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Homework assignment

1. What is the difference between statistics and spatial statistics?

"normal" statistics aims to summarize (descriptive), identify, and quantify if there are pattern or relationships in a given set of data; and provide insight into the validity (significance) of pattern or relationships

Spatial statistics aims to do much the same, with the addition of spatial information to the data. In practice it yields additional insights into spatial trends and patterns within a specific geographic context.

2. Why and with which objectives are methods of spatial statistics used in Geographic studies?

Descriptive spatial statistics are used to assess the validity of the used dataset, to present a summary of the obtained data, and to improve the general interpretability of the data.

Inferential spatial statistics are used to analysis the data in a way that allows for generalization, predictions, and categorizations to be made and ideally to be extrapolated to a larger population.

3. Give 5 examples for exploratory descriptive statistical methods (based on Chapter 2, see reading list)?

1 Histograms and frequency distributions: a graphical representation of the distributions of a variable. Important to assess normality or determine what distribution needs to be used in inferential methods

2 Boxplot: a graphical representation of data that is grouped

3 Normal QQ pot: a graphical representation of the obtained data vs a theoretically normal distribution that forms a straight line. Important for assessing normality and gaining insight where data is skewed.

4: scatter plot/correlation: a quick was to graphically represent the relationship between two variables, assess the degree of this relationship, and identify any potential outliers.

5: Pairwise correlation: the correlation coefficients of all variables arranged in a matrix formation. Easy to identify relationships/collinearity of all variables.

4. What are choropleth maps and why are they used?

Choropleth maps are thematical maps, where geographic regions are rendered with respect to the values of the associated variable. They are used to for the graphical representation of a variable across the all geographic regions.