

HEART DISEASE DIAGNOSTICS

DETAILED PROJECT REPORT



PROJECT DETAIL

Project Title	Heart Disease Diagnostic – Analysis
Technology	Business Intelligence
Domain	Healthcare
Project Difficulty Level	Advanced
Programming Language Used	Python
Tools Used	Jupyter Notebook, MS-Excel, MS- Power BI

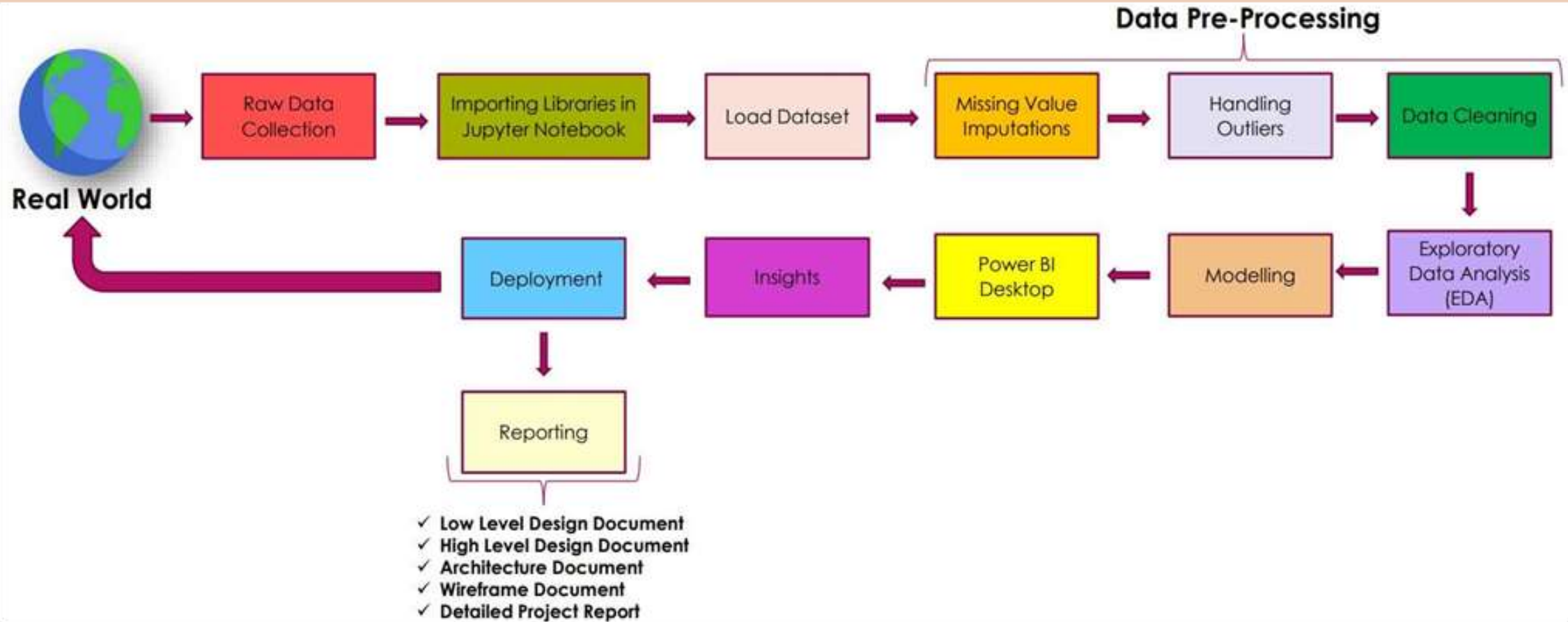
OBJECTIVE

The goal of this project is to analyze the heart disease occurrence, based on a combination of features that describes the heart disease.

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 of the information of 303 individuals.

ARCHITECTURE

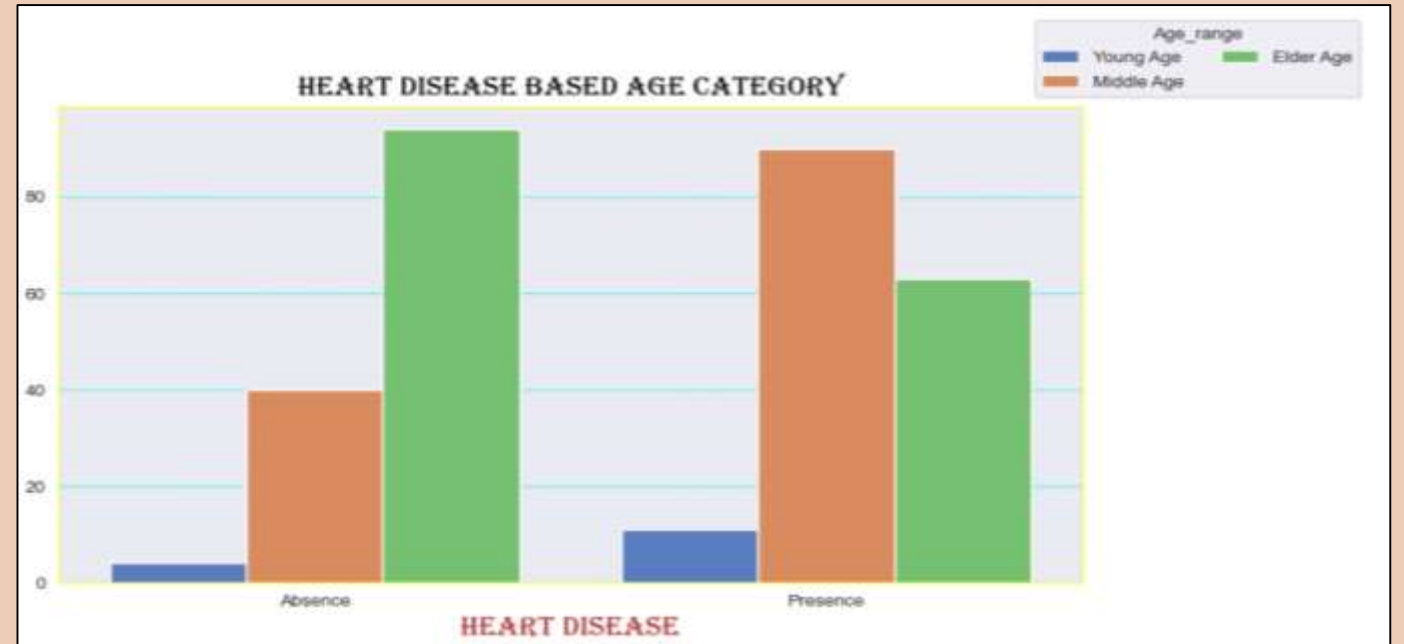
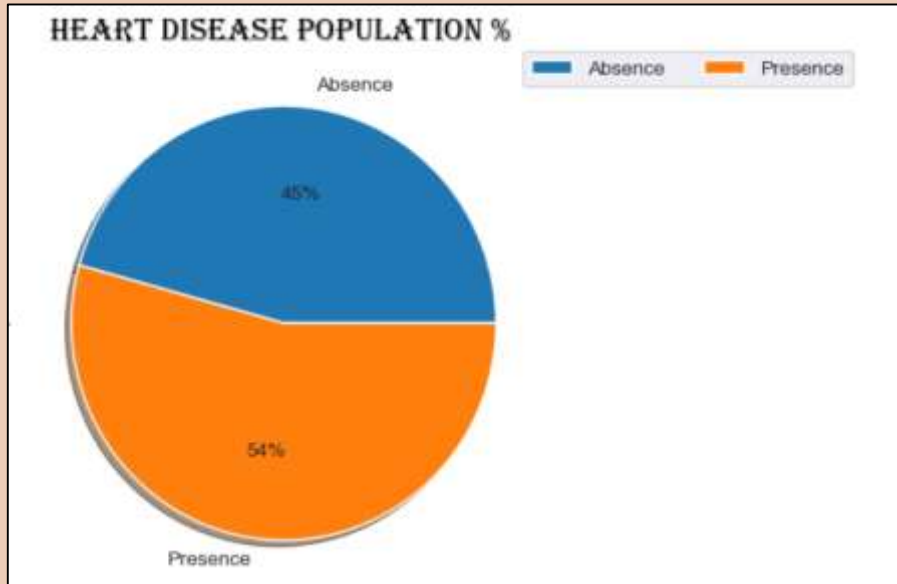


DATASET INFORMATION

S.No	Attribute	Value	Description
1	age	29 – 62	age in years
2	sex	0 – male, 1- female	gender
3	cp	1-typical angina; 2-atypical angina 3-non-anginal pain; 4-asymptomatic	chest pain type
4	trestbps	Numeric value(140mm/Hg)	resting blood pressure in mm/Hg
5	chol	Numeric value(289mg/dl)	serum cholesterol in mg/dl
6	fbs	1-true, 0-false	fasting blood pressure>120mg/dl
7	restecg	0-normal, 1-having ST-T, 2-hypertrophy	resting electrocardiographic results
8	thalach	140,173	maximum heart rate achieved
9	exang	1-yes, 0-no	exercise induced angina
10	oldpeak	Numeric value	ST depression induced by exercise relative to rest
11	slope	1-upsloping, 2-flat, 3-downsloping	the slope of the peak exercise ST segment
12	ca	0-3 vessels	number of major vessels colored by flourosopy
13	thal	3-normal, 6-fixed defect, 7-reversable defect	thalassemia
14	num	0: < 50% diameter narrowing 1: > 50% diameter narrowing	diagnosis of heart disease (angiographic disease status)

INSIGHTS

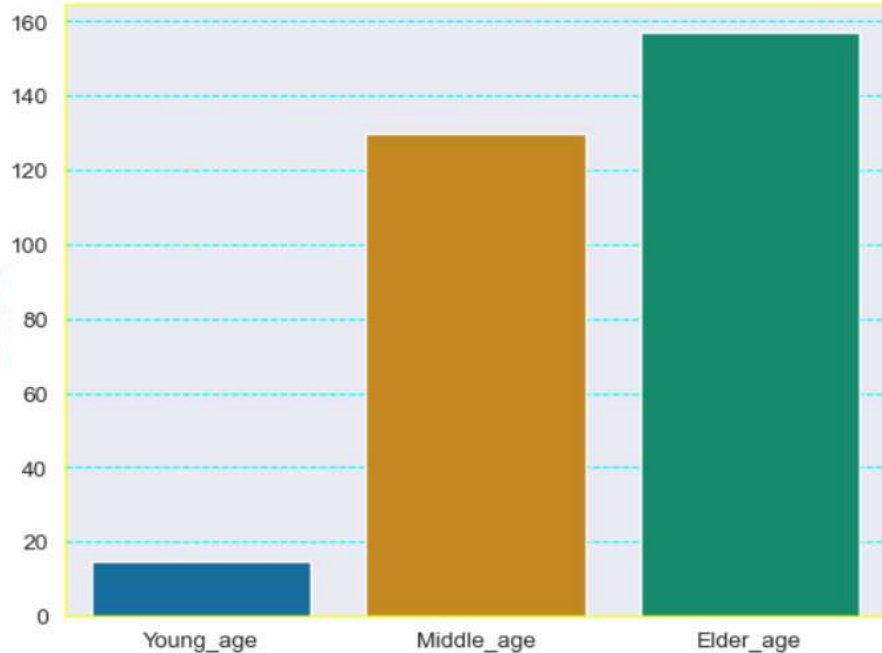
What kind of population do we have ?



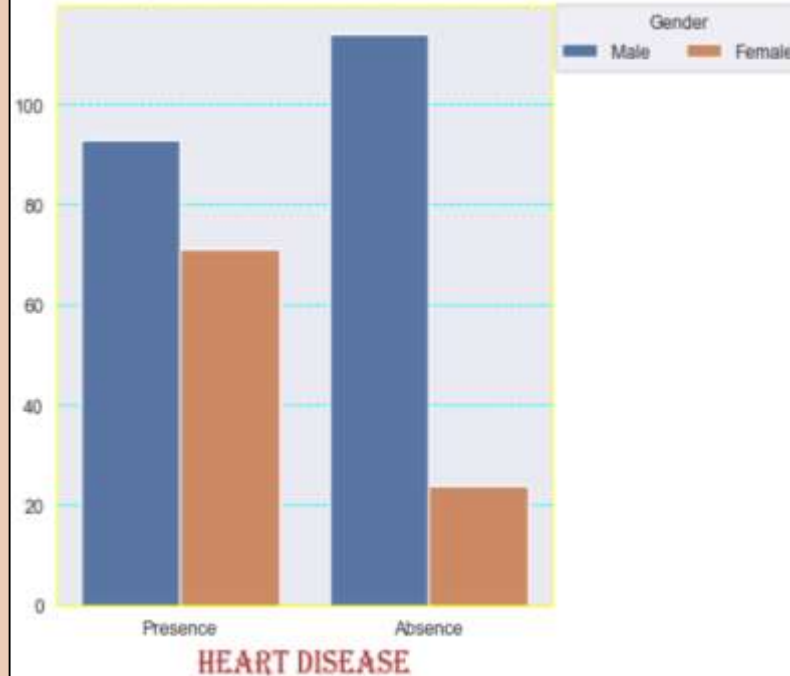
- 54% People are suffering from heart disease
- Middle age people at the age of (40-55) are more effected by heart disease

Who Suffers from Heart Disease?

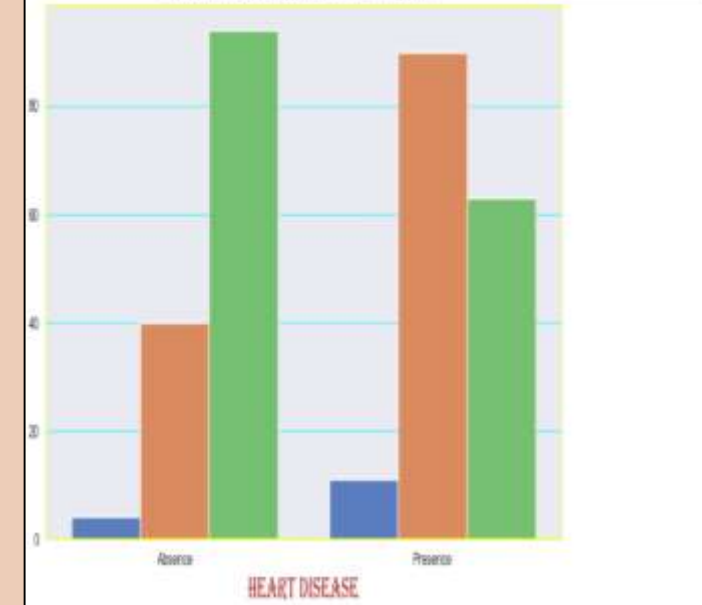
AGE CATEGORY



HEART DISEASE BASED ON GENDER

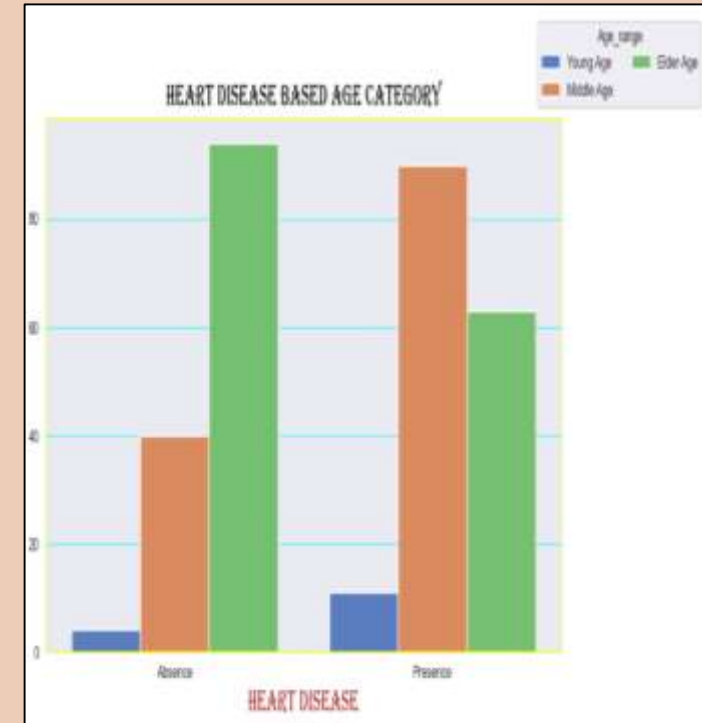
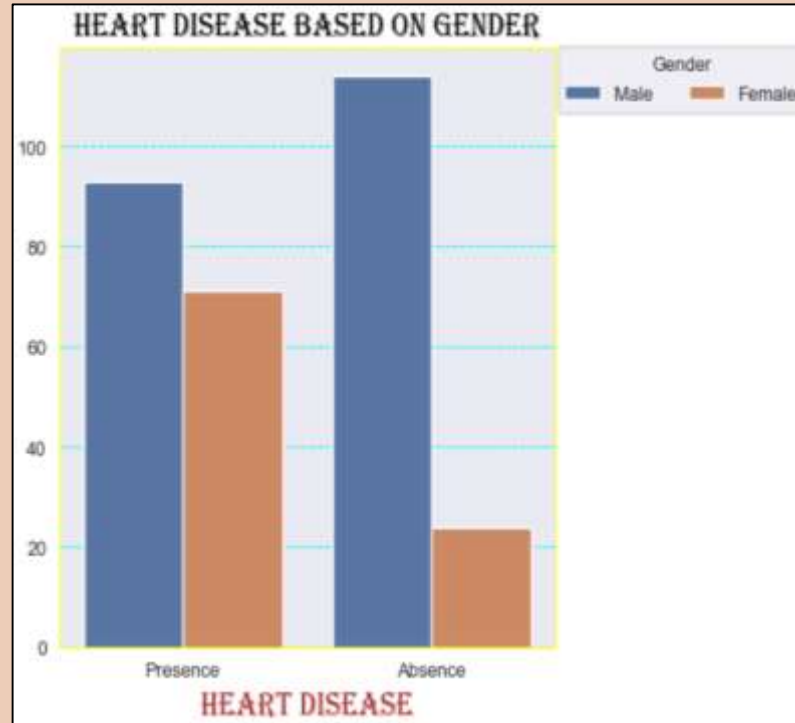
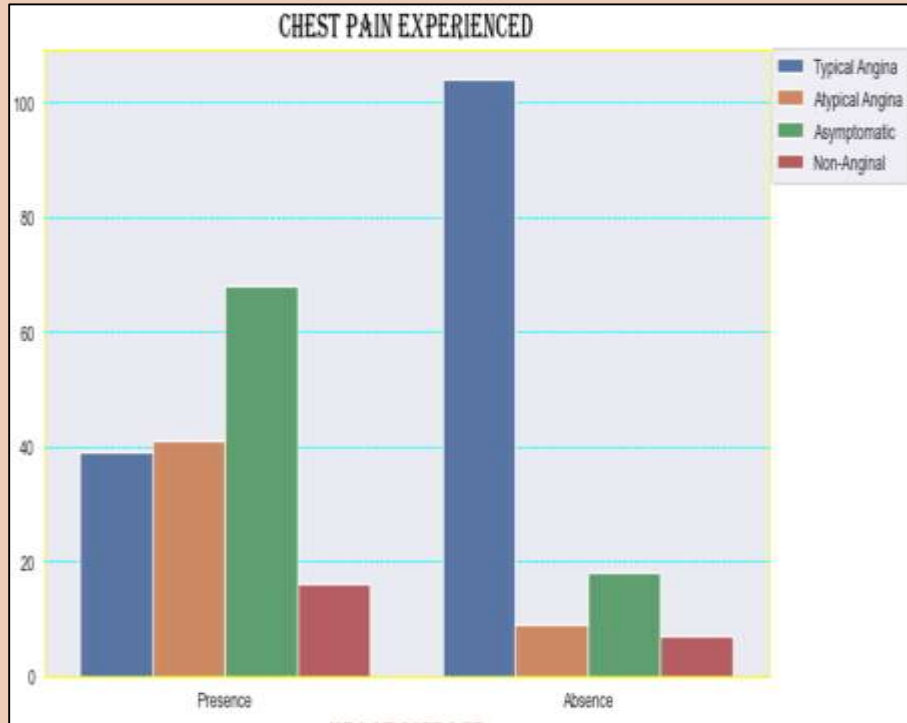


HEART DISEASE BASED AGE CATEGORY



- Elderly Aged People (>55) are more in our population
- Males are more prone to heart disease.
- Elderly Aged People (>55) are more prone to heart disease.

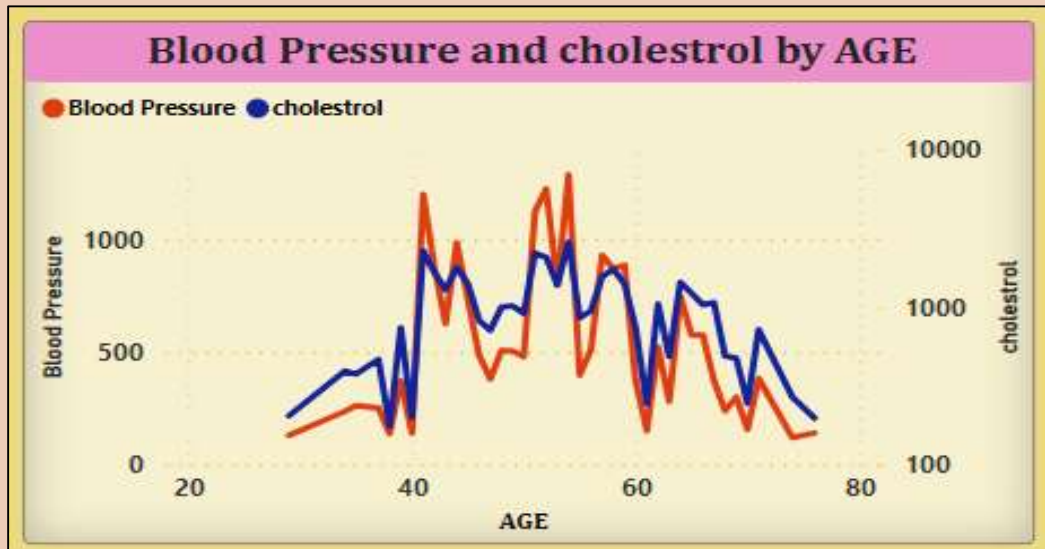
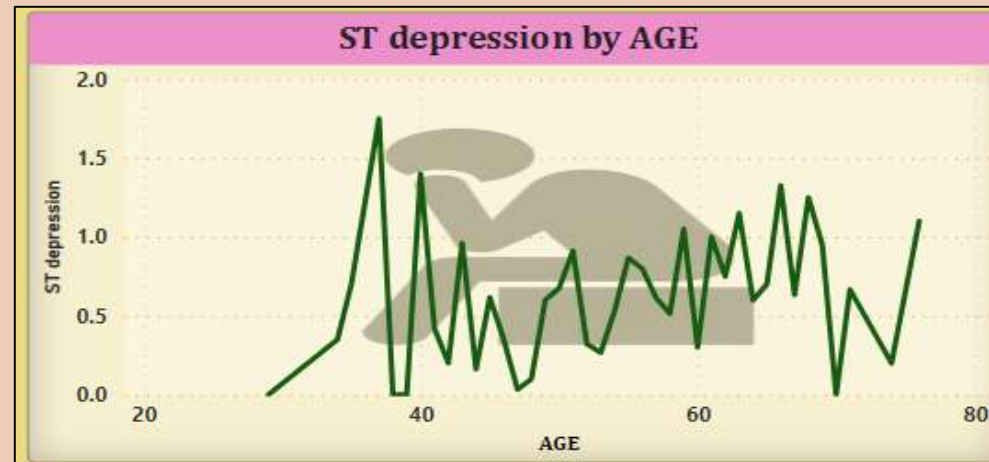
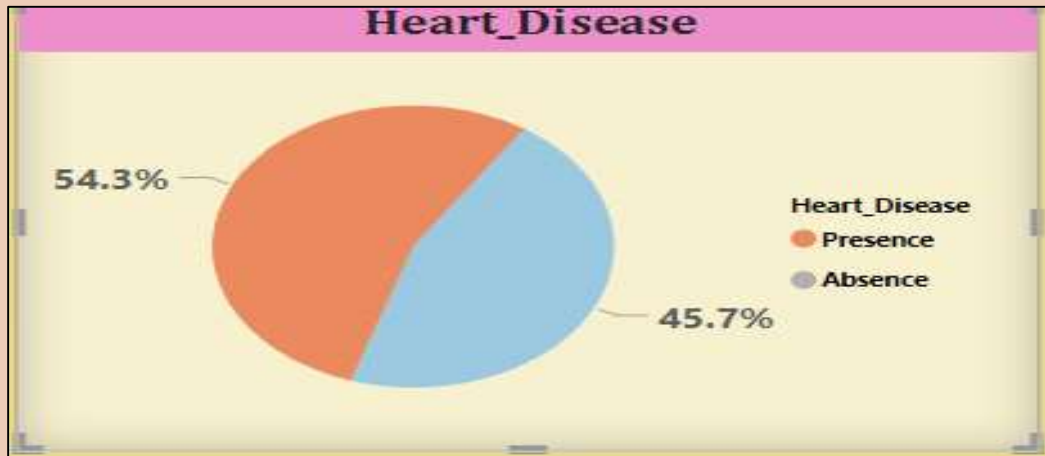
Chest Pain Experienced by Patients



- We can see that a higher number of men are suffering from Asymptomatic type of Chest Pain
- It seems people having asymptomatic chest pain have a higher chance of heart disease.
- There is very high number of Asymptomatic Pain in Elderly and middle age Category

Asymptomatic Chest pain means neither causing nor exhibiting symptoms of heart disease.

Other symptoms people experience in heart disease



- ❖ Here we can observe that Blood pressure increases between age of 50-60 and somehow continue the pattern till 80.
- ❖ Similarly, Cholesterol increasing in the age group of 50-60
- ❖ we can observe from here that ST depression mostly increases between the age group of 30-40.
- ❖ ST depression refers to a finding on an electrocardiogram, wherein the trace in the ST segment is abnormally low below the baseline.

KEY PERFORMANCE INDICATOR (KPI)

1. *Percentage of People Having Heart Disease.*
2. *Heart Disease based on Age and 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

- 54% People are suffering from heart disease
- Middle age men at the age of (40-55) and females are more in 55 to 65 years are more effected by heart disease.
- Males are more prone to heart disease.
- Elderly Aged People (>55) are more prone to heart disease
- People having asymptomatic chest pain have a higher chance of heart disease.
- High number of Blood pressure and cholesterol level in people having heart disease.
- Blood pressure increases between age of 50 to 60 and somehow continue till 80.
- Maximum heart rate Increasing in the age group of 50-74.
- ST depression mostly increases between the age group of 30-40

Q & A

Q1) What's the source of data?

Ans) The Dataset was taken from I Neuron's Provided Project Description Document.

<https://www.drive.google.com/drive/folders/165Pjmf9W9PGy0rZjHEA22LW0Lt3Y-Q8>

Q2) What was the type of data?

Ans) The data was the combination of numerical and Categorical values.

Q 3) What's the complete flow you followed in this Project?

Ans) Refer slide 5th for better Understanding

Q4) What techniques were you using for data?

Ans) -Removing unwanted attributes :-

- ✓ Visualizing relation of independent variables with each other and output variables
- ✓ Removing outliers
- ✓ Cleaning data and imputing if null values are present.
- ✓ Converting Numerical data into Categorical values.

Q 6) What were the libraries that you used in Python?

Ans) I used Pandas, NumPy, Matplotlib and Seaborn libraries in Pandas.

Thank You...