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EVANS SCHOOL
OF PUBLIC POLICY & GOVERNANCE

UNIVERSITY *of* WASHINGTON

PUBPOL 543 A: VISUAL ANALYTICS FOR POLICY AND MANAGEMENT

Prof. José Manuel Magallanes, PhD.

Winter 2022

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Office Hours: By appointment   Class Hours: 8:30-11:20 (Mondays)
Class Room: Parrington Hall 320

Course Description

This course gives students the tools to show insights to political or scientific communities, while presenting different strategies to avoid biased interpretations. Given the overwhelming computational toolbox for displaying information, the course follows a 'keep it simple' approach from the beginning, starting from foundational topics relating color, nature of data, and the brain; and takes students to build their own visualization tools. Emphasis is placed on complex data such as networks, geography and multivariate models. While the course uses R, it makes no emphasis on programming and more on the building of templates to produce information.

There is no pre-requisite for this course.

Course Objectives

1. Carry-out visual analytics following a reproducibility/replicability approach.

2. Master basic data visualization techniques following a 'keep-it-simple' approach.

3. Become an effective user of templates in R to produce graphics.

4. Be a reflective user of data science tools for informing on public data.

Course Book

There is no required book for the course.

Recommended Readings

- R Manuals: **https://cran.r-project.org/manuals.html**

- You can supplement some classes with:

    Magallanes Reyes, J. M. (2017). *Introduction to Data Science for Social and Policy Research: Collecting and Organizing Data with R and Python*. Cambridge University Press, 1 edition edition.

Software installations required

Students have to install the following software in their computers:

- R (choose according to your Operating System):
  https://cran.r-project.org/

- RStudio Desktop Personal License (choose according to your Operating System)
  https://www.rstudio.com/products/rstudio/download/

- LATEX:
  https://www.latex-project.org/get/

- ZOTERO:
  Get an account at **https://www.zotero.org**, and then download the desktop app.

- GITHUB:
  Get an account at **https://github.com/**,
  and then download the desktop app from **https://github.com/**

Evans School Community Conversation Norms

This course has adopted the Evans School Community Conversation Norms. Please be aware of these norms in interactions with the instructor and other students. At the Evans School, we value the richness of our differences and how they can greatly enhance our conversations and learning. As a professional school, we also have a responsibility to communicate with each other–inside and outside of the classroom–in a manner consistent with conduct in today's increasingly diverse places of work. We hold ourselves individually and collectively responsible for our communication by:

- Listening carefully and respectfully

- Sharing and teaching each other generously

- Clarifying the intent and impact of our comments

- Giving and receiving feedback in a "relationship –building" manner

- Working together to expand our knowledge by using high standards for evidence and analysis

Changes to the Syllabus

The professor reserves the right to make changes to the syllabus during the quarter. The professor will notify students immediately by email and in class if any changes are made.

Grading Policy

Grades are based on the following class project:

- Preparing *good* univariate plots will give you 1 points on the final grade.

- Preparing *good* bivariate plots will give you 1 points on the final grade.

- Preparing *good* maps will give you 1 points on the final grade.

- Preparing *good* text plot will give you 1 points on the final grade.

All the plots have to be displayed in a dashboard. All your work has to be organized in a GitHub repository.

Working in groups

This course requires working in pairs. You should have decided who will be in your group by the end of the **first** week of classes.

Course Schedule

Week 01, 01/03 - 01/07:   Principles of visual communication.

- Components
- Objects
- Data

Week 02, 01/10 - 01/14:   Tabular Data: univariate categorical data

- Nominal values.
- Ordinal values.

Week 03, 01/17 - 01/21:   Tabular Data: univariate numerical data

- Continuous values.
- Discrete values.

Week 04, 01/24 - 01/28:   Tabular Data: bivariate case

- Plotting categorical-categorical associations.
- Plotting categorical-numerical relationships.
- Plotting numerical-numerical relationships.

Week 05, 01/31 - 02/04:   Tabular Data: multivariate case

Week 06, 02/07 - 02/11:   Spatial Data

- Introducing shapefiles: point, line and polygon. Projection and coordinate system.
- Plotting multiple layers of spatial data.

Week 07, 02/14 - 02/18:   Dashboards and Reproducible environments

- Creating a Github repo.
- Connecting the repo to RStudio.
- Latex and Markdown in RStudio.
- Connecting to Zotero files.
- Dashboard and interactive plots

Week 08, 02/21 - 02/25:   Working on your own: preparing first project draft

Week 09, 02/28 - 03/04:   **Text Data**

Week 10, 03/07 - 03/11:   **Network Data**

- Relationships among agents.

- Relationships among words (n-grams).

Week 11, 03/14 - 03/18:   Final week: submitting final project.

Remote teaching protocol

- Attendance is recommended, but every session will be recorded in case you can not attend. If a student attends, his/her camera should be activated.

- Group meetings need to be recorded.