

▶▶ JSGS 803: Quantitative Methods for Public Policy

	University of Regina Campus	University of Saskatchewan Campus
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Office Hours:	Open door policy – if my doors are open then come on in; if my doors are locked then I'm unavailable for help	
Office Location:	CL244	
Term:	Winter 2012	
Room:	RIC208	
Date and Time:	16:00 – 17:15	

CALENDAR DESCRIPTION

This course is a primer that exposes students to the statistical concepts and techniques used in conducting research and critically evaluating empirical studies. Topics include statistical inference, sampling theory, and data and regression analysis as applied to problems in public policy.

COURSE CONTENT AND APPROACH

This course is designed to introduce you to the basic principles of bivariate and multivariate regression analysis, and to apply the regression model to problems in political science, public administration, and public policy research. Various modifications to the regression model will be examined, as will several problems that often plague regression models. Finally, you will become familiar with the regression routines of the statistical package STATA. This software will be used in completing class assignments.

This course emphasizes the application of statistical procedures more than the theoretical or mathematical principles behind them. While you will learn the basic theoretical and mathematical principles of regression analysis, the overall objective of the course is to learn how to apply this method to diverse empirical problems in public policy.

The course has a lecture format. However, discussion is encouraged. As well, portions of class time will be devoted to the discussion of journal articles in which techniques learned in lectures are applied to specific research topics.

REQUIRED READINGS

Leo H. Kahane, *Regression Basics* (Thousands Oaks: Sage, 2001). The textbook is available at the University of Regina bookstore.

Studenmund, A.H. "Using Econometrics: A practical guide (6th Edition)", Pearson Addison Wesley; 2011.

Due to a recent change in the University of Regina copyright policies other required and supplementary readings will not be made available to students through URCourses or distributed to students in class. The students will be expected to access the readings mentioned in the course outline through the University of Regina library website. Papers published in electronic journals can be accessed from <http://www.uregina.ca/library/eresources/ejournals.shtml>.

In this course, I assume that most of you have no experience using STATA. I will supply help sheets for using this program as well as during lectures I will be explaining how to use STATA for particular problems. Should you desire more exhaustive resources, there are many manuals available in the library, bookstore and online (e.g. at <http://www.stata.com/links/resources1.html>).

EVALUATION

There will be four assignments and one article summary. The first assignment is primarily a written assignment. The other three assignments involve more extensive use of STATA. While STATA software is expensive you can order STATA within the GradPlan. This plan allows you to purchase small STATA 12 software with PDF documentation for \$32.00/6 months or for \$49.00/year. You can order STATA online between the dates of December 10, 2012 and May 1, 2012 at <http://www.stata.com/coursegp.html>. You just need to specify VGALU8 for the GRADPLAN ID, choose what you would like to order, and enter your shipping and billing information. **Make sure that you order Stata early enough because it takes about 2 weeks for it to be delivered (the software is shipped).** Stata can be installed on 3 different computers, so two students can share the cost of Stata and buy one Stata per two students. Each student will also be responsible for writing a summary of one of the various journal articles listed in this course outline. A student can also choose his/her own article to write a summary of but this article has to contain the material covered during the course. More details on the requirements of the article summary will be provided in class. There will be two exams: an in-class mid-term and a final.

Assignment 1. Bivariate Regression-paper and pencil (Due Jan. 31)	10%
Assignment 2. Bivariate Regression-computer (Due Feb. 16)	10%
Assignment 3. Multiple Regression (Due March 20)	15%
Assignment 4. Logistic Regression (Due Apr. 5)	15%
Article summary (Due Apr. 10)	10%
Mid-term examination (February 28, 2012 – in-class)	15%
Final examination (APRIL 17, 2012: 2 – 5 pm)	25%
TOTAL	100%

The assignments' due dates are subject to change depending on the pace of the course.

Late assignments WILL NOT BE ACCEPTED. Only documented special circumstances will exempt you from this rule. If you know in advance that you will not be able to submit the assignment on time and thus avoid penalty, you must notify the Instructor before it is due and hand it in early. If you have a documented, acceptable medical/personal reason for missing an assignment, you may shift the weight of the assignment to the final.

DESCRIPTION OF SEMINAR PRESENTATION

1. **Introduction: overview of statistical analysis** (*statistical inference, probability distributions, sampling distributions, scales of measurement, variables and constants*) **(Jan. 10)**
 - The role of quantitative analysis in public policy
 - Types of data, sources of data; describing data with graphs and numbers

Required readings

1. **Garnet Picot.** 2003. "Does Statistical Analysis Matter?" *Horizons*, 6 (1) (Policy Research Initiative: 2003), pp. 6-10. Available at http://www.policyresearch.gc.ca/doclib/HOR_v6n1_e.pdf.
2. **Joel Best.** 2004. *More Damned Lies and Statistics: How Numbers Confuse Public Issues*, (Berkeley: University of California Press, 2004) Chapter 6 "Contentious Numbers"

2. **Overview of Statistical Analysis cont'd (Jan. 12, 17)** (*hypothesis testing, type I and Type II errors, significance levels*)

Required readings

1. **James P. McGregor.** 1993. "Procrustus and the Regression Model: On the Misuse of the Regression Model," *PS: Political Science & Politics*, 26:4 (December, 1993), pp. 801-804.

Supplementary readings

1. John Richard, Jennifer Hove, and Kemi Afolabi, "Understanding the Aboriginal/Non-Aboriginal Gap in Student Performance" *C.D. Howe Institute Commentary*, No. 276 (December 2008), available online at http://www.cdhowe.org/pdf/commentary_276.pdf.

3. Linear regression model: bivariate OLS (Jan. 19, 24)

- Detecting relationship between variables (correlation coefficient & scatter plot)
- The Least Squares estimation method (estimating parameters and standard errors)
- Assumptions underlying a linear regression model

Required readings

1. **Kahane.** *Regression Basics*. Chapter 1-2.
2. **Studendum, A.H.** "Using Econometrics: a Practical Guide", Chapter 1-2 (OLS, pp. 19-40) and Chapter 4 (model's assumptions).
3. **Joseph P. Newhouse.** 1977. "Medical-Care Expenditure: A Cross-National Survey," *Journal of Human Resources*, 12: 1 (Winter, 1977), pp.115-125. Available through UofR library at <http://www.jstor.org/stable/145602>.

Supplementary readings

1. **B. Curtis Eaton and Mukesh Eswaran.** 2008. "Differential Grading Standards and Student Incentives," *Canadian Public Policy* 34:2 (June 2008), pp. 215-36.

JANUARY 31, 2011 – ASSIGNMENT 1 DUE

4. Linear Multiple regression model (Jan. 26, 31)

- OLS estimation of the model parameters
- Interpretation of OLS parameters

Required readings

1. **Kahane.** *Regression Basics*. Chapter 4.
2. **Studendum, A.H.** "Using Econometrics: a Practical Guide", Chapter 2.

Supplementary readings

1. **Laurence J. O'Toole Jr. and Kenneth J. Meier.** 2004. "Parkinson's Law and the New Public Management? Contracting Determinants and Service-Quality Consequences in Public Education," *Public Administration Review* 64:3 (June, 2004), pp. 342-352. Available through UofR library at <http://www.jstor.org/stable/3542599>.
2. **Stuart Landon, Melville L. McMillan, Vijay Muralidharan and Mark Parsons.** 2006. "Does Health-Care Spending Crowd Out Other Provincial Expenditures?" *Canadian Public Policy* 32:2 (June, 2006), p. 121-142.
3. **Sohrab Abizadeh and John A. Gray.** 1992. "Politics and Provincial Government Spending in Canada," *Canadian Public Administration* 35:4 (1992), pp. 519-533.

5. Model performance and hypothesis testing (Feb. 2, 7)

- Measures of goodness of fit
- Basics of hypothesis testing (refreshing your memory)
- Testing for significance of coefficients
- Testing for the significance of the model

Required readings

1. **Kahane.** *Regression Basics*. Chapter 3.
2. **Studendum, A.H.** "Using Econometrics: a Practical Guide", Chapter 2 (pp. 49-58), Chapter 5 (hypothesis testing).
3. **Anderson, Sweeney, & Williams.** 2008. *Statistics for Business and Economics*. Mason, OH: South-Western Cengage Learning. Chapter 9 "Hypothesis Tests" (pp. 349 -374) **OR** a chapter on hypothesis testing from any other statistics textbook.

Supplementary readings

1. **Joseph P. Newhouse.** 1977. "Medical-Care Expenditure: A Cross-National Survey," *Journal of Human Resources*, 12: 1 (Winter, 1977), pp.115-125. Available through UofR library at <http://www.jstor.org/stable/145602>.

6. Violation of the classical assumptions and the analysis of residuals (Feb. 9, 14, 16)

- Multicollinearity: detection, implications for validity of the results and remedies
- Serial Correlation: detection, implications and remedies
- Heteroskedasticity: detection, implications and remedies
- Measurement errors and omitted variable bias

Required readings

1. **Kahane.** *Regression Basics*. Chapter 7.
2. **Studendum, A.H.** "Using Econometrics: a Practical Guide", Chapter 6, 8-10.

FEB. 20 – FEB. 25 – ENJOY THE BREAK!

FEBRUARY 16, 2011 – ASSIGNMENT 2 DUE

FEBRUARY 28, 2012 – MIDTERM EXAM

7. Choosing specification: functional forms, data transformations (March 1, 6)

Required readings

1. **Kahane.** *Regression Basics*. Chapter 5, 6.
2. **Studendum, A.H.** "Using Econometrics: a Practical Guide", Chapter 7.
3. **Jeffrey E. Cohen.** 2004. "Economic Perceptions and Executive Approval in Comparative Perspective," *Political Behaviour* 26:1 (March, 2004), pp. 27-43. Available through UofR library at <http://www.jstor.org/stable/4151357>.

Supplementary Readings

1. **M. Reza Nakhai.** 2006. "Electoral Participation in Municipal, Provincial and Federal Elections in Canada," *Canadian Journal of Political Science* 39:2 (June, 2006), pp. 363-390.
2. **John Fox.** 1991. *Regression Diagnostics* (Newbury Park, CA: Sage, 1991), Chapter 4 "Outlying and Influential Data", pp. 21-40. (ARCHER library, call # QA278.2 F63 1991)
3. **Schroeder et al.** 1986. *Understanding Regression Analysis: An Introductory Guide*, Chapter 5, "Problems and Issues of Linear Regression", pp. 65-80 (ARCHER library, call # HA31.3 S37 1986)

8. Multiple regression: dummy variables and interaction variables (March 8, 13, 15)

- Interaction coefficients
- Dummy variables and interaction dummies

Required readings

1. **Kahane.** *Regression Basics*. Chapter 5.
2. **Studendum, A.H.** "Using Econometrics: a Practical Guide", Chapter 7.

Supplementary Readings

1. **Mohammed H.I. Dore and Surendra Kulshreshtha.** 2003. "The Labor Market and Rural-Urban Differences Among First Nations: The Case of Saskatchewan," *Journal of Socio-Economics*, 32:2 (May 2003), pp. 147-159. Available through UofR library at <http://www.sciencedirect.com/science/article/B6W5H-484VM7R-1/2/5a799fa7ca09fcb488334fe102fbd768>.
2. **Abdelaziz Testas.** 2004. "Economic and Political Explanations of Algeria's Human Rights Violations," *International Journal of Human Rights* 8:4 (Winter, 2004), pp. 399-411.

MARCH 20, 2011 – ASSIGNMENT 3 DUE

9. Limited dependent variables: logistic regression (March 20, 22, 27)

Required readings

1. **Studendmund, A.H.** "Using Econometrics: a Practical Guide", Chapter 13.
2. **Fred C. Pampel.** 2000. *Logistic Regression: A Primer* (Newbury Park, CA: Sage, 2000), Chapter 1 "The Logic of Logistic Regression" and Chapter 2 "Interpreting Logistic Regression Coefficients", pp. 1-30. Available at ARCHER library HA31.3 P36 2000.

Supplementary Readings

1. **Kelly M. LeRoux.** 2005. "What Drives Nonprofit Entrepreneurship?: A Look at Budget Trends of Metro Detroit Social Service Agencies," *American Review of Public Administration*, 35:4 (December, 2005), pp. 350-362. Available through UofR library at <http://arp.sagepub.com/content/35/4/350.full.pdf>.

10. Time-series data (March 29, April 3, 5)

Required readings

1. **Studendmund, A.H.** "Using Econometrics: a Practical Guide", Chapter 12.

Supplementary Readings

1. **François Pétry, Louis M. Imbeau, Jean Crête, and Michel Clavet.** 2000. "Explaining the Evolution of Government Size in the Canadian Provinces," *Public Finance Review* 28:1 (Jan., 2000), pp. 26-47.
2. **Kyung-Ho Lee and Jai S. Mah.** 2003. "Institutional Changes and Antidumping Decisions in the United States," *Journal of Policy Modeling*, 25: 6-7 (2003), pp. 555-565. Available through UofR library at <http://ideas.repec.org/a/eee/jpolmo/v25y2003i6-7p555-565.html>.

APRIL 5, 2011 – ASSIGNMENT 4 DUE

11. Final Exam Review (Apr. 10)

STUDENTS WITH SPECIAL NEEDS

Students in the course who, because of a disability, may have a need for accommodations are encouraged to come and discuss accommodations with the instructor, and to contact the Coordinator of Special Needs Services at 585-4631.

ACADEMIC INTEGRITY AND CONDUCT

Understanding and following the principles of academic integrity and conduct as laid out in the University of Saskatchewan's Guidelines for Academic Conduct is vital to your success in graduate school (as attached; and available at http://www.usask.ca/university_council/reports/archives/guide_conduct.shtml), and at the University of Regina (available at http://www.uregina.ca/gradstudies/calendar/policy_univ.shtml#conduct). Ensuring that your work is your own and reflects both your own ideas and those of others incorporated in your work is important: ensuring that you acknowledge the ideas, words, and phrases of others that you use is a vital part of the scholarly endeavour. If you have any questions at all about academic integrity in general or about specific issues, contact any faculty member and we can discuss your questions.