POL232 Introduction to Quantitative Reasoning II
Summer 2019

6-8 pm, Tuesday & Thursday, SS561

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Office Hours: SS3058, Thursday 2:00 pm - 4:00 pm (or by appointment).

TA: Alejandro García Magos, a.garciamagos@mail.utoronto.ca.
Office Hours: TBA

Learning objectives

This course focuses on the application of data analysis. It builds up on students' knowledge of causal inference and basic principles of statistical theories (covered in POL222). This course advances students' understanding of statistical theories, and builds their capacities in analyzing social data. By the end of the semester, students will be able to work with data independently.

Key learning objectives are:

1. advance understanding of survey design, statistical inference, & linear regression;
2. learn how to analyze data using R;
3. acquire the skills to communicate quantitative information correctly and effectively.

Grade distributions

Essay	20%	July 18
Final paper	40%	August 12
Homework #1	2.5%	July 25
Homework #2	2.5%	August 6
Final Exam	25%	TBA
Participation	10%	Throughout the term

Tutorial schedules

There are 3 required tutorials (1 hour each). In them, students will have the opportunity to work with data in small groups. No tutorial scheduled on July 23/July 25; it can be arranged upon request.

#1 (Week 2)	July 9 / July 11
#2 (Week 3)	July 16 / July 18
#3 (Week 5)	July 30 / August 1

Readings & Textbooks

- Kellstedt & Whitten (2018). *The Fundamentals of Political Science Research.* Cambridge University Press. Available on the course reserves.
- [*Recommended*] Agresti, A. (2018). *Statistical Methods for the Social Sciences.* Pearson. Can be purchased from the publisher. Readings from this book are marked as "**A. A.**" in ths course outline.
- Other readings are posted on the course website.

Course website

Some reading materials and lecture slides are on Quercus.

Course structure

Lectures in Week *a (1a - 6a) focus on concepts & theories. Week *b (1b - 6b) lectures emphasize how to use R to

analyze data (marked as ℝ in the course outline).

Statistical software
R Studio. You also need to download R. Both are free.

Datasets
All datasets used in this course are stored in the course data repository.

Essay & final paper
These two assignments (essay and final paper) are designed to build students' capacities in working with survey data and in communicating quantitative information. Students will use the *2011 Canadian Election Study* for these assignments. Assignments must be submitted before 11:59 pm on the due date. Late submissions will be taxed 3 percentage points per calendar day.

Homework assignments
The two homework assignments (homework 1 and homework 2) are due at 6:10 pm on the due date. Late homework assignments not accepted.

Exam
Theoretical/conceptual questions (40%) + R practical questions (60%). Schedule TBA.

Attendance
Lecture and tutorial attendances are mandatory. 10 points will be rewarded to students with full attendance records ($\sim$ 1.1 points per lecture week & $\sim$ 1.1 points per tutorial).

Grade appeal
Grade appeals must be made to the original grader (the TA) within 7 calendar days after the grade is released. Only written appeals with one-page cover letter will be considered.

Course communications
In-person meetings during office hours are preferred. Emails will be answered within 48 hours. Follow up if you do not receive an email reply within 48 hours. Quercus messenger app is *not* monitored.

Turnitin
Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their essays to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University's use of the Turnitin.com service are described on the Turnitin.com web site.

Accessibility
The University of Toronto is committed to accessibility. If you require accommodation for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services at www.accessibility.utoronto.ca or (416) 978-8060 as soon as possible.

Academic integrity
All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. For students, this means following the standards of academic honesty when writing assignments, collaborating with fellow students, and writing tests and exams. Ensure that the work you submit for grading represents your own honest efforts. Plagiarism-representing someone else's work as your own or submitting work that you have previously submitted for marks in another class or program-is a serious offence that can result in sanctions. Speak to me or your TA for advice on anything that you find unclear. To learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at http://www.writing.utoronto.ca. Consult the Code of Behaviour on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see http://www.artsci.utoronto.ca/osai and http://academicintegrity.utoronto.ca.

Course Outline

Week 1a Introduction + Life of a Survey I ..... July 2

Week 1b Life of a Survey II + ℝ : the Basics ..... July 4
- Chapter 3 & Chapter 6. Statistics Canada, (2003). *Survey Methods and Practices.*
- Chapter 1 & 2. Monogan, J. *Political Analysis Using R.* Springer.

Week 2a Descriptive Statistics & Probability Distributions ..... July 9
- Chapter 6.1, 6.2, & 6.3. Kellstedt and Whitten.
- Chapter 7. Kellstedt and Whitten.
- **A. A.** Chapter 3, *Descriptive Statistics*
- **A. A.** Chapter 4, *Probability Distributions*

Week 2b Point Estimation & Interval Estimation + ℝ: Data Wrangling ..... July 11
- **A. A.** Chapter 5, *Statistical Inference: Estimation*
- Chapter 4. Monogan, J. *Political Analysis Using R.* Springer.
- Chapter 3. Pollock, P. H. & Edwards, B. *An R Companion to Political Analysis.* CQ Press.

Week 3a Hypothesis Testing, & Measures of Association ..... July 16
- Chapter 9. Noack, A. (2018). *Social Statistics in Action: A Canadian Introduction.* Oxford University Press.
- Chapter 8. Kellstedt and Whitten.
- **A. A.** Chapter 7 & Chapter 8.

Week 3b ℝ: Storytelling with Data ..... July 18
- Chapters 2, 3, & 4. Knaflic, C. N. (2015). *Storytelling with Data: A Data Visualization Guide for Business Professionals.* Wiley.
- Chapter 3. Monogan, J.*Political Analysis Using R.* Springer.

<<July 18: Essay due>>

Week 4a Linear Regression as a Descriptive Tool ..... July 23
- Chapter 10, Kellstedt and Whitten.

Week 4b ℝ: Applied Linear Regression with R ..... July 25
- Chapter 6.1. Monogan, J. *Political Analysis Using R.* Springer.

Week 5a Linear Regression II ..... July 30
- Chapter 11, Kellstedt and Whitten.

Week 5b ℝ: Applied Linear Regression ..... August 1
- Chapter 6.2 & 6.3. Monogan, J. *Political Analysis Using R.* Springer.

Week 6a Logistic Regression + ℝ: Logistic Regression ..... August 6
- Chapter 12.2, Kellstedt and Whitten.
- Monogan, J. Chapter 7.1. *Political Analysis Using R.* Springer.

Week 6b ℝ: Logistic Regression + Review ..... August 8

<<August 12: Final paper due>>