**In-class Project**
**Due 02/20/2022**

**Data Description:**
Forced expiratory volume (FEV) is an index of pulmonary function that measures the volume of air expelled after one second of constant effort. The data set contains FEV determinations of 654 children seen in the Childhood Respiratory Disease Study, which aimed to detect factors related to pulmonary function in children. The data set comprises the following variables:

Age: Subject Age (in years)
FEV: Forced Expiratory Volume (liters)
Height: Subject Height (inches)
Sex: Subject Gender, 0 = female / 1 = male
Smoke: Subject Smoking Status, 0= not a current smoker / 1 = current smoker

**Questions:**
A. Does the FEV differ according to either sex or smoking status? Describe your findings and comment on any differences that you find.

B. Look at the relationships between the smoking status and FEV in Part A. Try to find an explanation for this result by investigating the relationship between the variable in part A (FEV vs. smoking status and FEV vs. sex) and other variables (Age and Height).

Use Matplotlib and Seaborn to explore the data set with summary statistics and graphs to answer the questions above.

**Deliveries - Rubric:**
[20%] Create at least two comparison charts for your analysis (e.g., bar diagrams).

[20%] Create at least two relational charts for your analysis (e.g., scatter plots, correlation heatmap for the variables).

[20%] Create at least two distribution charts for your analysis (e.g., histograms plots, boxplot, violin plots).

[40%] Write a description of what analyses you did and what results you found. The text needs to be no longer than three double-spaced pages (graphs do not count for this restriction). Include the most relevant graphs that you think illustrate your conclusions and reference these graphs in your written text.