

Introduction to Statistics in Geography

GEOG 271
4 Credits
Summer Session 1, 2006
M-Th 10:10 - 12pm
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Text: *Statistics Explained*, by Perry R. Hinton. Routledge; 2nd edition (2004), ISBN: 0-415-33285-0.

More information and materials are available at blackboard and my personal website (see above)

Have you ever seen a presidential poll that has 47% for one candidate and 45% for another candidate with a + or – 3% margin of error and wondered what this means and how did they arrive at these conclusions and if these result actually means anything at all? Have you ever heard anyone say that there is a “significant difference” between two groups and wondered what do they mean by this and how did they determine that there is any difference at all? Likewise, have you ever heard the someone characterize two groups as having a “strong relationship” and wondered how they were able to determine this? More than likely, the groups or individuals making claims like the ones above were using statistical analysis. Statistical analysis is a highly practical means of communicating information about differences in groups or individuals. It also serves as a vehicle to examine the presence and strength of relationships between the different characteristics of those groups or individuals. Because of these proclivities, statistical tools have become both a powerful and “common” language that is used to communicate results in a way that is easy to understand for everyone.

This course serves as an introduction into using statistical analysis in Geography with main goal of providing you with a strong foundation in the practical application of statistical analysis with a focus on geographic data. To these ends we will employ both Microsoft Excel and SPSS as tools to help calculate the intricate, but straight-forward, formulas needed to conduct statistical analysis. We will rely heavily on the textbook which does a good job of concisely explaining the technical and practical side of statistical analysis in an easy to understand manner. Beyond the technical aspects of calculating statistical results, we will also examine the contextual side of statistical analysis, trying to avoid many of the pitfalls and misuses of these techniques that seem to be so prevalent in many attempted usages of these helpful tools.

Grading: You will complete 10 small assignments that cover the material we go over in class during the summer session. Projects will be turned-in in digital format. Each project will consist of a single Excel file that contains the completed material. Final and Midterm exams will also be given, in which you will be asked to use the skills learned in the course to complete a project during the scheduled final exam period. It is a good practice to save all of your graded and returned assignments until you receive your grade for the course. There should be ample time to do much of the assignments in class, but some commitment of outside time will be required to finish the work.

The weighting for the projects and exam will be as follows:

Individual projects: $10 \times 5\% = 50\%$

Mid term and Final Exams: $2 \times 25\% = 50\%$

Grading Schedule:

Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
%	100-	93-	89-	86-	83-	79-	77-	73-	69-	66-	63-	59 or
Range	94	90	87	84	80	77	74	70	67	64	60	less

Since this course relies heavily on in-class demonstrations and project work, attendance is critical (although not a direct basis for grading). If any topic is unclear after lecture, please do not hesitate to see me as soon as possible. If you are unable to attend any class (e.g., because of an OU-sanctioned activity), please notify me ASAP. You will be held responsible for all material covered in class whether you are present or not, and deductions will be imposed for projects turned in late ($\frac{1}{3}$ -letter grade per day). If you do miss class, you should make every effort to contact me before the next class period, so that you can catch up on the missed material. No “extra” credit is available, and **all projects and the final exam must be completed to pass the course**. I will post all grades and additional handouts on blackboard so make sure to check the site regularly.

Proposed Schedule:

Day	Date	Topic	Readings
1-Mon	June 19	Course Introduction and computer use	CH1
2-Tue	June 20	Measures of central tendency / Standard Scores	CH 2, 3
3-Wed	June 21	Hypothesis Testing / Sampling*	CH 4, 5
4-Thur	June 22	Hypothesis Testing from one	CH 6
6-Mon	June 26	Hypothesis Testing from two samples	CH 7-8
7-Tue	June 27	*Hypothesis Testing Cont / Error, Power, and Significance	CH 9
8-Wed	June 28	Probability	HO 1
9-Thur	June 29	Mid-term Exam	
11-Mon	July 3	Intro to the Analysis of Variance	CH 10
12-Tue	July 4	<i>NO CLASS – INDEPENDENCE DAY</i>	
13-Wed	July 5	One factor ANOVA	CH 11
14-Thur	July 6	Multiple Comparisons	CH 12
16-Mon	July 10	Using SPSS	HO 2
17-Tue	July 11	Basic Spatial Analysis-GIS	HO 3
18-Wed	July 12	Introduction to Non-parametric statistics	CH 16-17
19-Thur	July 13	Chi Square	CH 19
17-Mon	July 17	Correlation and Regression	CH 20-21; 23
18-Tue	July 18	Correlation and Regression	CH 20-21; 23
19-Wed	July 19	Review	
20-Thur	July 20	Final Exam	

HO = Handout; CH = Chapter from the text

* Perhaps the most important lectures/topics to understanding all statistics

Project Due Dates:

All assignments are due the following Monday after they are assigned except for the correlation and regression assignment which will be due on Wednesday July 19th.

Project	Description	Due Date
1	Measures of central tendency – Standard Scores	June 26 th
2	Hypothesis testing – Sampling	June 26 th
3	One Samples Tests	June 26 th
4	Two Samples Tests	July 3 rd
5	One Factor ANOVA	July 10 th
6	Multiple Comparisons	July 10 th
7	Basic Spatial Analysis	July 17 th
8	Nonparametric Tests	July 17 th
9	Chi Square (X^2)	July 17 th
10	Correlation and Regression	July 19 th

All assignments are due at the end of class on the specified due date above and should be uploaded to the blackboard site as excel files.

Academic Honesty: Academic dishonesty will not be tolerated. Although it is expected that students will help each other while working on the projects, what you turn in should reflect your knowledge, competence, and acquired skills. *Anyone who turns in someone else's work as his/her own will receive a failing grade for the course, and may be reported to the Director of University Judiciaries for further action.*

Disabilities: If you have a disability that may hinder your performance in the class please inform me at the beginning of the quarter.

Computer and Lab Use: You will need to use the computers outside of the regularly scheduled class time to work on projects and explore the functionality of the software. Dedicated lab times have been established for our class use; I will be present at this time to help answer your questions. You may use the computers at other times during the week except during designated lecture/lab times for other Geography courses (a schedule is posted on the lab door). The lab is not intended for general use, and entrance to the lab is restricted. To enter, punch in the last 6 digits of your PID and then press the * key (the keypad “beeps” with every button pushed). The green light will flash and the door will unlock. Do not leave the door propped open. Please see handout # 1 for additional information about logging on and computer lab use.

IMPORTANT: The computer lab is your resource for the quarter so please abide by its rules and limit your printing to class projects. Below are some basic tips to keeping your data safe and backed up.

Each student should strongly consider purchasing a 512K or larger USB Flash drive.

1. Copy all your data and do all processing on your local machine. It is much faster and more reliable for data analysis.

2. When working on a local machine put your data in C:\Workspace
3. It might also be smart to back your data up on a flash drive as well
4. In doing the above, **MAKE SURE TO COPY ALL YOUR DATA BACK TO YOUR L: DRIVE** after working in the lab. The machines may be gutted at anytime so any work that is not backed up to the L drive will be lost.