

Assignment 5

Objective: Introduce students to spatial analysis using Python, focusing on spatial statistics, understanding spatial dependence, creating spatial weight matrices, and running a basic spatial regression.

Dataset: For this assignment, students are expected to find, download and merge required data, which are expected to be about TR cities socio-economic data, including spatial data (latitude, longitude, shapefiles) and socio-economic indicators.

Tasks:

1. Load and Visualize the Dataset:
 - Use geopandas to import the dataset.
 - Find a shapefile, merge,
 - Plot a map showing the spatial distribution of counties.
2. Spatial Weight Matrix:
 - Create a spatial weights matrix for the counties.
3. Spatial Regression:
 - Run a spatial regression model with a socio-economic variable as the dependent variable.
 - Interpret the coefficients briefly in comments.
4. Visualization:
 - Create a choropleth map showing the distribution of the selected socio-economic indicator.

Submission: A Jupyter Notebook containing the code for each task.

Data access: Students can access the TR cities socio-economic data from a few public data repositories.

TÜİK (Turkish Statistical Institute): Provides demographic, socio-economic, and geographical data for provinces and districts. Visit the official website: tuik.gov.tr.

Devlet Haritaları (Government Maps): Look for shapefiles of Turkish provinces and districts, which can be used for spatial mapping.

OpenStreetMap or GADM (Global Administrative Areas): These platforms provide free administrative boundary files (shapefiles) for Turkey.

When using these datasets, it's crucial for you to understand how to navigate these platforms, select relevant data, and download it in a format that can be used for their analysis. Most of these platforms provide data in CSV format, which can be easily imported into Python using libraries like Pandas, and shapefile format for spatial data, which can be used with geopandas.