*Lab 03: Spatial autocorrelation, globally and locally*

*NAME:* ***KIDUS BERHE***

Questions:

1. Describe in your own words how Moran’s I is calculated
2. Describe in your own words: what is a spatially-lagged variable?
3. How does your analysis in this lab (as simple as it is) differ by how you have formalized W (e.g., space, neighbors) in two different methods? How might it affect analysis?
4. What does it mean if an observation falls in the “H-L” quadrant? Why might it be useful to detect such occurrences?

**ANSWERS:**

1. Moran’s I is calculated by applying a weighted matrix to a data frame that will calculate the similarities between the differences of the produced variable (chosen to analyze) represented as wij and the mean of the data.
2. A spatially-lagged variable is a weighted value that is normally the average observed value from the data when the matrix is applied to specific information. It demonstrates that relation to the neighbours based off the weight matrix applied.
3. From my lab, the results were not too different from each other. The p-values were similar however the moran’s I plot was slightly different. This being said, the histograms produced showed large variations, these mainly being the majority of the neighbours being past the half way point.
   1. Had some issue with IDW weights matrix so I think the values are biased/erroneous
4. An H-L quadrant would signify areas that have a high number of neighbours however are surrounded by areas that have low values for neighbours. This is useful as it shows the user the distribution of the chosen variable’s clusters, while also showing the areas that are not getting the equivalent amount of the chosen value. In the case of my lab, it would show the areas that have a high number of 18-61 year olds while also showing the areas around them with low clusters of these.