

# South Bronx

Environmental Health  
and Policy Study



a collaboration between the  
South Bronx community and  
New York University



“Children and families have suffered enough. Our communities must be treated fairly and with the same respect as other communities in the city and state.”

CONGRESSMAN JOSÉ E. SERRANO



**New York University**  
*A private university in the public service*

## WHAT IS THE SOUTH BRONX ENVIRONMENTAL HEALTH AND POLICY STUDY?

In the South Bronx, 17 percent of school-aged children have asthma, a rate that is twice the New York City average (as reported by New York City Department of Mental Health & Hygiene, *Asthma Facts*, 2003). The South Bronx environment has a host of problems that have caused the disease to develop in the first place. Heavy diesel truck traffic on highways, such as Bruckner Boulevard, the Cross Bronx Expressway, and the Major Deegan Expressway, exposes residents to outdoor air pollution, a likely risk factor for asthma.

In 1999, Congressman José E. Serrano enlisted NYU's School of Medicine, Robert F. Wagner Graduate School of Public Service, and four community groups (The Point Community Development Corporation, Sports Foundation, Inc., We Stay/Nos Quedamos, Inc., and Youth Ministries for Peace and Justice, Inc.) for help in understanding this important public health issue. The *South Bronx Environmental Health and Policy Study* has been working to determine how local air quality is related to factors such as the number of waste transfer stations and the level of car and truck traffic in the area.

Today, scientific findings from the *South Bronx Environmental Health and Policy Study* are beginning to inform the community. The study will also provide a set of tools on how to better understand the problem of poor air quality and to engage in environmental policy-making efforts.



## WHY IS THIS STUDY IMPORTANT?

Through the *South Bronx Environmental Health and Policy Study*, New York University has been finding out **how** poor the air quality in the South Bronx is, **why** it is that bad, and **what** is in it to make it that way. The more we know about the air quality in the South Bronx, the easier it is to work within the community, with the city, and with the state to make the air safer to breathe.

## WHO ARE THE PARTNERS IN THE STUDY?

**NYU School of Medicine—Nelson Institute of Environmental Medicine** operates an air pollution mobile van laboratory (“NYU mobile van”), which gathers air samples and identifies pollution sources at different locations in the South Bronx. They are also conducting a study on the impact of air pollution on children with asthma (“Backpack Study”) in several local schools.

**NYU Robert F. Wagner Graduate School of Public Service—Institute for Civil Infrastructure Systems** studies the effects of traffic, air quality, and the number of waste transfer stations on the living conditions in the South Bronx. They have also compared ground-level air samples taken by the NYU mobile van with rooftop air samples taken by New York State Department of Environmental Conservation (DEC).

**The Point Community Development Corporation, Sports Foundation, Inc., We Stay/Nos Quedamos, Inc., and Youth Ministries for Peace and Justice, Inc.,** helped NYU scientists develop the study and continue to provide guidance on future research strategies. Each group also participates in outreach efforts to raise awareness about air pollution, environmental justice, and asthma. In October 2003, community groups helped develop the Youth Participation and Leadership Program, which engaged local high-school students in research related to the study and exposed them to careers in environmental health and policy.

## WHAT HAS THE STUDY FOUND SO FAR?

Since 2001, the NYU mobile van lab has been collecting samples at eight sites in the South Bronx to determine ground-level pollution concentrations. Because current NY State DEC measurements are drawn from roof-top stations, community residents have expressed particular interest in studying air pollution closer to where people live and breathe—at ground level. The study has confirmed that because of the number of highways and industrial facilities, heavy car and truck traffic exposes residents of the South Bronx to more air pollutants than other New Yorkers.

- Concentrations of elemental carbon—a component of diesel exhaust from trucks—were higher at all South Bronx sites than at sites in Manhattan.
- Car exhaust and burning fuels are producing higher ground-level concentrations of pollutants, like CO (carbon monoxide), NO<sub>2</sub> (nitrogen dioxide), and SO<sub>2</sub> (sulfur dioxide), in the South Bronx compared to rooftop station samples.
- Local and regional air pollution from cars, power plants, construction activity, and other chemical processes are producing high concentrations of O<sub>3</sub> (ozone) and PM<sub>2.5</sub> (particulate matter) in the South Bronx—at levels that exceed U.S. EPA standards.
- While urban environments generally contain a presence of NO<sub>2</sub> (nitrogen dioxide) in the air, samples from the NYU mobile van in the South Bronx were higher than scientists expected. In order to compare to the yearly U.S. EPA standard, the study recommends that New York State Department of Environmental Conservation perform more ground-level monitoring of NO<sub>2</sub> in the South Bronx.
- Peak outdoor elemental carbon concentrations at South Bronx schools participating in the “Backpack Study” were related to rush-hour traffic, especially in the mornings.
- Elemental carbon can influence asthma symptoms more than PM<sub>2.5</sub>, while lung health can be affected by both PM<sub>2.5</sub> and elemental carbon.
- Higher asthma hospitalization rates are more likely to occur in lower-income areas of the South Bronx and in areas where there is a large presence of Latino/Hispanic residents.
- There is a strong link between Bronx zip codes with high asthma rates and those with a large concentration of industrial facilities.

## KIDS ASSIST IN BRONX ASTHMA STUDY

by Amy Odell

Originally published in the *Washington Square News*,  
November 15, 2004\*

Every day for three weeks, Jessica Clemente listened for the sound of rolling plastic wheels echoing through the hallway to signal that her crack team of 10 researchers was returning to report its results.

Clemente was stationed at an elementary school in the South Bronx, and these researchers weren't draped in white lab coats and didn't hold Ph.D.s. They were fifth graders with asthma.

Clemente, who works for the NYU School of Medicine, recently finished up the second leg of a study exploring the link between pollution and asthma in the South Bronx, which has one of the highest asthma rates in the country.

This is the first time the study is taking this approach—using fifth graders with backpacks to measure the air pollution they encounter in their everyday lives. The researchers asked 10 students from three South Bronx elementary schools to spend three weeks wheeling around devices that measure air quality. Two schools have finished the study, and a third will complete it this spring.

The students take the rolling backpacks nearly everywhere they go.

“It feels like someone’s following me,” fifth grader Alex Perez said.

Clemente meets with each student twice a day to go over diaries the students keep about their health, activities, and medication. Meanwhile, a van, equipped with air pollution readers and computer and weather stations, is parked outside the school and monitors local air quality conditions.

The devices in the backpacks, Clemente noted, measure levels of particulate matter in the air, which comes from diesel fuel combustion and emissions from cars and trucks.

“When you see a truck give off a big cloud of black smoke, in that soot is particulate matter,” Clemente said.

The children volunteered for the study with parental consent, though Clemente said parents were eager to have their children participate.

“To know that there’s someone out there looking into these questions for their health is powerful to [the parents],” she said.

\*Minor alterations have been made to this article since its first publication.

## WHERE DO WE GO FROM HERE?

The NYU research team is working to create tools that will help the community respond to city, regional, and national decisions that influence public health and environment. Additional findings from the NYU mobile van, Backpack Study, and transportation modeling will continue to inform the research over the next year—all of which will assist the community groups raise awareness on the harmful impacts of air pollution.

- Air pollution can be a major cause of asthma. South Bronx residents also live with a disproportionate share of industrial facilities, a higher concentration of poverty, and inadequate access to health care—factors that can also make the disease worse.
- Living conditions could be significantly improved if pollution from diesel trucks, a major contributor of PM<sub>2.5</sub>, were reduced by redirecting traffic flow or enacting other environmental policy initiatives.
- In areas where school-based asthma rates are as high as 20 to 25%, children would particularly benefit from air conditioners or filters in the classrooms to reduce the effect of diesel fumes from nearby highways.





Even though there is still much work to be done to investigate air pollution and its effects on the South Bronx, information from the *South Bronx Environmental Health and Policy Study* can help find ways to make the air safer to breathe.

- **RECOMMEND** that New York State Department of Environmental Conservation monitor NO<sub>2</sub> closer to ground level for at least one full year. This would help determine whether this pollutant is within EPA standards.
- **PREVENT** future schools from being built near highways and other high-traffic areas through rezoning.
- **CREATE** more green space buffers near highways and industrial facilities.
- **PROMOTE** alternatives to diesel fuel, such as compressed natural gas and technologies that reduce the impact of truck idling.
- **IMPROVE** access to health care to decrease asthma hospitalization rates.

Contact a South Bronx community partner in your area to see how you can get involved in making the South Bronx a better place to live—and breathe!

## FOR MORE INFORMATION

NYU School of Medicine—  
Nelson Institute of Environmental Medicine  
[www.med.nyu.edu/environmental/labs/NYU\\_bronx/](http://www.med.nyu.edu/environmental/labs/NYU_bronx/)

NYU Robert F. Wagner Graduate School of Public Service—Institute for Civil Infrastructure Systems  
[www.icisnyu.org/index\\_001.html](http://www.icisnyu.org/index_001.html)

NYU—Office of Federal Policy  
[www.nyu.edu/ofp](http://www.nyu.edu/ofp)

## GOVERNMENT PARTNERS

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[www.house.gov/serrano/](http://www.house.gov/serrano/)

U.S. EPA—Region 2 Office  
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## COMMUNITY PARTNERS

The Point Community Development Corporation  
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Sports Foundation, Inc.  
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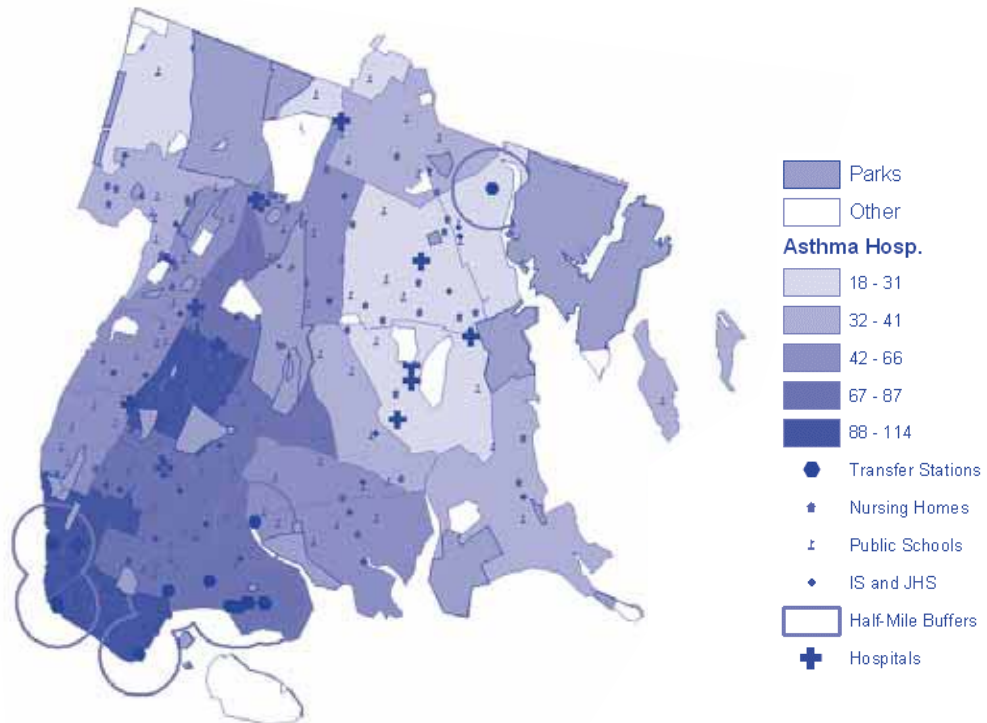
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In memory of  
Yolanda Garcia (1951-2005)  
Founder and Executive Director  
We Stay/Nos Quedamos, Inc.

## Bronx County Asthma Hospitalization Rates

in Relationship to Waste Transfer Stations, Schools, Hospitals, and Nursing Homes



Sources: InfoShare.org, Census 2000; SPARCS; DCP.

- Asthma hospitalization rates are highest in the central and southern parts of Bronx County, especially in zip codes 10457, 10451, 10454, and 10456.
- There is a strong association between asthma hospitalization rates, poverty, the percentage of Hispanic residents, and the number of industrial facilities in the Bronx.
- Zip Code 10474—Hunts Point—has by far the highest number and density of industrial facilities in Bronx County.