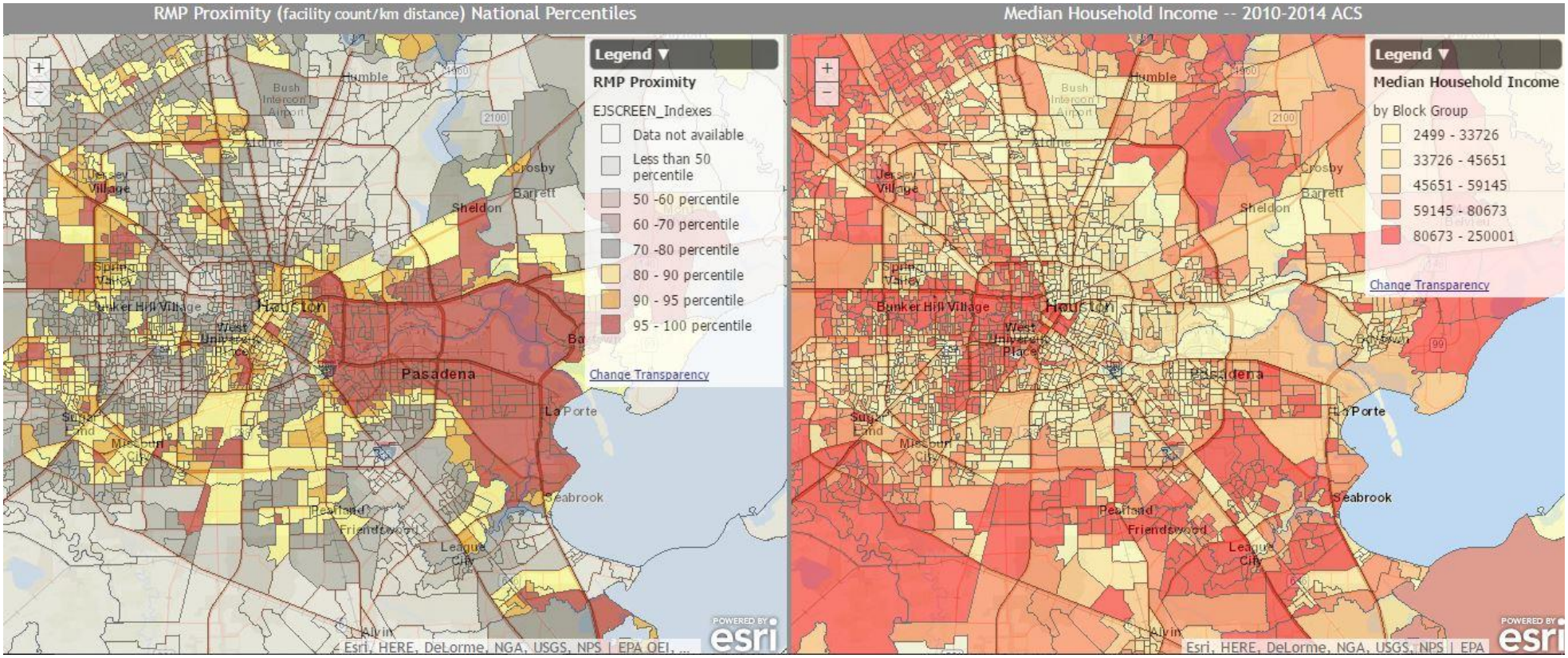
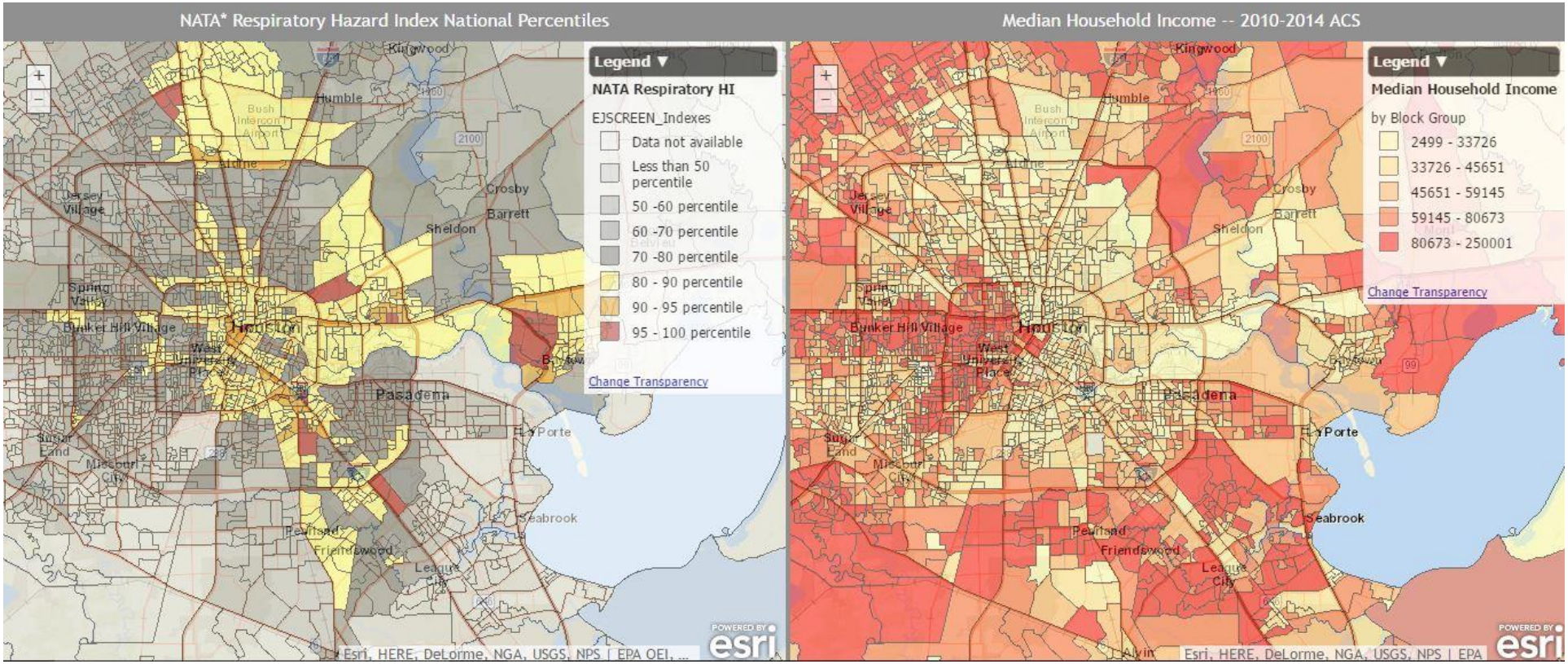
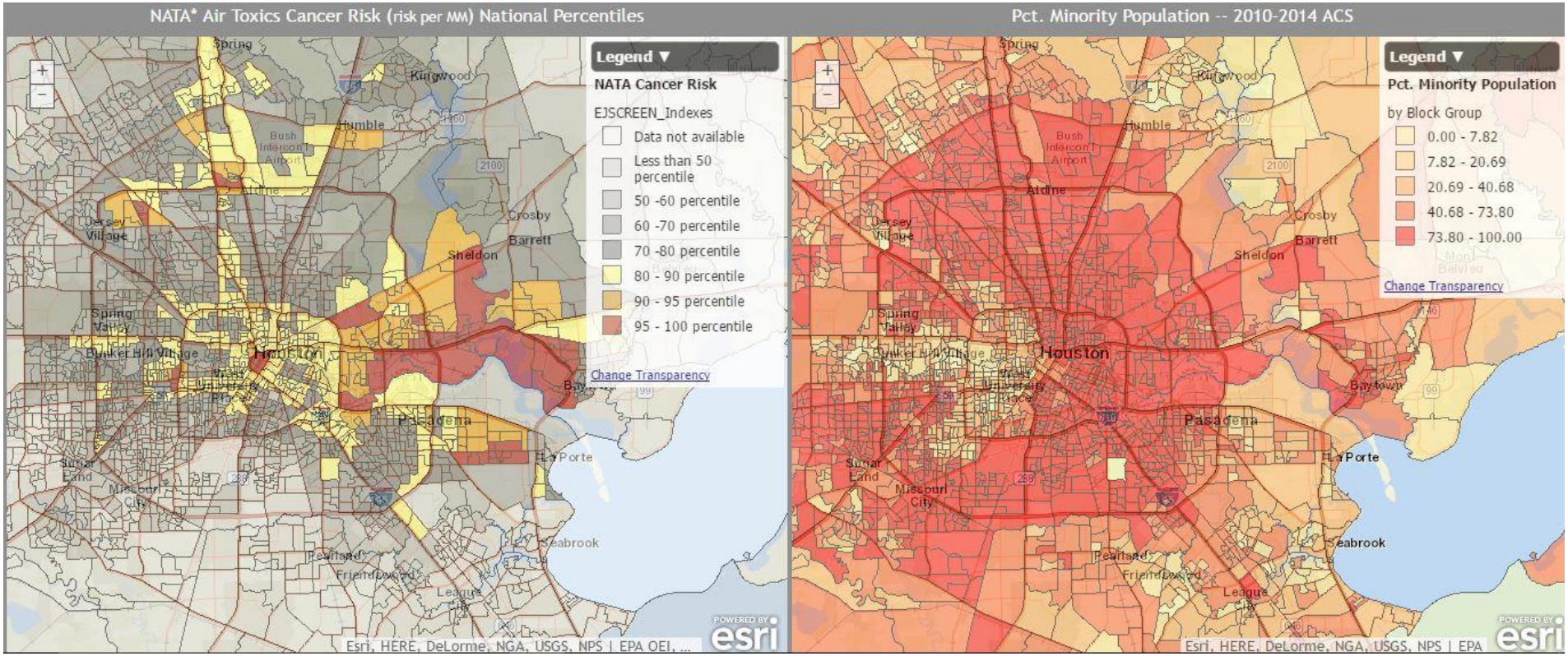
Student Handout - Maps for the Assignment #1



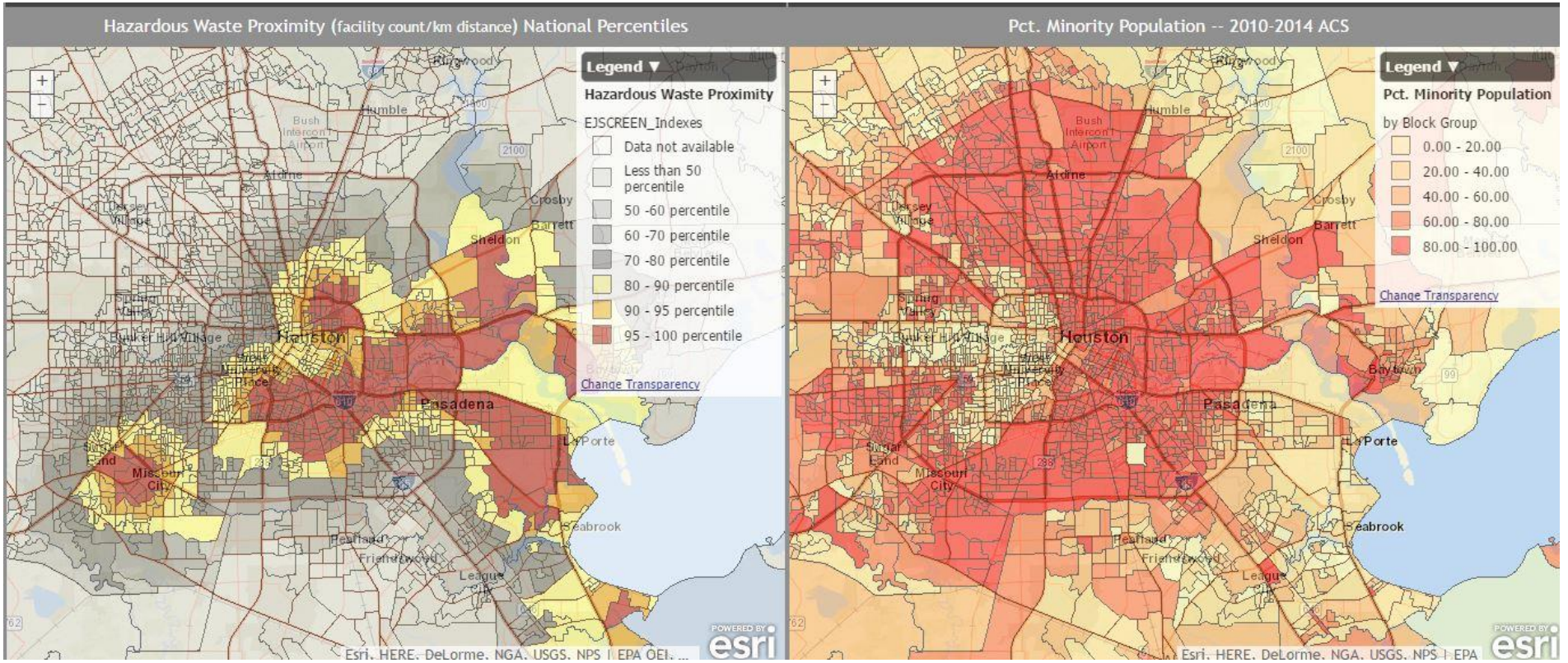
Note: “RMP Proximity” refers to the “Risk Management Plan” sites. It is the count of RMP (potential chemical accident management plan) facilities within 5 km (or nearest one beyond 5 km), each divided by distance in kilometers.



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



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



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

Student Handout– How to Use EJSCREEN

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 unhealthful toxins in their communities.

Below, I detail how to use EJSCREEN. It is relatively user-friendly; it is my experience that students are able to relatively quickly pick the tool up, and begin using it. Also, the EPA provides a comprehensive user guide for the tool: https://ejscreen.epa.gov/mapper/help/ejscreen_help.pdf. Because it is user-friendly and there is a detail user guide already in existence, this introduction here will be brief.

The first step to 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.

The second step is to 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.

The third step is to 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. Open that window.

The fourth step is to select your geography by zooming to the correct city, county, or metropolitan area. You can use the zoom on the upper left side of the map to find the best place.

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

The fifth step is to 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.). Choose one, and click "Update Map."
    - Note that some of the options may be unfamiliar to you and the students. The EJSCREEN help has a guide to the indicators here: https://www.epa.gov/ejscreen/overview-environmental-indicators-ejscreen

The sixth step is to 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."
- Choose whether to compare to US or to compare to State. (This is the student's choice).

- Under “Category,” select a category (this is the student’s choice).
    - 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 to communicate to students.
- For “Breaks,” 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 quartiles of the demographic variable.
- For “Colors,” “Transparency,” and “Border,” it is the student’s preference.

The assignment is to utilize steps 5 and 6 to successfully create a map. The students will likely to choose between variables for both types of measures, and explore the data in depth. They probably should not pick the first two they happen to analyze, but instead should thoughtfully explore the data.

The seventh step is to make sure to expand the “Legend.” Without doing so, each map will not have a legend. To do this, simply click “Legend” and you will see the Legend appear.

The eighth step is to 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. 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.

Student Handout– Instructions for Final Assignment

The primary assessment is for the students to create a map, and write a two page analysis and reflection on the map.

The map should use the "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, students should demonstrate a technical capacity to identify environmental inequality, and create a visual aid and written description of their findings. Second, students should be able to analyze and reflect on the environmental inequality that they have identified, and connect it to environmental justice or social justice concerns more broadly.

Students are instructed to choose their own location for the analysis because it can be illuminating about relationships in that community with which the student may or may not have been previously acquainted. Because the first day of instruction already features a few different maps of the Houston area, it is appropriate to expand the case study's single city focus to a case beyond Houston.

Here are a few questions that you might want to consider as you complete your analysis:

- What are the overall trends for your human exposure variable? You can think about trends across space (i.e. clustered in certain sections of the area), or by degree (i.e. is the variable relatively dispersed or concentrated in only one or two parts).
- What are the overall trends for the environmental exposure variable? Like the human exposure variable, think about trends across space, and to what degree those trends are seen.
- Using the environmental exposure variable, where are the most advantaged places? Where are the most disadvantaged places? What are the social characteristics of those places?
- More broadly, do you find evidence for environmental inequality and environmental injustice?
- What natural resources are relevant for the environmental exposure measure you chose? What can that tell us about the relationships you are analyzing?
- Using knowledge from the readings, can you reflect on the social and environmental processes at play in the maps you created?
- Using your own experience or knowledge about the place you chose, can you reflect on the social and environmental processes at play in the maps you created?

The assignment should be graded in the following areas (with the following grading weights): the side-by-map (40% of grade), the analysis of the map (40% of grade), and reflection on map (20% of grade).

Student Handout – Rubric for Final Assignment

An "A" assignment will:

- Design an effective map that communicates clearly the socioenvironmental issue that the student selected
    - The map should have an EJSCREEN variable, a demographics variable, and a legend.
- The analysis will fully describe both the EJSCREEN variable and the demographic variable
- The analysis will identify the geographic locales that are exposed to the worst of their chosen variable of environmental degradation.
    - They will identify the inequalities in human exposure that are seen across geographic locales.
- The paper will analyze the implications of the inequalities they have identified in an exemplary fashion
- The reflection will discuss the meaningful lessons that the student has learned from the unit, EJSCREEN, or about environmental justice. The student will relate their own knowledge on the environment, social justice, and/or measurement of pollution previous to the unit, and effectively reflect on what they have learned since.

A "B" assignment will:

- Design an effective map that somewhat clearly communicates the socioenvironmental issue that the student selected
    - The map should have the needed attributes (see above), but may have forgotten the legend
- The analysis will mostly describe both the EJSCREEN variable and the demographic variable
- The analysis will identify the geographic locales that are exposed to the worst of their chosen variable of environmental degradation.
    - They will identify the inequalities in human exposure that are seen across geographic locales.
- The paper will analyze the implications of the inequalities they have identified in an effective fashion.
- The reflection will discuss the meaningful lessons that the student has learned from the unit, EJSCREEN, or about environmental justice. This reflection will incorporate important themes, but not as deeply or as broadly as those in the "A" category.

A "C" assignment will:

- Design a map that does not clearly communicate the socioenvironmental issue that the student selected
    - The map should have the needed attributes (see above), but may have forgotten the legend
- The analysis will partly describe both the EJSCREEN variable and the demographic variable. The student may have analyzed one effectively but not the other.
- The analysis will identify the geographic locales that are exposed to the worst of their chosen variable of environmental degradation.

- They will identify the inequalities in human exposure that are seen across geographic locales. A "C" paper may not speculate on both the geographic locales or the human exposure, instead analyzing only one or the other.
- The paper will analyze the implications of the inequalities they have identified but with only a limited engagement with the unit's overarching topics
- The reflection will discuss the lessons that the student has learned from the unit, EJSCREEN, or about environmental justice. This reflection will incorporate some themes, but not all and not as deeply or as broadly as those in the "A" or "B" categories.

A "D" assignment will:

- Design a map that does not clearly communicate the socioenvironmental issue that the student selected.
  - The map does not have all of the attributes. The student may have only done a map with only one variable symbolized.
- The analysis will poorly describe both the EJSCREEN variable and the demographic variable. The student may have analyzed one variable but not the other.
- The analysis will identify the geographic locales that are exposed to the worst of their chosen variable of environmental degradation.
  - They will identify the inequalities in human exposure that are seen across geographic locales. A "D" paper may not speculate on both the geographic locales or the human exposure, instead analyzing only one or the other, and do so poorly.
- The paper will not analyze the implications of the topic.
- The reflection does not discuss the lessons that the student has learned from the unit, EJSCREEN, or about environmental justice. The reflection is off topic.

A "F" assignment will:

- The student does not produce a side-by-side map.
- The student either has no analysis of their map or is largely off topic in their discussion of the description of the maps and implications of the map.
- The reflection portion is either not present or does not discuss the lessons that the student has learned from the unit, EJSCREEN, or about environmental justice. The reflection is off topic.