	53.6%	13.5%
Yonkers	199	4,482	103.5	198	6,486	109.8	44.7%	6.1%
Onondaga	453	7,389	95.7	467	9,657	95.4	30.7%	-0.3%
Syracuse	134	5,963	104.0	144	7,664	103.9	28.5%	-0.1%
Albany	298	4,593	105.6	305	6,129	111.0	33.4%	5.1%
Albany	91	3,054	110.4	98	4,083	116.2	33.7%	5.2%

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data. Note: Recipient counts and prevalence rates exclude recipients whose Medicaid eligibility is with the State Office of Mental Health and the State Office for People With Developmental Disabilities.

Asthma Prevalence Among Medicaid Recipients by Age

Among age groups, asthma prevalence rates among Medicaid recipients were highest among children aged 0 through 17. These remained significantly higher than the overall statewide and New York City averages in SFY 2012-13, despite dropping by 12 percent over the five-year period.

As shown in Figure 11, asthma prevalence rates for adult Medicaid recipients aged 55 and over experienced large increases from SFY 2008-09 to SFY 2012-13.

Figure 11

Asthma Prevalence Rates Among Statewide Medicaid Recipients By Age
(per thousand Medicaid enrollees)

Age	SFY 2008-09 Recipients	SFY 2008-09 Prevalence Rate	SFY 2012-13 Recipients	SFY 2012-13 Prevalence Rate	Five-Year Percentage Change Recipients	Five-Year Percentage Change Prevalence Rate
0-17	181,133	130.8	226,219	115.2	24.9%	-12.0%
18-34	74,621	60.1	106,415	74.1	42.6%	23.2%
35-54	98,279	92.8	122,624	99.0	24.8%	6.7%
55+	74,616	72.9	103,655	101.9	38.9%	39.8%
Total	**428,649**	**91.0**	**558,913**	**98.8**	**30.4%**	**8.5%**

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.
Note: Recipient counts and prevalence rates do not reflect recipients whose claiming or encounter data omitted their date of birth. Totals may not add due to rounding.

Costs of Asthma in New York

Overall increases in asthma prevalence are contributing to growing health care costs for employers, consumers and taxpayers. Asthma costs the United States $56 billion a year in medical expenses, lost school and work days, and early deaths, according to CDC.[21] Using a different measure, DOH estimates that asthma costs total $1.3 billion annually in New York State.[22] In 2011, the total cost of asthma hospitalizations alone in the State came to $660 million, a 61 percent increase since 2002, according to DOH. [23]

After adjusting for inflation, asthma-related hospitalization costs in New York increased 19 percent from 2002 through 2011.[24] From 2009 through 2011, Medicaid recipients accounted for 41 percent of total asthma hospitalizations and Medicaid incurred 35 percent of total asthma hospitalization costs, according to DOH.[25]

Costs of Asthma Among New York's Medicaid Recipients

Asthma-related costs for the more than 500,000 people who suffer from the disease in the New York Medicaid program represent a significant portion of overall asthma spending in the State. As noted, Medicaid recipients account for more than a third of the State's asthma hospitalizations and hospitalization costs.

Over the five-year period ending in SFY 2012-13, asthma-related expenditures for Medicaid recipients increased by $111.7 million, or 26.5 percent, to $532.7 million, as shown in Figure 12.

[21] See www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf.
[22] See www.health.ny.gov/health_care/medicaid/redesign/docs/2012-08-06_waiver_amendment_request.pdf.
[23] Department of Health, Draft New York State Asthma Surveillance Report 2013, Chapter 11.
[24] Ibid.
[25] Ibid.

Figure 12

Asthma-Related Medicaid Expenditures in New York State by Category of Service
(in millions of dollars)

	SFY 2008-09	SFY 2012-13	Five-Year Change	Percentage Change
Prescription Drugs	223.5	306.6	83.1	37.2%
Inpatient	135.4	126.7	(8.7)	-6.4%
Clinic	20.4	22.9	2.5	12.3%
Emergency Room	7.7	16.6	8.9	115.6%
Other	34.0	59.9	25.9	76.2%
Total	**421.0**	**532.7**	**111.7**	**26.5%**

Source: OSC analysis of Medicaid fee-for-service claims and managed care encounter data drawn from DOH data.
Note: Other includes nursing home, home health and various other claims with a primary diagnosis code of asthma.

Prescription drugs represented the largest portion of the Medicaid program's asthma-related expenses – growing from $223.5 million, or 53.1 percent of all asthma-related Medicaid spending, in SFY 2008-09 to $306.6 million, or 57.6 percent, in SFY 2012-13.

Spending on hospital admissions declined from $135.4 million, or 32.2 percent of all asthma-related Medicaid spending, in SFY 2008-09 to $126.7 million, or 23.8 percent, in SFY 2012-13, but hospitalization remained the second most expensive asthma-related service category in the State Medicaid program over the five-year period. The decrease in inpatient hospital spending likely reflects State efforts to restructure how Medicaid pays for inpatient care.

Asthma Risk Factors

Several factors are believed to impact the risk of developing asthma. These include genetic components such as having an immediate relative with asthma, or having another allergic condition such as hay fever, as well as environmental and behavioral factors such as being overweight, being a smoker, being exposed to second-hand smoke, having a mother who smoked while pregnant, being exposed to exhaust fumes or other types of pollution, and exposure to occupational triggers such as chemicals used in farming, hairdressing and manufacturing.[26] Certain weather conditions, such as thunderstorms or high humidity, or breathing in cold, dry air, may trigger an asthma attack.[27]

In New York, for example, adults with asthma are more likely to be smokers (23.2 percent) than those without asthma (17.6 percent) in 2011. New York adults with asthma are also more likely to be obese (33.4 percent) than those without asthma (23.5 percent) in 2011.[28] From 2003 through 2010, the percentage of DOH survey respondents who smoked or were obese was consistently greater among adults with asthma than adults without asthma.[29]

[26] See www.mayoclinic.com/health/asthma/DS00021/DSECTION=risk-factors.
[27] See www.cdc.gov/asthma/faqs.htm.
[28] Department of Health, Draft New York State Asthma Surveillance Report 2013, Chapter 5.
[29] Ibid.

New York State's Response to Asthma

There is no known cure for asthma.[30] However, important tools and strategies can help the approximately 1.7 million New York children and adults with asthma manage their symptoms and minimize serious health risks. On a personal level, the CDC says every person with asthma needs to have an asthma action plan, developed in consultation with a doctor, which lists all medications along with instructions on when they should be taken.[31] The CDC says the plan should also describe how to achieve long-term control, how to handle asthma attacks, and when to call a doctor or go to the emergency room.[32]

The CDC's national asthma control program, created in 1999, is an important part of the national effort to minimize the impact of the disease in the United States. Under this program, New York, 33 other states, the District of Columbia and Puerto Rico receive federal funding to support asthma surveillance systems, improve asthma management in schools, evaluate programs to identify and share best practices, and target interventions to populations and communities disproportionately affected by asthma.[33]

New York has taken additional steps to address the rising frequency of asthma in the State. Such steps include providing Medicaid access to a broad range of services such as medications and prescription drugs, nebulizers, self-management education, doctor visits and hospital care.[34] The State also provides: asthma care and management for children at school-based health centers; technical assistance to local health departments, hospitals, regional asthma coalitions and other partners on evidence-based interventions and program monitoring and evaluation; and in-home assessments and interventions for asthma in selected communities throughout the State.[35] Effective programs to control asthma can reduce New York's Medicaid expenditures and significantly improve the public health.

DOH's new five-year plan to improve the health and quality of life of all New Yorkers – *Prevention Agenda 2013-17: New York State's Health Improvement Plan* – promotes the use of evidence-based care to reduce asthma emergency room visits and hospitalizations, and increase the dispensing of appropriate asthma control medications for persons with persistent asthma.[36]

In addition, in February 2014, DOH received federal approval of the State's Medicaid Redesign Team (MRT) waiver amendment application, the most recent description of which included two asthma-related proposals to:

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[30] See www.cdc.gov/asthma/impacts_nation/asthmafactsheet.pdf.
[31] See www.ct.gov/dph/cwp/view.asp?a=3137&q=397020.
[32] See www.cdc.gov/asthma/actionplan.html.
[33] See www.cdc.gov/asthma/pdfs/investment_americas_health.pdf.
[34] See www.health.ny.gov/statistics/ny_asthma/pdf/2009_asthma_surveillance_summary_report.pdf#page=1.
[35] See www.health.ny.gov/statistics/ny_asthma/pdf/2009_asthma_surveillance_summary_report.pdf#page=1.
[36] See www.health.ny.gov/prevention/prevention_agenda/2013-2017/plan/chronic_diseases/focus_area_3.htm#sector.

1. Expand the State's Medicaid home-based asthma assessment and education program. Under this program, health care providers are required to partner with home care or other community-based programs to reduce avoidable hospitalizations by abating home environmental triggers such as second-hand smoke, mold and dust mites, encouraging appropriate use of asthma medications, and following up on emergency room or hospital visits to help Medicaid recipients and their families avoid future visits.[37]

2. Reduce childhood exposure to asthma triggers by enlisting health care providers and health plans to refer at-risk children to home evaluation services. Under this initiative, trained nursing and public health staff will arrange home visits to assess the need for hazard control within the home and help with any landlord issues or need for relocation.[38]

Details of the pending agreement between the State and CMS on the Medicaid asthma initiatives are not final, but the waiver amendment application DOH submitted to CMS in 2012 proposed to provide home-based asthma prevention and treatment services to about 10,000 Medicaid recipients a year. Such services are expected to cost about $6.5 million and generate $19.5 million in annual Medicaid savings by improving asthma control, promoting health and preventing avoidable emergency room visits and hospital admissions.[39] The most recent description of DOH's Medicaid asthma initiatives, included in waiver amendment documents submitted to CMS in January 2014, does not indicate how many Medicaid recipients would benefit from the State's asthma initiatives, or the Medicaid-related costs and savings associated with them.

State and local policymakers in New York, as well as various advocacy groups, support next steps in combating asthma that include: additional school-based programs to make children and their parents more aware of asthma triggers and the precursors to asthma attacks; further training for school nurses who are often on the front lines of addressing student asthma; mold remediation programs in public and private housing; and greater asthma self-management education among children and adults.

Despite reductions in deaths and hospitalizations from the disease, overall asthma rates in New York remain a concern. Approximately one in fourteen children and one in ten adults, including over 500,000 Medicaid recipients, suffer from the disease. Asthma is a major public health problem with both human and economic costs. The CDC data and OSC's analysis of asthma-related Medicaid expenditures present interpretive challenges while also suggesting promising avenues for research. DOH needs to work with academic experts, health-care providers and others to gain a better understanding of trends in asthma prevalence for adults and children, and within different communities, to ensure that initiatives to address the disease are targeted as effectively as possible.

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[37] See www.health.ny.gov/health_care/medicaid/redesign/docs/ny_mrt_dsrip_reducing_avoid_hosp_use.pdf.
[38] See www.health.ny.gov/health_care/medicaid/redesign/docs/ny_mrt_dsrip_reducing_avoid_hosp_use.pdf.
[39] See www.health.ny.gov/health_care/medicaid/redesign/docs/2012-08-06_waiver_amendment_request.pdf.

Appendices

Appendix A – New York State Medicaid Asthma Prevalence Rates by County

(per thousand Medicaid recipients)

County	2008-09	2012-13	County	2008-09	2012-13
Albany	105.6	111.0	Queens	71.3	78.1
Allegany	78.9	86.1	Staten Island	91.9	99.4
Broome	93.7	97.2	Niagara	104.0	113.2
Cattaraugus	89.0	105.1	Oneida	103.8	100.7
Cayuga	86.6	90.1	Onondaga	95.7	95.4
Chautauqua	108.4	113.0	Ontario	76.1	82.9
Chemung	86.5	97.5	Orange	92.8	97.0
Chenango	80.8	79.5	Orleans	75.9	84.0
Clinton	122.3	129.9	Oswego	77.4	89.2
Columbia	103.6	115.0	Otsego	81.2	92.2
Cortland	84.0	81.6	Putnam	78.1	107.6
Delaware	96.8	94.1	Rensselaer	122.9	123.2
Dutchess	104.2	112.7	Rockland	65.8	71.6
Erie	100.5	108.9	Saratoga	89.0	99.0
Essex	80.6	84.6	Schenectady	107.5	131.3
Franklin	92.1	98.7	Schoharie	85.0	108.4
Fulton	133.8	129.9	Schuyler	68.0	85.9
Genesee	84.9	82.3	Seneca	64.9	80.8
Greene	98.2	110.8	St. Lawrence	92.4	101.6
Hamilton	78.2	95.8	Steuben	86.7	103.9
Herkimer	77.0	91.2	Suffolk	90.5	94.4
Jefferson	85.7	95.6	Sullivan	104.5	113.6
Lewis	82.0	78.0	Tioga	77.7	94.8
Livingston	89.0	94.1	Tompkins	84.7	78.3
Madison	93.8	90.0	Ulster	105.9	109.8
Monroe	98.6	103.8	Warren	94.2	104.6
Montgomery	99.0	118.5	Washington	93.8	102.7
Nassau	78.1	86.9	Wayne	82.6	96.5
New York City	90.1	98.5	Westchester	86.7	98.4
Bronx	118.9	130.2	Wyoming	70.3	74.9
Brooklyn	83.0	90.0	Yates	71.0	67.5
Manhattan	96.2	111.6	**New York State**	**90.9**	**98.7**

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.
Note: Except for New York City boroughs, prevalence rates reflect Medicaid data corresponding to each county's local social services district code; e.g. Albany County's district code is 01, Allegany County's district code is 02, etc. New York City borough-specific prevalence rates do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health, the State Office for People With Developmental Disabilities or a county outside of New York City, recipients whose claiming or encounter data contained invalid zip codes, recipients whose claiming or encounter data omitted zip code information, recipients no longer residing in the City of New York, and homeless recipients.

Appendix B – New York City Medicaid Asthma Prevalence Rates by Selected Zip Codes

Bronx Medicaid Asthma Prevalence Rates by Zip Code

(per thousand Medicaid recipients)

Zip Code	Neighborhood	SFY 2008-09	SFY 2012-13
10451	Concourse Village-Melrose	134.8	146.8
10452	Highbridge	105.6	117.5
10453	Morris Heights	112.0	120.6
10454	Mott Haven-Port Morris	140.7	161.9
10455	Melrose-Longwood	139.3	153.3
10456	Morrisania	127.8	140.6
10457	Tremont	127.0	136.7
10458	Belmont-Fordham-Bedford Park	119.1	130.6
10459	Longwood-Morrisania	150.2	163.8
10460	West Farms-Crotona Park East	133.5	145.7
10461	Westchester Square-Morris Park	100.5	109.3
10462	Parkchester-Van Nest	102.4	110.6
*10463	Kingsbridge-Spuyten Duyvil	92.7	100.6
10464	City Island	94.6	114.6
10465	Throgs Neck-Country Club	108.6	115.3
10466	Wakefield	104.8	117.8
10467	Norwood-Williamsbridge	108.1	116.7
10468	University Heights-Kingsbridge	102.9	113.3
10469	Williamsbridge-Baychester	96.4	111.0
10470	Woodlawn-Wakefield	95.4	110.0
10471	Riverdale-Fieldston	68.2	77.2
10472	Soundview-Bruckner	127.9	135.8
10473	Clason Point	129.8	146.4
10474	Hunts Point	178.2	197.9
10475	Co-op City-Eastchester	96.7	111.7
	Total for The Bronx	**118.9**	**130.2**

* Includes Medicaid recipients in Manhattan's Marble Hill neighborhood assigned zip code 10463. Total rate does not reflect Medicaid recipients in the Bronx neighborhood of Riker's Island assigned Queens zip code 11370.

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.
Note: Prevalence rates do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health, the State Office for People With Developmental Disabilities or a county outside of New York City, recipients whose claiming or encounter data contained invalid zip codes, recipients whose claiming or encounter data omitted zip code information, recipients no longer residing in the City of New York, and homeless recipients. Zip codes with fewer than 100 Medicaid recipients diagnosed with asthma are excluded.

Brooklyn Medicaid Asthma Prevalence Rates by Zip Code

(per thousand Medicaid recipients)

Zip Code	Neighborhood	SFY 2008-09	SFY 2012-13
11201	Brooklyn Heights-Cobble Hill	111.8	118.6
11203	East Flatbush	65.5	80.7
11204	Bensonhurst-Mapleton	51.5	53.5
11205	Fort Greene-Clinton Hill	91.6	86.1
11206	Williamsburg-Bedford Stuyvesant	101.7	103.6
11207	East New York	110.6	129.4
11208	Cypress Hills	97.8	109.0
11209	Bay Ridge	90.0	93.9
11210	Vanderveer	62.1	73.1
11211	Williamsburg	57.9	62.3
11212	Brownsville	116.9	134.8
11213	Crown Heights-Weeksville	86.7	99.4
11214	Bath Beach-Bensonhurst	62.1	67.2
11215	Park Slope-Windsor Terrace	111.1	115.5
11216	Bedford Stuyvesant	93.7	110.4
11217	Park Slope-Boerum Hill	126.2	138.3
11218	Kensington-Windsor Terrace	63.5	64.3
11219	Borough Park	44.7	46.1
11220	Sunset Park	69.7	70.3
11221	Bushwick-Bedford Stuyvesant	114.3	127.0
11222	Greenpoint	68.0	72.9
11223	Gravesend	75.1	77.2
11224	Coney Island	114.6	124.9
11225	Crown Heights-Prospect Lefferts	67.9	79.0
11226	Flatbush	77.0	85.9
11228	Dyker Heights	68.7	69.4
11229	Homecrest-Madison	68.6	78.7
11230	Midwood	61.6	65.0
11231	Carroll Gardens-Red Hook	138.8	148.7
11232	Industry City-Sunset Park	93.5	93.4
11233	Stuyvesant Heights-Ocean Hill	117.2	132.5
11234	Flatlands-Mill Basin	69.4	78.4
11235	Sheepshead Bay-Brighton Beach	70.8	75.8
11236	Canarsie	82.1	93.5
11237	Bushwick	100.6	112.4
11238	Prospect Heights	102.0	109.5
11239	Starrett City	97.5	130.0
	Total for Brooklyn	**83.0**	**90.0**

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.
Note: Prevalence rates do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health, the State Office for People With Developmental Disabilities or a county outside of New York City, recipients whose claiming or encounter data contained invalid zip codes, recipients whose claiming or encounter data omitted zip code information, recipients no longer residing in the City of New York, and homeless recipients. Zip codes with fewer than 100 Medicaid recipients diagnosed with asthma are excluded.

Manhattan Medicaid Asthma Prevalence Rates by Zip Code

(per thousand Medicaid recipients)

Zip Code	Neighborhood	SFY 2008-09	SFY 2012-13
10001	Fur-Flower District	108.8	114.9
10002	Chinatown-Lower East Side	68.8	80.5
10003	Cooper Square-Union Square	92.8	98.3
10009	East Village-Stuy Town	122.4	144.9
10010	Flatiron-Peter Cooper Village	106.0	122.8
10011	Chelsea	117.6	107.2
10012	Village-Noho-Soho	77.3	81.0
10013	Tribeca-Chinatown	51.9	66.8
10016	Murray Hill	91.5	108.1
10018	Garment District	114.5	117.2
10019	Midtown-Clinton	84.5	91.4
10021	Upper East Side Lenox Hill	60.7	61.9
10023	Lincoln Square-Ansonia	97.2	105.9
10024	Upper West Side	95.0	110.3
10025	Cathedral-Manhattan Valley	114.1	126.1
10026	Central Harlem South	109.5	130.7
10027	Manhattanville-Harlem	114.6	131.9
10028	Upper East Side Yorkville	88.2	84.8
10029	East Harlem South	142.5	162.8
10030	Central Harlem Middle	109.1	130.1
10031	Hamilton Heights	85.3	95.3
10032	Washington Heights South	82.9	94.2
10033	Washington Heights Middle	79.7	92.6
10034	Inwood	82.8	103.3
10035	East Harlem Middle	130.1	149.8
10036	Theater District-Clinton	84.3	98.0
10037	East Harlem North	111.4	131.6
10038	South Street Seaport-Chinatown	93.8	101.3
10039	Central Harlem North	107.9	127.8
10040	Washington Heights North	76.1	89.0
10044	Roosevelt Island	77.1	88.3
10128	Upper East Side Yorkville-Carnegie Hill	93.4	119.3
	Total for Manhattan	**96.2**	**111.6**

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.
Note: Prevalence rates do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health, the State Office for People With Developmental Disabilities or a county outside of New York City, recipients whose claiming or encounter data contained invalid zip codes, recipients whose claiming or encounter data omitted zip code information, recipients no longer residing in the City of New York, and homeless recipients. Total rate does not reflect Medicaid recipients in Manhattan's Marble Hill neighborhood assigned Bronx zip code 10463. Zip codes with fewer than 100 Medicaid recipients diagnosed with asthma are excluded.

Queens Medicaid Asthma Prevalence Rates by Zip Code

(per thousand Medicaid recipients)

Zip Code	Neighborhood	SFY 2008-09	SFY 2012-13
11004	Glen Oaks	52.6	63.3
11101	Long Island City-Hunters Point	98.5	95.5
11102	Astoria-Old Astoria	80.0	82.1
11103	Astoria	58.7	59.0
11104	Sunnyside	59.5	61.6
11105	Astoria-Steinway	62.8	65.4
11106	Astoria-Ravenswood	80.1	88.2
11354	Flushing	53.5	56.0
11355	Flushing-Murray Hill	52.7	53.4
11356	College Point	63.2	69.7
11357	Whitestone	54.6	59.4
11358	Auburndale	52.5	59.6
11361	Bayside	52.7	61.4
11362	Little Neck-Douglaston	45.2	48.4
11364	Oakland Gardens-Bayside Hills	47.2	49.9
11365	Fresh Meadows	66.2	76.7
11366	Hillcrest-Fresh Meadows	64.8	73.8
11367	Kew Gardens Hills	74.7	80.8
11368	Corona	63.6	87.3
11369	East Elmhurst	64.5	79.4
*11370	Jackson Heights-Astoria Heights	58.9	59.7
11372	Jackson Heights	60.0	66.1
11373	Elmhurst	56.1	60.2
11374	Rego Park	71.0	78.8
11375	Forest Hills	67.9	77.8
11377	Woodside	63.2	63.8
11378	Maspeth	63.0	70.4
11379	Middle Village	65.5	66.2
11385	Ridgewood-Glendale	82.6	89.5
11411	Cambria Heights	62.4	81.5
11412	St. Albans	77.5	86.0
11413	Springfield Gardens-Laurelton	79.4	88.6
11414	Howard Beach	97.2	90.5
11415	Forest Hills-Kew Gardens	73.4	86.8
11416	Ozone Park-Woodhaven	86.1	83.8
11417	Ozone Park	74.7	80.8
11418	Richmond Hill	78.9	91.7
11419	Richmond Hill South	60.2	65.2
11420	South Ozone Park	70.0	74.5
11421	Woodhaven	93.4	87.6
11422	Rosedale	62.4	75.1
11423	Hollis-Holliswood	63.2	70.9
11426	Bellerose	61.5	79.1
11427	Queens Village-Hollis Hills	66.2	81.9
11428	Queens Village	62.6	82.7
11429	Queens Village South	69.4	86.7
11432	Jamaica-Hillcrest	70.9	77.3
11433	South Jamaica	93.2	102.3
11434	Rochdale	94.6	102.8
11435	Briarwood-South Jamaica	85.9	88.6
11436	South Ozone Park	79.3	86.5
11691	Far Rockaway-Edgemere	113.8	125.7
11692	Arverne	125.9	138.4
11693	Hammels-Broad Channel	124.1	135.9
11694	Seaside-Belle Harbor-Neponsit	97.3	130.6
	Total for Queens	**71.3**	**78.1**

* Includes Medicaid recipients in the Bronx neighborhood of Riker's Island assigned Queens zip code 11370.

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.
Note: Prevalence rates do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health, the State Office for People With Developmental Disabilities or a county outside of New York City, recipients whose claiming or encounter data contained invalid zip codes, recipients whose claiming or encounter data omitted zip code information, recipients no longer residing in the City of New York, and homeless recipients. Zip codes with fewer than 100 Medicaid recipients diagnosed with asthma are excluded.

Staten Island Medicaid Asthma Prevalence Rates by Zip Code

(per thousand Medicaid recipients)

Zip Code	Neighborhood	SFY 2008-09	SFY 2012-13
10301	New Brighton-Grymes Hill	102.6	115.8
10302	Port Richmond	99.5	106.3
10303	Mariners Harbor-Port Ivory	117.5	128.3
10304	Stapleton-Todt Hill	98.1	111.3
10305	Rosebank-Old Town	84.2	91.6
10306	New Dorp-Richmondtown	80.0	83.5
10307	Tottenville	75.9	75.8
10308	Great Kills	75.2	70.5
10309	Princes Bay-Woodrow	76.0	81.3
10310	West Brighton	116.2	125.4
10312	Eltingville-Arden Heights	77.2	76.1
10314	Castleton Corners-New Springville	74.8	80.9
	Total for Staten Island	**91.9**	**99.4**

Source: OSC analysis of DOH Medicaid fee-for-service claims and managed care encounter data.
Note: Prevalence rates do not reflect recipients whose Medicaid eligibility was with the State Office of Mental Health, the State Office for People With Developmental Disabilities or a county outside of New York City, recipients whose claiming or encounter data contained invalid zip codes, recipients whose claiming or encounter data omitted zip code information, recipients no longer residing in the City of New York, and homeless recipients. Zip codes with fewer than 100 Medicaid recipients diagnosed with asthma are excluded.