

## Topic Outline: Matplotlib Graphics

Revised: April 9, 2016

### Materials

- Today's handouts: this outline, book chapter, code practice answers, stickers (as needed)
- All posted on *Topic outlines & links* page of website (except the stickers)

### Preliminaries

- Tools and buzzwords
  - IPython notebooks in Jupyter
  - Graphing with Matplotlib: dataframe plot methods, figure and axis objects
- What is this?
  - Package
  - Pandas
  - `import` statement
  - csv file
  - A dataframe `df`
  - `df.shape`
  - `df.columns`
  - `df.index`
  - Dataframe methods: `set_index`, `rename`, `drop`
  - The “x” and “y” variables in the `plot` method
  - Jupyter
- **Exercise**
  - Put red sticker on your laptop
  - Download IPython notebook  
[https://github.com/DaveBackus/Data\\_Bootcamp/blob/master/Code/IPython/bootcamp\\_graphics.ipynb](https://github.com/DaveBackus/Data_Bootcamp/blob/master/Code/IPython/bootcamp_graphics.ipynb)  
and save Raw file in your `Data_Bootcamp` directory  
In short: GitHub ⇒ Code ⇒ IPython ⇒ `bootcamp_graphics.ipynb` ⇒ Raw
  - Start Jupyter and open notebook
  - Run this code:

```
import pandas as pd
print('Pandas version: ', pd.__version__)
```
  - Replace red sticker with green when you're set

- **Known issues**

- Notebook has `.txt` extension. Solution: In Jupyter, navigate to the file, click on the box next to it, click on rename at the top, and delete the extension `.txt`.
- Windows 10 + Chrome sometimes has no right-click Save As option. Solution: Use a different browser.
- Some Macs generate the error: `ValueError: unknown locale: UTF-8`. Solution: Ask for help. More at StackOverflow: <http://stackoverflow.com/a/19961403/804513>

## Python graphics: Introduction to Matplotlib

We'll follow the notebook:

- Jupyter
- Markdown
- Preliminaries: import statements, dataframes to work with
- Graphing in Excel
- Apply plot methods to dataframes
- `plot(x,y)` (skip)
- Figure and axis objects
- Recap
- Bells and whistles
- Examples
- Review
  - Put red sticker on, replace with green when done

## After class

- Required
  - Nothing
- Recommended
  - **Write:** After class, write down everything you remember without using your notes
  - **Review:** Reread the chapter and fill in anything you missed.
  - Download the **Code Practice A** notebook and work through the questions. If you have trouble with the download step, keep practicing with notebooks in the **IPython** and **Lab** directories. You will need this ability for the exam in a few weeks.

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