Public Policy 527 B **Quantitative Methods I** **Winter 2019** Tuesday/Thursday 2:30-3:50pm Condon Hall 135	**Instructor:** **Crystal Hall** Condon Hall 522 206.221.5237 hallcc@uw.edu Office hours: Tuesday 12-2pm and by appointment	**Teaching Assistant:** **Bridget Boyle** Condon Hall 313 bboyle01@uw.edu Office hours: Wed 12-2pm Thu 9:30-11:30

This course is the first in a two-quarter sequence aimed at helping you to become a critical consumer and competent producer of research and statistical analysis.

By the end of this course, you will:

- Gain an understanding of research and statistical analysis as ways to explore, describe, and explain management or policy issues;

- Use descriptive statistics and statistical inference to understand policy or management problems;

- Understand the meaning of analyses using confidence intervals, test statistics, and p-values;

- Recognize the implications of the qualities and quantities of data;

- Demonstrate your ability to manipulate data to produce informative analysis;

- Communicate about statistical results for a non-technical audience.

Our goal is for you to understand enough theory and have enough experience to intelligently use data to arrive at reasonable conclusions in an applied context. Furthermore, you will be able to digest and critically assess empirical evidence and understand what analysis you need in order to make decisions. Throughout the course, we will examine policy questions and related data in order to learn how to apply analytic techniques.

Text. The required text for this course is a free online resource: https://www.openintro.org/stat/textbook.php?stat_book=os

Software. We will be using STATA to complete some class assignments and the policy report. You can access STATA in the Evans computer lab or remotely: http://evans.uw.edu/technology/evans-school-terminal-server

I expect all students to adhere to the **Evans School Community Conversation Norms** in interactions with myself, the TAs and other students:

At the Evans School, we value the richness of our differences and how they can greatly enhance our conversations and learning. As a professional school, we also have a responsibility to communicate with each other—inside and outside of the classroom—in a manner consistent with conduct in today's increasingly diverse places of work. We hold ourselves individually and collectively responsible for our communication by:

- **Listening** carefully and respectfully

- **Sharing** and teaching each other generously

- **Clarifying** the intent and impact of our comments

- **Giving and receiving** feedback in a "relationship-building" manner

- **Working** together to expand our knowledge by using high standards for evidence and analysis

Plagiarism and cheating

In this course, cheating is defined as any attempt to gain or give assistance in a formal exam, without instructor acknowledgement. Plagiarism is defined as the use or reproduction of the work of another author (individual, or organization) without proper acknowledgement or citation. If any type of academic misconduct is suspected, the appropriate investigation and possible sanctions will be carried out in consultation with student services.

Grading breakdown and assignments

Homework: Graded as Check Plus (4.0), Check (3.4) or Check Minus (2.7). Hard copy due at the beginning of the class on the due date. A check plus assignment will be fully completed, and display exceptional mastery of the material. A check assignment will be mostly complete, and display a good understanding of the material. A check minus assignment is one that is mostly incomplete, or lacking in adequate mastery of the material. Your assignment may also be downgraded if it is messy, disorganized, or illegible. Handwritten assignments are fine, just ensure that they are neat enough to be easily read.

Exams: Both the midterm and final exam will be in class and open notes. You may not use a textbook, laptop, or other electronic device. Calculators will be provided at the exam.

If you have a conflict with the final exam (Tuesday March 19th, 4:30-6:20pm), **let me know by Jan 31st. I will not reschedule final exams after that date. Alternate times will be given only in the case of unavoidable conflicts.**

Grading breakdown	Homework assignments (credit for complete and on time)	15%
	Midterm Exam	20%
	Policy Report	40%
	Final Exam	25%

Date	Topic	OpenIntro
1/8	Introduction	Ch.1
1/10	Introduction, con't	
1/15	Probabilities and proportions	Sect. 2.1 and 2.2
1/17	P&P con't	
1/22	Discrete and Continuous Random Variables	Sect. 2.4
1/24	Discrete and Continuous Random Variables, con't	
1/29	Introduction to Sampling distributions	Sect. 2.5, 3.1
1/31	Review so far	
2/5	IN CLASS MIDTERM EXAM	
2/7	Sampling Distributions and Confidence Intervals	Sect. 4.1, 4.2, 4.4, 5.1, 6.1
2/12	Sampling Distributions and Confidence Intervals, con't	
2/14	Hypothesis Testing	Sect. 4.3, 4.5, 5.2, 6.5
2/19	Hypothesis Testing, con't	
2/21	Making Comparisons	Sect. 5.3, 6.2
2/26	Making Comparisons, con't	
2/28	Research, Hypotheses, and Statistics	Sect. 5.4
3/5	Research, Hypotheses, and Statistics, con't	
3/7	Review	
3/12	Final policy report issues/discussion	
3/14	Policy reports/ Final wrap-up	

Policy Report

The purpose of this assignment is to apply the skills you gain from class to a policy issue. For this project, you will use data from the American Community Survey. You will choose a topic, identify a client (real or hypothetical), manipulate the data, and write a memo using the results. You should choose a topic early in the quarter and explore it for the SPSS portions of the homework.

For the policy report, **you must work with a partner**. The pairs submitted in the proposal must be the final pairs for the project.

In the 1 page **proposal for your report** (**due Feb. 17th**), describe the research question that you will test with the data. Explain which variables and comparisons you will use to examine your ideas. Write this proposal as a memo to the client you have chosen for your project.

The **final report (due March 15th)** should contain up to 6 single-spaced pages of text (plus equivalent of 2 additional pages of graphics and tables, for a total of 8 pages) and demonstrate your understanding of the issues and concepts covered in the class. The report must contain empirical analysis in the form of tables, graphs, and hypothesis tests. The objective is to "translate" statistical information for a policy-maker. Write your report for the client (a non-statistician), but include enough information for a statistician to evaluate what you've done (often in footnotes and appendices). The memo will be graded on content, analytic reasoning, analytic techniques, clarity of writing, and graphical presentation. You're encouraged to make full use of statistical software, word processing, and graphics packages to put your results in an attractive, readable form. We will discuss your results in class when the report is due.

Required elements of Policy Report:
- Executive summary (1/2 page or less):
  - *Identify the client, research question, and a brief summary of the results.*
- Construct a research question:
  - W*hat question will you answer for your client?*
- Describe your data source:
  - *What is the source of your evidence? What are the limitations of the data for your question?*
- Present your evidence:
  - *Provide appropriate statistics, figures, and charts.*
- Tell client how good this information is (give caveats about data or methods) and how to get better information:
  - *Do these data answer the questions?*
- Give your conclusions and policy implications:
  - *What should your client do with this information? Can you identify follow-up research questions?*