

A Systematic Review of Coal Fired Power Plant Proximity and Local Socioeconomic Status Trends and Outcomes



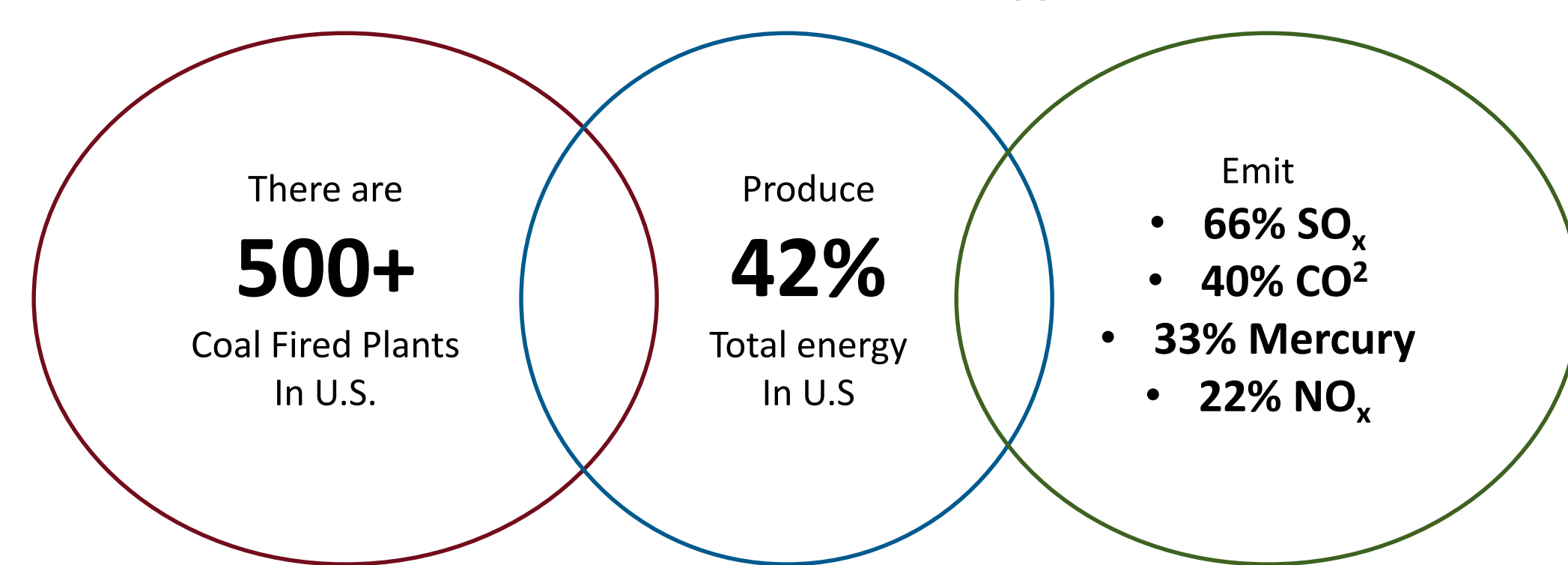
Public Health

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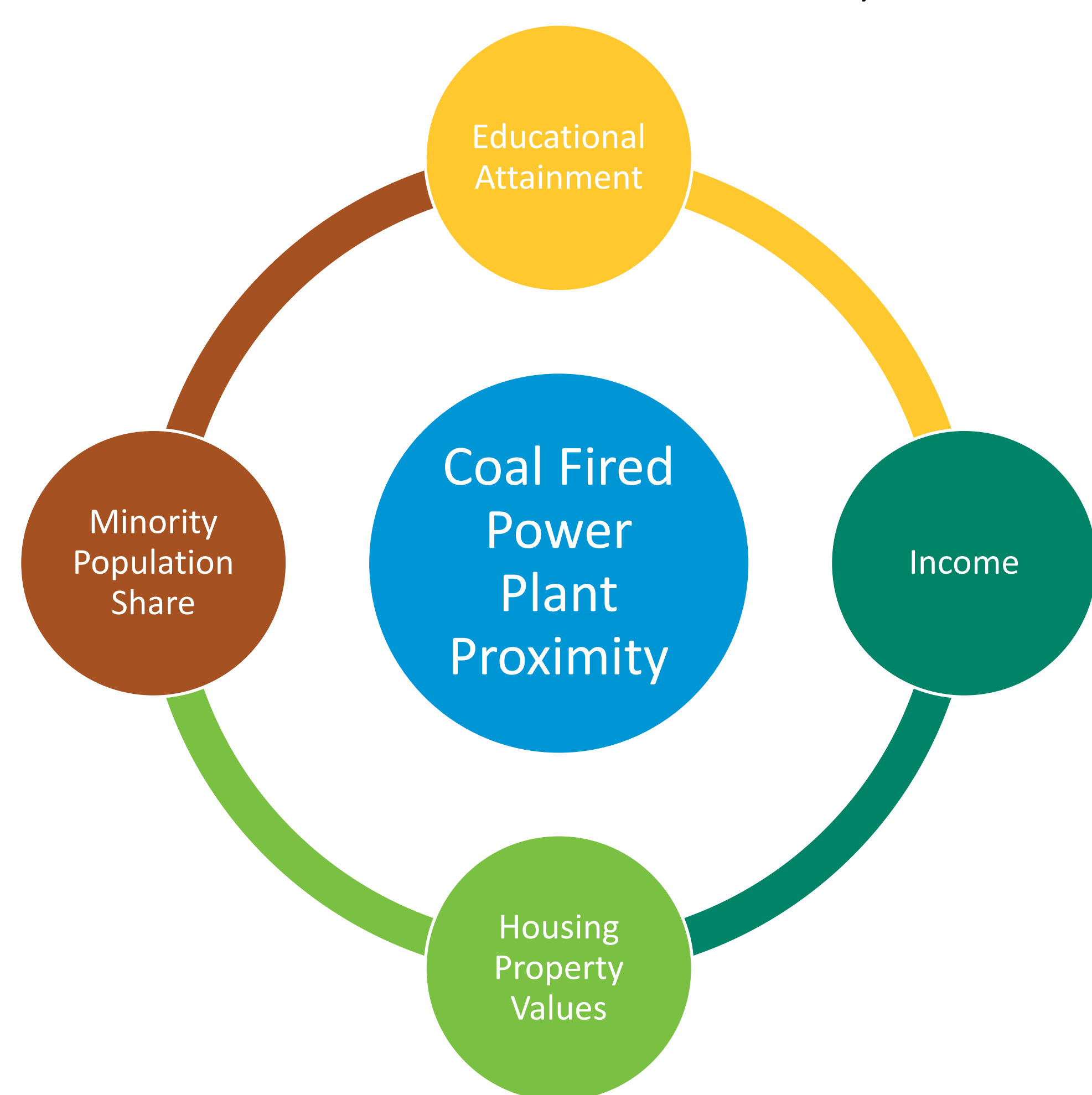
Introduction

Coal-fired power plants emit 66% of sulfur oxides, 40% of carbon dioxide, 33% of mercury and 22% of nitrogen oxides in the U.S. and are linked as risk factors to respiratory diseases, cardiovascular diseases and other ailments shown to impact environmental and human health. Along with the injurious health effects that come with the presence of hazardous waste sites like coal fired power plants, there are broader socioeconomic trends and outcomes related to their siting, especially affecting those who live near these facilities. This systematic literature review research study surveyed the relationship between the location of coal fired power plants and the socioeconomic conditions and trends of proximate communities and the cumulative evidence suggested there to be a link

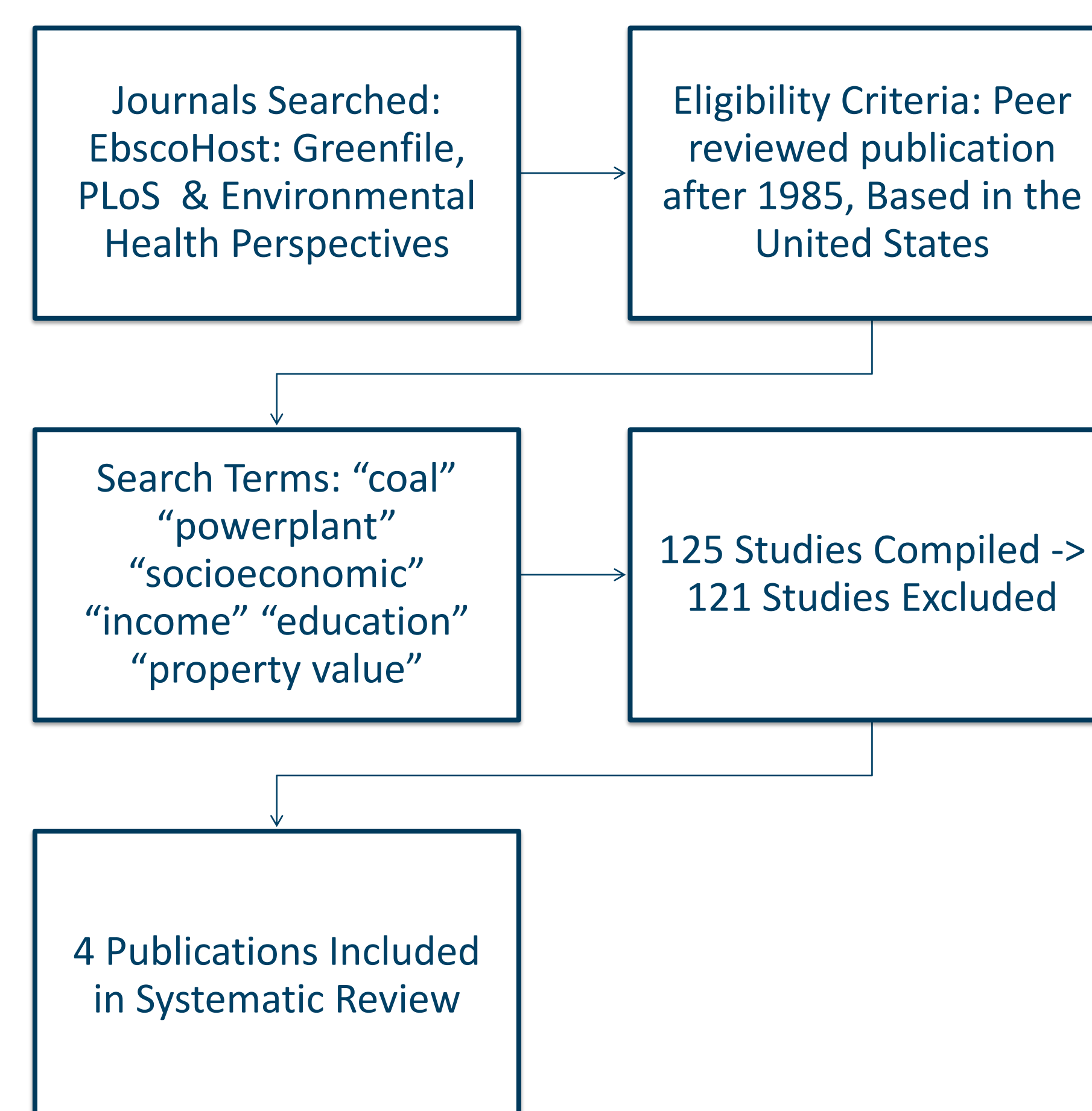


Objective

To review peer-reviewed literature and assess the association between the proximity and placement of coal fired power plants and the socioeconomic trends and outcomes observed in nearby communities.



Methods



Types of studies: No study type restrictions were imposed. English written, published after 1985, United States based were the only study restrictions, no other restrictions were imposed.

Types of participants: Only studies with participants (towns/cities, plants) based within the United States were included.

Types of outcome measures: The socioeconomic status of the residents were cumulatively outlined across three different primary outcome measures were income levels (low income – high income \$), property values (housing values and rents \$), educational attainment (graduation rates & test performance). Secondary outcome measures were blood lead levels (BLL), mercury pollution as a proxy for toxic pollution emitted from hazardous industrial sites including coal fired power plants.

Risk of Bias:

- Demographic Homogeneity
- Site Pre & Post Analysis
- Lack of Granularity
- Publication Bias

Results

Authors	Year	Location	Evidence of Association?/Direction/Strength	Findings
Davis	2010	United States	Yes/Negative/Sufficient	Decreases in housing values, educational attainment, income levels & increases percentage of population black & Hispanic
Moody et al.	2015	Detroit, MI	Yes/Negative/Moderate	All but 1 of the top 15 environmentally overburdened communities were low income communities and 9 of the 15 communities of high minority status.
Faber	1997	Massachusetts	Yes/Negative/Sufficient	Communities most heavily burdened with environmentally hazardous industrial facilities and sites are overwhelmingly low-income towns and/or minority communities.
Farber	1998	United States	Yes/Negative/Sufficient	The adverse effects from hazardous industrial sites diminished with distance from some facilities or events, resulting in increased property values as distances from these sites increased.

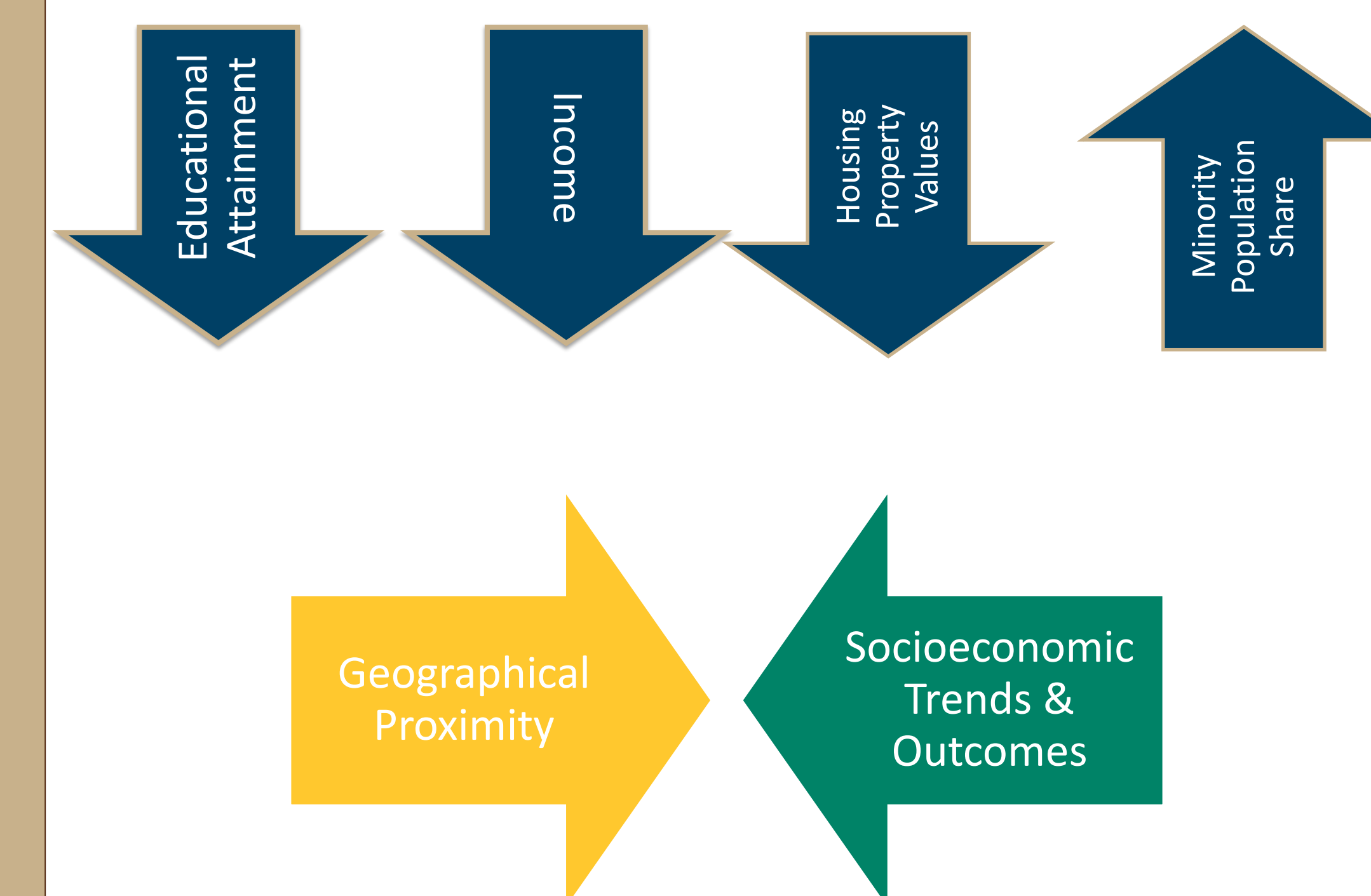
Authors	Year(s) Studied	Property Values	Race/Ethnicity Included in Analysis	N (towns, plants, population)	Risk of Bias	Funding Sources
Davis, L	1992-2000	Property Values	Yes	92 Large Power Plants	Mostly only controlled for community size	U.S. Census Bureau
Moody et al.	2006-2010	Blood Lead Levels	Yes	>200,000 Children	Selection Bias; Reporting Bias	Michigan State University
Faber	1990	Income	Yes	351 cities & towns	Selection Bias	Buffalo State University
Farber	1962-92	Property Values	No	30 Hazardous Sites (2 Coal Fired Power Plants)	Few Control Measures; Risk of Confounding	University of Pittsburgh

Outcome Measures:

- exposure
- population(s) studied
- size of population(s)
- location
- funding sources
- the inclusion of race/ethnicity in analysis
- the measure
- direction and strength of association

Conclusions

The four studies used recent U.S. Census data to examine housing values and rents in relation to the location of coal fired power plants during the 1990s and found that there were statistically significant **decreases in mean household income, decreases in housing values and proportion declines in educational attainment (declines in high school and college completion rates), and increases in the populations of black and Hispanic residents.**



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