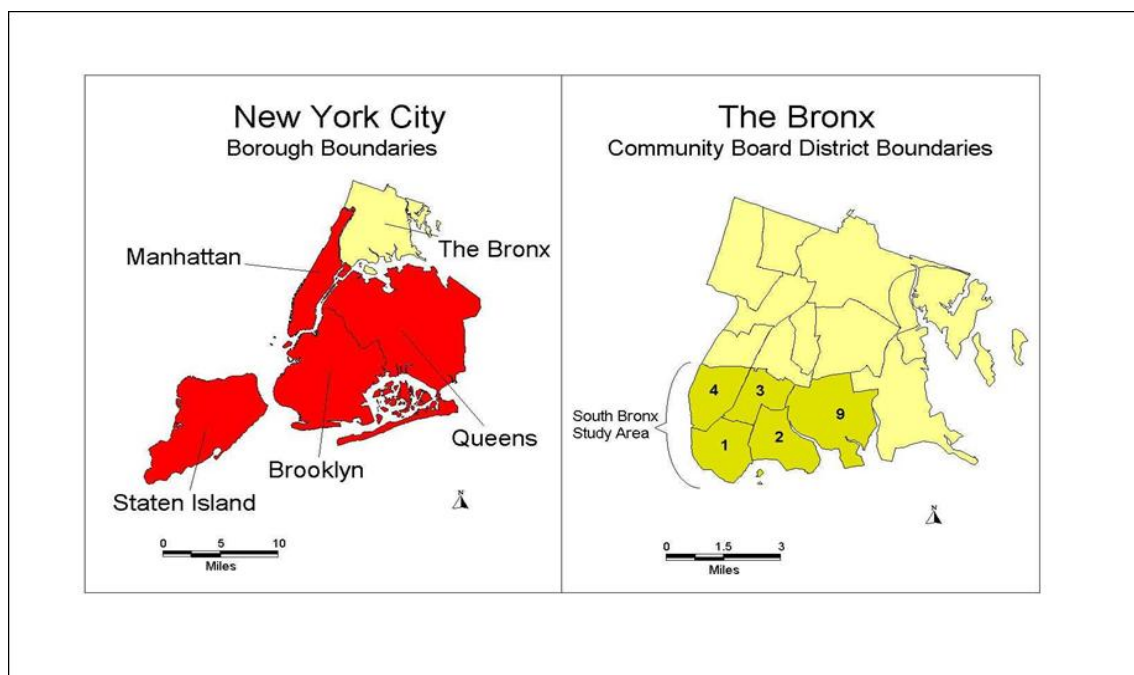


South Bronx Environmental Health and Policy Study

The South Bronx is a low-income, minority community in New York City. It has one of the highest asthma rates in the country, which residents feel is one of the most pressing health issues in their community. The main goal of the South Bronx Environmental Health and Policy Study is to study environmental and health issues affecting that community, with particular emphasis on the relationships between air quality, transportation, waste transfer activity, demographic characteristics, and public health. It is a collaborative research project that involves the NYU School of Medicine's Nelson Institute of Environmental Medicine (NIEM), the NYU Wagner Graduate School of Public Service's Institute for Civil Infrastructure Systems (ICIS), and four community groups: The Point Community Development Corporation, We Stay/Nos Quedamos, Inc., The Sports Foundation, Inc., and Youth Ministries for Peace and Justice, Inc. The study is funded with a Congressional Appropriation sponsored by Congressman José E. Serrano and administered through the U.S. Environmental Protection Agency.



Geographical location of the study area.

Areas of work:

Environmental databases:

During the initial phase of the project information and a number of environmental databases were collected and analyzed. Special emphasis was placed on traffic information, the location and volume of activity of waste transfer stations, and daily air quality data for the criteria air pollutants. The study has examined air quality in the study area in three different ways. The first consists of analyzing daily monitoring data provided by the New York State Department of Environmental Conservation (DEC). These are hourly data that can be compared to national standards established by the U.S. Environmental Protection Agency (EPA). The second is by looking at data collected specifically for this project by a mobile van placed in a van operated by the NYU Nelson Institute of Environmental Medicine (NIEM). The data provided by the NIEM team were compared to DEC data to determine whether measuring air quality at 4 meters above the ground, as done by the van, resulted in significant differences to measuring pollutant concentrations 15 meters above the ground, as done by DEC stations located above school rooftops. The third way of looking at air quality consists of using traffic modeling data to model air quality. As mentioned in the next section this was done for two pollutants: particulate matter (PM) and nitrogen dioxide (NO₂). Water quality issues within the boundaries of the study area were also examined.

Transportation and air quality modeling: The transportation and air quality modeling component of the project provides estimates of traffic volumes and air pollutant emissions associated with traffic in the study area. Traffic patterns associated with waste transfer activity in the study area were also estimated and analyzed. Air quality modeling provided maps of particulate matter (PM) and nitrogen dioxide (NO₂) concentrations associated with traffic volumes estimated from traffic modeling. Scenario analyses also showed that eliminating or relocating waste transfer stations can have an important impact on traffic patterns and air quality in the area.

Environmental justice analyses: work to date in this area has concentrated in two areas. The first was a detailed GIS analysis of several socio-economic characteristics, such as race, poverty and housing variables, around waste transfer stations located in Bronx County. The analyses used concentric rings around the stations to examine how these variables change with distance away from the stations. The second area of work includes an examination of the variation in asthma hospitalization rates by zip code in Bronx County, and a study of the factors that are associated with these variations. Among the factors included in the analysis are poverty, race, density of industrial facilities, and others. GIS and regression analyses were used.

Decision Tools: Environmental Management Plan, GIS, Air Quality and Health: This is an ongoing part of the project and will consist of identifying, developing, and adapting a set of decision tools to allow the community to leverage this data for policy making efforts. Outcomes will include an Environmental Planning Framework, a Specific Decision Tool package, and a GIS study of the association between air pollution, waste transfer, and morbidity rates of diseases related to air pollution in the South Bronx as compared to other sites in the New York City region. The Environmental Planning Framework will utilize collected data, current conditions, and GIS technology, for ready use by the community in environmental justice advocacy. It will also include updated databases, including new information on water quality and brownfields, in a form that is compatible for community access.

Youth Participation and Leadership Program: The objective of the Youth Participation and Leadership Program is to involve high-school students from the area in the project by training them in environmental science, policy and health and by offering them a chance to work directly with scientists and policy experts in these areas. The students are also expected to help disseminate the findings of the project to other community leaders and residents. In addition, the youth participants gain an opportunity to explore career opportunities within the fields of public health and environmental science. ICIS collaborated with the other team members of the South Bronx Environmental Health and Policy Study in the implementation of this program twice in 2003/04. The program is designed to last 8 weeks and accommodates 12-15 students from high-schools throughout the study area.

Outputs:

Phase I report: a comprehensive report of Phase I of the project was completed in September, 2002. During that phase of the project data was gathered and analyzed on the demographic characteristics of the study area, transportation, waste transfer activity, ambient air quality, and water quality. In addition, the report includes a review of the literature on the association between asthma and air pollution.

Phase II & III report: this report includes detailed information on the comparison between DEC's air quality data and the data collected by NIEM's mobile van. The transportation and air quality modeling work is also described in detail, as well as the environmental justice work. In addition, the report includes a general discussion about possible ways to improve environmental quality in the study area.

The results of the work described in both the Phase I and Phase II & III reports will be used with ongoing work to provide a more detailed discussion about policy options to improve environmental quality and public health at the last phase of the study.

Project web page:

A description of the ICIS work related to the South Bronx Environmental Health and Policy Study is found in the project web page: http://www.icisnyu.org/index_001.html.