M2: Basic Graphing Assignment

Instructions

This assignment utilizes three data files that were distributed with the course files: `OpiodsVA.csv`, `presidents.csv`, `TOTALNSA.csv`. For each data source, respond to the questions posed in the bullet points below by creating graphs in Jupyter using the Python `matplotlib` package. Call that Jupyter file `BasicGraphAssignment.ipynb` and submit it to the LMS.

Additional information about the files is also listed in the bullet points, including the column names and descriptions of each data field.

The requirements for each data source are to do the following:

- Import the CSV files into `pandas DataFrames` using the `.read_csv()` function.
- Address each of the questions posed by plotting at least one graph.
- Choose the best graph type for the data and the posed questions.
- Use a different Jupyter cell for each graph.
- Include a comment in your code for each graph that describes, in one sentence, your rationale for the graph type you chose for each data source.
- Include these components in your graphs:
    - Figure title
    - X-axis and y-axis captions
    - X-axis and y-axis tick marks and tick-mark labels
- Do not worry about these facets of your graphs:
    - Overlapping tick-mark labels
    - Appropriate tick-mark labels and formatting thereof
    - Appropriate white space around the plotted data

Data

Filename: **`OpiodsVA.csv`**

- Data Description: Data about the opioid crisis in Virginia and, in addition, income data. Both data sources list data fields by county.
- Sources:
    - Opioid Data for VA
    - County Statistics
- Questions:
    - Do opioid overdoes tend to be associated with less affluent areas—that is, areas where families have lower incomes?
    - Some people who start with opioid addictions are reported to transition to heroin use. What is the relationship in Virginia counties between opioid overdoses and heroin overdoses?
- Column names and descriptions:

  - `FIPSCode`: Official county identification number. The first two digits indicate the state and the remainder specify locations within the state.
  - `CountyName`: Self-explanatory
  - `FFHO-Rate`: Fentanyl and/or heroin overdoses per 100,000 county residents
  - `FPOO-Rate`: Opioid overdoses per 100,000 county residents
  - `HIV-Rate`: Number of diagnosed HIV cases per 100,000 county residents
  - `MedianHouseholdIncome`: Self-explanatory

***Filename:* `presidents.csv`**

- Data Description: Data about United States presidents and their birthplaces.
- Source: List of presidents of the United States by home state
- Question:
  - Which states are associated with the greatest number of United States presidents in terms of the presidents' birthplaces?
- Column names and descriptions:
  - `Name`: The presidents' names
  - `Location`: Specific location of birthplace within the birth state
  - `State`: The state of birth
- Hint: If you want to use a histogram for this exercise, then use the second bar chart method as demonstrated in the Histogram 1 video presentation on the M2 lecture page. The `.hist()` method does not work well when you are plotting the frequency of text fields.

***Filename:* `TOTALNSA.csv`**

- Data Description: United States vehicle sales
- Source: Total Vehicle Sales
- Question:
  - How have vehicle sales in the United States varied over time?
- Column names and descriptions:
  - `Date`: Date in year-month-day format (text)
  - `TOTALNSA`: Total sales for the month indicated