Python for Visualization

Agenda

1. Pop Quiz
2. Data Visualization
3. Visualization - One variable
4. Visualization - Two variables
5. Visualization - Multiple variables

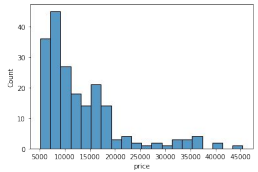
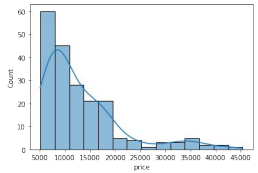
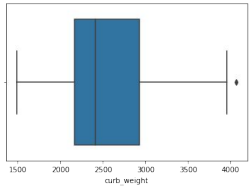
Pop Quiz

1. What is data visualization?
2. Why does data visualization help?
3. How to visualize numerical and categorical variables?
4. What is correlation?

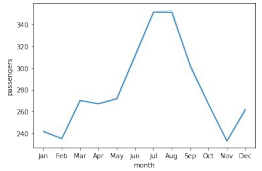
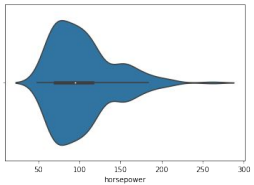
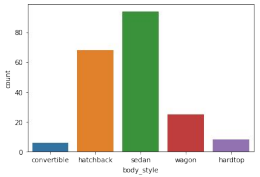
Data Visualization

- Data visualization is the process of translating data and metrics into charts, graphs and other visuals.
- The resulting visual representation of data makes it easier to identify patterns, trends, and outliers hidden in the data, enabling us to gain better insights.
- We can use different charts/plots to visualize different kinds of data
- Each chart/plot helps us gain insights from a different perspective

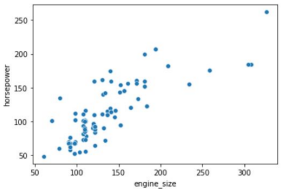
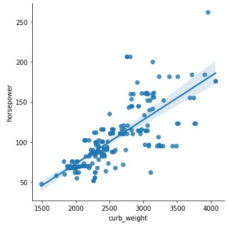
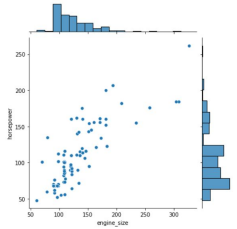
Visualization - One Variable

Plot	Type of Data	Usage	Example
Histogram	Numerical	Helps us understand data distribution by dividing it into bins and showing the number of observations in each bin via bars	
Histogram with density curve	Numerical	Helps us understand data distribution by displaying a distribution curve on top of the histogram bars	
Boxplot	Numerical	Helps us understand data distribution and skewness by displaying the data in the form of a box divided by quartiles	

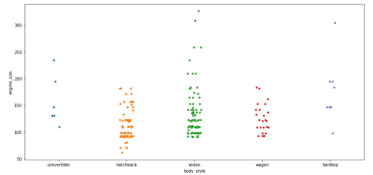
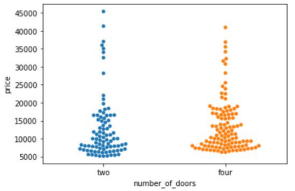
Visualization - One Variable

Plot	Type of Data	Usage	Example
Line Plot	Numerical	Helps us understand the trend or pattern in the data by displaying it as straight lines formed by connecting individual data points	
Violin Plot	Numerical	Helps us understand data distribution by plotting a density curve symmetrically around a boxplot	
Bar Graph	Categorical	Helps us understand data distribution by showing the counts of observations in each level (or group) using bars	

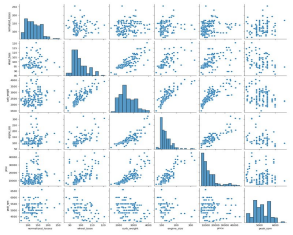
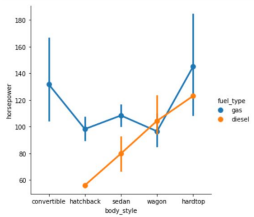
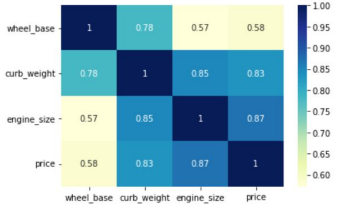
Visualization - Two Variables

Plot	Type of Data	Usage	Example
Scatter Plot	Numerical	Helps us understand potential relationship between two numerical variables	
Implot	Numerical	Helps us understand and measure the relationship between the two variables quantitatively	
Joint Plot	Numerical	Helps us understand the distribution and relationship between two numerical variables on the same plot.	

Visualization - Two Variables

Plot	Type of Data	Usage	Example
Strip Plot	Categorical	Helps us to visualize the distribution of a numerical variable wrt different categories of a categorical variable	
Swarm Plot	Numerical	Helps us to visualize the distribution of a numerical variable wrt different categories of a categorical variable and avoids overlapping of data points	

Visualization - Multiple Variables

Plot	Type of Data	Usage	Example
Pair Plot	Numerical	Helps us understand the relationship between two or more pairs of numerical variables	
Cat Plot	Numerical	Helps us understand relationship between a numerical variable and one or more categorical variables	
Heatmap	Numerical	Helps us understand the correlation between pairs of columns in the data	

Happy Learning !