Applied Social Data Science - Coding Camp

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PhD Candidate

September 4 - 8, 2023

Introductions

- My background and projects

  Public Policy + Computational Methods

Examples: Thesis (super) preliminary results

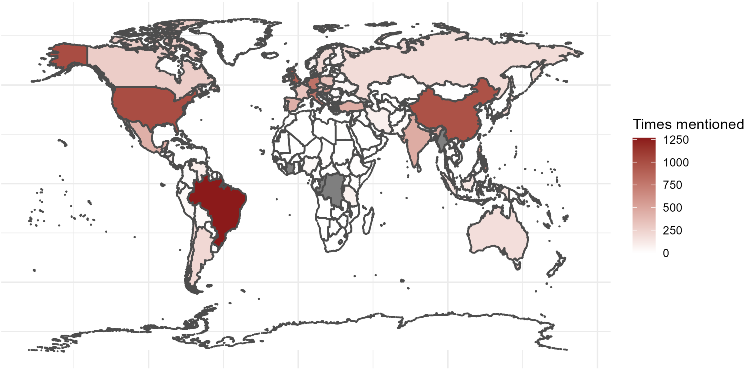

Figure: Number of times each county is mentioned in studies on populism and health/science included in the review.

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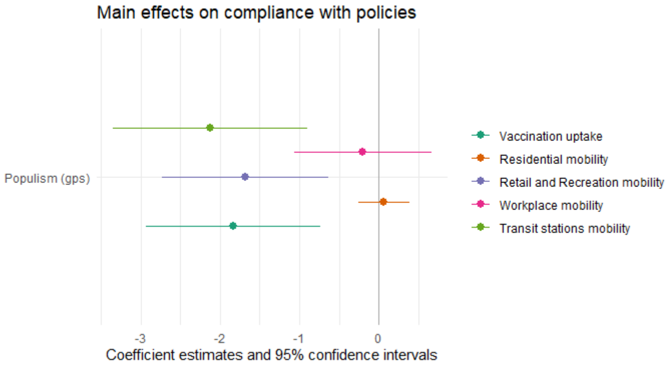


Figure: Estimating the main effect of populist rhetoric of the leader's party (GPS index) on compliance with COVID-19 policies. The figure shows the results from Random Effects models controlled for Presidentialism (binary), Party's ideology right-wing (binary), Liberal Democracy Index, Regional Index, Covid deaths and reproduction rates in the previous month, GDP per capita, Government effectiveness, Relative Political Reach, and Hospital beds/1000.

Examples: Master's projects with Twitter data

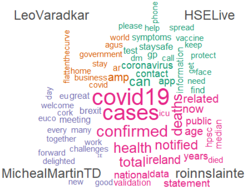


Figure: Irish government

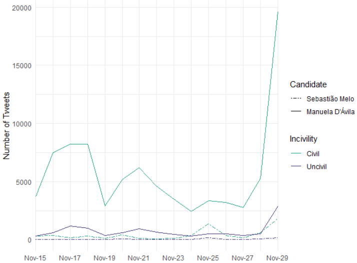


Figure: Brazilian candidates

Introductions

- Who are we

  Background and current course

  Coding familiarity?
- Expectations with the program/ Coding camp week

Schedule

- Monday: Introduction (Maxwell Theatre)
- Tuesday: R basics (Lecture Theatre LB01- O'Reilly Institute)
- Wednesday: Python basics (Maxwell Theatre)
- Thursday: Good practices and Latex (Maxwell Theatre)
- Friday: How to report and share results (Maxwell Theatre)

10am to 12pm. 10min break?

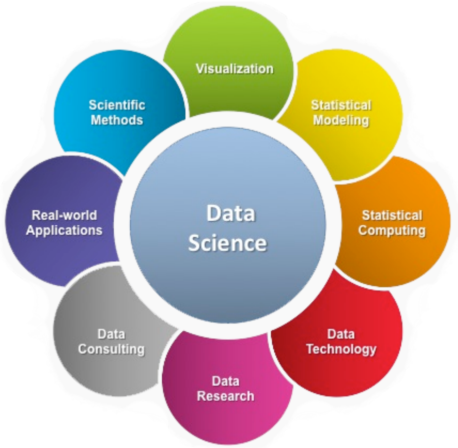
Today's class

What is data science?

Quantitative Programming Environments: R and Python

Expectations

What is data science?



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- – Pattern discoveries, etc

A brief history...

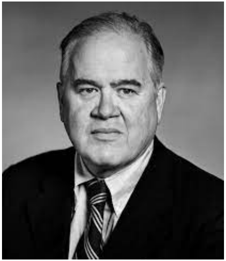

Figure: John Tukey, 1915-2000

'All in all, I have come to feel that my central interest is in **data analysis**, *which I take to include, among other things: procedures for analyzing data, techniques for interpreting the results of such procedures, ways of planning the gathering of data to make its analysis easier, more precise or more accurate, and all the machinery and results of (mathematical) statistics which apply to analyzing data.'*

The Future of Data Analysis, 1962.

A brief history...

'Four major influences act on data analysis **today***:*

1. *The formal theories of statistics*
2. *Accelerating developments in computers and display devices*
3. *The challenge, in many fields, of more and ever larger bodies of data*
4. *The emphasis on quantification in an ever wider variety of disciplines'*

(Tukey, 1962**!**)

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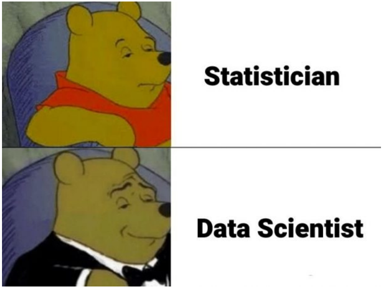
> *‘I keep saying the sexy job in the next ten years will be statisticians [...] The ability to take data—to be able to understand it, to process it, to extract value from it, to visualize it, to communicate it—that’s going to be a hugely important skill in the next decades.*
>
> Hal Varian, Google Chief Economist, Jan. 2009

Things to keep in mind

- **Statistics**: the mathematics associated with inference
- **Data science**: the practices associated with working with data
- Not everyone agrees with this distinction...
- Data science and statistics are essentially the same, but in practice they are coming to mean different things



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- In the social sciences, we often want to understand what's inside the 'black box', but not all data science methods are designed for this.

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- **Data Analytics**

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- **Data Analytics**

  Analyses data to gain insights and inform decisions - past data for present decisions, specific questions.

Data science is a process

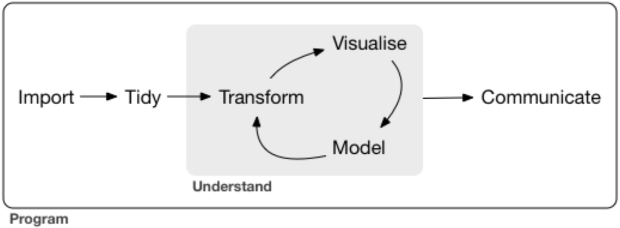

Figure: Data science tools and workflow, c/o Hadley Wickham (R for Data Science)

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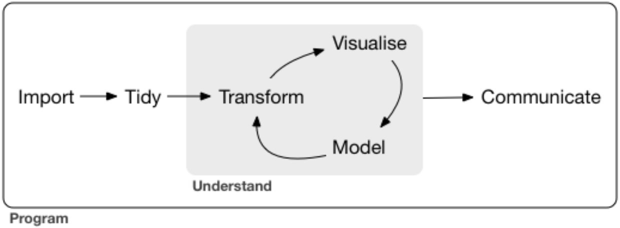

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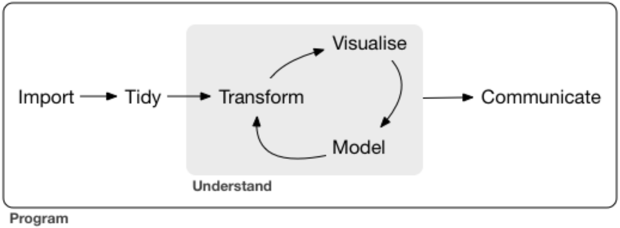

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Programming?

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The activities of 'Greater Data Science' are classified into six divisions (Donoho,2017):

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5. Data Visualization and Presentation
6. Science about Data Science

R and Python

YES, I WOULD LOVE TO SEE ANOTHER
R VS PYTHON FOR DATA SCIENCE COMPARISON
makeameme.org

Installing R

R is a programming language used for statistics. It is completely free and can be downloaded from CRAN, the comprehensive R archive network.

1. Go to `cran.r-project.org/`
2. In the box headed "Download and Install R", click the link corresponding to your operating system.
3. Follow the instructions for your system.

Installing R Studio: integrated development environment

1. Go to `rstudio.com/products/rstudio/download/`
2. Scroll down to "R Studio Desktop (Open Source License) Free" and click the "download" box underneath.
3. Follow the instructions for your system.

Open "R x64" app (console)

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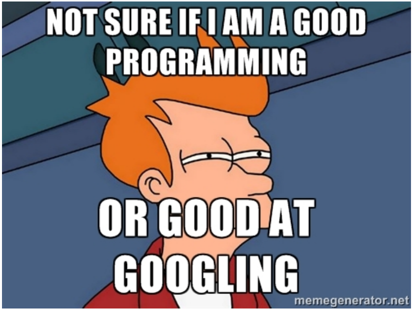

Useful Resources

- R for Data Science (2e): `https://r4ds.hadley.nz/`
- Python for Data Analysis (3e): `https://wesmckinney.com/book/`
- GitHub: `https://docs.github.com/en/get-started/quickstart/hello-world`
- Posit Primers: `https://posit.cloud/learn/primers`