

*Lab 06: Exploratory spatial data analysis and visualization***Read the instructions COMPLETELY before starting the lab**

This lab is intended to further develop your exploratory spatial data analysis skills, including visualization. This lab builds upon your in-class activities from this week, which themselves are inspired by the ENVS 363/563 course at the University of Liverpool (see [https://darribas.org/gds\\_course/content/bC/lab\\_C.html](https://darribas.org/gds_course/content/bC/lab_C.html)). This lab ALSO gives you significant latitude to use datasets, methods, and visualizations of your own choosing and interests. There are limited tasks for this lab.

**Tasks:**

1. Select one of the datasets from the libpysal library (see <https://pysal.org/libpysal/notebooks/examples.html> for details). The dataset should include a polygon feature class, as you will make a choropleth map in a later task
2. If it is not projected, assign it a proper projection. Show this projection in the notebook.
3. Perform ESDA on the dataset, including at a minimum:
  - Basic summary statistics on at least one relevant attribute
  - Plot of numeric data (e.g., histogram, scatter plot, NOT A MAP)
  - A plot of the geometry, styled in some way that is *appropriate* (e.g., alpha, colour)
4. Make a choropleth map of a *sensible* variable in your dataset. Choose an appropriate data classification scheme
5. Plot a kernel density estimation plot with the breaks included (see the Jupyter notebook that I provided on Canvas for examples)
6. Find ANOTHER dataset from the web *that overlaps spatially with your dataset*. For example, a streets file for the city of Chicago
7. Make another map, this time with multiple layers. The base layer is the choropleth map from above. The top layer is a visualization of the dataset you found. Give it a title.

**Questions:**

1. Describe your dataset and the ESDA you performed. What did you learn?
2. What classification scheme did you use? How many classes? Why?
3. In your final multi-layer map, why did you choose your particular symbolization method?

**What to turn in**

- Your Jupyter notebook (or Python script). I must be able to run your code - do not turn in a screenshot or code pasted into a Microsoft Word document
- The answers to the above questions