

Introduction to Data Science

Hello World!

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Welcome

Important Information

- Email: joanna_bieri@redlands.edu
- Office Hours: Duke 209 [Click Here for Joanna's Schedule](#)

Today's Big Ideas

- Writing and running your first Python code
- Packages: importing tools other people built for us
- Loading and exploring data with a DataFrame
- Visualizing data: scatter plots and trend lines

Getting Started with Python

Big Idea: Code Basics

- `print()` sends output to the screen - it's how Python “talks back” to you
- A data science project almost never starts from scratch - we bring in **packages**: code other people already wrote and tested
- Import a package once at the top of your notebook, then use it for the whole file

Check Your Understanding

- **Q1.** What would `print("data science")` output?
- **Q2.** Why do we `import` packages instead of writing everything ourselves?
- **Q3.** Once you `import` a package, how many times do you need to `import` it again in the same notebook?

Working with Data

Big Idea: The DataFrame

- pandas loads data into a table-like structure called a **DataFrame**
- Today's data: how countries vote in the UN General Assembly, and how that's changed over time
- Before you analyze any dataset, **explore** it first - how many rows? how many columns? what does each column mean?

Check Your Understanding

- **Q4.** How would you find out how many different countries are in a dataset?
- **Q5.** What pandas code would show you only the rows for one specific country?
- **Q6.** Why is it important to explore a dataset *before* you start visualizing or drawing conclusions from it?

Visualizing Data

Big Idea: Telling a Story with Graphs

- A **scatter plot** shows individual data points - one dot per observation
- A **trend line** (we used LOWESS) smooths out the noise so you can see the pattern underneath
- Always label your axes and include a legend - a graph nobody can read isn't useful

Example: UN Human Rights Votes

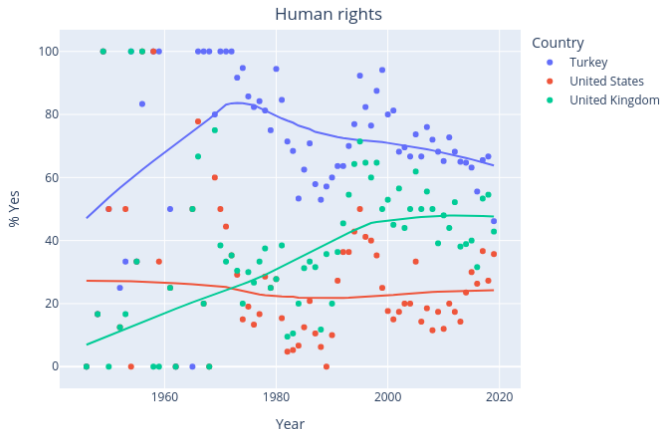


Figure 1: UN Human Rights Votes

Check Your Understanding

- **Q7.** What does each dot in the scatter plot above represent?
- **Q8.** Why might a trend line reveal something the raw dots alone don't?
- **Q9.** Looking at the graph, how would you describe the UK's voting trend on human rights over time?

Wrap-Up

Explore the Data!

Now it is your turn to explore the data!

Questions?