

# Constricted Airways:

## Status of Asthma Among Puerto Ricans and Latinos in New York State

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### CONTENTS

- 1 PREFACE
- 1 EXECUTIVE SUMMARY
  - 1 Preliminary findings
  - 2 Recommendations for continued actions
- 2 INTRODUCTION
  - 3 What is asthma, major causes?
  - 3 What is in the air?
- 4 PREVALANCE
  - 4 National patterns:  
Lifetime asthma prevalence
  - 5 National patterns:  
Current asthma prevalence  
by gender
  - 5 New York patterns:  
Current and lifetime prevalence
  - 5 New York City patterns: Current  
prevalence for adults by age,  
race/ethnicity and gender
  - 8 New York City/State patterns:  
Current and lifetime asthma  
prevalence for children
  - 9 Limitations of data
- 10 RECOMMENDATIONS

### PREFACE

Asthma is a serious problem for many communities in New York. This disease severely limits an individual's ability to breathe and curtails quality of life. My interest in the topic of asthma emerges from prior research on the Bronx and South Bronx Clean Air Coalitions. I documented their environmental justice campaigns in the South Bronx to close a medical waste incinerator. The campaign was interethnic and had many Puerto Rican and Latino leaders. Many of the participants became active because of the high levels of asthma in the South Bronx and the links between pollution and illness. This report highlights the distribution and impact of asthma on Latinos and Puerto Ricans in New York City and New York State and provides recommendations for programmatic interventions and further research.<sup>1</sup>

Asthma is a chronic respiratory disease with many causes including indoor and outdoor pollution. It is a leading cause of school absence among children and is the most common cause of hospitalization for 14 year olds and younger. Among adults, asthma causes absence from work, emergency department visits, and limitation of activity.<sup>2</sup>

### EXECUTIVE SUMMARY

#### Preliminary findings

Nationally, 22 million people, including 6.5 million children are asthmatic. Data on both lifetime & current asthma prevalence are used to show the extent of asthma for Latinos and Puerto Ricans. Not surprisingly, asthma prevalence is higher among families with low incomes.<sup>3</sup> In New York State, 2004 prevalence data reports 16.1% of Hispanics are diagnosed with lifetime asthma,<sup>4</sup> compared to 12.2 % of African Americans, and 14.0% of Whites.<sup>5</sup>



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1 With Acknowledgements to Omar Ortiz, Dr. George Friedman-Jimenez, Eddie Batista, Reverend Earl Koopercamp, George Lipson, Carlos Alicea, NYC Department of Health and Mental Hygiene, Elena Schwolsky-Fitch, Asthma Training Institute, New York City Asthma Initiative, Olivia Perrotta Hare Asthma Free School Zone, Michelle Santiago.

2 New York City Department of Health and Mental Hygiene Fact Sheet on Asthma from website: [www.nyc/html/doh/html/asthma](http://www.nyc/html/doh/html/asthma)

3 United States Environmental Protection Agency. *EPA Asthma Facts May 2007. Indoor Environment Division Office of Air and Radiation. EPA 402-F-04-019. [www.epa.gov/iag/asthma.html](http://www.epa.gov/iag/asthma.html)*

4 Note that the national and local health agencies collect their statistics using the question, "Persons have been told they have asthma in the past 12 months".

5 Larry L. Steele, Ph.D, Cheryl M. Elleberg, MPH and Michael G. Medvesky, MPH. "Asthma Among Adults in New York State, 1996-2002: Prevalence and Behavior". *Behavioral Risk Factor Surveillance System*. Vol. 11, No. 1. New York State Department of Health, Bureau of Chronic Disease Epidemiology and Surveillance.

In NYC, the Hispanic adult self-reported asthma prevalence citywide is 6.88 % but varies widely by borough (3.27%-13.39%). The Puerto Rican self-reported asthma prevalence rate is (11 .85%) citywide but it also varies by borough (8.07% to 15.08%, see figure 9). The Puerto Rican average prevalence rate is almost double that of Hispanics.<sup>6</sup>

### Recommendations for continued action

1. Continue support of community, government and academic partnerships to research and promote strategies to decrease outdoor pollution. For example, the use of alternative fuels in automobiles, city and school buses, the rerouting of traffic and the promotion of green spaces are strategies that should be explored.
2. Support culturally competent (language appropriate, degree of literacy) effective health services in hospital asthma clinics and community based clinics for vulnerable children, seniors and workers.
3. Expansion of treatment options for workplace asthma.
4. Increase prevention, education and programmatic interventions including the programs from the NYC Department of Health and Mental Hygiene on Integrated Pest Management as well as pilot projects in Harlem under the NYCHA to reduce and remediate indoor housing conditions that lead to mold, mildew, dust and pest infestation.
5. Promote smoking cessation programs in Latino/Puerto Rican communities.
6. A need for further research on:
  - a. the differences in asthma rates within Latino/a sub-populations and comparisons to the populations within the “Multiracial/other” categories.
  - b. High rates of asthma prevalence among Puerto Ricans,
  - c. the causes and diagnostic tools for workplace asthma
7. Further research of the role diet, exercise and access to healthy food has on asthma prevalence in the Latino/a community.

### INTRODUCTION

Asthma affects Latinos, Puerto Ricans, and minorities at much higher rates than other populations. The Federal Environmental Protection Agency (EPA) sees asthma as a growing public health concern.<sup>7</sup> The EPA 2007 fact sheets reports that the United States Department of Health and Human Services Centers for Disease Control and Prevention statistics counts 22 million people, including 6.5 million children with asthma.<sup>8</sup> Asthma prevalence is higher among families with low incomes. Approximately 2 million Hispanics in the U. S. have asthma and Puerto Ricans are disproportionately impacted:

- the rate of asthma among Puerto Ricans is 125% higher than non-Hispanic Whites
- the prevalence of asthma attacks is highest among Puerto Ricans<sup>9</sup>

The report integrates national and local health statistics, and interviews with physicians, community activists, health educators and project directors to explore three questions:

1. what are the demographic and geographic trends of asthma prevalence and mortality for the Puerto Rican and Latino community in NYC.
2. What are some of the current research, intervention, education and prevention approaches applied in this community?
3. What are areas that need further research?

Both quantitative and qualitative data are used to explain the various aspects of asthma for the Latino community. The data sources include the New York City Department of Health and Mental Hygiene, the New York State Department of Health, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System, National Institutes of Health and The Federal Environmental Protection Agency, and data sets from community partnerships.

<sup>7</sup> United States Environmental Protection Agency, *EPA Asthma Facts May 2007*. Indoor Environment Division Office of Air and Radiation. EPA 402-F-04-019. [www.epa.gov/iag/asthma.html](http://www.epa.gov/iag/asthma.html)

<sup>8</sup> Ibid.

<sup>9</sup> United States Environmental Protection Agency, *EPA Asthma Facts May 2007*. Indoor Environment Division Office of Air and Radiation. EPA 402-F-04-019. [www.epa.gov/iag/asthma.html](http://www.epa.gov/iag/asthma.html)

<sup>6</sup> New York City Department of Health & Mental Hygiene Community Health Survey 2003-2004, 2005 New York City Interactive Health Information accessed from October 2005-March 2007. <http://www.nyc.gov/html/doh/html/community>

### What is asthma, major causes?

Asthma is a chronic lung condition characterized by the closing of airways. There are various causes for asthma. The report mentions the affects of outdoor and indoor pollution as well as workplace exposures. Claudio and others at Mount Sinai research the connections between air pollution and asthma rates for minority communities.<sup>10</sup> The heightened impact of asthma upon Latino/vulnerable populations (ie.children, elderly) is also noted, as well as limited access to consistent health care.

### What is in the air?

Air pollution negatively contributes to health and respiratory problems for people in the United States. The American Lung Association reported even while air quality has improved over the last two decades, 160 million tons of air pollution was released in 2002. Approximately 146 million people in the U.S. live in counties that did not meet EPA standards.<sup>11</sup> Figure 1 illustrates that (57%) of Whites, (65%) of African Americans and (80%) of Hispanics live in counties that are not in compliance with the Clean Air Act's air quality standards Hispanics are more concentrated in areas with high levels of pollutants. The percentages of the Hispanic population that lives in areas with high levels of carbon monoxide (57.1%) and ozone (71.2%) are both one-third more than the percentage of the White population that live in areas with high levels (33.6% and 52.5 %). The percentage of the Hispanic population living in areas with high levels of particulate matter (34%) is almost double that of the White population (14.7%). These patterns are shown in Figure 2.

The American Lung Association reports that exposure to high levels of ozone causes shortness of breath and coughing, can trigger asthma attacks and reduce lung function. Ozone comes from sunlight mixing with hydrocarbons given out in gas/oil emissions. Carbon monoxide (CO<sub>2</sub>) is a colorless and odorless gas and can be poisonous at high levels. It is formed when carbon in fuel is not completely burned. CO<sub>2</sub> can cause harmful

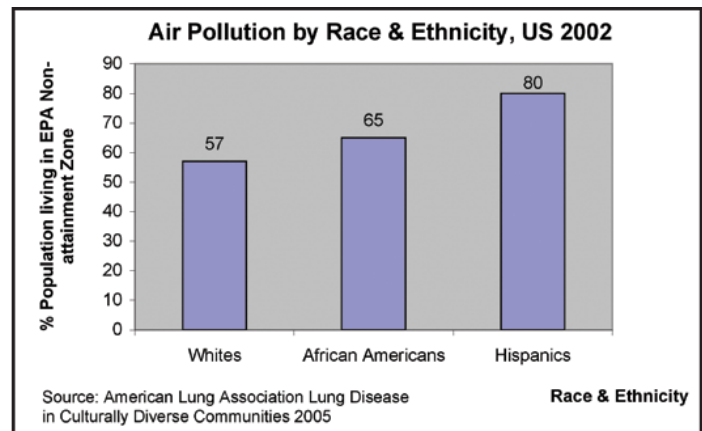


Figure 1

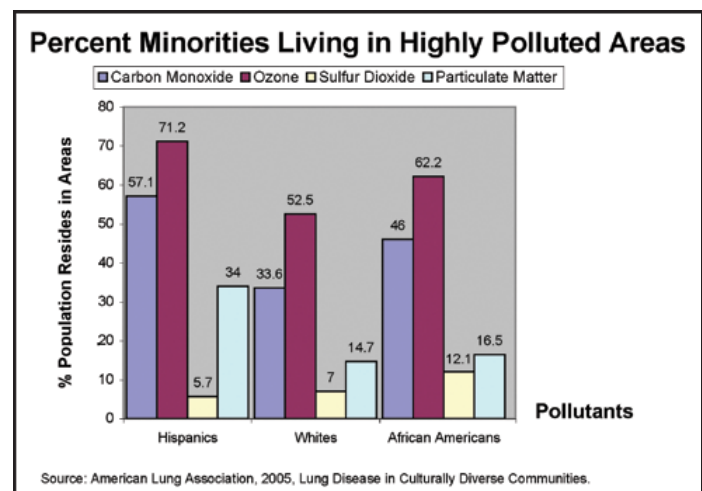


Figure 2

health effects by reducing oxygen delivery to the body's organs and tissues. Sulfur dioxide is formed when fuel-containing sulfur (coal and oil) is burned and leads to health concerns such as difficulty breathing, pulmonary illness and heart disease. Sulfur dioxide contributes to the creation of ozone pollution. Particulate matter is composed of a variety of different components, including carbon-based particles, dust and acid aerosols. It is connected to premature deaths, can trigger asthma attacks, wheezing, coughing and lung irritation.<sup>12</sup>

Components of indoor air are also highly polluted and contribute to asthma. The American Lung Association reports

10 Luz Claudio, PhD, Jeanette A. Stingone, MPH, & James Godbold, PhD. 2005 "Prevalence of Childhood Asthma in Urban Communities: The Impact of Ethnicity and Income". *Annals of Epidemiology*. 2005 Elsevier Inc. Contact Luz Claudio, PhD. Mount Sinai School of Medicine, Box 1057, One Gustave L. Levy Place, NY, NY 10029, 212 -241-7625. Email: Luz.Claudio@mssm.edu

11 American Lung Association report "Lung Disease in Culturally Diverse Communities 2005", [www.lungusa.org](http://www.lungusa.org)

12 Ibid. pp. 23 -24, [www.lungusa.org](http://www.lungusa.org).

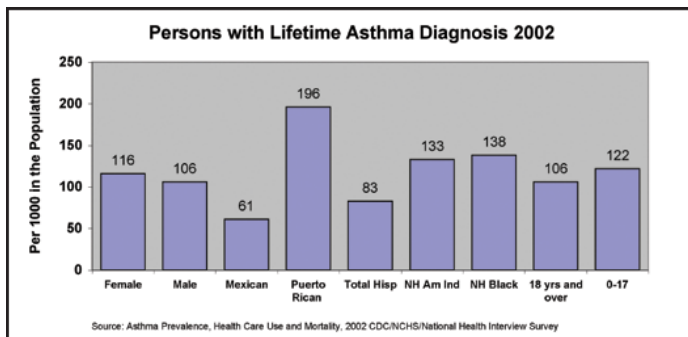


Figure 3

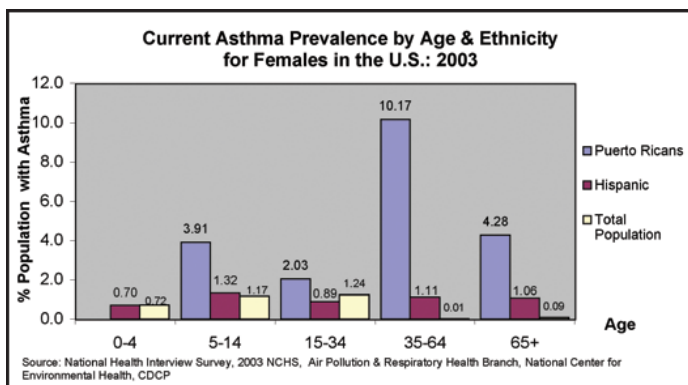


Figure 4

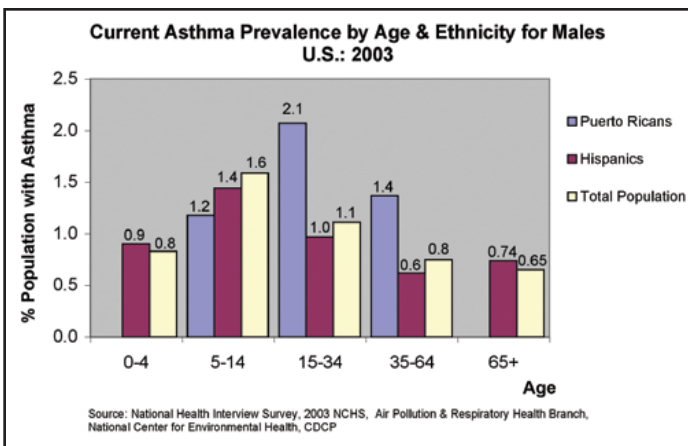


Figure 5

findings from the U.S. Environmental Protection Agency that “show human exposure to indoor levels of air pollutants may be two to three times higher than outdoor levels and in some cases 100 times higher. Areas where long term exposure may

occur such as home, school and work are of greatest concern.”<sup>13</sup> Sources of indoor air pollution include tobacco smoke, radon, and devices that combust such as heaters, stoves, furnaces. These produce carbon monoxide, nitrogen dioxide and sulfur dioxide. Other sources of indoor air pollutants include dust, pet dander, mold, roach and rat infestations and toxic chemicals emitted from cleaning, beauty and pesticides products.

A number of national and local health agencies collect data for various Latino/Hispanic subgroups.<sup>14</sup> The best sources of data which disaggregate Latino/a’s asthma rates are the U.S. Department of Health and Human Services Centers for Chronic Disease Prevention and Health Promotion Division of Adult and Community Health as well as the National Center for Environmental Health and the N.Y.C. Department of Health and Mental Hygiene.

## PREVALENCE

Asthma prevalence measures the number of people in the population with the condition. There are two types of prevalence measures, current and lifetime. Data from both measures are used since both are important and some of the agencies only collect information on one. New York City Department of Health and Mental Hygiene only gather information on current asthma prevalence. The lifetime asthma prevalence is a broader measure, exhibiting less change, and providing a stronger measure over time of the extent of asthma for a population. Current asthma prevalence is narrower and focuses on a moment on time, exhibiting more fluctuation. Possible reasons for the fluctuation include the changing categories used to capture differences among ethnic groups. These categories are not used consistently throughout the years. The lifetime asthma and multiple year measures allows for a review of trends helpful for the planning and allocation of treatment and preventive alternatives.

### National patterns: Lifetime asthma prevalence

Figure 3 illustrates several demographic characteristics about individuals with a lifetime diagnosis of asthma. Children and

<sup>13</sup> Ibid. pp. 24. [www.lungusa.org](http://www.lungusa.org).

<sup>14</sup> Data is from the most recent available year except in instances where a question is not asked in that year.

those under 17 face a higher incidence, with asthma at 12 per 1000 than those 18 yrs and older at 106 per 1000 in the population. While ethnic/racial groups Non-Hispanic (NH) Blacks and Non-Hispanic (NH) American Indians have similar rates of asthma, 13.8 per 1000 for (NH) Blacks and 13 per 1000 for NH American Indians. The Total Hispanic category has a much lower number of persons with lifetime asthma at only 83 per 1000. However, within the Hispanic categories Puerto Ricans have a high rate at 196 per 1000 almost one fifth. That means one of every five Puerto Ricans has ever had a lifetime asthma diagnosis. Mexicans have a much lower rate of 61 per 1000. Females in the total population have a higher rate than males with a 11.6 per 1000 than males whose rate is 106 per 1000. These gender ratios are also visible in the local N.Y.C. data asthma rates but vary considerably by age cohorts within different ethnicities.

#### National patterns: Current asthma prevalence by gender

Figure 4 presents national data on the current asthma prevalence rates for Puerto Ricans, Hispanics and the Total Population for females. Asthma prevalence is double the rate (3.91%) for Puerto Rican women age 5-14, compared to Hispanics (1.32%) and the Total Population (1.17%). The rate of current asthma for the 35-64 age group is nearly ten times higher (10.17%) for Puerto Rican women, compared to (1.11%) for Hispanics and (0.01%) for the Total Population. For the 65+ age group Puerto Rican women have a rate of (4.28%) four times higher than the rate of (1.06%) for Hispanic and (0.09%) for the Total Population.

Figure 5 presents national data on the current asthma prevalence rates for Puerto Ricans, Hispanics and the Total Population for males. The percentage of men with asthma is similar in all the age and ethnic groups except that for ages 15-34 the Puerto Rican rate (2.1%) is double the rate of males of Hispanic origin and the Total Population. For men ages 35-64 the current asthma rate is nearly two times higher at (1.4%) to the rates of males of Hispanic origin and in the Total Population. Finally, it is worth noting that in the 65+ age group, while the numbers are too small to be significant for Puerto Ricans, the Hispanic current asthma prevalence rate is (0.74%) slightly higher than the total population percent of (0.65%).

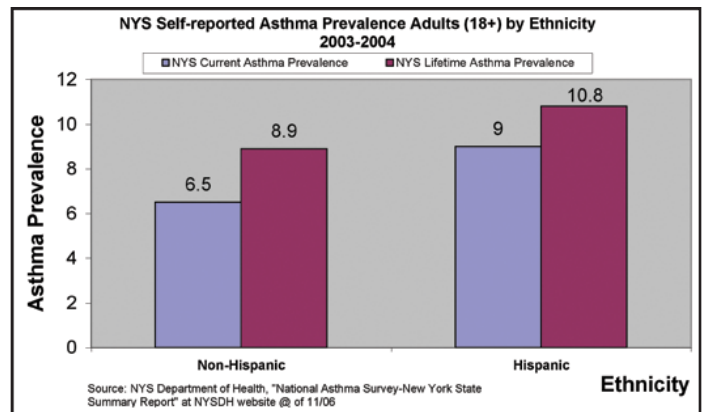


Figure 6

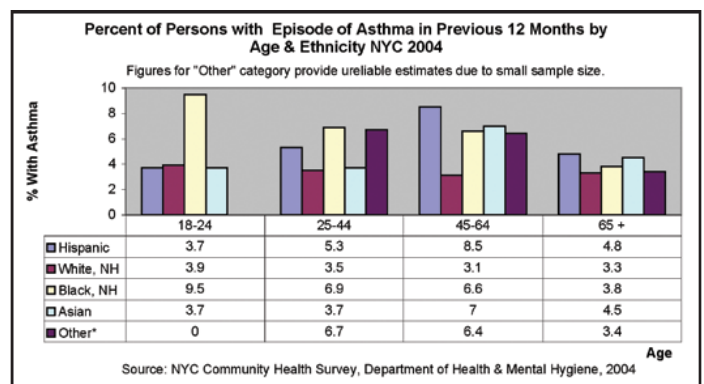


Figure 7a

#### New York patterns: Current and lifetime prevalence

Figure 6 compares the current asthma prevalence and lifetime asthma prevalence for Hispanic and Non-Hispanic populations in New York State. The current asthma prevalence rate for Hispanics is (9.0%) compared to the rate of (6.5%) for Non-Hispanic. The lifetime asthma prevalence rate for Hispanics is (10.8%) compared to the rate of (8.9%) for Non-Hispanics.

#### New York City patterns: Current prevalence for adults by age, race/ethnicity and gender

Figure 7a presents a breakdown of New York City residents who experienced an episode of asthma in the past 12 months by age groups and race/ethnicity. The Hispanic current asthma rate of (8.5%) for the 45-64 age group is the highest of all groups. The Hispanic rate of (4.8%) for the 65+ age group is

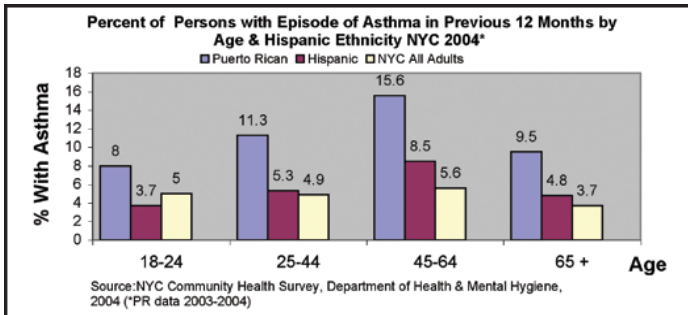


Figure 7b

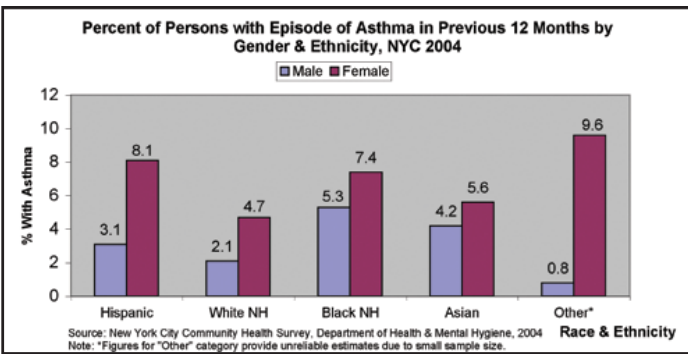


Figure 8a

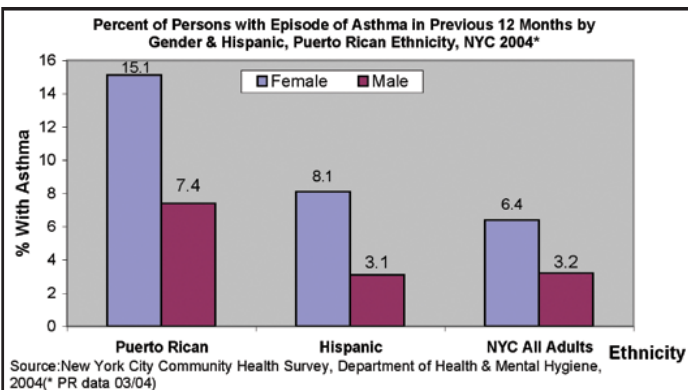


Figure 8b

also the highest compared to the White non-Hispanic of (3.3%), the Black rate of (3.8%), the Asian rate of (4.5%) and the rate for Other, of (3.4%).

Figure 7b compares the Puerto Rican current asthma prevalence rates to the Hispanic and Total population (All N.Y.C. Adults). The Puerto Rican current asthma rates are the highest compared to the rates for Hispanics and All N.Y.C. Adults. The Puerto Rican current asthma rate is (8.0%) for persons 18 to 24

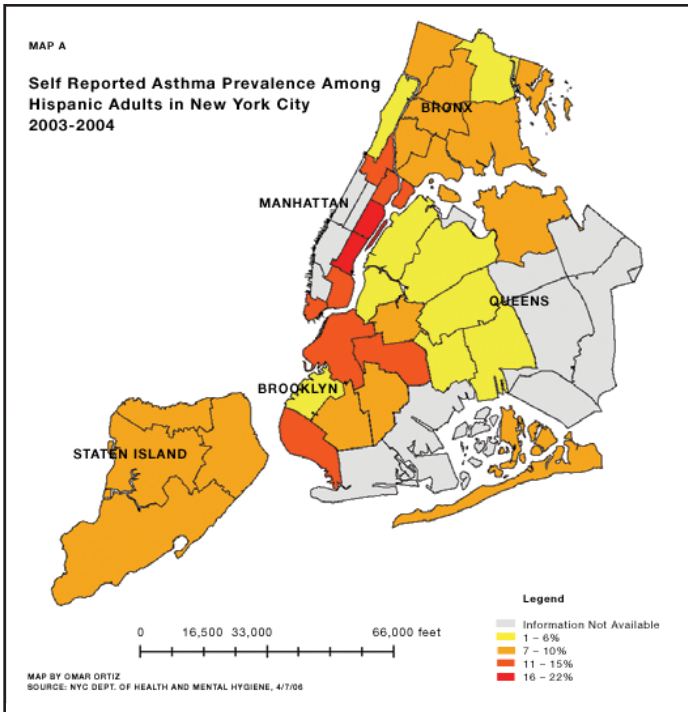
years, which is double the Hispanic rate of (3.7%) and more than four times higher than the rate for All N.Y.C. Adults (1.8%). For Puerto Rican persons aged 25 to 44, the rate is (11.3%), more than double the Hispanic rate of (5.3%) and the N.Y.C. All Adults rate of (4.9%). For the group aged 45 to 64 years, the Puerto Rican rate is (15.6%), almost double the Hispanic rate of (8.5%) and about three times the rate for All N.Y.C. Adults which is (5.6%). Finally, for the 65+ the Puerto Rican rate is (9.5%) almost double the Hispanic rate of (4.8%) and more than double the rate of (3.7%) for All N.Y.C. Adults.

Figure 8a presents current asthma prevalence by race/ethnicity and gender for the N.Y.C. population who reported experiencing an episode of asthma in the past 12 months. Data were not readily available for Puerto Rican origin, so I examined the prevalence among Hispanics. The rate for Hispanic females was (8.1%), only the rate for Other female<sup>15</sup> category of (9.6%) was higher. The number of persons in the "Other" category is small and therefore conclusions about this group are unstable. The Hispanic female rate of (8.1%) is almost double the White non-Hispanic rate of (4.7%) and is higher than the Black non-Hispanic (NH) rate is (7.4%) and the Asian rate of (5.6%). The Hispanic male rate at (5.2%) is the highest rate in the chart for men. The rate for Black Non-Hispanic men, (3.6%) is the second highest.

Figure 8b presents current asthma prevalence by race/ethnicity and gender for Puerto Ricans, Hispanics, and All N.Y.C. Adults who reported an asthma episode in the past 12 months. The current Puerto Rican female asthma rate, (15.1%) is almost double the Hispanic rate which is (8.1%), and more than doubles the rate of (6.4%) for All N.Y.C. Adults. The Puerto Rican male current asthma rate of (7.4%) is more than double the Hispanic rate of (3.1%) and the rate of (3.2%) for All N.Y.C. Adults.

Figure 9 presents current asthma rates by Hispanic ethnicity and borough for the N.Y.C. population who experienced an episode of asthma in the past 12 months. The current asthma

<sup>15</sup> Gretchen Van Wye, PhD, MA Director Community Epidemiology, NYCDHMH, 9/20/06. Provided a definition of the "Other" category as referring to people who did not self-report as Non Hispanic White, Non Hispanic Black, Hispanic or Asian/Pacific Islander. If people were bi or multi-racial and not Hispanic, they were considered "Other", if they were bi or multi-racial & Hispanic, they were considered Hispanic.



rate is (15.1%) for Puerto Ricans in Manhattan, double the rate of (7%) for Hispanics and almost four times higher than the rate of (4.3%) for All N.Y.C. Adults. For Brooklyn, the current asthma rate for Puerto Ricans is (12.9%) compared to (7.7%) for Hispanics and a rate of (5.5%) for All N.Y.C. Adults. For Puerto Ricans in the Bronx the current asthma rate is (10.5%) compared to (7.6%) for All N.Y.C. Adults and (6.3%) for Hispanics. For Puerto Ricans in Queens the current asthma rate is (8.1%) compared to rates of (3.3%) for Hispanics and (3.3%) for All N.Y.C. Adults. While the rate of (13.5%) for Puerto Ricans in Staten Island is high relative to a rate of (6.6%) for Hispanics and (5.1%) for All N.Y.C. Adults, these percentages provide unreliable estimates of prevalence due to small sample sizes.

Map A depicts the prevalence rates for by health districts for Hispanics adults in the boroughs.

Figure 10 provides race/ethnicity and household income information for the N.Y.C. population who experienced an episode of asthma in the past 12 months.<sup>16</sup> For the “less than \$24,999” category, the rate for Hispanics of (8.1%) is the

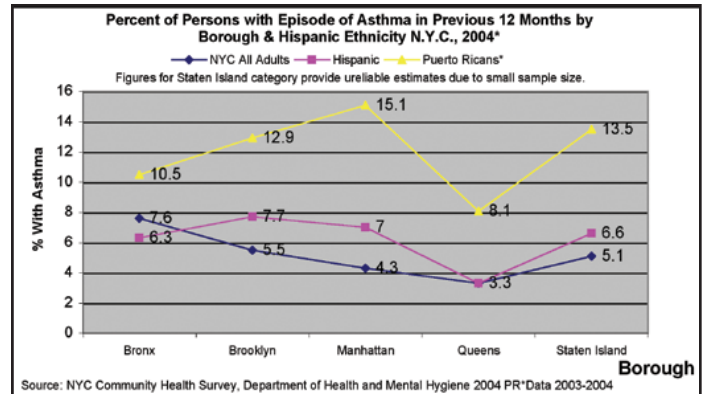


Figure 9

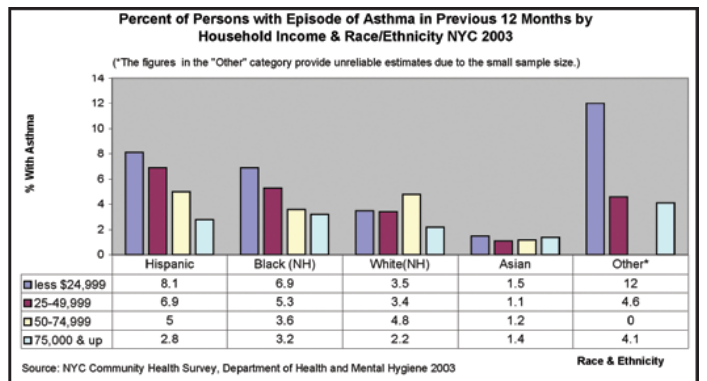


Figure 10

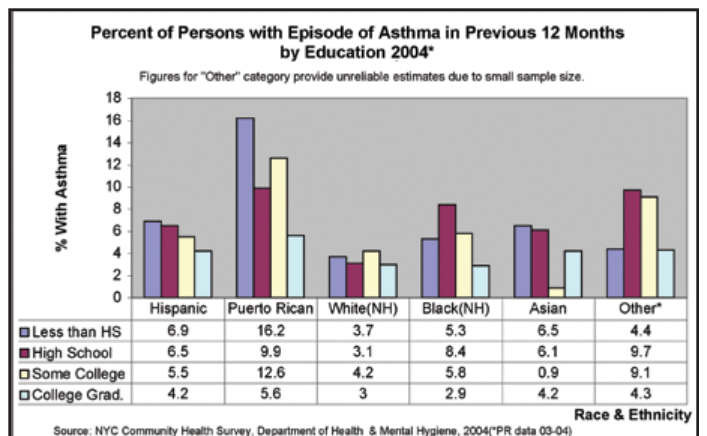


Figure 11

highest compared to the rate for White non- Hispanic of (3.5%), the rate for Black of (6.9%) and the rate for Asian of (1.5%). Among Hispanics current asthma prevalence remains high throughout the four different income categories.

Figure 11 presents current asthma prevalence rates by education levels and ethnicity, showing that Puerto Ricans have the

16 The data from 2003 is used because the question was not included in the 2004 New York City Department of Health and Mental Hygiene Community Health Survey.

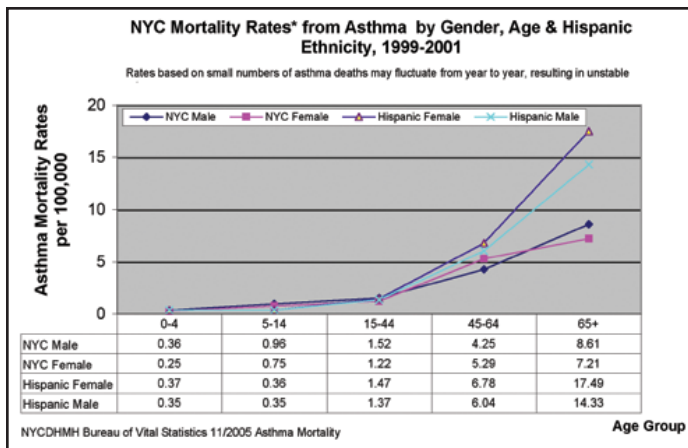


Figure 12

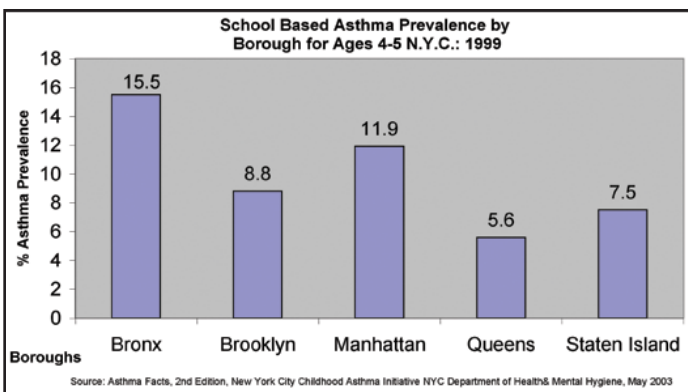


Figure 13

highest levels of asthma prevalence within each cohort of education. For example their rate of (16.2%) for the “less than high school” category exceeds the rates for other racial/ethnic groups. It is a measure of the gravity of the asthma crisis in the Puerto Rican community that no matter what the level of education, their rates of asthma are more severe than other residents of New York City.

Figure 12 compares New York City asthma mortality rates by gender and Hispanic ethnicity. For example, among Hispanic females in the 45-64 age group the asthma mortality rate of (6.78%) is higher than the rate of (5.29%) for all female New Yorkers. The asthma mortality rate for Hispanic males in this age cohort of (6.04%) is higher than the rate of (4.25%) for all male New Yorkers. The asthma mortality rate in the 65 and older age group for Hispanic females is (17.49%) more than double the rate for all female New Yorkers of (7.21 %). The rate of (14.33 %) for Hispanic males is a little less than double the rate of 8.61% male

New Yorkers. A more recent N.Y.S. study, the October 2005 New York State Asthma Surveillance Summary Report, also emphasizes the high mortality rate among Hispanics.

The October 2005 New York State Asthma Surveillance Summary Report indicates that, “the age adjusted mortality rate of 33.7 per 1,000,000 for Hispanic New Yorker’s is almost 3.5 times higher than White Non-Hispanic in New York State. New York’s City’s age-adjusted asthma mortality rate for 2000 to 2002 is 2.5 times higher than the rest of the State.”<sup>17</sup>

### New York City/State patterns: Current and lifetime asthma prevalence for children

This section highlights asthma conditions for children. While there are no recent NYC data available on asthma prevalence in children, school based data collected by the New York City Department of Health and Mental Hygiene for 1999 shows that asthma prevalence in 4-5 yr olds is highest in the Bronx. The children’s asthma rates vary by boroughs as seen in figure 13.

Map B depicts the areas with the highest asthma prevalences within the boroughs. The neighborhoods in the Bronx with the highest level of asthma are Fordham-Bronx Park (15.2%), Crotona Tremont (16.0%), High Bridge-Morrisania (17.2%) and Hunts Point-Mott Haven with (17.1%).

In Brooklyn, the three highest prevalence rates are in the neighborhoods Williamsburg-Bushwick at (15.5%), Bedford-Stuyvesant-Crown Heights at (11.4%) and East New York (10.1%). Finally in Manhattan there are five neighborhoods with high prevalence rates, these are East Harlem at (18.5%), Central Harlem at (14.7%), Washington Heights- Inwood at (12.6%), Upper West Side (12.6%) and Union Square Lower East Side (10.9%). A number of sources suggest that the prevalence for children is still high in these areas.

Another crucial area of concern is workplace asthma. The October 2005 New York State Asthma Surveillance Summary Report states that, “approximately 113 ,000 adult asthmatics indicated that either a health professional had

17 New York State Asthma Surveillance Summary Report October 2005. Public Health Information Group, Center for Community Health, New York State Department of Health. On NYSDH website @ of 11 /06 OnOnhttp://www.health.state.ny.us/statistics/ny\_asthma/index.htm November P. 46 & 10

told them they had work-related asthma, or they had informed a health professional of such.”<sup>18</sup>

Figure 14 refers to research done by Friedman-Jimenez and colleagues (2006) emphasizing the significance of workplace asthma on Latino/a and Puerto Rican workers. The author points out that (58%) of the respondents in this study self-identified as Latino, (59%) percent of the Latinos, identified as Puerto Ricans and female. This is part of a larger study that underscores the higher risk for workplace asthma diagnosis within occupations such as janitor, cleaning jobs, garment and textile manufacturing work. Those are typical occupations in the Latino community.<sup>19</sup> In addition, the exposures that are most often identified as triggering asthma symptoms are common in Latino communities as well. These included second hand smoke, pollens, dust, plaster dust, ammonia, mice, rats, diesel exhaust fumes and chlorine bleach or gas.<sup>20</sup>

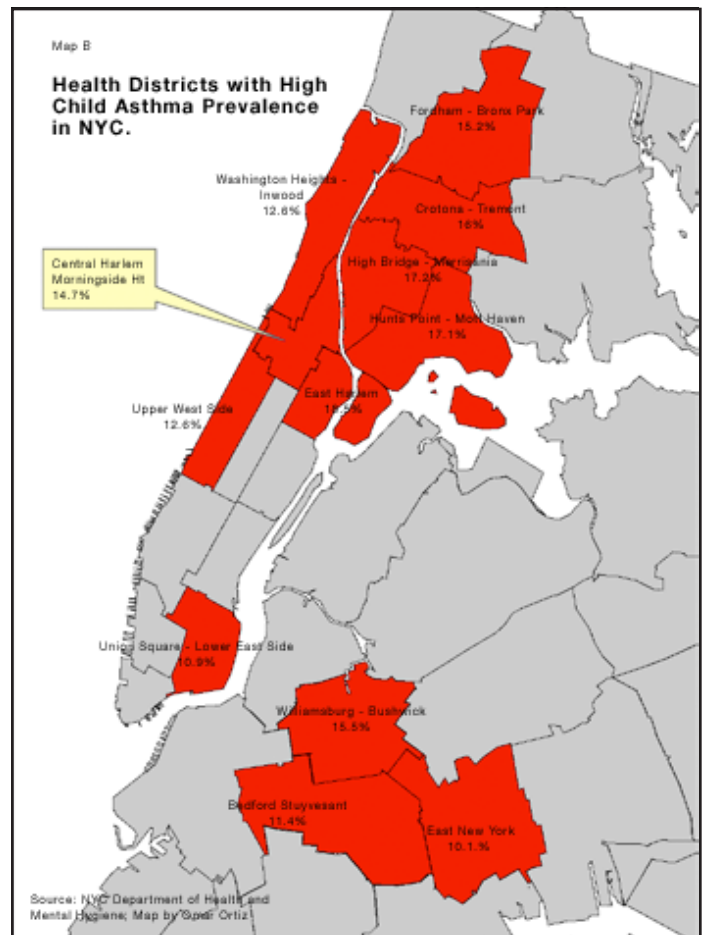
### Limitations of data

1. Some community programs and advocates believe that official prevalence rates are inaccurate measures of the actual number of Latinos/minorities affected by asthma. Prevalence rates “undercount” people without regular access to health care as well as New Yorkers with undocumented status.
2. Current health data are missing information on other discrete communities considered Latino/Hispanic (Dominicans, Colombians, ect.). Further research is needed to disaggregate the different groups within the Latino/a community.
3. It is difficult to coordinate health information for Latinos/a given the lack of uniform questions and variables collected across local, state and national health agencies.
4. In addition, the categories of “Other”, “Multiracial”, are not uniform across city and state and national health data agencies. These categories are not used consistently throughout years. There are also problems of applicability of asthma prevalence rates given unreliable estimates due to small sample sizes.

18 New York State Asthma Surveillance Summary Report October 2005. Public Health Information Group, Center for Community Health, New York

19 Conversations in Fall 2005 and Winter 2006 with Dr. George Friedman-Jimenez, MD.

20 Berger, Zackary MD, PhD; Rom, W N. MD, MPH; Reibman, J MD; Kim, M ScD; Zhang, S MS; Luo, L BS; Friedman-Jimenez, George MD. “Prevalence of Workplace Exacerbation of Asthma Symptoms in an Urban Working Population of Asthmatics” *Journal of Occupational & Environmental Medicine*. 48(8):833 -839, August 2006.



Map B

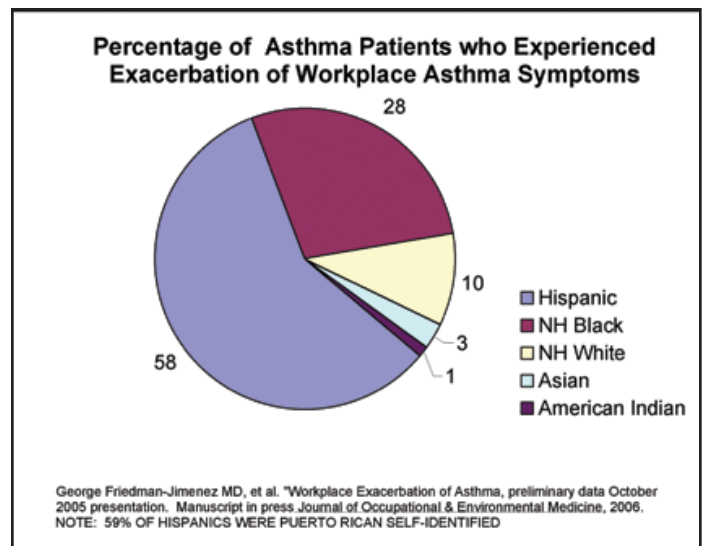


Figure 14

## RECOMENDATIONS

The following section summarizes various interventions for groups with high asthma rates. The recommendations focus on both research and programmatic gaps identified by the data, interviews and published studies. These ideas are organized into several categories: pollution, childhood asthma & vulnerable populations, workplace asthma and air pollution and asthma.

### I. Children and vulnerable populations

#### 1. High level of asthma prevalence rates among Puerto Ricans & Latinos

Further research is needed to find the causes for the high rates of asthma for Puerto Ricans and Latinos regardless of income level. There is a need for studies that can disaggregate both the different asthma rates within Latino groups as well as target these populations for increased intervention and services.

#### 2. Children

Though interventions have occurred sources suggest the high childhood asthma prevalence is still a major challenge. There is a need for school based asthma clinics and preventive initiatives as well as further research on the causes of asthma for Puerto Rican, Latino and minority children. Claudio et al. (2005) conclude that while genetic susceptibility needs further research, the socioeconomic and environmental conditions of the neighborhoods are important factors in high asthma prevalence. These include income and access to care. They state that "the prevalence of asthma rises if the school is in a low-income neighborhood. Hospitalization rates do not show the impact of other factors on children who live in low-income neighborhoods. These factors include other contaminated sites and the availability of care for children with asthma."<sup>21</sup> Findley and colleagues (2003) also concludes that more research is needed on the distinct factors that influence asthma prevalence for various ethnic groups.<sup>22</sup>

21 Claudio PhD, et al. *ibid.*, pp. 1, 9.

22 Sally Findley, Ph.D., Katherine Lawlwer, M.P.H., Monisha Brinda, M.P.H., Linda Maggio, M.P.H., Madeline M. Penachio, D.S.W., & Christopher Maylahn, M.P.H. "Elevated Asthma and Indoor Environmental Exposures Among Puerto Rican Children in East Harlem." *Journal of Asthma*. Vol.40, No. 5, pp. 557-569. 2003. Pp. 566.

#### 3. Elderly /seniors

Puerto Rican and Latino/a seniors/ elderly have very high asthma prevalence and mortality rates. There is an urgent need to provide affordable, locally based linguistic and culturally competent asthma services for Spanish and other language speaking seniors. A second related issue is creating material that can reach various degrees of written and, spoken fluency in English and Spanish and /or Native Language.<sup>23</sup> This urgency comes from the high mortality rates among Hispanic women and men relative to the NYC total population. In particular, the Hispanic female mortality rate is almost 3 times the total female population rate. The asthma prevalence rates for Puerto Rican and Latina (women) in the 35-64 year old is among the highest.

#### 4. Other minorities

Further comparative research is needed on the high asthma rates between Latinos/a and minority groups such as the African American population. These groups live in the same geographic areas and share higher asthma rates relative to the total population.<sup>24</sup>

### II. Workplace asthma

#### Latino/a and Puerto Rican workers exhibit many symptoms of workplace asthma.<sup>25</sup>

1. Further research is needed to develop more precise tools to allow early diagnosis of occupational asthma. Research is also needed on the different substances that serve as triggers and exacerbate workplace asthma. Instruments used for diagnostic purposes such as peak flow meters and x-rays are limited.

23 The urgent need for culturally competent asthma management and treatment services was highlighted in a study by Bridgeport Hospital on East Harlem residents, please see Cortes T., Lee A., Boal J., Mion L., & Butler A. "Using Focus Groups to Identify Asthma Care and Education Issues for Elderly Urban-Dwelling Minority Individuals." *Applied Nursing Research*. 2004 Aug; 17(3):207-12 .

24 Stephen W. Nicholas MD, Betina Jean-Louis, Phd, Benjamin Ortiz, MD, Mary Northridge, PhD, MPH, Katherine Shoemaker MPP, Roger Vaughan, DrPH, MS, Michaela Rome, PhD, Geoffrey Canada, MEd & Vincent Hutchinson, MD for the Harlem Children's Zone Asthma Initiative. "Addressing the Childhood Crisis in Harlem: The Harlem Children's Zone Asthma Initiative." February 2005, Vol 95, No. 2. *American Journal of Public Health*. Pp. 245-249.

25 These three recommendations are by Dr. George Friedman-Jimenez, MD Assistant Professor, Environmental Medicine and Medicine, from interview in Winter 2006. He can be contacted at NYU School of Medicine 650 First Avenue, Room 518, New York, NY 10016 (212) 263-6083 george.friedman.jimenez@nyu.edu

2. Primary care doctors need better access to referral networks for patients who have occupational asthma. The New York State Department of Health and Occupational Medicine clinic network needs expansion. Only eight clinics exist in all of New York State. Consequently, more clinics are needed that are geographically accessible to patients with workplace asthma.
3. There is a need for more hospital asthma clinics, which can move people out of the emergency room. Asthma hospital clinics such as the one at Bellevue provide consistent care and education for patients to manage asthma symptoms and illness.

### III. Asthma & pollution (indoor & outdoor)<sup>26</sup>

1. The Federal government should continue funding participatory community research about the effects of air pollution on asthma<sup>27</sup> and other respiratory conditions generated by stationary and mobile sources.<sup>28</sup>
2. Research on links between nutrition, obesity and asthma. Review the importance of promoting accessible fresh food, creation of organic farmers markets and community gardens.
3. Promote green belts between industrial blocks and residential zones, the rerouting of traffic and the promotion of green spaces are strategies that should be explored. Trees and plants clean the air increasing the amount of oxygen. Provide air filters for classrooms.
4. Promote the use of alternative fuels in automobiles, city and school buses and research energy alternatives such as the solar power.

### Indoor pollution

1. Improve the quality of housing and implement the enforcement of codes and regulations. Remediate dilapidated public and private housing stock to deal with issues such as leaks, mold, and toxic chemicals used for pest control. These conditions can all act as indoor asthma triggers.
2. Increase prevention, education and programmatic interventions such as the NYCDOHMH<sup>29</sup> workshops on Integrated Pest Management as well as pilot projects in Harlem under the NYCHA to reduce and remediate indoor housing conditions that lead to mold, mildew, and dust and pest infestation.
3. Improvement of waste management practices to curtail pest (cockroach & rodent) infestation.

<sup>26</sup> Special thanks to conversations with Eddie Batista, Rev. Earl Koopercamp, Paul Lipson and Carlos Alicea.

<sup>27</sup> South Bronx Environmental Health and Policy Study. Paul Lipson, The South Bronx study focused on the increase of environmental causes for high asthma rates for children & residents in areas where there are multiple sources of pollution.

<sup>28</sup> Such as trucks moving in the highway.

<sup>29</sup> New York City Department of Health & Mental Hygiene, New York City Asthma Initiative provides many workshops on asthma related topics.