# Environmental Justice, Trees, and Health

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August 8, 2017

# Questions to Ponder

- Does tree canopy vary spatially by race/ethnicity, SES, and hazard profile?
- Do investments in tree canopy improvements vary spatially by race/ethnicity, SES, and hazard profile? Is the money matching the need?
- Are there differential investments in groups performing tree canopy work based on race/ethnicity, SES, geography? Are organizations in target neighborhoods being activated? Funded?
- Do changes in tree canopy lead to tangible health, economic, and quality of life benefits for all groups?
- Do changes in tree canopy lead to green gentrification? Are there policies in place to ensure that long-term underserved residents are not displaced?
- How can trees be used to empower/inpower underserved, overburdened, marginalized, and health disparity populations?

# Environmental Justice Movement

# History of the EJ Movement

- Martin Luther King, Jr. and Sanitation Workers Strike in Memphis (1968)
- Landfill issues in Houston, TX (1970s)
- PCB Landfill in Warren County, NC (1982)

# What are these LULUs?

- Power Plants
- Landfills
- Publicly Owned Treatment Works (e.g. wastewater treatment plant)
- Chemical Plants


# EJ Definitions

- **Environmental Justice** is the fair treatment and meaningful involvement of all people regardless of race, ethnicity, culture, income or education level with respect to the development, implementation and enforcement of environmental laws, regulations, and policies

- **Environmental Justice** is served when people can realize their highest potential, without experiencing the 'isms.' EJ is supported by decent paying and safe jobs, quality schools and recreation, decent housing and adequate health care, democratic decision-making and personal empowerment; and communities free of violence, drugs and poverty. These are communities where both cultural and biological diversity are respected and highly revered and where distributive justice prevails

# EJ Definitions Contd.

- **Environmental racism refers to intentional or unintentional racial discrimination in the enforcement of environmental rules and regulations, the intentional or unintentional targeting of minority communities for the siting of polluting industries, differential enforcement of environmental laws and statutes, and exclusion from public and private boards, commissions, and regulatory bodies.**

- **The term was coined and defined by Reverend Dr. Benjamin Chavis Jr. Executive Director and CEO of the United Church of Christ Commission for Racial Justice.**

- **Environmental Justice is the movement to reverse environmental racism.**

# 17 Principles of Environmental Justice

1) **Environmental Justice** affirms the sacredness of Mother Earth, ecological unity and the interdependence of all species, and the right to be free from ecological destruction.

2) **Environmental Justice** demands that public policy be based on mutual respect and justice for all peoples, free from any form of discrimination or bias.

3) **Environmental Justice** mandates the right to ethical, balanced and responsible uses of land and renewable resources in the interest of a sustainable planet for humans and other living things.

5) **Environmental Justice** affirms the fundamental right to political, economic, cultural and environmental self-determination of all peoples.

7) **Environmental Justice** demands the right to participate as equal partners at every level of decision-making, including needs assessment, planning, implementation, enforcement and evaluation.

12) **Environmental Justice** affirms the need for urban and rural ecological policies to clean up and rebuild our cities and rural areas in balance with nature, honoring the cultural integrity of all our communities, and provided fair access for all to the full range of resources.

# My Definition of Environmental Justice (EJ)

- EJ Framework is a Three-Legged Stool
  - Leg 1: Differential Burden and Exposure to Environmental Hazards and LULUs (chemical plants, TRI facilities, incinerators, brownfields, heavily-trafficked roadways, industrial zoning, goods movement activities, landfills, depots, etc)
  - Leg 2: High Concentration of Psychosocial Stressors (Crime, Violence, Poverty, isms, social disorder)
  - Leg 3: Lack of access to high quality health-promoting infrastructure (supermarkets, banks, schools, basic amenities, housing, parks/green space, economic opportunity structures)

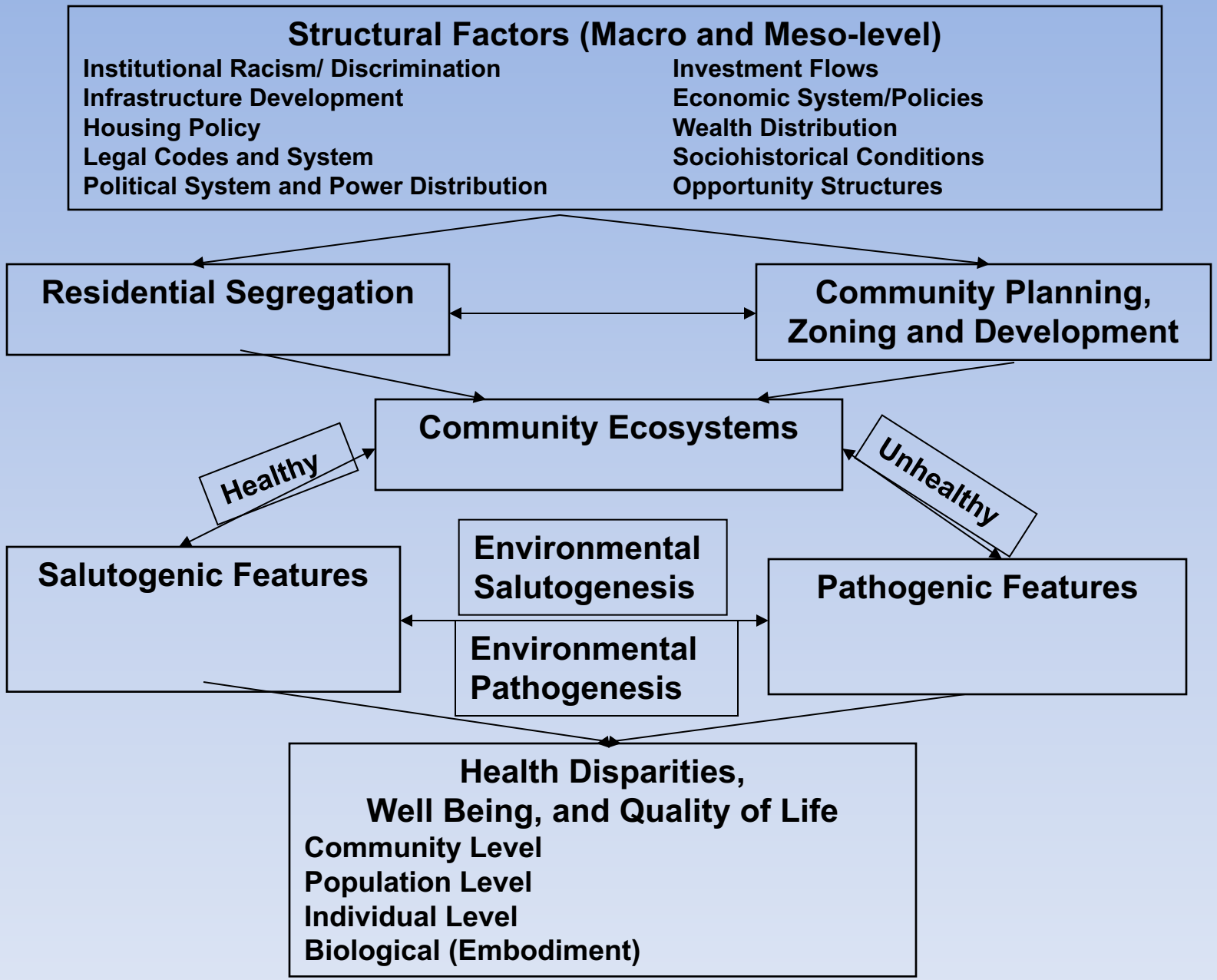
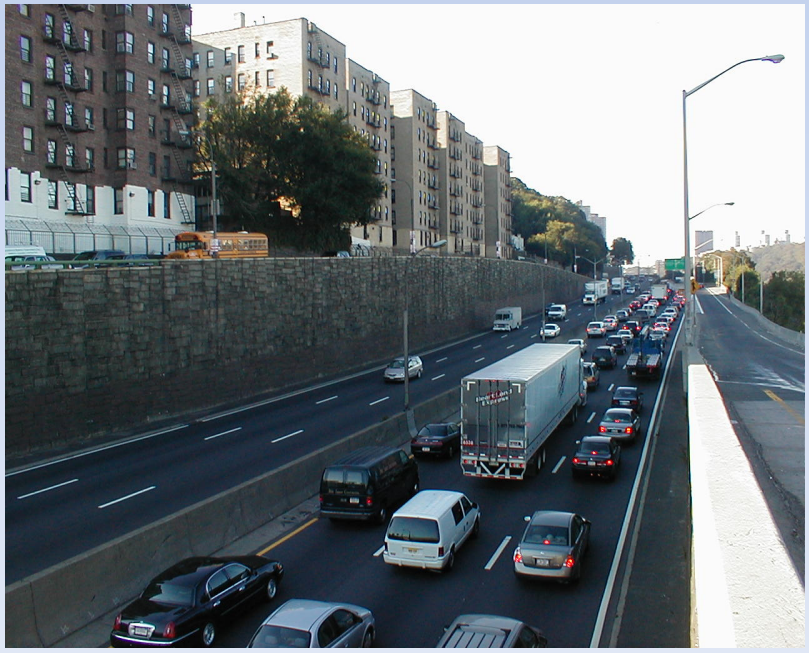



**Fig. 1. Ecological Framework to Address Health and Health Disparities**

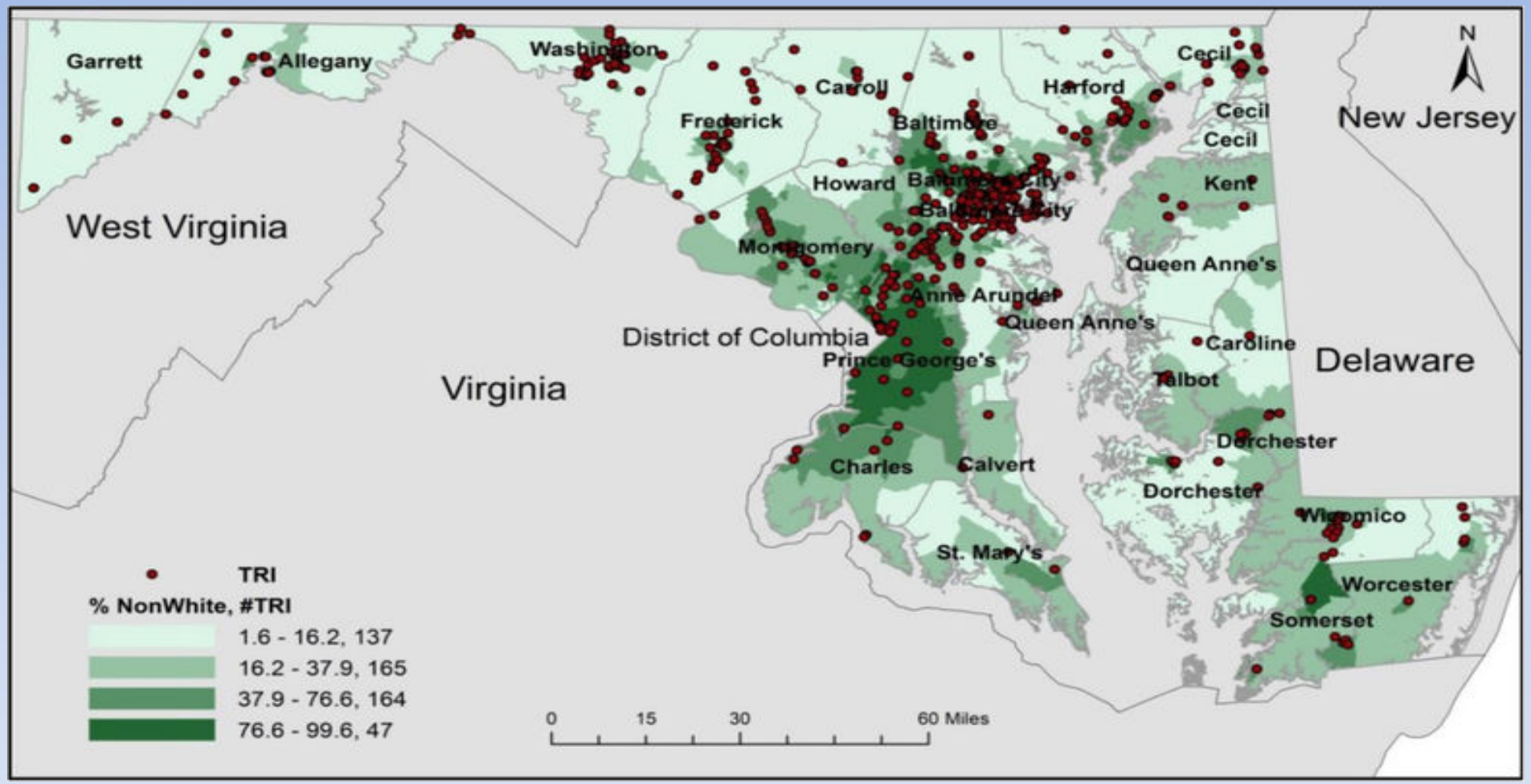
- This ecological framework focuses on aspects of the built and social environments and spatial processes which create "riskscapes" (Morello-Frosch and Lopez 2006) or "unhealthy community ecosystems" (UCEs) (Wilson 2008)

- Populations who live in or are exposed to "riskscapes" experience health inequities (Gee and Payne-Sturges 2004)



# Examples of Environmental Injustice

# Double Disparity: Being Overburdened and Medically Underserved




**Choropleth Map of TRI Facilities in Maryland by Quartiles for % Non-White (2010 US Census)**

- In the state of Maryland, we found that census tracts with a higher proportion of non-white residents and people living in poverty were more likely to be closer to TRI facilities

# Double Disparity: Being Overburdened and Medically Underserved

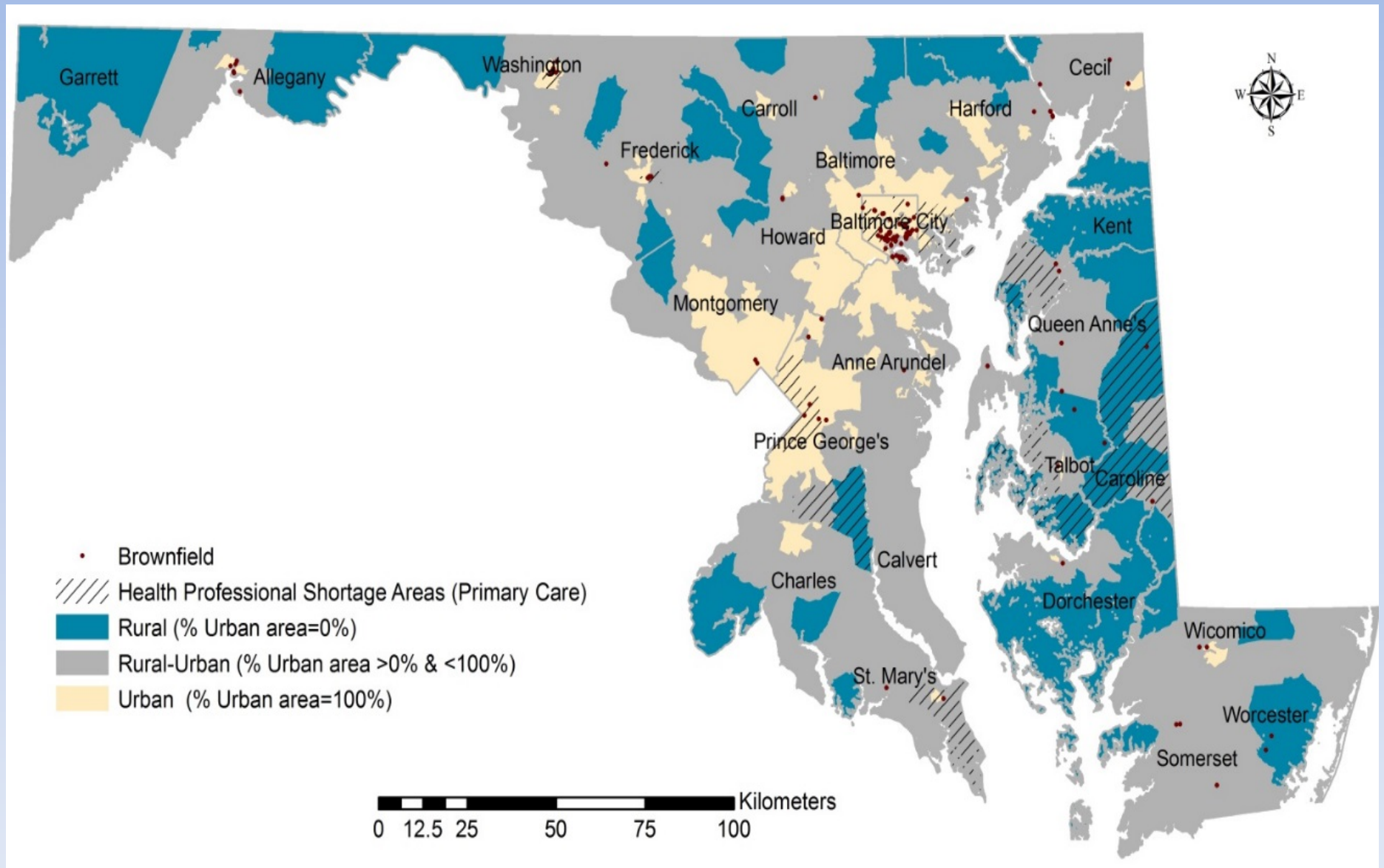
- Percent poverty, unemployment, less than high school education, and homes built pre-1950 were higher in HPSA tracts hosting TRI facilities than in non-HPSA tracts hosting TRI facilities. In addition, both low-income groups and persons without a high school education are both overburdened and medically underserved
- This has important implications for the Affordable Care Act, National Prevention Strategy, and the MD Health Improvement/Health Disparities Reduction Act

**Mean Distribution of Sociodemographic Measures by TRI Facility Buffer Zones for 2010 Maryland HPSA tracts and non-HPSA tracts**

| Sociodemographic measures | Host | 1 km – 5 km buffer |
|---|---|---|
| | HPSA/Non-HPSA | HPSA/Non-HPSA |
| # Census tracts | 57/202 | 117/496 |
| % Hispanic | 8.3/6.6* | 10.3/8.2* |
| % Non-white | 55.8/33.4 | 79.8/41.9 |
| % Poverty | 18.8/8.8 | 16/6.5 |
| % Unemployment | 11.2/6.2 | 11.1/5.5 |
| % Less than HS education | 22.2/13.3 | 21/9.5 |
| % Homeownership | 53.4/68.6 | 47.9/73.8 |
| % Homes built pre-1950 | 41.5/20.9 | 27.6/14.4 |
| Diversity index | 0.41/0.43* | 0.37/0.45 |
| Median HH income | 47428/70202 | 48723/88798 |

*Statistically insignificant at the level of 0.05.

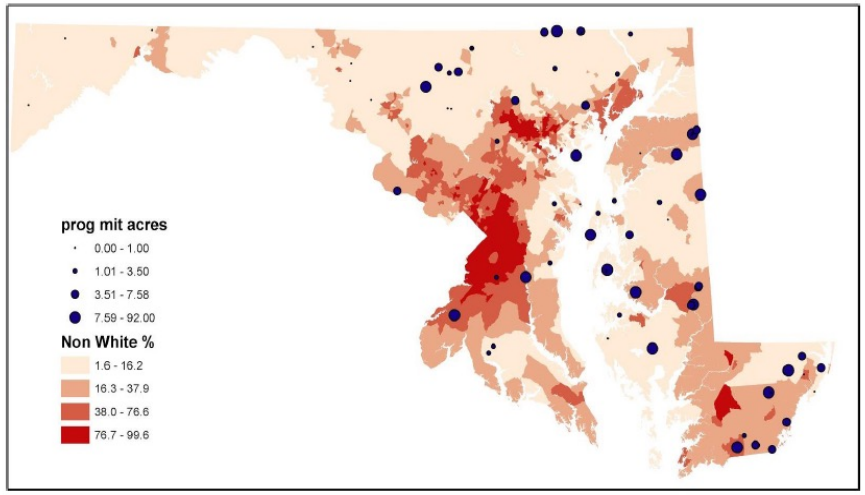
# Brownfields and HPSA



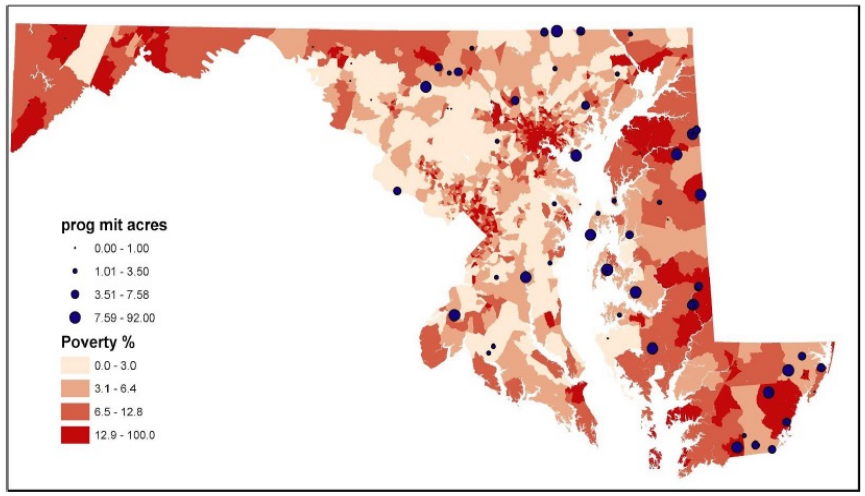
# Disparities in Allocation of Clean Water Act Resources in MD

**Figures 1a and 1b. Programmatic Wetlands Acreage by Percent Non-White in Maryland and Programmatic Wetlands Acreage by Percent Poverty in Maryland (US Census 2010).**

A




B



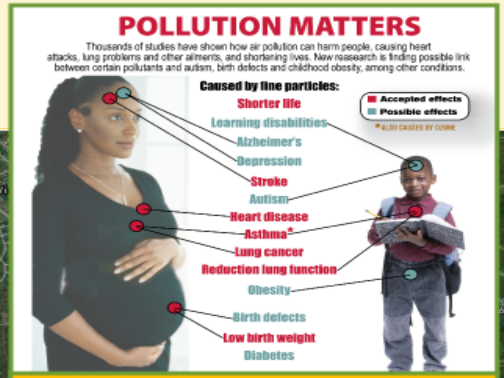

- Under Maryland's Clean Water Act Non-tidal Wetland Mitigation program, projects were observed to have clear disparities when it came to race, and to a lesser degree poverty
- Of the 75 programmatic wetlands projects performed by the state, only three took place in census tracts where greater than 50% of the population was made up of people of color
- Only 11 of the projects occurred in census tracts where greater than 25% of the population were people of color
- Of the $28 million of funding analyzed in this study, the top 10 watersheds receiving funds consisted of only one watershed with a majority non-white population (Anacostia Watershed)
- While roughly 10% of Maryland residents live below the federal poverty line, the programmatic wetlands projects went to census tracts averaging a poverty level of 7.6%
- Combined racial and economic disparities can be especially stark for Baltimore City, a predominantly African-American jurisdiction which has a poverty level of 24%, yet received no documented wetlands projects

# Environmental Injustice in Brandywine, MD

# Brandywine Health Impact Assessment

HIA

Health impact assessment → Changes to decision & implement-ation → Changes to determinants of health → Changes to health outcomes

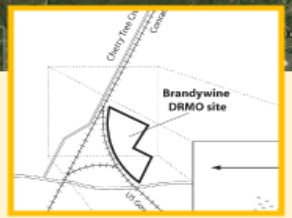




**Environmental Justice & Health Effects:**
**Environmental Pollution • Water Pollution**
**Toxic Pollution • Bacteriological Danger**
**Atmospheric Pollution • Particulate Matter**
**Dust • Fumes • Combustion Products**

**Chronic Disease Prevention...** **environmental and zoning inequality** and chronic diseases such as heart disease, cancer, diabetes and asthma are the leading causes of death and disability in disproportionately affect communities of color populations. Developing successful prevention strategies starts with recognizing the complex interplay of social factors that drive chronic diseases, and Brandywines' community Local Resilience and Responsible Planning. adverse effects of development projects on human health, and on the promotion of healthy environments. Therefore, the development and promotion of instruments for the systematic evaluation and mitigation of health impacts of development is a primary concern. Prince George's County, Brandywine, Maryland has poorer health outcomes compared to the rest of the counties over 60% of deaths are related to chronic diseases.



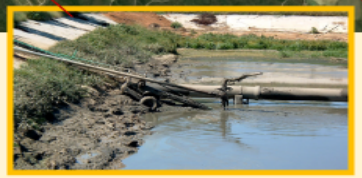

**Fossil Fuel | Gas Power Plant**




**Brandywine DRMO Superfund**

**Aggregate Surface Mining Wash Plants**

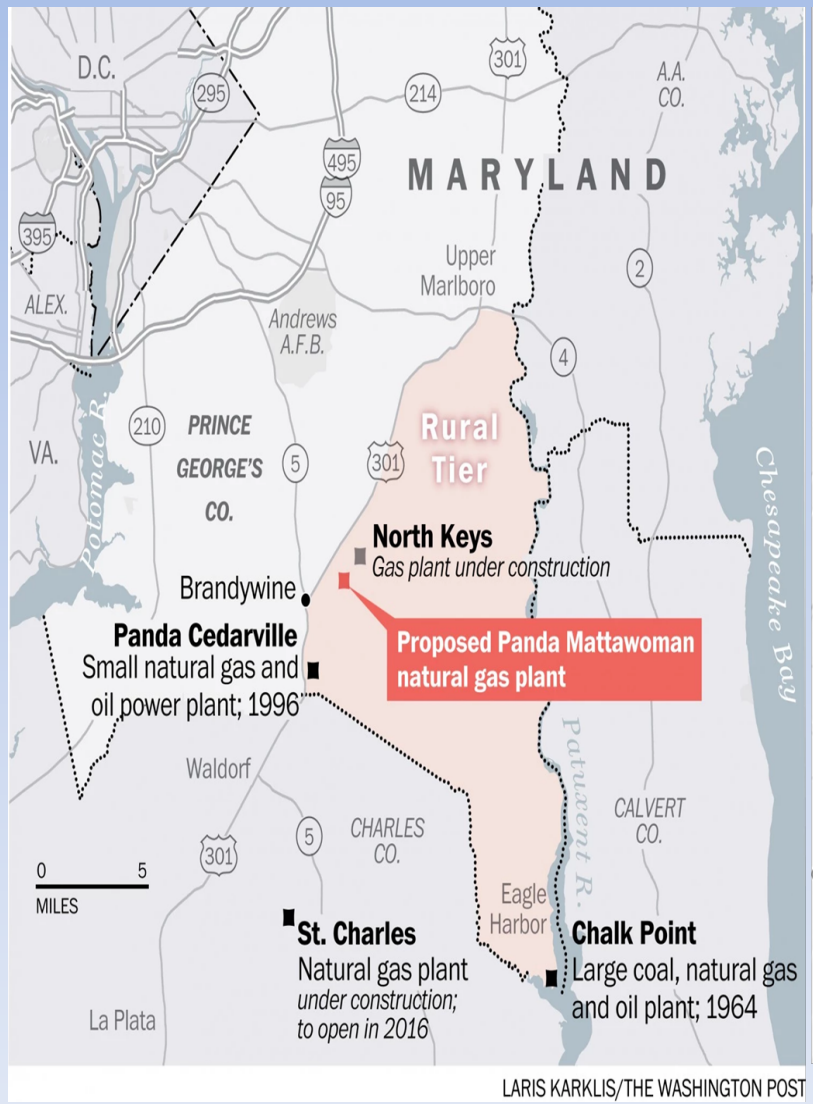
**Diesal Fumes**

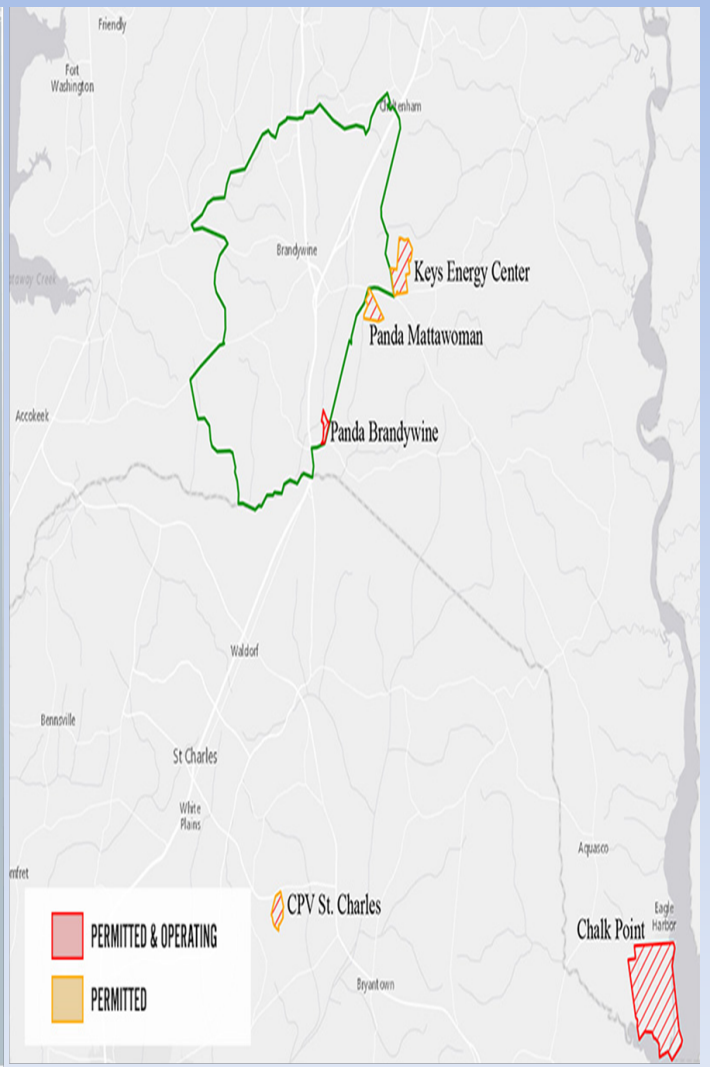


**Sludge Lagoon**

**Fly Ash Site**

# Environmental Injustice and Power Plants



# Coal Ash Landfill and Playground


# Environmental Justice and Youth Engagement in Curtis Bay, Baltimore

# Figure 1: Baybrook Area

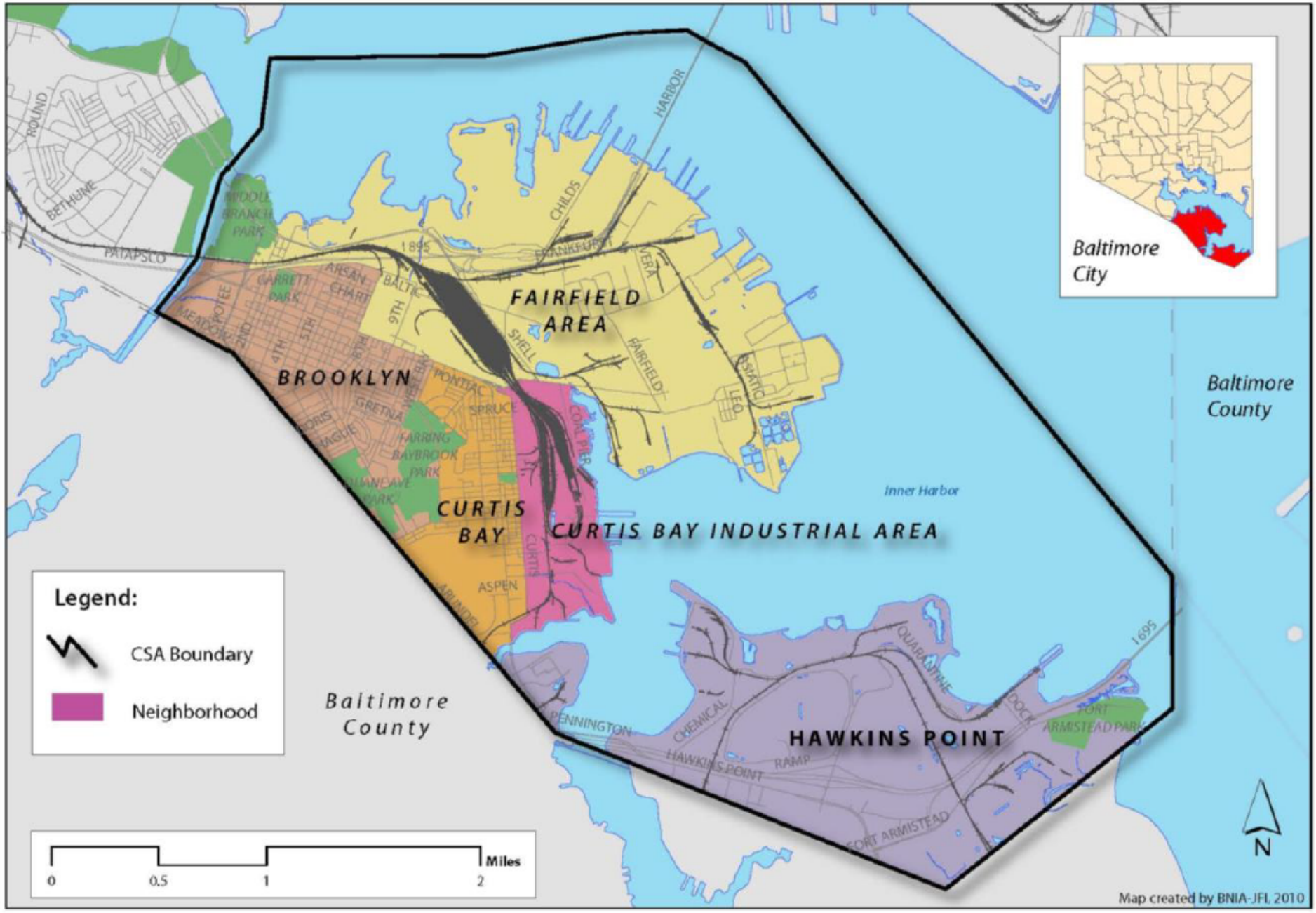
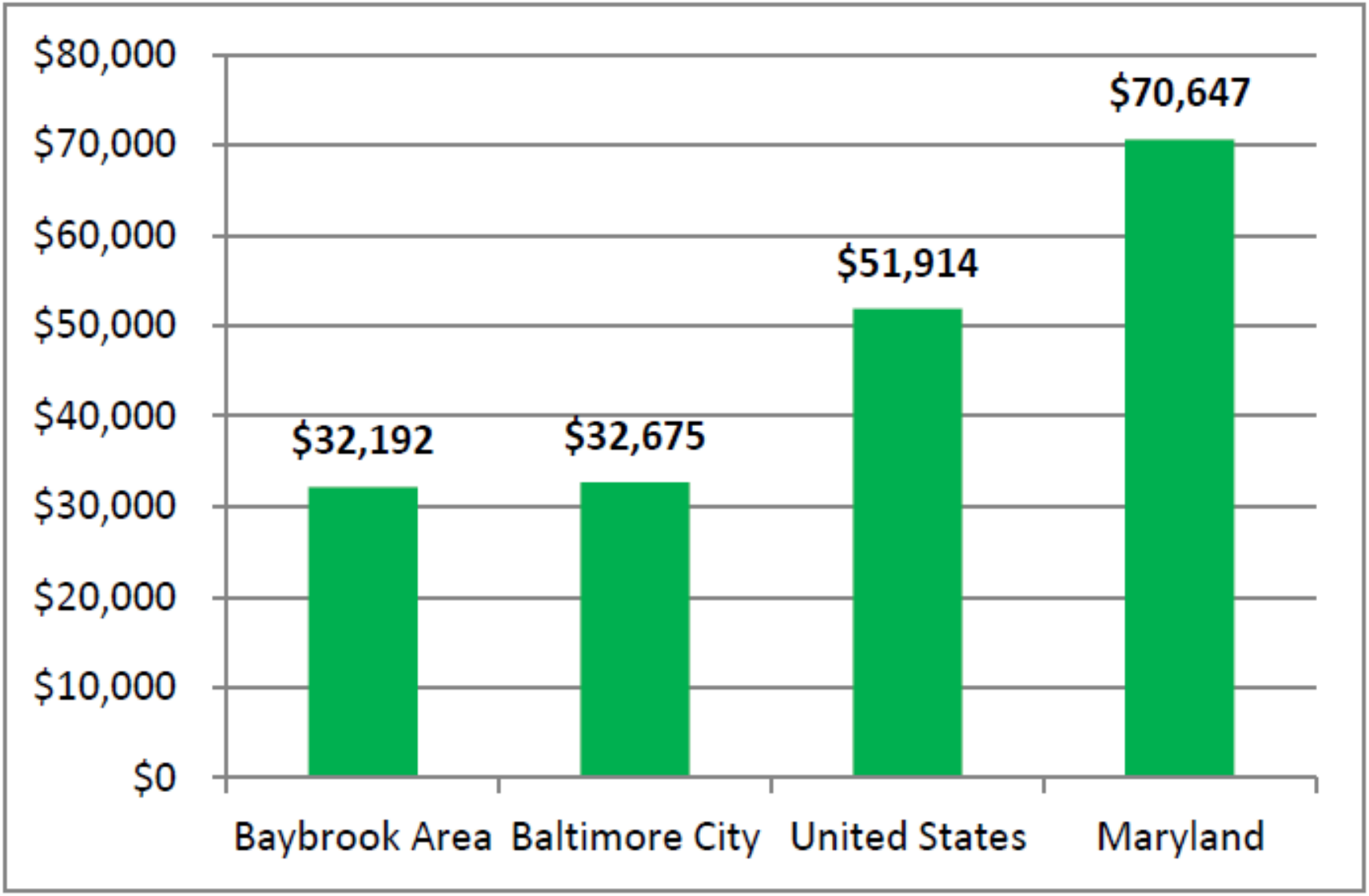


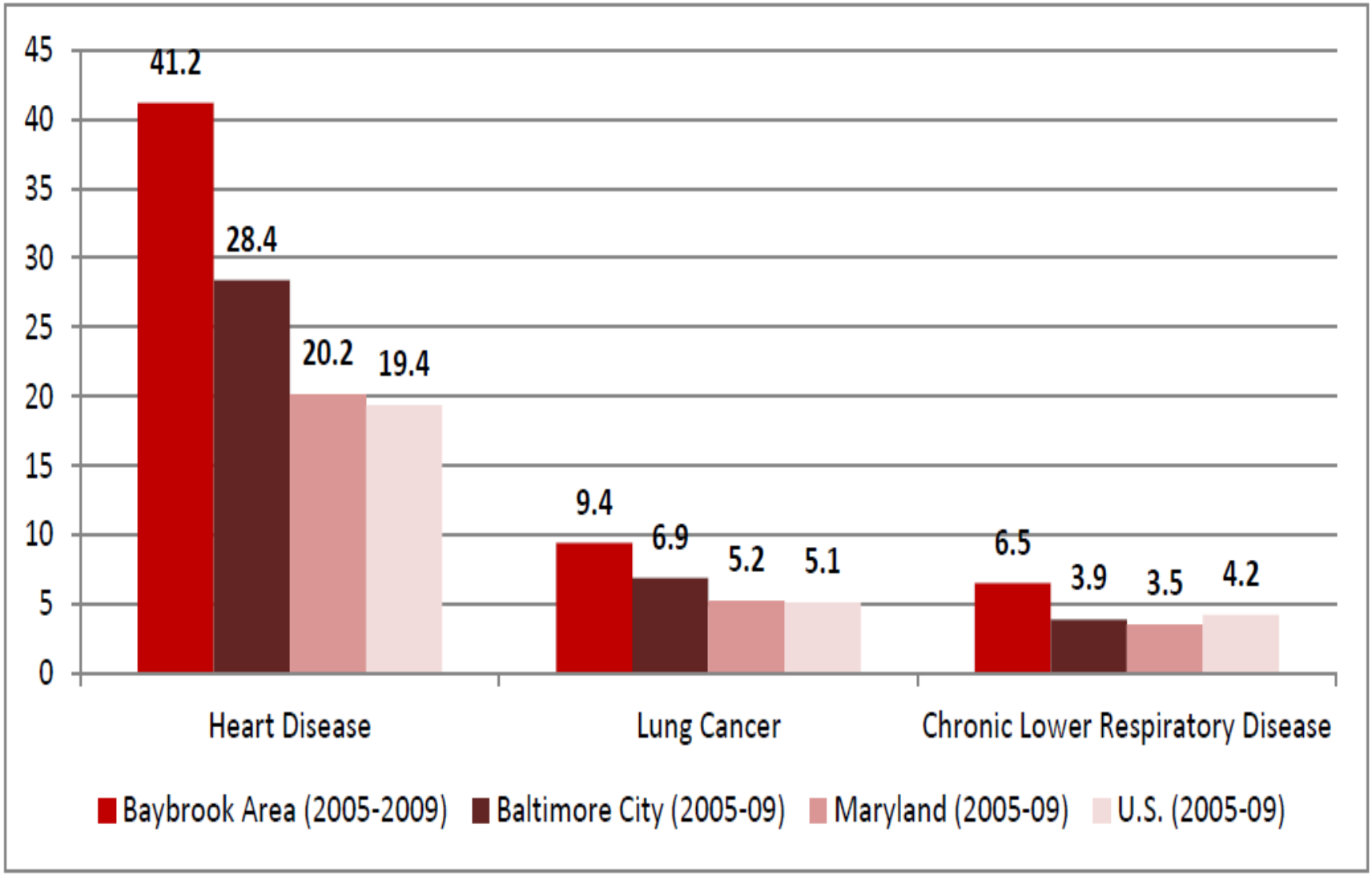
**Figure 2: Active Facilities in Curtis Bay with Major Air Permits[ff]**


| NO. | FACILITY NAME |
|---|---|
| 1 | BP PRODUCTS NORTH AMERICA INC CURTIS BAY TERMINAL |
| 2 | CITGO PETROLUEM CORP |
| 3 | CONSTELLATION - BRANDON SHORES STATION |
| 4 | CONSTELLATION - WAGNER STATION |
| 5 | CURTIS BAY ENERGY |
| 6 | ERACHEM COMILOG INCORPORATED |
| 7 | HESS CORP BALTIMORE TERMINAL |
| 8 | MOTIVA ENTERPRISES |
| 9 | QUARANTINE ROAD LANDFILL |
| 10 | SUNOCO PARTNERS MARKETING & TERMINALS LP BALTIMORE TERMINAL |
| 11 | US COAST GUARD YARD |
| 12 | US GYPSUM CO |
| 13 | W.R. GRACE - DAVISON CHEMICAL |

## Figure 3: Comparison of Median Household Income



## Figure 5: Comparison of Baybrook Area Specific Mortality Rates per 10,000 to Baltimore City, Maryland, and United States



**Toxic Air Emissions Reported to the Toxics Release Inventory in 21226 Relative to Other Zip Codes in the U.S.**

| Year | Toxic Air Emissions | | |
|---|---|---|---|
| | Rank | Percentile | Pounds |
| 2005 | 7 | 99.93% | 13,736,694 |
| 2006 | 9 | 99.91% | 11,939,943 |
| 2007 | 1 | 99.99% | 20,670,026 |
| 2008 | 1 | 99.99% | 21,650,020 |
| 2009 | 2 | 99.98% | 13,798,694 |
| 2010 | 75 | 98.96% | 2,205,260 |
| 2011 | 73 | 99.00% | 2,084,433 |

Rank is out of 8,949 zip codes in the U.S. (not counting territories)

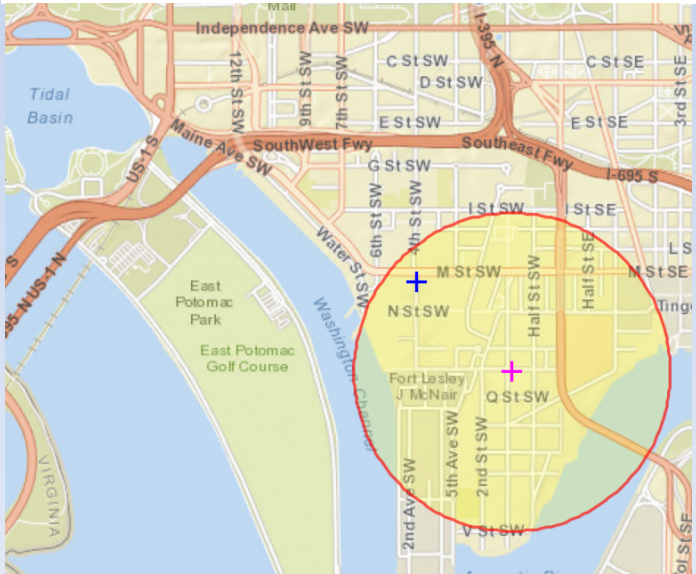

CURTIS BAY SCHOOL


Education
WE DEM
FAIR DEVELO ENT

# Gentrification and Injustice in Buzzard Point, Washington, DC

# Buzzard Point

| Buzzard Point Demographics | |
|---|---|
| Non-White Residents | 53% |
| Age: Under 5/Over 65 | 19% |
| Home Ownership | 36% |
| Average Income | $20,321 |



CAUTION
HARD HATS
REQUIRED
IN THIS AREA
DANGER
EYE
PROTECTION
REQUIRED
PELIGRO
SE REQUIERE
PROTECTOR
DE OJOS
DANGER
CONSTRUCTION
AREA
KEEP OUT
PELIGRO
AREA DE
CONSTRUCCION
PROHIBIDO EL PASO


## A new Buzzard Point

In planning documents dated from July 2010, a "Sports & Entertainment District" featuring a new stadium for D.C. United is envisioned a few blocks southwest of Nationals Park. The idea would require five property owners, including the District, to contribute land for the stadium site.

Satellite image via GoogleEarthPro.

Capital Business

# Environmental Justice, Trees, and Health

- Why are trees important?
  - Air Quality improvements in urban areas
  - Help reduce morbidity and mortality rates for chronic respiratory diseases
  - Noise, heat, and pollution mitigation
  - Shading and cooling – Climate Change
  - Reservoir for wildlife
  - Contact with nature can reduce stress and improve mental health outcomes
  - Aesthetics/Quality of Life
  - Stormwater management
  - Opportunity to build social capital
  - Create a sense of place
  - Energy Savings
  - Property values
  - Food Forests/Urban Agriculture

# Environmental Justice, Trees, and Health

- Heynen (2003) found an uneven pattern of tree cover in Indianapolis where high-income areas had more and larger stands of trees mainly through planting than low-income areas
  - Some groups have more agency in the decision-making about where to plant new trees, where to spend funds to manage existing trees, or invest more resources to protect particular set of trees
  - Low-income areas receive less benefits from trees and their locally distributed ecosystem services has been moderated through a socio-political process

# Environmental Justice, Trees, and Health

- Wolch et el (2014) discusses the paradox of urban green space
  - By making older and low-income and/or industrial areas more livable and attractive, urban greening projects can cause rounds of gentrification, altering housing opportunities and the commercial/retail infrastructure that supports low-income communities
  - This is known as green gentrification or eco-gentrification
- To avoid this and achieve environmental justice, efforts must be community-driven, tree programs must focus on anti-gentrification and community inpowerment

# THANKS!