**Objectives**

* Now we will see the objectives
* First, we will give a brief introduction
* Then, we will mention important facts about Budweiser that will reinforce our analysis
* After that, we will explain important concepts like ABV and IBU
* We will also discuss about the difference between IPA and Pale beer
* And finally, Explore different analysis in the EDA project

**Introduction**

* In this EDA project we will conduct an analysis about the different beer types sold across the united State
* We will show the different beer styles manage by each brewery and how this information could be beneficial for Budweiser
* In this analysis we will focus on the different business areas that the Budweiser corporation could improve: Customer service and Inventory Management
* How Budweiser can use this data and in order to strengthen its position in the market

**Missing values**

* Now will see the Analysis of the missing values of our dataset
* Data Cleaning is one of the important steps in an EDA
* Handling missing values is part of the Data Cleansing activities
* A missing value is a data value that is not captured nor stored in our dataset
* As we have seen before we have two datasets in this data analysis, the beer dataset has two variables with missing values, so we will make the adjustment here
  + ABV and IBU
* ABV🡪Replacing missing values using Mean
* IBU🡪Replacing missing values using KnnImputation

KnnImputer utilizes a number Nearest Neighbors method to replace the missing values

**Summary statistics and distribution ABV**

* As we can see from histogram plot we have a right skewed distribution
* When The mean is greater than the median which suggest that the value are normally distributed to the right
* Another important element is the Skewness, a distribution can be considered skewed when the skewness is in between -1 and -0.5 or 0.5 and 1
* In addition to that, we have the kurtosis, a normal distribution has a kurtosis of three, and we have 1.24 which means we have an excess of kurtosis
* By exploring all these factors, we can conclude that we are in the precedence of a right skewed distribution

**7.Relationship between IBU and ABV**

* As the data suggests There’s a strong positive linear relationship between IBU and ABV
* According to the information we looked up IPA beer has a higher ABV and IBU , and this is what evidence shows from the plot
* Another element is the correlation coefficient, it is 0.74, very close to 1 which means we are in the presence of a strong positive relationship

**8.Difference between IPA and PALE Beer types**

* There’s a representative difference between two group of beers
* IPA beer types high level of IBU and ABV however ALE beer types less level of IBU and ABV
* Pale ales will usually be between 4.5%(0.045) – 6.2% (0.062)ABV
* We can also confirm the clear difference between both groups using KNN, the accuracy is very high
* KNN could easily classify both groups which means there’s a clear difference between both beer types in terms in IBU and ABV

**9.Analysis of Beer Assortment by State**

* **In this map we can visualize the number of beers by state and how wide is the assortment of each brewery**
* There are states with more beers than others
* California has a large number of beers by style 183 contrary to Dakota that has a small number 3 beers by style
* This data will play an important role in two different areas: Advertising strategy and Inventory management
* It is a great idea to invest capital in advertising strategy in states like California and Colorado because of the level of consumption of beer
* It doesn’t make sense to invest too much money in States like Dakota because it seems that demand of beers is very low.
* In terms of Inventory Management, it is recommendable to keep a high service level and a good safety stock in states like California or Colorado
* We have to prevent getting stock out in those states since it seems they bring the most profit to the company

**9.Most popular beer styles**

The image shows the number of beer by style in each state

Most popular beer styles in every state in USA

The company can focus on these important beer styles in the future

Budweiser is a American-style lager not an American IPA , they can lunch a new beer based on this style