Mapping Asthma Hot Spots: The Geography of Asthma and Air Pollution in the Bronx

Dr. Juliana Maanta1, Dr. Hal Streliska2, Holly A. Porter Morgan3, Juan Carlos Salario4
Lehman College, City University of New York, Department of Geology and Geography 1; Montefiore Medical Center/Albert Einstein College of Medicine, Institute for Community and Collaborative Health 2; Ph.D. Candidate, CUNY Graduate Center (Biogeography) 3; Geography Major, Lehman College 4

Project Description:
Mapping Asthma Hot Spots: The Geography of Asthma and Air Pollution in the Bronx. New York City examines the spatial correspondence between the incidence of asthma and the locations of environmentally hazardous land use and activity. We purpose that this is a spatially complex problem that requires the utilization of geographic information systems (GIS) to synthesize all available data. This is a truly interdisciplinary project, bringing together data from Wide Exposure to the spatial settings in which pediatric asthma hospitalization cases reside. To estimate how much of each block group's area lies within the buffer, we had to calculate what proportion of each block group's area lies within the buffer.

Methods:
1. We accumulated major sources of air pollution in the Bronx- facilities that must use or store some value. To determine the extent of air pollution sources by Census Block Group, Lehman College, City University of New York, Department of Geology and Geography 1; Montefiore Medical Center/Albert Einstein College of Medicine, Institute for Community and Collaborative Health 2; Ph.D. Candidate, CUNY Graduate Center (Biogeography) 3; Geography Major, Lehman College 4

Conclusions:
The solid waste for activities (age 0-15 years) and adults (16 years and older) for asthma hospitalization for each year from 1995 (TRI) data was calculated, comparing those who lived in buffer zones around Toxic Release Inventory (TRI) Facilities. These indicators include Asthma Hospitalizations (SPS), along Major Truck Route (MTR) and/or Environmental Data (12), and compared to other Bronx residents living outside these buffer zones. Patterns of increased risk were consistent from year to year.

References:

Data Sources:
- Emissions from Toxic Release Inventory (TRI) Facility Buffers
- Sludge Polutionization Plant (SPP) Emissions from Housing Complex
- Emissions from Highway/Route 997

Acknowledgments:
Funding for this research was provided by the National Science Foundation Grant #1021046, the Environmental Protection Agency Grant DE-FC-02-99ER62973, the Center for Environmental Justice, University of California, Berkeley, and the University of New Haven.

© 2002 American Geophysical Union. All Rights Reserved.

5-Year Average Rates

Bronx, New York City examines the spatial correspondence between the incidence of asthma and the locations of environmentally hazardous land use and activity. We purpose that this is a spatially complex problem that requires the utilization of geographic information systems (GIS) to synthesize all available data. This is a truly interdisciplinary project, bringing together data from Wide Exposure to the spatial settings in which pediatric asthma hospitalization cases reside. To estimate how much of each block group's area lies within the buffer, we had to calculate what proportion of each block group's area lies within the buffer. The increased risk for children living near SPS sites ranged from 14-30%, for TRI facilities 16-31%, and for combined buffer zones 11-17%. No increased risk was found along LAHs and none for combined buffer zones. Patterns of increased risk were consistent from year to year.

Conclusions:
The solid waste for activities (age 0-15 years) and adults (16 years and older) for asthma hospitalization for each year from 1995 (TRI) data was calculated, comparing those who lived in buffer zones around Toxic Release Inventory (TRI) Facilities. These indicators include Asthma Hospitalizations (SPS), along Major Truck Route (MTR) and/or Environmental Data (12), and compared to other Bronx residents living outside these buffer zones. Patterns of increased risk were consistent from year to year.

References:

Data Sources:
- Emissions from Toxic Release Inventory (TRI) Facility Buffers
- Sludge Polutionization Plant (SPP) Emissions from Housing Complex
- Emissions from Highway/Route 997

Acknowledgments:
Funding for this research was provided by the National Science Foundation Grant #1021046, the Environmental Protection Agency Grant DE-FC-02-99ER62973, the Center for Environmental Justice, University of California, Berkeley, and the University of New Haven.

© 2002 American Geophysical Union. All Rights Reserved.