



City government, academia, and local communities: Cooperative approaches to citizen data collection

Air Sensors International Conference
Citizen and Community Science Session

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Overview

- Background
- NYC's Citizen Science Program
- Challenges
- Opportunities



New York City Community Air Survey (NYCCAS)

Largest urban monitoring program in US

→ 90 monitoring sites

2009-2016 citywide annual averages have declined by:

↓ 28% for $PM_{2.5}$

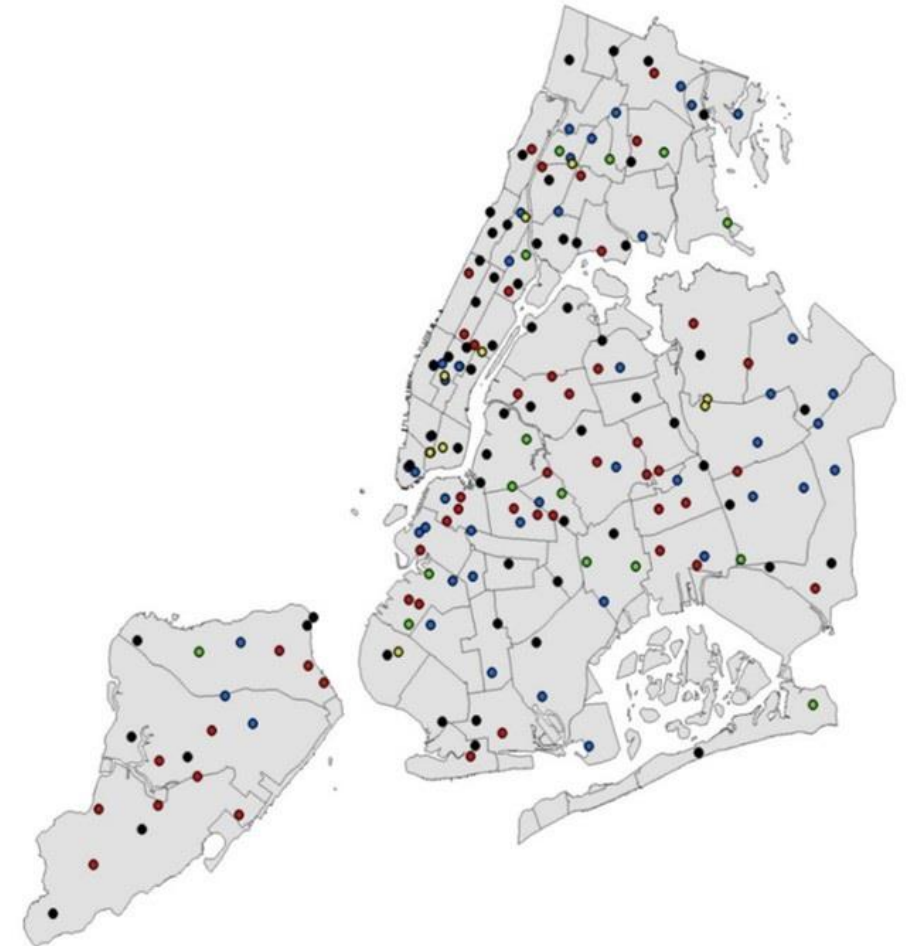
↓ 27% for NO_2

↓ 35% for NO

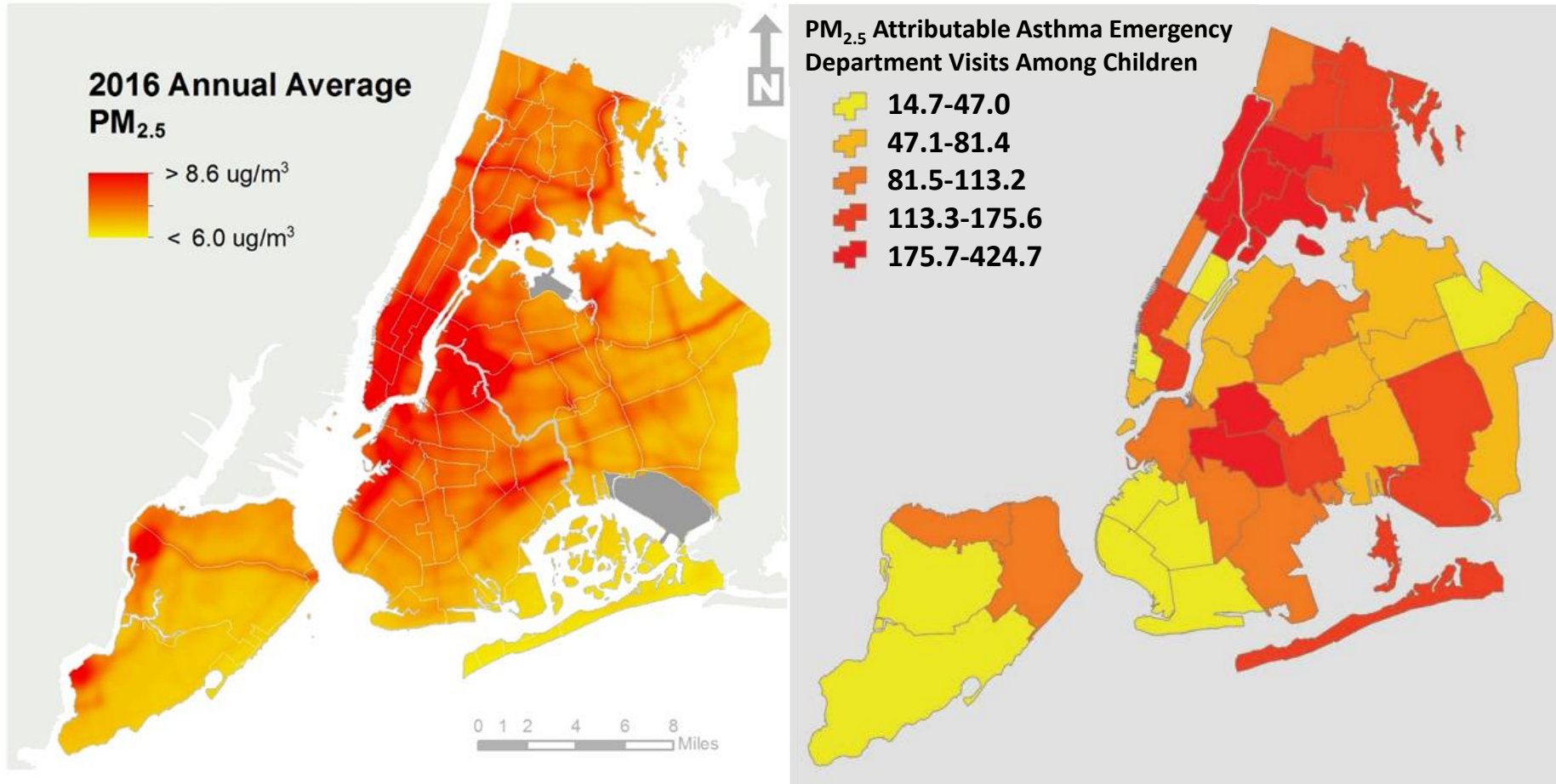
↓ 24% for BC

Wintertime average SO_2 decreased 95%

*Inequitable distribution throughout the city

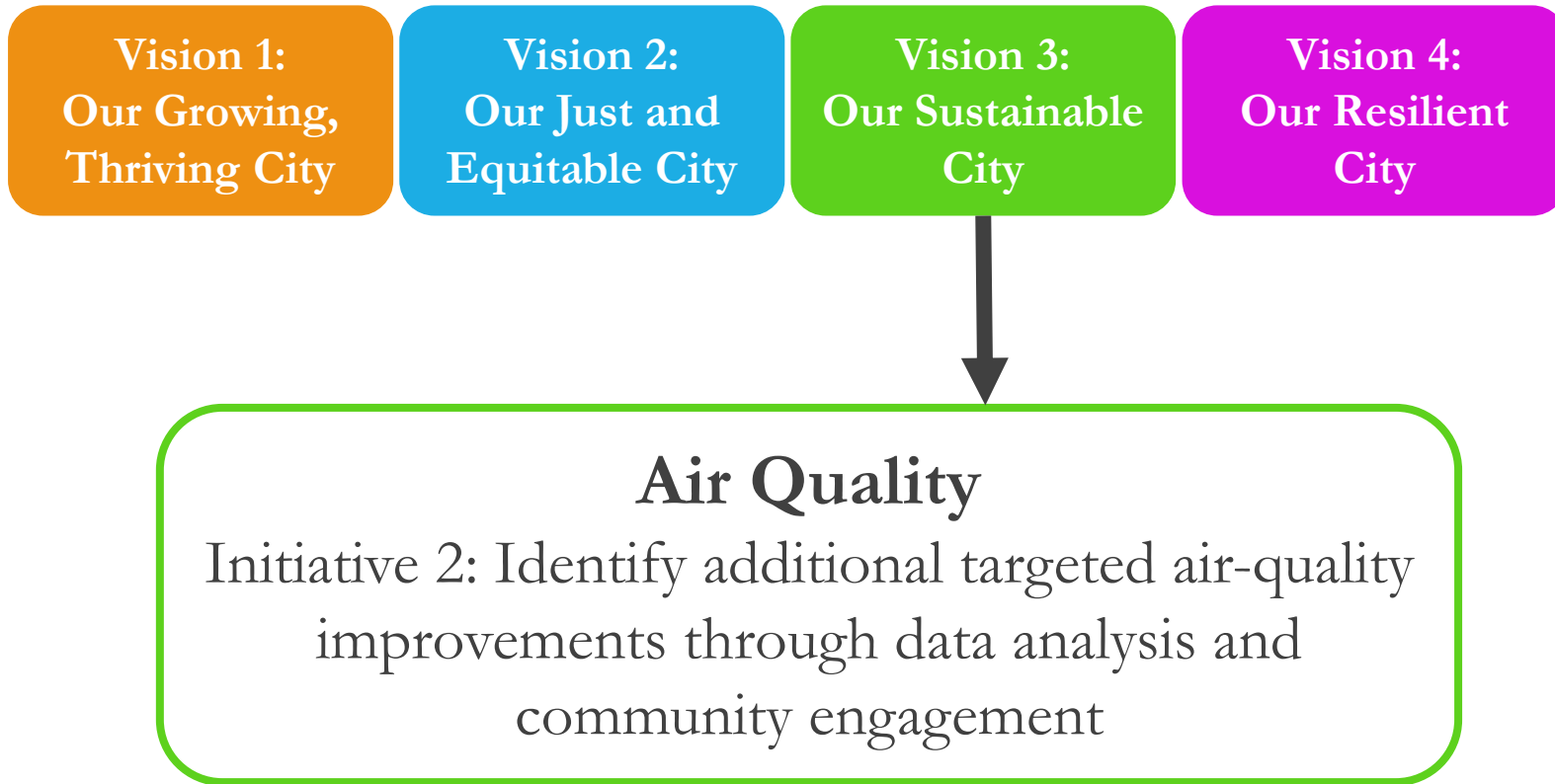


Air Pollution and Health Disparities

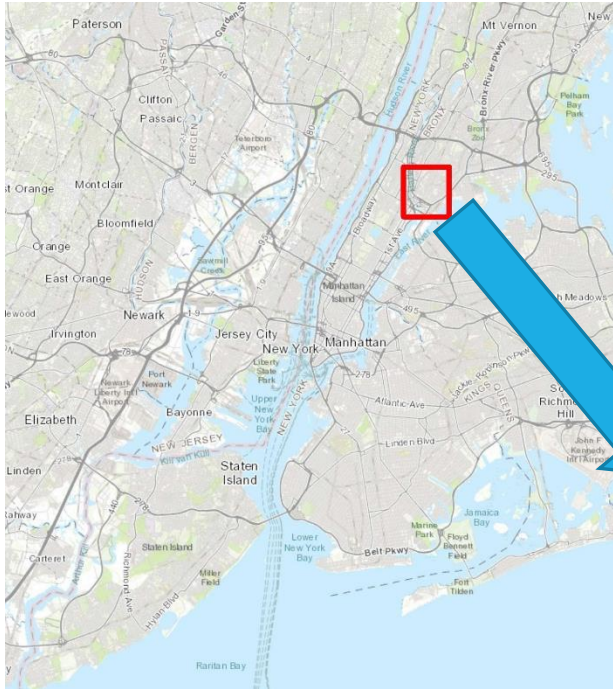


Poor communities of color bear the heaviest burden of the health impacts from air pollution

OneNYC

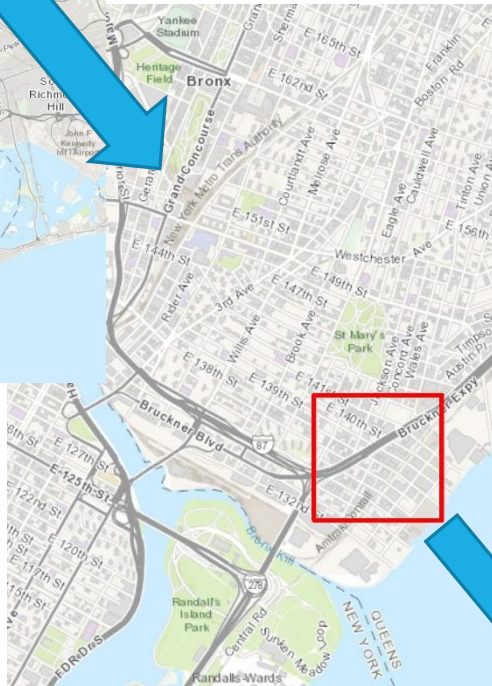


Increasing Monitoring Resolution on Local Air Pollutants



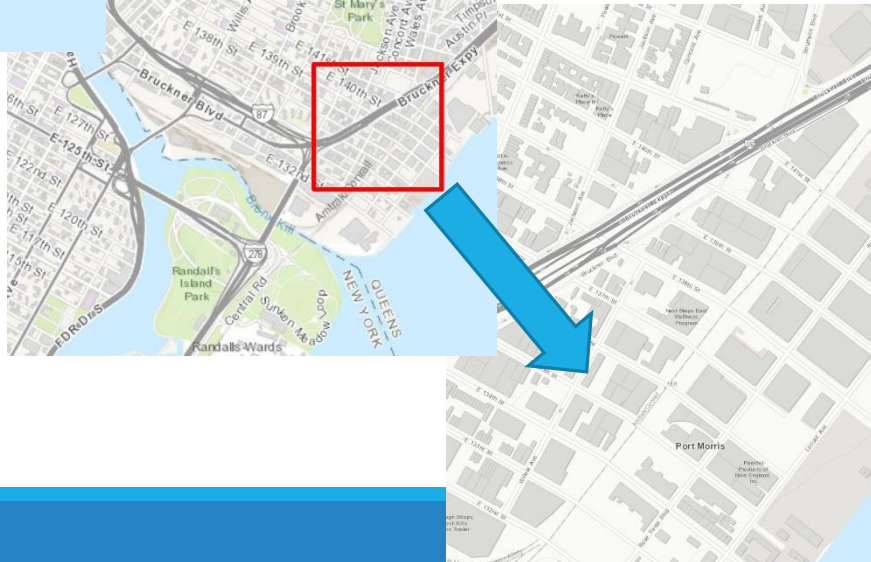
Regional Air Quality Monitoring

- EPA, NY State Department of Conservation



Neighborhood Air Quality Monitoring

- NYC DOHMH - NYCCAS



Hyper-local Air Quality Monitoring

- Citizen Science Project

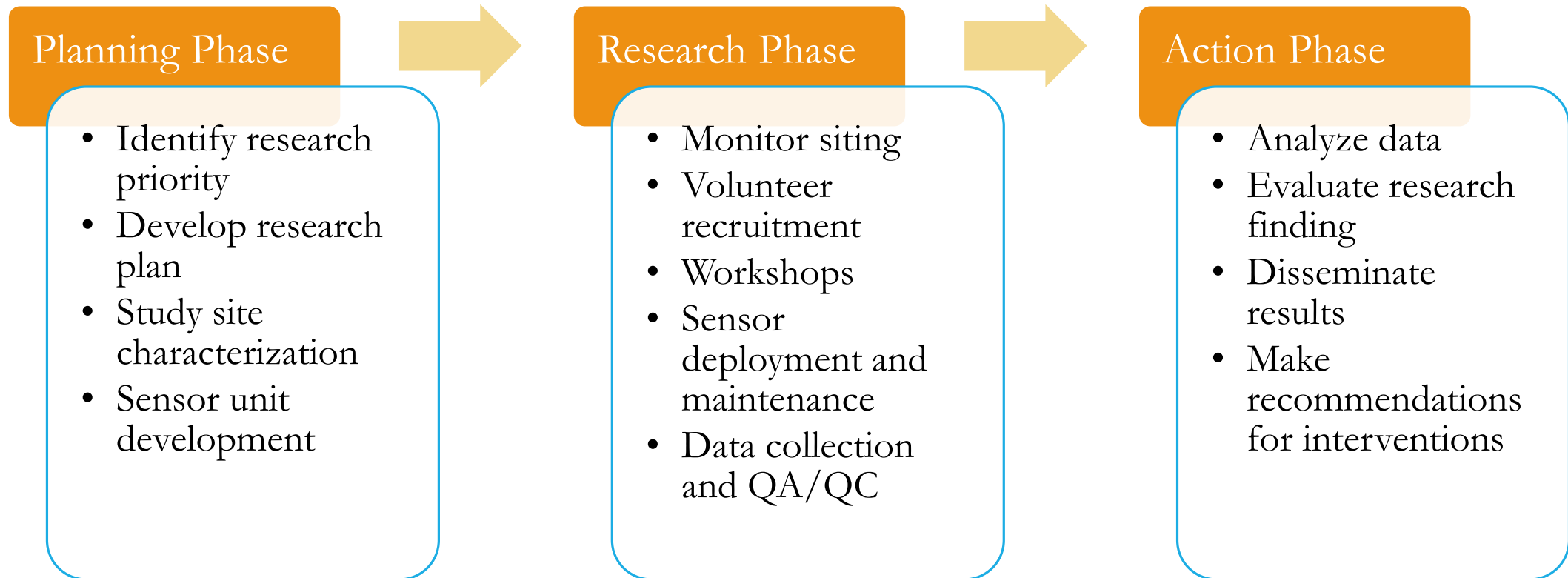
NYC Citizen Science Program

Evaluate existing low-cost PM_{2.5} air quality sensors

Create two fixed-site pilot community air quality monitoring networks with community groups

Develop a community air quality monitoring toolkit

Pilot Community Air Quality Monitoring Networks



Community-based Environmental Justice Organizations

El Puente

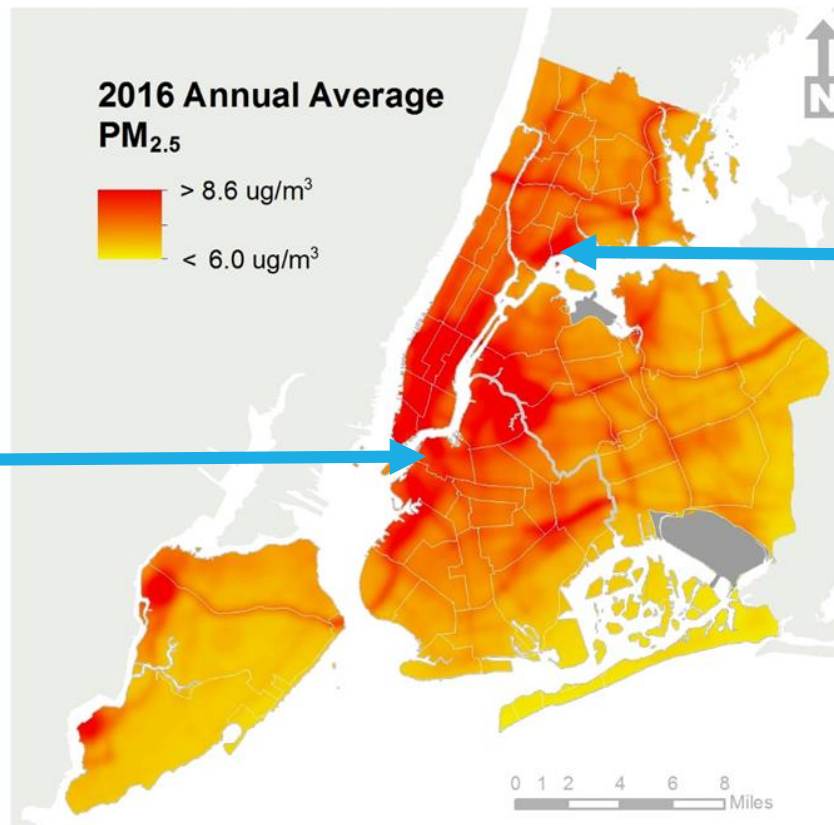
Location: **Brooklyn**

Local Air Quality

Concerns:

- **Air quality of available park spaces**
- **High traffic expressway**

Health Concerns: **High asthma rates among youth**



Youth Ministries for Peace & Justice

Location: **Bronx**

Local Air Quality

Concerns:

- **Truck traffic on residential streets**
- **Three high traffic highways**

Health Concerns: **High asthma rates among youth**

Opportunities for Baseline Data Collection



Bronx: State's \$1.8 billion investment to redevelop expressways
→ remove 13,000 trucks that use local roads daily

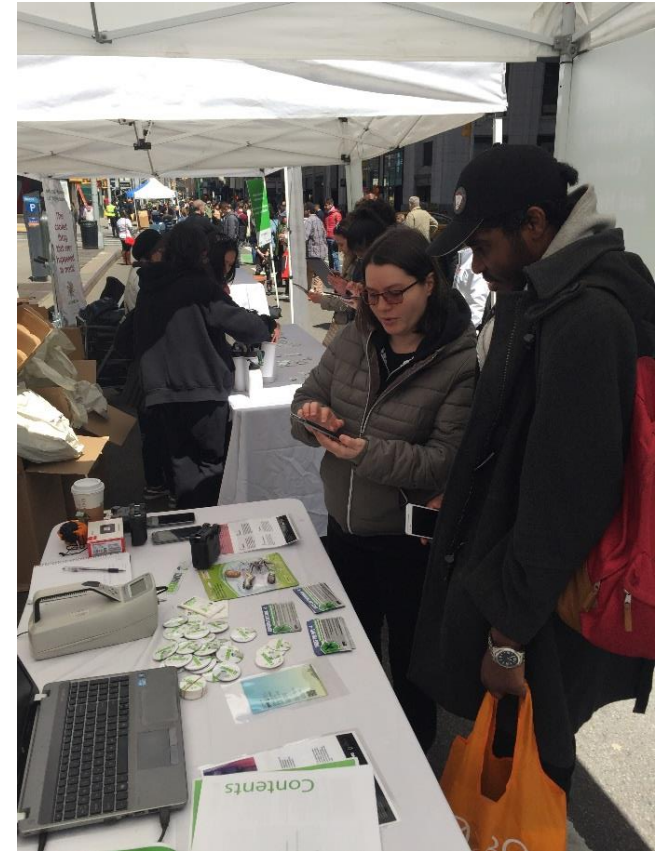
Brooklyn: Major subway line closure → New bus route and fleet of buses to accommodate commuter traffic



governor.ny.gov

Community Engagement

- Meeting with community-based organization to discuss local air quality concerns
- Community input into neighborhood characterization
- Community developed maps for suggested monitor siting
- Volunteer recruitment
- Workshops and trainings



Challenges

- ❖ Ensuring expectations and anticipated outcomes are understood
- ❖ Developing effective communication strategies to maintain community participation
- ❖ Limitations of extrapolating results due to neighborhood differences

Opportunities

- ❖ New and unique ways to assess air pollution
- ❖ Data collection in places where data would not have otherwise been collected
- ❖ Access to informational tools to help understand and avoid harmful exposures
- ❖ Solutions designed to fit the needs of the community



Acknowledgements

El Puento



Youth Ministries for Peace & Justice



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