



POL232H1S: Introduction to Quantitative Reasoning II

University of Toronto

Winter 2021

I Basic information

Mode of course delivery: Online Asynchronous

Delivery Instructions: Lectures will be pre-recorded, and delivered online asynchronously. Tutorials are delivered in person and online synchronously per the meeting schedule. Students will need to download R Studio and have the ability to use Quercus (Slack is optional)

Instructor: Alejandro García Magos, PhD

Email: a.garciamagos@mail.utoronto.ca

Office Hours: TBD online via Zoom

Teaching Assistant(s): TBD

II Course overview

Course Description

POL232 builds on students' knowledge of the fundamentals of political science research and basic statistical literacy covered in POL222. The learning goal is to advance students' capacity to work and analyze data independently using RStudio. The learning topics are the following:

1. Statistical inference and linear regression
2. Data analysis using RStudio
3. Effective communication of quantitative information (data storytelling)

Required Readings (available online through the University of Toronto Libraries):

Paul M. Kellstedt and Guy D. Whitten, *The Fundamentals of Political Science Research*, Second Edition (Cambridge University Press, 2013).

Monogan, James E. *Political analysis using R*. Springer, 2015.

Knafllic, C. N. (2015). *Storytelling with Data: A Data Visualization Guide for Business Professionals*. Wiley.

There will also required readings from academic journals and websites. All of these readings will be available for free via the University of Toronto Libraries or will be available on Quercus.

III Organization of the course

The class Quercus site will be the primary site through which class announcements and assignments will be distributed and marked. Its Discussion Board will be the primary method by which you will ask simple questions about the course materials and get them answered. It is your responsibility to obtain access to the class Quercus site and regularly check it.

IV Lectures

Lectures will be pre-recorded, and delivered online asynchronously.

V Teaching Assistants

There are a number of teaching assistants for this course whose main duties are helping students with their assignments and grading them. Students will be divided in sections and there will be one TA for each. Normally, the TA for your section will be the grader of your essay and your primary point of contact for all class-related matters. All requests for extension or waiver regarding required assignments must be made to your designated TA. Please include your full name, the student number, tutorial time slot, and the name of your tutorial instructor in your email on these requests.

VI Grading and Evaluation

Two Written Assignments:	60%	
<i>Midterm Paper:</i>	20%	<i>Due: February 12th (Friday)</i>
<i>Final Paper:</i>	40%	<i>Due: April 1st (Thursday)</i>
Final Assessment:	30%	<i>Due: TBD</i>

Tutorial Participation: 10%

>>> Written Assignments

Extension for the written assignments may be made only when there is a legitimate reason, such as an unforeseeable medical emergency, an accessibility issue, religious observances, and a family emergency, and there is an acceptable official documentation, which verifies the specific reason given, such as the UofT Verification of Student Illness or Injury form, the Accessibility Services Letter, and the College Registrar's Letter. Students who know in advance they will need an extension for a legitimate reason should contact the teaching assistant in charge of grading your assignments as early as possible before the deadline. Those who missed the deadline for a legitimate, unforeseeable reason should contact the teaching assistant as soon as possible and no later than one week after returning to class.

Late assignments will be subject to a late penalty of 2% per day (including weekends) of the total marks for the assignment. Accommodations due to late registration into the course will NOT be approved.

By the end of the semester, you will write an empirical research paper based on a linear regression analysis using R and a dataset provided in class, which addresses the causal theory of your interest.

As you gradually develop your empirical research project throughout the semester, you will be required to submit an intermediate product of your research in the middle of the semester ("Midterm Paper") and a full-length research paper at the end of the semester ("Final Paper").

>>> Final Assessment

Final Assessment not completed before the due date will receive a grade of zero. The due date will be clearly specified on the class Quercus site. It is your responsibility to check this due date and complete the assessment before then.

If you cannot complete the assessment by its deadline for a legitimate reason your should notify your TA immediately. An official documentation to verify the specific reason given, such as the UofT Verification of Student Illness or Injury form, the Accessibility Services Letter, and the College Registrar's Letter, will be required.

As in the essay assignments, computer-related problems, such as the crash of your computer, a slow internet connection, and an occasional slow response of the server, will not be considered as an acceptable reason to request for a waiver. I strongly suggest you avoid a last-minute completion or submission of the assessment to avoid the last- minute hassle and technical problems.

>>> Tutorial Participation

Tutorial Participation mark is based on your participation in the five tutorial sessions, each of them weighing 2 percent hence the 10 percent evaluation. If you will have to miss one or more tutorial sessions for a legitimate reason, the participation in these sessions may be waived as long as you provide official documentation, such as the UofT Verification of Student Illness or Injury form, the Accessibility Services Letter, and the College Registrar's Letter, which verifies the specific reason given.

VII How to Succeed in This Course

Carefully follow the lectures. Hand in your assignments on time. Study for the assessment. If you do not understand, ask for help to the TA.

VIII Late Penalties and Extension

All work is late if submitted after the date and time specified as due. To ensure fairness, the late-penalty policy specified below will be strictly enforced. Conflict with other class's assignment/exam schedule, leaving for a non-academic trip, or vacation is not an acceptable reason to miss the assignments or request an extension.

IX Grade Appeals

Grade appeals must be received within two weeks from when the grade is assigned. Before making a formal grade appeal, you are required to raise your questions to and discuss with your grader, who is normally your tutorial instructor. If you still believe the grade you received is not appropriate after discussing with the grader, you may make an appeal to the instructor. When you make an appeal, you are required to

submit a brief documentation substantiating why you believe your grade is not appropriate. Once the grade appeal is received, your assignment will be re-graded with fresh eyes by another teaching assistant who did not give your original mark. Please note that the re-graded mark may go up or down from the original mark. The new mark will be your final mark whether it goes up or down from the original.

X Communication Policy

1. Discussion Board

We will use the Discussion Board on the class Quercus site as the main medium through which you can ask relatively simple questions regarding class materials and get answers. Given the nature of the course materials and a large size of the class, someone else may have the same question as yours and s/he would benefit from your posting the question and getting an answer through the Discussion Board.

You are also encouraged to post an answer to the questions posted by your classmates on the Discussion Board so that we can maintain a mutually-supporting learning community from which all of you will benefit.

Discussion Board questions will be normally addressed within 24 hours except on weekends by one of the teaching assistants in charge of answering Discussion Board questions on that day.

While relatively simple questions may be posted on the class Discussion Board, you are best advised to contact your TA for complex questions or those that would require an extensive treatment.

3. Email Communications

If you have any questions of personal nature (e.g., deadline extension for a legitimate reason, grade appeal), you should email the TA and expect a response within two working days. Please start the subject heading of your email with "POL222:..."

If your questions are of substantive nature (i.e. academically relevant for other classmates) please post these questions on the Discussion Board

If you send teaching assistants or the instructor a question of substantive nature, it will be posted on the Discussion Board and answered by one of the teaching assistants in charge of answering Discussion Board questions on that day. You will get your questions addressed more quickly if you post your questions directly on the Discussion Board, as the one on duty on that day may not be the teaching assistant to whom you would send your email.

I will try to respond to emails within 48 hours during the week or 72 hours over the weekend, and I usually respond to student emails each afternoon.

4. Essay Assignments

You may post general questions on the essay assignments on the class Discussion Board. If you have a question specific to your essay idea that is not appropriate to post on the Discussion Board, you are best advised to contact the teaching assistants.

Please note that neither the instructor nor teaching assistants will be able to review your draft essay when you seek advice.

5. Non-response

Please note that the instructor and teaching assistants will not be able to answer email or Discussion Board questions during weekends.

In the case of your questions of substantive nature on the Discussion Board or those of personal nature over email not answered within two working days (excluding weekends), send the teaching assistant an email to let him/her know they have not been addressed. Please include "POL222: Unanswered Question" in the subject heading of your email.

6. Office Hours

There will also be office hours held by teaching assistants before the essay assignments' due dates. Specific schedules of the instructor and teaching assistants' office hours will be posted on the class Quercus site.

XI 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, accessibility.services@utoronto.ca, or (416) 978-8060 as soon as possible.

XII Academic Integrity

Academic integrity is fundamental to learning and scholarship at the University of Toronto. Participating honestly, respectfully, responsibly, and fairly in this academic community ensures that the U of T degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the respect and recognition it deserves.

You are expected to be familiar with the Code of Behaviour on Academic Matters, available at <https://governingcouncil.utoronto.ca/secretariat/policies/code-behaviour-academic-matters-july-1-2019>, which is the rule book for academic behaviour at U of T. Potential offences include, but are not limited to, plagiarism, cheating on tests and exams, fraudulent medical documentation and improper collaboration on marked work.

Please read more about Academic Misconduct here: <https://www.artsci.utoronto.ca/current/academic-advising-and-support/student-academic-integrity/academic-misconduct>. For further information on plagiarism, visit <http://advice.writing.utoronto.ca/using-sources/>. This list is part of the Advice on Academic Writing at the University of Toronto (<http://advice.writing.utoronto.ca/>). There are valuable resources for you in this website.

The University of Toronto treats cases of academic misconduct seriously. All suspected cases of academic dishonesty will be examined following the procedures outlined in the Code. The consequences for academic misconduct can be severe, including a failure in the course and a notation on your transcript.

I take violations of academic integrity very seriously.

If you have questions about how best to cite another's work or facts in the public domain, please write your TA. When in doubt, cite. I recommend the Chicago Manual of Style's author-date format https://www.chicagomanualofstyle.org/tools_citationguide/citation-guide-2.html. If you have questions about whether an action qualifies as misconduct, please talk to your TA or me.

XII Class Schedule and Readings

Class schedule and the assigned readings for each lecture are specified below. During the semester, the lecture schedule may be adjusted according to the actual progress of the class. If this is the case, the due dates of assignments may also be modified. In addition, some assigned readings may be replaced by others, and there may be additional readings. If this happens, you will be given an advance notice at the class Quercus site.

Readings listed for each class are required unless explicitly stated that they are recommended. In addition to the chapters of Kellstedt and Whitten, the readings include actual empirical research articles published in academic journals, which will be used as examples in the lectures to illustrate the variety of quantitative empirical research designs and data analysis methods. When you read these articles, skip the technical details but focus on the big picture of how the authors designed their empirical research to answer the causal question of their interest.

January 4

Introduction. Political Science in the Age of Big Data

- >> Big data in Political Science. ThinkData Works. García Magos, Alejandro (to be published fall 2020)
- >> Steve Lohr, “[For Today’s Graduate, Just One Word: Statistics,](#)” New York Times (August 6, 2009): A1.
- >> What Big Data Can Teach Political Scientists. The Oxford University Politics Blog. Goet, Niels <https://blog.politics.ox.ac.uk/big-data-can-teach-political-scientists/>
- >> Bringing Big Data to Political Science. Western Social Science. https://www.ssc.uwo.ca/news/2017/dave_armstrong_profile.html
- >> Big Data and Political Science. Christenson, Dino. Boston University newsletter. <http://www.bu.edu/polisci/events/newsletters/po-newsletter-spring-2018-article-4/>

January 11

Introduction to RStudio. Loading and Manipulating Data

Topics covered

- a) Reading in Data
- b) Viewing Attributes of the Data
- c) Logical Statements and Variable Generation
- d) Cleaning Data

- e) Merging and Reshaping Data
 - >> Kellstedt and Whitten, Chapter 5.1, 5.7-5.9
 - >> Monogan, J. Chapter 1 and 2

January 18

Visualizing Data

Topics covered

- a) Histograms
- b) Boxplots
- c) Scatterplots
- d) Bar graphs
 - >> Kellstedt and Whitten, Chapter 5.10-5.12; 7.4
 - >> Monogan, J. Chapter 3

January 25

Descriptive Statistics

Topics covered

- a) Measures of Central Tendency
- b) Measures of Dispersion
 - >> Kellstedt and Whitten, Chapter 5.9-5.10
 - >> Monogan, J. Chapter 4

February 1

Basic Inferences and Bivariate Association

Topics covered

- a) Significance Tests for means
- b) Cross-Tabulations
- c) Correlation Coefficients
 - >> Kellstedt and Whitten, Chapter 7
 - >> Monogan, J. Chapter 5

February 8

Data Storytelling

Topics covered

- a) Explanatory Analysis
- b) Effective Visualization
- c) Storytelling
 - >> Introduction and Chapters 1, 2, & 7. Knafllic, C. N. (2015). *Storytelling with Data: A Data Visualization Guide for Business Professionals*. Wiley.
 - >> *Recommended*: Chapters 3 & 4. Knafllic, C. N.

*** Midterm Paper Due: Feb. 12 (Fri.), 11:59pm

February 15-19

Family Day/Winter Reading Week

February 22

Linear Models and Regression Diagnostics

Topics covered

- a) Estimation with Ordinary Least Squares
- b) Regression Diagnostics
 - >> Kellstedt and Whitten, Chapter 8, 9, 10
 - >> Monogan, J. Chapter 6

March 1

Generalized Linear Models

Topics covered

- a) Binary outcomes
- b) Ordinal outcomes
- c) Event counts
 - >> Kellstedt and Whitten, Chapter 11
 - >> Monogan, J. Chapter 7

March 8

Is Our Finding Significant?

Topics covered

- a) Statistical significance
- b) Substantive significance
 - >> Kellstedt and Whitten, Chapter 8.4.4 - 8.4.5
 - >> Kellstedt and Whitten, Chapter 9.5 - 9.6
 - >> Miller, Jane E. "Interpreting the substantive significance of multivariable regression coefficients." *Proceedings of the American Statistical Association, Denver, CO, USA* (2008): 3-7. <http://www.statlit.org/pdf/2008MillerASA.pdf>

March 15

Applied Linear Regression

Topics covered

- a) Examples from the Literature
 - >> TBD

March 22

Special topic: The Quantitative/Qualitative divide

Topics covered:

a) Multiple Methods

>> James Mahoney and Gary Goertz. "A Tale of Two Cultures: Contrasting Quantitative and Qualitative Research." *Political Analysis* (Summer 2006) 14 (3): 227-249

>> James D. Fearon and David D. Laitin, "Integrating Qualitative and Quantitative Methods," In *The Oxford Handbook of Political Methodology*, 2008

>> Jason Seawright and John Gerring. "Case Selection Techniques in Case Study Research: A Menu of Qualitative and Quantitative Options." *Political Research Quarterly* (June 2008) 61 (2): 294-308

>> Mainwaring, Scott, and Aníbal Pérez-Liñán. "Lessons from Latin America: Democratic breakdown and survival." *Journal of Democracy* 24.2 (2013): 123-137.

>> John Gerring. "What is a Case Study and What is it Good For? *American Political Science Review* (2004), 98(2): 341-354

>> Edward Schatz and Elena Maltseva. "Assumed to be Universal: The Leap from Data to Knowledge in the American Political Science Review." *Polity* 44.3 (2012): 446-472.

John Gerring. "The Mechanismic Worldview: Thinking Inside the Box." *British Journal of Political Science* (2008), 38:1:161-179.

March 29

Wrap-up

***** Final Paper Due: April 1st (Thursday), 11:59pm**

Syllabus Change Policy

The policies and contents of this syllabus may be changed by the instructor with advanced notice. If any, such a change will be announced during lectures.