Cole, Aidan

LARP 745

2/18/22

**Project Proposal 1**

Since the last project proposal, I have narrowed in on what exactly I want to do with my final project. The project option that I chose was the first: a research paper with GIS analysis about a substantive question. I see myself more as an environmental scientist than as a coder/data analyst, so I wanted my final project to be related to the environment in some way. Additionally, as a native Angelino, I have huge interests in making the city of Los Angeles a more climate-adaptive place to live. After seeing a guest speaker present in one of my public health/climate change classes, I was introduced to Philadelphia’s Heat Vulnerability Index tool which I thought was incredibly interesting because of the holistic way in which it calculated vulnerability; taking into consideration historical, environmental, social, and economic implications. All of this ultimately led me to want to make a Sea Level Rise Vulnerability Index for Los Angeles. With this being said, my final project question is: **“What neighborhoods in Los Angeles County are disproportionately affected by sea level rise?”**

Using a plethora of open datasets, I will create a model(s) that calculates sea level rise vulnerability (assigning risk scores) for different neighborhoods in LA County. These datasets currently include 1) current and historical sea level rise data (depth, rise, DEM, frequency), 2) point/polygon data for spatial features (hospitals/medical facilities, historical/cultural/social landmarks, Ballona Wetlands Ecological Reserve), 3) demographic census data from the ACS and 4) historical disenfranchisement data (redlined districts). I also would like to use data related to infrastructure health or land use to see if some neighborhoods are left even more physically vulnerable (besides proximity and elevation) to sea level rise, but I have yet to find a good dataset for this. While before I was planning on placing all these features within the same model, my peers advised me that I should probably develop three separate models; one in which I map just physical/environmental vulnerability to sea level rise, one in which I map just social vulnerability to sea level rise, and one in which I overlay my first model on the second to observe correlations between them and determine which features are most important when calculating vulnerability. To assist me in determining which features to leave out/add/weigh to my models, I have compiled a list of literature on the topic. Specifically, USC’s Sea Level Rise Vulnerability Study grants great scientific insight into which features should be considered more when calculating vulnerability (for example, the feature of the majority race of a neighborhood would be less considered in the model than something with a more overt relationship, like proximity to the water or even per capita income).

I will create maps for each of my three models – 1) physical vulnerability (taking into consideration proximity/spatial features, elevation, sea level rise, land use, infrastructure health), 2) social vulnerability (taking into consideration race, per capita income, genetic predispositions, median house value, historical disenfranchisement), and 3) overlayed/mixed model – and will use them to inform my persuasive, briefing report to the City of Los Angeles. By highlighting different types of vulnerability (social, environmental, and economic), as well as subclasses within those different types (rank vulnerability by quintile), I am in turn giving the City a holistic way of identifying where climate-adaptive strategies should be rolled out first.

I am going to start scraping and wrangling my data tomorrow, but currently I have all the literature and sources that I will need to write my report. I would appreciate any advice on what other features I should use in my models, as well as how to find meaningful land use data (I am very new to coding and am not familiar with how to use or join raster data). Also, should I do what my peers said and do three separate models? I can see why this would be better because it would give my paper more deliverables/maps/features and could even provide my paper with a structure, but I also am skeptical that I won’t be able to obtain the holistic calculation of vulnerability that I want.