Environmental Justice Case Study Maps*

We will begin discussing Redlining and Environmental Justice on Wednesday, April 14.

Assignment: You will create a map highlighting an environmental justice issue in a formerly redlined city and write a short reflection on the map you created.

The map should use a "side-by-side" function in EJSCREEN. The map on the left should symbolize an environmental exposure variable (i.e., an "EJSCREEN Map"). The map on the right should symbolize a human exposure variable (i.e. "Demographics").

The overall objectives of this assignment are twofold. First, you should demonstrate a technical capacity to identify environmental inequality, and create a visual aid and written description of your findings. Second, you should be able to analyze and reflect on the environmental inequality that you have identified, and connect it to environmental justice or social justice concerns more broadly.

You will choose a formerly redlined city for this analysis. You can use this map to figure out what cities were redlined. I hope that this assignment is illuminating about relationships with which you may or may not have been previously acquainted in that community. You should choose a city other than Houston (since that is used as an example below), preferably one to which you have a personal connection.
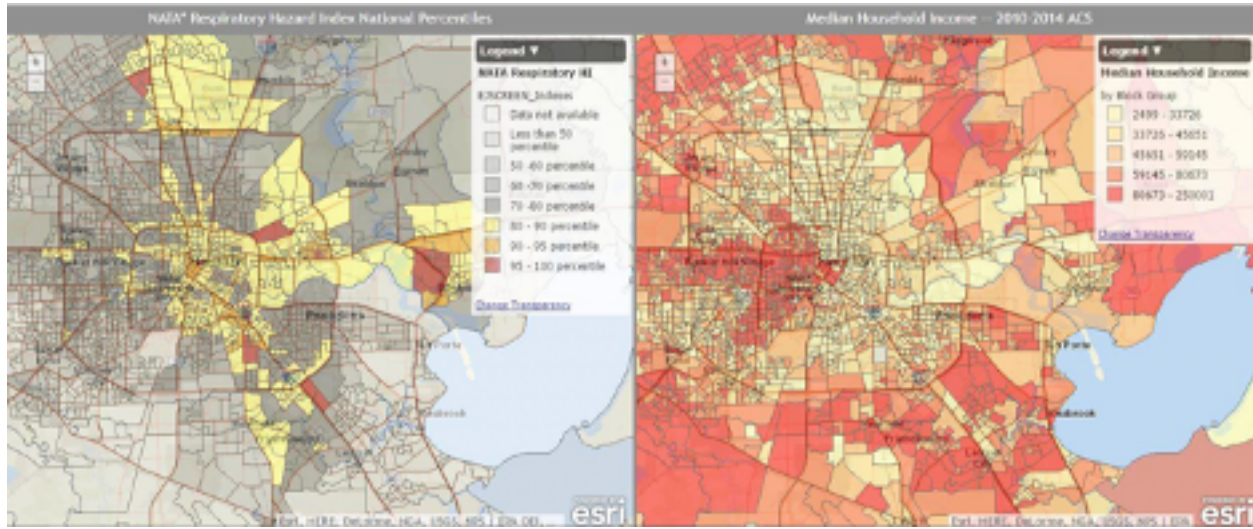
For your reference, here are 4 example maps of Houston:
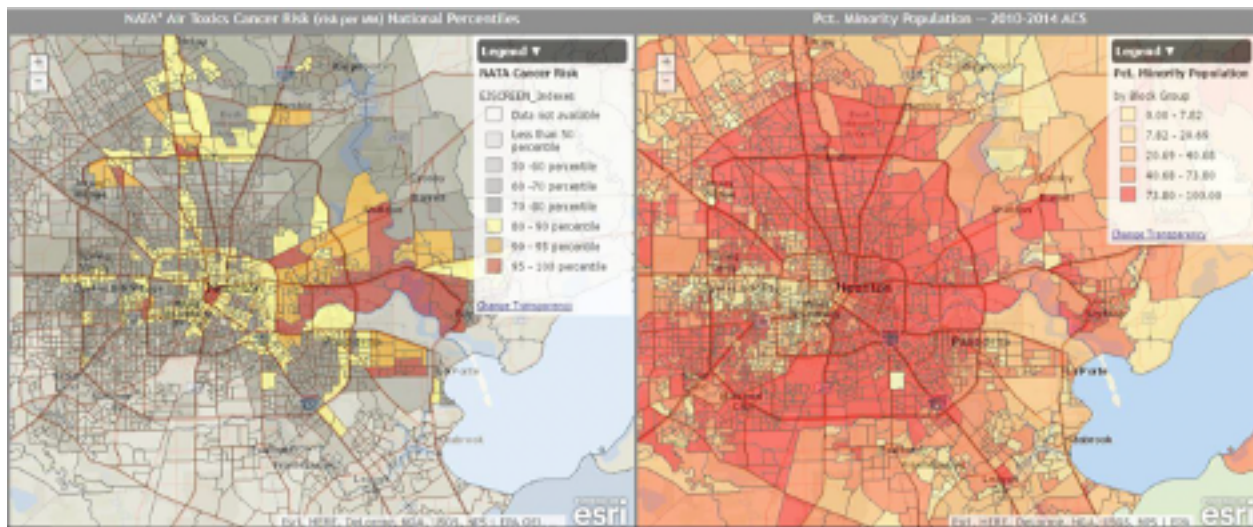
Houston Map1:
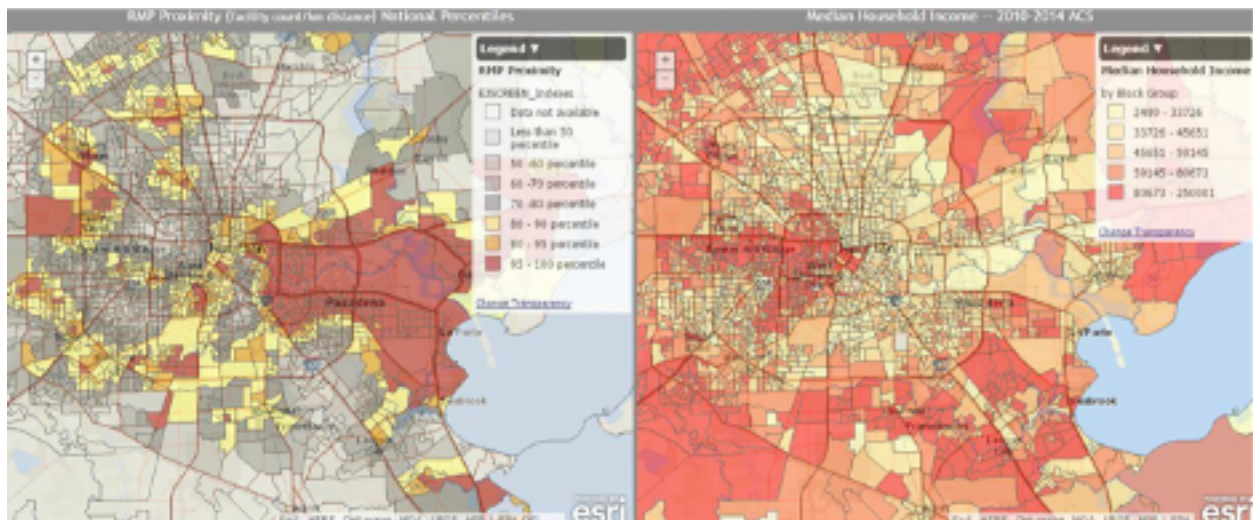
Note: "RMP Proximity" refers to the "Risk Management Plan" sites. It is the count of the RMP (potential chemical accident management plan) facilities within 5 km (or nearest one beyond 5 km), each divided by distance in kilometers.
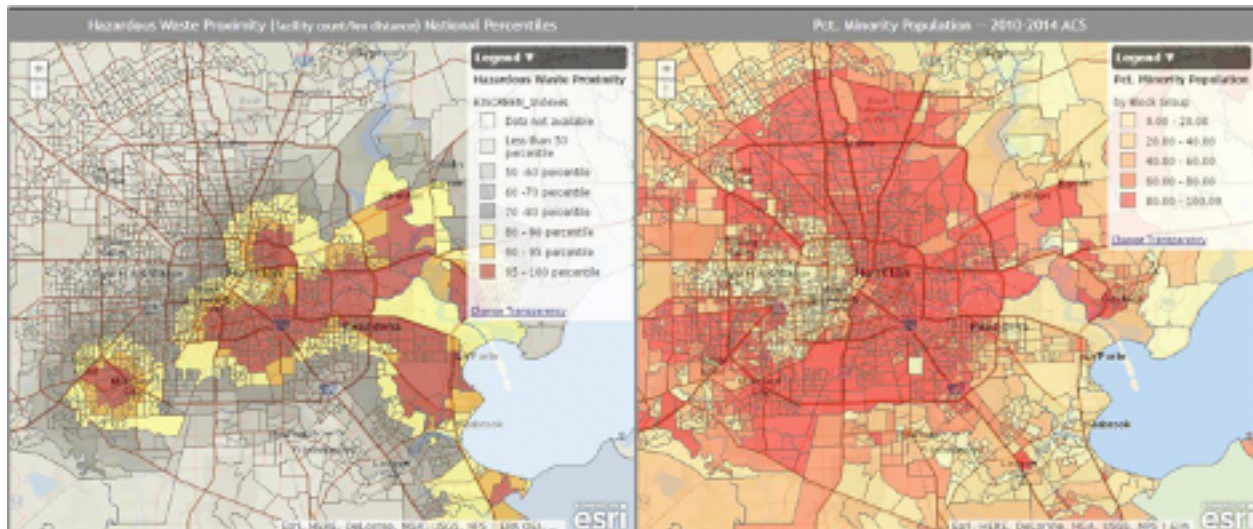
Houston Map 2:

Note: NATA respiratory hazard index refers to the ratio of exposure concentration to health-based reference concentration.

Houston Map 3:

Note: NATA Air Toxics Cancer risk refers to the lifetime cancer risk from inhalation of air toxics.

Houston Map 4:

Note: Hazard waste proximity refers to the closeness of the neighborhood to nearest hazardous waste facility or facilities.

Part 1: Using EJSCREEN to create your Environmental Justice Case Study Map

EJSCREEN is an online tool developed by the United States Environmental Protection Agency. It is designed to be used by residents of the U.S. to investigate exposure to unhealthy toxins in their communities.

Below, I detail how to use EJSCREEN. It is relatively user-friendly; students are generally able to pick the tool up and begin using it relatively quickly. Also, the EPA provides a comprehensive user guide for the tool. Because it is user friendly and there is a detailed user guide already in existence, this introduction here will be brief.

Step 1: Access the EJSCREEN tool by navigating to https://www.epa.gov/ejscreen.

- Note on this homepage that there are many useful resources, including the user guide, help in interpreting the results, and frequently asked questions, among many others.

Step 2: Click "Launch EJSCREEN tool." (Do not worry about writing in an address).

- A new window will pop up with the tool.
- At this stage, you can begin to use the tool. Because the assignment primarily concerns the side-by-side maps, I will skip a discussion of how to use it here.

Step 3: Click the "Add Maps" tab. One of the options on the drop-down menu will be "Side-by-Side Maps." Click that option.

- A new window will pop up with the tool.

Step 4: Select the location you'd like to analyze by zooming in to the city or metropolitan area you wish to analyze. You can use the zoom + and - on the upper left side of the map. Click and hold the map to move to a different location.

- Entering an address for the second step or the third step would pre-empt the need for this step.

Step 5: Identify an EJSCREEN variable. This variable will denote the environmental risk.

- On the left side, click "Map Data."
- On the drop down tool, click the circle for "EJSCREEN Maps" (this should be the default).
- Choose whether to compare to US or to compare to State. (This is the student's choice).
- Under "Category," click "Environmental Indicators" (this should be the default).
- Several options are in the box to symbolize in the map (e.g. PM2.5, Superfund proximity, etc.) Don't just pick the first 1 or 2 you happen to analyze, but thoughtfully explore the data.
- Choose one, and click "Update Map."
- Note that some of the options may be unfamiliar to you. The EJSCREEN help has a guide to the indicators here.

Step 6: Identify a demographic variable. This variable will denote the human exposure variable.

- On the right side, click "Map Data."
- On the drop down tool, click the circle for "Demographics."
- Under "Category," select a category
- Each category has several demographic variables. You might toggle between categories to explore the different possibilities
- Click "Variable" and select a variable (this is the student's choice).
- For "Method," choose one of the three options. I suggest quantile; it is the most straightforward.
- For "Breaks," you can leave it as the default (5). If you'd like, you can change it to choose the number of categories with which to symbolize the social variable.
- For example, choosing four breaks for a quantile method will result in the map showing the demographic variable broken up into four levels.
- For "Colors," "Transparency," and "Border," you can choose based on your preference.

Step 7: After you have created your map (using steps 5 & 6), make sure to expand the "Legend" for both maps. Without doing so, each map will not have a legend. To do this, simply click "Legend" and you will see the Legend appear.

Step 8: Save the map. Unfortunately, the side-by-side map does not include a save option. There are a few alternate ways to do so, though. If on a Windows computer, I would suggest using the "Snipping Tool." Simply crop the part of the screen that includes the maps, and save the image that it produces. Here are some other tips for saving screen shots. You can also download the free Greenshot app, which makes taking and clipping screen shots super easy. An alternate

option is to print the screen through your internet browser. For Macs, pressing command+shift+4 should allow you to snip part of the screen.

Part 2: Reflection

Write 2-3 paragraphs reflecting on the map you created. Please respond in full, grammatically correct sentences. In your reflection, make sure you address the following questions:

1. What region or city did you choose? Why?
2. What environmental indicator and demographic variable did you map? Please embed the map image in your response. (Use the little picture icon in the tool bar)
3. Did you find evidence for environmental inequality and environmental injustice in the region you mapped? If so, discuss that evidence here. Did there seem to be a relationship between inequalities and redlined neighborhoods? (You can zoom in on your city in this map to check out redlined areas). If not, why do you think that is?
4. Using your own experiences or knowledge about the place you chose, can you reflect on the social and environmental processes at play in the maps you created?
5. If you were a policy maker, how would you address the environmental justice issues you found in the region you mapped? If you did not find environmental injustice in your map, how would you address these types of issues in the Houston areas in the example maps?
6. Please return later and respond to ONE other student's post. What did you find interesting in their post? What were you surprised about? (100 word minimum)

*This assignment has been modified from Karen Gallardo-Cruz, who modified it from
https://www.sesync.org/environmental-justice-in-houston-2016-2