Practical 9
Presenting Data

Learning Objectives

1. Understand and critique approaches to presenting data
2. Select appropriate presentation options for structured and unstructured data
3. Present data from real-world datasets, applying good practice

Overview

In this practical you will work within a notebook to explore a dataset from GovHack3. We will use matplotlib, pandas, seaborn and bokeh to present the data and then basemap to give a taste of plotting maps.

Tasks

1. Download the notebook and data

The notebook for this Practical is in the unit materials area. Create a Prac9 directory and download the notebook and sample data into the Prac9 directory.

2. Run the current notebook

Work through each cell of the notebook to see what it is doing, then run it. For each cell, add in a command of your own to further explore and/or plot the data. E.g. plot, print or describe a different column.

Note that bokeh will render the plot in a new tab of the browser window. You should save this html file to your Prac9 directory.

Submission

Create a README file for Prac9. Include the names and descriptions of all of your files from today.

All of your work for this week's practical should be submitted via Blackboard using the link in the Week 9 unit materials. This should be done as a single "zipped" file.

Reflection

1. **Knowledge**: List the presentation options explored in the notebook for the practical.
2. **Comprehension**: What do styles do? Why would you use them?
3. **Application**: How would you apply the “seaborn-bright” style when using Matplotlib. Pandas and Seaborn?
4. **Analysis**: Basemap lets you draw maps in Python. How do we change the following in Basemap:
    a. Colours used in the map (land, sea, lakes)
    b. Centre position (latitude and longitude)
    c. Area/zoom shown
5. **Synthesis**: Jupyter markdown supports code from other applications. Type the following Latex code into a markdown cell and execute it:

    ```
    $e^x=\sum_{i=0}^\infty \frac{1}{i!}x^i$$
    ```

    How might this be useful when documenting research?

    $$e^x = \sum_{i=0}^{\infty} \frac{1}{i!}x^i$$

6. **Evaluation**: What are some benefits of using a presentation option based on Matplotlib? What are some benefits of using a non-Matplolib presentation option?

Challenge

Some challenges to test and extend your learning (also included at the end of the notebook).

1. Look into table styles for pandas and try applying them to the hospital dataset. See: http://pandas.pydata.org/pandas-docs/stable/style.html
2. Basemap is a package for plotting maps in Python. It may need additional packages to be installed (basemap, pillow). Visit the basemap documentation and tutorial to find out more - http://basemaptutorial.readthedocs.io/en/latest/. Then try the code below.