NYU | ROBERT F. WAGNER GRADUATE SCHOOL OF PUBLIC SERVICE

PADM-GP 4503.001 | EXEC-GP 4503

Introduction to Data Analytics for Public Policy, Administration, and Management
Spring 2025

Instructor Information

- Poranee (Pam) Kingpetcharat
- Email: pk1030@nyu.edu

- Office Hours: For office hours during the workweek, please find time on my work calendar using this link: https://calendly.com/pam-kingpetcharat If a time that works for you is not available, please email me with your available dates & windows of time to quickly coordinate office hours that work best for you.

Course Information

- Class Meeting Times: Saturdays, 10:50pm -- 12:30pm ET
- Class Location: 105 E 17St Room 120 Loc: Washington Square

Course Prerequisites

- None
- All course materials will be provided via Brightspace.

Course Description

This course aims to establish a first principles understanding of qualitative and quantitative techniques, tools, and processes used to wield data for effective decision-making. Its approach focuses on pragmatic, interactive learning using logical methods, basic tools, and publicly available data to practice extracting insights and building recommendations. It is designed for students with little prior statistical or mathematical training and no prior pre-exposure to statistical software.

Course and Learning Objectives

Students will be able to:

- Explain the value of data, assess data arguments, identify alternatives to using data, and leverage administrative data to ground-truth research data.
- Structure problems, develop hypotheses, identify assumptions, and reference sources and considerations in a rigorous and transparent manner.
- Identify, obtain, understand, prepare, and analyze data using standard approaches and industry-standard tools.
- Package and persuade with data visualization techniques and tools [PowerPoint, Excel, Tableau] to reach specific objectives.

How this Course Relates to Other Courses

This is a foundational course. There are no prerequisites. It is designed to introduce students to first principles[1] approaches to data analytics to build their comfort in navigating ambiguity, leveraging quantitative skills, and using industry-standard data tools and technologies.

Evaluation

The course will be evaluated through class participation [as measured by short quizzes and exit surveys] (25%), two problem sets (25%), and one final project (50%). Problem sets will use Excel and PowerPoint, so students should ensure they are familiar with how to access these applications.

Late Policy

Assignments are due on the class dates indicated on the course's NYU Brightspace site. Late submission of assignments will lead to a two-point reduction for missing the deadline and another two-point reduction for each day thereafter until submitted.

Course Structure

The class includes lectures, readings, break-out session group work, and independent project work. Class attendance is critical as the course is structured as an experiential learning course. Students are strongly encouraged to apply approaches and tools learned in the course to their specific sector interests to deepen their content knowledge and understand the forces shaping trends in that sector.

[1] A first principle is "the fundamental concepts of assumptions on which a theory, system, or method is based." [English Oxford Dictionary]

Expectations

Class participation

The course is designed as an experiential learning course, so class participation, group work [via breakout groups], and responsiveness to electronic surveys distributed is crucial.

Absenteeism, punctuality, and in-class conduct

Students are expected to attend all classes and arrive on time. Systematic tardiness and disruptive behavior will negatively impact your grade. Please contact me via e-mail if you need to miss a class due to unavoidable circumstances.

Class Overview

This is an NYU half-course conducted over 7 weeks in 100-minute sessions per week.

Week 1 [January 25, 2025] – IN-PERSON CLASS: The value of data and the importance of problem structuring.

Topics

- Describe the value of data and how it can lead to informed decisions
- Identify the steps and goals of the analytics workflow, discuss problem structuring, and its importance
- Apply basic criteria to judge the quality of data-related questions
- Explore Excel both as software (basic layout, navigation, keyboard shortcuts, worksheet organization) and as a data analysis platform (basic math/stat formulas, visualization)
- Practice basic summary tactics used to familiarize yourself with a dataset

Readings

- "What Great Data Analysts Do - and Why Every Organization Needs Them," by Cassie Kozyrkov, Harvard Business Review, December 4, 2018.
- Redman, Thomas (2013), "Are you Data-Driven?", *HBR Guide to Data Analytics Basics for Managers*, Cambridge, MA: Harvard Business Review Press, pgs. 9 – 13, 15 – 26.
- Rasiel, Ethan (1999), *The McKinsey Way*, New York, NY: McGraw-Hill Education, pgs 3 - 28.
- "Why data culture matters," by Alejandro Diaz, Kayvaun Rowshankish, and Tamim Saleh, *McKinsey Quarterly,* September 2018.

[Optional] Reference Readings:

- "CIO Explainer: What is Artificial Intelligence?," by Steven Norton, The Wall Street Journal, July 18, 2016.

- "Changing Behaviour to Improve People's Lives: A Practical Guide," by Piyush Tantia Jason Bade Paul Brest Maeve Richards, Ideas42.org.

[Optional] Real-world example(s):

- "Addressing Homelessness with Data Analytics," by Mahesh Kelkar, Rachel Frey, Nagen Suriya, Shane Engel, Deloitte Insights, September 25, 2019.
- "Using Data to Provide Better Healthcare to New York's Homeless," by Laura Jacobson, Remi Newton-Dame, Kalpana Bhandarkar and Dave A. Chokshi, Harvard Business Review, May 21, 2019.

Week 2 [February 8, 2025] – IN-PERSON CLASS: Formulate, clean, and manipulate data in Excel.

Topics

- Intro to data cleaning
- Describe the relationship between functions and parameters
- Use nested functions

Readings

- Redman, Thomas (2013), "Are you Data-Driven?", *HBR Guide to Data Analytics Basics for Managers*, Cambridge, MA: Harvard Business Review Press, pgs. 63 - 69.

[Optional]

- "Achieving business impact with data," by Niko Mohr, Holder Hurtgen, Digital McKinsey, April 2018.

[Optional] Real-world example(s):

- "Huge Racial Disparities Found in Deaths Linked to Pregnancy," by Roni Caryn Rabin, New York Times, May 7, 2019.
- "Vital Signs: Pregnancy-Related Deaths, United States, 2011–2015, and Strategies for Prevention, 13 States, 2013–2017", by Emily E. Petersen, MD; Nicole L. Davis, PhD; David Goodman, PhD; Shanna Cox, MSPH; Nikki Mayes; Emily Johnston, MPH; Carla Syverson, MSN; Kristi Seed; Carrie K. Shapiro-Mendoza, PhD; William M. Callaghan, MD; Wanda Barfield, MD, Morbidity and Mortality Weekly Report, May 10, 2019.
- Pregnancy Mortality Surveillance System, CDC.

Week 3 [February 22, 2025] – IN-PERSON CLASS: Dynamic data referencing and dashboard creation.

Topics

- Learn how to look up data in other tables using VLOOKUP and HLOOKUP

- Use data functions [INDEX and MATCH] to lookup values in other tables
- Use these Excel functions to create a simple dashboard in Excel

Readings

- Davenport, Thomas H., "Competing on Analytics", *Harvard Business Review*, January 2006.
- "You Don't Have to Be a Data Scientist to Fill This Must-Have Analytics Role," by Nicolaus Henke, Jordan Levine, and Paul McInerney, *Harvard Business Review*, February 8, 2018.

[Optional] Real-world example(s):

- Study on the Evolution of the UN Support Account for Peacekeeping Operations
- "New York's Economic Spending Shortchanges Nonwhite Communities, Report Says," by Vivian Wang, New York Times, August 1, 2018.
- "Shortchanged: Racial Disparities in New York's Economic Development Programs," Fiscal Policy Institute, 2018.

Week 4 [March 8, 2025] – IN-PERSON CLASS: Dynamic data aggregation.

Topics

- Learn about data aggregation using Pivot Tables
- Use excel aggregation commands to summarize data sets
- Learn to use histograms, scatterplots, and trend analysis to analyze data

Readings

- Heath, Chip, Heath, Dan (2010), *Switch: How to Change Things When Change is Hard*, New York, NY: Crown Business, pgs 1 - 23.
- "Big Data for Social Innovation," by Kevin C. Desouza & Kendra L. Smith, Stanford Social Innovation Review, Summer 2014.

[Optional]

- "An Overview of Data Management," The American Institute of Certified Public Accountants (AICPA), Information Management and Technology Assurance Section.

[Optional] Real-world example(s):

- From Compstat to Gov 2.0 Big Data in New York City Management - either PDF (available on Brightspace Resources folder) or online format
- COMPSTAT: Its Origins, Evolution, and Future in Law Enforcement Agencies, Bureau of Justice Assistance (BJA), US Department of Justice, Police Executive Research Forum, 2013.

Week 5 [March 22, 2025] – IN-PERSON CLASS: Presentation, storytelling, data visualization, and color theory.

Topics

- Translate problem structuring into storytelling for persuasion
- Determine how to pick the right chart types for effective data visualization
- Apply color theory to ensure effective data visualization
- Introduction to Tableau

Readings

- Berinato, Scott, "Visualizations That Really Work," *Harvard Business Review*, June 2016.
- Anderson, Chris, "How to Give a Killer Presentation, Lessons from TED," *Harvard Business Review*, June 2013.

[Optional] Reference Readings:

- Roam, Dan (2009), *The Back of the Napkin: Solving Problems and Selling Ideas with Pictures*, New York, NY: Penguin Group (USA) LLC, pgs 301 – 711.
- Tufte, Edward R. (1990), *Envisioning Information*, New York, NY: Graphics Press.

[Optional] Real-world example(s):

- "How healthy is your neighborhood for your child? Take a look", by Sandee LaMotte, CNN, January 22, 2020
- The Child Opportunity Gap data visualizations: http://www.diversitydatakids.org/research-library/data-visualization/child-opportunity-gap
- A snapshot of child opportunity across the U.S.: http://www.diversitydatakids.org/research-library/data-visualization/snapshot-child-opportunity-across-us
- Policy Equity Assessments: http://www.diversitydatakids.org/policy-equity-assessments

Week 6 [April 12, 2025] – IN-PERSON CLASS: Using Tableau for creating charts, dashboards, and stories.

Topics

- Create a variety of charts in Tableau
- Create a dashboard in Tableau with a variety of chart types
- Build Stories and explore Tableau's power for narrative presentation

Readings:

[Optional]

Cindi Howson, James Richardson, Rita Sallam, Austin Kronz, *Magic Quadrant for Business Intelligence and Analytics Platforms*, Gartner Research, 11 February 2019.

[Optional] Real-world example(s):

See example visualizations in Tableau Public.

Week 7 [April 26, 2025] – IN-PERSON CLASS: Class assessment and more Tableau visualizations

Final project is due May 3, 2025 by midnight

Sample Source Readings

Readings drawn from academic & business journals and news sources will also be used to encourage in class discussion, illustrate principles, and facilitate learning. Examples include:

- Use of Tableau Public to share student results data and other publicly available data sets
- Use of Gap Minder to show how human development has changed over time
- Growth in the use of technology in governance and politics e.g. civic tech: TechPresident
- Including the ability to discern and critically assess those presenting data: FiveThirtyEight ; New York Times: TheUpshot

Academic Integrity

Academic integrity is a vital component of Wagner and NYU. All students enrolled in this class are required to read and abide by Wagner's Academic Code. All Wagner students have already read and signed the Wagner Academic Oath. Plagiarism of any form will not be tolerated and students in this class are expected to report violations to me. If any student in this class is unsure about what is expected of you and how to abide by the academic code, you should consult with me.

Use of Generative AI

AI tools like ChatGPT are designed to assist humans with their work, and you may use Generative AI programs to help generate ideas and brainstorm and to make stylistic changes to make your writing more suited to the nature of requirements of a particular assignment. However, you should know that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic. This is because Generative AI derives its output from previously created texts from other sources that the models were trained on, and essentially reflects the bias inherent in them. Please remember that these tools are not capable of

independent thinking or making judgments based on personal experiences, cultural contexts, or ethical considerations. I trust you to use AI judiciously to enhance and supplement academic work, not to replace it. When using AI tools on assignments, add an appendix showing (a) a description of precisely which AI tools were used *(e.g., ChatGPT private subscription version or DALL-E free version)*, (b) an explanation of how the AI tools were used *(e.g., to generate ideas, turns of phrase, elements of text, long stretches of text, lines of argument, pieces of evidence, maps of conceptual territory, illustrations of key concepts, etc.)*; and (c) an account of why AI tools were used *(e.g. to save time, to surmount writer's block, to stimulate thinking, to clarify prose, to translate text, etc.)*.

Henry and Lucy Moses Center for Students with Disabilities at NYU

Academic accommodations are available for students with disabilities. Please visit the Moses Center for Students with Disabilities (CSD) website **and click the "Get Started" button. You can also call or email CSD** (212-998-4980 or mosescsd@nyu.edu) for information. Students who are requesting academic accommodations are strongly advised to reach out to the Moses Center as early as possible in the semester for assistance.

NYU's Calendar Policy on Religious Holidays

NYU's Calendar Policy on Religious Holidays states that members of any religious group may, without penalty, absent themselves from classes when required in compliance with their religious obligations. Please notify me in advance of religious holidays that might coincide with exams to schedule mutually acceptable alternatives.

NYU's Wellness Exchange

NYU's Wellness Exchange has extensive student health and mental health resources. A private hotline (212-443-9999) is available 24/7 that connects students with a professional who can help them address day-to-day challenges and other health-related concerns.