Political Science 678 – Quantitative Methods in Public Administration

Class meets Thursday evenings, 6:00 P.M. to 8:40 P.M., 419 Pray-Harrold

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Office Hours: M 10-12; T 11-12; Th 11-12 and 3-5; and by appointment

E-mail is an effective way to reach me; I check my messages frequently. In addition to my office hours, I will be available before and after class every week. If these times don’t work, talk to me and we can make an appointment. Never hesitate to talk to me if you have a problem, comment, or concern.

Overview of the Class

This class presents a rigorous introductory treatment of the exciting world of statistical methods in public administration. While perhaps not the most exciting thing in your life, or even something you’ve been looking forward to taking, this is an important subject for you to know. For most of you, the need to conduct, evaluate or use studies in the field of public administration will at some point require familiarity with this subject. You NEVER want to be at the mercy of somebody else just because they understand statistical analysis better than you do. The ability to perform your own statistical analyses, and to understand the analyses others perform, will stand you in good stead during your career. Trust me.

Throughout the course, our emphasis will be on learning by doing. The bulk of our time will be spent applying what we are learning in the classroom, or in the computer lab. We will have multiple datasets that we will explore, and that will give you hands-on experience learning the material I am sharing with you in class. I cannot emphasize enough the importance of “practicing” the skills you gain here, asking any questions you may have, and taking an active approach to learning. The material is probably different from what you’ve done in the past and will challenge you at first. However, by keeping up with the readings, coming to class, and working diligently, you can master the material and do well in this course. I haven’t lost a student yet, and I don’t intend to start now!

Readings and Other Course Materials

I have ordered one required book for this course, which is available in all of the local bookstores, and online. Most of you, fortunately, probably already own it. The book is:


This is a basic textbook that presents a straightforward treatment of the topics we will be covering this term. We will largely be picking up in the book from where PLSC 578 left off. In some cases, I will spend time backtracking, just to make sure you have a solid grasp of foundational course material. In other cases, we will backtrack to give you an opportunity not just to learn about a technique, but to actually perform analyses using that technique. There is a difference, of course, between reading about a technique and using it yourself, so we will sometimes backfill your knowledge to fill in that gap.
In addition to the textbook, there are a few other readings assigned during the term. My goal with these readings is get you thinking about how the authors designed their projects, and hence how they are forced to use different kinds of statistics. These articles provide some very nice examples for us to use and discuss. They will be made available to you on the course management system (Canvas).

**Class Requirements and Grading**

My most central expectation is that you will do the assigned readings (and review previously covered material) **before** class. I prefer to run the course as a discussion, with me as the discussion leader; this will work only if you come to class prepared. You cannot learn from each other, and I cannot learn from you, if you are not prepared for class. Don’t be passive; class will be much more interesting, and you will learn the material better, if you are active participants. It goes without saying that attending class will prove very useful to you; a **great deal** of the material you will be responsible for can be learned best in class.

Graded work will fit into three categories. First, there will be four graded “short assignments” throughout the course. These exercises will typically require you to do some statistical analyses and write up the results; they are meant to ensure that you are keeping up with the material and understanding what you need to understand. Each of these assignments will be fairly brief, but is critical for your learning the material required in this course. The assignments will also explore the issue of “audience” in writing, concentrating not just on writing up statistical results accurately, but also on thinking about who you are writing for, and how you would explain yourself differently to people with differing levels of statistical expertise.

A second graded assignment is the final paper. This paper will use one of the datasets I provide to you and will be based upon a real-world problem a public administrator might be asked to address. You will be asked to write a memo that addresses the question (something like a consultant might write), backed up with a Technical Appendix that provides detail on the statistical work you did. It will be due to me by Thursday, December 15, at 9 P.M. I will have much more to say about this assignment as the term unfolds.

As part of this assignment, you will team up with a group of students to present your findings to the class (who will play the part of City Council members and department heads). The written work on this assignment will be yours alone, but the presentation will be done in a group, with a shared grade. I know group work can be stressful, but as this mirrors the kind of work you will do in the field as a working professional, I use this assignment despite the stress it might cause. I will, of course, be as helpful as I can to you and your group as you pull this work together.

A final component of your grade is based on class participation. Learning works best in an open and comfortable class environment. Each of you has something to contribute to the group, whether that something is a brilliant answer, an incisive analysis, a critical question, or even voicing that seemingly simple question that will help others further their understanding of the material. This is not my class – it is yours, and I **strongly** encourage each of you to be active, engaged participants.

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<thead>
<tr>
<th>Due Date</th>
<th>Assignment</th>
<th>Percent of Grade</th>
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<tbody>
<tr>
<td>September 15</td>
<td>Short Assignment #1</td>
<td>10</td>
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<tr>
<td>October 6</td>
<td>Short Assignment #2</td>
<td>10</td>
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<tr>
<td>October 27</td>
<td>Short Assignment #3</td>
<td>15</td>
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<tr>
<td>November 10</td>
<td>Short Assignment #4</td>
<td>15</td>
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<tr>
<td>December 1 or 8</td>
<td>Presentation of Final Paper</td>
<td>15</td>
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Your grade as determined by the above percentages is tentative. I reserve the right to raise grades on the basis of dramatic improvement during the term, exemplary class participation, or other such things. When events warrant, I am more than happy to do this.

A Few Other Notes

Let me make a couple of other comments here. First of all, academic integrity. Here at the university, there are few issues that are more important. Academic dishonesty, including all forms of cheating and/or plagiarism, will not be tolerated in this class. Anyone caught engaging in academic dishonesty will receive a grade of zero for the assignment in question and may, at my discretion, receive a failing grade for the entire course. In addition, you may be referred to the Office of Student Conduct and Community Standards for discipline that could result in suspension or permanent dismissal from the university. If you are not sure whether something constitutes academic dishonesty, talk to me.

For students with disabilities, if you wish to be accommodated for your disability, EMU policy requires that you first register with the Disability Resource Center in room 240K of the Student Center. You may contact the DRC by phone at (734) 487-2470; their website is http://www.emich.edu/drc/. Students with disabilities are encouraged to register with the DRC soon as you will only be accommodated from the date you register with them forward. No retroactive accommodations are possible. I am more than willing to offer you all accommodations to which you are entitled, but emphasize this is not something I can do on my own. If you have any questions, talk to me or the Disability Resource Center.

I am willing to make all reasonable accommodations for absences caused by religious observation. I do ask that you keep me posted when situations like this occur. Like most people, I am familiar with religious observances in my own faith, but know less about other religions. Perhaps your informing me of your absences, should they be necessary, will give me an opportunity to learn something new!

In terms of my contacting you: for purposes of this course, when I need to reach all of the students, I will use e-mail, specifically e-mail sent to your emich.edu address. Please make sure that all messages sent to this account are accessible by you and, if you use a different account, that you are able to forward EMU e-mails to your other account. I will consider you to have been informed about something connected with the course if I e-mail it to you at your emich.edu address.

Schedule of Classes

Below, I have listed the topics to be covered in each class, and the readings that I expect you will do for each class. I anticipate sticking closely to this outline, although we may deviate from it slightly as events warrant. Remember to do all readings before the class in which we will discuss them.

September 8: Course Introduction; Some Important Words and Ideas

Reading: Nishishiba, Jones, and Kraner, chapter 4.
Topics: The basics of empirical research – variables, hypotheses and measurement.
Variance and causation, two of the most important words you need to know.
Experimental and quasi-experimental research design.
Assignments: Today you will receive Short Assignment #1, due next Thursday.
September 15: Research Design and Some Examples of Research
Topics: Continuing our treatment of experimental and quasi-experimental designs.
Assignments: Three different kinds of designs and the statistics they require.

September 22: Statistical Review; The Concept of Statistical Significance
Reading: Nishishiba, Jones, and Kraner, chapters 7 (skim) and 8.
Topics: Nominal, ordinal and interval measures and their statistical implications.
Issues in data collection – samples and populations
Measures of central tendency and spread for a single variable.
Interpretation of the concept of statistical significance.
Assignments: Today you will get an assignment sheet for Short Assignment #2, due October 6.

September 29: Statistical Significance and Chi-Square
Reading: Nishishiba, Jones, and Kraner, chapter 12.
Topics: Statistical significance and statistical inference.
What the chi-square statistic does and does not tell us.
Assignments: You should be working on Short Assignment #2, due on October 6.

October 6: Statistical Techniques for Categorical Variables
Reading: Nishishiba, Jones, and Kraner, chapter 11.
Topics: Proportional reduction in error (PRE).
Varieties of techniques to analyze categorical variables.
When to use each of the different statistical methods you have learned thus far.
Assignments: Short Assignment #2 is due today.

October 13: The T-Test for Differences of Means
Reading: Nishishiba, Jones, and Kraner, chapter 9.
Topics: Statistical techniques for one dichotomous and one continuous variable.
Applications to independent samples and paired samples.
Assignments: Today you will receive Short Assignment #3, due on October 27.
Today you will receive the Final Assignment, due on December 15. The oral presentation piece of the Final Assignment takes place on December 1 or 8.
October 20: Analysis of Variance (ANOVA)
Reading: Nishishiba, Jones, and Kraner, chapter 10.
Topics: Using one categorical, non-dichotomous variable and one continuous variable. Exploring uses of t-tests and ANOVA.
Assignments: *You should be working on Short Assignment #3, due October 27.*

October 27: The Basic Multiple Regression Model
Topics: Assumptions made when using multiple regression. Bivariate regression. Formally introducing the multiple regression model.
Assignments: *Short Assignment #3 is due today.*
   *Today you will receive Short Assignment #4, due on November 10.*

November 3: Continuing Multiple Regression and Putting in into Practice
Topics: Continuing to build an understanding of multiple regression. How regression is done, and results presented, in practice.
Assignments: *You should be working on Short Assignment #4, due November 10.*

November 10: Problems in Multiple Regression
Reading: Nishishiba, Jones, and Kraner, chapter 13. (re-read)
Topics: Causes of violating regression assumptions. An introduction to techniques for correcting violations of assumptions.
Assignments: *Short Assignment #4 is due today.*
   *Time to start really working on the Final Assignment.*

November 17: Work Night for Groups
   We’ll reserve this night for each group to work on their presentations for the first two weeks of December, and for each of you to work on your own individual papers for the Final Assignment.

November 24: No Class Tonight (Thanksgiving Break)

December 1 and December 8: Oral Presentation of Group Work
We’ll schedule each group’s dates for their presentation well in advance of these weeks.

December 15: Final Assignment Due
Class does not meet in regular session, but your final assignment is due by 9 P.M.