Hello, and welcome to Public Affairs 819 Quantitative Methods for Public Policy. This course is designed to equip students with fundamental skills for conducting quantitative analyses of public policy problems, and interpreting the published research of other analysts and scholars. PA 819 is the second and final course in quantitative methods for students in the La Follette School of Public Affairs.

PA 818, or an equivalent introductory statistics course, is a prerequisite. Three types of students should consult the instructor before enrolling in this course: (1) students who have not completed the prerequisite; (2) students who have a strong quantitative background; or (3) students who anticipate taking additional statistics courses. The latter two groups, in particular, should consider enrolling in Political Science 552 or an equivalent course, which will introduce students to regression analysis using a matrix algebra approach.

2. Readings

Two books have been ordered for the course.


The Kennedy book is not required, but strongly recommended. It provides very concise and non-technical explanations of many of the concepts we will encounter during the semester. Additionally, if you have already purchased an earlier edition of Kennedy, for our purposes there is no need to buy this latest edition. (Note, though, that the chapters and sections from Kennedy
listed in the course schedule do follow the 4th edition.) It is critical to own the edition of Gujarati that is listed above.

Additional required application readings will be made available to students either as class handouts or in a set of folders that we will keep on reserve in the La Follette student lounge. One set of these reserve readings will be designated as "La Follette building only," which means they will never leave the building. Another set will be designated "To copy / check out," which you may sign out for short periods of time during the day, or overnight after 5:00pm (to be returned by 9:00am the next morning).

3. Assignments and grading

3.1 Problem sets
Statistics is not a spectator sport. The only way to learn the methods that we will sample in this course is to use them with live data to see how they behave in practice. Thus, six problem sets will be assigned over the course of the semester. Due dates are listed in the course schedule, which is at the end of this syllabus.

Given that these problem sets provide you with first opportunities to explore the methods we will learn in the course, the assignments will be graded on the basis of student effort. Problem sets should be turned in by the due date. Problem sets that are one day late will be assessed a score penalty. No problem sets will be accepted more than one day after the due date. Because the problem sets will be reviewed for completeness and effort, individual problems generally will not be corrected. You should consult with Darrell or Paul for detailed feedback on particular problems.

Finally, even though it is okay to help one another on these assignments, everyone must actually complete and turn in each assignment as an individual. In other words, simply copying computer output or interpretations from a classmate and handing that in or turning in a group assignment with multiple names at the top will not count.

3.2 Examinations
You will complete three in-class examinations for the course. The dates of these tests are listed in the course schedule. The exams will not be cumulative in a formal sense, but because knowledge tends to cumulate in a course such as PA 819, it is conceivable that some key concepts will make repeat appearances on multiple exams.

3.3 Research Paper
This assignment will serve as a capstone for the course, and provide you with an opportunity to explore a policy problem of interest using some of the methods we have learned. Writing an original research paper will also provide you with experience in data management and project documentation, which are both critically important skills in the policy world.
You will be allowed to work in teams of up to 4 students to identify and supplement a preexisting dataset, or build an original one. Working in smaller groups or alone is also acceptable. Each student in the class must complete an original paper, however, and no students within the same team may analyze the same dependent variable(s). More details on these and other requirements for the paper will follow. You are encouraged to consult with Paul and Darrell as you begin to develop your research ideas.

A brief proposal outlining the dataset you plan to compile or use, your team members (if any), and the analysis that you hope to conduct will be due early in the course. The final paper is due during exam week. Both of these dates are included in the course schedule.

One important note about the paper: Other than death and taxes, the only other verifiably true fact of the world is that conducting original research by building a database, cleaning it, and then analyzing it always takes more time than one anticipates. Thus, it is crucial that you consider this assignment an on-going project that you will work on throughout the semester. Leaving it for the last couple of weeks, or even the last month, of the course will inevitably result in you running out of time to complete the paper.

3.4 Grades
We will compute course grades as follows.
20% – Problem sets (6 @ 3% each, and 2% for overall problem set effort during the semester)
20% – Exam #1
20% – Exam #2
20% – Exam #3
20% – Research Paper

4. Computing resources
We will make extensive use of the statistical package Stata to facilitate our work. Stata and its accompanying manuals—which are superbly written—are available in the La Follette student lounge and in the Social Science Microcomputer Lab (SSML).

If you wish to purchase Stata you should do so through the University of Wisconsin's Social Science Computing Cooperative (SSCC). Through an agreement with the Stata Corporation, the SSCC sells the program at a reduced student rate. The details are on the web at this site:

http://www.ssc.wisc.edu/sscc/info/gradplan.htm

Because several different flavors of Stata and its manuals are available, you are encouraged to consult with Paul or Darrell before purchasing the program.

For assistance on problem sets and the course research paper, in addition to Paul and Darrell, you may wish to meet with the SSML's statistical consultant, Doug Hemken, who is available to answer questions about Stata. Doug's office hours are posted in the SSML. You might also consider exploring the Stata web site and other on-line resources for assistance using the
program. Some useful web resources are listed on the course web site. And again, the Stata manuals are a terrific resource.

5. Other important notes

5.1 Class attendance
Even though we will not take attendance at lectures or discussions, it is critical that you attend all course sessions and all of your assigned discussion sections. The material in this course is challenging and becomes increasingly difficult to master for students who repeatedly miss class.

5.2 Class interruptions
This may be stating the obvious, but please make your best effort to arrive to class on time, as folks piling in late can be a big distraction for everyone. And unless you want to see Paul’s head explode (literally!), please disable all cell phones and pagers before entering class each day.

5.3 Participation
Active student participation in both lecture and discussion section is essential to getting the most out of this course. Unfortunately, the Department of Psychology does not offer a course in mind reading, so Paul and Darrell will rely on your questions to help them target trouble spots and provide additional explanations for difficult concepts.

Although the course is organized around lectures, we strongly encourage you to interrupt to ask questions. Periodically, Paul will stop the class to take "2 minute timeouts" and ask students to repeat back key concepts to one another to see if they can verbalize the material he is covering in lecture. Paul will also call on students periodically in class, frequently after one of these timeouts, not to embarrass anyone but to help him gauge how well the material seems to be sinking in with the class.

Discussion sections will be organized around a question and answer format. With rare exceptions, Darrell will not be presenting new material in section, so it will be up to you to come prepared with questions to discuss. That includes clarifications from lectures, homework assignments, and Stata-related issues.

5.4 Student feedback
Please feel free to share any comments or concerns about the course with Paul or Darrell. We will be doing our best to help you learn the course material and are open to suggestions that you may have for helping us to do our jobs well. Comments from past students have been incredibly valuable and have helped to inform the current approach we are taking in PA 819.
6. Tentative course schedule (Dates and topics are subject to change as needed)

Course introduction (Jan. 22)

Week 1. Review of PA 818 (Jan. 27-29)
  - Gujarati. Chapter 3 (pp. 58-76, skim rest as needed); Chapter 7 (pp. 202-223); Chapter 8 (pp. 248-254, 257-260), Appendix A. For all of these readings, focus in particular on key concepts from last semester.
  - Kennedy. Chapter 1, 2, 3, 4
  *Note: Chapters and pages in the Kennedy book are keyed to the 4th edition.*

Week 2. Model specification (Feb. 3-4)
  - Gujarati. Chapter 13
  - Kennedy. Chapter 5, 6
  - PROBLEM SET #1 DUE, Friday, Feb. 7

Week 3. Multicollinearity (Feb. 10-12)
  - Gujarati. Chapter 10
  - Kennedy. Chapter 11
  - RESEARCH PAPER PROPOSAL DUE, Friday, Feb. 14

Week 4. Autocorrelation (Feb. 17-19)
  - Gujarati. Chapter 12
  - Kennedy. Chapter 8, especially section 8.4
  - PROBLEM SET #2 DUE, Friday, Feb. 21

Week 5. MIDTERM EXAM WEEK – Catch up and review (Feb. 24-26)
  - Catch up and review
  - EXAM #1, Wednesday, February 26 in class

Week 6. Heteroskedasticity (Mar. 3-5)
  - Gujarati. Chapter 11
  - Kennedy. Chapter 8, especially section 8.3

Week 7. Working with panel data (Mar. 10-12)
  - Gujarati. Chapter 16
  - Kennedy. Chapter 14, section 14.6
  - PROBLEM SET #3 DUE, Friday, Mar. 14
SPRING BREAK (Week of Mar. 17)

Week 8. Statistics and experimental methods in public policy research (Mar. 24-26)

Week 9. Categorical dependent variables (Mar. 31 - Apr. 2)
- Gujarati. Chapter 4 (pp. 112-113, 114-117); Chapter 15 (pp. 580-615)
- Kennedy. Chapter 15, especially section 15.1 and 15.2
- PROBLEM SET #4 DUE, Friday, Apr. 4

Week 10. MIDTERM EXAM WEEK (Apr. 7-9)
- Catch-up and review
- EXAM #2, Wednesday, April 9 in class

Week 11. Categorical dependent variables, continued (Apr. 14-16)
- PROBLEM SET #5 DUE, Friday, Apr. 18

Week 12. Simultaneity (Apr. 21-23)
- Gujarati. Chapter 18; Chapter 20 (pp. 770-778)
- Kennedy. Chapter 10 (pp. 157-165)

Week 13. Forecasting (Apr. 28-30)
- Kennedy. Chapter 18
- PROBLEM SET #6 DUE, Friday, May 2

Week 14. MIDTERM EXAM WEEK (May 5-7)
- Catch-up and review
- EXAM #3, Wednesday, May 7 in class

Week 15 (UW exam week). FINAL PAPER DUE, May 14 by 5:00pm