

2023 STEM-UP Program: Elements of Data Science

Final Project

The project represents an opportunity to examine a topic of interest with your newfound tools in data science. Work together to develop a plan to study the data in a systematic manner as outlined below. Be ready to enthusiastically present your completed Jupyter notebook with the class on the last class meeting day, Wednesday August 9th.

Example and suggested datasets can be found at: <https://temple.2i2c.cloud/hub/user-redirect/lab/tree/datascience/STEM%20UP/Group-project/dataset.ipynb>.

For this project you will work in a group. Discuss a common topic and design a plan to work collaboratively.

Project goals and milestones

1. Provide a project title, a short description of the data source and motivation for studying dataset.
2. Carry out exploratory data analysis. Create initial data tables and plots to explore the nature of the dataset.
3. Formulate a research question(s). Create a detailed markdown cell to detail this research question. Support with papers or links where possible.
4. Formulate a data science plan to study the research questions.
5. Implement your methodology in necessary and annotated code.
6. Create markdown cells to annotate your work.
7. Organize your sheet and visualizations to maximize interest and impact for submission to Canvas, posting for class, and final presentation.
8. Develop an abstract with less than 200 words which gives an overview of the project and highlights the findings. This should appear in a markdown cell under the title and a list of names of group members at the top of the Jupyter notebook.
9. Carefully organize a presentation which provides
 - 1) background and overview of selected data
 - 2) overview of data in tables and through visualization
 - 3) Data science plan
 - 4) code discussion explaining strategy and algorithms
 - 5) Conclusions and their statistical significance.