

Disparities among Children with Asthma in New York City

Asthma is a chronic respiratory disease characterized by airway inflammation and hyper-responsiveness that can lead to recurrent episodes of wheezing, difficulty breathing, tightness in the chest, and coughing. These episodes are typically due to airflow obstruction in the lung that either resolves on its own or in response to treatment.¹

Nationally and in New York City (NYC) asthma disproportionately affects Black and Latino/a children as well as those residing in high poverty neighborhoods.^{2,3} In 2017, 17% of children ages 13 and younger residing in the Bronx had been diagnosed with asthma at some point in their lives, compared with 11% of NYC children ages 13 and younger.^A

Disparities in childhood asthma outcomes have been described in previous Health Department publications;^{4,5} this report further highlights the trends and persistent disparities in asthma-related outcomes among children residing in the Bronx compared with other areas of NYC.

Asthma-related health disparities in the Bronx: There are several high poverty neighborhoods in the Bronx where two thirds or more of the residents are people of color. These neighborhoods persistently have the highest rates of asthma-related morbidity compared with the rest of New York City. Residents of high poverty neighborhoods very often live in poorly maintained, substandard housing which subjects residents to a number of common environmental asthma triggers, including pests, dust, mold, and smoking.⁶ These environmental triggers can in turn increase the frequency and severity of asthma symptoms and exacerbations.

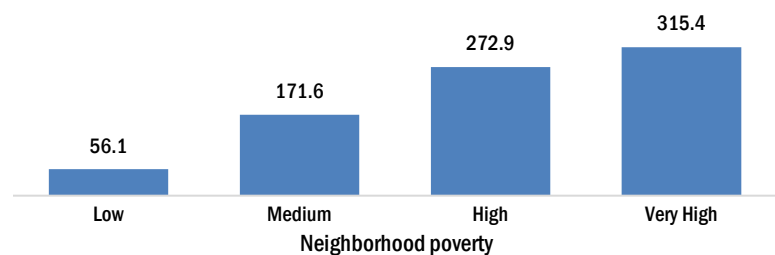
In addition to household exposures, there are other well-documented risk factors of asthma that may cause disparities in asthma-related outcomes among low income communities. Environmental injustice – inequitable exposure of poor and minority populations to environmental hazards such as air pollution – as well as neighborhood-level economic and social stressors (i.e., stress, crime, poverty),⁷ and an inequitable health care system may all play a role in why high poverty communities do not receive optimal care and treatment for asthma.

Those living in high poverty neighborhoods are more likely to seek care in emergency departments, where the acute asthma episode is treated, but controller medications for managing asthma and preventing further episodes may not be prescribed. This may lead to episodic management of asthma and a lack of continuity of care between the emergency department and primary care physician. Further difficulties in doctor-patient communication due to factors such as language barriers, cultural differences, and limited health literacy create barriers to quality care and can lead to poor treatment adherence.⁴

High poverty neighborhoods have the highest burden of asthma-related morbidity^B

- Four out of seven Bronx neighborhoods have 30% or more of the population living below the Federal Poverty Level (FPL).
- In 2016, the rate of asthma-related emergency department (ED) visits among children ages 5 to 17 years was more than six times higher in very high poverty NYC neighborhoods (30% or more of the population living below the FPL) compared with low poverty neighborhoods (less than 10% of the population living below the FPL; 315.4 vs. 56.1 per 10,000 children).
- Across all neighborhood poverty groups, 10-11% of asthma-related ED visits subsequently resulted in a hospitalization.

Asthma-related emergency department visit rates were highest among children living in very high poverty neighborhoods in New York City
Rate per 10,000 children ages 5 to 17 years by neighborhood poverty, 2016



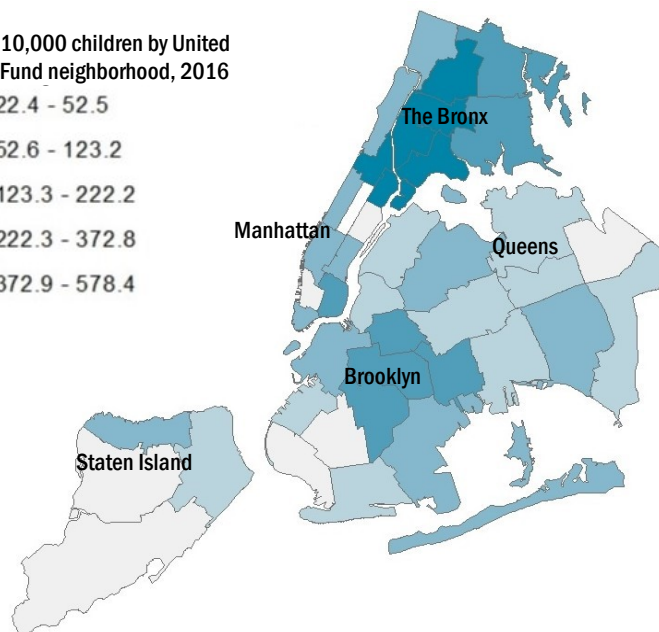
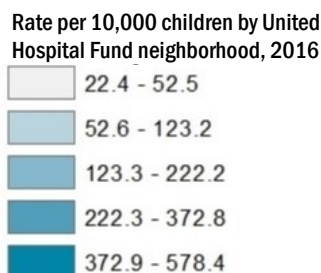
Note: Neighborhood poverty (based on ZIP code) is defined as percentage of residents with incomes below 100% of the Federal Poverty Line (FPL), per American Community Survey, 2012-2016, in four groups: low (<10% FPL), medium (10%=<20% FPL), high (20%=<30% FPL), and very high (≥30% FPL).

Source: SPARCS 2016; NYC DOHMH population estimates, modified from US Census Bureau interpolated intercensal population estimates, vintage 2016. Updated September 2017

Children living in the Bronx have been disproportionately affected by asthma for over a decade^B

- Historically, children residing in the Bronx have consistently experienced higher rates of asthma-related ED visits and hospitalizations compared with all other NYC boroughs.
- While there has been a slight decrease in asthma-related hospitalizations over the past decade (2006 to 2016), the marked disparity between the Bronx and all other NYC boroughs persists.
- In 2016, the asthma-related ED visit rate among Bronx children ages 5 to 17 years was more than two times the rate of all other NYC boroughs combined (388.4 vs. 171.5 per 10,000 children in 2016, compared with 335.9 vs. 175.1 per 10,000 children in 2006).
- This disparity was particularly apparent in two South Bronx neighborhoods, Hunts Point-Mott Haven and High Bridge-Morrisania, where asthma-related ED visit rates among children ages 5 to 17 were 502.7 and 482.2, respectively, per 10,000 children. For comparison, these rates are nearly 20 times higher than the rates of asthma-related ED visits among the same age group residing in Bayside-Little Neck (22.4 per 10,000 children), a low poverty neighborhood in Queens.

Asthma-related emergency department visits among children ages 5 to 17 years old were highest in the South Bronx compared with all other New York City neighborhoods



Note: Neighborhoods are defined by United Hospital Fund (UHF) which classifies New York City into 42 neighborhoods, comprised of contiguous ZIP codes.

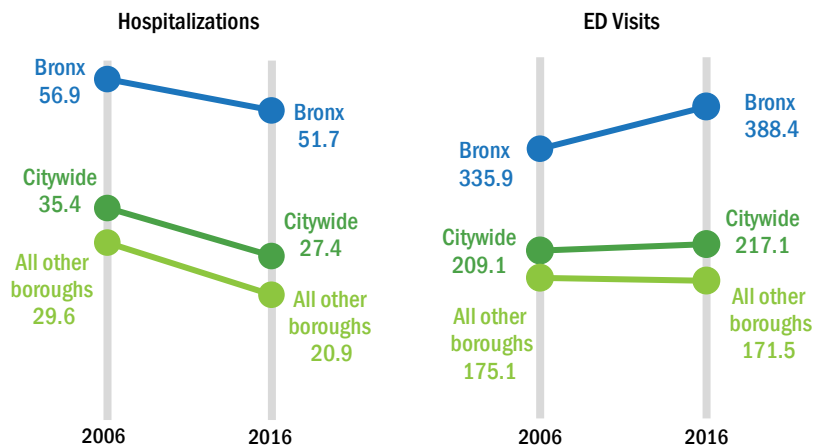
For more information visit:

<http://www1.nyc.gov/assets/doh/downloads/pdf/ah/zipcodetable.pdf>

Source: SPARCS 2016; NYC DOHMH population estimates, modified from US Census Bureau interpolated intercensal population estimates, vintage 2016. Updated September 2017

From 2006 to 2016, rates of asthma-related hospitalizations and emergency department visits were persistently higher among children ages 5 to 17 years old residing in the Bronx compared with those in the rest of New York City

Rate per 10,000 children



Source: SPARCS 2016; NYC DOHMH population estimates, modified from US Census Bureau interpolated intercensal population estimates, vintage 2016. Updated September 2017

Definitions:

Neighborhoods: The United Hospital Fund classifies New York City into 42 neighborhoods, comprised of contiguous ZIP codes. For more information visit: <http://www1.nyc.gov/assets/doh/downloads/pdf/ah/zipcodetable.pdf>.

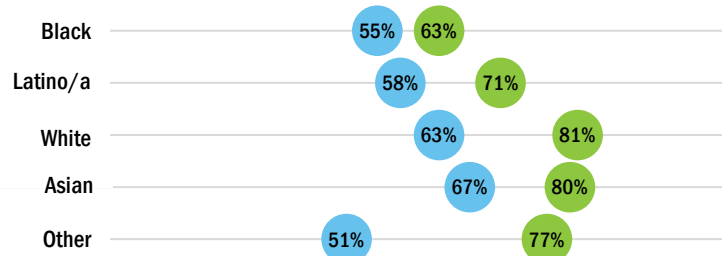
Neighborhood poverty (based on ZIP code) is defined as the percentage of the population living below the Federal Poverty Line (FPL) per the American Community Survey (2012-2016). Neighborhoods are categorized into four groups as follows: "Low poverty" neighborhoods have <10% of the population living below the FPL; "Medium poverty" neighborhoods have 10-<20% of the population below FPL; "High Poverty" neighborhoods have 20-<30% of the population living below the FPL; "Very high poverty" neighborhoods have ≥30% of the population living below the FPL.

Race/ethnicity White, Black, Asian (including Pacific Islander), and Other race categories exclude Latino/a ethnicity. Latino/a includes Hispanic or Latino/a of any race. Other race includes non-Latino/a students not identified as White, Black, or Asian, alone.

Disparities in asthma management observed among public school children in the Bronx compared with other boroughs^C

- About 60,000 children (9%) attending public schools (grades K through 8) in NYC have active asthma. Bronx public schools had a higher percentage of children with active asthma compared with NYC public schools from all other boroughs combined (12% vs. 9%).
- Among these children with asthma, only 36% of Bronx public school children had a completed asthma Medication Administration Form compared with 47% of public-school children from all other NYC boroughs combined.
- Among students with active asthma diagnoses attending public school, approximately one in four children were identified as at risk of adverse asthma outcomes in both the Bronx and in other boroughs (27% and 26%, respectively). However, among the at-risk students in the Bronx, only 57% had an asthma MAF on file, compared with 70% of non-Bronx students.
- Among at-risk Latino/a students, 58% attending public schools in the Bronx had an MAF on file, compared with 71% of students attending non-Bronx schools.

High risk Black and Latino/a K through 8th grade students with asthma at Bronx public schools are less likely to have a Medication Administration Form (MAF) on file compared with students at non-Bronx public schools
Percentage with MAF on file by race/ethnicity, New York City, 2016-2017



White, Black, Asian (including Pacific Islander), and Other race categories exclude Latino/a ethnicity. Latino/a includes Hispanic or Latino/a of any race.

Source: New York City Department of Education Automated Student Health Record, 2016-2017

Medication Administration Forms (MAFs) are completed by a physician (and must be renewed each school year), confirming a child's asthma diagnosis, and are required for school nurses to administer medication for asthma in the event of an acute asthma attack. Without a current MAF on file, nurses are legally not permitted to administer asthma medications to children with asthma. Thus, MAFs are key to the successful school management of acute asthma in children and could contribute to potentially avoidable asthma-related ED visits.

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Acknowledgements: Tejinder Singh

Data Sources: **A. Child Health, Emotional Wellness and Development Survey (CHEWDS) 2015** was a random digit dialed survey of approximately 3,000 NYC families with children ages 0 to 12 years conducted by the Health Department. Respondents were individuals who were "sufficiently knowledgeable" about the child (85% biological parents).

B. Statewide Planning and Research Collaborative System (SPARCS) 2006-2016: SPARCS is an administrative database of all hospital discharges reported by New York State (NYS) hospitals to the NYS Department of Health. Data are extracted based on the International Classification of Diseases- 9th Revision Code (ICD-9CM) 493.XX and 10th Revision Code (ICD-10CM) and J45.XX for all children ages 0 to 17 years residing in NYC. Rates were calculated using NYC DOHMH intercensal population estimates, modified from US Census Bureau interpolated intercensal population estimates, 2010-2015, vintage 2016, updated September 2017.

C. Automated Student Health Record (ASHR) 2016-17: NYC public school student ASHR data for students attending general education schools, 2016-17 school year. "Students identified as at risk" is defined by an algorithm put in place to identify children with asthma who might be at risk of adverse asthma outcomes. These red/yellow alerts use several data elements that are available to the Office of School Health and are used to target and monitor asthma programs within the NYC public schools.

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References:

- 1 Bateman E, Hurd S, Barnes P et al. Global strategy for asthma management and prevention: GINA executive summary. *European Respiratory Journal*. 2008; 31(1): 143-178.
- 2 Wright RJ, Mitchell H, Visness CM, et al. Community violence and asthma morbidity: the Inner-City Asthma Study. *Am J Public Health*. 2004;94(4):625-632.
- 3 Beck AF, Moncrief T, Huang B, et al. Inequalities in neighborhood child asthma admission rates and underlying community characteristics in one US county. *J Pediatr*. 2013;163(2):574-580. e1.
- 4 Wang H, Dannefer R, Brown-Dudley L, et al. Childhood Asthma and the Asthma Counselor Program of the East Harlem Asthma Center of Excellence. New York City Department of Health and Mental Hygiene. Epi Data Brief (90); June 2017.
- 5 Myers C, Walters S, Perez-Rivera B. Preventing and Treating Childhood Asthma in New York City. NYC 2012, 11(4): 1-4.
- 6 Williams DR, Sternthal, M, Wright RJ. Social determinants: taking the social context of asthma seriously. *Pediatrics*. 2009 Mar; 123 (Suppl3): S174-S184.
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Epi Data Tables

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Data Tables

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Data Sources

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Automated Student Health Record (ASHR) 2016-17: NYC public school student ASHR data for students attending general education schools, 2016-17 school year. "Students identified as at risk" is defined by an algorithm put in place to identify asthmatic children who might be at risk of adverse asthma outcomes. These red/yellow alerts use several data elements that are available to the Office of School Health and are used to target and monitor asthma programs within the NYC public schools.

Table 1. Asthma-related emergency department visits in New York City by United Hospital Fund neighborhood,[^] 2016

Source: New York Statewide Planning and Cooperative System, 2016; NYC DOHMH population estimates, modified from US Census Bureau interpolated intercensal population estimates, vintage 2016, updated September 2017

UHF	Neighborhood	Ages 0-4 years		Ages 5-17 years		Ages 0-17 years	
		Count	Rate per 10,000	Count	Rate per 10,000	Count	Rate per 10,000
101	Kingsbridge - Riverdale	122	205.9	195	161.6	317	176.2
102	Northeast Bronx	525	436.1	940	286.7	1465	326.9
103	Fordham - Bronx Park	1169	576.3	1948	417	3117	465.2
104	Pelham - Throgs Neck	866	420.1	1484	285.2	2350	323.5
105	Crotona - Tremont	1279	695	1928	437.1	3207	513.0
106	High Bridge - Morrisania	1427	790.6	2106	482.2	3533	572.4
107	Hunts Point-Mott Haven	1029	862	1469	502.7	2498	606.9
	Bronx	6417	601.5	10069	388.4	16486	450.5
201	Greenpoint	117	102.7	158	78.5	275	87.2
202	Downtown - Heights - Slope	282	145	433	153.5	715	150.0
203	Bedford Stuyvesant - Crown Heights	1060	452.1	1878	372.8	2938	398.0
204	East New York	752	515.3	1271	357.4	2023	403.4
205	Sunset Park	127	115.7	206	102	333	106.8
206	Borough Park	214	63.2	310	44.9	524	50.9
207	East Flatbush - Flatbush	596	298.1	1170	260.6	1766	272.2
208	Canarsie - Flatlands	327	261.7	554	169.4	881	194.9
209	Bensonhurst - Bay Ridge	81	60.7	155	52.5	236	55.1
210	Coney Island - Sheepshead Bay	215	124.7	332	81.6	547	94.5
211	Williamsburg - Bushwick	648	380.8	1239	324.1	1887	341.6
	Brooklyn	4419	228	7706	188.2	12125	201.0
301	Washington Heights - Inwood	448	288.5	761	222.2	1209	242.9
302	Central Harlem - Morningside Heights	711	684.9	1342	570.1	2053	605.2
303	East Harlem	486	700.1	957	578.4	1443	614.4
304	Upper West Side	178	152.9	280	134.7	458	141.2
305	Upper East Side	80	71	75	36	155	48.3
306	Chelsea - Clinton	45	87.6	126	166.1	171	134.4
307	Gramercy Park - Murray Hill	43	94.6	84	143.8	127	122.3
308	Greenwich Village - Soho	19	55.8	23	41.2	42	46.7
309	Union Square - Lower East Side	207	276.6	435	264.3	642	268.1
310	Lower Manhattan	33	86.2	63	142.6	96	116.4
	Manhattan	2250	277.8	4146	261.9	6396	267.3
401	Long Island City - Astoria	148	132.6	276	123.2	424	126.4
402	West Queens	711	217	1057	159.5	1768	178.6
403	Flushing - Clearview	180	129.8	244	78.3	424	94.1
404	Bayside - Little Neck	23	50.1	29	22.4	52	29.6
405	Ridgewood - Forest Hills	203	128.2	292	88.8	495	101.6
406	Fresh Meadows	94	132.8	147	100.5	241	111.1
407	Southwest Queens	343	182.3	571	119.6	914	137.3
408	Jamaica	633	316.4	907	187.7	1540	225.4
409	Southeast Queens	210	183.2	294	95.6	504	119.3
410	Rockaway	191	198.7	379	175.1	570	182.4
	Queens	2736	188.8	4199	128.1	6935	146.7
501	Port Richmond	135	284.7	223	166.7	358	197.6
502	Stapleton - St. George	143	197.6	244	122.1	387	142.2
503	Willowbrook	35	75	58	44.5	93	52.5
504	South Beach - Tottenville	52	50.8	107	34.6	159	38.7
	Staten Island	365	135.8	632	81.8	997	95.7
	New York City	16187	292.6	26752	217.1	42939	240.5

[^] The United Hospital Fund (UHF) classifies New York City into 42 neighborhoods, comprised of contiguous ZIP codes.

UHF counts may not add up to borough and citywide counts

Table 2. Asthma-related hospitalizations in New York City by United Hospital Fund neighborhood,^ 2016

Source: New York Statewide Planning and Cooperative System, 2016; NYC DOHMH population estimates, modified from US Census Bureau interpolated intercensal population estimates, vintage 2016, updated September 2017

UHF	Neighborhood	Ages 0-4 years		Ages 5-17 years		Ages 0-17 years	
		Count	Rate per 10,000	Count	Rate per 10,000	Count	Rate per 10,000
101	Kingsbridge - Riverdale	25	42.2	25	20.7	50	27.8
102	Northeast Bronx	126	104.7	141	43	267	59.6
103	Fordham - Bronx Park	248	122.3	296	63.4	544	81.2
104	Pelham - Throgs Neck	219	106.2	224	43.1	443	61.0
105	Crotona - Tremont	216	117.4	217	49.2	433	69.3
106	High Bridge - Morrisania	287	159	272	62.3	559	90.6
107	Hunts Point-Mott Haven	196	164.2	166	56.8	362	88.0
	Bronx	1317	123.4	1340	51.7	2657	72.6
201	Greenpoint	15	13.2	17	8.4	32	10.2
202	Downtown - Heights - Slope	57	29.3	58	20.6	115	24.1
203	Bedford Stuyvesant - Crown Heights	229	97.7	241	47.8	470	63.7
204	East New York	176	120.6	181	50.9	357	71.2
205	Sunset Park	18	16.4	16	7.9	34	10.9
206	Borough Park	41	12.1	32	4.6	73	7.1
207	East Flatbush - Flatbush	178	89	184	41	362	55.8
208	Canarsie - Flatlands	91	72.8	81	24.8	172	38.0
209	Bensonhurst - Bay Ridge	13	9.7	18	6.1	31	7.2
210	Coney Island - Sheepshead Bay	45	26.1	39	9.6	84	14.5
211	Williamsburg - Bushwick	114	67	123	32.2	237	42.9
	Brooklyn	977	50.4	990	24.2	1967	32.6
301	Washington Heights - Inwood	99	63.8	110	32.1	209	42.0
302	Central Harlem - Morningside Heights	138	132.9	148	62.9	286	84.3
303	East Harlem	64	92.2	87	52.6	151	64.3
304	Upper West Side	28	24	15	7.2	43	13.3
305	Upper East Side	24	21.3	14	6.7	38	11.8
306	Chelsea - Clinton	-	-	-	-	19	14.9
307	Gramercy Park - Murray Hill	-	-	-	-	16	15.4
308	Greenwich Village - Soho	-	-	-	-	-	-
309	Union Square - Lower East Side	33	44.1	40	24.3	73	30.5
310	Lower Manhattan	-	-	-	-	16	19.4
	Manhattan	416	51.4	440	27.8	856	35.8
401	Long Island City - Astoria	32	28.7	23	10.3	55	16.4
402	West Queens	100	30.5	98	14.8	198	20.0
403	Flushing - Clearview	40	28.8	39	12.5	79	17.5
404	Bayside - Little Neck	-	-	-	-	-	-
405	Ridgewood - Forest Hills	51	32.2	46	14	97	19.9
406	Fresh Meadows	28	39.6	23	15.7	51	23.5
407	Southwest Queens	85	45.2	61	12.8	146	21.9
408	Jamaica	118	59	121	25	239	35.0
409	Southeast Queens	62	54.1	53	17.2	115	27.2
410	Rockaway	36	37.5	37	17.1	73	23.4
	Queens	559	38.6	506	15.4	1065	22.5
501	Port Richmond	34	71.7	49	36.6	83	45.8
502	Stapleton - St. George	41	56.6	31	15.5	72	26.5
503	Willowbrook	12	25.7	-	-	17	9.6
504	South Beach - Tottenville	24	23.4	12	3.9	36	8.8
	Staten Island	111	41.3	97	12.5	208	20.0
	New York City	3380	61.1	3373	27.4	6753	37.8

^ The United Hospital Fund (UHF) classifies New York City into 42 neighborhoods, comprised of contiguous ZIP codes.

- Data suppressed due to small number of events

UHF counts may not add up to borough and citywide counts

Table 3. Asthma prevalence, asthma medication administration forms, and students identified as at risk for adverse asthma outcomes in New York City public schools by grade level and race/ethnicity in the 2016-17 school year

Source: NYC public school student Automated Student Health Record (ASHR) data for students attending general education schools, 2016-17 school year.

Grade	Number of Children	Active Asthma		Asthma Medication Administration Form (MAF)		Students identified as at risk		Students identified as at risk with Asthma MAF		Students identified as at risk with Asthma MAF for ICS (inhaled corticosteroids) in school	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Pre-K	70873	2945	4.2%	1126	38.2%	1096	37.2%	459	41.9%	7	0.6%
K to 5th	436124	44422	10.2%	21050	47.4%	12844	28.9%	8951	69.7%	261	2.0%
6th to 8th	203303	15640	7.7%	5332	34.1%	3144	20.1%	1696	53.9%	42	1.3%
9th to 12th	285221	10025	3.5%	2104	21.0%	1879	18.7%	558	29.7%	15	0.8%

Race/Ethnicity	Number of Children	Active Asthma		Asthma Medication Administration Form (MAF)		Students identified as at risk		Students identified as at risk with Asthma MAF		Students identified as at risk with Asthma MAF for ICS (inhaled corticosteroids) in school	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
K to 5th											
Asian	77060	3956	5.1%	2173	54.9%	924	23.4%	745	80.6%	18	1.9%
Black	91037	13128	14.4%	5665	43.2%	4188	31.9%	2687	64.2%	105	2.5%
Latino/a	182454	22411	12.3%	10458	46.7%	6455	28.8%	4477	69.4%	125	1.9%
White	74300	3999	5.4%	2267	56.7%	1015	25.4%	841	82.9%	9	0.9%
Other	11273	928	8.2%	487	52.5%	262	28.2%	201	76.7%	4	1.5%
6th to 8th											
Asian	36549	1546	4.2%	712	46.1%	260	16.8%	182	70.0%	0	0.0%
Black	46774	4717	10.1%	1405	29.8%	1023	21.7%	500	48.9%	18	1.8%
Latino/a	82984	7472	9.0%	2398	32.1%	1509	20.2%	779	51.6%	18	1.2%
White	32892	1646	5.0%	722	43.9%	301	18.3%	206	68.4%	6	2.0%
Other	4104	259	6.3%	95	36.7%	51	19.7%	29	56.9%	0	0.0%

Grade	Number of Children	Active Asthma		Asthma Medication Administration Form (MAF)		Students identified as at risk		Students identified as at risk with Asthma MAF		Students identified as at risk with Asthma MAF for ICS (inhaled corticosteroids) in school	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
K-12	924648	70087	7.6%	28486	40.6%	17867	25.5%	11205	62.7%	318	1.8%
K-8	639427	60062	9.4%	26382	43.9%	15988	26.6%	10647	66.6%	303	1.9%

Race/Ethnicity	Number of Children	Active Asthma		Asthma Medication Administration Form (MAF)		Students identified as at risk		Students identified as at risk with Asthma MAF		Students identified as at risk with Asthma MAF for ICS (inhaled corticosteroids) in school	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
K to 8th											
Asian	113609	5502	4.8%	2885	52.4%	1184	21.5%	927	78.3%	18	1.5%
Black	137811	17845	12.9%	7070	39.6%	5211	29.2%	3187	61.2%	123	2.4%
Latino/a	265438	29883	11.3%	12856	43.0%	7964	26.7%	5256	66.0%	143	1.8%
White	107192	5645	5.3%	2989	52.9%	1316	23.3%	1047	79.6%	15	1.1%
Other	15377	1187	7.7%	582	49.0%	313	26.4%	230	73.5%	4	1.3%

School Borough	Number of Children	Active Asthma		Asthma Medication Administration Form (MAF)		Students identified as at risk		Students identified as at risk with Asthma MAF		Students identified as at risk with Asthma MAF for ICS (inhaled corticosteroids) in school	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
K to 8th											
Bronx school	139230	17045	12.2%	6162	36.2%	4616	27.1%	2645	57.3%	120	2.6%
non-Bronx school	500197	43017	8.6%	20220	47.0%	11372	26.4%	8002	70.4%	183	1.6%

Race/Ethnicity	Number of Children	Active Asthma		Asthma Medication Administration Form (MAF)		Students identified as at risk		Students identified as at risk with Asthma MAF		Students identified as at risk with Asthma MAF for ICS (inhaled corticosteroids) in school	
		Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Bronx School (K-8)											
Asian	6199	409	6.6%	167	40.8%	108	26.4%	72	66.7%	2	1.9%
Black	35292	4513	12.8%	1645	36.5%	1395	30.9%	772	55.3%	41	2.9%
Latino/a	89270	10603	11.9%	4087	38.5%	2959	27.9%	1709	57.8%	76	2.6%
White	6537	465	7.1%	191	41.1%	109	23.4%	69	63.3%	1	0.9%
Other	1932	175	9.1%	72	41.1%	45	25.7%	23	51.1%	0	0.0%
non-Bronx School (K-8)											
Asian	107410	4994	4.6%	2718	54.4%	1076	21.5%	855	79.5%	16	1.5%
Black	102519	12587	12.3%	5425	43.1%	3816	30.3%	2415	63.3%	82	2.1%
Latino/a	176168	18110	10.3%	8769	48.4%	5005	27.6%	3547	70.9%	67	1.3%
White	100655	5110	5.1%	2798	54.8%	1207	23.6%	978	81.0%	14	1.2%
Other	13445	986	7.3%	510	51.7%	268	27.2%	207	77.2%	4	1.5%

"Students identified as at risk" is defined by an algorithm put in place to identify children who might be at risk of adverse asthma outcomes. These red/yellow alerts utilize a number of data elements that are available to the Office of School Health and are used to target and monitor asthma programs within the NYC public schools.