UNIVERSITY OF NORTH TEXAS
Department of Geography

GEOG 5800
Research Design and Geographic Applications
Dr. Murray Rice

Major Statistical Methods

Consider the following statistical methods for the analysis of your data as you plan your research. This is not an exhaustive list of possible methods, but the methods listed below are some of the most important methods to consider. Ask yourself if you have already selected the most appropriate means of analyzing your data (perhaps you have), or if there might be another analytical method that is better-suited to the problem or data you are studying.

Spatial Autocorrelation

Statistical test for the existence of some form of spatial pattern

Correlation and Regression

Correlation: how strong is the relationship between two variables?
Regression: prediction of one variable, based on another

Multiple Correlation and Regression

Examine relationships among three or more variables

Spatial Pattern: Smoothing and Trend Surface Analysis

Uncover overall spatial trends; conceptually related to regression

Factor Analysis

Simplify highly complex, multivariate situations by identifying major influences.

Cluster Analysis

A grouping or classification system; identify similar and dissimilar objects, places, etc.

Multidimensional Scaling

Create a "map" from a set of measures of similarity/dissimilarity

Matrix Summary of Basic Comparative Methods

Number of Samples	**Type of Test**		
	Non-Parametric		**Parametric**
K	X^2 K-Sample Test	Kruskal-Wallis H-test	Analysis of Variance
2	X^2 Two Sample Test	Mann-Whitney U-test	t-test of difference between means
1	X^2 One Sample Test	Kolmogorov- Smirnov D-Test	t-test
Relationships and Trends	N/A	Spearman Rank Correlation	Product-Moment Correlation Simple Linear Regression
Measurement Scale	**Nominal**	**Ordinal**	**Interval/Ratio**

Adapted from Shaw and Wheeler, *Statistical Techniques in Geographical Analysis*.