Time and Place:
Mon 1:40PM-04:40PM   Husted 004 (we will only meet for 3 hours, we can talk about which 3 hours makes the most sense, in terms of schedules)
Thursday 10:00am-11:30am   Husted 004

Professor:
Shawn D. Bushway Ph.D.
324 Milne Hall
Wk (518) 591-8738
sbushway@albany.edu
The best way to contact me is via email. To ensure that I see your email, write "PAD 705" in the subject line, and your full name.

Teaching Assistant
Cesar Renteria
crenteria@albany.edu
Cesar is a fourth year PhD student in PAD who is developing an expertise in econometrics. He has taken 688, 704, 705, and 725 and has taught statistics before. This is third year as the TA for 705.

Office Hours:
Bushway
I have found that students don't make use of regularly scheduled office hours. However, I am willing to meet with students when asked. If we can find a time that works for all of you, I will get it scheduled.

Renteria
Wednesday 4pm-6pm. 290 Richardson.

Course Goals:
1) Students will have a strong intuitive understanding of multivariate regression, and its various uses, including statistical inference and statistical forecasting/prediction.
2) Students will be able to perform sophisticated empirical analysis and interpret the results.
3) Students will be able to read and critique empirical analyses used in academic publications.

Prerequisites:
I am assuming basic familiarity with statistics and basic regression at the level taught in POS 517. Calculus is not required, but a conceptual understanding of calculus does make comprehension of

the material easier. For PAD doctoral students, this course fulfills a core requirement, which means that you must receive at least a B.

Expectations:
This is a 4 credit class. By university rules, that means that you are expected to spend 12 hours total on this class, 4 in class and 8 outside of class. I will not be surprised if you spend more than that, at least for some weeks. If you get above 15, let me or Cesar know. We might be able to help you study more efficiently.

I know of no one who has survived advance statistics without some help from a study group. Study together, but make sure you are doing your own work. In the end, your ability to understand the material will be evaluated on an individual basis.

The material in these books often includes equations. Many students are afraid of equations. Don't be – equations are awesome. They are very precise and concise ways of communicating complicated concepts. Take your time, and don't be surprised if it takes you an hour to read 10 pages. You are not stupid – you are normal. This is a different kind of reading, and it takes a little getting used to if you have never done it before. Don't be afraid to start and stop, and bounce between books. Also, you are free to use outside resources – the web is full of material related to these topics, and you might be able to find things (including Wikipedia, believe it or not), which help you understand these ideas. Although we will necessarily have a theoretical focus, please always keep the applications in mind.

Book:
Required: Our book uses an interesting approach, and is consistent with the goals of our program. We believe that it should be an excellent entry point into the material and a good reference for you throughout your career as a graduate student.

Real Stats, Using Econometrics for Political Science and Public Policy.
Michael A. Bailey
Oxford University Press. ISBN 978-0-19-998194-6

Optional Texts
A Guide to Econometrics 6E by Peter Kennedy
The edition doesn't actually matter, and people have posted pdf versions on the web. Kennedy is to be used as a resource when you didn't understand. Not all the explanations will makes sense (he occasionally goes at a higher level than we will cover in the class, but the genius of Kennedy is that everything is explained in three different ways, ranging from really basic to more complicated.

Basic Econometrics by Damodar Gujarati is an old undergraduate econometrics text book that many people have found helpful. If you find yourself lost, head for Gujarati, and then work yourself back to where you were lost.
https://docs.google.com/file/d/0B61KSjKBWIfscmdkSVF6VF9ONjA/edit?pref=2&pli=1

A Full Course in Econometrics (on You Tube) by Ben Lambert
https://www.youtube.com/playlist?list=PLwJRxp3blEvZyQBTTOMFRP_TDaSdly3gU

This is a nicely done lecture series on econometrics. Past students in 705 have found this very helpful. I do not lecture in class very much, so people who know they really like lectures might want to try these before class. They are also very good after you have been trying for a while – at that point his lectures can help lightbulbs go off.

A Gentle Introduction to Stata, Fourth or Fifth Edition by Alan Acock
If you are finding the Stata text too challenging, you can use this one as an intro. Not sure too many people will find it necessary. I also strongly encourage you to take Stephen Weinberg's Stata class on Wed. mornings. Course Info: RPAD 688 Statistical Program Workshop Meeting Info: W 10:00_AM-11:30_AM HS 004. (He requires the fifth edition). This is a required course for students in the Policy Concentration, and will have the biggest payoff if you take it early in your career.

Software:
The recommended software package for this course is Stata 15 (although older versions should be acceptable, and 14 will also work). You do not have to buy Stata -STATA is available on computers in the campus libraries and other laboratories throughout campus. These resources should be utilized to complete your assignments.

If you choose to buy Stata, you can purchase it directly at the following URL:
http://www.stata.com/order/new/edu/gradplans/student-pricing/

There are three versions of Stata:
1) Stata/SE or 2) Stata/MP – If you plan to do a lot of statistical analysis for your dissertation, I would suggest buying one of these versions of Stata, but only if you have a substantial amount of RAM You may also wish to buy the Base Reference Material and Stat Transfer.
3) Stata Intercooled (IC) – If you may do some analysis, but not with large datasets (ie. Not over 2047 variables) or your computer does not have much RAM, this version is the better choice. Buy a temporary (6 month) license if you never plan to do statistical analysis for your work or if you think your computer situation might change.

Here are two STATA websites that Cesar has found very helpful.

http://www.ats.ucla.edu/stat/AnnotatedOutput/ (basic commands) (This website might be temporarily out of commission, but we believe that it will be back up soon).

http://www.princeton.edu/~otorres/

STATA Cheat Sheets (Very Helpful – we recommending printing out and keeping with you when you are programming).
http://geocenter.github.io/StataTraining/portfolio/01_resource/

In terms of STATA, let me state at the beginning that Cesar is a **much** better STATA programmer than I am. He should be your go to person for STATA questions.

Classroom Approach

This class uses a technique known as Team-Based Learning. Team-based Learning (www.teambasedlearning.org) is a type of active learning approach to classroom teaching that is part of the "flipped classroom" movement. The standard lecture class has the teacher present material in the class, and students do applications or learning exercises outside of class. In a flipped classroom, students do much of the concept acquisition outside of class through reading or other mixed media presentation, and then participate in applied learning activities in the classroom.

I first learned about Team-based Learning after arriving at UAlbany twelve years ago. The technique has led to improved student outcomes (i.e. student learning) in my classrooms and I am a strong supporter of this approach both at UAlbany and at national conferences. For more information about my journey towards TBL adoption, see http://www.itlal.org/index.php?q=node/287 To see an academic article on Team Based Learning on which I am a co-author, please see the following website: https://jstamatel.wordpress.com/courses/

We only have enough one people for one team – so the "team" part will be muted somewhat in this class. However, you will still do work in a team during class, and I will still use the basic approach.

Grading Requirements and Procedures
RATS, Problem Sets, Papers and Exams:
There will be 7 short, multiple choice Readiness Assessment Tests (RATs) given during the course (I will drop the worst one for each person). The same RATs will be given to individuals, and then the Teams will take the same Test again together. Both grades will count. There will be 6 problem sets. These will be graded (although not at the same level as an exam), and an answer key provided. Students will be expected to study the answer key to complete the learning exercise. There will be a midterm and a final. Both will have an individual and a team component. These are graded separately. All students in the team get the team grade. The ultimate goal is to make sure that you can apply what you know to new situations.

The RATS and problem sets are tools that will help you be successful on the exams and papers. You will also read mainstream public administration papers in this class that use the tools we are learning. For two assignments, you will replicate paper and produce a memo demonstrating the replication.

Grading Criteria:

Grade Weights and Percentages	Grade Weights
Readiness Assessment Tests	10
Problem Sets	10
Mid Term (in class)	20
Replication 1	20
Replication 2	20
Final	20

Determination of Final Grades:

The final grades will be determined as follows:

1) A raw total score will be computed for each student in each major performance area
2) Total scores will be computed by multiplying the raw scores in each area by the grade "weight" (see above).
3) Course grades will be based on each individual's standing in the overall distribution of total individual scores within the class. (Note: When this procedure is followed: a) **the actual impact of any score on an individual students final grade depends on both his or her actual score and also how high or low he or she scores relative to other members of the class and, b) the conventional practice of 90% is an A, 80% is a B, etc. does not apply**). No set distribution is followed – All students can get an A, for example, if the performance is at a high level and there is a tight distribution of grades. PAD students need to earn a B or better in this class in order to continue in the program. (Students are allowed to take the course a second time).

Incomplete Policy

I will follow the university standards on incompletes. Please see here for more details.
https://www.albany.edu/graduatebulletin/requirements_degree.htm#graduate_grades

Students Needing Accommodation.

Reasonable accommodations will be provided for students with documented physical, sensory, systemic, cognitive, learning and psychiatric disabilities. If you believe you have a disability requiring accommodation in this class, please notify the Director of the Disability Resource Center (Campus Center 130, 518-442-5490, DRC@albany.edu). That office will provide the instructor with verification of your disability, and will recommend appropriate accommodations.

Policy on Integrity

The University's standards for integrity are at the website below:
http://www.albany.edu/graduatebulletin/requirements_degree.htm#standards_integrity

Avoid plagiarism by properly acknowledging material and ideas taken from other sources. The University of Albany Library offers a useful tutorial on plagiarism and how to avoid it:
http://library.albany.edu/usered/plagiarism/index.html

I take plagiarism and cheating very seriously and will report any incidents directly to the University. You are allowed to work with colleagues on problem sets and in studying for exams.

You will not be allowed to work with colleagues on the replications – we will make this clear in the directions.

Syllabus Authored by Shawn Bushway on August 26, 2018

Schedule – Please note this schedule is preliminary, and reading assignments may change. Please check on Blackboard. Readings that are not from the required text will be available on Blackboard.

	Date	Topic	Reading Assignment Readings not from the books listed in the syllabus will be available on Blackboard
C1	8/27/18	Introduction	
L1	8/30/18	Workflow/Stata	1) Bailey Ch. 1, 2,16, 2) Matthew Ingram's Slides on Workflow in Stata. 3) Watch Scott Long's Presentation (you can start at minute 27:30, the workflow section). We have the slides in Blackboard too. https://media.dlib.indiana.edu/media_objects/gb19f9513 (Examples are given in R, don't worry about that, it also applies to Stata). In Gandrud, examples are also given in R, don't worry about that, it also applies to Stata 4) Gandrud (2015) Ch 2 5) Gandrud (2015) Ch 4 6) CEPR Coding Style Guide 7) Hill Stata Coding Style Essentials
--	9/3/18	Labor Day No Class	Bailey Ch.3, 4, & Ch 14.1-14.2 Lewis-Beck (1983). Ch. 1 & 2
L2	9/6/18	RAT 1 Multivariate Regression	Bailey Ch. 5 & 6. Lewis-Beck (1983) Ch. 3. Problem Set 1 Due
--	9/10/18	Rosh Hashanah (Jewish New Year) No Class	
--	9/11/18	Last Day to Drop without a W	Problem Set 2 Due Using Blackboard
L3	9/13/18	Multivariate Regression Exercises	Suggested Readings on Programming. 1. IPA - Best Practices Data and Code Management 2. Gentzkow & Shapiro (2014) Coding & Data Social Sciences 3. Milet - Do-Files Dos and Donts
C2	9/17/18	RAT 2 Multivariate Regression Continued	Bailey Ch. 7, 14.3 to end of Chapter 14 Academic Paper (Moynihan & Pandey (2007))
L4	9/20/17	Multivariate Regression Continued	Academic Paper (Meier & O'Toole (2002)) Academic Paper (Walker et al (2010)
C3	9/24/18	Replication	Problem set 3 Due Replication Exercise: Read Herring (2009) prior to class. Cesar will have data available for replication in class, but

			you need to understand the paper well enough to attempt the replication prior to class. P-Hacking, Statistical Significance, good research practice Please read in this order. Cohen (1990) Nuzzo (2014) Franco, Malhotra & Simonovits (2014) O'Boyle, Banks & Gonzalez-Mule (2017) Open Science Collaboration (2015) Ziliak & McCloskey (2004)
L5	9/27/18	Introduction to Matrices	Moore and Siegel (Ch. 12) (There is also a video)
C4	10/1/18	Weighted Least Squares	TBD King (1991)
L6	10/4/18	Bootstrapping	Cameron and Trivedi Ch. 13
--	10/6/18 5pm		Replication 1 due Using Blackboard
C5	10/8/18	RAT 3 Panel Data	Bailey Ch. 8 (Fixed Effect) Cameron & Trivedi Ch. 8 (Optional)
L7	10/11/18	Panel Data Practice	Academic Paper: Paternoster, Bushway, Brame and Apel (2004)
C6	10/15/18	Review/More Panel	Problem Set 4 Due
L8	10/18/18	Midterm	
C7	10/22/18	RAT 4 Time Series	Bailey Ch. 13. Pindyck and Rubinfeld Ch. 8, 15, & 16.
L9	10/25/18	In Class Stata Exercise	Academic Papers Cantor & Land (1985); Chandley et al. (2000)
C8	10/29/18	Discrete Probability Distributions	Moore and Siegel (Ch 9-10); There is also a video TBD Problem Set 5 Due
L10	11/1/18	Discrete Probability Distributions	Continued

C9	11/5/18	RAT 5 Maximum Likelihood Estimation	Myung (2003) Tutorial on MLE Eliason (1993) Ch. 1-3. King (1999) Ch. 1-4. (Read carefully up to p. 51, skim afterwards.) Watch Lambert's lecture series: 1) https://www.youtube.com/watch?v=I_dhPETvll8 2) https://www.youtube.com/watch?v=Z582V53dfr8 3) https://www.youtube.com/watch?v=jpHreXjtw1Q
L11	11/8/18	Working on MLE	Moore and Siegel (Ch.11) (There is also a video)
C10	11/12/18	RAT 6 Logit & Probit	Bailey Ch. 12. Cameron and Trivedi Ch. 14-15. Aldrich and Nelson (1984) Ch. 1-3.
L12	11/15/18	More On Logit & Probit	Academic Papers Lee & Whitord (2008), Lee & Wilkins (2011), Einstein (2016)
C11	11/19/18	More on Logit and Probit	Introduction of Second Replication
--	11/22/18	Thanksgiving, NO LAB	
C12	11/26/18	Count Models, Limited Dependent Variable	King (1999) Ch. 5.7-5.9, & 9. Cameron & Trivedi Ch. 16-17. Problem Set 6 Due
L12	11/29/18	In Class Stata Exercise	Academic Papers Piatak 2014; Neshkova 2014.
C13	12/3/18	RAT 7 Factor Analysis	Acock (2008) Ch. 12. Brown (2006) Ch. 1-3. King (1999) Ch. 10.1-10.3. Rethemeyer handout on Factor Analysis.
L13	12/6/18	Factor Analysis in Stata	Second Replication Due
C14	12/10/18	Experiments	Bailey Ch. 10
--	12/13/18	Final Exam	3:30-5:30 pm Husted 004

Bibliography

Acock, A. C. (2008). A gentle introduction to Stata. Stata press.

Aldrich, J. H., & Nelson, F. D. (1984). Linear probability, logit, and probit models (Vol. 45). Sage.

Bailey, M. (2015). Real stats: Econometrics for political science, public policy, and economics.

Brown Timothy, A. (2006). Confirmatory factor analysis for applied research. New York: Guilford.

Bushway, S. D., Sweeten, G., & Wilson, D. B. (2006). Size matters: Standard errors in the application of null hypothesis significance testing in criminology and criminal justice. Journal of Experimental Criminology, 2(1), 1-22.

Cameron, A. C., & Trivedi, P. K. (2010). Microeconomics using stata, Revised Edition. College Station, TX: Stata Press Publications.

Cohen, Jacob (1990). Things I have learned so far. American Psychologist 45:12:1304-1312.

Eliason, S. R. (1993). Maximum likelihood estimation: Logic and practice (Vol. 96). Sage Publications.

Fanelli, D. (2011). Negative results are disappearing from most disciplines and countries. Scientometrics, 90(3), 891-904.

Franco, A., Malhotra, N., & Simonovits, G. (2014). Publication bias in the social sciences: Unlocking the file drawer. Science, 345(6203), 1502-1505.

Head, Megan; Luke Holman, Rob Lanfear, Andew Kahn, Michael Jennions. (2015). The extent and consequences of P-Hacking in science. PLOS Biology.

Herring, Cedric (2009). Does Diversity Pay?: Race, Gender and the Business Case for Diversity. American Sociological Review 74:2:208-224.

John, L. K., Loewenstein, G., & Prelec, D. (2012). Measuring the prevalence of questionable research practices with incentives for truth telling. Psychological science, 23(5), 524-532.

King, G. (1991). On political methodology. Political Analysis, 2, 1-29.

King, G. (1999). Unifying political methodology: The likelihood theory of statistical inference. University of Michigan Press.

Lewis-Beck, M. (1983) Applied Regression: An Introduction. Sage Publications.

Moore, Will & David Siegel (2013). A Mathematics Course for Political & Social Research. Princeton University Press.

Myung, In Jae (2003). Tutorial on Maximum Likelihood Estimation. Journal of Mathematical Psychology 47:90-100.

O'Boyle Jr, E. H., Banks, G. C., & Gonzalez-Mulé, E. (2017). The chrysalis effect: How ugly initial results metamorphosize into beautiful articles. Journal of Management, 43(2), 376-399.

Pindyck, R., & Rubinfeld, D. (1998). Economic models and economic forecasting.

Simmons, J. P., Nelson, L. D., & Simonsohn, U. (2011). False-positive psychology: Undisclosed flexibility in data collection and analysis allows presenting anything as significant. Psychological science, 22(11), 1359-1366.

Nuzzo, R. (2014). Statistical errors. Nature, 506(7487), 150.

Ziliak, S. T., & McCloskey, D. N. (2004). Size matters: the standard error of regressions in the American Economic Review. The Journal of Socio-Economics, 33(5), 527-546.

Academic Papers

These are the papers we will be reading in class as applications of the methods. I reserve the right to add/subtract papers as the course develops.

Cantor, D., & Land, K. C. (1985). Unemployment and crime rates in the post-World War II United States: A theoretical and empirical analysis. American Sociological Review, 317-332.

Chanley, V. A., Rudolph, T. J., & Rahn, W. M. (2000). The origins and consequences of public trust in government: A time series analysis. Public Opinion Quarterly, 64(3), 239-256.

Chang, A. C., & Li, P. (2015). Is Economics Research Replicable? Sixty Published Papers from Thirteen Journals Say'Usually Not'.

Einstein, K. L., & Glick, D. M. (2016). Does Race Affect Access to Government Services? An Experiment Exploring Street- Level Bureaucrats and Access to Public Housing. American Journal of Political Science.

Lee, S. Y., & Whitford, A. B. (2008). Exit, voice, loyalty, and pay: Evidence from the public workforce. Journal of Public Administration Research and Theory, 18(4), 647-671.

Lee, Y. J., & Wilkins, V. M. (2011). More similarities or more differences? Comparing public and nonprofit managers' job motivations. Public Administration Review, 71(1), 45-56.

Meier, K. J., & O'Toole, L. J. (2002). Public management and organizational performance: The effect of managerial quality. Journal of Policy Analysis and Management, 21(4), 629-643.

Moynihan, D. P., & Pandey, S. K. (2007). The role of organizations in fostering public service motivation. Public Administration Review, 67(1), 40-53.

Neshkova, M. I. (2014). Does agency autonomy foster public participation?. Public Administration Review, 74(1), 64-74.

Nicholson-Crotty, S., & O'Toole, L. J. (2004). Public management and organizational performance: The case of law enforcement agencies. Journal of Public Administration Research and Theory, 14(1), 1-18.

Paternoster, Raymond; Shawn Bushway, Robert Brame and Robert Apel* (2003). "The Effect of Teenage Employment on Delinquency and Problem Behaviors," Social Forces 82:297-335.

Piatak, J. S. (2014). Altruism by Job Sector: Can Public Sector Employees Lead the Way in Rebuilding Social Capital?. Journal of Public Administration Research and Theory, muu013.

Walker, R. M., Andrews, R., Boyne, G. A., Meier, K. J., & O'Toole, L. J. (2010). Wakeup call: Strategic management, network alarms, and performance. Public Administration Review, 70(5), 731-741.

STATA COMMANDMENTS
(BY AUDREY HICKERT, FOR THE LAB)

I
THOU SHALT ALWAYS USE A .DO FILE TO RUN AND SAVE COMMANDS

II
THOU SHALT USE THE MOST EFFICIENT COMMAND POSSIBLE (E.G., EGEN, LOOP, MACROS)

III
THOU SHALT JUDICIOUSLY ANNOTATE .DO FILES FOR LATER REFERENCE AND OTHERS' UNDERSTANDING

IV
THOU SHALT NOT OVERWRITE ORIGINAL VARIABLES

V
THOU SHALT ORGANIZE ALL RELATED PROJECT FILES IN A SINGLE DIRECTORY

VI
THOU SHALT LABEL FILES, VARIABLES, AND VALUES USING UNDERSTANDABLE NAMING CONVENTIONS FOR LATER REFERENCE AND OTHERS' UNDERSTANDING

VII
THOU SHALT SEPARATE .DO FILES FOR DATA CLEANING AND SUBSEQUENT ANALYSES ON FINAL ANALYTICAL FILE (CALLING .DO FILES WITHIN .DO FILES AS NEEDED)

VIII
THOU SHALT EXPLORE DATA DESCRIPTIVELY AND GRAPHICALLY (TO OBSERVE PATTERNS AND ANOMALIES) PRIOR TO ANALYSES

IX
THOU SHALT SEARCH FOR AND DOWNLOAD .ADO (USER WRITTEN SUCH AS OUTREG2 & TABOUT) FILES TO IMPROVE EFFICIENCY AND CAPACITY

X
THOU SHALT USE "HELP" IN COMMAND WINDOW TO SEE COMMAND OPTIONS, EXAMPLES, AND DESCRIPTIONS AND GOOGLE ERROR MESSAGES AND QUESTIONS TO REFERENCE HELP FROM THE STATA COMMUNITY