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Fully Fleshed-Out Brainstorm

While I don’t yet know what specific question I would like to explore in my final project, the two project options that I am considering are 1) a research paper with GIS analysis about a substantive question and 2) a dashboard answering a question. Because I am particularly interested in the environment, I was thinking about doing a project that could help to visualize future environmental impacts, such as sea-level rise, increasing temperatures, wildfires, etc. The easiest way of going about doing this, in my mind, would be to create an interactive dashboard/story map where a user could manipulate the time scale to see how environmental problems will become further exacerbated in the future; I could also include data from the past to see how environmental problems have worsened in the present and will continue to worsen in the future. For the sake of this brainstorming exercise, I will continue to use sea-level rise as my example project. In this case, my project’s question would be “How has sea-level changed in the past and how will sea-level respond to the increasing temperatures caused by climate change in the future?” This question is likely causal because I am asking how the variable of time has affected the outcome variables of temperature and sea-level rise. Because I am inferring here -based on historical climate change data - that global temperatures increase over time, I do not need to have an additional slider widget for the user of my dashboard to change the temperature. Instead, I can overlay my story map or dashboard visualizing sea-level rise on top of a temperature map to observe the correlation between the increasing temperatures and the increasing sea-level (ex. <https://psl.noaa.gov/data/gridded/> or https://cal-adapt.org/tools/local-climate-change-snapshot). Furthermore, I could append more datasets to the sea-level dataset to either assess how increasing sea-level could affect something like housing prices or to visualize sea-level rise as encroaching on different geographical landmarks (ex. I would visualize landmarks like Venice Beach or Pershing Square as stagnant point data overlayed on top of the sea-level data to assess the threat of flooding for said landmarks across time). For the sake of convenience and readability, I will limit my area of study to one county or one state specifically (probably CA). Because I want to visualize future data, I will have to either find someone else’s sea-level rise prediction dataset or I will have to make my own using predictive modeling. The past sea-level rise data will be far easier to find and utilize. The National Oceanic and Atmospheric Administration has great open data for both future and past sea-level rise, but it is limited by state or county (ex https://coast.noaa.gov/slrdata/). With this data, I can see myself being able to make an interactive dashboard or ArcGIS storymap that could show users the progression of sea-level rise across time and into the future and ultimately get users to think differently about their individual roles or responsibilities within the context of increasing climate change.