

▶▶ JSGS 803 – QUANTITATIVE METHODS AND RESEARCH DESIGN (STATISTICAL ANALYSIS FOR PUBLIC POLICY)

University of Saskatchewan Campus	
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Office Hours:	Monday/Wednesday 10am-noon; other times by appointment
Office Location:	Diefenbaker 156
Term:	Term 2 (Winter 2012)
Room:	DIEF 137
Date and Time:	Tuesday 9am-noon; January 10-April 3

CALENDAR DESCRIPTION

Provides students with the statistical concepts and techniques required for 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 SPSS. 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. 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.

COURSE OUTLINE

Session 1 – January 10: Course introduction: Overview of statistical analysis (statistical inference, probability distributions, sampling distributions, scales of measurement, variables and constants)

REQUIRED READINGS

- Garnet Picot, "Does Statistical Analysis Matter?" Horizons, 6:1 (Policy Research Initiative: 2003), pp. 6-10. (<http://dsp-psd.pwgsc.gc.ca/Collection/CP12-1-6-1E.pdf>)
- Joel Best, More Damned Lies and Statistics: How Numbers Confuse Public Issues, (Berkeley: University of California Press, 2004) Chapter 6 "Contentious Numbers".

Session 2 – January 17: Overview continued (hypothesis testing, Type 1 vs. Type 2 error, significance levels)

REQUIRED READINGS

- Levin, Jack and James Alan Fox, *Elementary Statistics in Social Research* (New York: Harper & Row, 2004) Chapters 7-9 “From Description to Decision Making, pp. 128-192.
- James P. McGregor, “Procrustus and the Regression Model: On the Misuse of the Regression Model,” *PS: Political Science & Politics*, 26:4 (December, 1993), pp. 801-804.
(<http://library.usask.ca/scripts/remote?URL=http://www.jstor.org/stable/pdfplus/419556.pdf?acceptTC=true>)

SUPPLEMENTARY READING

- 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.

Session 3 – January 24: Introduction to correlation and linear regression: Bivariate OLS, best-fit regression line, correlation coefficients, and residuals

REQUIRED READINGS

- Kahane, *Regression Basics*, Chapter 1; Chapter 2, pp. 19-29.
- Michael S. Lewis-Beck, *Applied Regression: An Introduction*, Chapter 1, pp. 9-26.
(<http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412983440.n1>)

SUPPLEMENTARY READINGS

- Linda M. Gerber, “Urban Diversity: Riding Composition and Party Support in the Canadian Federal Election of 2004,” *Canadian Journal of Urban Research* 15:2 Supplement (2006), pp. 105-118.
(<http://winnspace.uwinnipeg.ca/bitstream/handle/10680/381/2006-cjur-vol.15.2.pdf?sequence=1> and then use pdf search function <ctrl + f> to search for ‘Gerber’ in the document.)
- B. Curtis Eaton and Mukesh Eswaran, “Differential Grading Standards and Student Incentives,” *Canadian Public Policy* 34:2 (June 2008), pp. 215-36.
(<http://library.usask.ca/scripts/remote?URL=http://www.jstor.org/stable/pdfplus/25463608.pdf?acceptTC=true>)

ASSIGNMENT 1: OLS REGRESSION (DUE JANUARY 31)

Session 4 – January 31: Hypothesis testing and model performance (r^2)

REQUIRED READINGS

- Kahane, Chapter 3
- Michael S. Lewis-Beck, *Applied Regression: An Introduction*, Chapter 2, pp. 26-43.
(<http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412983440>)
- Edward Tufte, *Data Analysis for Politics and Policy* (Englewood Cliffs, N.J.: Prentice-Hall, 1974), Chapter 3, “Example 5: Comparing the Slope and the Correlation Coefficient”, pp. 101-107.
- Christopher H. Achen, *Interpreting and Using Regression*, Chapter 4, “Comparing Substantive and Statistical Significance”, pp. 46-51. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412984560.n4>

SUPPLEMENTARY READING

- Joseph P. Newhouse, “Medical-Care Expenditure: A Cross-National Survey,” *Journal of Human Resources*, 12:1 (Winter, 1977), pp.115-125.
<http://library.usask.ca/scripts/remote?URL=http://www.jstor.org/stable/pdfplus/145602.pdf?acceptTC=true>

ASSIGNMENT 2: RUN REGRESSION ANALYSIS IN SPSS (DUE FEBRUARY 7)

Session 5 – February 7: Regression model assumptions and the analysis of residuals

REQUIRED READINGS

- Kahane, Chapter 2, pp. 30-34; Chapter 6, pp. 119-142.

Session 6 – February 14: Mid-term examination

Session 7 – February 28: The multiple regression model: partial (regression coefficients) slopes and betas

REQUIRED READINGS

- Kahane, Chapter 4.
- Michael S. Lewis-Beck, Applied Regression: An Introduction, Chapter 3, pp. 47-54.
<http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412983440.n3>

SUPPLEMENTARY READINGS

- Stuart Landon, Melville L. McMillan, Vijay Muralidharan and Mark Parsons, "Does Health-Care Spending Crowd Out Other Provincial Expenditures?" Canadian Public Policy 32:2 (June, 2006), pp. 121-142.
<http://library.usask.ca/scripts/remote?URL=http://www.jstor.org/stable/4128724>
- Laurence J. O'Toole Jr. and Kenneth J. Meier, "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.
<http://library.usask.ca/scripts/remote?URL=http://www.jstor.org/stable/3542599>
- Sohrab Abizadeh and John A. Gray, "Politics and Provincial Government Spending in Canada," Canadian Public Administration 35:4 (1992), pp. 519-533. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.1111/j.1754-7121.1992.tb00709.x>

ASSIGNMENT 3: MULTIPLE REGRESSION (DUE MARCH 20)

Session 8 – March 6: The multiple regression model: Interaction effects and dummy variables

READINGS

- Kahane, Chapter 5, pp. 83-101.
- Achen, Chapter 2, pp. 12-29. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412984560.n2>

SUPPLEMENTARY READINGS

- Abdelaziz Testas, "Economic and Political Explanations of Algeria's Human Rights Violations," International Journal of Human Rights 8:4 (Winter, 2004), pp. 399-411.
<http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.1080/1364298042000283567>
- Mohammed H.I. Dore and Surendra Kulshreshtha, "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.
http://library.usask.ca/scripts/remote?URL=http://www.sciencedirect.com/science?_ob=MiamiImageURL&_cid=272092&_user=1069128&_pii=S1053535703000155&_check=y&_origin=browse&_zone=rslt_list_item&_coverDate=2003-05-31&_wchp=dGLzVlk-zSkzk&md5=bc6c2ffd9a04b0f6ae0288374f30fdef/1-s2.0-S1053535703000155-main.pdf

Session 9 – March 13: Diagnostics and data transformations (multicollinearity, outliers, non-normality, homoscedasticity and nonlinearity)

READINGS

- Kahane, Chapter 5, pp. 79-83, Chapter 7.
- Edward Tufté, Data Analysis for Politics and Policy (Englewood Cliffs, N.J.: Prentice-Hall, 1974), Chapter 3, "Example 6: Interpretation of Regression Coefficients when the Variables are Re-expressed as Logarithms (with Five Examples)", pp. 108-134.
- John Fox, Regression Diagnostics (Newbury Park, CA: Sage, 1991), Chapter 4 "Outlying and Influential Data", pp. 21-40.
<http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412985604.n4>

SUPPLEMENTARY READINGS

- Robert W. Jackman, "The Politics of Economic Growth in the Industrial Democracies, 1974-80: Leftist Strength or North Sea Oil?," The Journal of Politics, 49: 1 (Feb., 1987), pp. 242-256.
<http://library.usask.ca/scripts/remote?URL=http://www.jstor.org/stable/2131143>

- Joseph G. Nagy and W. Hartley Furtan, "Economic Costs and Returns from Crop Development Research: The Case of Rapeseed Breeding in Canada," *Canadian Journal of Agriculture Economics* 26:1 (Feb. 1978), pp. 1-14. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.1111/j.1744-7976.1978.tb02894.x>

Session 10 – March 20: The multiple regression model: Choosing a specification

READINGS

- Kahane, Chapter 6, pp. 110-119.
- Achen, Chapter 5, "Choosing a Specification", pp. 51-77. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412984560.n5>
- Schroeder et al., *Understanding Regression Analysis: An Introductory Guide*, Chapter 5, "Problems and Issues of Linear Regression", pp. 65-80. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412986410.n5>

SUPPLEMENTARY READINGS

- Jeffrey E. Cohen, "Economic Perceptions and Executive Approval in Comparative Perspective," *Political Behaviour* 26:1 (March, 2004), pp. 27-43. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.1023/B:POBE.0000022342.58335.cd>
- M. Reza Nakhaie, "Electoral Participation in Municipal, Provincial and Federal Elections in Canada," *Canadian Journal of Political Science* 39:2 (June, 2006), pp. 363-390. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.1017/S000842390606015X>

Session 11 – March 27: Limited dependent variables: Logistic regression

READINGS

- Kahane, Chapter 7.
- Fred C. Pampel, *Logistic Regression: A Primer* (Newbury Park, CA: Sage, 2000), Chapter 1 "The Logic of Logistic Regression" (<http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.4135/9781412984805.n1>) and Chapter 2 "Interpreting Logistic Regression Coefficients", pp. 1-30. (<http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/DOI:10.4135/9781412984805>)

SUPPLEMENTARY READING

- Anna Ya Ni and Stuart Bretschneider, "The Decision to Contract Out: A Study of Contracting for E-Government Services in State Governments," *Public Administration Review*, 67:3 (May, 2007), pp. 531-544. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.1111/j.1540-6210.2007.00735.x>

ASSIGNMENT 4: LOGISTIC REGRESSION (DUE APRIL 3)

Session 12 – April 3: Time series data and end-of-term review

READINGS

- Kahane, Chapter 5, pp. 103-118; Chapter 6, pp. 132-138.
- John Fox, *Applied Regression Analysis: Linear Models and Related Methods*, Ch. 14, pp. 369-387.

SUPPLEMENTARY READING

- François Pétry, Louis M. Imbeau, Jean Crête, and Michel Clavet, "Explaining the Evolution of Government Size in the Canadian Provinces," *Public Finance Review* 28:1 (Jan., 2000), pp. 26-47. <http://library.usask.ca/scripts/remote?URL=http://dx.doi.org/10.1177/109114210002800102>

REQUIRED READINGS

One text has been ordered and is available at the bookstore:
Leo H. Kahane, *Regression Basics* (Thousand Oaks: Sage, 2008)

SUPPLEMENTARY READINGS

If you are looking for an introductory text on statistical methods I would recommend:

- Jack Levin and James Fox, Elementary Statistics in Social Research (Toronto: Pearson, 2006).

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 SPSS. Each student will also be responsible for presenting a summary of one of the various journal articles that will be discussed during the term. 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	10%
Assignment 2 Bivariate Regression-computer	10%
Assignment 3 Multiple Regression	15%
Assignment 4 Logistic Regression	15%
Article summary	10%
Mid-term examination	15%
Final examination	<u>25%</u>
Total:	100%

LATE ASSIGNMENTS

Without compelling reasons, late assignments will not be accepted and will result in a mark of zero.

STUDENTS WITH SPECIAL NEEDS

All students who have special needs are encouraged to register with Disability Services for Students (DSS). Access to most services and programs provided by DSS is restricted to students who have registered with the office. Once you have registered, please contact the professor to discuss accommodations.

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). 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.