**GIS Lab: Mapping TRI sites and Community Demographic Data**

Due: October 15 via Sakai’s Dropbox

We’ve talked in class about the role of evidence in environmental justice work, and we’ve also touched upon the power of spatial analysis to illuminate siting disparities based on race, class and other demographic characteristics. For this assignment, you will work in groups of two or three to use GIS to create a map that depicts the location of TRI sites in Crawford County and an EJ-relevant demographic variable of your choosing. You’ll have time in class on September 24th to get started on this project, but you’ll likely need to spend some time in the GIS lab outside of class. **Each group should turn their map in to me electronically via email by the end of the day on October 3rd**. I’ll compile the maps and send them back to you, at which point you can answer the follow-up questions.

**Data sources:**

2009 TRI Data: <http://toxmap.nlm.nih.gov/toxmap/facilities/download.do>

TIGER/Line shapefiles: <http://www.census.gov/geo/www/tiger/tgrshp2010/tgrshp2010.html>http://www.census.gov/geo/www/tiger/tiger2k/othertgr.html

2000 Census Data: <http://factfinder2.census.gov/main.html>

Spatial extent: Crawford County, PA

Spatial scale/Unit of Analysis: Census Block group

At the beginning of class, we’ll choose a set of demographic variables available through the Census that are applicable to environmental justice concerns. You will be creating a choropleth map that depicts that Census variable and the TRI sites in Crawford County. If all goes well, you’ll end up with a higher quality version of this map (from Szaz, 2000):

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**GIS Instructions**

1. Acquire variable from U.S. Census Bureau and TIGER/Line shapefiles (see PPT instructions).
2. Identify relevant data tables in American Fact Finder 2 (for Census 2000 data). Make sure you select the census data by block groups for Crawford County, PA. Manipulate your data tables as necessary, according to your chosen variables. You may need to manipulate the data in Excel to make this work well.
3. Join the census table(s) to the appropriate TIGER/Line shapefiles. Export the data to make the join “permanent”. Remove the original block groups layer from the map.
4. Acquire toxic release inventory (TRI) shapefiles and overlay onto census map (see link above).
	1. Search for Meadville, PA 16335
	2. Zoom the map out slightly to catch all of Crawford County
	3. Click Download link at the top
	4. Select Download ESRI Shapefile of TRI facilities
	5. Save in ES352 folder, unzip, and add to ArcMap
5. Create one choropleth maps depicting TRI sites and your chosen demographic variable. Employ the appropriate classification method, number of classes, and color scheme. Make sure you follow all the standard principles of mapmaking.

You SHOULD work in groups to create the maps, but please work independently on the project write-up. After you receive the compiled class maps from me, you should work on the write-up:

1. In a paragraph or so, please describe the role of GIS in establishing evidence for environmental injustice. Include appropriate citations from the course readings.
2. After visually inspecting these maps, can you determine whether any one of the demographic variables is a determining factor in TRI siting? If yes, which one is a more important factor?
3. If you wanted to more definitively answer #3, how would you go about doing that? What kind of analysis would you conduct?
4. Based on this mini-GIS analysis, what do you see as the limitations of using GIS to document/create EJ evidence? Can we overcome those limitations through more sophisticated spatial analysis, or do we need to turn to something else?
5. In class, we’ve discussed the importance of historical processes in creating the inequitable patterns we see in many EJ studies. Select one interesting pattern or observation from your maps and conduct some Internet research to see if you can explain that pattern based on Crawford County’s history.