AI and Data Science in Public Policy (SOC 401)

Fall Quarter, 2025

Class Schedule

Lecture:	Monday & Wednesday 1:30 PM - 3:20 PM [We will typically meet 1:30-2:30]
Location:	SMI 205
URL:	https://canvas.uw.edu/

Professor

Name:	Zack W. Almquist
Office:	Savery 231
Office Hours:	By appointment
Email:	zalmquist@uw.edu

Course Description

Goals: This course explores the role of AI, data science and social research in policy making and public decisions and develops skills for the communication of research findings and their implications in writing and through data visualization. Students will develop an understanding of various perspectives on the role that AI, data and data analysts/scientists play in policymaking, learn how to write for a public audience about data, results, and implications, and learn how to create effective and engaging data visualizations.

Course Format: We will meet each week for two hours. How we will use this time will vary from week to week. The first part of the course will focus on learning about research and policy, we will mostly use our time for a seminar-style discussion. During the later part of the quarter when we are learning more practical skills and working on projects, we will have brief lectures and do in-class lab exercises together.

Data Science Minor: Following the logic of what the minor describes as cross-cutting, this class will focus on using theories, questions, and data that are relevant to public policy alongside data science knowledge and skills. See the data science minor website (https://dataminor.uw.edu/curriculum/overview/).

Course Objectives

Writing and Communication

- Produce effective public policy writing in three formats: Op-Ed, Policy Brief, and Public Dashboard.
- Communicate results clearly to non-technical audiences with attention to ethics and equity.

Technical Skills

- Apply data wrangling, visualization, and machine learning to policy-relevant datasets.
- Build reproducible workflows and develop interactive dashboards for decision-making.

Policy and AI Applications

- Frame researchable policy questions and evaluate the role of AI and data science in addressing them.
  Use AI tools for text, prediction, and decision support while assessing their benefits and limitations.
- Weigh ethical trade-offs around privacy, fairness, and accountability in data-driven systems.

Prerequisites

None.

Course Requirements

Software requirements

Google Doc and Sheets

We will make extensive use of Google Drive and Google Documents.

How to create your UW Gmail account: Log into your UW Gmail account to access it. If you still need to set it up, I recommend going (Getting Started with UW G Suite | IT Connect). If you have it set up, you must use the NETID SSO http://gmail.uw.edu.

Google Sheets: A cloud-based spreadsheet tool for organizing, analyzing, and visualizing data. It supports collaboration in real time and can be used to clean data, run basic analyses, and create charts for policy projects.

Canvas

Canvas is the official learning management system of the UW. It simplifies course management tasks, such as publishing course materials, grading, communicating with students, and more. Students can use Canvas to access course content, submit assignments anytime, anywhere, and collaborate with peers and instructors. Canvas is FERPA-compliant and has no service fee for eligible users.

More information about UW Canvas is available on IT Connect.

Github

GitHub is a platform for version control and collaboration that allows you to store, track, and share code and data. In this course, we'll use GitHub to manage assignments, maintain reproducible workflows, and collaborate on projects. https://github.com/

Colab/Python Notebooks

Google Colab is a free, cloud-based platform for running Python or R notebooks. It allows you to write, run, and share code without installing anything locally, making it easy to collaborate and use powerful data science tools. We will also have python notebooks available from UW IT.

Assignments

All assignments are due on the specified due date, as they are closely linked to scheduled guest speakers. Late submissions cannot be accepted. However, I will drop your two lowest scores from the Weekly Speaker Questions, Speaker Reflections, and Weekly Reflections categories.

Course Project

Students will develop a data-driven dashboard that analyzes a policy issue of their choice (e.g., housing affordability, climate resilience, public health, criminal justice). The project integrates data acquisition, cleaning, modeling, and policy communication.

- The core idea is to generate a website that incorporates the basic structure of Policy Brief and data dashboard.
- Clarity and design count!
- Data dashboards can be done in any method you choose, AI, Google Sheets, RShiney, etc.

In Class Reading Responses

Purpose: The goal of the weekly reading response is to engage critically with course materials, connect technical and policy insights, and prepare for in-class discussion. I will provide you with a prompt in class to write your response to.

Instructions: Each week, students must submit a 300-500 word response (about half a page) to the assigned readings in class. Responses should not be summaries; they should instead demonstrate critical engagement, synthesis, and application. They can focus on prompts provided in lecture.

Suggested Components:

1. Key Takeaway (100 words)
    a. Identify one central argument, insight, or method from the readings.
    b. Explain why it is important for understanding the intersection of AI, data science, and public policy.
2. Critical Reflection (100 words)
    a. Raise one or two questions about the readings.
    b. Discuss limitations, assumptions, or ethical implications of the methods or arguments presented.
3. Policy Application (100 words)
    a. Apply the reading to a real-world policy issue of your choice (e.g., housing, climate, healthcare, criminal justice).
    b. Suggest how policymakers, practitioners, or the public might use or misuse the ideas.

Format & Submission

- Submit as a **Google Document Links** to the course website before class each week.
- Use **clear writing, proper citations**, and ensure your response is structured with subheadings for each section.

Drop Policy

- **I drop two in class reading responses – however, these have to be done in class, no make ups.**

Policy Brief

Students will write a 2–4 page policy brief that identifies a relevant issue at the intersection of AI, data science, and public policy. Briefs should clearly define the problem, use evidence and data appropriately, analyze multiple policy options, and make a specific, well-justified recommendation. Strong briefs will be concise, well-organized, and written in a professional policy style. Grading will be based on issue definition and relevance, quality of evidence and integration of AI/data concepts, depth of policy analysis, strength of recommendation, and clarity of writing.

Op-Ed

Students will write an 800–1,000 word op-ed aimed at a general public audience on a contemporary issue at the intersection of AI, data science, and policy. The piece should clearly state a position or argument, explain its significance, and support it with evidence, examples, or data. Successful op-eds will balance accessibility and rigor—avoiding technical jargon while demonstrating a solid understanding of the underlying concepts. Students are encouraged to write with a strong, engaging voice that captures the reader's attention and motivates action or reflection. Grading will emphasize clarity of argument, effective use of evidence, accessibility of writing for a broad audience, and creativity in framing the issue.

AI Lab

Over the course of the quarter, you will complete 11 short lab assignments designed to build hands-on skills in AI and data science for policy. Each lab emphasizes practical application of course concepts through coding, data analysis, or short written responses. ***To allow for flexibility, your lowest lab score will be dropped when calculating your final grade***. All grades will be out of 100.

DS Lab

Across the quarter, you will complete 11 short lab assignments that give you hands-on practice with core data science methods and their applications to policy. Labs will include coding, data exploration, and interpretation tasks that reinforce lecture material. ***To support flexibility, your lowest lab score will be dropped when calculating your final grade***. All grades will be out of 100.

Weekly Reading

READINGS

- All readings are due on Monday

W	D	Dates	NC	Core Readings (Discussion Monday -- All readings due Monday)
Introduction to Research & Policymaking				
0	M	9/22/2025	No Class	--
	W	9/24/2025		John W Kingdon 1984 Agendas, alternatives, and public policies (Chapter 9)
				Elizabeth Grant 2019 Building the Policy Wave: The Power of Data-based Storytelling William T Grant Foundation
Research and Policymaking; Critical Approaches and Engaged Research				
1	M	9/29/2025		Carol H Weiss (1977) "Research for policy's sake: The enlightenment function of social research"
	W	10/1/2025		Kim DuMont (2019) Reframing evidence-based policy to align with the evidence William T Grant Foundation
				Fabienne Doucet (2019) Centering the margins: (Re)defining useful research evidence through critical perspectives William T Grant Foundation
				Jenny Irons (2019) Shifting the lens: Why conceptualization matters in research on reducing inequality William T Grant Foundation
Introduction to Writing for a Policy Audience & Crafting Policy Briefs				
2	M	10/6/2025	No class	Arlene Stein and Jessie Daniels 2018 Going Public: A Guide for Social

				Scientists (Chapter 1)
	W	10/8/2025		Laura ffrench-Constant "How To plan, write and communicate an effective Policy Brief: Three Steps to Success"
				Harry Guinness “How to Edit Your Own Writing” New York Times, April 7, 2020
Case Study: The Policy Brief				
3	M	10/13/2025		Giraudy, et al (2021) Measuring long-term displacement using Facebook data IDMC Global Rep Internal Displacement (GRID), Geneva, Switzerland, Tech Rep
				Cook, P J, & Ludwig, J (2011) More prisoners versus more crime is the wrong question Washington: Brookings Institution
	W	10/15/2025		Tews, S (2025, September 5) Are humans the greatest bottleneck to AI progress? American Enterprise Institute, Center for Technology, Science, and Energy (CTSE)
				Ward, Jason M and Luke Schlake, The High Cost of Producing Multifamily Housing in California: Evidence and Policy Recommendations Santa Monica, CA: RAND Corporation, 2025
				Mignano, Jim and Jonathan W Welburn, Artificial Intelligence and Crypto in Financial Services: Policy Primer Santa Monica, CA: RAND Corporation, 2025
				Ruggles, et al (2019, May) Differential privacy and census data: Implications for social and economic research In AEA papers and proceedings (Vol 109, pp 403-408)
Case Study: The Op-Ed				
4	M	10/20/2025		Seattle Times Op-Ed Tips [Speaker]
				Seattle Times Op-Ed Good Example [Speaker]
				Seattle Times Op-Ed Bad Example [Speaker]
	W	10/22/2025		Karp, A C (2023, July 30) Our Oppenheimer Moment: The Creation of AI Weapons The New York Times
				Douthat, Ross “Peter Thiel and the Antichrist” The New York Times, 26 June 2025
				Trump Taps Palantir to Compile Data on Americans - The New York Times
				Palintar Correcting the Record: Responses to the May 30, 2025 New York Times Article on Palantir Palantir Blog
				The Promise and Peril of AI for Education American Enterprise Institute - AEI
Charts and Graphs, Coding Basic Visualizations				
5	M	10/27/2025		Claus O Wilke Fundamentals of Data Visualization (Sections: 1-7, 10-12, 14)
				Why We Love Diagrams: The Psychology Behind Data Visualization - Data Pilot
				https://online.hbs.edu/blog/post/bad-data-visualization
				Ten Simple Rules for Better Figures
	W	10/29/2025		https://r4dshadleynz/data-visualizehtml
Principles of Effective Data Visualization				

6	M	11/3/2025	No Class	Claus O Wilke Fundamentals of Data Visualization (Sections: 17-26, 29)
	W	11/5/2025	No Class	Tableau Visual Analysis Best Practices: Simple Techniques for Making Every Data Visualization Useful and Beautiful
Mapping Techniques				
7	M	11/10/2025		Campbell & Shin, Geographic Information System Basics, v10 (chapters 1-2)
	W	11/12/2025		Axis Maps Cartography Guide
Data Ethics and Data Justice				
8	M	11/17/2025		Basl, et al (2021) Getting from commitment to content in AI and data ethics: justice and explainability
	W	11/19/2025		https://oecdai/en/ (Skim)
				OECD 2025 AI openness: A primer for policymakers OECD Artificial Intelligence Papers No 44 Paris: OECD Publishing
				Catherine D'Ignazio and Lauren F Klein 2020 Data Feminism Introduction: Why Data Science Needs Feminism
Student Projects: Individual Meetings and Lab Sessions over Zoom/Thanks Giving Week				
9	M	11/24/2025	No Class 🦃	(Application week, drawing on all previous readings)
	W	11/26/2025	No Class 🦃	

Weekly Lab and Assignments

AI and Data Science for Policy Course Work

W	DOW	Dates	NC	Course Project	Assignments Due (Course Assignments)	Data Science Lab	Data Science Lab Assignment	AI Lab	AI Lab Assignment
Introduction to Research & Policymaking									
0	Mon	9/22/2025	No Class						
	Wed	9/24/2025			None				
Research and Policymaking; Critical Approaches and Engaged Research									
1	Mon	9/29/2025		Framing the Policy		Google Sheets	Create a shared Google	AI Tools Overview	Provide an AI tool with a policy

	Wed	10/1/2025		Question: * Select a policy issue and identify stakeholders. * Write a short problem statement with measurable outcomes (e.g., "How do eviction moratoria affect homelessness?").		(basic data organization, manipulation, collaborative features)	Sheet, input a small dataset, and apply basic sorting/filtering	(introduction to Notebook LM, Gemini, ChatGPT, Anthropic Claude)	issue and generate a 3-point outline for a policy brief
Introduction to Writing for a Policy Audience & Crafting Policy Briefs									
2	Wed	10/6/2025	No class						
	Wed	10/8/2025		**Guest Speaker JW Schneider, Google**					
				FPQ Due Friday; Data Collection & Management: * Acquire relevant datasets (public records, surveys, open government data, or APIs). * Practice cleaning, merging, and documenting sources.	Policy Brief Rough Draft Assignment	Write up a reflection on Dr Schneider's take on AI & Data Science.			
Case Study: The Policy Brief									

3	Mon	10/13/2025		DCM Due Friday EOD	Policy Brief Rough Draft Due Sunday	GitHub Websites (GitHub Pages) (hosting simple websites for data/research outputs)	Publish a simple "Hello World" webpage using GitHub Pages from your repository	Use AI to help build simple websites.	Work with AI and github to produce a simple website (joint DS and AI activity)
	Wed	10/15/2025							
Case Study: The Op-Ed									
4	Mon	10/20/2025		**Guest speaker, Melissa Davis, Deputy opinion editor for the Seattle Times**					
	Wed	10/22/2025			Op-ed Rough Draft Assignment	Discuss AI/DS Op-Eds		Peer review of Policy Brief	
Charts and Graphs, Coding Basic Visualizations (with Jupyter Notebooks)									
5	Mon	10/27/2025		Descriptive & Exploratory Analysis: * Use visualization and summary statistics to describe the policy-relevant patterns. * Identify disparities (e.g., by geography, income, race, age).	Op-ed Rough Draft Due Friday; Feedback on Policy Brief on Friday.	Introduction to R in Google Colab (basic data analysis and manipulation)	Run a basic R script in Google Colab to load a CSV and display its first few rows	Generating Op-Ed Prompts and Angles (creative angles, persuasive arguments)	Using an AI tool, brainstorm 3 distinct angles for an op-ed based on a social issue of your choice
	Wed	10/29/2025							
Principles of Effective Data Visualization									
6	Mon	11/3/2025	No Class	Predictive Modeling / AI Methods: * Build a model	Final Draft of Policy Brief Due Sunday Op Ed Peer review (async)	Data Cleaning and Preprocessing in R (Google	Write R code in Colab to identify and handle missing values or outliers in a	AI for Data Storytelling Ideas (generate narratives and	Submit a draft visualization to an AI tool and ask for feedback on clarity, potential
	Wed	11/5/2025	No Class						

				(e.g., regression, machine learning, NLP, or geospatial analysis) that helps answer the policy question. * Evaluate fairness, interpretability, and limitations of the model.		Colab) (practical data cleaning techniques)	sample dataset	insights from data)	misinterpretation, or bias
Mapping Techniques (Parts A & B)									
7	Mon	11/10/2025		PMAIM Due Friday. Communicating Results * Build a simple dashboard (using R Shiny, Python Dash, or a static web app). * Include visualizations, plain-language summaries, and an “executive brief” of findings. * Final product will be a github website.	Monday Op-ed Feedback	Introduction to Spatial Data in R (Google Colab) (basic concepts, simple maps)	Generate a basic choropleth map or point map using a sample spatial dataset in R	AI for Identifying Mapping Biases (identify biases, propose ethical alternatives)	Using an AI tool, discuss how a map could be misleading or biased if not presented carefully, focusing on data selection or visual encoding
	Wed	11/12/2025							
Data Ethics and Data Justice									

8	Mon	11/17/2025		Policy Simulation / Scenario Testing: * Use the model to simulate the impact of alternative policy scenarios (e.g., increased subsidies, different emissions targets).	Final Draft of Op-ed Due Sunday	Ethical Data Handling Practice with R (Google Colab) (anonymization, aggregation, privacy protection)	Demonstrate basic data aggregation or redaction techniques on a small dataset in R to protect privacy	Ethical AI and Data Justice Discussion (facilitate discussions, generate perspectives)	Use an AI tool to generate arguments for and against the use of specific data in a hypothetical policy decision, focusing on ethical concerns
	Wed	11/19/2025							
R practice and Project									
9	Mon	11/24/2025	No Class 🦃	PSST and CR Due Sunday.	Set up 1-1 to discuss final project	Project Work Session with R (Google Colab) (apply R skills to final projects)	Prepare a progress report of your final project's data analysis and visualization in R, sharing your Colab notebook	AI for Project Feedback and Refinement (feedback on ideas, analytical approaches, communication strategies)	Input your final project proposal or draft to an AI tool and request feedback on its clarity, scope, or potential weaknesses
	Wed	11/26/2025	No Class 🦃						
Student Projects: Individual Meetings and Lab Sessions									
10	Mon	12/1/2025		1-1 Meeting 1:30-3:30	Sign up for 1-1				
	Wed	12/3/2025		Open Lab help for course project 1:30-3:00 (and/or make up for 1-1 on monday if you can't make it)					

Finals Week									
11	Mon	12/8/2025		Submit website with full write up and dashboard.	Submit Final Project 12/10.				
	Wed	12/10/2025							

Grading

Note about grading

Lectures, readings and review sessions are provided for each student's benefit. It is the student's responsibility to take advantage of these opportunities to acquire and demonstrate mastery of course material and achieve his or her desired grade.

Assignment	**Number of Assignments**	**Percent of Grade**
Project	6	30
AI Lab	10	10
DS Lab	10	10
Policy Brief	1	15
Policy Memo	1	15
In Class Reading Response	9	20
Total	**–**	**100%**

Letter grade assignment

% Points Earned	Number grade	Letter Grade
100-97	4.0-3.9	A
96-90	3.8-3.5	A-
87-89	3.4-3.2	B+
86-84	3.1-2.9	B

83-80	2.8-2.5	B-
79-77	2.4-2.2	C+
76-74	2.1-1.9	C
73-70	1.8-1.5	C-
69-67	1.4-1.2	D+
66-64	1.1-0.9	D
63-60	0.8-0.7	D-
59-0	0	F

Grading Policy

If you wish to contest a grade, please outline in writing via email (1) what assignment you are contesting, (2) the grade you received on the assignment, and (3) the reason(s) why you believe the grade you received is unfair. Whatever the outcome, the score from the re-grade will be final. The grade appeals process should be initiated within seven days of receiving the grade in question.

Syllabus Change Policy

The instructor reserves the right to modify the syllabus, including assignments, readings, grading criteria, and schedule, at any time during the course. Any changes will be communicated to students in a timely manner via email and canvas. It is the student's responsibility to stay informed about updates.

University of Washington Policies

ACCOMMODATIONS FOR RELIGIOUS ACTIVITIES
Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy. Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form.

DISABILITY ACCESS & ACCO\MMODATIONS:

It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you experience barriers based on disability, please seek a meeting with DRS to discuss and address them. If you have already established accommodations with DRS, please communicate your approved accommodations to
me at your earliest convenience so we can discuss your needs in this course. Disability Resources for Students (DRS) offers resources and coordinates reasonable accommodations for students with disabilities. Reasonable accommodations are established through an interactive process between you, your instructor (me) and DRS. DRS information can be found at: Disability Resources for Students.

SOCIOLOGY DIVERSITY STATEMENT:
The Department of Sociology at the University of Washington values diversity, equality, and inclusivity in our community. We realize these goals in our classrooms by questioning assumptions in our texts, discussions, and our own thinking, and by holding all members of our community to the highest standards of respectful and open communication, as laid out in the UW Student Conduct Code.

ACADEMIC INTEGRITY
See Student Conduct Code | Community Standards & Student Conduct for crucial information regarding academic integrity. The library also has an extremely useful website with resources at Library Guides: Academic Integrity and Plagiarism Prevention Resources: Academic Integrity & Plagiarism. You are responsible for knowing what constitutes a violation of the University of Washington Student Code, and you will be held responsible for any such violations whether they were intentional or not. A clear list of rules and examples of violations can be found : Student Academic Responsibility

MANDATORY REPORTING STATEMENT
* CAUTION! Please note that we are mandatory reporters, which means that we may be required to report it to the University if you share with me experiences of past abuse or plans to harm yourself and others.

UW Student Resources

STUDENT RESEARCH RESOURCES:
- *Libraries*: University of Washington Libraries
- *Center for Statistics and the Social Sciences (CSSS):* Home | Center for Statistics and the Social Sciences
- *Center for Social Science Computation and Research (CSSCR):* The Center for Social Science Computation and Research
  Center for Studies in Demography and Ecology (CSDE): Computing

UW WRITING CENTERS

- *Sociology Writing Center* (open to all students enrolled in this course): SAV 203; Sociology Writing Center 206.221.0972
  Students who want to make an appointment should email writesoc@uw.edu.
  Students may also make appointments by calling or visiting the Advising Office.
- *Odegaard Writing and Research Center* (open to all students) : Odegaard Undergraduate Library — UW Libraries. Phone 206.221.0972 and 206.543.5396.
- Center for Undergraduate Learning and Education (CLUE): email clue@uw.edu
  This Week at CLUE: UW Academic Support Programs.

Other student support services

Dispute Resolution and Bias Reporting Supports

- *Office of the Ombud*: Office of the Ombud 206-543-6028
- *Bias Report* (for incidents of bias in any form): Report Bias
- *Community Standards & Student Conduct*: Making a report | Community Standards & Student Conduct
- *Title IX/ADA Coordinator* if complaint is related to disability accommodation, sex/gender discrimination, or sexual harassment (Title IX): (scroll down to bottom of page to "Grievance Procedures & Barrier Reporting") Policy, law and reporting | Compliance

Financial Assistance

- *Emergency Aid:* Seattle | Emergency Aid
- *Office of Student Financial Aid*: Contact us | Student Financial Aid
- *Short Term Emergency Loans:* Short-term loans | Student Financial Aid
- *Campus Food Pantry:* Get-Food
- *Housing Assistance*: Other assistance | Student Financial Aid

Mental Health Supports

- *Health and Wellness office:* LiveWell Center for Student Advocacy, Training, and Education 206.543.6085
- *Hall Health:* http://depts.washington.edu/hhpccweb/
- *Hall Health Mental Health:* Hall Health
- *Counseling Center:* About the Counseling Center | Counseling Center
- *Resources Re: Sexual / Relationship Trauma:** Sexual Assault Resources

Building Community

- *Office of Minority Affairs & Diversity:* Office of Minority Affairs & Diversity
- *Samuel E. Kelly Ethnic Cultural Center*: Samuel E. Kelly Ethnic Cultural
- *Q Center (for Queer community, including Questioning):*
  Q Center
- *Intellectual House (for Indigenous community):*
  wəɬəbʔaltxʷ – Intellectual House | Diversity at the UW
- *International Student Center:* International Student Services - International Student ServicesInternational Student Services

- *Deaf and Disability Cultural Center (D Center):* HUB 327 D Center at the University of Washington
- *Undocumented Student Resources:* Undocumented student resources | Admissions

Technology Supports (and remote learning related supports)

- *IT Connect* (tech support services for students): Teaching and Learning Tools
- *Internet connection and free wifi hotspots* (enabled during COVID-19 outbreak) Internet connectivity for learning, teaching and working remotely
- *Laptop Loans* Remember that through the technology fees that you pay you can reserve a laptop if you need to! Laptops for takeout or delivery: Student technology program readies for spring quarter
- *Online Academic Success Coaching*: Success Coaching: UW Academic Support Programs
- *Online Study Skills Resources*: (e.g. time management) Study Skills: UW Academic Support Programs
- Video on preparing for online learning: https://vimeo.com/4012001600