GCP501.DL1: Data Analysis for Global Political Economy

Professor Matthew Guse

George Mason University: Fall 2025

[DRAFT SUBJECT TO CHANGE]

Office hours: Tuesdays 7-9PM and by appointment via Teams.

Contact: Professor Matthew Guse, mguse@gmu.edu

Important Notice: This course will be hosted on Canvas for the Fall 2025 semester. Please ensure you are familiar with accessing and navigating this platform.

Resources and support are available here to help you get started. If you have any questions, do not hesitate to reach out to me or contact the ITS Support Center for assistance.

LEARNING OUTCOMES

Students will gain the necessary skills and knowledge to:

- Analyze and visualize data
- Understand how data are presented in academic and policy work
- Communicate data clearly and effectively to decision makers in government, international organizations, private sector firms, non-profit institutions, and NGOs
- Recognize the limitations of data analysis
- Identify misleading interpretations of data
- Calculate and interpret descriptive statistics
- Interpret OLS regression tables and results

EVALUATION

The course will be evaluated as follows. More details on individual components are provided in subsequent sections of the syllabus.

- Final paper: 30 percent (details below)
- Examinations (2): 30 percent
- Quizzes: 15 percent
- Discussion posts: 15 percent
- Assignments: 10 percent

TEXTS

REQUIRED:

- [*Economist*]: *Numbers Guide: The Essentials of Business Numeracy (sixth edition)*, *The Economist* (2014)
- [*WSJ*]: Wong, Dona M., *The Wall Street Journal Guide to Information Graphics: The Dos & Don'ts of Presenting Data, Facts, and Figures*, Dow Jones & Company, Inc., and Dona M. Wong. (2010)

Choose **one** book below based on your personal interest. These texts will provide examples of applying data to policy analysis throughout the stages of the policy research process. Both have applications to a variety of international economic, financial, and security issues. Students are welcome to reach out to the instructor with questions about how their specific research interests might apply (**ONE REQUIRED**):

- **Singh**, J.P., *Sweet Talk: Paternalism and Collective Action in North-South Trade Relations*, Stanford: Stanford University Press (2017)
- **Steinberg**, David A., *Demanding Devaluation: Exchange Rate Politics in the Developing World*, Ithaca: Cornell University Press (2015)

TECHNICAL TOOLS

To fulfill course requirements, students will need a tool for processing and manipulating data and preparing graphics. Microsoft Excel will be sufficient to fulfill the requirements of the course. Microsoft Excel is available to all GMU students. [More information on accessing this and other Microsoft Office products can be found here](#).

Students wishing to gain statistical software experience with a marketable tool are encouraged to use R. [R is open-source and available free of charge](#). [Please see RStudio Desktop for instructions on accessing the free software and statistical suite](#).

COURSE SCHEDULE

Module 1: Core concepts in global commerce and policy
25 - 31 August 2025

Introduction to major themes of the course, including the power of data analysis and the uncertainty that comes with it. Explore influential opinions regarding estimation and the nature of the world as it pertains to statistical analysis.

Readings: Consider the following two quotes.

(1) "The long run is a misleading guide to current affairs. In the long run we are all dead. Economists* set themselves too easy, too useless a task if in tempestuous seasons they can only tell us that when the storm is past the ocean is flat again."

- John Maynard Keynes

*For our purposes, consider "economists" to mean all practitioners of policy including diplomacy, economics, and security

(2) "Consider a turkey that is fed every day. Every single feeding will firm up the bird's belief that it is the general rule of life to be fed every day by friendly members of the human race "looking out for its best interests," as a politician would say. On the afternoon of the Wednesday before Thanksgiving, something unexpected will happen to the turkey. It will incur a revision of belief."

-Nassim Nicholas Taleb

Module 2: International economics, policy and security

31 August - 7 September 2025

Overview of course semester plan, course policies and the syllabus. Overview of concepts of international economics, policy and security. Discussion of course readings and data tools.

Readings: *Economist,* ch. 2 (pgs. 39-45, 54, 57-62); and...

Pick ONE of the below based on your interest; you will continue to use this book throughout the course.
- Singh, introduction, ch. 2.
- Steinberg, introduction, ch 1.

Module 3: Finding and pulling data

7 - 14 September 2025

Overview of breadth and depth of available, reliable data sources on the web. Discussion of key similarities and differences between data from governments, central banks, international organizations and private sources. Evaluate the reliability of data sources and understand their methodology and potential biases. Leveraging data portals and downloading data in a usable format.

Readings: *Economist,* ch. 1 (pgs. 6-22, 31-38); Wickham, Hadley, "Tidy Data," *Journal of Statistical Software* (2013).

Module 4: Applying data to analysis

14 - 21 September 2025

Examine how data are used in academic research and real-world policy analysis. Discuss how course readings incorporate data. Incorporate data into own analytical writing.

Readings: *Economist* ch. 4; and...

ONE of the below based on which book you chose:
- Singh, ch. 3.

- Steinberg, ch. 4.

Module 5: Descriptive statistics and Data visualization

21 September - 5 October 2025 (the submodules may be completed concurrently or in either order)

- ### 5.1: Descriptive statistics

  Introduction to central tendency and spread.

  Readings: *WSJ,* chs. 1-3.

- ### 5.2: Data visualization

  Overview of different types and methods for visualizing data. Techniques for effective visualization. Creating effective charts from downloaded data using excel and R.

  Readings: *Economist,* ch. 3; *WSJ,* ch. 3; and…

  ONE of the below based on which book you chose:
  - Singh, ch. 4.
  - Steinberg, ch. 5.

EXAMINATION 1

Examination 1 will cover modules 1, 2, 3, 4, 5.1 and 5.2. Due 12 October 2025, 11:59 PM.

Module 6: Data distributions

12 - 19 October 2025

Explore the concept of data distributions and different types and shapes of data universes. Understanding when to use mean- or median-based statistical techniques depending on the shape of the distribution and presence of outliers. Identify and intuit characteristics of data distributions based on real-world examples.

Readings:

- [An overview of data distributions](#)**
- The following investopedia primers on…
  - [The normal distribution](#)
  - [Skewness](#)
  - [Kurtosis](#)
- [On skewness and kurtosis](#)**

**Understanding of Python code will not be evaluated, but may be used to enhance code literacy (ability to understand what is going on in the code).

Module 7: Hypothesis testing

19 October - 2 November 2025

Statistical significance and how the term is (mis)used in popular media. Theory, assumptions and application of hypothesis testing

Readings: *Economist,* ch. 6; and…

> **ONE of the below** based on which book you chose:
> - Singh, ch. 5.
> - Steinberg, ch. 3.

Module 8: Regression analysis

26 October - 9 November 2025

Theory, assumptions and concepts of OLS regression analysis. Independence; law of large numbers. Interpretation of regression results. Running OLS regressions in excel and R.

Readings: *Economist,* chs. 5, 7.

Module 9: Data in practice: GDP and balance of payments

9 - 16 November 2025

Explore core concepts of GDP and BOP and the available empirical data from official sources. Discuss uses of government data for research, policy analysis and public information. Download, analyze and interpret GDP and BOP data from official sources.

Readings:

- Stiglitz, Joseph E., "GDP is the Wrong Tool for Measuring What Matters," *Scientific American*, August 1, 2020
- "Measuring the Economy: A Primer on GDP and the National Income and Product Accounts," *Bureau of Economic Analysis* (2015).
- "Chapter 15: The Balance of Payments Accounts," in Caves, Richard E., Jeffrey A. Frankel and Ronald W. Jones, *World Trade and Payments: An Introduction*, Boston: Pearson Addison Wesley (2007)

Module 10: Biases and data storytelling

16 - 23 November 2025

Discuss biases when conducting own data analysis. Evaluate data sources, analysis and popular media for publisher and writer bias.

Readings: *Economist,* ch. 8; *WSJ*, ch. 4.

THANKSGIVING BREAK: 24-29 November 2025

Module 11: Limitations of traditional analysis

30 November - 7 December 2025

Discuss pitfalls in analysis techniques and violations of assumptions. Fat-tailed distributions. Black Swan events; antifragility; when estimation can actually be harmful for outcomes.

Economist, ch. 9; and…

- [On Black Swan events](#)
- [On Antifragility](#)

EXAMINATION 2

Examination 2 will cover modules 6, 7, 8, 9, 10 and 11. Due 14 December 2025, 11:59 PM.

FINAL PAPER DUE: 15 DECEMBER 2025, 11:59 PM

- A **written report of 1000 words** on an issue of interest presenting an issue in international economics, policy or security, and potential solution to policymakers
    - The report should include a brief background of the issue, followed by policy implications and recommendations
    - This report should include **two data figures, one of which must be of the student's own making** using **at least one dataset found and utilized by the student.**
        - This means **downloading a dataset** and **creating a graph** in R or excel
        - Charts made using the data portal of an organization's website will **not** be counted for this requirement
        - **The data file used must be submitted with the final paper**
    - The report should integrate data, including the data presented in visualizations, into textual analysis
    - This report accounts for 30 percent of the final grade

Grading will be based on:
- **quality of analysis**
- integration of **original data** into the background and recommendations of the report
- integration of **course concepts** into analysis and data figures
- Integration and quality of an **original data visualization**

Sources may be cited using APA, Chicago, or another conventional style.

GMU COMMON COURSE POLICIES

Please familiarize yourself with the [GMU Common Course Policies](#) regarding academic standards, accommodations for students with disabilities, FERPA and use of GMU email addresses for course communication, and Title IX resources and required reporting.

LATE WORK POLICY

Late coursework will not be accepted except in cases of extreme extenuating circumstances. In the rare case of such circumstances, the student is responsible for contacting the

instructor ahead of the deadline. Documentation may be requested at the instructor's discretion.

Academic Standards

Academic Standards exist to promote authentic scholarship, support the institution's goal of maintaining high standards of academic excellence, and encourage continued ethical behavior of faculty and students to cultivate an educational community which values integrity and produces graduates who carry this commitment forward into professional practice.

As members of the George Mason University community, we are committed to fostering an environment of trust, respect, and scholarly excellence. Our academic standards are the foundation of this commitment, guiding our behavior and interactions within this academic community. The practices for implementing these standards adapt to modern practices, disciplinary contexts, and technological advancements. Our standards are embodied in our courses, policies, and scholarship, and are upheld in the following principles:

- Honesty: Providing accurate information in all academic endeavors, including communications, assignments, and examinations.
- Acknowledgement: Giving proper credit for all contributions to one's work. This involves the use of accurate citations and references for any ideas, words, or materials created by others in the style appropriate to the discipline. It also includes acknowledging shared authorship in group projects, coauthored pieces, and project reports.
- Uniqueness of Work: Ensuring that all submitted work is the result of one's own effort and is original, including free from self-plagiarism. This principle extends to written assignments, code, presentations, exams, and all other forms of academic work.

Violations of these standards—including but not limited to plagiarism, fabrication, and cheating—are taken seriously and will be addressed in accordance with university policies. [The process for reporting, investigating, and adjudicating violations is outlined in the university's procedures here](). Consequences of violations may include academic sanctions, disciplinary actions, and other measures necessary to uphold the integrity of our academic community.

The principles outlined in these academic standards reflect our collective commitment to upholding the highest standards of honesty, acknowledgement, and uniqueness of work. By adhering to these principles, we ensure the continued excellence and integrity of George Mason University's academic community.

Student responsibility:

Students are responsible for understanding how these general expectations regarding academic standards apply to each course, assignment, or exam they participate in; students should ask their instructor for clarification on any aspect that is not clear to them.

Accommodations for Students with Disabilities

Disability Services at George Mason University is committed to upholding the letter and spirit of the laws that ensure equal treatment of people with disabilities. Under the administration of University Life, Disability Services implements and coordinates reasonable accommodations and disability-related services that afford equal access to university programs and activities. Students can begin the registration process with Disability Services at any time during their enrollment at George Mason University. If you are seeking accommodations, please visit the [Disability Services website](#) for detailed information about the Disability Services registration process. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: ods@gmu.edu. Phone: (703) 993-2474.

Student responsibility:

Students are responsible for registering with Disability Services and communicating about their approved accommodations with their instructor in advance of any relevant class meeting, assignment, or exam.

FERPA and Use of GMU Email Addresses for Course Communication

The Family Educational Rights and Privacy Act (FERPA) governs the disclosure of education records for eligible students and is an essential aspect of any course. **Students must use their GMU email account** to receive important University information, including communications related to this class. Instructors will not respond to messages sent from or send messages regarding course content to a non-GMU email address.

Student responsibility:

Students are responsible for checking their GMU email regularly for course-related information, and/or ensuring that GMU email messages are forwarded to an account they do check.

Title IX Resources and Required Reporting

As a part of George Mason University's commitment to providing a safe and non-discriminatory learning, living, and working environment for all members of the University community, the University does not discriminate on the basis of sex or gender in any of its education or employment programs and activities. Accordingly, **all non-confidential employees, including your faculty member, have a legal requirement to report to the Title IX Coordinator, all relevant details obtained directly or indirectly about any incident of Prohibited Conduct** (such as sexual harassment, sexual assault, gender-based stalking, dating/domestic violence). Upon notifying the Title IX Coordinator of possible Prohibited Conduct, the Title IX Coordinator will assess the report and determine if outreach is required. If outreach is required, the individual the report is about (the "Complainant") will receive a communication, likely in the form of an email, offering that person the option to meet with a representative of the Title IX office.

For more information about non-confidential employees, resources, and Prohibited Conduct, please see University Policy 1202: [Sexual and Gender-Based Misconduct and Other Forms of Interpersonal Violence](#). Questions regarding Title IX can be directed to the Title IX Coordinator via email to TitleIX@gmu.edu, by phone at 703-993-8730, or in person on the Fairfax campus in Aquia 373.

Student opportunity:

If you prefer to speak to someone confidentially, please contact one of Mason's confidential employees in [Student Support & Advocacy (SSAC)](#), Counseling and [Psychological Services (CAPS)](#), [Student Health Services (SHS)](#), and/or the [Office of the University Ombudsperson](#).