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# Determining Factors in the Siting of Undesirable Land Uses

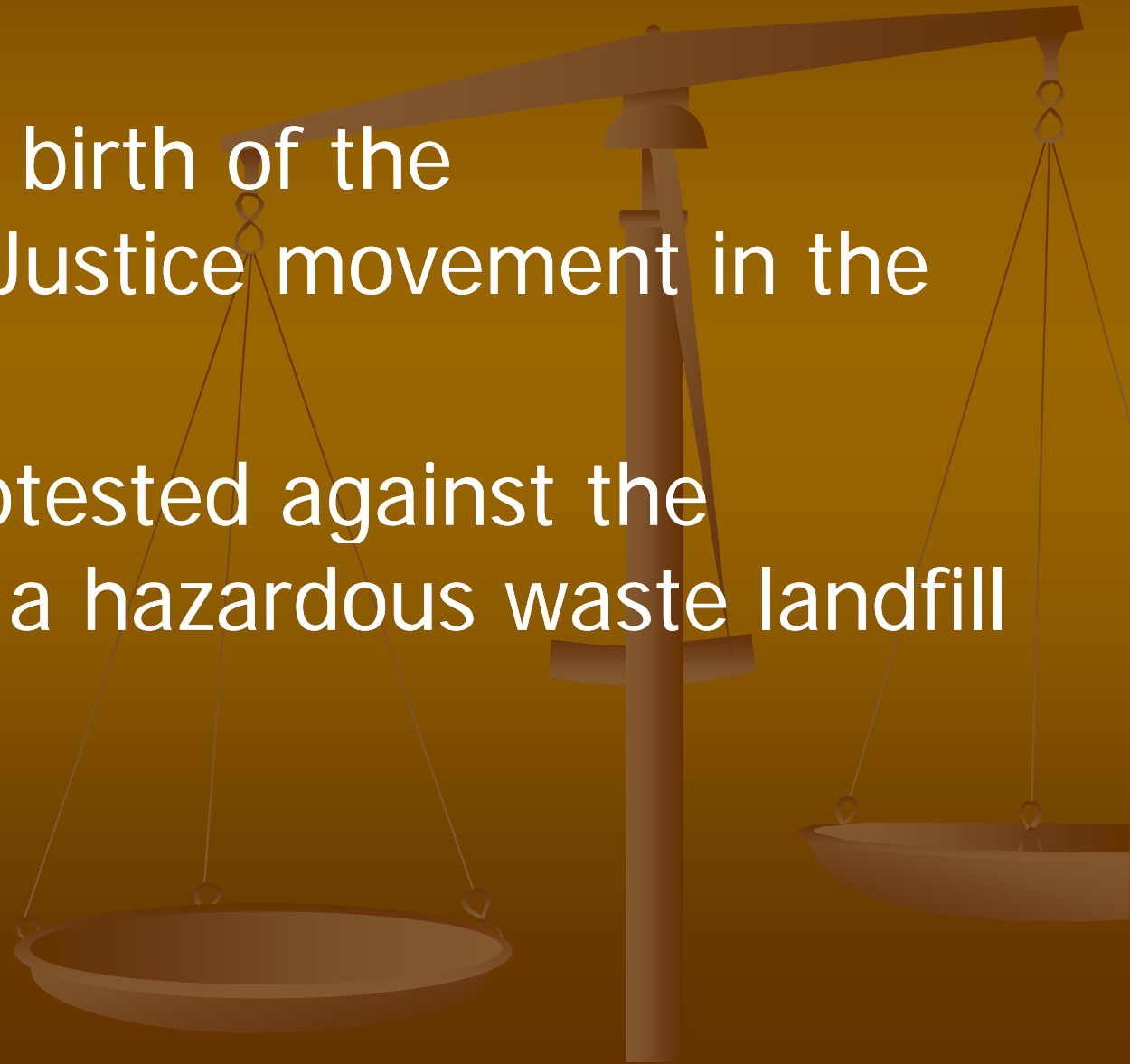
2009 ESRI User Conference  
San Diego, CA

# Introduction and Literature Review



# Warren County, NC

- 1982
- Credited as the birth of the Environmental Justice movement in the United States
- 500 citizens protested against the construction of a hazardous waste landfill
- Ultimately lost



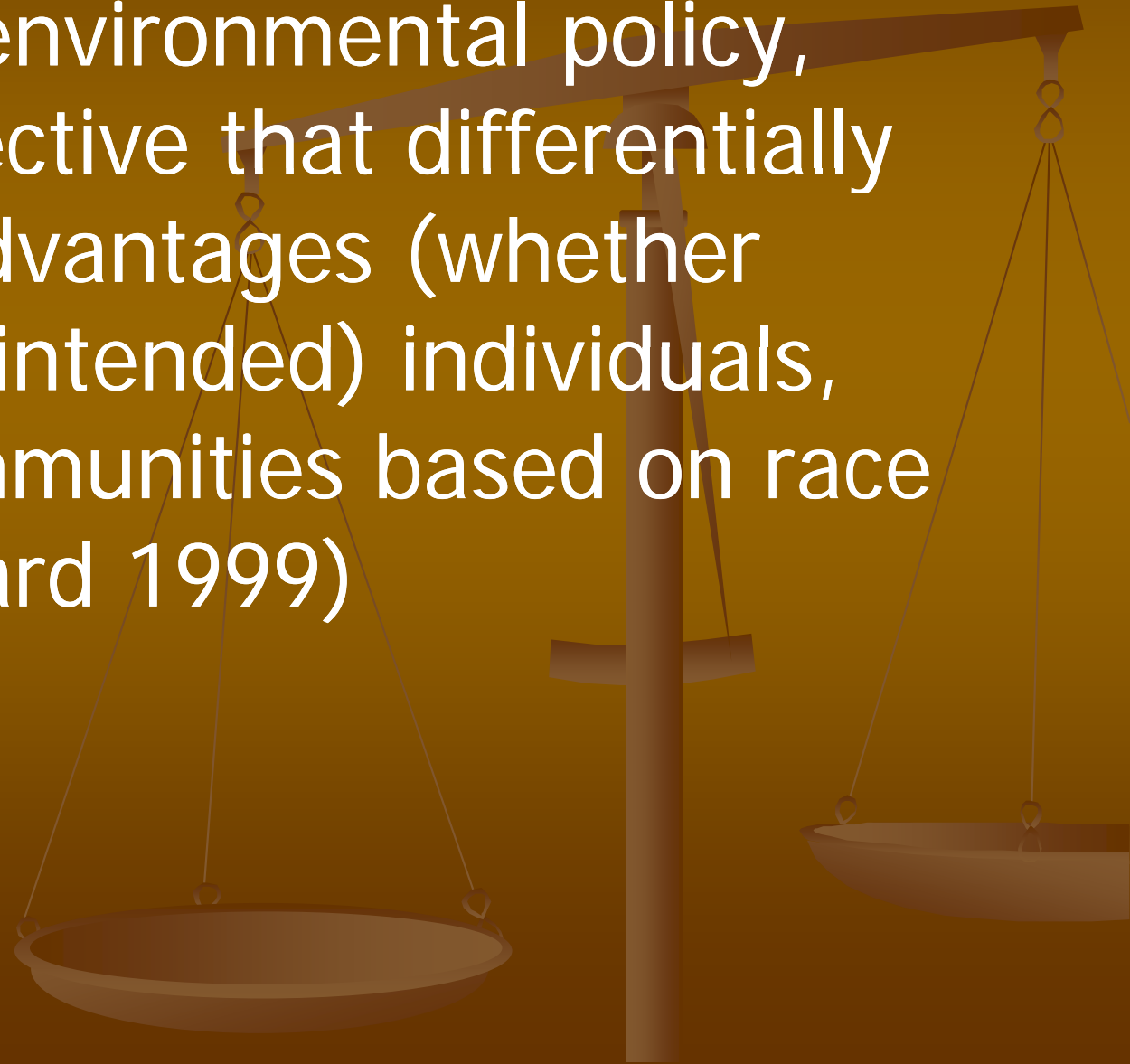
# Paradigm Shift

- New focus in environmentalism on Environmental Equity
- Environmental Racism
- Environmental Justice



# Environmental Racism

- Refers to any environmental policy, practice or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race or colour (Bullard 1999)



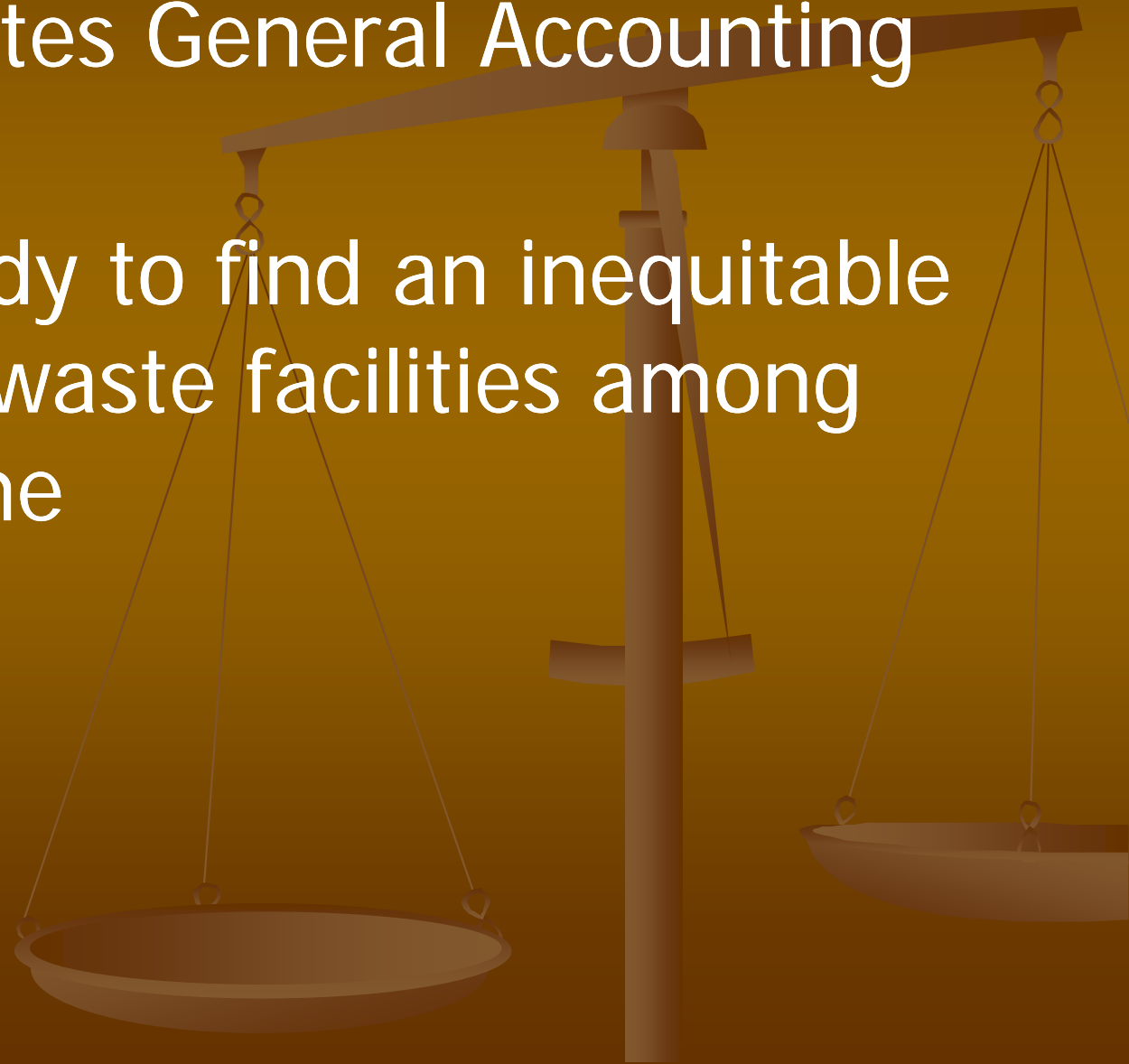
# Environmental Justice

- the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies



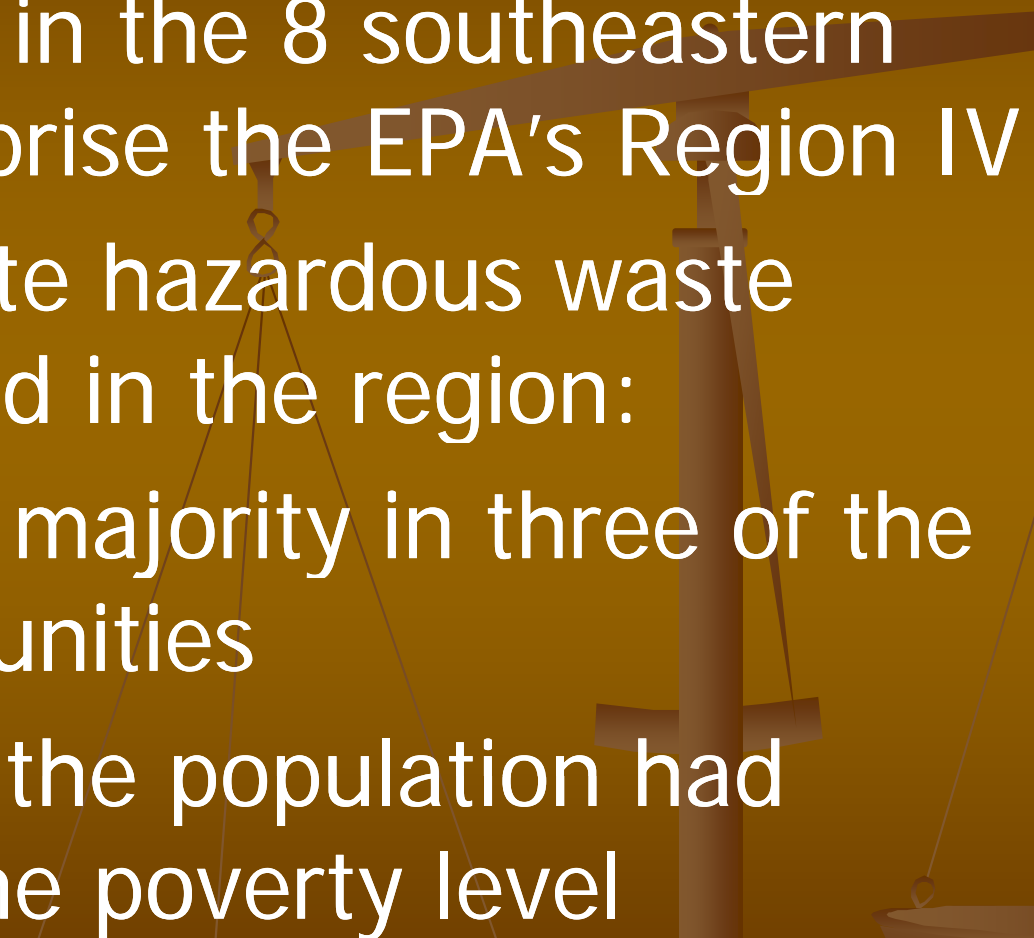
# Demographics of Waste in Relation to Race

- The United States General Accounting Office
- First major study to find an inequitable distribution of waste facilities among race and income

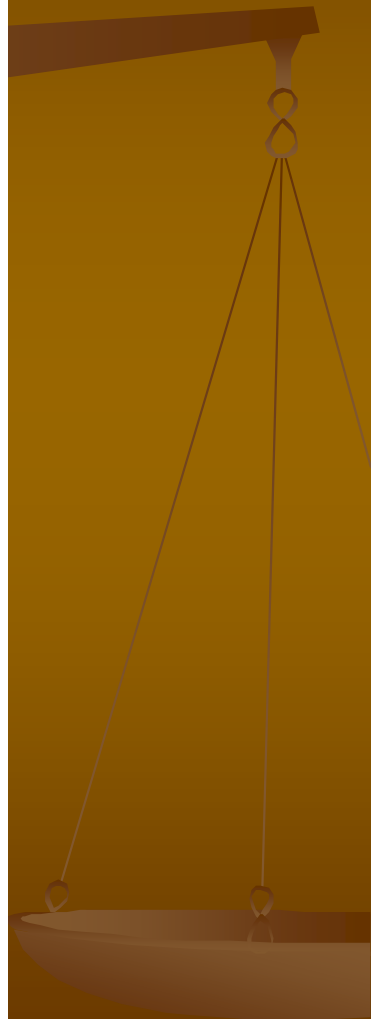




# General Accounting Office

- Studied landfills in the 8 southeastern states that comprise the EPA's Region IV
  - Of the four offsite hazardous waste landfills identified in the region:
    - Blacks were the majority in three of the four host communities
    - At least 26% of the population had income below the poverty level
- 

# EPA Southeast Region IV



# United Church of Christ

- Areas with an operating commercial hazardous waste facility twice as large those without (24% versus 12%)
- Areas with two or more facilities or one of the five largest landfills had a minority percentage three times those without
- Emelle, Alabama (79% black); Scotlandville, Louisiana (93% black); and Kettleman City, California (78 % Hispanic)

# Others

- Mohai and Bryant (1992). Detroit Metropolitan
- Bullard (1983). Houston
- Lejano and Iseki (2001). Los Angeles County

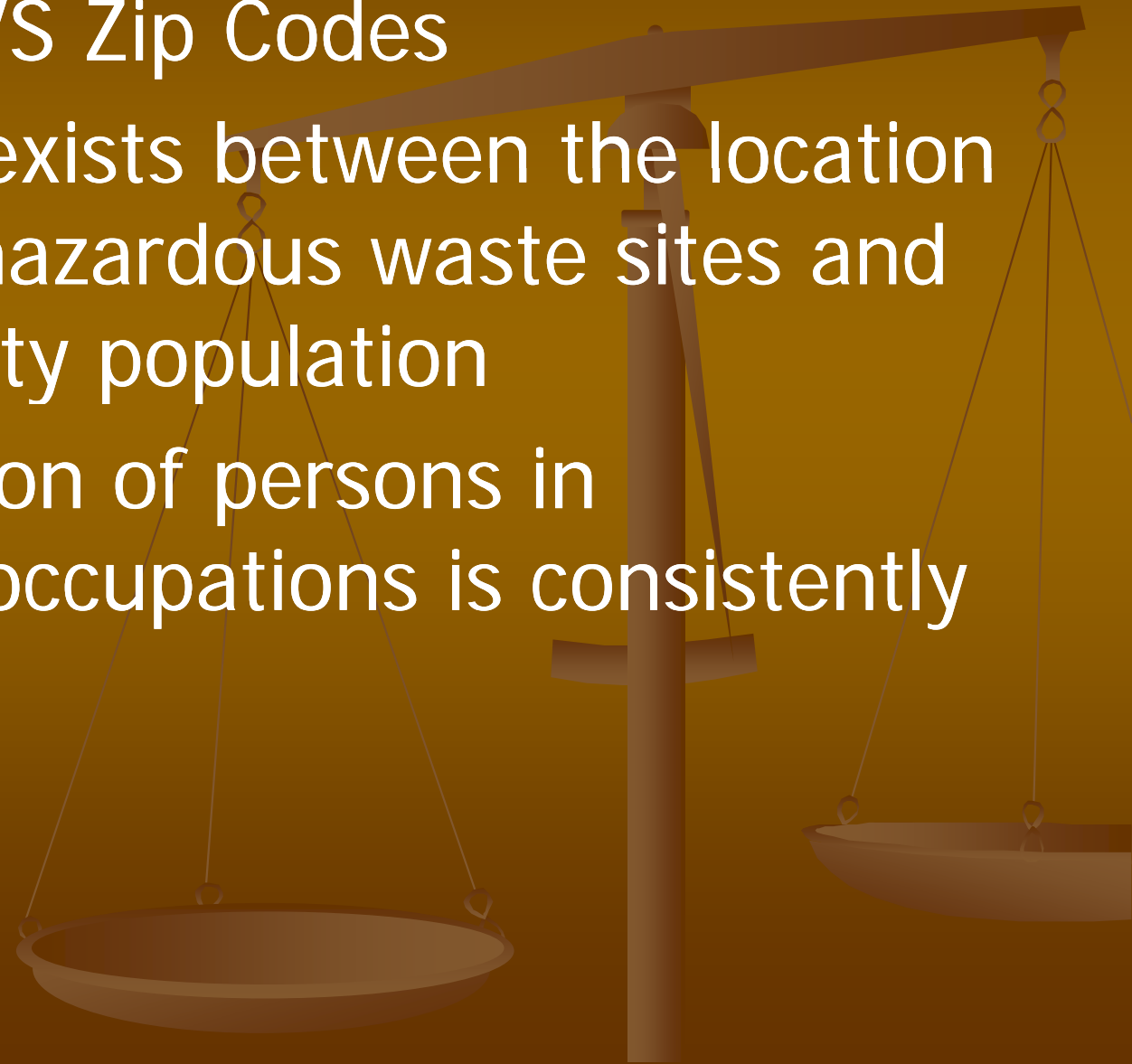


# Demographics of Waste in Relation to Income



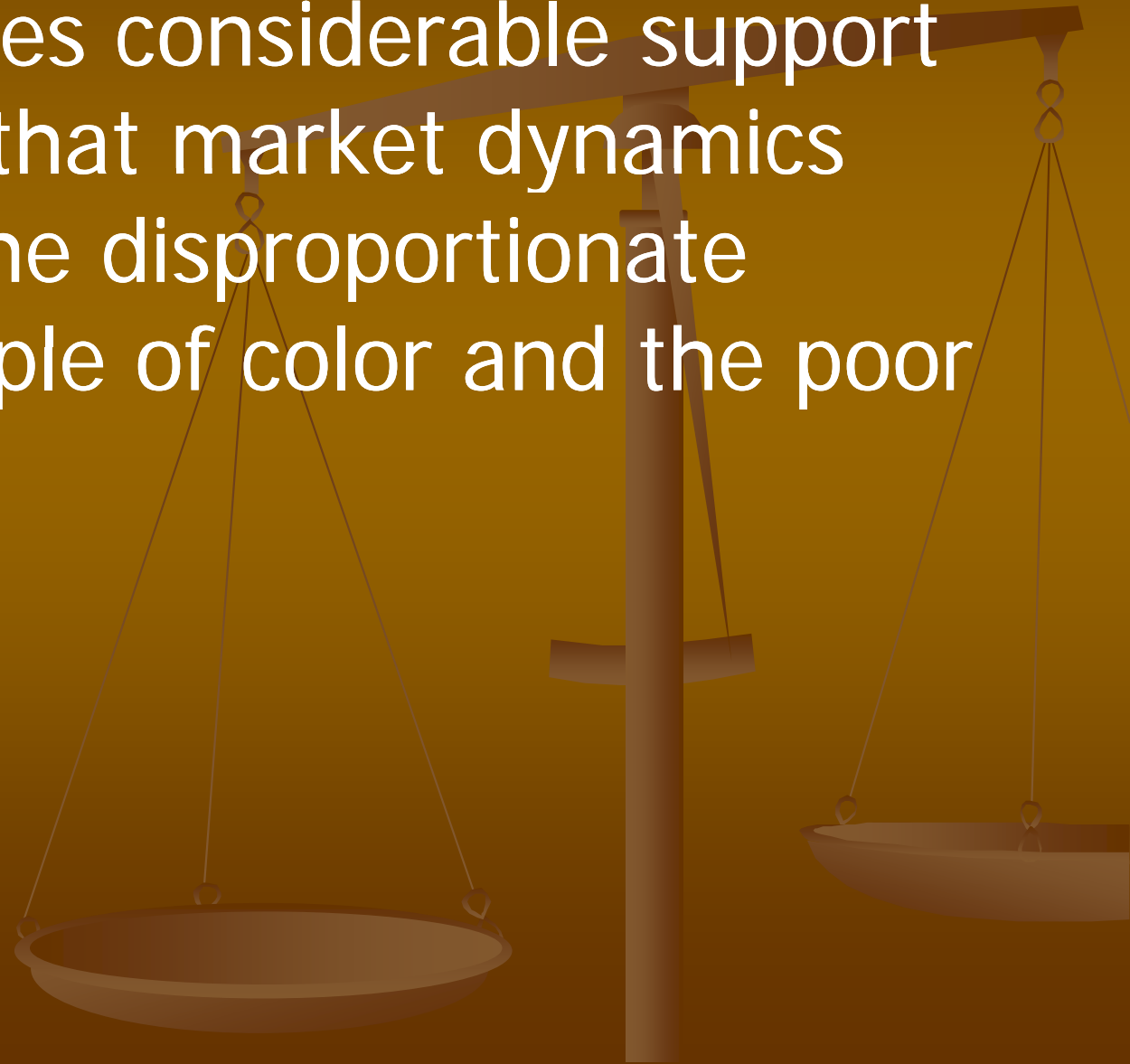
# University of Massachusetts

- Census Tracts VS Zip Codes
- No association exists between the location of commercial hazardous waste sites and the % of minority population
- The concentration of persons in manufacturing occupations is consistently higher



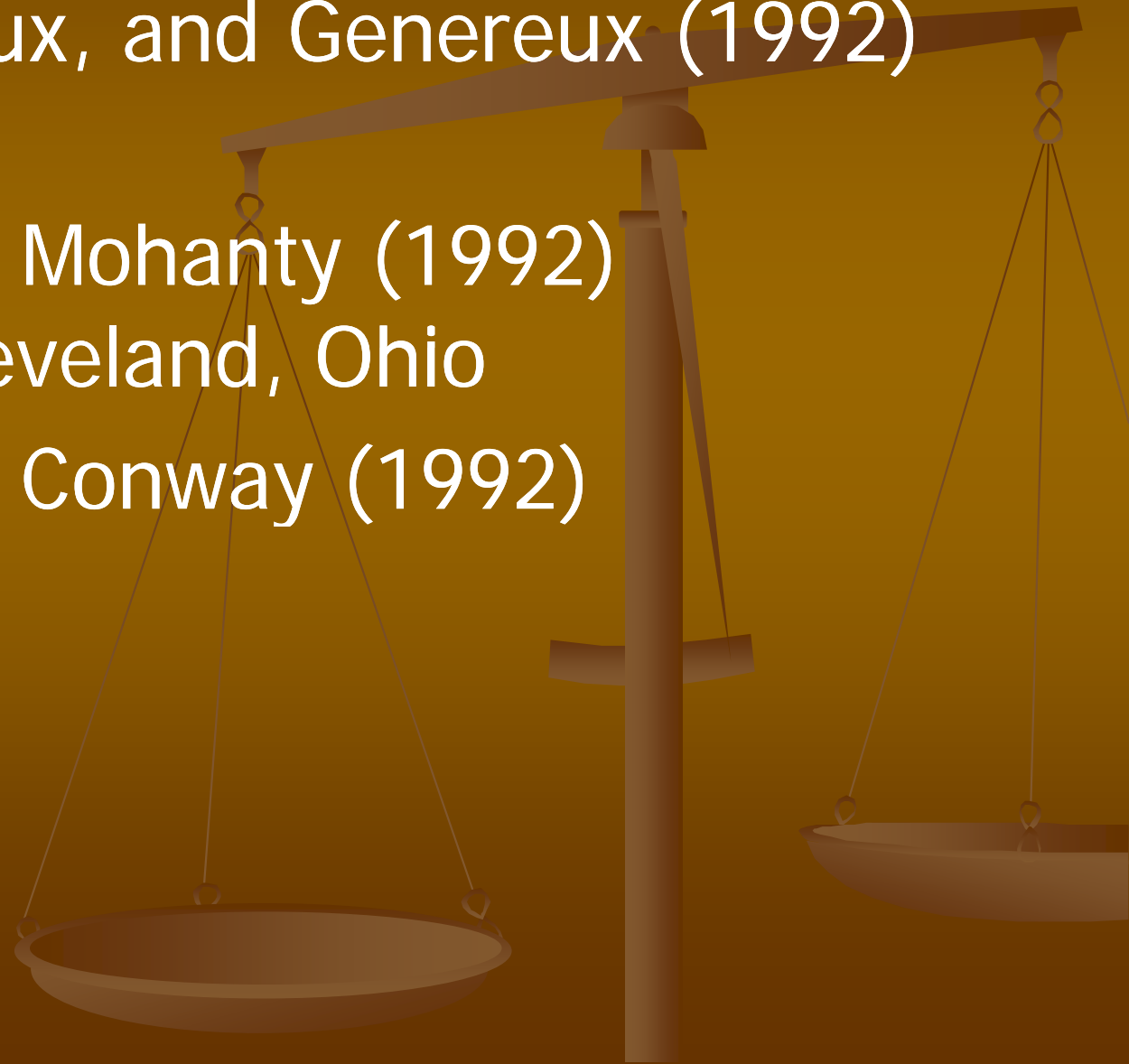
# Been (1994)

- Analysis provides considerable support for the theory that market dynamics contribute to the disproportionate burden on people of color and the poor



# Effects of Waste Facilities on Real Estate Values

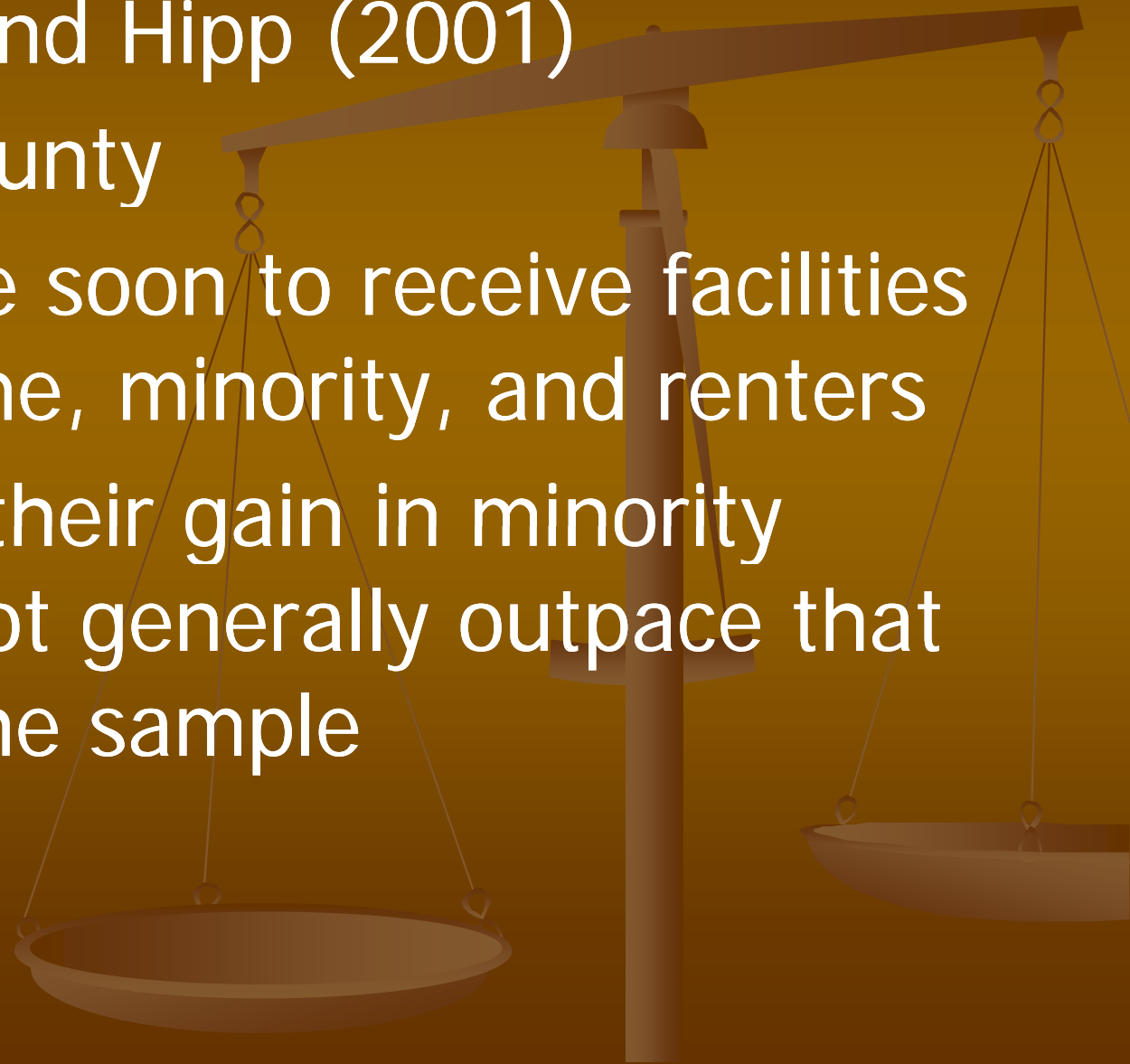
- Nelson, Genereux, and Genereux (1992)  
Minnesota
- Reichert, Small, Mohanty (1992)  
Metropolitan Cleveland, Ohio
- Smolen, Moore, Conway (1992)  
Toledo, Ohio



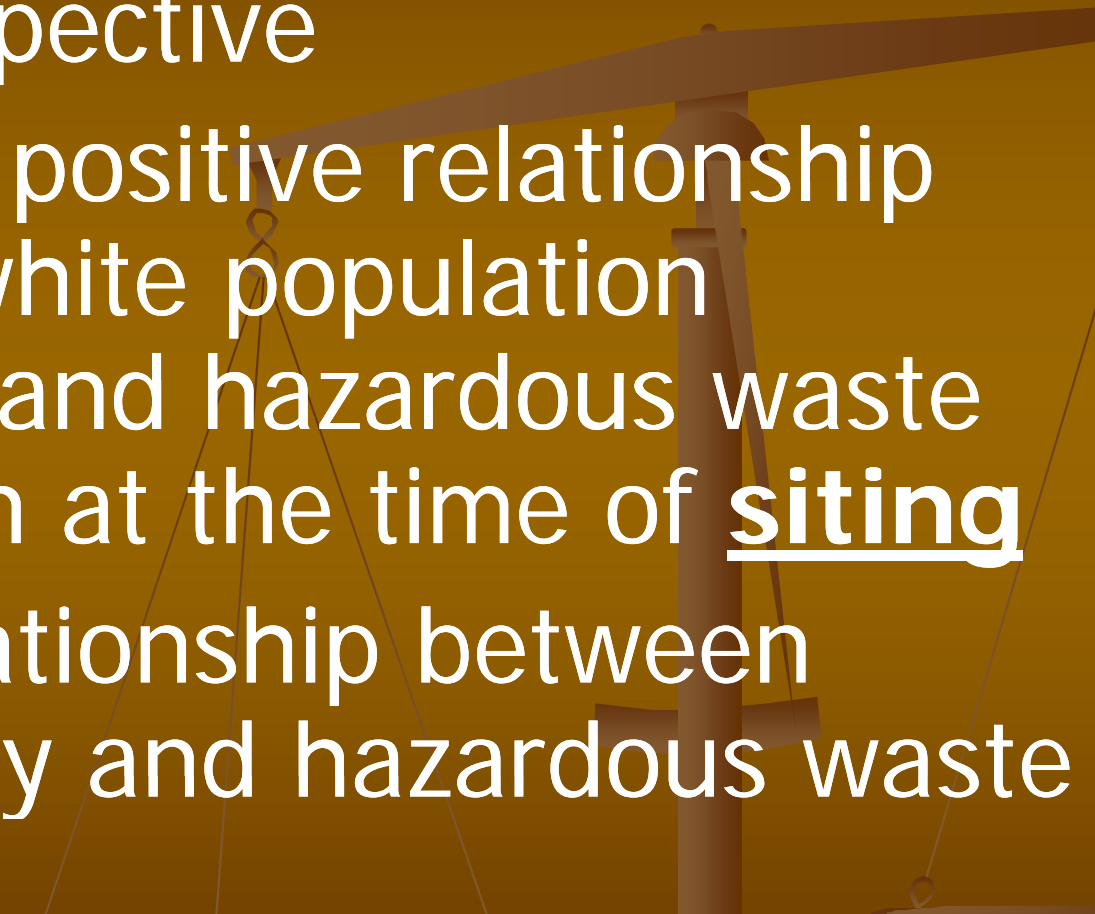


# Which Came First?

- Pastor, Sadd, and Hipp (2001)
- Los Angeles County
- Areas that were soon to receive facilities were low-income, minority, and renters
- Consequently, their gain in minority residents did not generally outpace that of the rest of the sample



# Yandle and Burton (1996)

- Historical Perspective
  - There is not a positive relationship between nonwhite population concentration and hazardous waste landfill location at the time of siting
  - Significant relationship between relative poverty and hazardous waste landfills
- 

# Industry

- Lawrence Summers, World Bank
- Cerrell Report, Kettleman City, CA



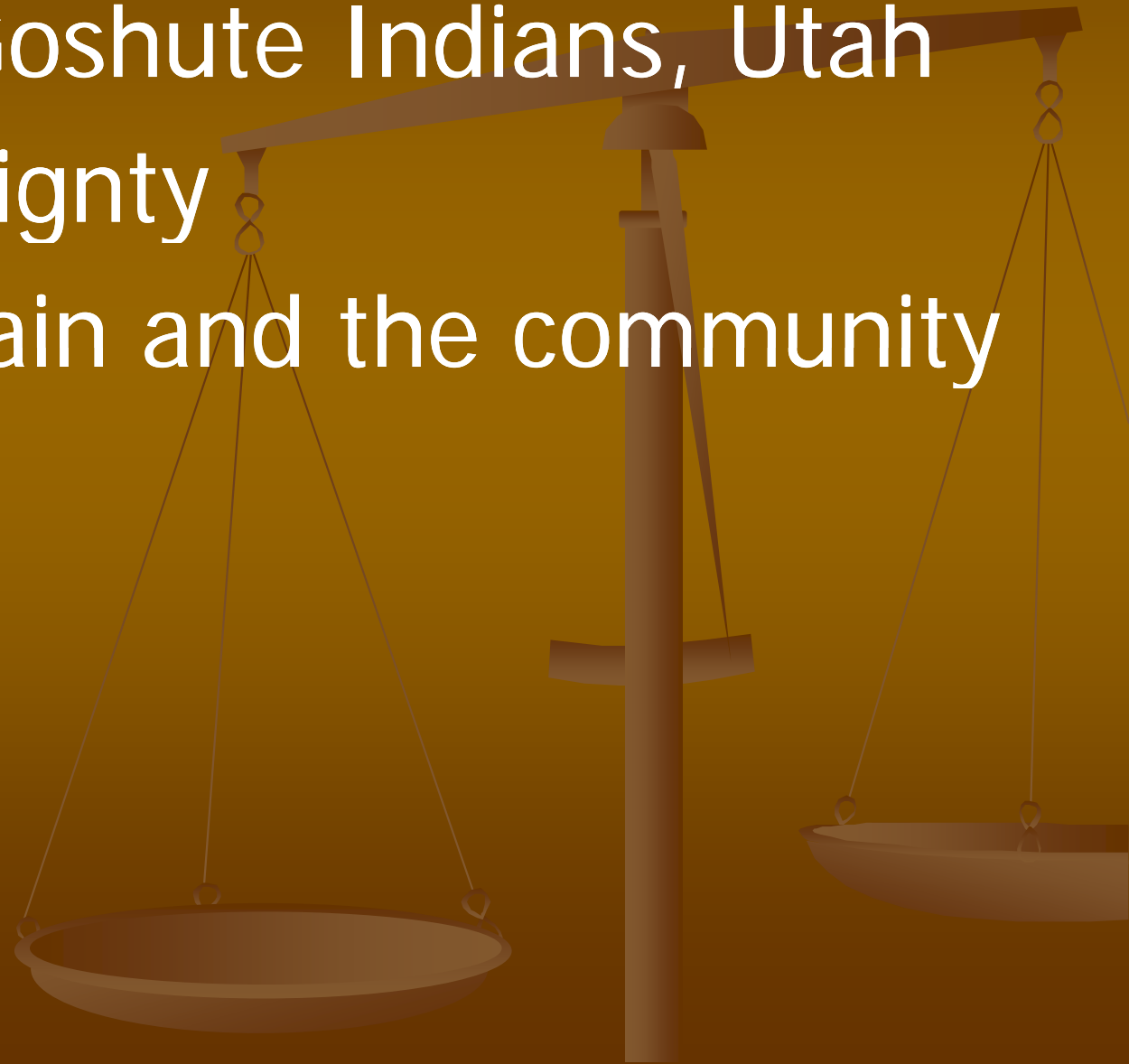
# Communities That Are

- Rural
- Poor
- Low Educational Levels
- Highly Catholic
- Fewer than 25,000 residents
- Employed in resource-extractive jobs (mining, timber, or agriculture)



# Victims or Profiteers?

- Skull Valley Goshute Indians, Utah
- Tribal Sovereignty
- Yucca Mountain and the community of Caliente



# Scope of Study



# Geography

- Census Block Groups: Philadelphia County
- Census Tracts: Pennsylvania



# Focus

- Philadelphia County
  - Air Emission Centers
  - Brownfields
  - Municipal Waste Operations
- Pennsylvania
  - Commercial Hazardous Waste Operations (a la UMass Study)



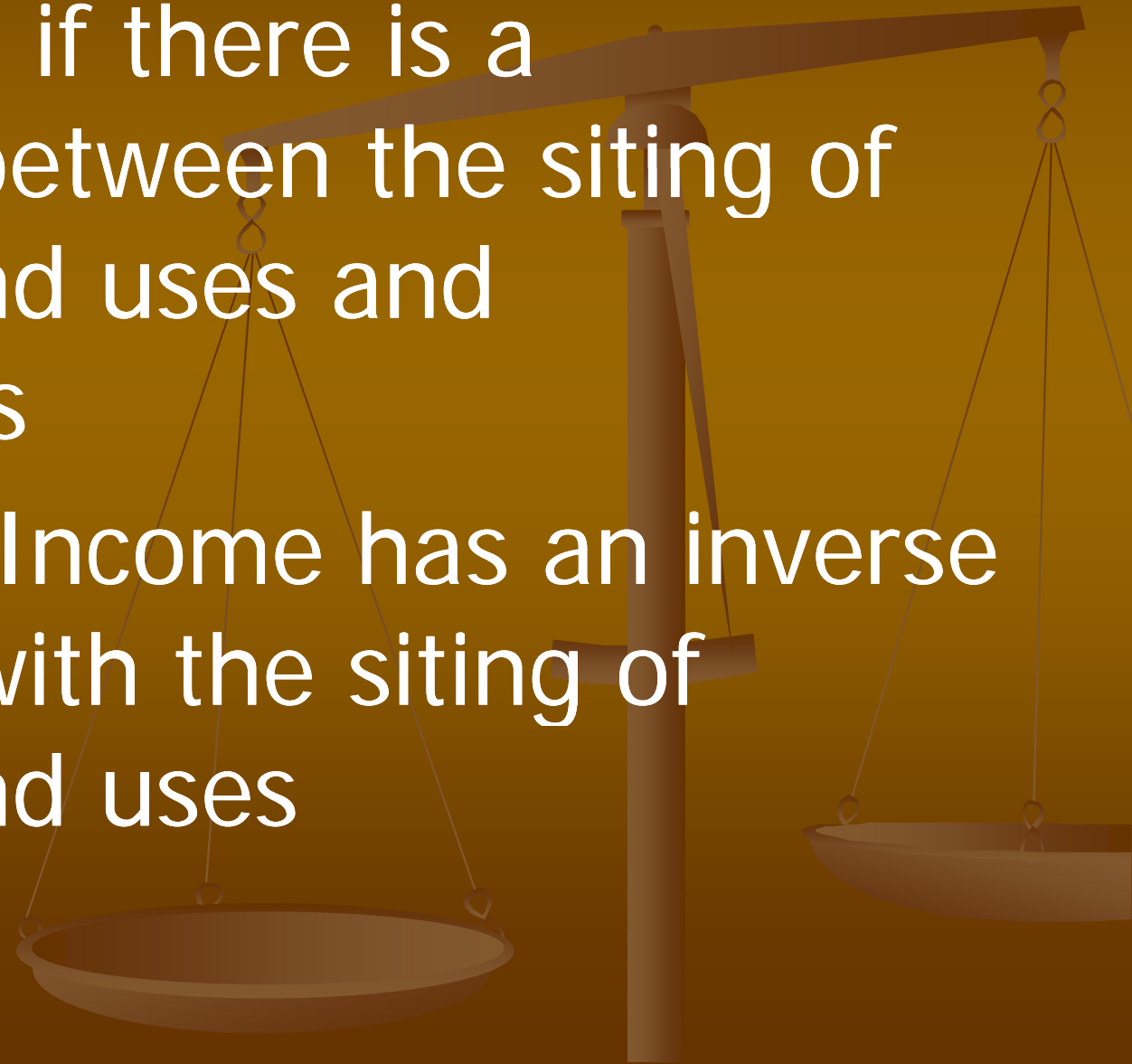


# Methodology



# Goal

- To determine if there is a relationship between the siting of unwanted land uses and demographics
- Hypothesis: Income has an inverse relationship with the siting of unwanted land uses



# Demographics

- Percentage White Population
- Percentage Black Population
- Median Household Income



# Donde Estan Los Hispánicos?

- Porque no Hispánicos?
- Los Hispánicos son muy complicados!

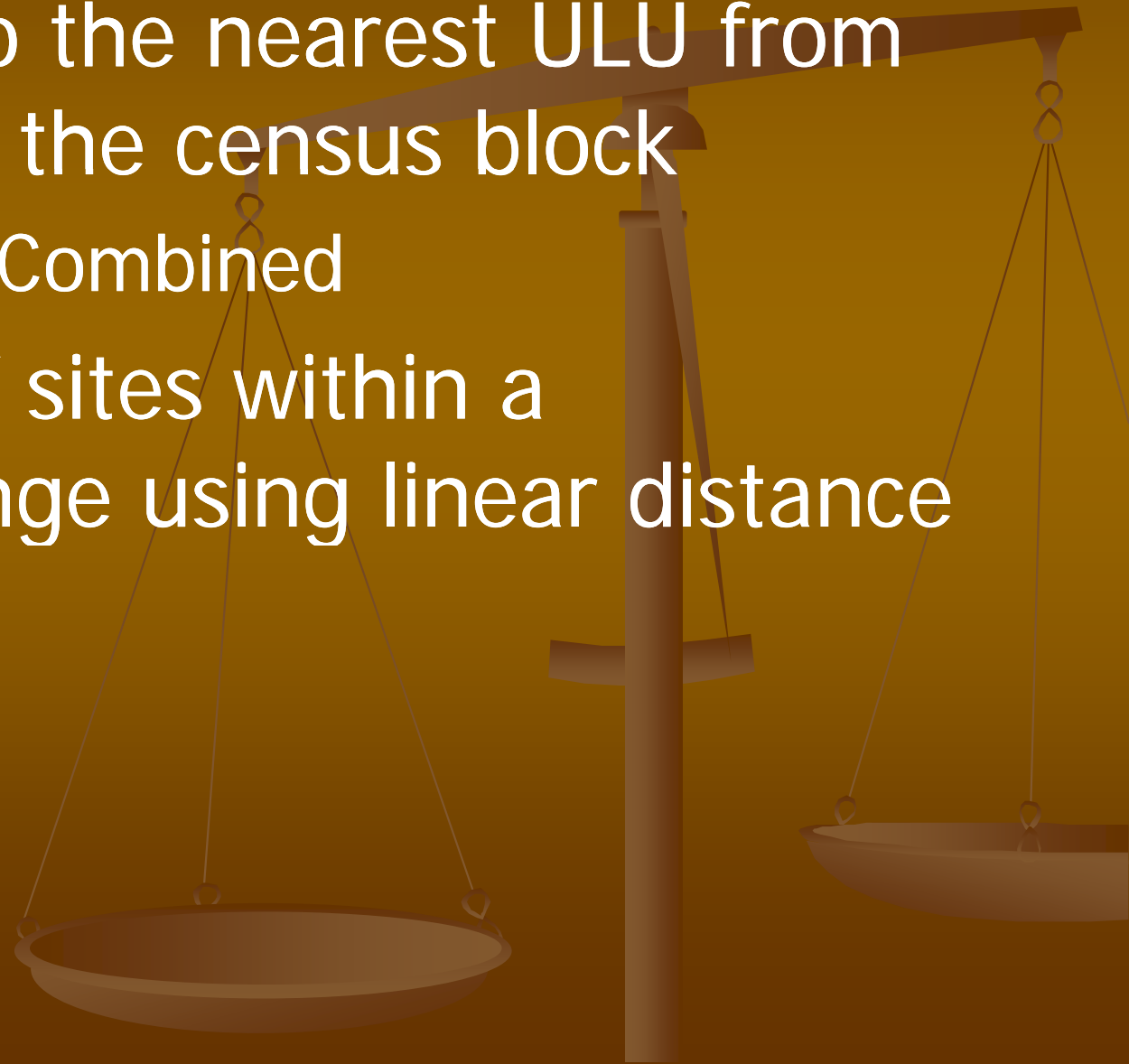


# Analysis



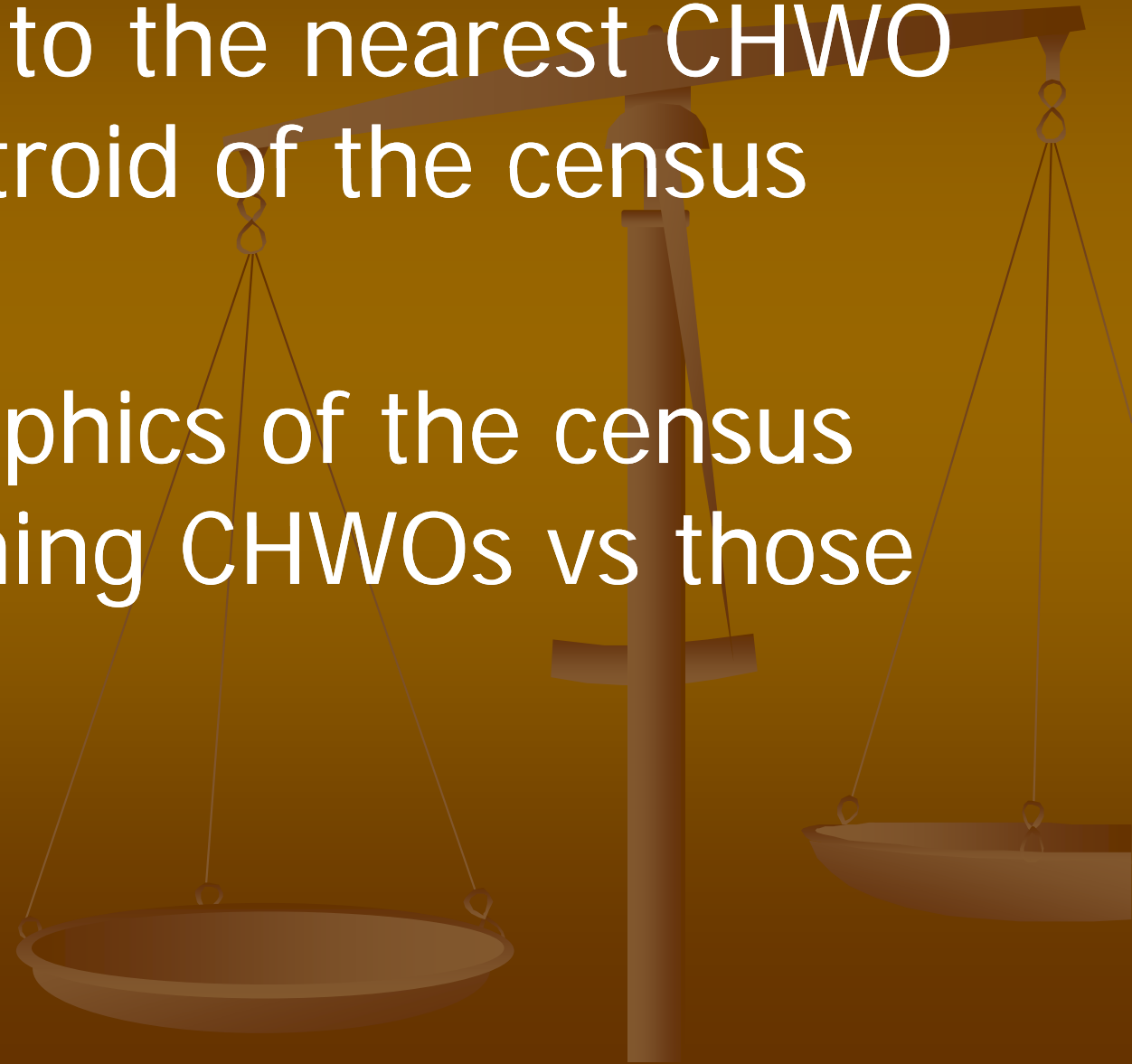
# Philadelphia

- The distance to the nearest ULU from the centroid of the census block
  - Individually & Combined
- The number of sites within a determined range using linear distance
  - ½ KM
  - 1 KM



# Pennsylvania

- The distance to the nearest CHWO from the centroid of the census tract
- The demographics of the census tracts containing CHWOs vs those that do not



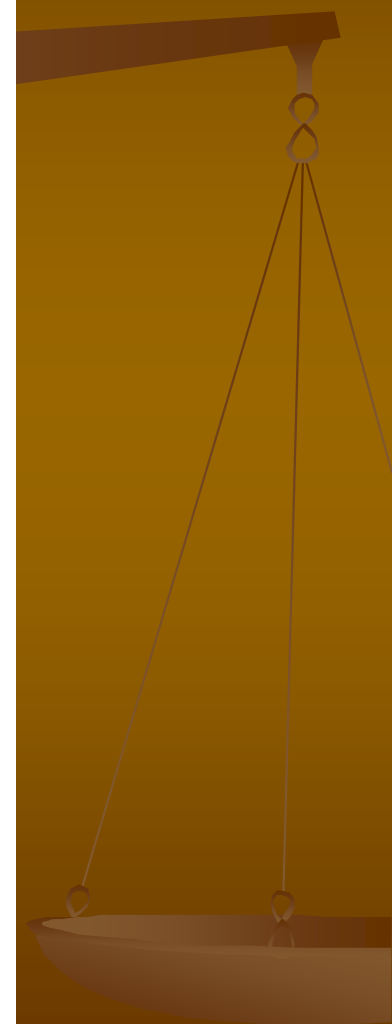
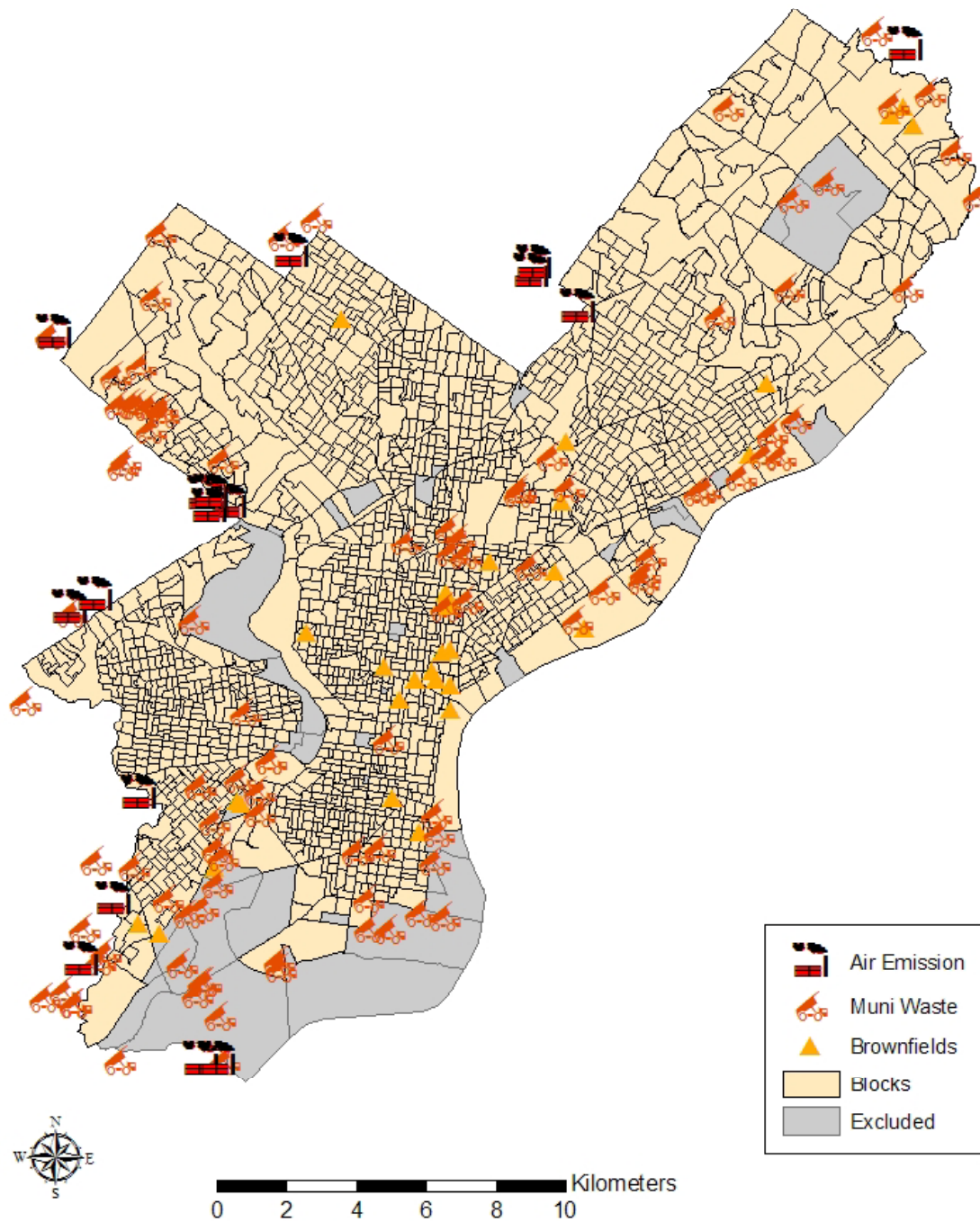
# Data Extractions

- Outliers:
  - 0 Population
  - 0 Median Income

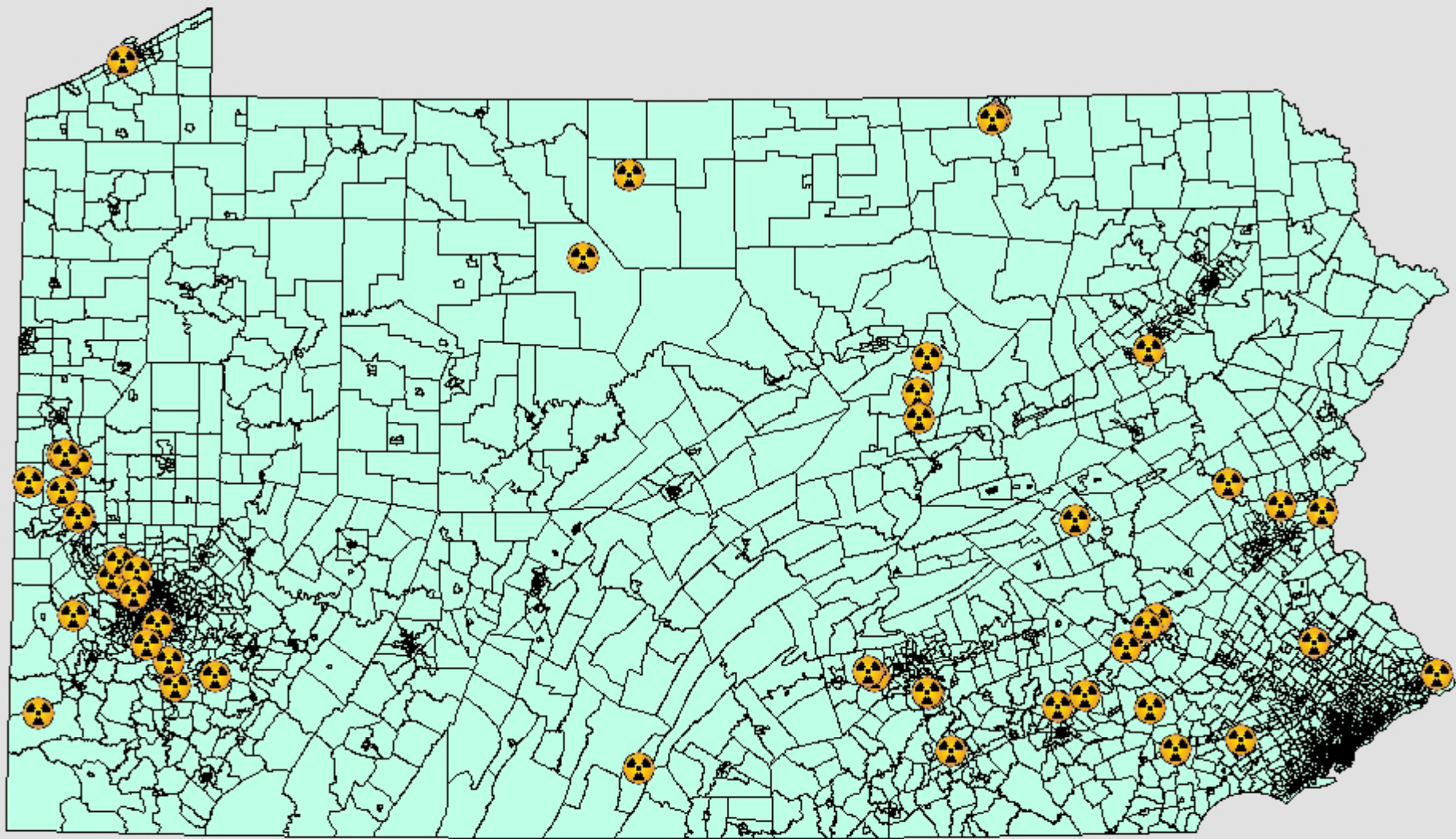




# Location of Undesirable Land Uses In Philadelphia



# Location of Commercial Hazardous Waste Operations & US Census Tracts in Pennsylvania



0 50 100 150 200 Kilometers



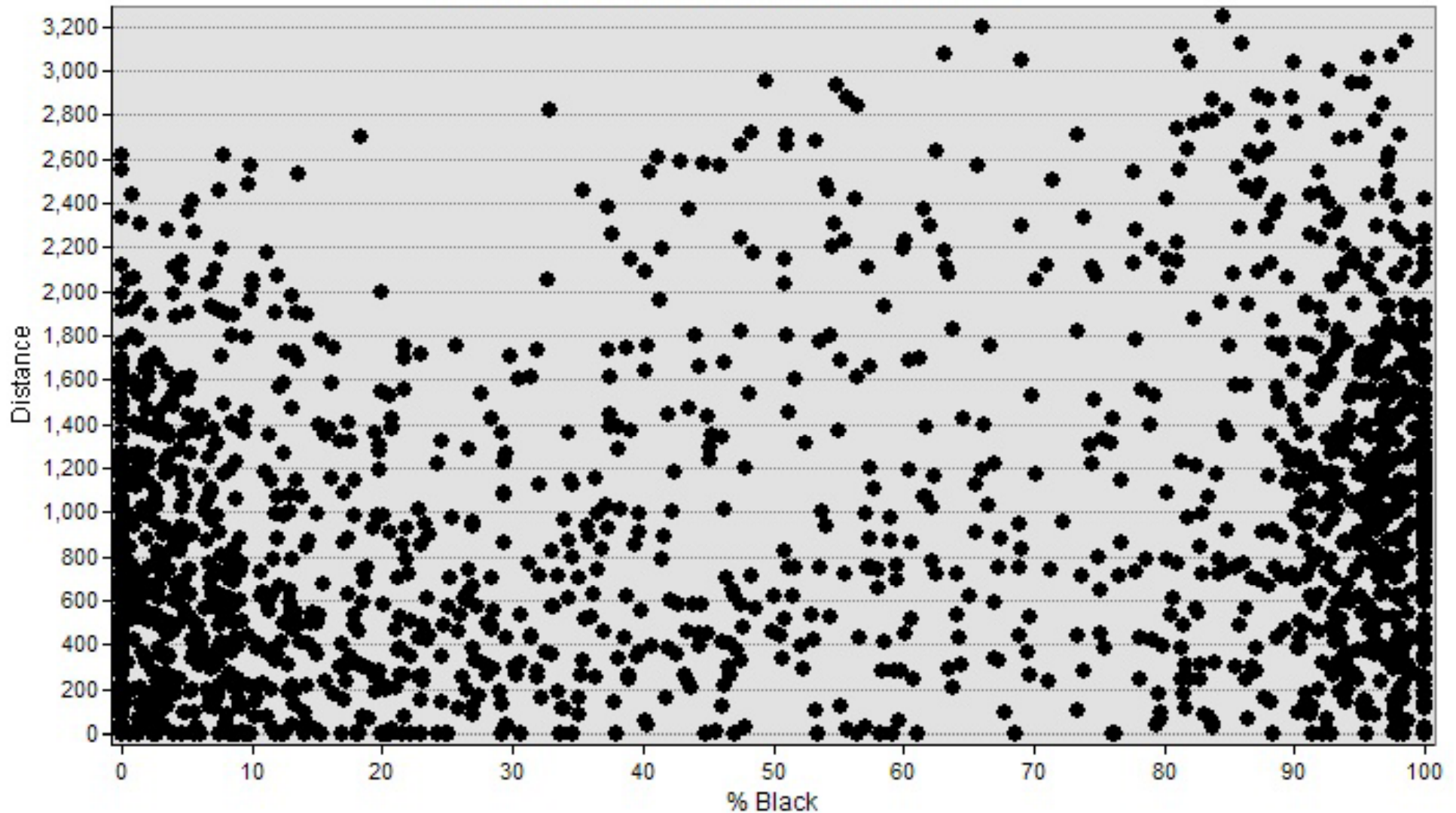
# Results

- **INCONCLUSIVE!**



# Philadelphia

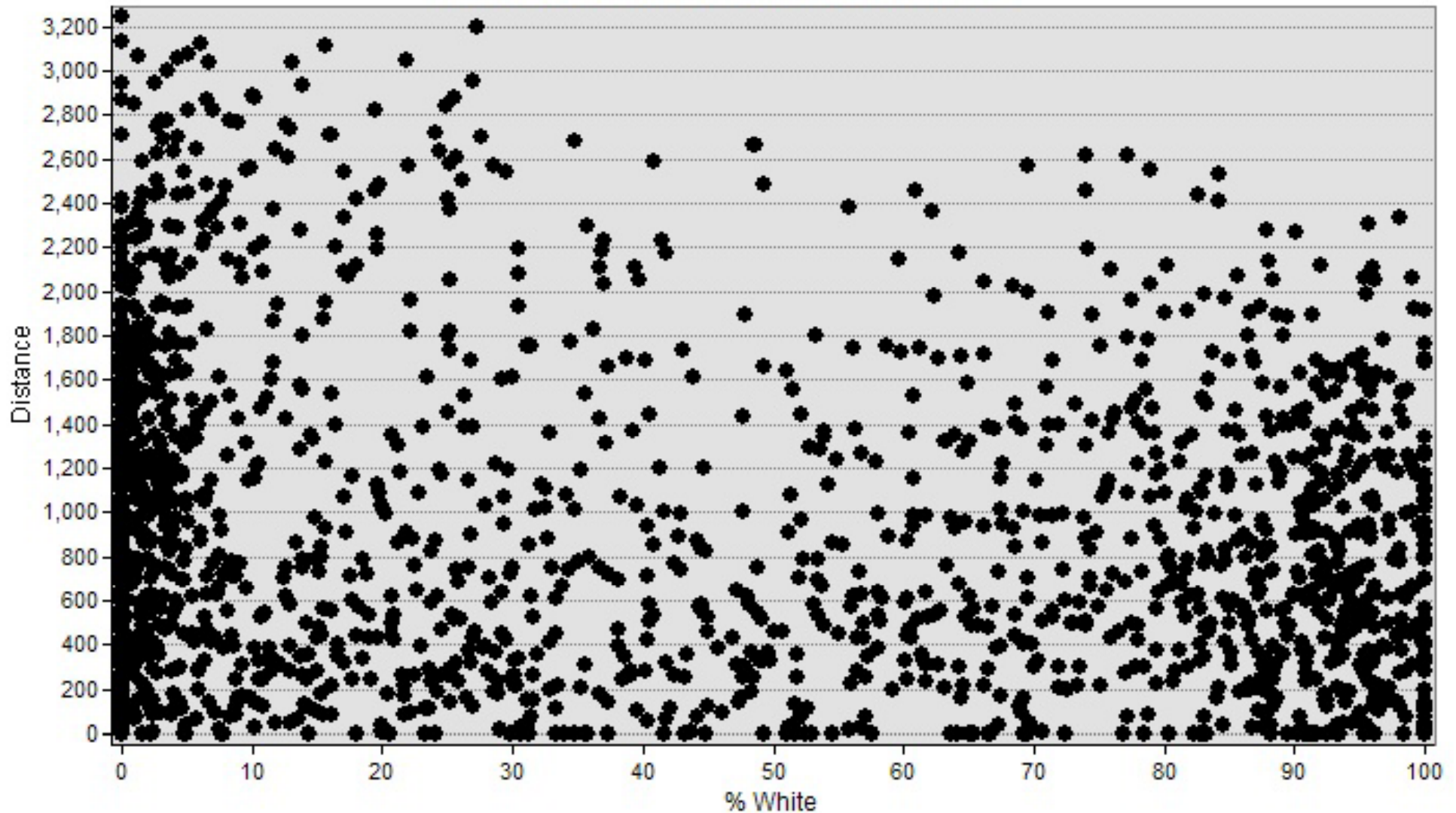
Distance From Undesirable Land Use





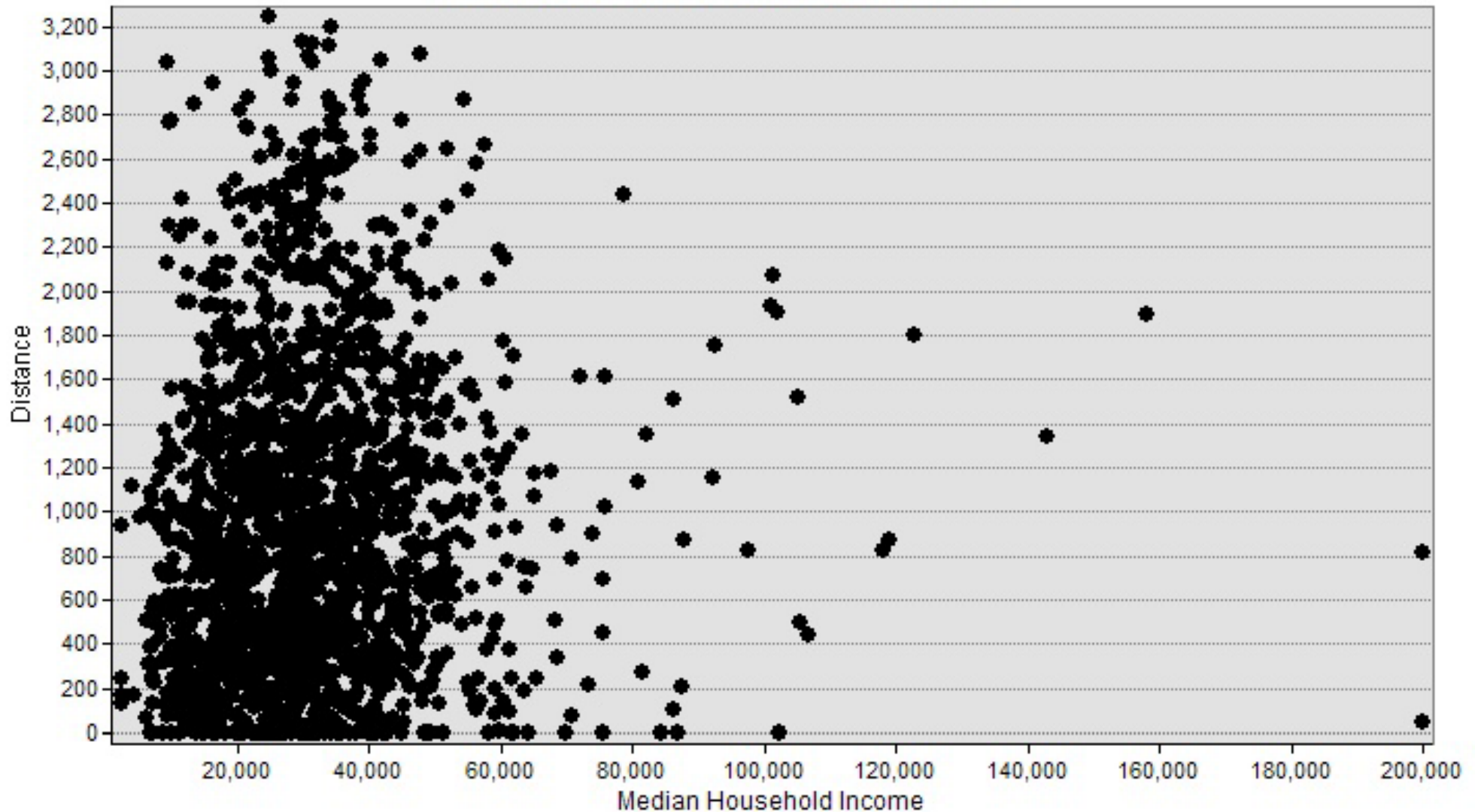
# Philadelphia

Distance From Undesirable Land Use



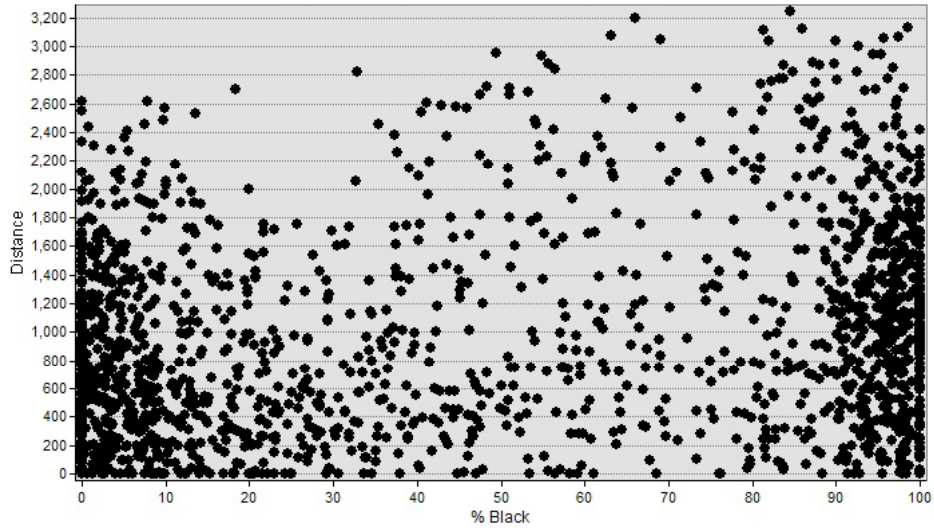
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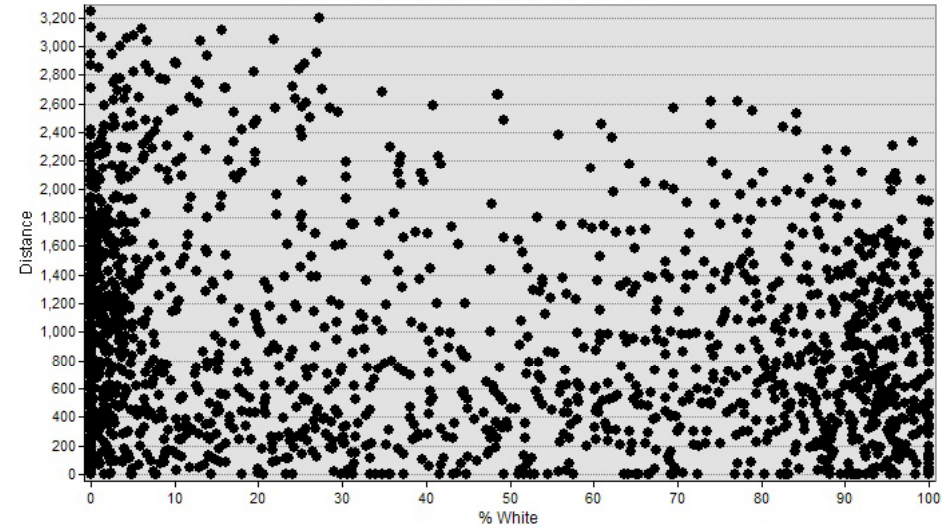


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Distance From Undesirable Land Use

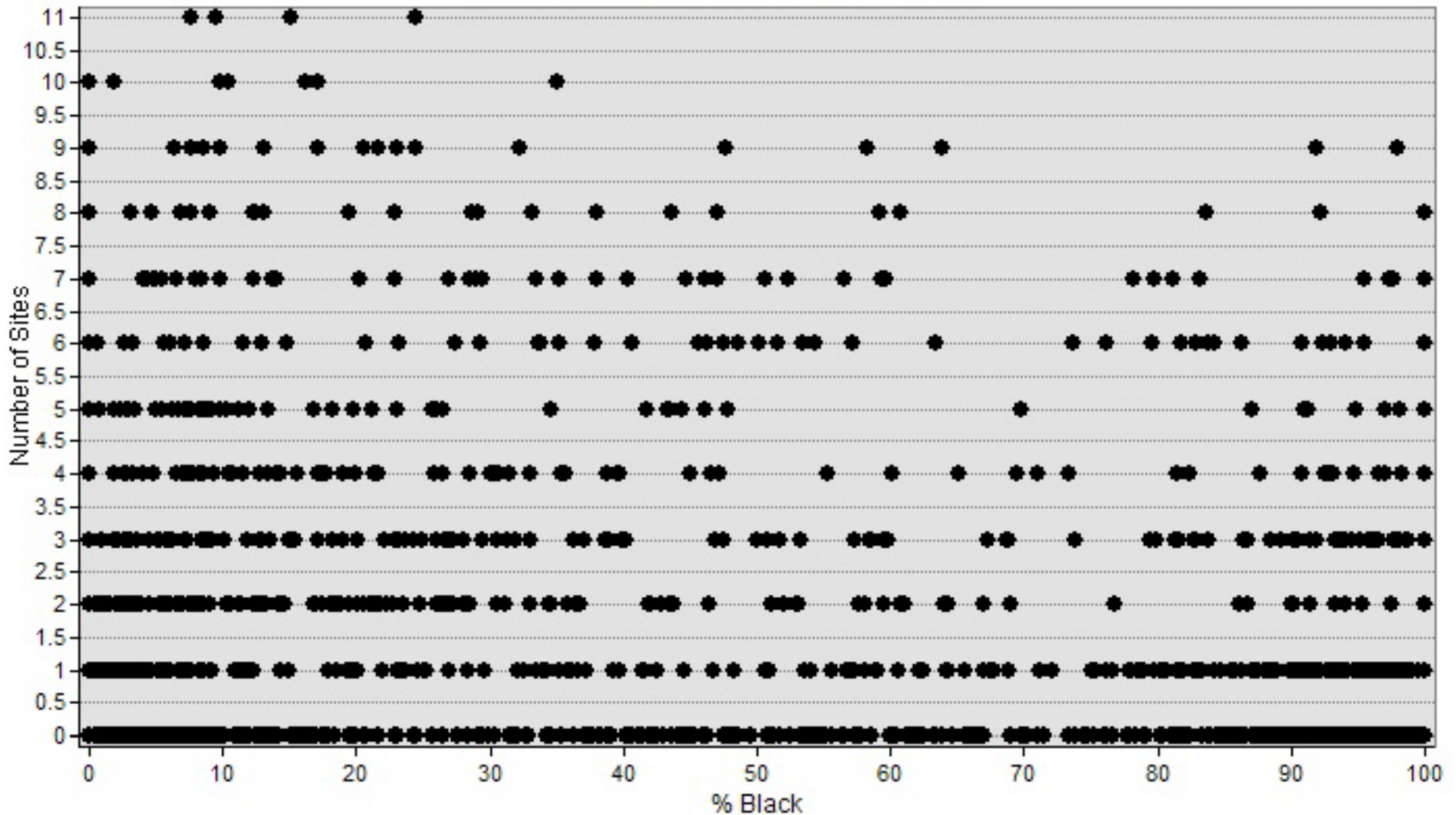


Distance From Undesirable Land Use



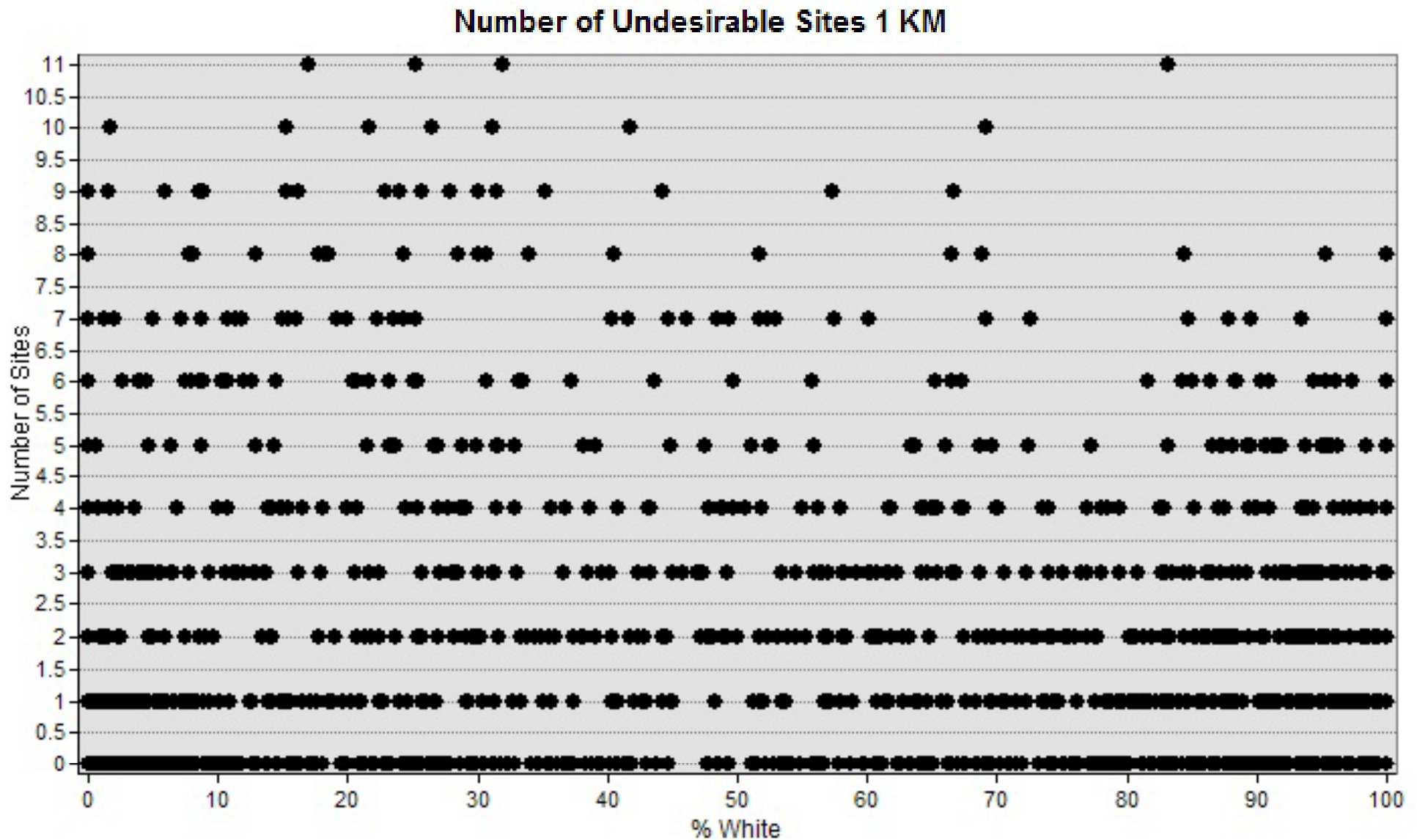
# Philadelphia Distance

Number of Undesirable Sites 1 KM



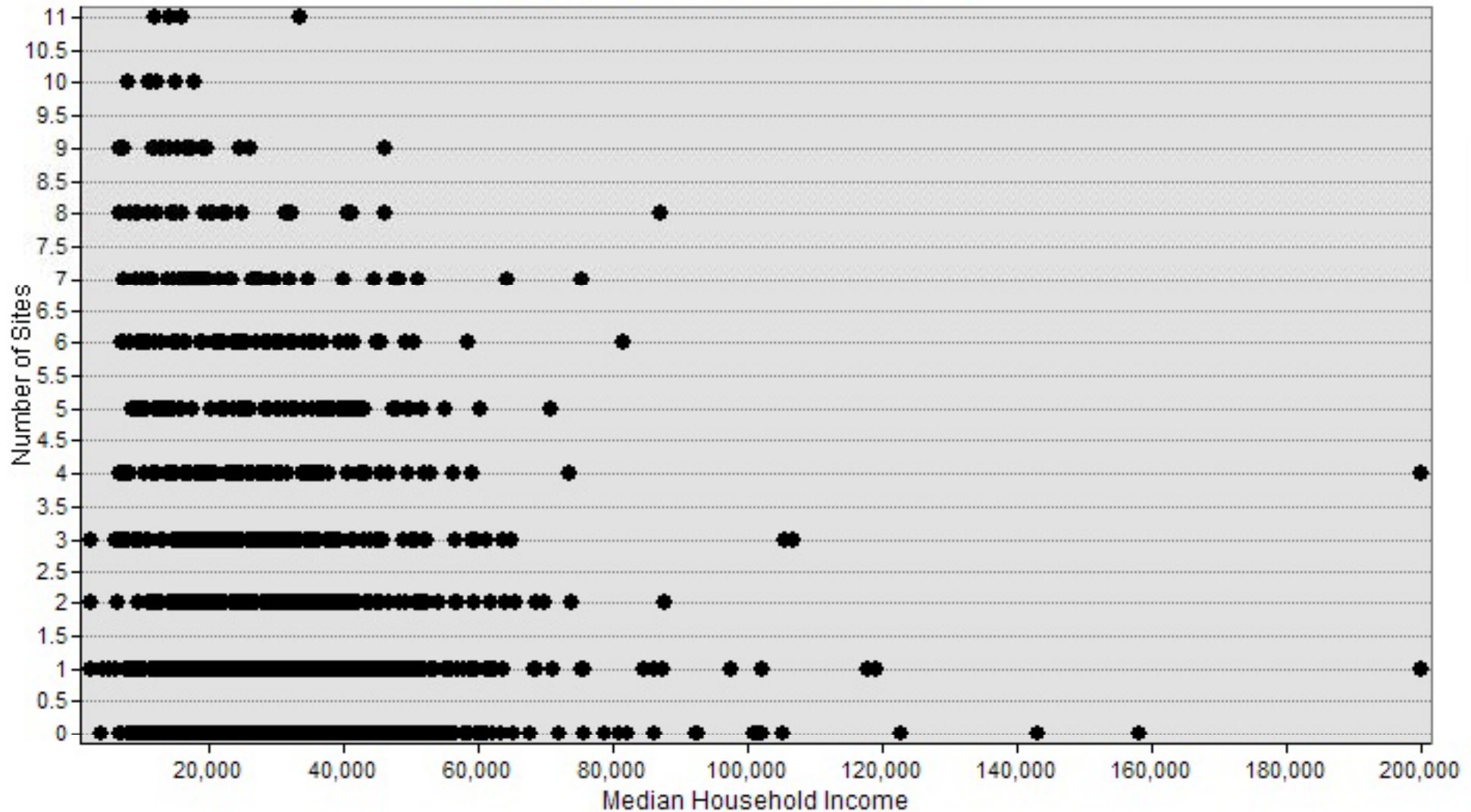


# Philadelphia Distance



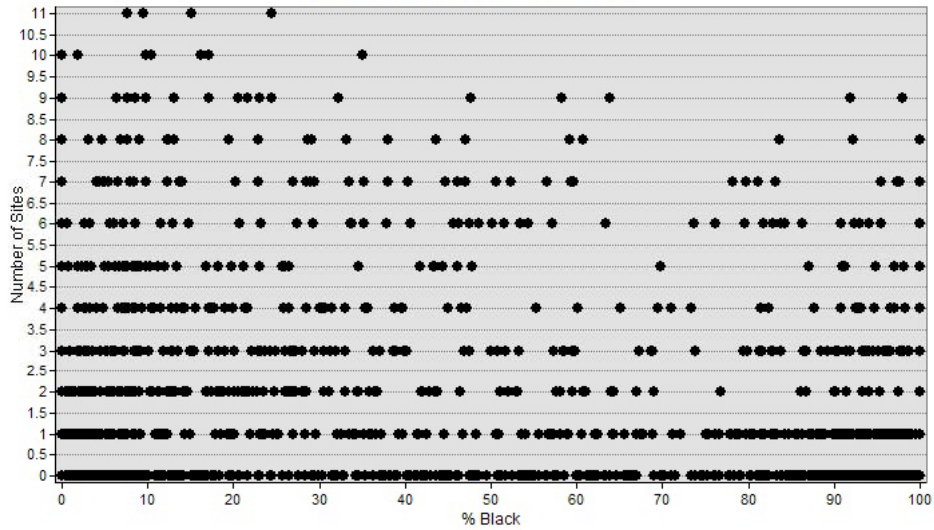
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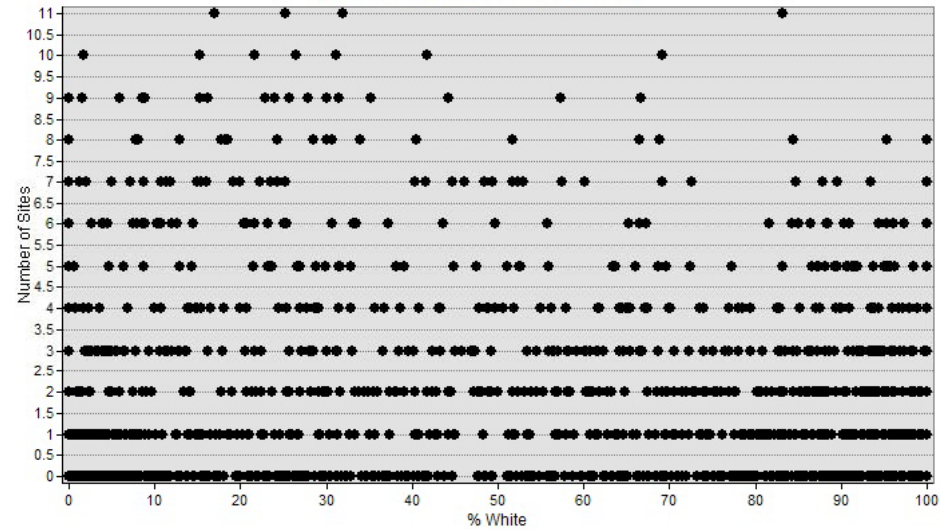


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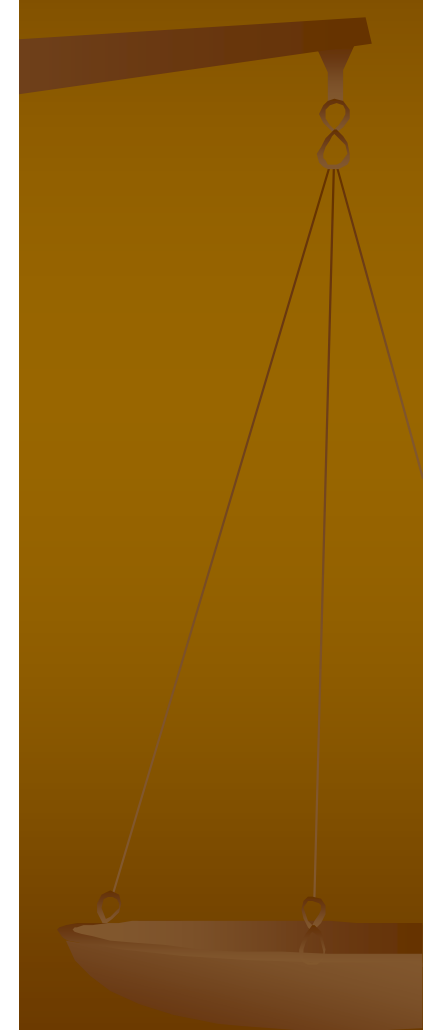
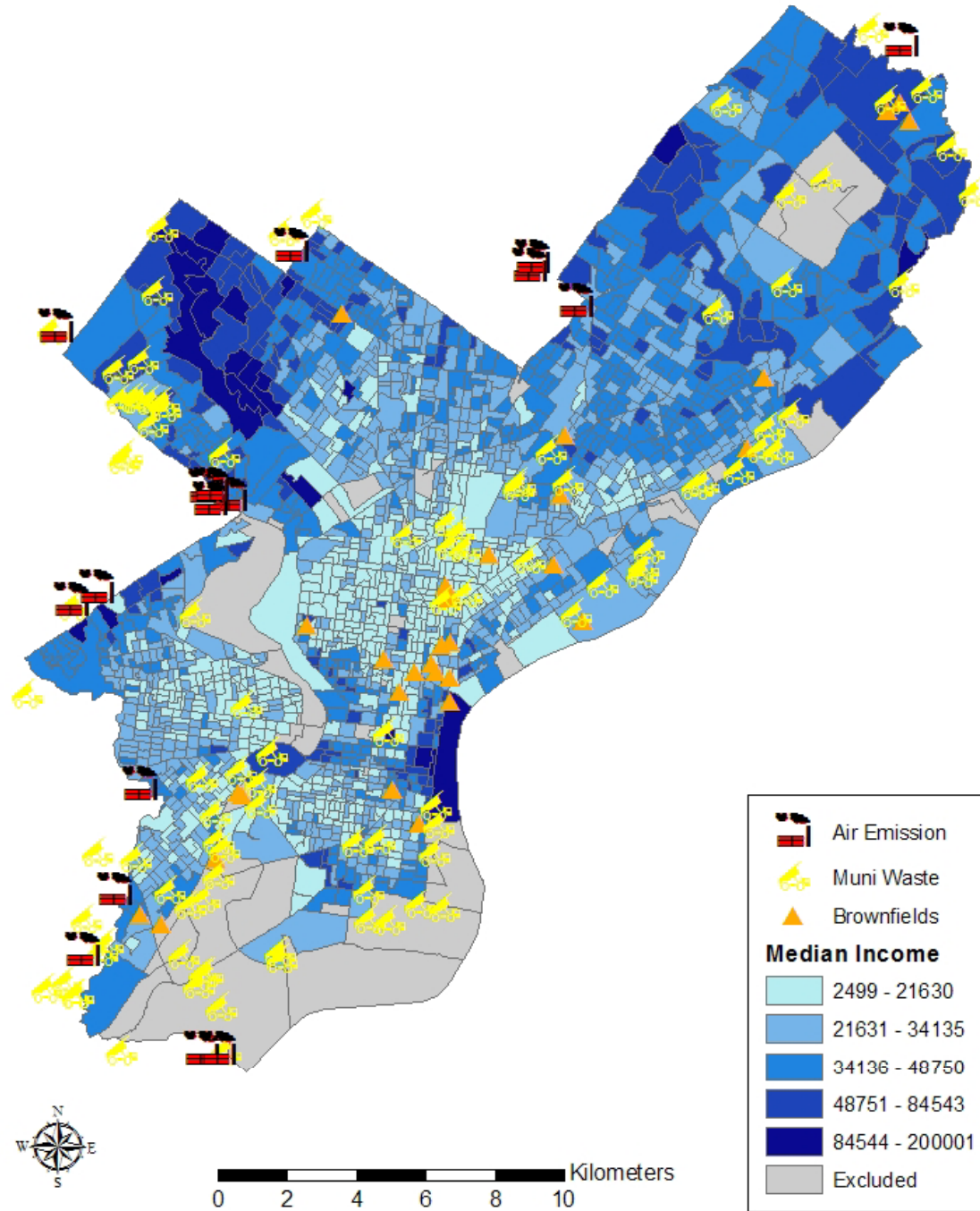
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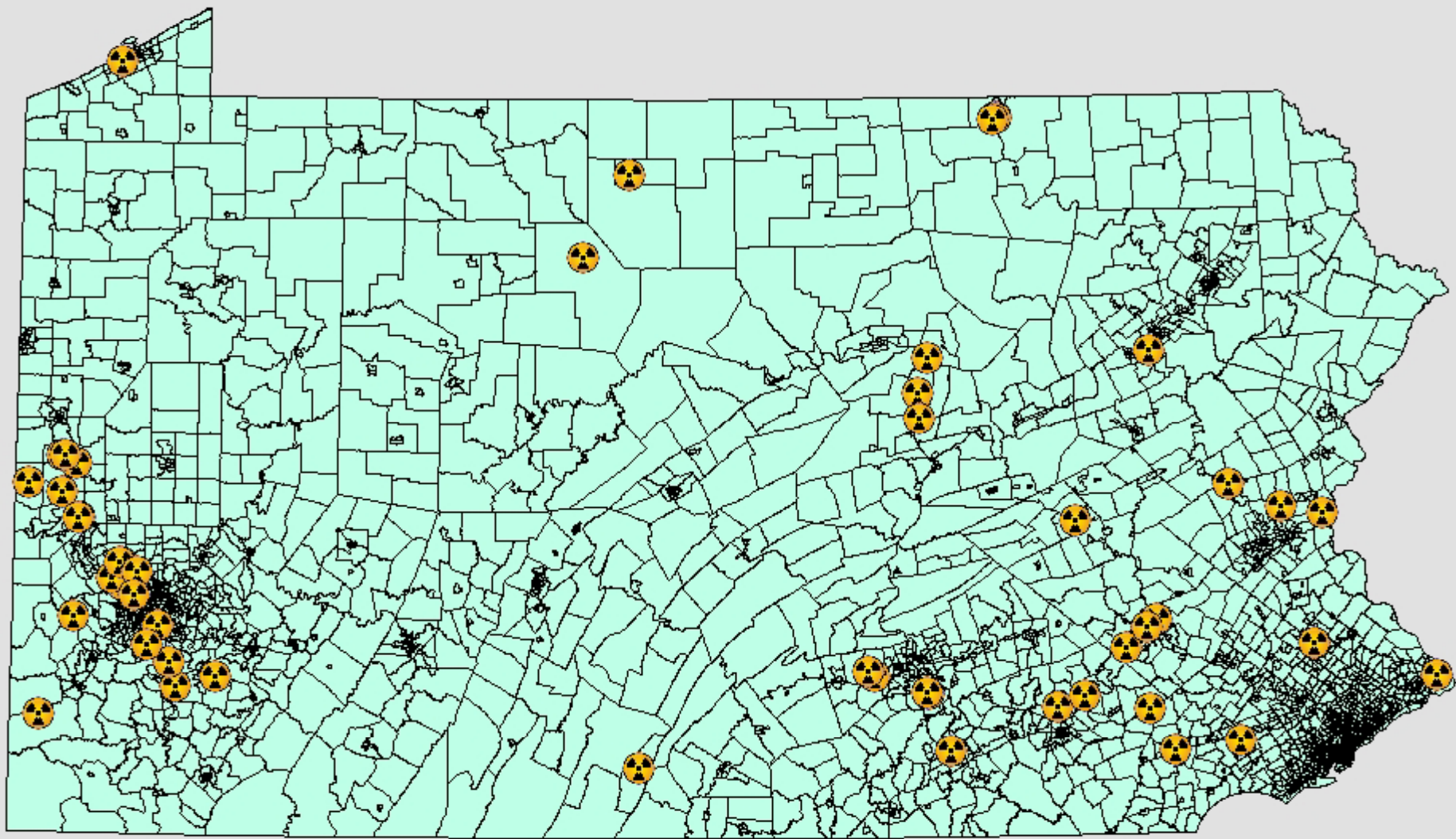


# Philadelphia Median Income Distribution & Location of Undesirable Land Uses





# Location of Commercial Hazardous Waste Operations & US Census Tracts in Pennsylvania

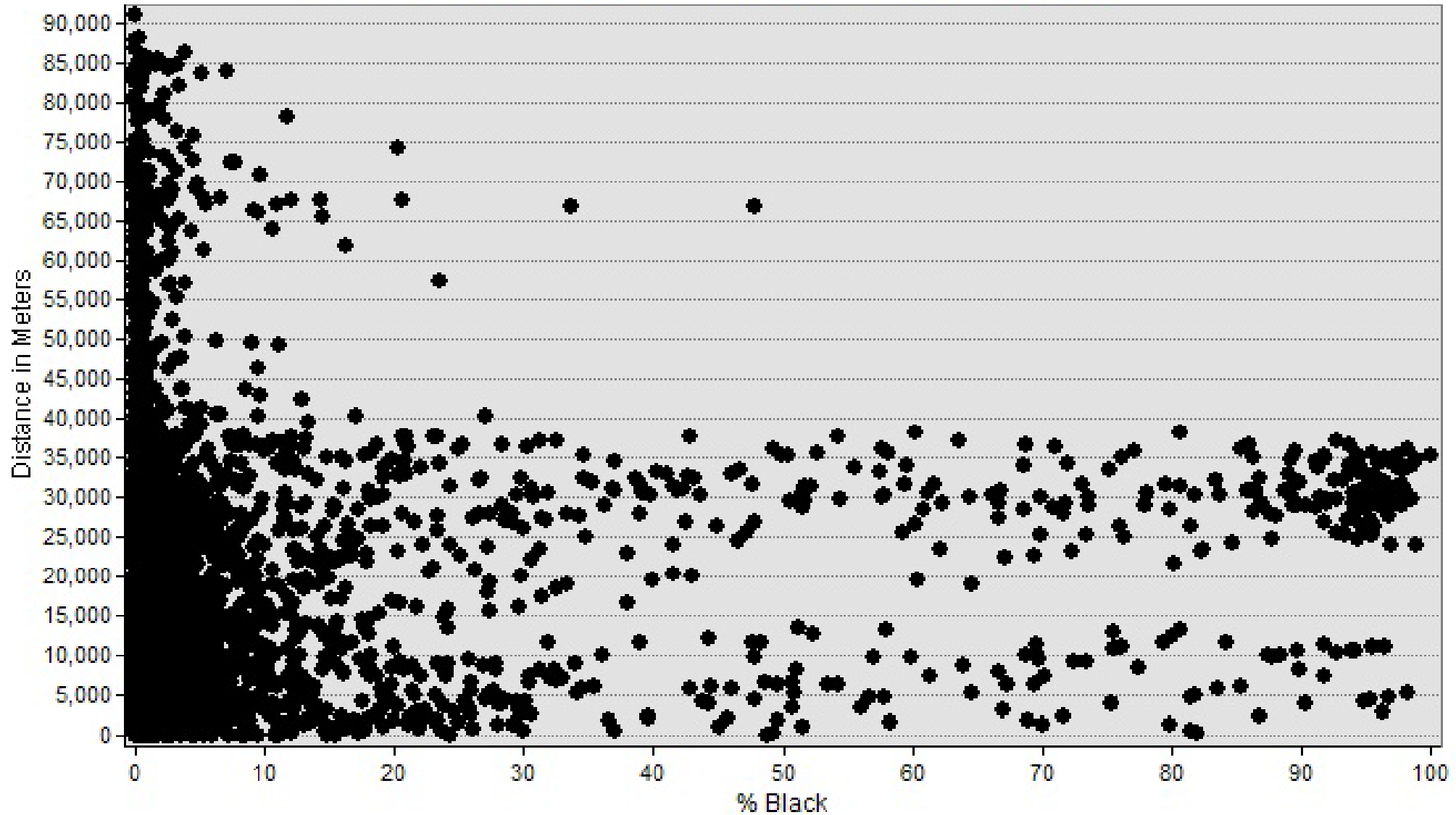


0 50 100 150 200 Kilometers



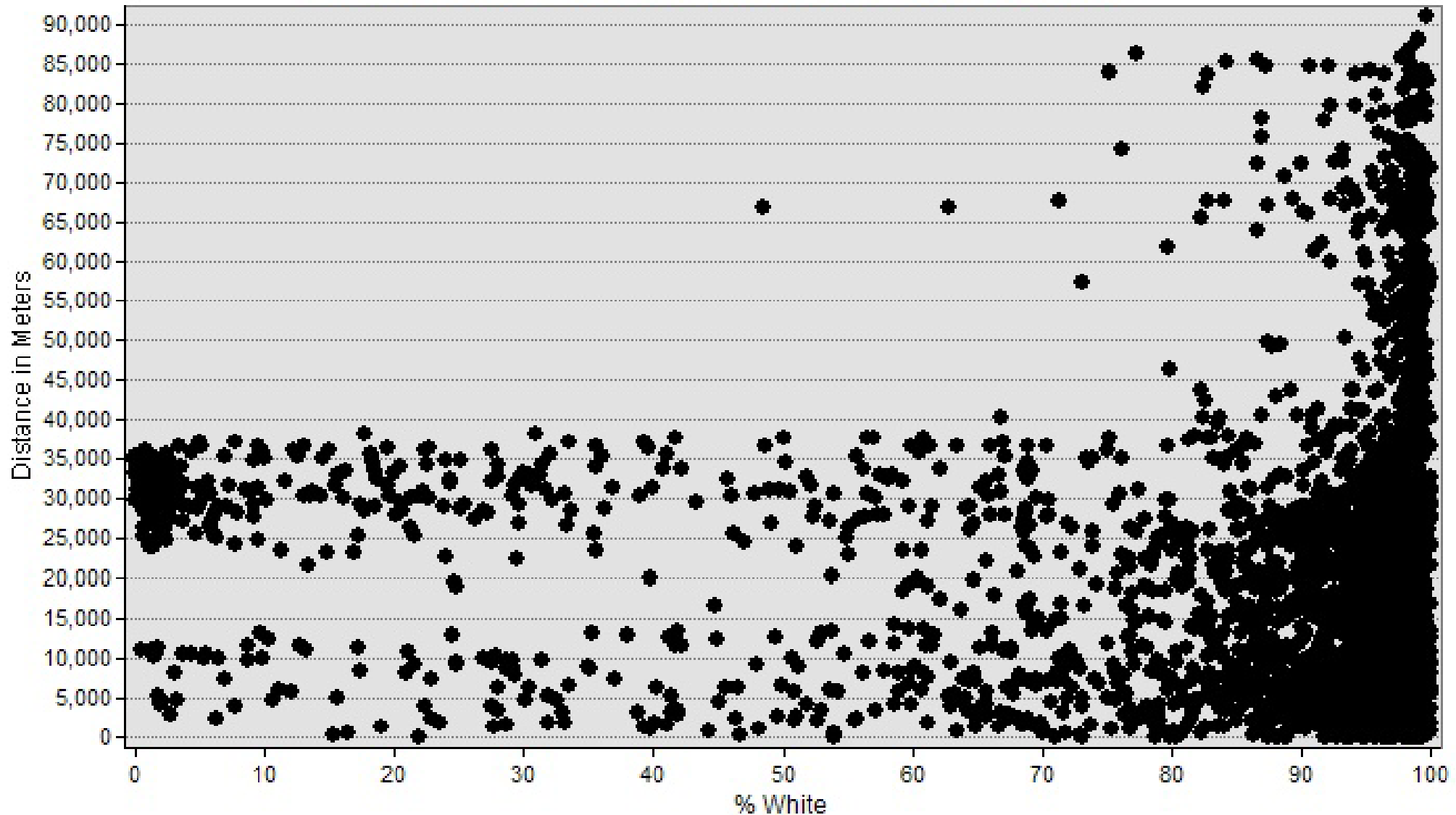
# Pennsylvania Distance

Distance from Commercial Hazardous Waste Operation



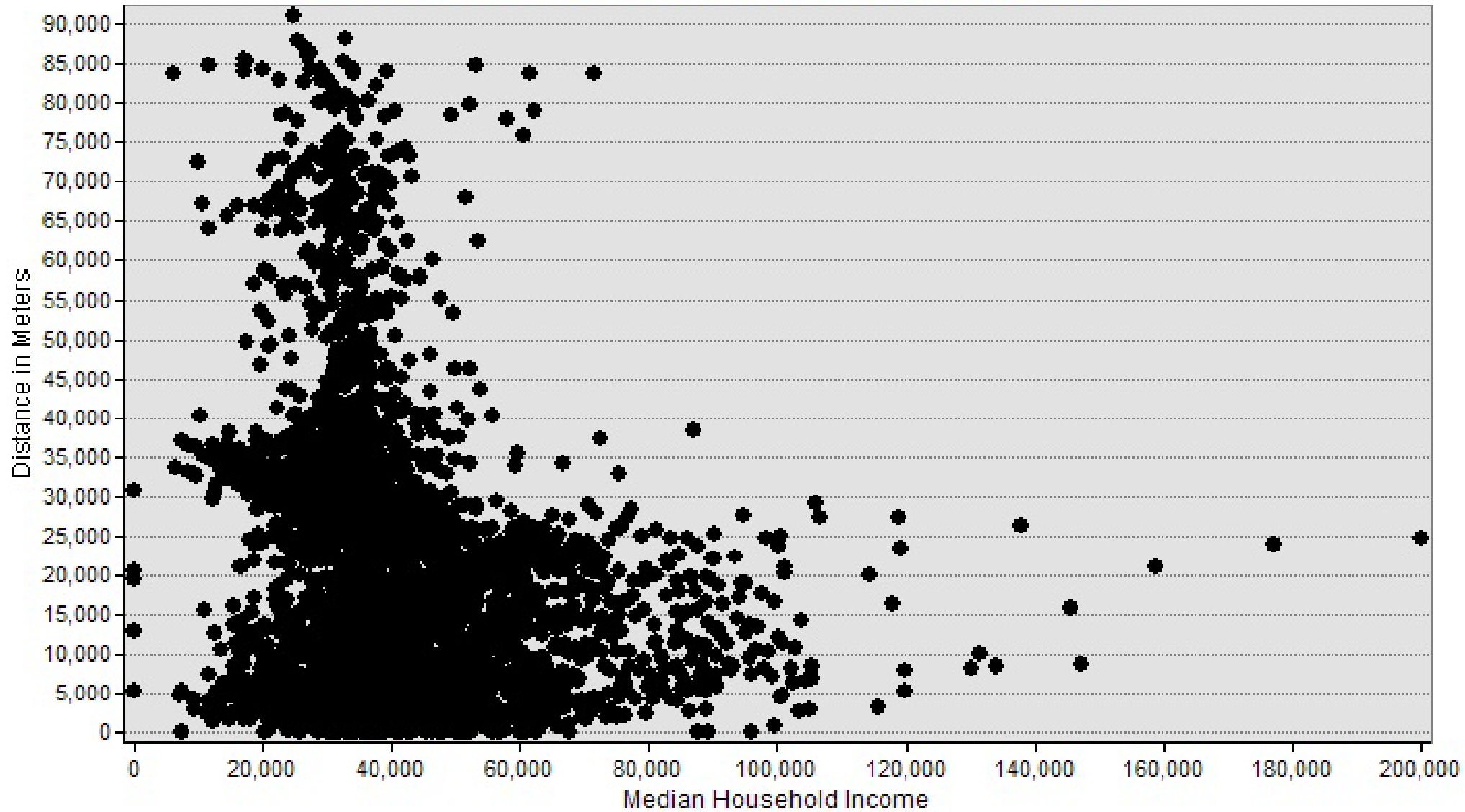
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Distance from Commercial Hazardous Waste Operation



# Pennsylvania Distance

Distance from Commercial Hazardous Waste Operation





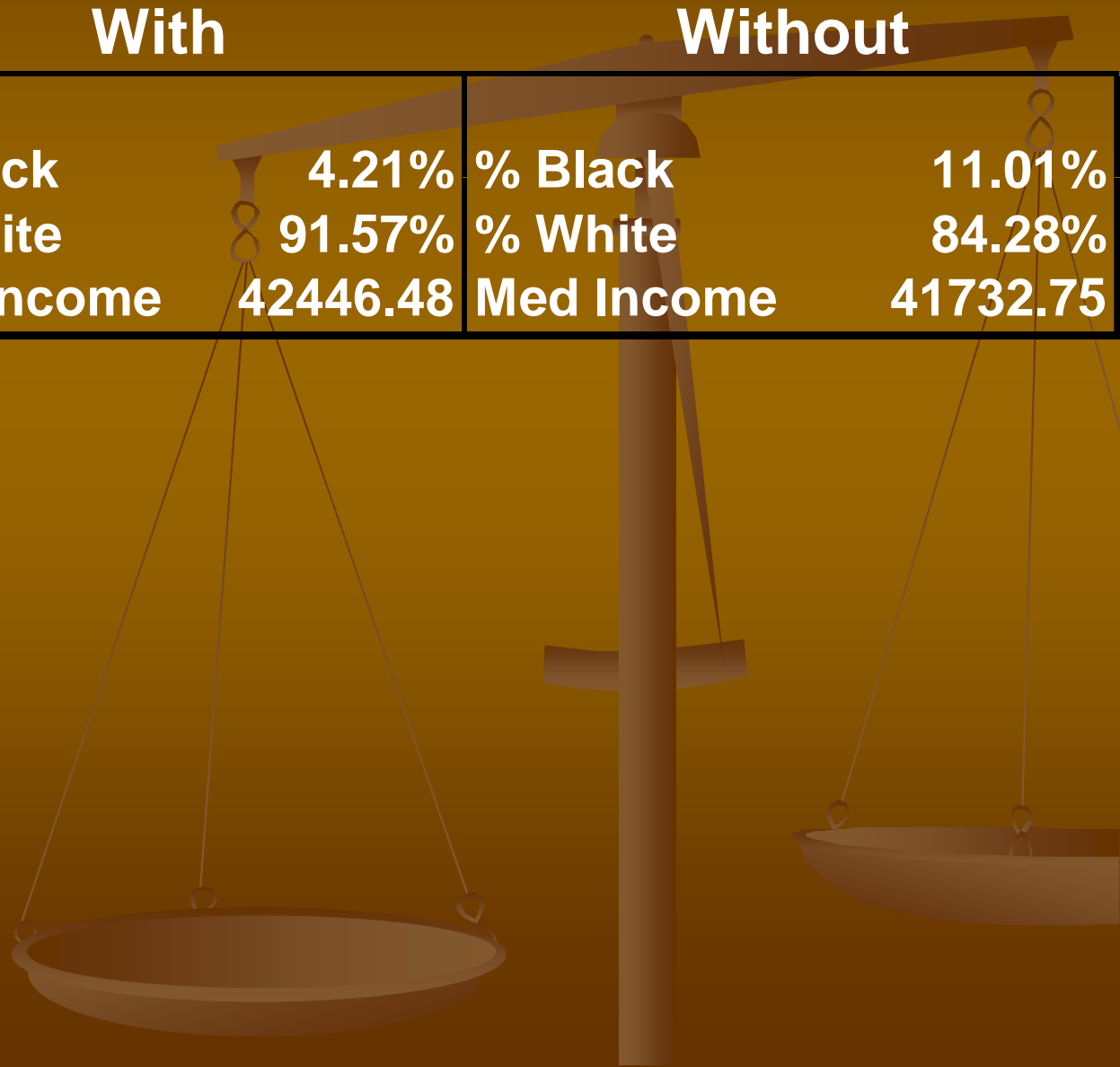
# Census Tracts

## Pennsylvania

## With

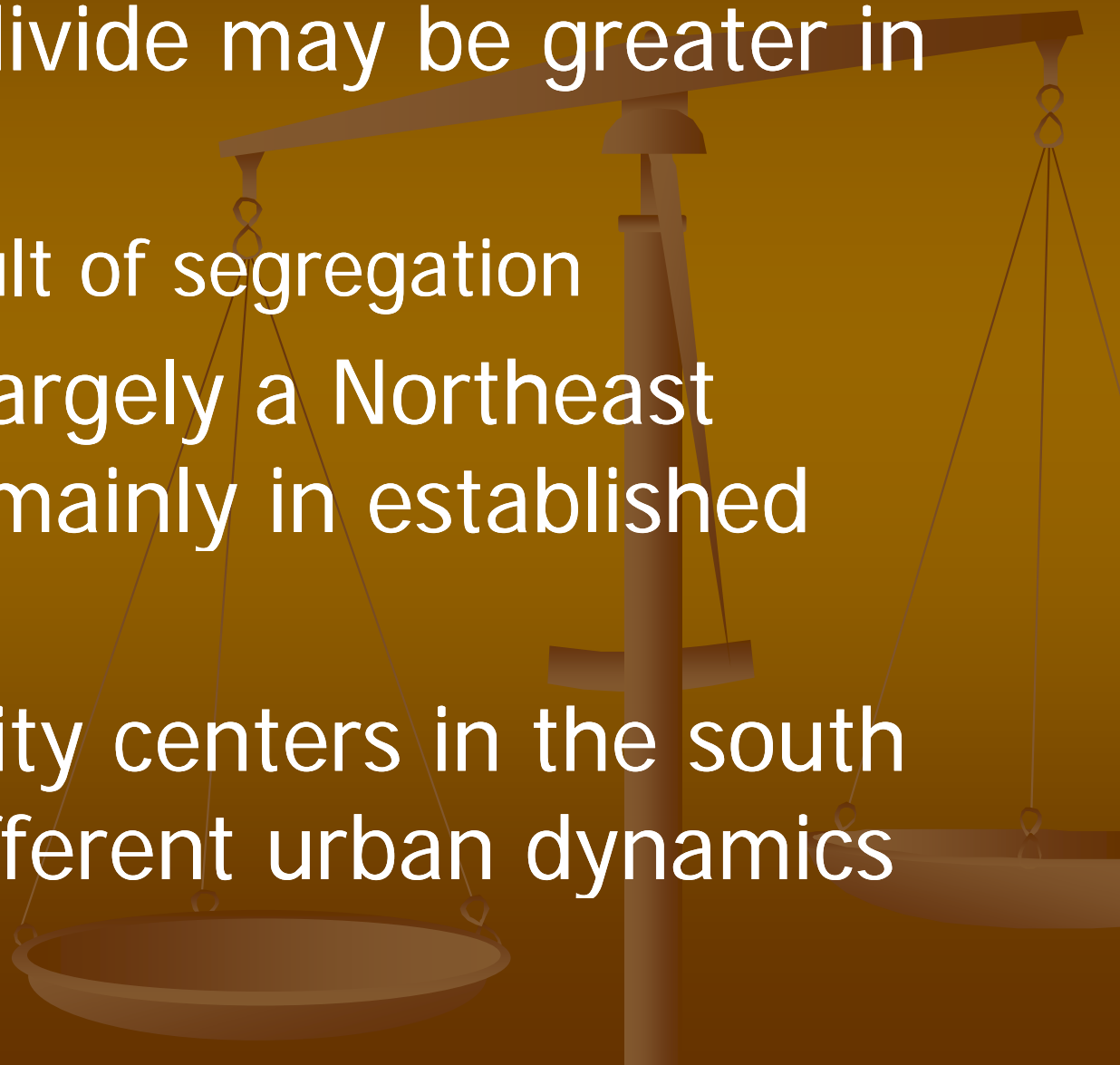
## Without

<b>% Black</b>	<b>10.92%</b>	<b>% Black</b>	<b>4.21%</b>	<b>% Black</b>	<b>11.01%</b>
<b>% White</b>	<b>84.39%</b>	<b>% White</b>	<b>91.57%</b>	<b>% White</b>	<b>84.28%</b>
<b>Med Income</b>	<b>41742.83</b>	<b>Med Income</b>	<b>42446.48</b>	<b>Med Income</b>	<b>41732.75</b>



# Discussion

- Demographic divide may be greater in the south
  - Perhaps a result of segregation
- Gentrification largely a Northeast phenomenon, mainly in established cities
- Desolation in city centers in the south may lead to different urban dynamics





# Questions?

Other than “what are the determining factors in the siting of undesirable land uses?”!