

URPL-GP-1620

Data Analysis, Mapping, and Storytelling

Fall 2024 Syllabus

Last updated September 8, 2024

## Course dates: September 9 - December 12, 2023

## Class hours and locations

Lecture: Mondays, 6:45 - 8:25p, Kimmel Room 808 (60 Washington Sq S)

Labs:

* Mondays, 8:35-10:15p (Patrick), Kimmel Room 808 (60 Washington Sq S)
* Tuesdays, 8:35-10:15p (Henry), Silver Ctr Room 402 (31 Washington Pl)
* Wednesdays, 6:45-8:25p (Lucy), Silver Ctr Room 500 (31 Washington Pl)
* Thursdays, 7-8:40p (Ceinna), Tisch Room LC2 (40 W 4th St)

## Contact info

Lucy Block, Co-instuctor: [lucy.block@nyu.edu](mailto:lucy.block@nyu.edu)

Patrick Spauster, Co-instructor: [ps4375@nyu.edu](mailto:ps4375@nyu.edu)

Henry Kanengiser, Teaching Assistant: [henry.kanengiser@nyu.edu](mailto:henry.kanengiser@nyu.edu)

Ceinna Little, Teaching Assistant: [cdl451@nyu.edu](mailto:cdl451@nyu.edu)

## Office Hours

Normal office hours will be **Sundays from 11a-12p**. On weeks before assignments are due, there will be an additional office hour on **Wednesday 5:30-6:30p**. During office hours, an instructor or TA will be available on Slack and Zoom to answer questions. Students can also reach out to instructors if needed for check-ins outside of lab and office hours.

Use [this Zoom link](https://nyu.zoom.us/j/96789257465) to attend office hours.

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## Preparing for this Course

A solid working knowledge of data analysis using spreadsheets is an important foundation for the work we will do in this course. We strongly recommend that you complete the [spreadsheets training online course](https://docs.google.com/document/d/1JPUjW5KRYK4bsHN5rnuJ-NkdABlpudhu3uGlI7nIB8U/edit) prior to the beginning of class. You are welcome to skip any topics you already know. Please note that it is up to each student to determine whether or not they are familiar with working in spreadsheets; taking and passing the Google Sheets training is not a prerequisite for enrollment in this course.

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## Course Description

This course will train students in the sound application of data and spatial analysis tools to clean, manipulate, analyze, map, and visualize data to support their work throughout their urban planning careers. The course emphasizes the critical role of communication, design, and storytelling in effective data analysis and visualization. Students will learn programming, data analysis, research, data visualization, writing, and communications skills. Students will engage with multiple tools and techniques, with a focus on R and QGIS. The course will help students build a foundation in working with data that will allow them to learn and master additional programs, languages, and tools toward future goals.

## Objectives

1. Learn how to find and access data relevant to the planning realm and understand sources, metadata, and limitations
2. Build a skillset of modern tools and techniques to obtain, process, clean, manipulate, and aggregate raw data
3. Learn to visualize and communicate spatial and tabular data with purpose, gain insights, and tell stories with data
4. Prepare a comprehensive, data-driven analysis of an urban planning issue that uses the tools and techniques learned in class.

## Notes

* The course requires a computer (Mac, Windows, or Linux) that can handle data processing and has permissions to install software. Students will not be dependent on a computer lab to do their work. Please contact the course instructors as early as possible if this requirement poses any issue to you.
* Students will need to install R and QGIS on their personal computers for this class. Instructors will provide instructions for installation.
* Tools taught and demonstrated in the course will be Free and Open Source Software (FOSS) or free-tier cloud services, with minimal exceptions. This provides maximum potential for application of these skills during the student’s time at Wagner and beyond.
* Students should give clear attribution and sourcing for all code and data, in assignments and the final project.

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## Class Format

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**Recorded technical demos**

Students will be expected to watch assigned demo videos prior to each lecture to learn the technical content of this course. Technical demos will build on each other and become more advanced as the course progresses.

**Lecture**

Lectures will include presentations and discussions of key concepts such as spatial and tabular data analysis, data storytelling, data visualization, and mapping. Lecture attendance is required.

**Lab**

Labs provide time for students to try out and troubleshoot the tools and skills covered in the technical demos through lab activities with help close-by from instructors. Labs will also be used to review and discuss assignment expectations and for peer review before assignments are due. Each lab will be run by one instructor or teaching assistant, who will also grade your assignments. Lab attendance is required.

### Class Notes

The instructors will use a google doc during each session to keep track of class Zoom recordings, as well as any other relevant notes, links, code snippets and other resources for students to reference.

### Slack

A Slack workspace will be the main mode of communication throughout the class. Students are expected to check Slack regularly for class announcements and important information. Instructors and students will use Slack to share code snippets, examples, links, and other resources. Students are encouraged to ask questions in the #general channel, share their work, and help each other if possible. Do not direct message the instructors with technical questions. Ask questions in the #general channel, so everyone can benefit from the exchange.

### Brightspace

Brightspace will be used only for assignment submission and for grading.

## Class Schedule

Note that class topics and schedule are subject to change based on our progress and needs identified during the semester.

***September 2 - Labor Day*** *- no lecture, no labs - work on spreadsheet tutorials to prepare for Class 1*

**September 9 - Class 1** - Intro to the course, research with purpose

**September 16 - Class 2** - Data sources, intro to programming, data types

**September 23 - Class 3** - Data analysis continued

**September 30 - Class 4** - Data storytelling and visualization

**October 7 - Class 5** - Data visualization continued

**October 15 - Class 6** - Intro to GIS

* Assignment 1 due
* October 14 Indigenous Peoples Day, so Monday’s lecture and lab meets on Tuesday instead. Students in the Tuesday lab can optionally attend lab on Tuesday, Wednesday, or Thursday that week.

**October 21 - Class 7** - GIS continued

**October 28 - Class 8** - Mapping Census data, tidycensus and sf

**November 4 - Class 9** - Custom styling your maps

**November 11 - Class 10** - Advanced QGIS and mapping

**November 18 - Class 11** - Guest speakers, flex

* Assignment 2 due
* Thursday November 24 and Friday November 25 is Thanksgiving. Students in the Thursday lab can optionally attend a Monday, Tuesday, or Wednesday lab that week if they wish.

**November 25 - Class 12 -** Guest speakers, flex

* Assignment 3 due

**December 2 - Class 13 -** Guest speakers, flex

**December 9 - Class 14 -** Closing thoughts, flex

* Final projects due

**Final Presentations:**

* Students will give their final presentations in their assigned **lab section** the week of December 9 (on December 9, 10, 11, or 12).
* The final presentation is due by the start of your lab section.

## Evaluation

### Participation

The participation grade will be based on the student’s active engagement on the course Slack workspace and during lectures, lab and peer review sessions with fellow students. There are many opportunities to ask for help, to help others, or to share tips, tricks, and best practices. Students are encouraged to share articles, visualizations, maps, tools, and anything else relevant to the course material to facilitate discourse. Absences from lecture or lab without prior notification to your instructor/TA will negatively affect participation grades.

### Assignments

There will be three assignments in this course in addition to the final project. Assignments 1 and 2 are “data stories” written in blog format that will demonstrate the data analysis, visualization, and communication concepts covered in class. Assignment 1 will require the use of R for data analysis and Assignment 2 will require the use of QGIS. Students are encouraged to choose subjects and data sources that interest them, and can optionally use Assignments 1 and 2 to build towards the final project. Assignment 3 will focus on preparing for the final project. Assignments will be graded on a 10 point scale.

### Final Project

The final project will consist of a blog and presentation that tells a data story about an urban planning-related topic of your choosing, making use of the tools and techniques learned in class. The final project will require both technical analysis and effective visual and written communication techniques. The analysis will contextualize and pose a clear research question, demonstrate analysis methods, visualize and communicate findings, and provide interpretation of the results. Projects must also include thorough documentation that allows others to follow and replicate the analysis. Students may work in pairs or independently. Any team larger than two must be approved by instructors. Each team will give a presentation of their project in their final lab session.

### Grading Breakdown

Students will be graded by their assigned lab instructor. If students choose to do their final project in a group with students from another section, their final project may be graded by that instructor instead.

* Participation: 20%
* Assignments: 30% (3 assignments, 10% each)
* Final Project: 50%
  + 10% - In-class presentation
  + 40% - Blog post and supporting documents

### Attendance

If you know you need to miss a lecture or lab, communicate with your instructor/TA in advance so you can stay on track with course work. If you miss lectures or labs without communicating in advance, it will negatively impact your participation grade.

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### Late Assignments

Communicate with your instructor if you anticipate needing more time to complete an assignment. If in doubt, get in touch. If we hear from you, we can accommodate your needs and figure out a plan with you. Late submission without advance communication will result in a 10% reduction in your grade for that assignment if submitted before the following assignment is due and 25% reduction if submitted after the following assignment is due.

### Extra Credit

Some lab sessions will involve a small assignment or activity that builds on the skills covered in lecture. While students are not required to complete these activities, students will have the opportunity to submit their completed work for 0.5 points of extra credit per assignment. Extra credit assignments are due by the following lab session to your instructor via Slack or email (not Brightspace).

## Additional Notes

### Academic Integrity

Academic integrity is a vital component of Wagner and NYU. Each student is required to sign and abide by Wagner’s Academic Code. Plagiarism of any form will not be tolerated since you have all signed an Academic Oath and are bound by the academic code of the school. Every student is expected to maintain academic integrity. If you are unsure about what is expected of you, you should **ask**.

**Use of AI**

Artificial Intelligence tools such as ChatGPT can be very useful for helping write code and troubleshooting errors, similarly to searching a web forum such as StackExchange, and we will cover such uses in this course.

If you use AI, we expect you to use it as an assistant to your own original work, as opposed to doing the work for you. We will cover documentation guidelines for AI when we discuss assignments.

You are fully responsible for the quality and content of the assignments you submit. AI tools can be a helpful assistant to organize ideas but at no point should you use text written by AI in the body of your assignments. AI cannot craft a data story of the complexity and originality required for this class, so it cannot and should not replace your own critical thinking required to produce work in this course.

### Accommodations for Students with Disabilities

Academic accommodations are available for students with disabilities. Please visit the Moses Center for Students with Disabilities (CSD) website at www.nyu.edu/csd and click on the Reasonable Accommodations and How to Register tab or call or email CSD at (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.

### 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.