# Political Science 3NN3
# Statistical Analysis of Primary Data
## Winter 2022

**Instructor:** Dr. Todd Alway
**Email:** alwayto@mcmaster.ca
**Lectures:** Available on Avenue
**Live sessions**: Thursdays 3:30-4:20pm
on Zoom until February 3; in MDCL
1102 beginning February 10

**Quizzes:** Tuesdays, 4:30-5:20pm
**Office Hours:** On Zoom or In-person
(KTH 538): Mondays 10:00am-12:00pm.

# Contents

## Course Description

In our previous research methods course (Political Science 2NN3), we explored many of the techniques that you can use to gather primary data. Depending on your research project, you may end up with enormous quantities of primary data – on voters, on states, on beliefs, and on actions. The question is, what do you do with the data once you have it? This course will explore some of the statistical techniques that you can use to analyze data. Statistics can simplify our analysis of the political world – helping us find patterns and identify relationships between variables.

## Course Objectives

By the end of the course students should be able to:
- Calculate basic Descriptive statistics, Inferential statistics, and Measures of Association by hand
- Analyze data using computer software (SPSS)
- Answer political questions using quantitative output

## Required Materials and Texts

Noack, Andrea M., *Social Statistics in Action: A Canadian Introduction*, Don Mills: Oxford University Press, 2018.

This book is available at the [McMaster University Campus Store](#). You can purchase a physical copy of the text - or rent an electronic version at a much lower price. You also have access to a [textbook companion website](#) that contains flashcards, sample quizzes, SPSS videos, and other useful material.

## Class Format

The original plan for this course was to run it in a blended format that includes **both** online and in-person components. In light of the recently announced Covid restrictions, we will be modifying the course format somewhat.

a). Pre-recorded course lectures will be available for viewing on Avenue to Learn for the entire semester. These lectures will cover statistical concepts and the math behind the statistics.

b). We will also meet as a class **virtually** once per week (Thursdays 3:30-4:20pm). These meetings will be held **in Zoom** until **February 3**. During these non-mandatory sessions (non-recorded), I will be available to answer any class questions about the lecture or tutorial material.

c). We will meet as a class **in-person** once per week (Thursdays 3:30-4:20pm in MDCL 1102) beginning on **February 10** (Covid restrictions permitting). We will use these non-mandatory in-person sessions (non-recorded) to work through additional application

questions (i.e., starting with a Political-Science-type research question and walking through how to use a given statistical technique to solve that question).

d). Tutorial sessions will be held **online** in Zoom **throughout the entire semester**. Tutorials will focus on using SPSS – a computer program that will enable you to (relatively) easily analyze large quantities of primary data. A detailed week-by-week overview of the tutorials is contained in the Course Guide posted on Avenue.

e). The course also involves regular quizzes.  The quizzes will be available on Avenue on a given Tuesday from 4:30pm-5:30pm.  Quizzes will test your knowledge of statistical concepts, your ability to calculate statistics when given raw data, and your ability to interpret SPSS output.

Please note: The material in this course is cumulative in nature.  The key to doing well is keeping up with the assigned work – including the lectures, the readings, the quizzes, and the SPSS exercises.

## Course Evaluation – Overview
1. Quizzes – 30% total: On Avenue, Tuesdays 4:30pm - 5:30pm.
2. Final Exam – 20%: In person during the official examination period (Covid restrictions permitting).
3. Tutorial Assignments: 50% total.  Assignments I and II are worth 10% each. Assignments III and IV are worth 15% each. Each assignment is due within 72hrs of your scheduled tutorial date/time.

## Course Evaluation – Details

**Quizzes – 30% total, Tuesdays 4:30pm. – 5:30pm.**
There are 8 quizzes in this course.  Quizzes will be available in Avenue from 4:30pm-5:30pm on the Tuesdays listed below.  You can start the quiz at any time during this one-hour window. However, your quiz must be **completed** by 5:30pm on the day in question. The quizzes will be multiple choice in nature.  Students will be expected to demonstrate an understanding of statistical concepts, the ability to calculate and interpret statistics, and skill in interpreting SPSS output.

Note I: Each Quiz is worth 3.75% of your final grade.  This may seem like a small amount per quiz, but it quickly adds up to a significant portion of the overall grade.

Note II: Quizzes are to be completed **individually** and not as part of a group. The usual standards pertaining to academic honesty will apply to the quizzes.

In the event that you miss a quiz (and have an approved MSAF), the corresponding marks will be re-allocated to your final exam.  Please note – missed quizzes that are not

covered by an MSAF will result in a grade of 0 on that quiz (the grade **will not** be reallocated to the exam).

Quiz 1 (up to and including Topic 3): Tuesday February 1, 4:30pm-5:30pm

Quiz 2 (particular focus on Topic 4): Tuesday February 8, 4:30pm-5:30pm

Quiz 3 (particular focus on Topic 5): Tuesday February 15, 4:30pm-5:30pm

Quiz 4 (particular focus on Topic 6): Tuesday March 1, 4:30pm-5:30pm

Quiz 5 (particular focus on Topic 7): Tuesday March 8, 4:30pm-5:30pm

Quiz 6 (particular focus on Topic 8): Tuesday March 15, 4:30pm-5:30pm

Quiz 7 (particular focus on Topic 9): Tuesday March 22, 4:30pm-5:30pm

Quiz 8 (particular focus on Topic 10): Tuesday March 29, 4:30pm-5:30pm

**Final Exam – 20%, To be scheduled during the official examination period**
The final exam will be held **in-person** (covid restrictions permitting) during the official examination period (as scheduled by the Registrar).  The exam will be cumulative, with a particular focus on Measures of Association.  Students will be expected to demonstrate an understanding of statistical concepts, the ability to calculate and interpret statistics, and skill in interpreting SPSS output.

**Tutorial Assignments – 50% total. Assignments I and II are worth 10% each. Assignments III and IV are worth 15% each. Each assignment is due within 72hrs of the relevant tutorial date/time**
This course has 7 tutorials.  Tutorials meet online in Zoom and focus on using SPSS to answer Political Science related research questions. During your scheduled tutorial, a Teaching Assistant will demonstrate how to use and interpret SPSS for a given statistical technique/research scenario.  Linked to 4 of the 7 tutorials is a short SPSS Assignment.  Assignment answers (**in your own words**) should be uploaded to the appropriate Assignment drop box within 72 hours of **your** scheduled tutorial date/time. Answers should be uploaded as a Word document or pdf and should include the relevant SPSS output.

Note I: Given Covid restrictions, we will not be able to access McMaster's physical computer labs to use SPSS.  However, you can access SPSS from your own personal computer using a Virtual Desktop (see the **"How to Connect"** tab).  The virtual desktop will allow you to access SPSS over an internet connection.  Further guidance on accessing a Virtual Desktop can be found in the "Accessing SPSS from Home" videos posted on Avenue in Module 1.

Note II: Please complete a first draft of your tutorial assignment **prior** to the linked tutorial. Doing so will allow you to raise any conceptual and/or technical questions during the tutorial itself – and thereby allow you to submit your assignment on time.

Assignment I – Due within 72 hours of your Tutorial held the week of January 31

Assignment II – Due within 72 hours of your Tutorial held the week of February 28

Assignment III – Due within 72 hours of your Tutorial held the week of March 21

Assignment IV – Due within 72 hours of your Tutorial held the week of April 4

## Weekly Course Schedule and Required Readings

### Topic 1 (January 10, 2022)
**Introduction to quantitative analysis: Using statistics to illuminate the political world**

Readings:
Noack, Chapter 1, pp1-24 Appendix A pp482-488

## Descriptive Statistics:

### Topic 2 (January 17, 2022)
**I - Basic descriptive statistics and Frequency Distributions**

Readings:
Noack, Chapter 2, pp25-66

### Topic 3 (January 24, 2022)
**II- Measures of central tendency**

Readings:
Noack, Chapters 3 and 4, pp67-128 (we will revisit these Chapters in our next two Modules as well)

### Topic 4 (January 31, 2022)
**III - Measures of dispersion**

Readings:
Noack, Chapters 3 and 4, pp67-128

**Topic 5 (February 7, 2022)**
   **IV - Probability, the normal curve, and Z scores**

   Readings:
   Noack, Chapter 4, pp105-128

## Inferential Statistics:

**Topic 6 (February 14, 2022)**
   **I - Sampling, Sampling Distributions, and Confidence Intervals**

   Readings:
   Noack, Chapters 5 and 6, pp129-194

**Reading week: No Class (February 21-26, 2022)**

**Topic 7 (February 28, 2022)**
   **II – Testing for Statistical Significance: T-Tests**

   Readings:
   Noack, Chapter 7, pp157-194

**Topic 8 (March 7, 2022)**
   **III - Chi squared**

   Readings:
   Noack, Chapter 9, pp278-287, 297-299

## Measures of Association:

**Topic 9 (March 14, 2022)**
   **I - Measures of Association for Categorical Data: Lambda, Phi, and Cramer's V**

   Readings:
   Noack, Chapter 9, pp261-269, 278-292

## Topic 10 (March 21, 2022)
### II - Measures of Association for Ordinal Data: Gamma

Readings:
Noack, Chapter 9, pp270-278

## Topic 11 (March 28, 2022)
### III - Measures of Association for Ratio-level Data: Pearson's Correlation Coefficient

Readings:
Noack, Chapter 10, pp307-347

## Topic 12 (April 4, 2022)
### IV - Linear Regression

Readings:
Noack, Chapter 11, pp349-396

## April 12, 2022

There is no new content this week. I will be in our physical classroom (MDCL 1102) during our **Tuesday** class time (4:30-5:20pm) (or in our Zoom classroom if we are still online) to answer any exam-related questions.

## Course Policies

### Submission of Assignments and tests

This course will use tests and assignments to assess your comprehension of the course material. All tests and assignments should be answered individually and in your own words. Do not simply "cut and paste" material out of the lectures, lecture summaries, course readings, or other sources: Doing so does not demonstrate **your** understanding of the course content.

Course assignments should be submitted to the appropriate Assignments drop box in Avenue by the designated due date. Written assignments should be submitted as a Word document or pdf.

If, for any reason, you cannot access the Assignments drop box before the assignment due date, please email the assignment to your TA in the specified time frame.

### Late Assignments

Late assignments may be subject to a one letter grade per day deduction. For example, an A- assignment received one day late may be reduced to a B+. Late assignments will not be accepted once graded assignments have been returned to the class.

**Absences, Missed Work, Illness**

The expectation for this course is that all components will be completed.

All requests for extensions (excluding SAS requests) should be submitted through the MSAF process.

In the event of an approved absence for an Assignment, the Assignment will be due **three days** from the original due date (inclusive of weekends).

In the event that you miss a quiz (**and have an approved MSAF**), the corresponding marks will be re-allocated to your final exam. Please note – missed quizzes that are not covered by an MSAF will result in a grade of 0 on that quiz (the grade **will not** be reallocated to the exam).

## Course Software and Technology

This course incorporates and utilizes several technological platforms:

**Avenue to Learn**

In this course we will be using Avenue to Learn. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure please discuss this with the course instructor.

**Zoom**

In order to access online office hours, classroom spaces, and tutorials, students require access to Zoom. Students should register for a free account (and download the relevant software) through McMaster's zoom website. Access to class Zoom rooms is restricted to McMaster Zoom accounts. Please login to your McMaster Zoom account prior to any online tutorial or meeting.

**SPSS and PSPP**

In actual research situations that involve quantitative analysis, you will most likely be using computer software. In this course, we will be using SPSS. SPSS is an easy to use (and popular) software package. The course textbook (and the Tutorials) offer guidance on how to use SPSS. You can access SPSS in many of the University's physical computer labs. You can also virtually access the University's subscription to SPSS from your own computer by following one of three methods (click the "How to Connect Tab").

If technology limitations make it difficult to access the University's virtual desktop environment, you can use PSPP as a free alternative to SPSS.  PSPP looks (and functions) in a way that is similar to SPSS, although there are occasional differences that might require "clicking" a different button or "checking" a different box depending on the statistical operation that you wish to perform.  You can download a copy of PSPP (for Windows (install the file PSPP_2020-09-05_daily_64bits)) or for Mac.  The Mac installation process is slightly more complex than is the case for Windows.  Further guidance on installing the software can be found on Avenue.

## Turnitin.com

In this course we will be using a web-based service (Turnitin.com) to reveal authenticity and ownership of student submitted work.  Students will be expected to submit their work electronically via Avenue to Learn (A2L) plagiarism detection (a service supported by Turnitin.com) so it can be checked for academic dishonesty.  Students who do not wish to submit their work through A2L and/or Turnitin.com must still submit an electronic copy to the instructor. No penalty will be assigned to a student who does not submit work to Turnitin.com or A2L. All submitted work is subject to normal verification that standards of academic integrity have been upheld (e.g., on-line search, other software, etc.). For more information please refer to the Turnitin.com Policy.

## Grades

Grades will be based on the McMaster University grading scale:

| MARK | GRADE |
|------|-------|
| 90-100 | A+ |
| 85-90 | A |
| 80-84 | A- |
| 77-79 | B+ |
| 73-76 | B |
| 70-72 | B- |
| 67-69 | C+ |
| 63-66 | C |
| 60-62 | C- |
| 57-59 | D+ |
| 53-56 | D |
| 50-52 | D- |
| 0-49 | F |

## <u>University Policies</u>

### Conduct Expectations

As a McMaster student, you have the right to experience, and the responsibility to demonstrate, respectful and dignified interactions within all of our living, learning and working communities. These expectations are described in the Code of Student Rights & Responsibilities (the "Code"). All students share the responsibility of maintaining a

positive environment for the academic and personal growth of all McMaster community members, **whether in person or online**.

It is essential that students be mindful of their interactions online, as the Code remains in effect in virtual learning environments. The Code applies to any interactions that adversely affect, disrupt, or interfere with reasonable participation in University activities. Student disruptions or behaviours that interfere with university functions on online platforms (e.g. use of Avenue 2 Learn, WebEx or Zoom for delivery), will be taken very seriously and will be investigated. Outcomes may include restriction or removal of the involved students' access to these platforms

## Academic Integrity Statement

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage.  This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy**.**

The following illustrates only three forms of academic dishonesty

- Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
- Improper collaboration in group work.
- Copying or using unauthorized aids in tests and examinations.

## Copyright and Recording

Students are advised that lectures, demonstrations, performances, and any other course material provided by an instructor include copyright protected works. The Copyright Act and copyright law protect every original literary, dramatic, musical and artistic work, **including lectures** by University instructors

The recording of lectures, tutorials, or other methods of instruction may occur during a course. Recording may be done by either the instructor for the purpose of authorized distribution, or by a student for the purpose of personal study. Students should be aware that their voice and/or image may be recorded by others during the class. Please speak with the instructor if this is a concern for you.

## Academic Accommodation for Religious, Indigenous or Spiritual Observances (RISO)

Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students should submit their request to their Faculty Office **normally within 10 working days** of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

## Academic Accommodation of Students with Disabilities

Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) at 905-525-9140 ext. 28652 or sas@mcmaster.ca to make arrangements with a Program Coordinator. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

## Faculty of Social Sciences E-mail Communication Policy

Effective September 1, 2010, it is the policy of the Faculty of Social Sciences that all e-mail communication sent from students to instructors (including TAs), and from students to staff, must originate from the student's own McMaster University e-mail account. This policy protects confidentiality and confirms the identity of the student. It is the student's responsibility to ensure that communication is sent to the university from a McMaster account. If an instructor becomes aware that a communication has come from an alternate address, the instructor may not reply at his or her discretion.

## Course Modification

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check his/her McMaster email and course websites weekly during the term and to note any changes.

## Extreme Circumstances

The University reserves the right to change the dates and deadlines for any or all courses in extreme circumstances (e.g., severe weather, labour disruptions, etc.). Changes will be communicated through regular McMaster communication channels, such as McMaster Daily News, A2L and/or McMaster email.