New York University
Robert F. Wagner Graduate School of Public Service

EXEC-GP 4119 Data Visualization and Presentation - Spring 2017

Course and Instructor Information

Section(s): 001
Instructor: Andrew Battista
Days: Saturday
Office: Bobst 523 D & Puck 3049
Location: Bobst LL 138
Phone: 212-992-7312
Time: 2:30 - 4:10 PM
Email: ab6137@nyu.edu
Credit Hours: 1.5
Class Twitter Hashtag: #WagnerDataViz

Course Blog: http://dataviz.hosting.nyu.edu

Required Texts: None

Office Hours: M-F, Bobst Library, by appointment; alternating Thursdays in Puck, 4-6 PM

Course Overview

We live in a data-rich world in which seemingly simple representations draw attention to or obscure complex realities. Data has the potential to inform decision-making and influence public or corporate policy. When situated with appropriate context, visualized data has the power to change the world. Increasingly, nonprofits and agencies ask workers to compile data and design visualizations as a way to advance a cause or spread a message. In this hands-on introduction to data visualization and presentation, we will focus on finding data from public sources, cleaning and structuring it, then circulating visualizations on blogs, social media, or other online platforms. We will focus on developing the skills of data literacy, presentation, and advocacy. Our learning will take place through a sequence of projects that invite students to frame a problem or a question related to their career, find data, create visualizations, and finally embed those products within a narrative on an online medium. This course is a part of the Executive Master of Public Administration curriculum in NYU’s Robert F. Wagner’s Graduate School of Public Service.

Course Learning Objectives

During the semester, and through recursive exercises in visualizing data, students in EXEC-GP 4119 Data Visualization and Presentation will learn to:

- Frame a problem, phenomenon, or challenge related an area of public service in order to identify opportunities for intervention and activism
- Locate appropriate data and assess its usefulness in order to develop an informed awareness of social patterns

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• Manipulate third-party visualization platforms in order to create arguments for social change
• Develop proficiency with data manipulation and online presentation environments in order to make visualizations honest and aesthetically compelling
• Provide context for visualizations by blogging in order to help others interpret data effectively

Course Evaluation

Your overall course grade in EXEC-GP 4119 Data Visualization and Presentation will be determined according to your performance in 7 categories or assignments:

• General Participation: 10%
• Visualization 1: 10%
• Visualization 2: 10%
• Visualization 3: 20%
• Visualization 4: 10%
• Visualization 5: 10%
• Group Data Storytelling Project: 30%

General Participation (10%): Because learning depends on active involvement, the participation grade will be derived from your contributions in all facets of the course, especially (1) attendance (2) comments on the course blog, (3) tweets that use our class hashtag, and (4) engagement during in-class discussions. As long as you do good work in each of these categories (i.e., arrive to class on time, contribute ideas to class discussion, tweet about the class, and write thoughtfully on the blog), you can expect to receive full participation credit.

Weekly Visualization Assignments (60% combined): At least 6 days before our class meetings, you are required to post a visualization to the blog. Guided assignments will be released in advance of each class. Please categorize your posts appropriately and follow the guidelines on the course blog. In order to receive credit, posts must be published in advance of the class to which they pertain. To restate, all assignments are due six days before we meet as a class; if you turn in an assignment after that, but before we actually meet, you will still get credit but will be penalized via a reduced participation grade. If you turn in a visualization after our class meets, you won’t receive credit for it. The visualizations will be assessed according to the rubric below.

Group Visualization Project (30%): Our culminating major visualization project will be completed in groups. It is meant to be an extension and an expansion of the skills developed in the individual visualization projects. The group project will also be assessed according to the rubric below. All members of the group receive the same grade on the project, no matter how much or how little work each individual member of the group does.

As you’ve noticed, each of these components add up to a total of 100 percentage points. The grade that will be filed with the registrar is derived from the following scale:

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A = 93-100; A- = 90-92; B+ = 87-89; B = 83-86; B- = 80-82; C+ = 77-79; C = 73-76; C- = 70-72; D+ = 67-70; D = 60-66; F = Below 60

### Sample Visualization Assessment Rubric

<table>
<thead>
<tr>
<th>Category</th>
<th>Scant Development (1)</th>
<th>Minimal Development (2)</th>
<th>Moderate Development (3)</th>
<th>Substantial Development (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evidence</strong></td>
<td>Data is not attributed or even present; No external source of information identified</td>
<td>Data source unclear or originates from spurious places</td>
<td>Data from some reputable sources are integrated, even if there are some lapses in explaining the external context of the source; data does not correspond ideally to the question being asked</td>
<td>Data comes from multiple highly reputable sources; Data is supplemented with references to relevant scholarship</td>
</tr>
<tr>
<td><strong>Context</strong></td>
<td>Little or no prose to explain the rationale of the visualization</td>
<td>Only fragmentary sentences or bullet points to help provide context for the visualization; difficult to decipher a logic of discovery for the issue</td>
<td>Generally good writing associated with visualization that helps the viewer interpret it, but some lapses in the narrative framework associated with the issue at hand</td>
<td>Insightful prose that integrates argument, evidence, scholarship, and ideas to compliment visualization; Personal methodology behind how the data was collected and computed is explained</td>
</tr>
<tr>
<td><strong>Data Cleanliness</strong></td>
<td>No manipulation of data is evident; Visualization is indecipherable because of unstructured data; “raw” data is not present</td>
<td>Some lapses in manipulation of data, which make the visualization appear to be cumbersome or unclear</td>
<td>Data has been structured with an eye for functionality with visualization platform</td>
<td>Data is impeccable in its structure; Column headings are clean and identifiable, multiple datasets are organized</td>
</tr>
<tr>
<td><strong>Aesthetic Design</strong></td>
<td>No apparent attention given to choice of color coordination, user experience, or appropriateness of visualization type; visualization not actually embedded</td>
<td>Some questionable or confusing choices regarding color, visualization type, or layout</td>
<td>Acceptable visual presentation, but with some lapses in clarity and design</td>
<td>Meticulous care given to colors, design, user experience, and presentation of visualization on the blog; The kind of visualization is appropriate given the data being presented</td>
</tr>
<tr>
<td><strong>Intellectual Intervention</strong></td>
<td>Almost no clear intervention, argument, or commentary present; visualization is a facile representation of data or statistics derived from another source</td>
<td>An issue of importance is identified but not clearly fleshed out developed to the full extent</td>
<td>An issue of importance is evident in the visualization, but some lapses occur in the argument behind the visualization</td>
<td>Visualization illuminates changes in time; Makes a clear argument; Puts disparate things in relationship to each other; Underscores a social pattern; Develops a clear sense of why data matter</td>
</tr>
</tbody>
</table>

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Course Policies

Attendance: EXEC-GP 4119 Introduction to Data Visualization demands interaction, discussion, and constructive criticism, all of which are compromised when you are not in the classroom. Because this class meets once every other week and only seven times throughout the semester, you are expected to attend every session and arrive on time. I realize that NYU is a nonsectarian institution that supports religious observance of all kinds, and I will account for that accordingly.

Discussion: We will respect others in the classroom. The discussions we’ll have about data visualization, culture, knowledge, public policy and politics will inevitably involve provoking issues (many of which may evoke some level of passion—and rightly so). However, exclusionary, or offensive language in the class or on the class blog is not appropriate and will not be accepted. I am confident that people in the class will approach the course readings, discussions, and writings respectfully.

Updates: This syllabus is a fluid document. I will do my best to keep readings and assignments current and announce changes on the course blog, but it is your responsibility to refer to this syllabus before class each week. Note also that it will always be posted prominently on the course blog homepage. Please finish class readings, blog posts, and projects before coming to class.

Technology: You are expected to have a baseline familiarity with modern web applications and use them. If you do not feel comfortable with downloading files, extracting files from a .zip archive, locating files you’ve downloaded on your hard drive, uploading files, creating an account with an online platform, copying and pasting text from one document to another, keeping track of passwords to multiple accounts, or checking e mail, you will need to refine these skills in order to complete this class. Also note that your learning in this class will be greatly increased if you bring your own laptop. If you don’t have a laptop, you may borrow one at the Bobst Library Computing Center, conveniently located just steps from our classroom.

Privacy: Many of the platforms we will explore in this class preserve data and information about us, and the work we do on them leaves an inevitable “digital trail” online. And while the chief learning goal of this course is to develop the skill public presentations, I want to respect your right to privacy. If you are not comfortable with sharing elements of yourself on a public forum, you are invited to take the following precautions:

- Develop a public-facing username that reveals your identity to the degree that you are comfortable
- Use visualization tools that are associated with NYU, such as Plot.ly and Google Drive
- Delete all traces of your work from the course blog at the conclusion of the semester

Note that our class blog and the database behind it are hosted by Reclaim, mediated by an agreement with NYU, and controlled by me. If you have any questions about the platforms we are using, please [view the blog](http://tiny.cc/wagnerdataviz).
don’t hesitate to ask.

**ADA Statement**

New York University is committed to providing equal educational opportunity and participation for students with disabilities. It is the University’s policy that no qualified student with a disability be excluded from participating in any University program or activity, denied the benefits of any University program or activity, or otherwise subjected to discrimination with regard to any University program or activity. **Any student who needs a reasonable accommodation based on a qualified disability is required to register with the CSD for assistance.** For more information on registering, go to [http://www.nyu.edu/life/safety-health-wellness/students-with-disabilities.html](http://www.nyu.edu/life/safety-health-wellness/students-with-disabilities.html)

**Plagiarism, Academic Dishonesty, and Incomplete Grades**

This course will abide by the Wagner School’s general policy guidelines on incomplete grades, academic honesty, and plagiarism. It is the student’s responsibility to become familiar with these policies. All students are expected to pursue and meet the highest standards of academic excellence and integrity.

The Wagner School has a strict policy regarding incompletes. The grade of "Incomplete Pass" will only be available in extreme circumstances such as serious medical emergencies. Students may withdraw from the course up until the date set by the Registrar. Students who withdraw will receive a grade of W and will have to pay for the course again when they retake it. For a complete description of these policies, see [http://wagner.nyu.edu/students/policies/incompletes](http://wagner.nyu.edu/students/policies/incompletes)

Academic dishonesty will not be tolerated. Cheating, forgery, plagiarism and collusion in dishonest acts undermine the Wagner School’s educational mission and your own personal and intellectual growth. You are expected to bear individual responsibility for your work and to uphold the ideal of academic integrity. Any student who compromises or devalues the academic process will be reported to the administration and be subject to disciplinary action. For a complete description of these policies, see [http://wagner.nyu.edu/students/policies](http://wagner.nyu.edu/students/policies) and [http://wagner.nyu.edu/students/policies/academic-code](http://wagner.nyu.edu/students/policies/academic-code)

**Course Communication**

Our course syllabus is posted on NYU Classes, but all course communication will take place via our blog and through NYU e mail. You are expected to use your nyu.edu e mail address throughout the course. Also note that this class is supported by Alex Ducett ([amd25@nyu.edu](mailto:amd25@nyu.edu)). You are encouraged to direct questions to her about readings, tools, or assignments.

**Midterm Progress Report**

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I will provide a progress report at the middle of the semester, on or around March 15. This report will give you an overview of your work and a projection of your grade. Aside from this progress report, you are always welcome to contact me regarding the class, but I will not calculate your grade or comment on it until the semester is over. To me, the final grade is subservient to the learning you experience in the class.

**Student Resources**

NYU Wagner offers a robust range of resources that will help you do well in this class. These resources include a memo-writing boot camp, a writing-intensive workshop, individual writing help, an overview of Microsoft Excel, and introductory sessions to library research and citation. See the [Writing Support resources](http://tiny.cc/wagnerdataviz) on the Wagner website for more information.
Course Schedule

January 28 - Introductions

Themes: Who are we? What kind of work do we do? What makes a data visualization meaningful?

Reading(s): Ben Fry, “The Seven Stages of Visualizing Data,” from Visualizing Data (2007)

Due: Write a blog post in which you embed or link to a visualization that someone else has created. What do you like about it? What makes it effective? What problem do you think it solves? How could it be better? What is the source of the data, and how was the data constructed? What do you think is the message of the visualization?

February 11 - Aesthetics, Design, User Experience, and Honesty

Themes: How do we know which visualization style or kind to use? How do our design choices, including color, tone, or interface influence the way that we process information? What ethical obligations do we have when we choose to visualize data?

Focus: Google Sheets


Due: Visualization 1 (February 5, 11:59 PM EST)

February 25 - How to Find Data

Themes: Where do we look for data? How can we tell if it’s good or not? What are some best practices for downloading public data sets?

Focus: Tableau


Due: Visualization 2 (February 19, 11:59 PM EST)

March 11 - Data Janitor Work, or Visualizations Don’t Just Happen

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Themes: How do we know what do with data once we’ve found it? What does it mean to clean data for visualization, and what are some common principles we should keep in mind when cleaning data?

Focus: Tableau part 2 & Carto


Due: Visualization 3 (March 5, 11:59 EST)

March 25 - The Constructed Variable

Themes: How can we put disparate things in relationship with each other for visualization? How can we show changes in time? What kind of thought needs to go into data in order for us to best reach our audience?

Reading(s): Matthias Shapiro, “Once Upon a Stacked Time Series,” in Beautiful Visualization: Looking at Data Through the Eyes of Experts, Julie Steele and Noah Iliinsky (2010).

Due: Visualization 4 (**UPDATED** March 25, 2:29 EST)

April 8 - Context and Analysis: The Art of Data Storytelling

Themes: How can we write blog posts that illuminate our visualizations? What does it mean to be a data storyteller?


Due: Visualization 5 (April 2, 11:59 EST)

April 22 - Final Presentations

Themes: Wrapping up and showcasing group visualization projects, evaluating the course

Due: Group Data Storytelling project (Projects are due in class)

*updated 3/30/2017

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