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GIS

Final Project: Proposal

11/21/22

There is a wealth of literature in the field of environmental justice that links race and the burden of environmental hazards such as hazardous waste sites or industrial plants [1]. For our project, we would like to use data from an open-source community reporting tool for air pollution to uncover potential links between environmental hazards and underprivileged communities in Pittsburgh, Pennsylvania.

For our project, we would like to use the open-source community environmental reporting tool titled **Smell Pittsburgh** to analyze trends in air pollution and environmental justice in Pittsburgh [2]. This project allows users to create “smell reports” that rate the severity of air quality issues on a scale of 1-5, in addition to the reporter’s geographic coordinates and any qualitative notes the user would like to submit [3]. The data from these reports is anonymized by slightly skewing the coordinates of each user when they submit smell reports. This project helps to capture instances of industrial air pollution that affects residents near polluters and, in some instances, acutely affects the entire metropolitan area of Pittsburgh.

The US Census publishes TIGER/Line files with demographic and economic indicators from the American Communities Survey at the levels of the Census Tract and Block Group [4]. Using this data alongside the Smell Pittsburgh data will allow us to investigate any relationship that might exist between persistent negative air quality experiences and concentrations of minority groups or impoverished areas in the city. We can aggregate Smell Reports by block group and correlate these reporting instances with demographic and economic indicators. Our goal is to utilize the Smell Pittsburgh API and handle some data cleaning in R to simplify the workflow of processing the data and make the project more reproducible overall. We aim to build on the analysis already performed by Hsu et al. (2019) which analyzed trends in user participation, engagement, and reporting in their interface [6].

Data List:

1. Smell Pittsburgh (tabular data available as a direct download from the website). We have already downloaded this data. See reference [3].
2. Census TIGER/Line Geodatabase with demographic and economic indicators for the state of Pennsylvania. Available as a direct download from reference [4].

References:

[1] Cole, Luke W, and Sheila R Foster. 2001. From the Ground Up: Environmental Racism and the Rise of the Environmental Justice Movement. Critical America. New York: New York University Press. ISBN: 9780814772294

[2] Smell Pittsburgh Website: <https://smellpgh.org/>

[3] Smell Pittsburgh Data Documentation and Direct Download: <https://smellpgh.org/data>

[4] Census Geodatabases with demographic and economic indicators: <https://www.census.gov/geographies/mapping-files/time-series/geo/tiger-data.html>

[5] Smell Pittsburgh API documentation: <https://github.com/CMU-CREATE-Lab/smell-pittsburgh-rails>

[6] Yen-Chia Hsu, Jennifer Cross, Paul Dille, Michael Tasota, Beatrice Dias, Randy Sargent, Ting-Hao (Kenneth) Huang, and Illah Nourbakhsh. 2019. Smell Pittsburgh: Community-Empowered Mobile Smell Reporting System.