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Dirty Jersey: Geographies of contaminated sites and race

Ananya Chandra
Syracuse University

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Dirty Jersey

Geographies of contaminated sites and race

Ananya Chandra
environment, sustainability, and policy,
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Abstract

This GIS (Geographic Information System) StoryMap explores environmental racism in New Jersey, presenting geospatial analyses of overlaps in Black population density and Known Contaminated Sites. Both of these parameters were normalized differently—the former by total county population and the latter by county area. The parallels between geographies of contaminated site density and black population density were strong enough to overcome differences in data normalization. The map visualizations demonstrate a trend of neglect toward Black communities and their environments, thereby portraying environmental racism. This exposure to environmental hazards amplifies the health and safety risks they face, demonstrating the unequal treatment of this population.

This abstract summarizes the project displayed on the website, which can be accessed by scanning the QR code.



Research Methods

To create the maps in this project, Black population densities in New Jersey counties were geospatially analyzed to allow for a calculation of contaminated site density within counties. The Black population data is sourced from the 2020 U.S. Census via the Social Explorer database. The Known Contaminated Sites shapefile, a common geospatial data file format, is sourced from the New Jersey Department of Environmental Protection (NJDEP) Bureau of GIS. In this data, “contaminated sites” are defined by the NJDEP as areas where the contamination of soil or groundwater has been confirmed at levels equal to or greater than applicable standards. This was visualized on the map by both displaying the number of sites per county and the density of contaminated sites per county. The latter was done by normalizing the number of sites by the area of each county (in square miles) to account for the assertion that counties with larger areas would contain more contaminated sites. The case study described looks at an Environmental Protection Agency (EPA) Superfund Site located in Essex County, New Jersey. Essex County has the highest Black population density of the state and contains 1,669 known contaminated sites. Aerial imagery in the cleanup visualization is sourced from the NJ Office of GIS. This research was aided by Geography Subject Librarian John Olson, who helped locate data and find useful digital resources.

Case Study

Essex County, New Jersey, has the highest Black population density of any county in the Garden State. Of the 1,669 known contaminated sites in the county, one of the most notorious examples is Diamond Alkali Co. The case study below illustrates one of many examples of environmental racism, which is defined as a form of “institutionalized discrimination”, and involves environmental practices that disproportionately impact disadvantaged racial or ethnic communities, such as Black, Indigenous, and people of color.

Diamond Alkali is an EPA Superfund site situated on the Newark Bay and is currently in remediation. An EPA Superfund site is a severely contaminated site that receives federal funding for its cleanup via the U.S. Environmental Protection Agency’s Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). CERCLA allows the EPA to identify contaminated sites, oversee their cleanup, and hold responsible parties accountable for their contamination; if contamination at a site is especially severe, it can be placed on the National Priorities List (NPL), which gives it precedence in receiving funding. Oftentimes state-level environmental agencies, such as the New Jersey Department of Environmental Protection (NJDEP), detailed later in this section are put in charge of allocating these remediation funds and overseeing the cleanup process.

Diamond Alkali used to manufacture agricultural chemicals and herbicide—including Agent Orange, which was used by the U.S. military in their herbicidal warfare program during the proxy Vietnam War—and in 1983, the NJDEP found high levels of dioxin at Diamond Alkali and within its vicinity. Dioxin is a persistent organic pollutant (POP) and has both carcinogenic and non-carcinogenic harmful effects, including reproductive and developmental problems as well as immune system damage. The dioxin levels were exceedingly severe, which led to its EPA classification on the NPL for superfund sites.

Since then, a thorough remedial process has been undertaken to tackle the widespread damage to soil, groundwater, air, surface water, and building structures. After a cleanup plan for the site was finalized in September of 1987, the NJDEP proceeded to supervise the chemical company’s enforcement of the plan. The EPA has since

discovered additional contamination and hazards within the Passaic River and Newark Bay region, and has even identified multiple potentially responsible parties for the contamination. Like all remediation efforts, the cleanup process for this site is long and arduous, and some impacts will persist in nature long after it is complete (such as the bioaccumulation of dioxin in the local wildlife species). Still, progress has been made to clean this site, which can be seen in the aerial imagery.

Appendix

Figure I: Counties Black Population Density I

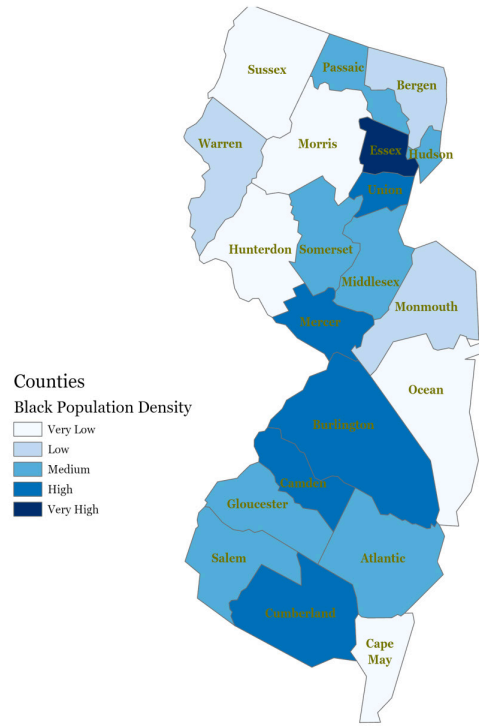


Figure II: Counties Black Population Density II

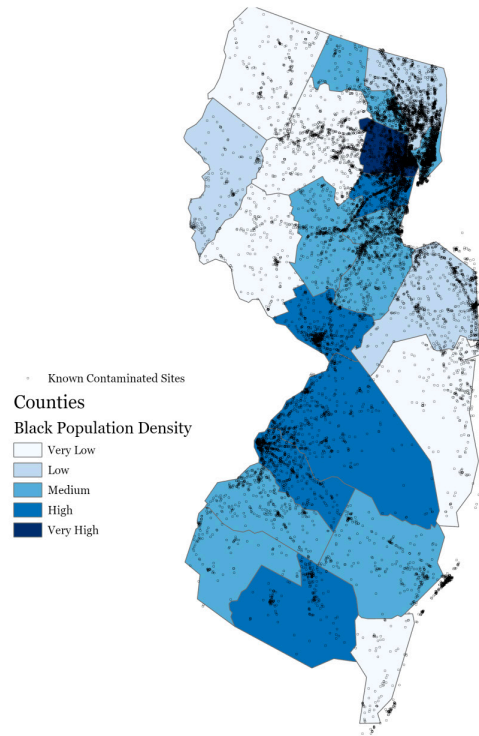


Figure III: Known Contaminated Site Density I

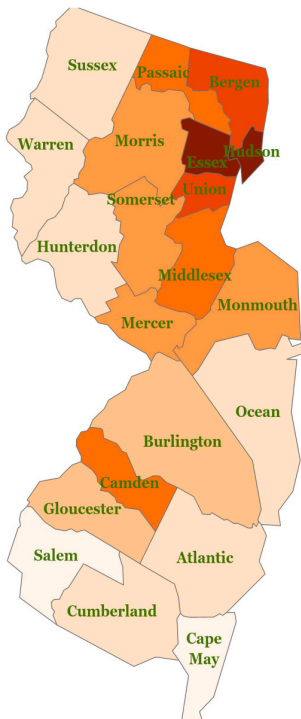


Figure IV: Known Contaminated Site Density II

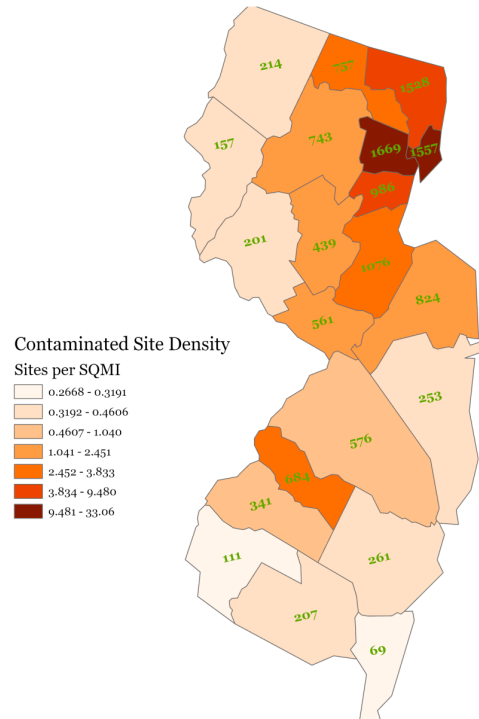


Figure V: Diamond Alkali Co. Newark, New Jersey, 1980s



Figure VI: Diamond Alkali Co. Newark, New Jersey, 2006



Figure VII: Diamond Alkali Co. Newark, New Jersey, 2010



Figure VIII: Diamond Alkali Co. Newark, New Jersey, 2020

