Introduction to Quantitative Analysis for Geographers
GEO 3162C, Sections 2B31, 129H, 1291, 04G7
Location and Time: Online
Term: Fall 2020

Instructor
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+1 214 883 2784 (WhatsApp, text, or call); There is also a GroupMe for this course where students can discuss course topics or ask Nick questions regarding assignments and course information. See Canvas Module 1 for link.
Office Hours: Appointments by request and as needed

Course Description
The course covers topics including data measurement, descriptive statistics, probability distributions, samples and populations, sampling, hypothesis testing, and inference. It is designed to ensure students gain a fundamental understanding of basic statistical procedures and the scientific methods. It lays the foundations for intermediate and advanced topics such as multivariate methods, spatial statistics, and econometrics. Students will learn how to apply statistical concepts and techniques, as well as gain a critical perspective on the data used in statistical analyses.

Course Objectives
1) Provide students with a working knowledge of various statistical techniques used in geographic research and practice
2) Understand the reason why we use statistics and how they are important to use informed decisions
3) Become familiar with the different types of data you will encounter, and why it is important to understand which statistical tests to use
4) Build awareness on the limitations of statistical analysis
5) Be able to critically assess data that are used in statistical analyses and understand the concept of "garbage-in-garbage-out" as it relates to statistical analyses.
6) Use statistical software to apply statistical concepts and methods learned in class
7) Gain hands on experience with real-world data – both identifying and downloading the data online, and applying statistical methods and interpretations to the data

Required Textbooks (Mandatory to Purchase)
Reid, H.M. (2014). Introduction to Statistics: Fundamental Concepts and Procedures of Data Analysis. Sage. ISBN – 9781452271965

Required Book (PDFs are provided by instructor – don't purchase)
Biruk, C. (2018). Cooking Data: Culture and Politics in an African Research World. Duke University Press Books. ISBN - 9780822370895

Course Schedule

Week 1: COURSE INTRODUCTION AND SYLLABUS

Week 2: WHAT IS STATISTICS, WHY DO WE USE IT/STATISTICAL THINKING

Week 3: PROCESS OF STATISTICS, SAMPLING DESIGN, AND PROBABILITY INTRODUCTION

Week 4: DATA TYPES, DATA VISUALIZATION, AND MEASURES OF CENTRAL TENDENCY

Week 5: NORMAL DISTRIBUTION AND Z SCORES

Week 6: INTRODUCTION TO INFERENTIAL STATISTICS AND CHI-SQUARE

Week 7: CHI-SQUARE (CONTINUED)

Week 8: MIDTERM EXAM

Week 9: THE ONE-SAMPLE Z-TEST AND ONE-SAMPLE T-TEST

Week 10: THE INDEPENDENT SAMPLES T TEST AND THE DEPENDENT SAMPLES T TEST

Week 11: INTRODUCTION TO THE F-DISTRIBUTION AND ANOVA (ONE-WAY BETWEEN SUBJECTS)

Week 12: THE ONE-WAY WITHIN SUBJECTS ANOVA

Week 13: THE TWO-WAY BETWEEN SUBJECTS ANOVA

Week 14: THE PHI CORRELATION, THE PEARSON R CORRELATION, THE POINT BISERIAL CORRELATION, AND INTRODUCTION TO REGRESSION

Week 15: SIMPLE LINEAR REGRESSION AND MULTIPLE LINEAR REGRESSION

Week 16: FINAL PROJECT

Tentative Due Dates (consult Canvas and Email for most up-to-date due date information)

Due Date	Assignment
Fri Sept 4, 2020	Syllabus Quiz
Mon Sept 14, 2020	Student Interests and Questionnaire
Mon Sept 14, 2020	Homework #1
Mon Sept 21, 2020	Homework #2
Mon Sept 21, 2020	Quiz 1
Sat Oct 3, 2020	Topic Proposal and Data Source
Mon Oct 5, 2020	Quiz 2
Mon Oct 5, 2020	Homework #3
Mon Oct 19, 2020	Quiz 3
Mon Nov 2, 2020	Homework #4
Mon Nov 9, 2020	Midterm Exam (last day to complete exam on ProctorU)
Fri Nov 13, 2020	Descriptive Statistics Analysis
Mon Nov 16, 2020	Cooking Data Reflection Paper
Mon Nov 16, 2020	Quiz 4
Mon Nov 23, 2020	Homework 5
Mon Nov 30, 2020	Quiz 5
Mon Dec 7, 2020	Homework 6
Mon Dec 9, 2020	Quiz 6
Tue Dec 15, 2020	Final Project Report

Evaluation of Grades

Assignment	Total Points	Percent of Grade
Homework	200	20%
Quizzes	100	10%
Midterm	300	30%
Reflection Paper	100	10%
Final Project	300	30%
TOTAL	**1000**	**100%**

Grading Policy

Score	Percent	Grade	Grade Points
930-1000	93.0-100.0	A	4.00
900-929	90.0-92.9	A-	3.67
870-899	87.0-89.9	B+	3.33
830-869	83.0-86.9	B	3.00
800-829	80.0-82.9	B-	2.67

770-799	77.0-79.9	C+	2.33
730-769	73.0-76.9	C	2.00
700-729	70.0-72.9	C-	1.67
670-699	67.0-69.9	D+	1.33
630-669	63.0-66.9	D	1.00
600-629	60.0-62.9	D-	0.67
0-599	0.0-59.9	F	0.00

More information on grades and grading policies is here:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Homework (20%)

Homework assignments will take the form of analyzing and interpreting datasets with statistical software, as well as reflecting on important conceptual and practical issues within statistics through reflection papers. Each homework assignment is worth 40 points (4% of the total grade). There are 6 total homework assignments. The lowest homework grade will be dropped from the student's overall grade. Thus, only 5 of the homework assignments will count to the final grade.

Quizzes (10%)

Student's understanding of course material will be assessed periodically through multiple-choice quizzes. Each quiz will be worth assignment is worth 20 points (2% of the total grade). There are 6 total quizzes. The lowest quiz grade will be dropped from the student's final grade. Thus, only 5 of the quizzes will count to the final grade.

Midterm Exam (30%)

There will be one exam in this class. The Midterm exam will cover the first half of the course and will be worth 30% of your final grade. The exam will be administered via ProctorU, and students are encouraged to sign up for an available time-slot as early as they can. There is a fee for sign-up as the date of the exam approaches. Please consult ProctorU for the most up to date information regarding this service.

Reading of *Cooking Data: Culture and Politics in an African Research World*

Students will be expected to read two chapters from the book "Cooking Data: Culture and Politics in an African Research World" by Crystal Biruk throughout the semester. This book has been assigned in order to help students better understand how data used in statistical analyses are created, and to better identify certain limitations of data through the process in which large surveys are created. This is a complex topic; however, this book provides a digestible account of the research process, and how human decisions can influence final statistical analyses. In my experience, many decision makers view quantitative data as "clean", unbiased, and free from

human influence. However, it is important to understand that this is not true when interpreting statistical models or performing analyses yourself. This discussion is an extension of the "garbage-in-garbage-out" concept we will discuss during the semester. The social theory in this ethnography is not what's important. Rather, it's important to understand the critical dialogue revolving around quantitative research and statistical analysis to be a more effective statistician and quantitative analyst.

Reflection Paper (10%)
The reflection paper will provide students an opportunity to summarize and discuss the content of Cooking Data. More information of the reflection paper, including paper requirements, will be provided on Canvas during the semester.

Final Project (30%)
The final project will test your ability to analyze real-world data with the statistical concepts we learn in this course, and how to interpret the results and write a professional report on your findings. The final project will be completed in a structured manner, with various due dates for project segments set throughout the semester. Students may work in groups of up to three people.

Topic selection and Student Interests (2%), Data Set Selection and Proposal (3%), Introduction and Descriptive Statistics Analysis (5%), Final Project Report (20%)

The final report for this project will be based on your ability to use both descriptive and inferential statistics. Students will first locate (and have approved by the instructor) a real-world dataset from the internet, with the help of the instructor based on the student answering a short student interest questionnaire. They will first investigate the sample data through descriptive statistics, and then use inferential statistics to make statements about the population from the dataset. More information regarding the final project will come during the semester.

Class Attendance
Students are required to watch all lectures and read all course materials. As this is an online course, attendance won't be a factor in grading, and students are expected to be self-motivated and completed all required assignments.

Late Work and Make-Up Policy
10% of the assignment grade will be deducted from an assignment for every day the assignment is late, unless prior arrangements are made with the instructor due to an unforeseen circumstance or life event that will not allow the student to turn in the assignment

on time. Prior arrangements must be made sufficiently in advance through email to the instructor (not the night before an assignment is due), and the instructor must approve the extension. The 10% deduction will be applied at midnight for each 24-hour increment after the time the assignment is due. The final project report must be turned in on time. There will be no late final reports accepted, due to the timeline for grading and final grade submission to the University.

Here is an example of the late policy applied to a 50-point homework assignment (5% of the final grade). If the assignment is due at 11:59 am on Monday, 10% of the homework assignment grade will be automatically deducted by Canvas as soon as the time is midnight on Tuesday. Therefore, the maximum credit the student can receive for the assignment is 45 points, representing a loss of half a percent of the student's final grade. If the student fails to submit the assignment within the subsequent 24-hour period, the maximum amount the student can receive for the assignment will be 40 points. This process continues until reaching 0, after which the student cannot earn credit for the assignment.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Class Demeanor

Students are expected to watch all lectures and read all required material. Students behave in a manner that is respectful to the instructor and to fellow students. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have

neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://www.dso.ufl.edu/sccr/process/student-conducthonor-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Counseling and Wellness Center

Contact information for the Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc/Default.aspx, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.