Immersive Python Workshop
Day 2

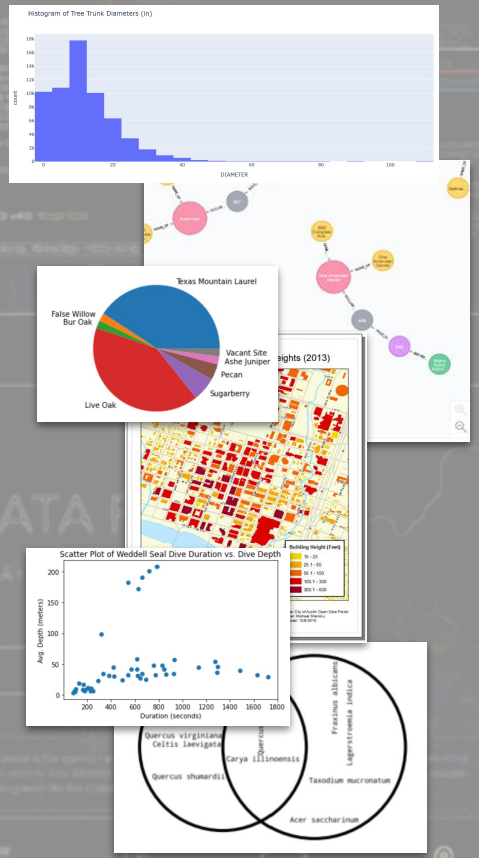
Data Visualization

Overall Goals of this Data Visualization Session

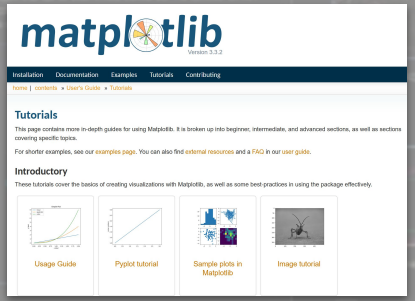
- ➔ See examples of what's possible
- ➔ Learn benefits of scripting data visualization tasks
- ➔ Learn how to read documentation about using Python packages
- ➔ Get familiar with the process of developing Python scripts locally

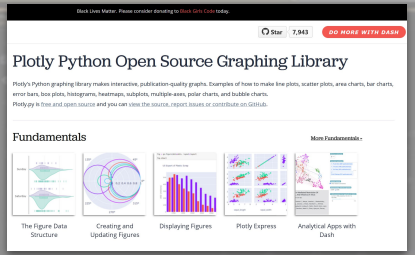
What is Data Visualization?

- ➔ **Graphically representing data to facilitate communication of information**
- ➔ **Visualizations often take the form of charts, graphs, maps, and diagrams**
- ➔ **Effective data visualization is both an art and science**
- ➔ **Can be difficult and time consuming when:**
  - ◆ Datasets are large and complicated
  - ◆ Datasets are updated frequently
  - ◆ Large numbers of visualizations need to be created
  - ◆ Multiple styles of a visualization product are required for different audiences



Python Data Visualization Resources



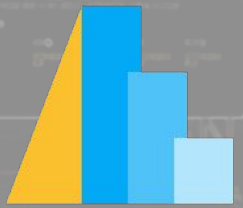


- **Matplotlib Documentation** (https://matplotlib.org/3.3.2/tutorials/index.html)
- **Plotly Documentation** (https://plotly.com/python/)

Choosing a Data Visualization Library

Factors to Consider

- Static vs. Interactive visualizations
- Support for niche visualization types (e.g. maps, networks)
- API complexity
- API level of control
- Popularity
- API documentation

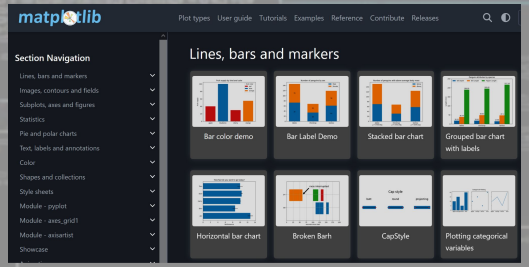


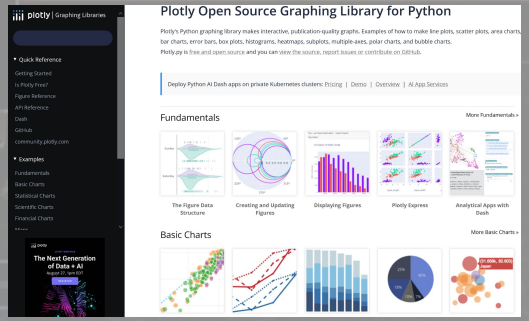
NetworkX
Network Analysis in Python

Learn What's Possible and Get Ideas

Python Data Vis Package Galleries to Visit

- https://networkx.org/documentation/stable/auto_examples/index.html
- https://plotly.com/python/
- https://matplotlib.org/stable/gallery/index.html
- https://seaborn.pydata.org/examples/index.html





Python Demo: Visualizing Data with MatPlotLib & Plotly

- ➔ Installing new packages
- ➔ Accessing data directly from repositories that can be processed and prepared for visualization
- ➔ Creating a variety of different chart types including venn diagrams, pie charts, bar charts, and scatter plots
- ➔ Comparing code for creating simple chart types with different visualization libraries
- ➔ Reading package documentation to learn how to create and make adjustments to charts and figures

The Google Colab notebook file for this demo can be accessed at:

https://colab.research.google.com/drive/1_A03NVEawLNbIGS3ycly7VX4LE57oO4S?usp=sharing