Statistical Research Methods in Geography, Geography 4185
Spring 2018: M-W 2 – 3:20 pm
ENV 360

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COURSE OBJECTIVES:
This course is designed to immerse students in fundamental descriptive and inferential statistics in a problem-oriented research context, primarily within geography. In order to succeed in the course, students must comprehend and be able to communicate the complete analytical process from:

Framing a research question
Generating statistical hypotheses related to that research question
Choosing the appropriate statistical test to test those hypotheses
Interpreting results of the statistical test
Drawing conclusions from the analysis

Students who fully understand the subject matter should be able to accomplish each of these tasks by the end of the class and should be able to read and comprehend analytical publications including scholarly journal articles and research reports that incorporate the use of basic quantitative analyses.

REQUIRED TEXT:
Cronk, B. C. 2014. *How to Use SPSS, 8th Edition*. Pyrczak Publishing, Glendale, CA.

GRADING BREAKDOWN

4 Exams @ 50 pts each	= 200 pts
4 Mini-reports @ 50 pts each	= 200 pts
4 Practicums @ 50 pts each	= 200 pts
2 Notebook sections @ 50 pts each (bonus)	= 100 pts
1 Final Notebook @ 100 pts	= 100 pts
1 cumulative final exam @ 300 pts	= 300 pts
Total	= 1000 pts

Reports
The mini-reports are projects done in *groups of three*. Groups will be shifted for each project, and reports are authored by the group members together, who share the grade. In the past, some members have not done their part; members may convene and vote to remove an individual who is not contributing from the team up to three days prior to the due date. Removal of a team member requires a meeting of the group with Dr. Wolverton. If the individual in question does not attend the meeting, she/he can still be removed from the team and will be notified by Dr. Wolverton via email.

Exams
Exams are individual, and each exam is cumulative, building on the material that precedes the current section of the class. The instructor keeps the Exams after grades have been disseminated.

Final Graded Material
Final Exam = Cumulative Short Answer Exam on choosing appropriate tests; includes knowing all null and alternative hypotheses and all test statistics for all tests.

Final Notebook = a compilation of all lecture notes, all projects, all quiz material, and all documents from the class in an organized, neat, three ring binder.

In-class Policies
The practicums are open notebook and open book.
You may use a calculator for all tests.
PowerPoints will rarely be used in this class. The entire class is project-based; all lessons will be taught around working with datasets for mini-projects. Lectures will combine brief introductions of relevant material using the greaseboard, but will be brief and spotty. Much of the class will be based on in-class group work and discussion.

Block 1 – Statistical Description
Goals
1) Learn parametric and non-parametric forms of description
2) Apply descriptive statistics and five types of graphs to summarize data
3) Learn to write about descriptive statistics and graphs

Time to learn = 3 weeks
Products = 1 mini report, Exam 1, Practicum 1
February 5 Exam 1
February 12 Practicum 1
February 19 Report 1 due

Block 2 – Probability
Goals
1) Learn to use curves to think about probability of events
2) Learn to create confidence intervals using probability curves
3) Learn to use probability curves to test null hypotheses

Time to learn = 2 weeks
Products = Exam 2, Notebook Section 1
February 28 Exam 2
February 28 Notebook Section 1 due

Block 3 – Inferential Tests of Difference
Goals
1) Learn parametric and non-parametric tests of difference
2) Learn the null and alternative hypotheses for each test
3) Learn test statistics for each test
4) Reinforce using probability to test null hypotheses
5) Learn to write about results of tests of difference

Time to learn = 3 weeks
Products = 1 mini report, Exam 3, Practicum 2, Notebook Section 2
March 26 Exam 3
March 28 Practicum 2
March 28 Notebook Section 2 due
April 2 Report 2 due

Block 4 – Categorical Tests
Goals
1) Learn about Chi-square
2) Learn X^2 Goodness of Fit tests
3) Learn X^2 Test of Independence
4) Learn how to write about results of Chi square tests

Time to learn = 3 weeks
Products = Practicum 3, mini report 3
April 11 Practicum 3
April 16 Report 3 due

Block 5 – Inference using Correlation and Regression

Goals

1) Learn about independent and dependent variables
2) Learn parametric and non-parametric correlation
3) Learn how regression differs from correlation
4) Learn how to write about results of correlation and regression

Time to learn = 3 weeks

Products = 1 mini report, Exam 4, Practicum 4 (cumulative), Notebook Section 3

April 30 Practicum 4

May 2 Exam 4

May 2 Report 4 due

Cumulative Final Exam Monday May 7, 1:30 pm

DROPPING LOWEST SCORES

Students may earn the right to drop her/his lowest practicum score, her/his lowest quiz score, his/her lowest notebook section score, and/or her/his lowest report score in by doing the following.

1) The UNT Learning Center offers Learning 101 workshops multiple times per week: see http://learningcenter.unt.edu/learning101
2) Students may take up to four different workshops: learning styles, note-taking, test taking, and time management.
3) Note-taking must be one of the workshops taken (do it first).
4) Note-taking counts to drop the lowest notebook score, test-taking counts to drop the lowest quiz score, learning styles count to drop the lowest practicum, and time management counts for dropping the lowest report score.
5) To qualify, all workshops must be taken by March 26th.
6) You must get the TLC Form signed by the workshop instructor.
7) The final exam and the final notebook scores may not be dropped.

University of North Texas
Department of Geography

Matrix Summary of 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*.

POLICIES

EXTRA CREDIT
The Department of Geography does not allow extra credit assignments (work not specified on a course syllabus).

ACCOMODATIONS
The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with an accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request accommodations at any time, however, ODA notices of accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940.565.4323.

ACADEMIC DISHONESTY
Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam. Additionally, the incident will be reported to the Office of Student Rights and Responsibilities for further penalty. According to the UNT catalog, the term "cheating" includes, but is not limited to: (a) use of any unauthorized assistance in taking quizzes, tests, or examinations; (b) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments; (c) the acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the university; (d) dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s); or (e) any other act designed to give a student an unfair advantage. Altering a returned test and claiming a grader or scanning machine made an error is also considered cheating. The term "plagiarism" includes, but is not limited to: (a) the knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; and (b) the knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

ACCEPTABLE STUDENT BEHAVIOR
Remember that you have agreed to follow the UNT Code of Student Conduct. "Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc." Again, the Code of Student Conduct can be found at http://conduct.unt.edu/student_conduct.

CLASSROOM COURTESY
Please follow these guidelines to avoid disrupting the class.
(1) Turn off cell phones before arriving and do not text in class.
(2) Do not arrive late or leave early (except for a bathroom break or emergency).
(3) Do not sleep during class.
(4) Do not work on other assignments during class.
(5) Do not talk or whisper to neighbors (except for formal class interaction).

ATTENDANCE/TARDINESS POLICY
After missing (*excused* or *unexcused*) 3 class periods a student will receive a WF (F if after the WF deadline) for the course. Students who are late should still come to class; just enter quietly with respect for those around you.

MISSED-CLASS POLICY
Neither the professor nor the TA re-teaches the course outside of lecture or lab; we are happy to answer questions, clarify content, and provide guidance for those who attend class and come in with informed questions after they have attempted the

work themselves. Students who miss class must secure notes from another student in the class; notes will not be provided by the instructor.

SUCCEED AT UNT

The following six practices enhance student success.

- Show Up
- Find Support
- Take Control
- Be Prepared
- Get Involved
- Be Persistent

Please see www.succeed.unt.edu for more information