## GEOG:5540 Geographic Visualization Spring 2022 Assignment 7 Discussion

## Haofeng Ma

Link for the web application: https://geog3540.github.io/haofma/hdi.html

## Spatial pattern

The spatial pattern is summarized based on the maps classified using the quantile method since variables are not on the same scale. There are primarily two noticeable spatial patterns: First, expected years of schooling and mean years of schooling are spatially related. Indeed, the spatial distributions of the two variables almost overlap. This is not a surprising finding, though. It is reasonable to think that the population aged 25+ had long years of schooling after if they were expected to have long schooling when being aged 6. Second, GNI per capita is spatially correlated with life expectancy, while its spatial correlations with two educational variables are not obvious. The southeastern coastal provinces have the highest GNI per capita, and their life expectancies are also the highest in the country. Substantively, Southeastern China is the most developed area in the country, therefore it is normal to see people on average are richer and live longer in this area.

## **Classification critiques**

The quantile method divides units into classes of each number. The advantage is that the maps made by the method are comparable. The main problem is that the classification is influenced by extreme values and will then visually mislead the readers about the differences. This problem can be seen especially in the 5-class map of expected years of schooling. The range of the first group that represents the lowest values is really huge, while the ranges of the next groups are much smaller. Based on the map, users might interpret that the middle and eastern provinces differ a lot in this variable, although in fact the differences within the middle and eastern provinces and the western provinces.

The equal interval method divides units into classes of each range. The advantage is the interpretation is easy. The main problem of the method is that it fails to account for how the values of a variable are distributed along the number line. As a result, many units might fall into a class, while only very a few units are in another class, leaving many units on the map the same color. This problem can be seen in the 5-class map for GNI per capita: as the variable is right-skewed most units are on a shallow green, which even hides the boundaries.

The Jenks natural break method can group similar values while maximizing the differences. Using this method, choropleth maps show the real groups in data. The 5-class maps based on the method are much better in showing regional differences, instead of differences across units, of the indicators than maps based on equal interval and quantile. The main problem is that the maps cannot be used to find spatial associations since they are not comparable.