



**PUBPOLM 822: Multivariate Data Analysis
for Public Policy and Management
Winter 2010
Syllabus**

Professor:

Robert Greenbaum
310N Page Hall
614-292-9578
greenbaum.3@osu.edu

Meets: W 5:30-8:18 PM

Room: Page Hall 010 (Lab in 030/040)

Credit hours: 4

Office Hours: TuTh 4:30-5:30 and by
appointment

Teaching Assistant:

Reena Uppal
uppal.4@osu.edu

Office Hours: W 3:30 – 5:30 PM and by
appointment

Room: Page Hall 030

Prerequisite:

PUBPOLM 820 or equivalent

Online course material:

Course material will be available on Carmen at <http://www.carmen.osu.edu/>

Course Objectives:

The primary objective of this course is to provide an understanding of regression techniques, both from a “producer’s” and a “consumer’s” perspective. Regression, which is a statistical method used to study the relationships between two or more variables, is the most widely used statistical technique in public policy analysis. It is almost impossible to learn statistical concepts without lots of practice using statistical methods, so the course focuses on applying the theory through multiple hands-on exercises, both inside of class in a lab format and outside of class with homework assignments. These exercises will also give students practice in how to use data from external sources and report statistical results in a clear manner. By the end of the course, students should not only be intelligent consumers who can readily interpret regression analysis performed by others, but they will also be equipped to test research hypotheses involving relationships among multiple variables.

Required Textbook:

- Damodar Gujarati and Dawn Porter (2010)
 - [Essentials of Econometrics, Fourth Edition](#)
 - For links to data sets and other resources, see www.mhhe.com/gujaratiess4e

Optional Supplemental Texts:

- Paul D. Allison (1998)
[Multiple Regression: A Primer](#)
 - For those who want more intuition regarding what regression is all about in “English”
- Peter Kennedy (2008)
[A Guide to Econometrics, 6th edition](#)
 - A great companion to supplement any econometrics textbook

Software

- Course will use Stata, v. 11. Small Stata, v. 11, is available on the computers in the 030 and 040 labs. Small Stata is designed for classes and is limited to 99 variables and 1,200 observations. See Carmen for a getting started guide.
- If you would like to purchase Stata for use on your own computer, pricing information is available at <http://www.stata.com/order/new/edu/gradplans/gp-campus.html>
 - To purchase, call 800-782-8272 or go to the [StataCorp](#) site. Once you have ordered the software, your order should normally be available for pickup at the IT Service Desk in 025 Central Classrooms the next business day (notification is sent via e-mail when the software is available for pickup). The software comes boxed from StataCorp. All materials you have ordered are in the distribution.
 - The [STATA End User License Agreement](#) must be signed by each user obtaining a copy of STATA. To facilitate this process, you can click on the link above and display the license as a .PDF file which you can print, fill out and bring to the IT Service Desk.
- Note: you are free to use different software (or no software) for the course if you'd prefer, but the classroom examples and labs will use Stata. Your exam will be in-class using pen (pencil) and paper rather than a computer.

Course Format:

Class sessions will combine lectures that focus on the relevant material from the textbook readings with student participation. Classes will be structured around addressing research questions. To address the question, the relevant theory will be presented along with examples. We will practice using the concepts through examples using Stata software in labs at the end of class. Students are expected to prepare for class by reading the appropriate textbook and any additional readings *prior* to each class. Students are also expected to answer and ask questions during class and fully participate in labs. Class lecture notes will be available for download on Carmen before each class. If you miss a class, be sure that you get any additional notes from a classmate.

Course Requirements and Evaluation:

The course grade will be based upon performance on homework assignments, an exam, and the research paper. Each is weighted equally.

Homework

The homework grade will be based upon the five highest homework grade scores. While students may collaborate on homework assignments, each student must turn in a separate assignment with his or her own answers. Assignments are due at the beginning of class, and late assignments will not be accepted. If you will miss a class when an assignment is due, please make arrangements beforehand to submit the assignment.

For your homework assignments,

- To receive full credit, show all work.
- Feel free to use Stata as much as you can/want to
- When you use Stata to answer a problem
 - Provide the Stata output as part of what you turn in (be sure to turn on a Stata log file to save your results)
 - This is “showing your work” for Stata problems
 - Organize (properly label) your output
 - It should be obvious which output goes with which questions: It may be best to incorporate the output by cutting & pasting
 - Minimize the amount of output (and number of pages) if at all possible
 - Make sure that you also directly answer the question
 - For example, it is not enough to provide the Stata output that shows that a mean is 1234. You should also tell me that the mean is 1234, as is indicated in the Stata output.

Exam

The Exam will be in class, open book, and open notes. Collaboration on the exam is strictly forbidden (and unnecessary given the open book policy). Students are reminded to obey all Ohio State rules regarding academic misconduct, which can be found at http://studentaffairs.osu.edu/resource_csc.asp.

Research paper

The paper is intended to help integrate the course material and provide students an opportunity to demonstrate that they can set up a testable research hypothesis, test the hypothesis, and correctly interpret the results. Students should also demonstrate an awareness of the limitations of their analysis.

Detailed instructions for the research paper will be distributed separately. The paper will be due during exam week.

Labs

The labs are designed to help you practice the using the concepts from each class. These are ungraded, but I reserve the right to start grading them *without prior notice* if I find students are not participating.

Preliminary Course Outline

Class	Date	Topics	Text		Assignment Due	
			Gujarati	Allison	HW	Lab
1	6-Jan	L1. Course introduction L2. Probability distributions and estimators	G 1	A 1, 4		Lab 1
2	13-Jan	L3. Prob. distributions & hypothesis testing L4. Regression: two-variable model	G Append A-B G 2	A 5		Lab 2
3	20-Jan	L4. Regression: two-variable model L5. Two-variable model hypothesis testing	G 2 G 3	A 6	HW1	Lab 3
4	27-Jan	L6. Multiple Regression estimation and testing	G 4	A 2	HW2	Lab 4
5	3-Feb	L7. Multiple Regression functional forms L8. Dummy Variables	G 5 G 6	A 8		Lab 5
6	10-Feb	L8. Dummy Variables L9. Model selection	G 6 G 7	A 3	HW3	Lab 6
7	17-Feb	L10. Catch up and review			HW4	
Exam						
8	24-Feb	L11. Logit	G 12.6			Lab 7
9	3-Mar	L12. Multicollinearity L13. Heteroscedasticity	G 8 G 9	A 7 A 6	HW5	Lab 8
10	10-Mar	L14. Time Series Data and Autocorrelation L15. Forecasting and/or other topics	G 10 G 12		HW6	Lab 9
	17-Mar	Paper due by 5:30pm				

THIS MATERIAL IS AVAILABLE IN ALTERNATIVE FORMATS UPON REQUEST.
PLEASE CONTACT THE SCHOOL'S OFFICE AT 292-8696 FOR ASSISTANCE.
STUDENTS WITH DISABILITIES ARE RESPONSIBLE FOR MAKING THEIR NEEDS
KNOWN AND FOR SEEKING THE AVAILABLE ASSISTANCE IN A TIMELY MANNER.