

# HEART DISEASE ANALYSIS - BI PROJECT

DETAILED PROJECT REPORT



# Project related Q & A

1. Data Source:  
<https://drive.google.com/drive/folders/165Pjmf9W9PGyorZjHEA22LWoLt3Y-Q8>
2. Libraries used in Python - Pandas, NumPy, Scikit-learn and Matplotlib
3. Type of Data - Both Numerical and categorical data involved.
4. What techniques were you using for data?
  - a. Removing unwanted attributes
  - b. Visualizing relation of independent variables with each other and output variables
  - c. Removing outliers, cleaning data and imputing if null values are present.
  - d. Converting Numerical data into Categorical values.

# Project Details

<b>Project Title</b>	Heart Disease Diagnostic – Analysis
<b>Technology</b>	Business Intelligence
<b>Domain</b>	Healthcare
<b>Project Difficulty Level</b>	Advanced
<b>Programming Language used</b>	Python
<b>Tools Used</b>	Jupyter Notebook, Data studio, Excel, MS PowerPoint

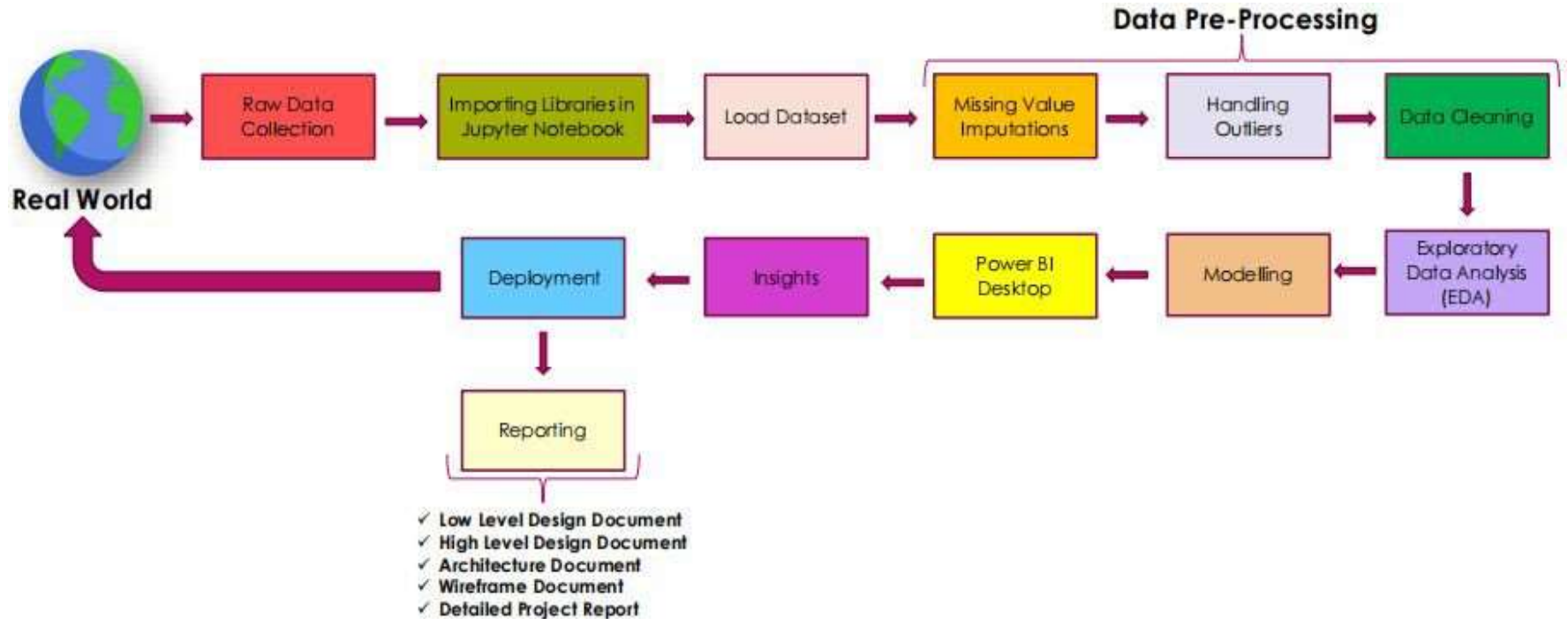
## OBJECTIVE

The goal of the project is to analyze heart disease dataset which comprises various features involving that describes the disease using various analytical tools and derive insights from them and create a report.

## Problem Statement

- ❖ Health is real wealth in the pandemic time we all realized the brute effects of Covid-19 on all irrespective of any status. You are required to analyze this health and medical data for better future preparation.
- ❖ A dataset is formed by taking into consideration some information of 303 individuals.

# Architecture



## Dataset Information

**age:** The person's age in years

**sex:** The person's sex (1 = male, 0 = female)

**cp:** The chest pain experienced (Value 1: typical angina, Value 2: atypical angina, Value 3: non-anginal pain, Value 4: asymptomatic)

**trestbps:** The person's resting blood pressure (mm Hg on admission to the hospital)

**exang:** Exercise induced angina (1 = yes; 0 = no)

**oldpeak:** ST depression induced by exercise relative to rest

## Continued.....(Dataset Information)

**slope:** the slope of the peak exercise ST segment (Value 1: up sloping, Value 2: flat, Value 3: down sloping)

**ca:** The number of major vessels (0-3)

**thal:** A blood disorder called thalassemia (3 = normal; 6 = fixed defect; 7 = reversible defect)

**num:** Heart disease (0 = no, 1 = yes)

**fbs:** The person's fasting blood sugar ( $> 120$  mg/dl, 1 = true; 0 = false)

**restecg:** Resting electrocardiograph's measurement (0 = normal, 1 = having ST-T wave abnormality, 2 = showing probable or definite left ventricular hypertrophy by Estes' criteria)

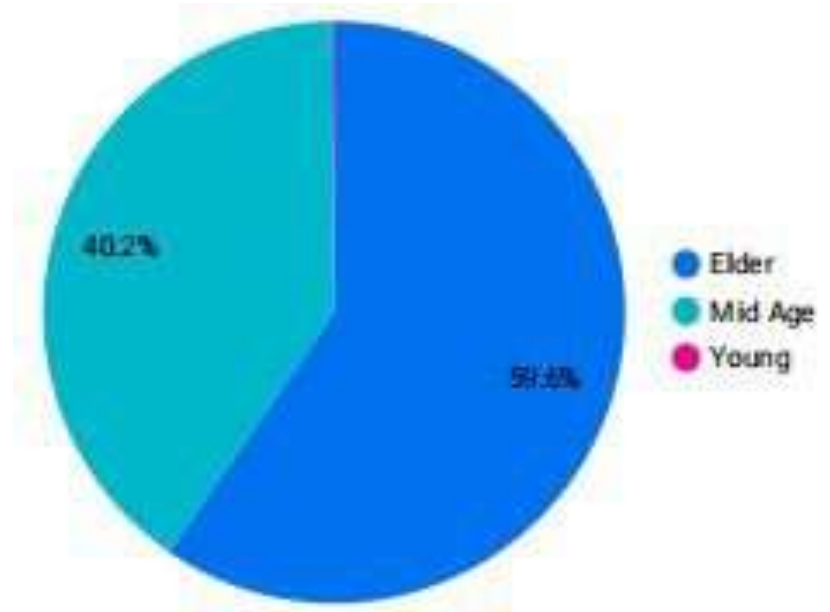
**thalach:** The person's maximum heart rate achieved.



## Data Insights

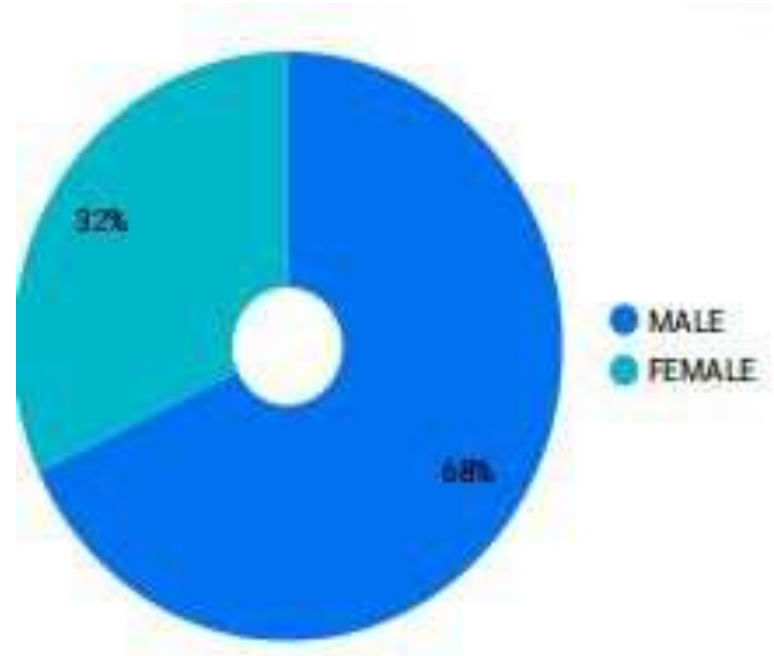
### What kind of population we have?

- We have 3 age categories:
- Elder - 59.6%
- Young - 1%
- Mid-Age - 40.2%



## Data Insight

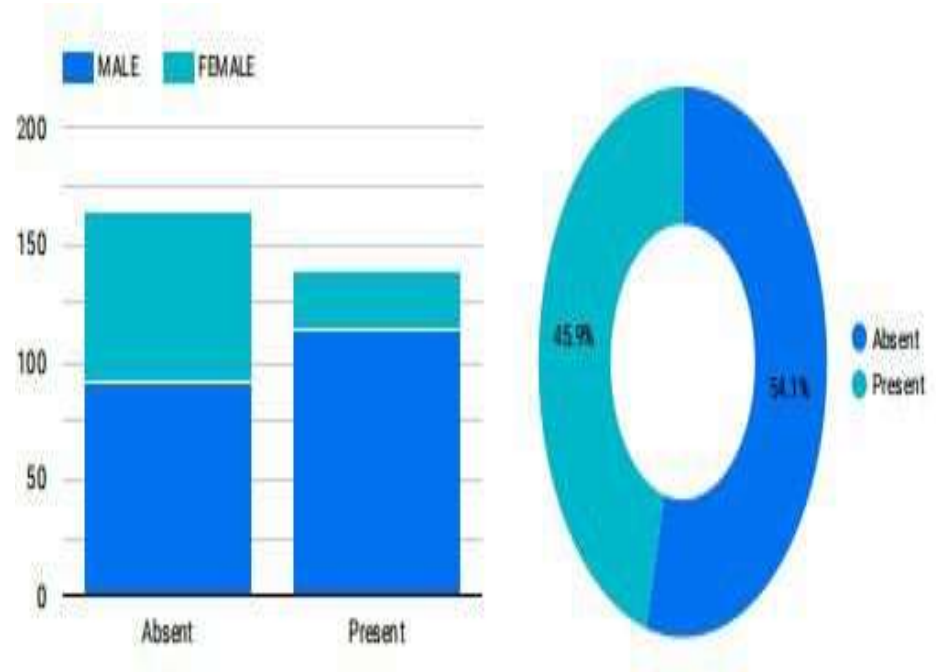
- Here we have 32% of female population and 68% of male population.



## Data Insight

### How many male and female population have disease ?

- 54 % of the population don't have heart disease, while 45.9% have.

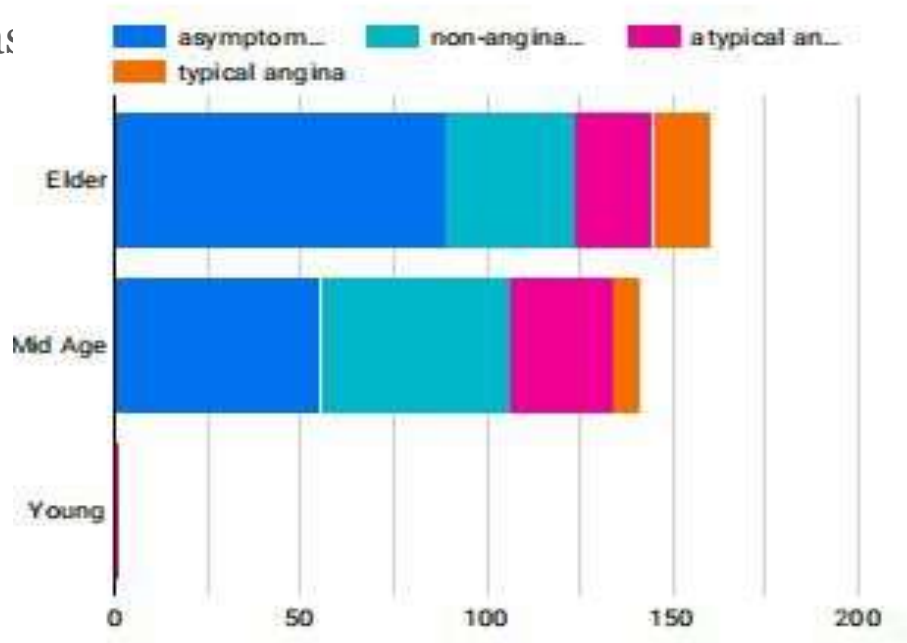


## Data Insight

### What kind of chest pain more prone to disease?

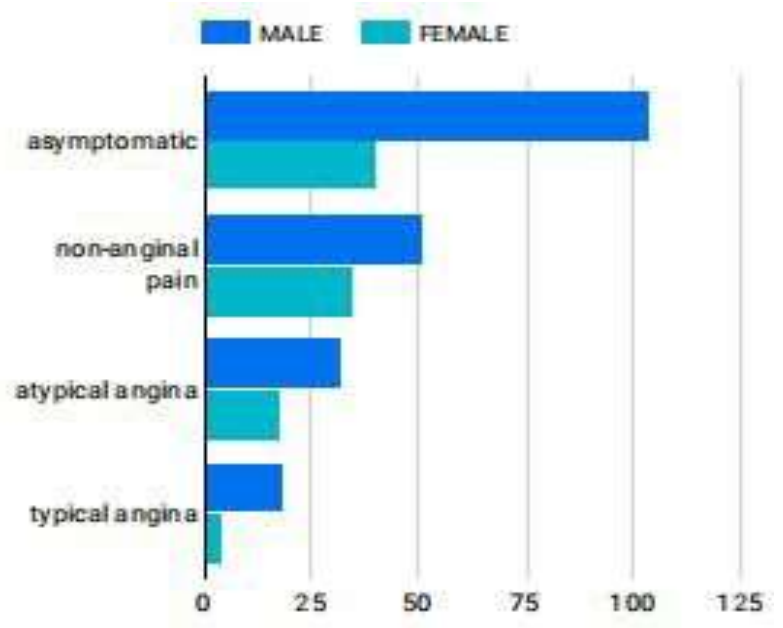
Various age category having heart diseases with different types of chest pain Symptoms.

Elder people are more prone to Asymptomatic chest pain.



## Population wise, chest pain category associated with disease ?

Male population are more prone to asymptomatic chest pain and non-anginal pain than female.



## Key Performance Indicator (KPI)

1. Percentage of People Having Heart Disease
2. Age Distribution including Gender
3. Gender Distribution Based on Heart Disease
4. Chest Pain Experienced by People Suffering from Heart Disease
5. Blood Pressure, Cholesterol Level and Maximum Heart Rate of People According to their Age and Heart Disease Patients.
6. ST Depression Experienced by People According to their age and heart disease.

## Conclusion

1. 45.87% People suffering from heart disease.
2. Elderly Aged Men are more (50 to 60 Years) and Females are more in 55 to 65 Years Category
3. Males are more prone to heart disease.
4. Elderly Aged People are more prone to heart disease.
5. People having asymptomatic chest pain have a higher chance of heart disease.
6. High number of cholesterol level in people having heart disease.
7. Blood pressure increases between age of 50 to 60 and somehow continue till 70.
8. ST depression mostly increases between the age group of 30-40.

THANK YOU