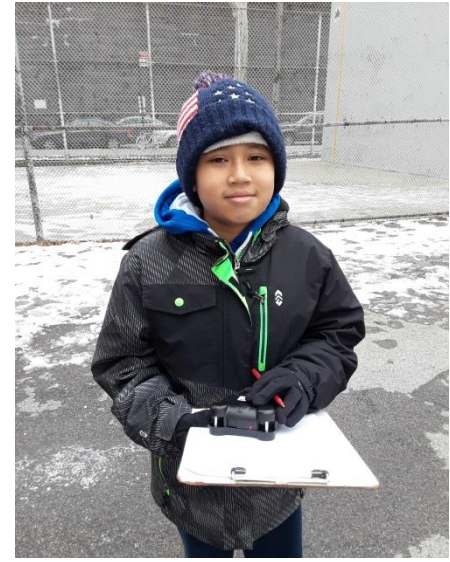
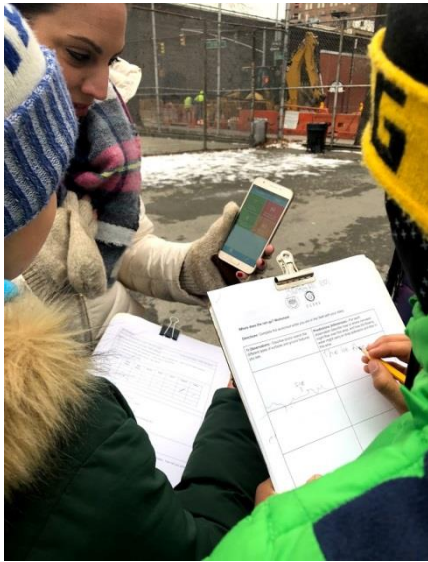


Team Science:

*A Cross-Disciplinary Training Approach to
Engaging Schools in Citizen Science*



Project Coordinator: Luz Guel



**Icahn
School of
Medicine at
Mount
Sinai**

*The Transdisciplinary
Center on Early
Environmental Exposures*



National Institute of Environmental Health Sciences
Your Environment. Your Health.

The Mount Sinai Transdisciplinary Center on Early Environmental Exposures

Community Engagement Core (CEC)
New York City



Maida Galvez, MD, MPH
CEC Co-Director



Carol Horowitz, MD, MPH
CEC Co-Director

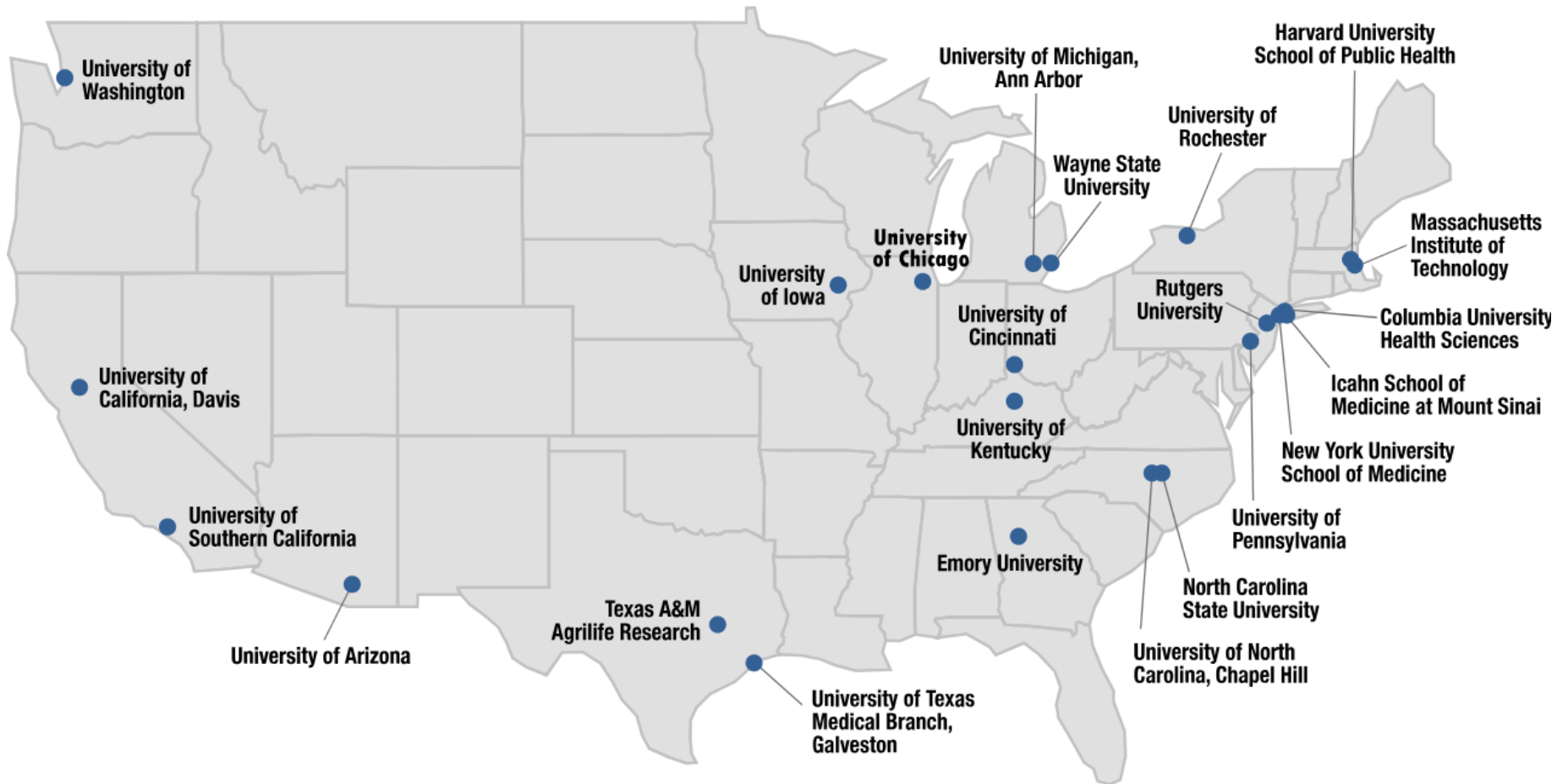


Luz Guel
CEC Project Coordinator



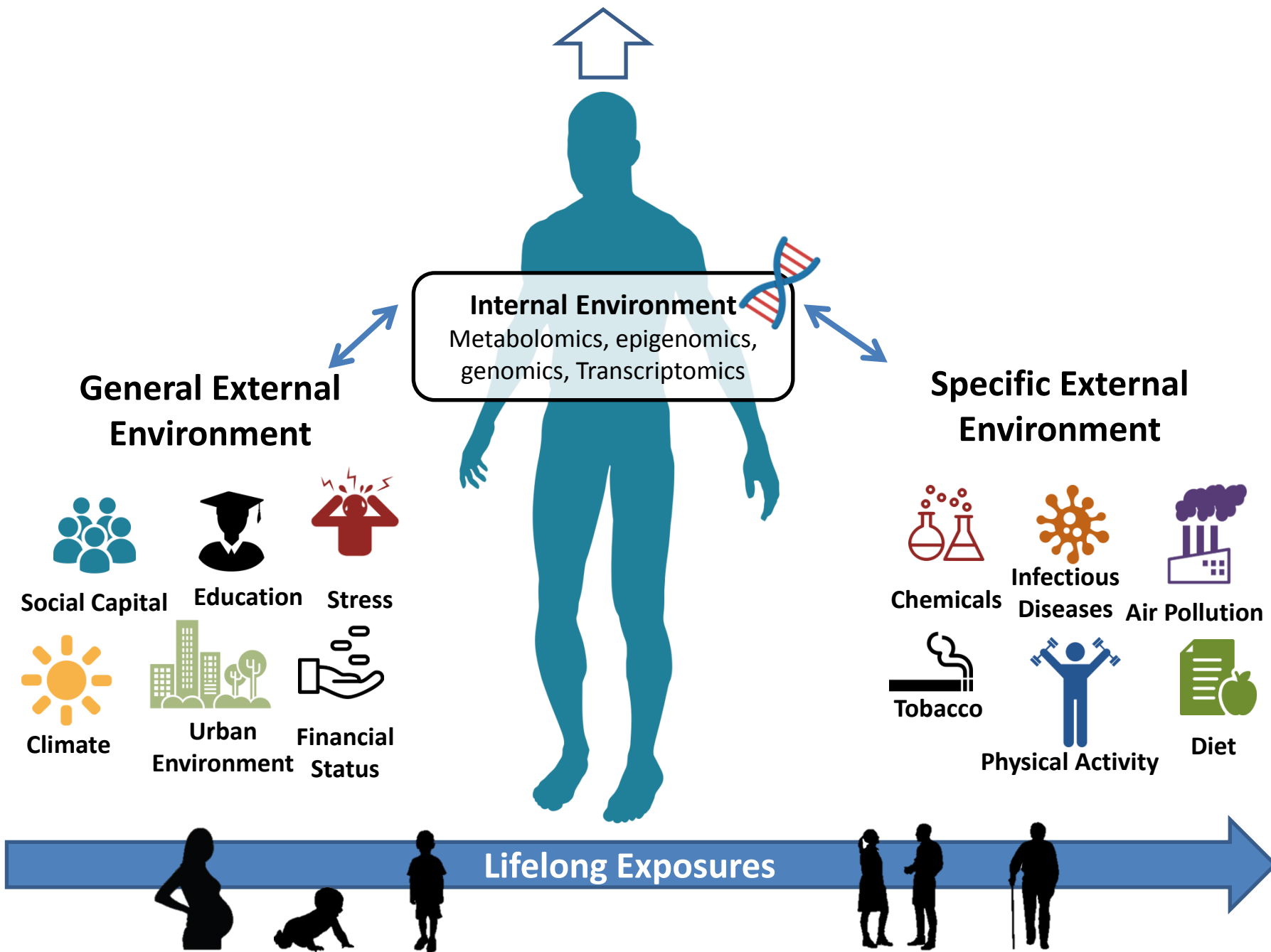
National Institute of Environmental Health Sciences
Your Environment. Your Health.

NIEHS Environmental Health Sciences Cores



National Institute of Environmental Health Sciences
Your Environment. Your Health.

Health Risk & Impact Assessment





Social and Economic Stress

Bronx

East Harlem

NYC

Poverty

(Percentage of Residents Living Below Poverty Line)



43%

31%

21%

Unemployment

(Percentage of Unemployed Residents)



16%

12%

11%

Elementary School

Absenteeism

(Percentage of Students missing 20 or more school days)



31%

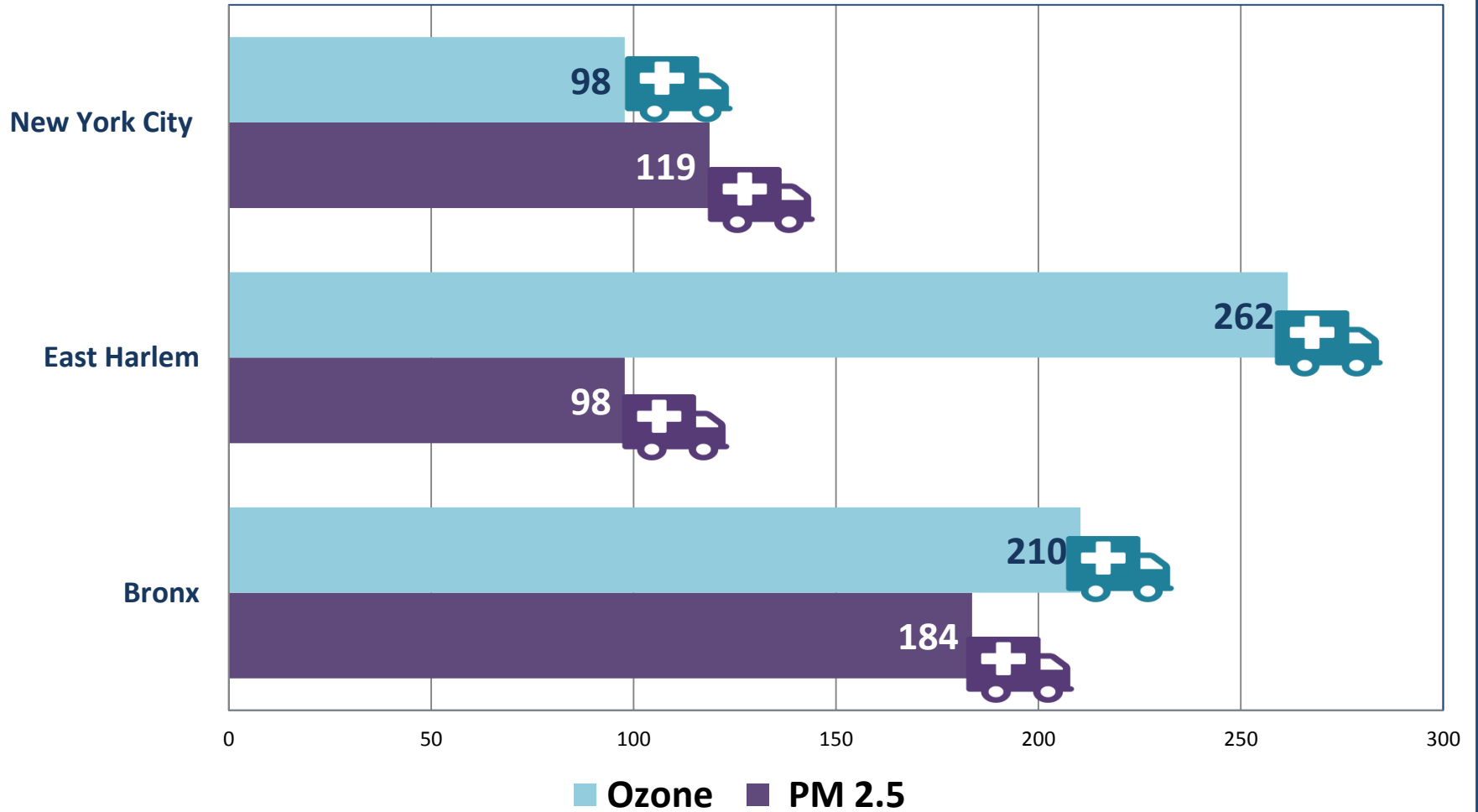
29%

20%

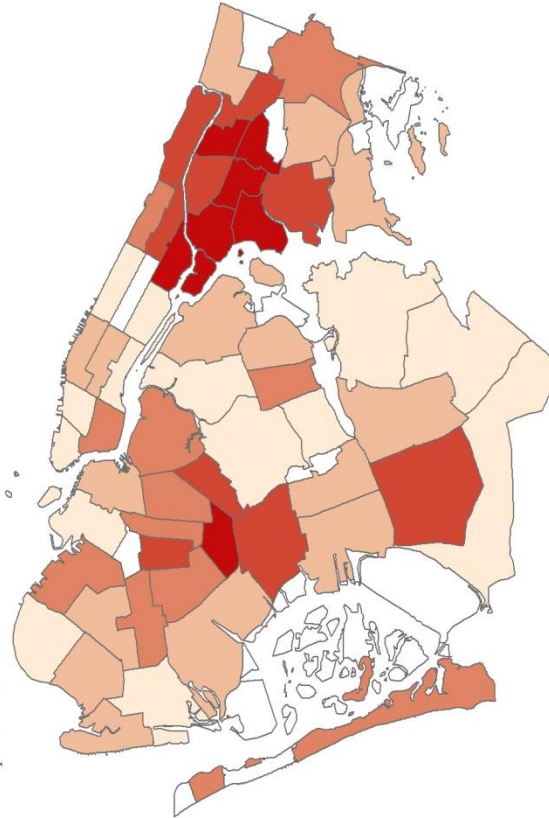
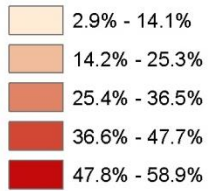
Health Burden:

Estimated Emergency Visits attributable to PM 2.5 & Ozone

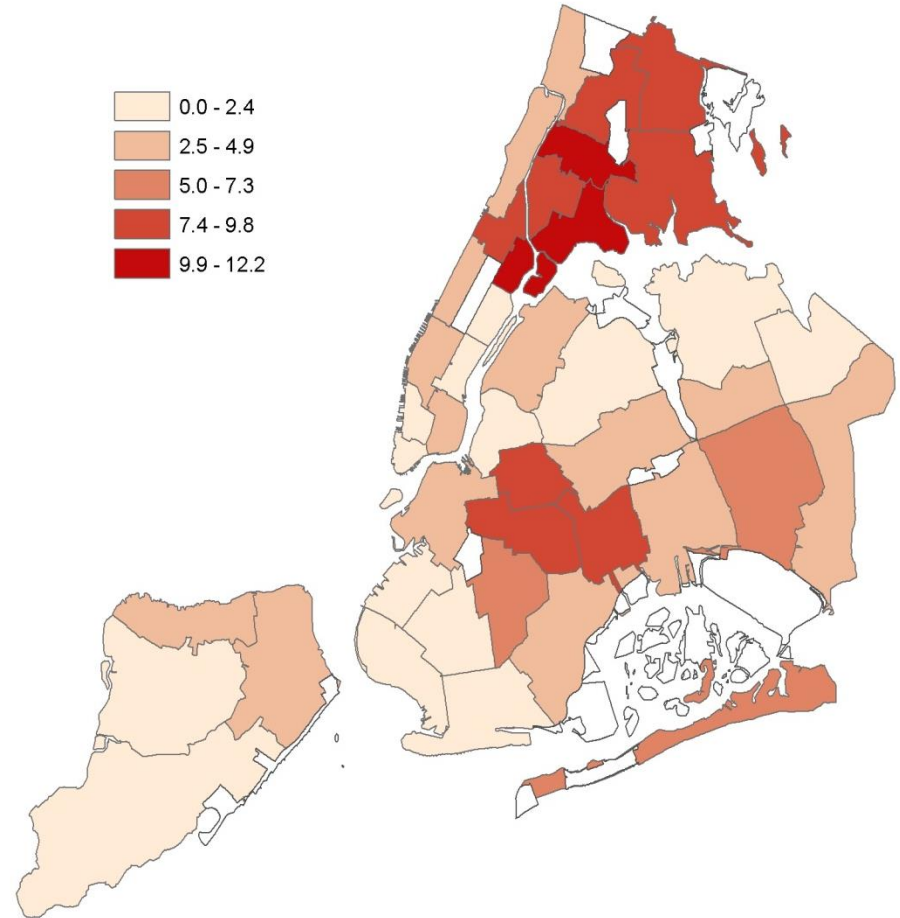
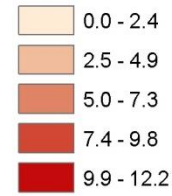
(average annual rate per 100,000)



Percent of Residents Who Rated Conditions of Residential Structures Fair or Poor
(2011, Community Districts)



Asthma Hospitalizations per 1,000 Children*
(2010, United Health Fund Districts)

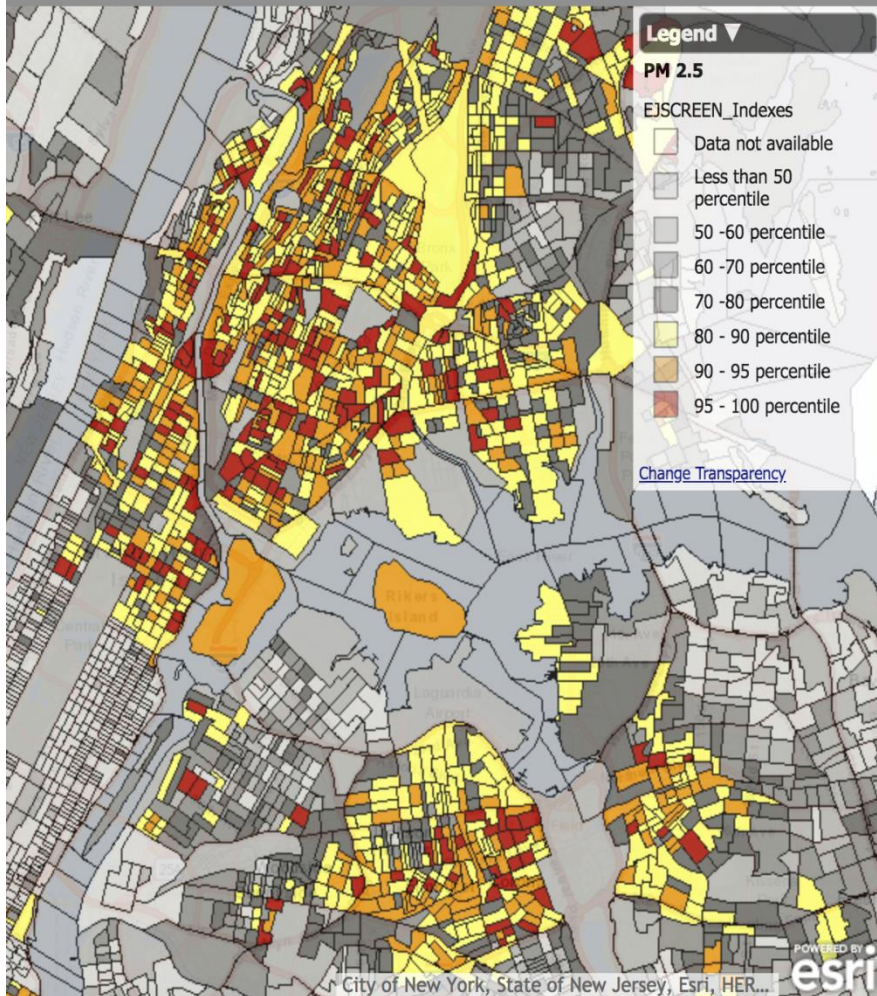


* Children under age 15.

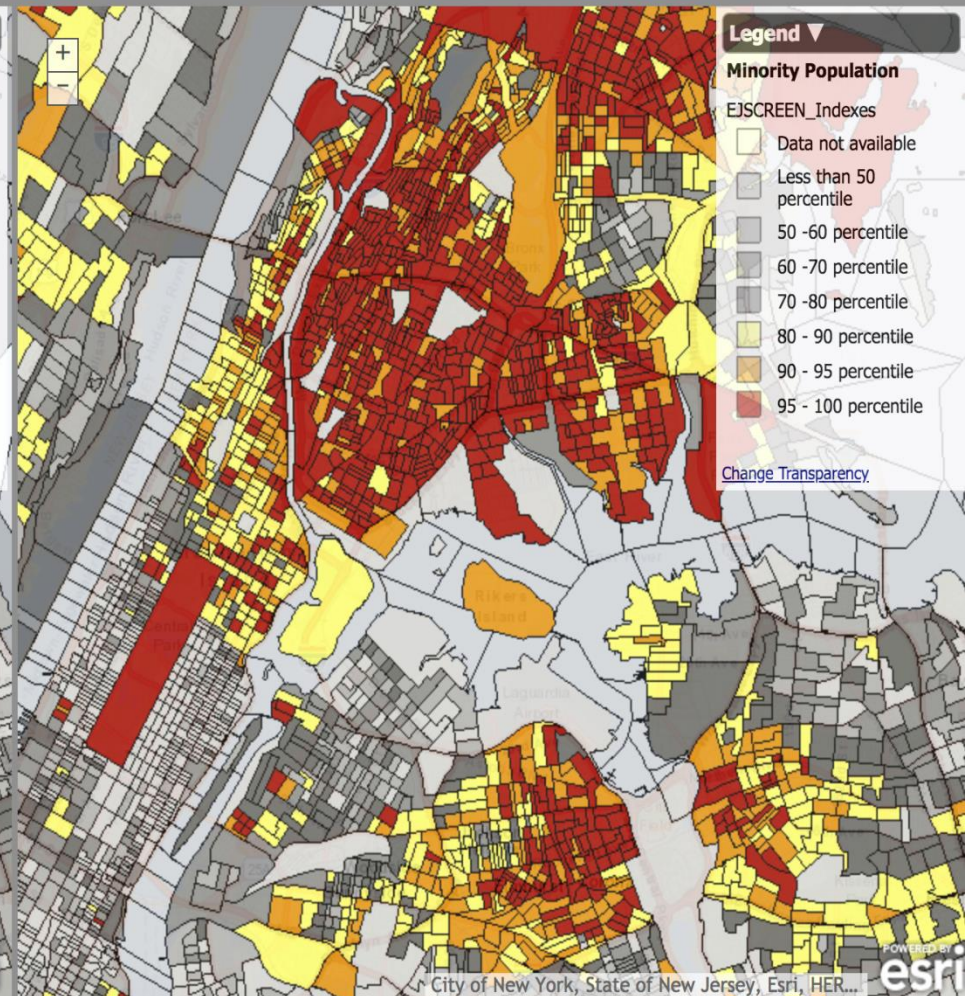
Source: Citizens' Committee for Children of New York (2013), *Keeping Track of New York City's Children, Tenth Edition*; Figure 3.12 and Figure 4.15.


Environmental Inequality: Race, Income, and Environmental Racism

EJ Index for Particulate Matter (PM 2.5) National Percentiles



Minority Population National Percentiles



A photograph of a multi-story red brick building with black fire escapes and windows. The building has a classic architectural style with decorative elements above the windows. A white text box is overlaid on the center of the image.

**Our Earth, city, community spaces,
schools, and our homes are all
connected and impact each other**

Health Professionals



Policy Makers



Community Groups



**Environmental
Health Research:**



Creating Equitable, Healthy
Communities through
Community Driven Research

Advocacy Groups



Educators





What is Team Science?

Team science is a collaborative effort to address a scientific challenge that leverages the strengths and expertise of professionals trained in different fields.

Project Partners



New York State
Pollution Prevention Institute



New York State
Centers of Excellence in
Children's Environmental Health
Dedicated to the Health and Well-Being of Children in NYS



CUNY CENTER
for URBAN



ENVIRONMENTAL LITERACY



A network of experts in reproductive and children's environmental health



ENVIRONMENTAL
REFORM



New York Hall of Science



Icahn School
of Medicine at
Mount
Sinai

*Transdisciplinary Center
on Health Effects of Early
Environmental Exposures*



Citizen Science in NYC School Communities

The project engaged students in air quality research that informed public health interventions and empowered students to act as advocates for healthy neighborhoods.

- 8 Middle Schools from Bronx, Brooklyn, and Manhattan
- 1-2 Teachers per school
- AirBeam monitoring devices & apps

Project Timeline



Cross-Disciplinary Training: Professional Development Course

Goals For Teachers:

- Increase instructional capacity for project-based and place-based learning through Citizen Science
- Build knowledge of environmental factors, in particular air pollution's impact on human and environmental health
- Gain knowledge of citizen science tools assessing environment, environmental law and advocacy

Environmental Health, Epidemiology & Community Engaged Research



*Transdisciplinary Center
on Health Effects of Early
Environmental Exposures*



Education for Sustainability & Curriculum Development



Environmental Justice & Environmental Law



AirBeam Technology & Data Analysis



New York Hall of Science

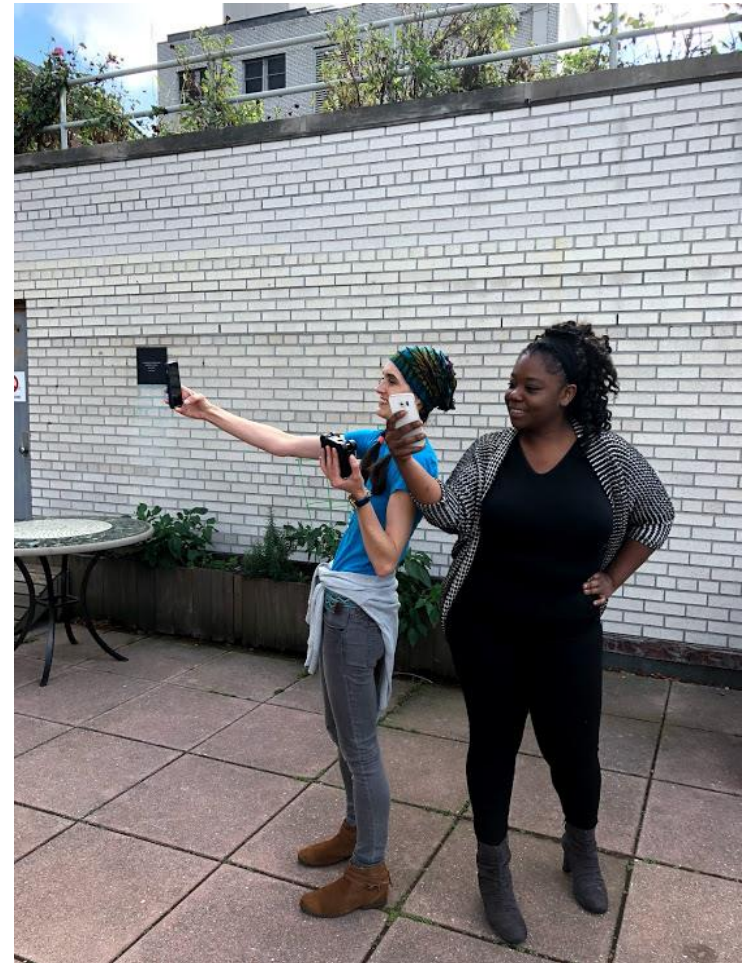


AirBeam

AirBeam is a wearable air monitor that maps, graphs & crowdsources your pollution exposures in real-time



AirBeam Technology Training



Environmental Health in Schools

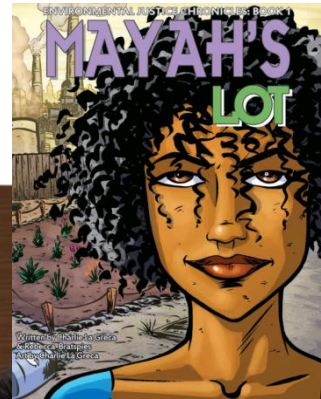
- Teachers witness the daily consequences of students being absent due to stressors contributing to their illness
- Teachers promote healthy futures for children by providing them with the education that allows them to advocate for themselves



Best Practices in Asthma In-Home Interventions Panel

58 views

👍 0 🗨️ 0 ➦ SHARE 📄 ...



Citizen Science in the Classroom

Data Collected:

- Asthma Hospitalization Rates
- Car/Truck Count
- Demographics
- Idling Vehicles
- Noise
- PM 2.5
- Soil Sampling
- Temperature & Humidity



Central Park East: No Findings?

Students ask construction workers if they can blow their cigarette smoke into the Air Beam 



Students share stories about their asthma and how family/neighbors smoke indoors



No drastic changes to PM 2.5

Students see the Air Beam
PM 2.5 count spike up

The Chapin School: Vehicles Idling Outside of School

- Vehicles idled the most during lunch and dismissal
- No one enforced the idling laws
- People turned their vehicles off only when they saw kids with cameras



Research to Action: The Chapin School

Promote stronger enforcement of idling laws



Educate people about the effects of air pollution on health, especially for children.

Proposed that school use Ecosia a default search engine that plants trees with it's profits

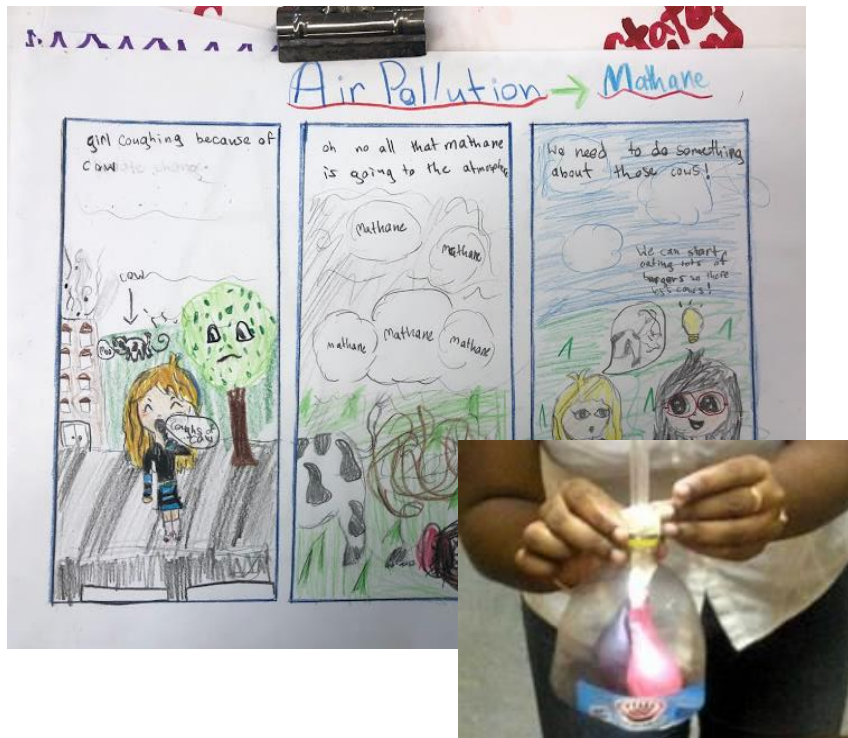


Informational Posters about Indoor Air Pollution: Anti-Smoking and Banning Nicotine

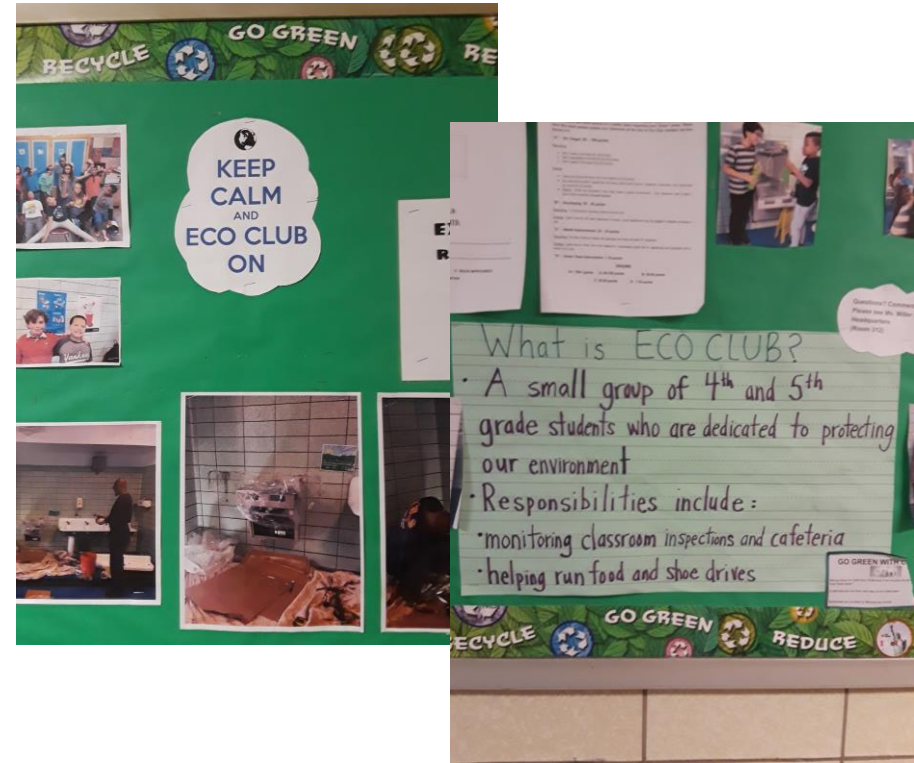


PS 111: Car Traffic & Health

Car Traffic



Re-Establishing the Eco-Club



- 60-70 Cars pass by PS 111 every hour
- Students created lung model and comic books to educate peers

- 5th Grade student lead the discussion/debates about what more they could do to improve the school community

Symposium

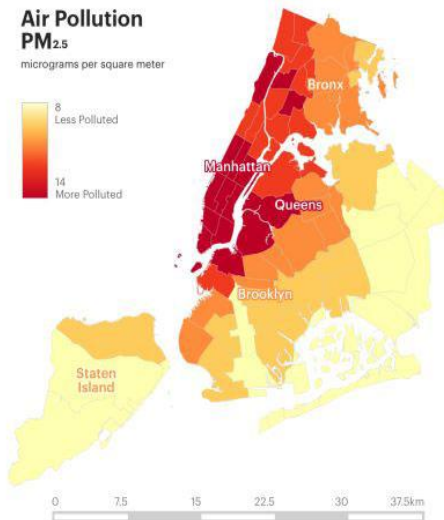
Community Concern

Air Pollution
PM_{2.5}

micrograms per square meter

8
Less Polluted

14
More Polluted



PM_{2.5} is fine particulate matter of diameter less than 2.5 micrometers. These tiny dust particles, when inhaled, lead to numerous health conditions including early deaths, and heart and lung related illnesses.

Research



Action



Dissemination & Education



Teachers and Students concerned about ground level Air Quality Levels around their schools



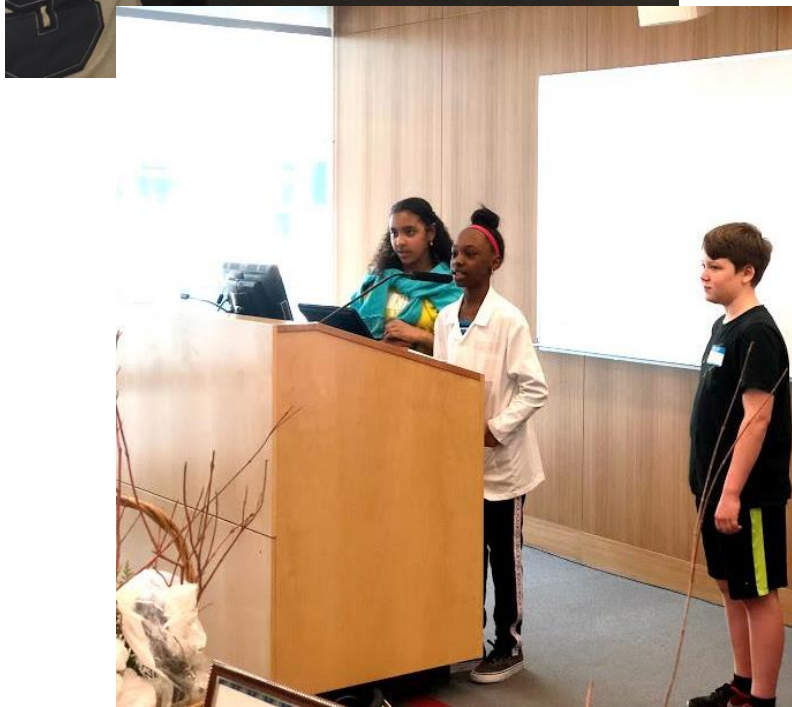
Each class collects air quality data around their school using an AirBeam

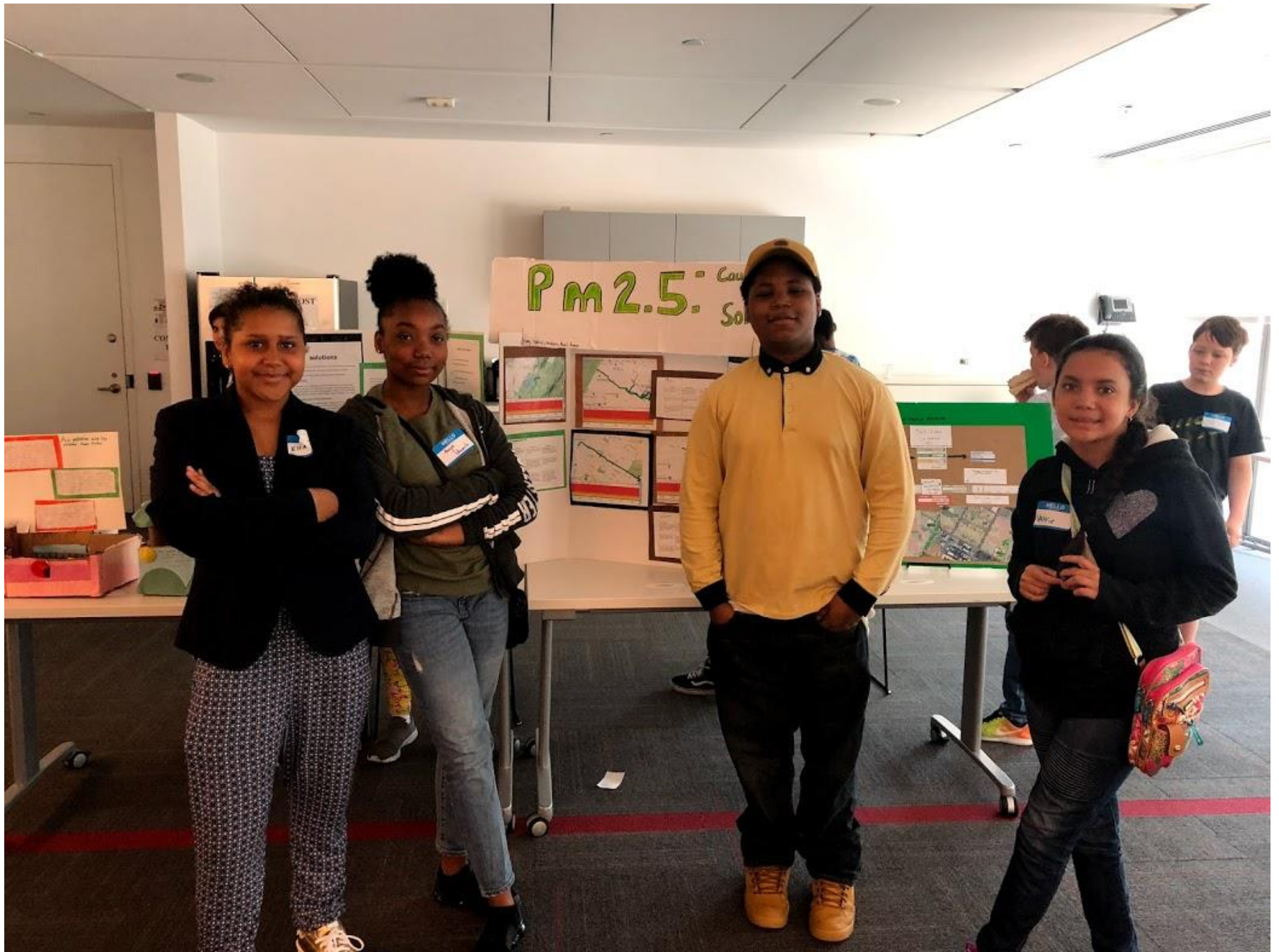


Students draw conclusions from the collected data and develop recommendations for pollution prevention in their neighborhood.



Each school presented their findings to the community at CUNY Law School







Pollution

Adrienne Kochs PS 111

Climate Science in NYC School Communities



Team Science: Importance of Partnerships



Lessons Learned

- There is a need for citizen science in schools
- Youth voices matter
- Future generation of team scientists
- Training teachers in February 2019
 - Mount Sinai
 - NY Hall of Science



THANK YOU!



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School of
Medicine at
Mount
Sinai**

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