POLS 3032
Statistical Methods for Political Science

CRN 31958
Brewster C-206
Tuesday and Thursday 2:00 – 3:15 PM

Office Hours
Tuesday and Thursday 12:30 – 1:30 & 3:30 – 5:00
and by appointment

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Required Readings

Kellstedt, Paul M. and Guy D. Whitten. 2018. *The Fundamentals of Political Science Research, 3rd edition*. Cambridge, UK: Cambridge University Press.

Kellstedt, Paul M. and Guy D. Whitten. 2021. *An R Companion For The Fundamentals of Political Science Research*. Cambridge, UK: Cambridge University Press.

Lewis-Beck, Michael S. 1995. *Data Analysis: An Introduction*. Thousand Oakes, CA: Sage Publications Inc.

Style Manual for Political Science. 2006. Washington D.C.: American Political Science Association. Available online at APSA(accessed December 8, 2021).

Course Description:

Students will learn to evaluate hypotheses through the use of logic, reasoning, and statistics. The course will cover the importance of scientific inquiry and the steps necessary to engage in quantitative analysis. Students will get hands-on experience of political analysis through in-class demonstrations, weekly assignments, and a final project.

The software for this class will be R and RStudio. These are available at no cost. R and RStudio are open-source programs that run on Apple, Windows, Linux, and Solaris computers. It also runs in the Cloud. These are programs that you will be able to use after you complete your undergraduate degree. R is one of the most powerful and flexible tools for data analysis. Moreover, when you want to create a picture with your data, R will produce some of the best graphics available. Other than being able to add, subtract, multiply, and divide using a basic calculator, no other math knowledge is a prerequisite for this class.

Course Goals:
The goal of this course is to familiarize students with the basic statistical techniques for testing hypotheses empirically. Students will become more employable as a byproduct of taking this course. Understanding data collection and being able to conduct basic data analysis using a statistical package, such as R, are skills that will translate readily to the work environment outside the classroom. Jobs in politics, marketing, public relations, business, and the like often require analytical skills such as the ones taught in this course.

Learning Objectives

- identify the basic concepts of statistics
- interpret statistical analyses
- organize, manage, and present data
- identify which statistical methods are appropriate
- use a wide variety of statistical methods
- use statistical software for data analysis
- carry out projects that make use of statistical analyses
- communicate effectively the results of statistical analysis
- write up projects from statement of problem through conclusion

Grading:

Homework	10%
Quizzes	15%
Exam I	15% February 1, 2022
Exam II	20% February 24, 2022
Hypothesis and variables	March 1, 2022
Exam III	20% May 4, 2022 (2:00 PM – 4:30 PM)
Final Project	20% April 21, 2021

Grading System

93 – 100 A	73-77 C
90 – 92 A-	70-72 C-
88 – 89 B+	68-69 D+
83 – 87 B	63-67 D
80 – 82 B-	60-62 D-
78 – 79 C+	Less than 60 F

Homework
There will be frequent assignments. These will involve problems and writing assignments. SUBMIT THESE VIA CANVAS. Some of these assignments will require that you perform calculations by hand. Other assignments will require that you use the R package to perform the calculations. You should be prepared to discuss the homework assignments during class.

Quizzes
There will be many quizzes over the course of the term. Be prepared to have your reading assessed

with these quizzes. The highest 80% of them will count toward your grade.

Examinations
There will be three examinations over the course of the term. These are designed to test your comprehension of material covered in readings, lectures, and homework assignments.

Final Data Project
Each student is expected to produce a final data project. Students will be required to generate and test a hypothesis. Data are to be analyzed and a final data report is to be produced. The final report will employ both descriptive and advanced statistical methods learned in class. Note that you need to use one of the datasets provided for this project.

I expect that you will be able to provide me with a listing of your hypotheses and the variables available to test them very early in the semester. Nonetheless, you are required to have these lists to me no later than 1 March. You will turn in a document that specifically details your hypothesis statements. Attached to each hypothesis statement will be a listing of the variables used, the coding, and frequencies. You are to also provide me the full name of the dataset and the source of the data. If you do any recodes (I'll be amazed if you do not have to), you must provide the crosstabulation of the original with the new coding. This means that if you do any recodes, you must create a new variable so that I can look at the original and the new version. As an aside, regardless of whether it is required by an instructor, it is wise to create new variables rather than simply do a recode. Also, for each variable you will identify the level of measurement. This must be typed (or, of course, word processed). You are required to meet with me at least once before you turn in the hypothesis statements.

You are to include a listing of hypotheses and the logic of each of these hypotheses, a literature review of your topic, a description of the data, how each variable is operationalized, a justification for the statistical techniques, a discussion of the results of your statistical analysis, a conclusion, and references. Any tables or figures will be appended to the end of the paper. In the text of the paper, simply mark the place of the table.

Every effort will be made to get graded material back to you by the next class session. All students are expected to attend class. I expect all students have completed the assigned reading by class. As this is a hands-on class, much of class time will be devoted to working on the material, as opposed to simply lecturing about it.

Course Outline:

January 11 ..... Introduction and Review K&W Chapter 1
.....Lewis-Beck Chapter 1
January 13 .....R and Rstudio
..... Workbook Chapters 1 and 2
January 20 .....Data Gathering K&W Chapter 6
.....Lewis-Beck Chapter 2
January 25 .....Levels of Measurement K&W Chapter 6
February 1 .....**EXAM**
February 3.....Frequencies Posted items
February 8 .....Means, Medians, and Modes Lewis-Beck Chapter 3
February 10 ..... Measures of Dispersion Lewis-Beck Chapter 3
February 15 ..... Z-scores Posted items
February 17 .....Crosstabulations - Ordinal Lewis-Beck Chapter 4
February 22 .....Crosstabulations - Nominal Lewis-Beck Chapter 4
February 24 .....**EXAM**
March 1 .....Rank Order - Spearman's Rho Posted items
March 15 ..... Confidence K&W Chapter 7
.....Lewis-Beck Chapter 5
March 17 ..... Difference of Means K&W Chapter 8
March 22 .....Bivariate Regression K&W Chapter 9
..... Workbook Chapter 9
.....Lewis-Beck Chapter 6
March 29 ..... Multivariate Regression K&W Chapter 10
..... Workbook Chapter 10
.....Lewis-Beck Chapter 7
April 5 ..... Multivariate Regression Complicated K&W Chapter 11
..... Workbook Chapter 11
.....Lewis-Beck Chapter 7
April 12 ..... Multivariate Regression Diagnostics K&W Chapter 11
..... Workbook Chapter 11
.....Lewis-Beck Chapter 7
April 14 .....Limited Dependent Variables K&W Chapter 12
..... Workbook Chapter 12
April 19 ..... Catchup
April 21 ..... Review

Academic Integrity:
The standard plagiarism and academic integrity rules apply, i.e. all the materials you submit in paper or online must be the results of your own individual work. Any signs of plagiarism will be taken very seriously. The university code of academic integrity will be strictly enforced in this course. According to the East Carolina University Honor Code, violations of academic integrity include the following:

- Cheating. Unauthorized aid or assistance or the giving or receiving of unfair advantage on any form of academic work.

- Plagiarism. Copying the language, structure, ideas, and/or thoughts of another and adopting same as one's own original work. DO NOT submit someone else's homework.
- Falsification. Statement of any untruth, either spoken or written, regarding any circumstances relative to academic work.
- Attempts. Attempting any act that if completed would constitute an academic integrity violation as defined herein.

For more information about university policies concerning academic integrity, please visit the web at Academic Integrity. If you violate the Honor Code you will be reported to the Academic Integrity Board for disciplinary action. The penalties for violating the university code of academic integrity range from having assigned an F for that assignment to more stringent measures such as failure, assigned grade of XF on the transcript, in the course and/or expulsion from the university.

Students with Disabilities
East Carolina University seeks to comply fully with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a disability must be registered with the Department for Disability Support Services located in Slay 138. Phone number: 252–737–1016.

Class Decorum
I expect all students to exhibit a high level of courtesy toward each other. Please arrive on time and stay for the entire class. While I endorse the reading of newspapers and the listening to music, please refrain from doing either in class. Please be respectful while other students are asking or answering a question. Treat those individuals as you would wish to be treated. The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Campus Emergencies and Severe Weather
In case of campus wide emergencies, you may obtain information about changes in the University class schedule by calling 252–328–0062.

ECU ALERT
In addition, in case of adverse weather or other campus emergencies you may consult ECU ALERT for information.

Covid-19 Appendix
As stated in ECU's Community Expectations, by working together, we can keep Pirate Nation safe for a successful Fall 2021 semester. Therefore, we will be observing the following class policies related to your health and safety:

- All students are required to comply with the University Regulation on Face Coverings. No student will be allowed into the classroom without a face covering or mask worn properly over both the mouth and nose. You must wear a face covering properly the entire time you are in class.

- If you do not have access to a face covering, you may obtain a mask from Dowdy Student Store, Pirate Pantry, or another provider of masks.

- Maintain appropriate social distancing in hallways or common spaces prior to and after class, and stay spaced as much as possible in the classroom.
- Follow all posted signage related to entry, exit and pedestrian flow within classroom buildings.
- Conduct a daily health screening using the CDC's COVID-19 symptoms list. Do NOT attend class if you answer yes to any item on the list or if you are experiencing symptoms of any illness.

In the case of localized outbreaks affecting our classroom identified by health officials, we will transition to online delivery for up to two weeks for your safety. Health officials will closely monitor conditions and may need to contact you by phone to help them monitor public health conditions. Please ensure your phone number is up to date in PiratePort. After this period of up to two weeks, we will resume on campus in-class activities. The temporary move to online course delivery will not affect the due dates for exams, quizzes, assignments, or any other form of assessment. If the course schedule requires adjustment, I will always notify you. If the course moves online, you may be required to attend synchronous class meetings at the established class times via Canvas. Class meetings will be recorded for students who have poor internet connections. I will post all course materials and class meeting recordings, if available, on Canvas. Students unable to attend should access those notes and materials and contact me if they have any questions. The Canvas course will be used for all communications, assignments, and assessments. It is recommended you save on your computer and/or print a copy of the syllabus, assignment schedule, and other important course material. In the event of a Canvas outage, I will use email to communicate with you.

This class will be recorded and broadcast on the internet and/or distributed on other electronic media now or hereafter known. These recordings may contain your image and your voice. You must notify me as soon as possible if you DO NOT want your image and your voice contained on the recording. Is you do not so timely notify me, then you understand and authorize that as part of this class we may record your image and record your voice and broadcast it on the intern and/or distribute it on other electronic media now or hereafter known.