STA 3180 Statistical Modelling: Spatial Statistics

STA 3180 Statistical Modelling - Lecture Notes on Spatial Statistics

Spatial statistics is a branch of statistics that deals with data that has a spatial or geographic component. It is used to analyze and model the spatial relationships between objects in a given area. Spatial statistics can be used to study patterns, trends, and correlations in data that are geographically distributed.

Key Concepts

* Spatial Autocorrelation: The degree to which the values of a variable at one location are similar to the values of the same variable at nearby locations.

* Spatial Lag: The average value of a variable at a location and its neighboring locations.

* Spatial Weights Matrix: A matrix that describes the relationship between two locations.

* Moran's I: A statistic used to measure spatial autocorrelation.

Definitions

* Spatial Autocorrelation: A measure of the degree to which the values of a variable at one location are similar to the values of the same variable at nearby locations.

* Spatial Lag: The average value of a variable at a location and its neighboring locations.

* Spatial Weights Matrix: A matrix that describes the relationship between two locations. It is used to calculate spatial lags and Moran's I.

* Moran's I: A statistic used to measure spatial autocorrelation. It is calculated using a spatial weights matrix.

Practice Multiple Choice Questions

1. What is spatial autocorrelation?

    A. The degree to which the values of a variable at one location are similar to the values of the same variable at nearby locations.

    B. The average value of a variable at a location and its neighboring locations.

    C. A matrix that describes the relationship between two locations.

    D. A statistic used to measure spatial autocorrelation.

Answer: A. The degree to which the values of a variable at one location are similar to the values of the same variable at nearby locations.

Explanation: Spatial autocorrelation is a measure of the degree to which the values of a variable at one location are similar to the values of the same variable at nearby locations.