# HEART  DIESISES ANALYSIS DETAILED PROJECT REPORT

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iNeuron

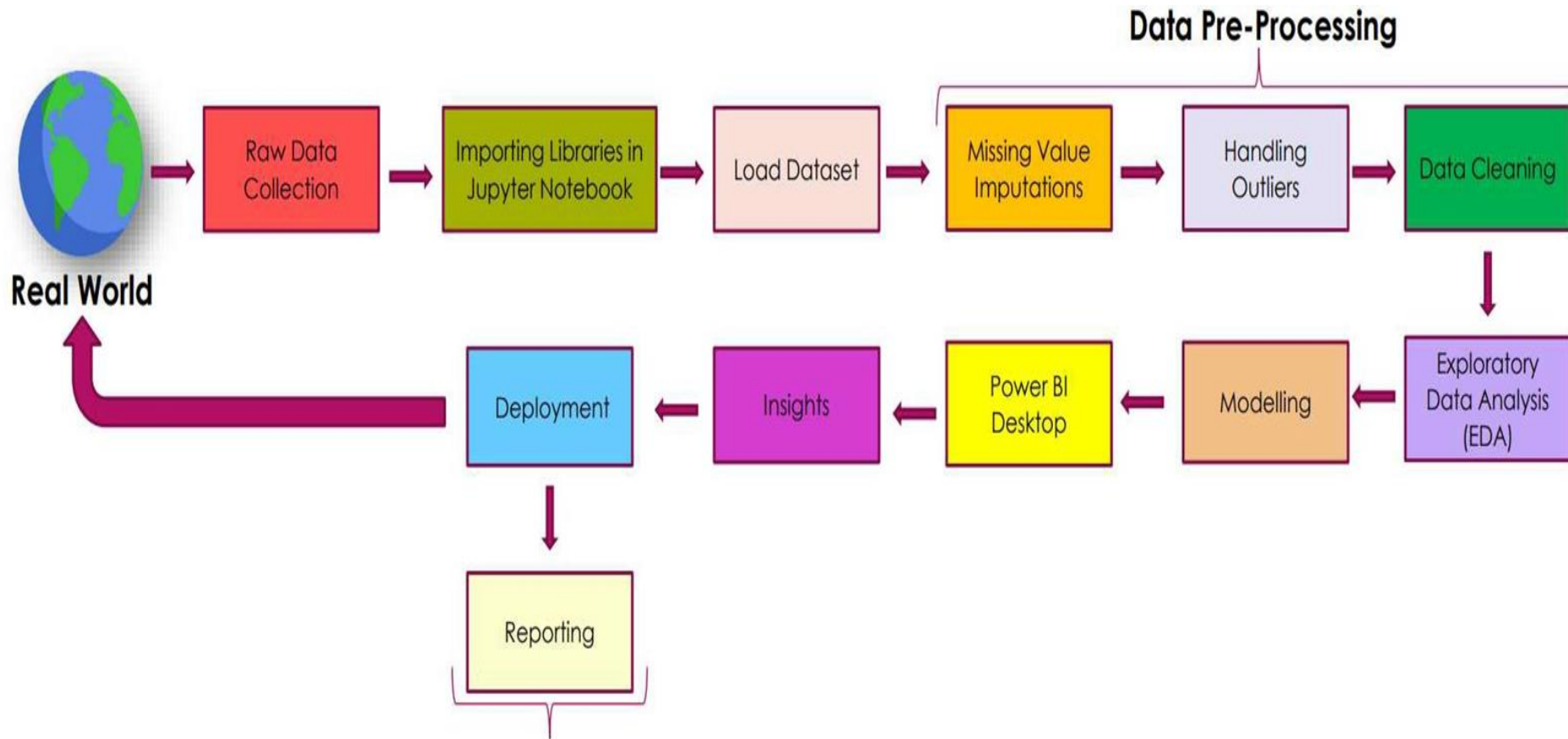| | |
|---:|:---|
| **Project Title** | **Heart Disease Diagnostic – Analysis** |
| **Technology** | Business Intelligence |
| **Domain** | Healthcare |
| **Project Difficulty level** | Advanced |
| **Programming Language Used** | Python |
| **Tools Used** | Jupyter Notebook, MS-Excel, MS-Power BI |

# PROJECT DETAIL

# OBJECTIVE

▶ The goal of this project is to analyse 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 analyse this health and medical data for better future preparation.

➢A dataset is formed by taking into consideration some of the information of 303 individuals.
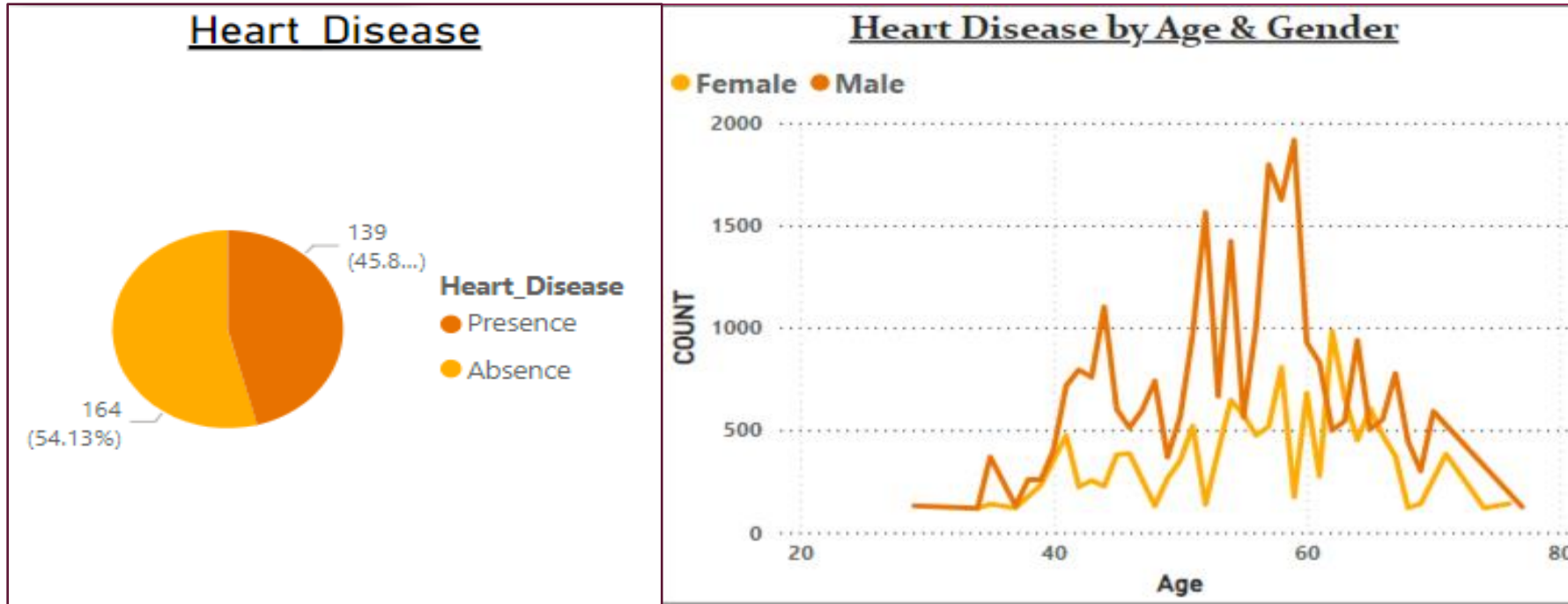
# ARCHITECTURE



**Data Pre-Processing**

Real World → Raw Data Collection → Importing Libraries in Jupyter Notebook → Load Dataset → Missing Value Imputations → Handling Outliers → Data Cleaning → Exploratory Data Analysis (EDA) → Modelling → Power BI Desktop → Insights → Deployment → Real World

Deployment → Reporting

✓ Low Level Design Document
✓ High Level Design Document
✓ Architecture Document
✓ Wireframe Document
✓ Detailed Project Report

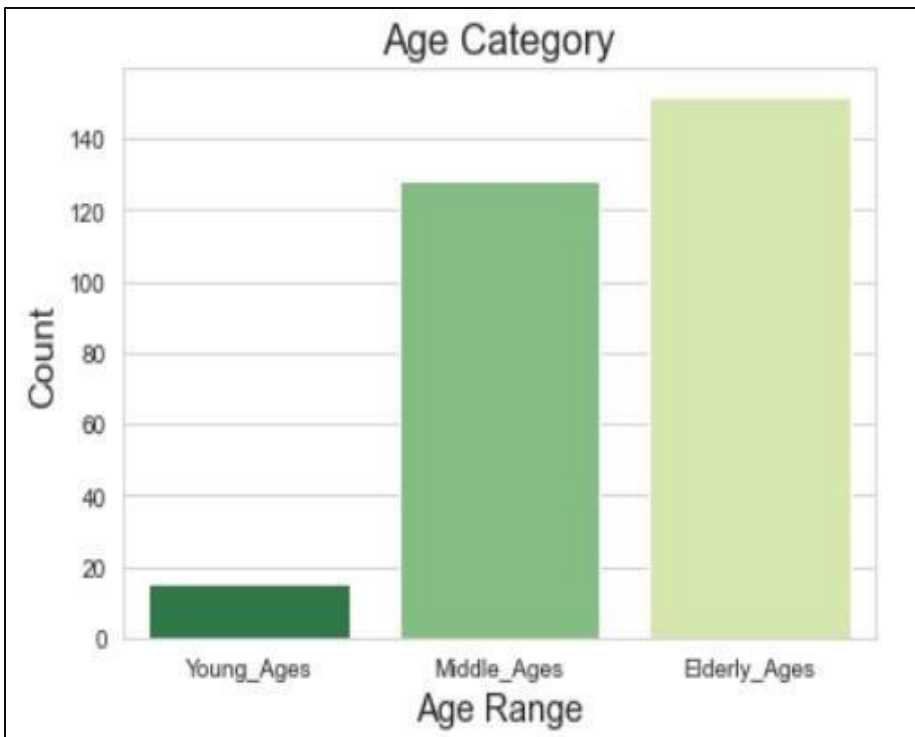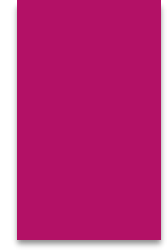| S.No | Attribute | Value | Description |
|---|---|---|---|
| 1 | age | 29 – 62 | age in years |
| 2 | sex | 0 – male, 1- female | gender |
| 3 | cp | 1-typical angina; 2-atypical angina<br>3-non-anginal pain; 4-asymptomatic | chest pain type |
| 4 | trestbps | Numeric value(140mm/Hg) | resting blood 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<br>1: > 50% diameter narrowing | diagnosis of heart disease (angiographic disease status) |

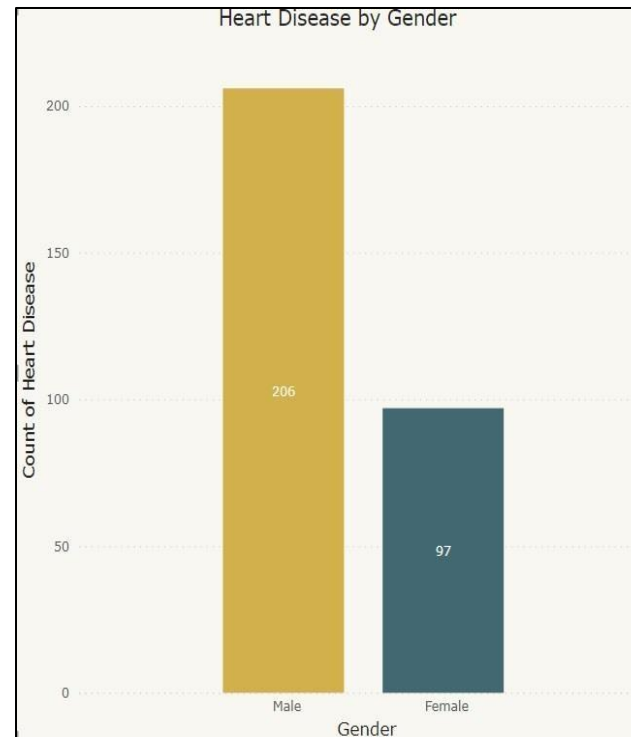# INSIGHTS

## What Kind of Population do we have?



- 45.87% People suffering from heart disease.

- More men are from age category >50 and females are from category >55
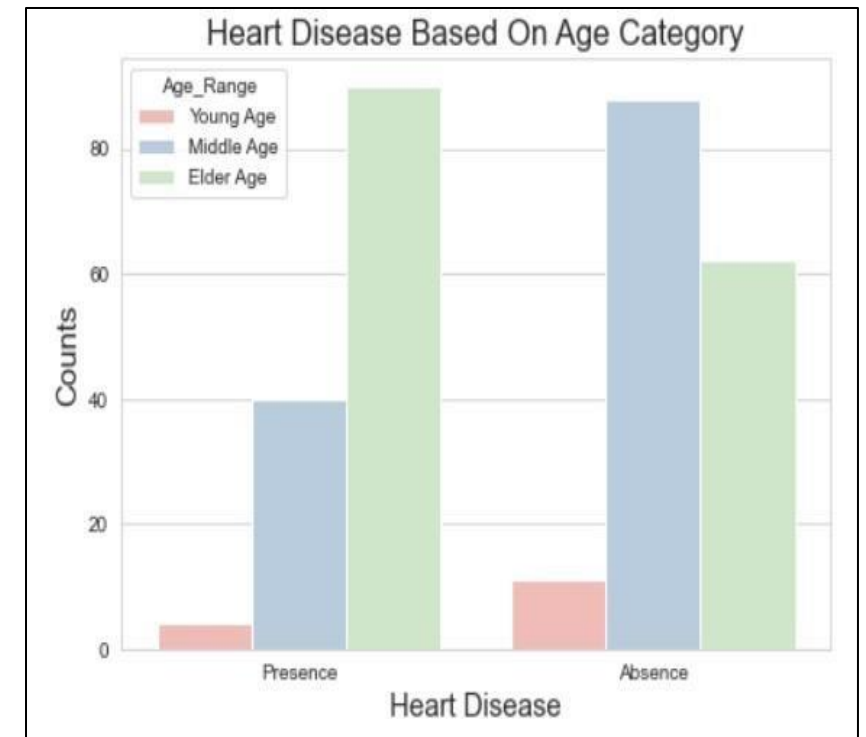
# Who Suffers from Heart Disease?



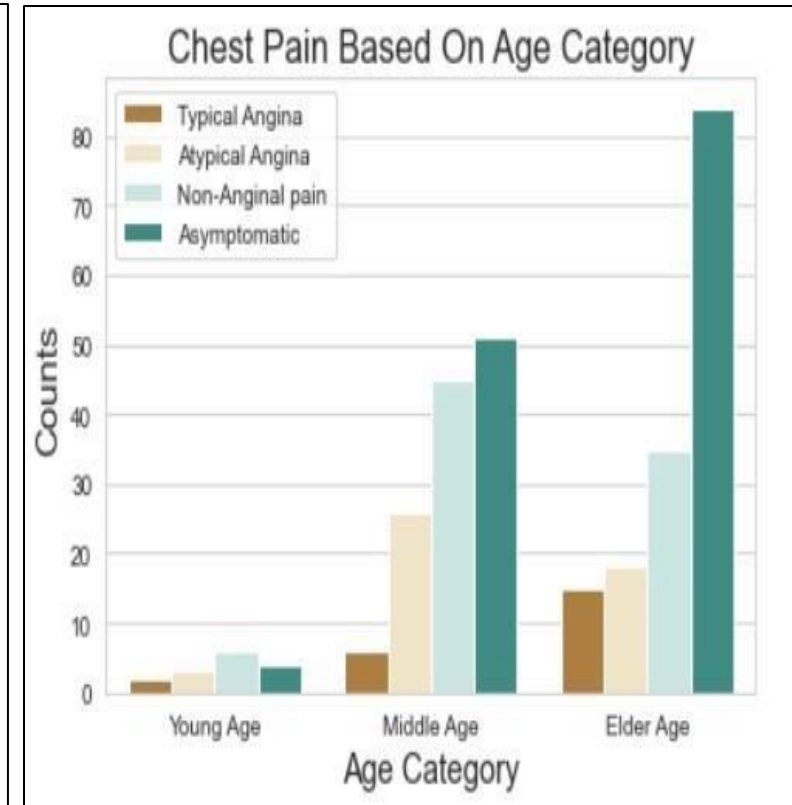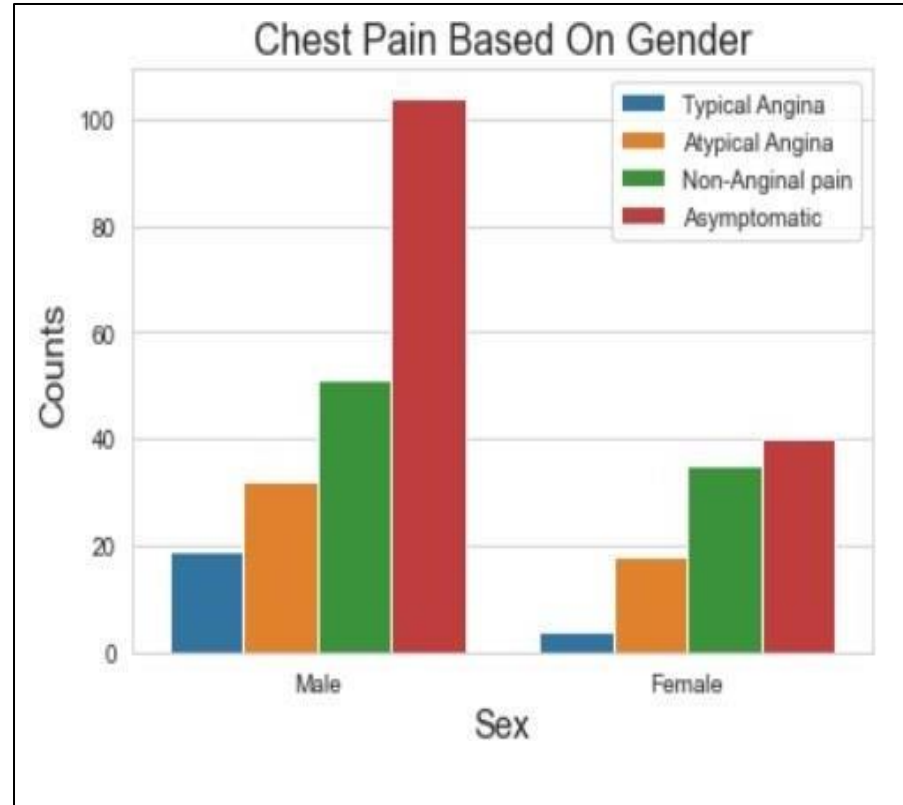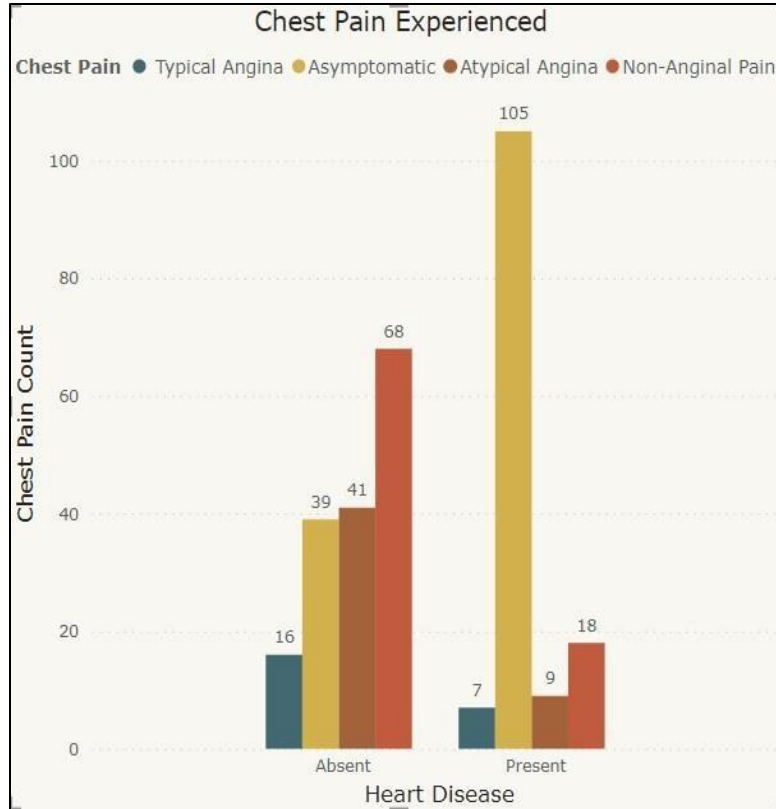➤ Elderly Aged People (>55) are more in our population

➤ Males are more prone to heart disease.

➤ Elderly Aged People (>55) are more prone to heart disease.

# Chest Pain Experienced By Patients
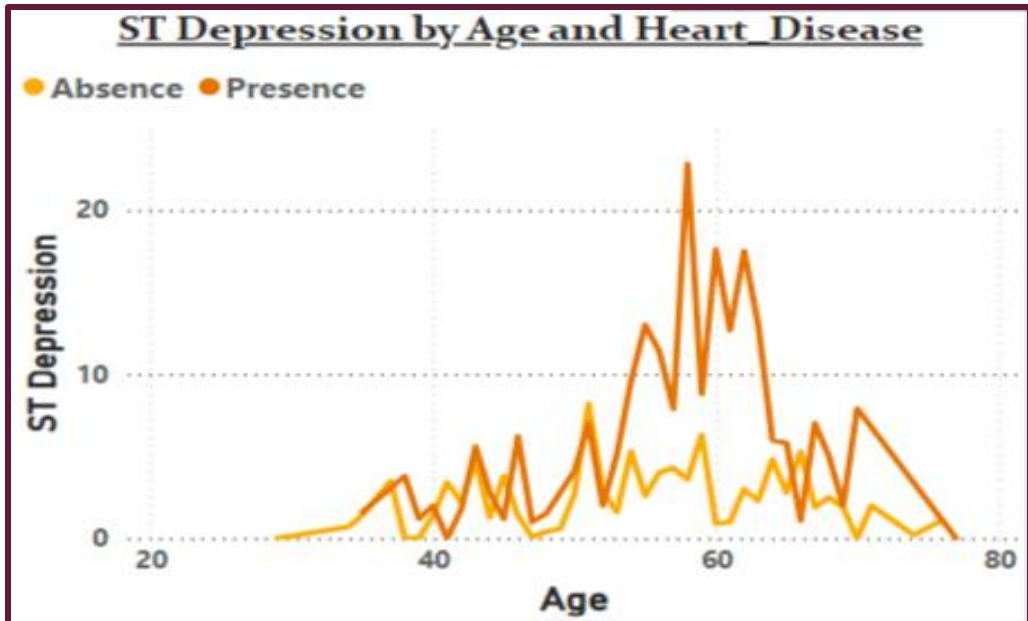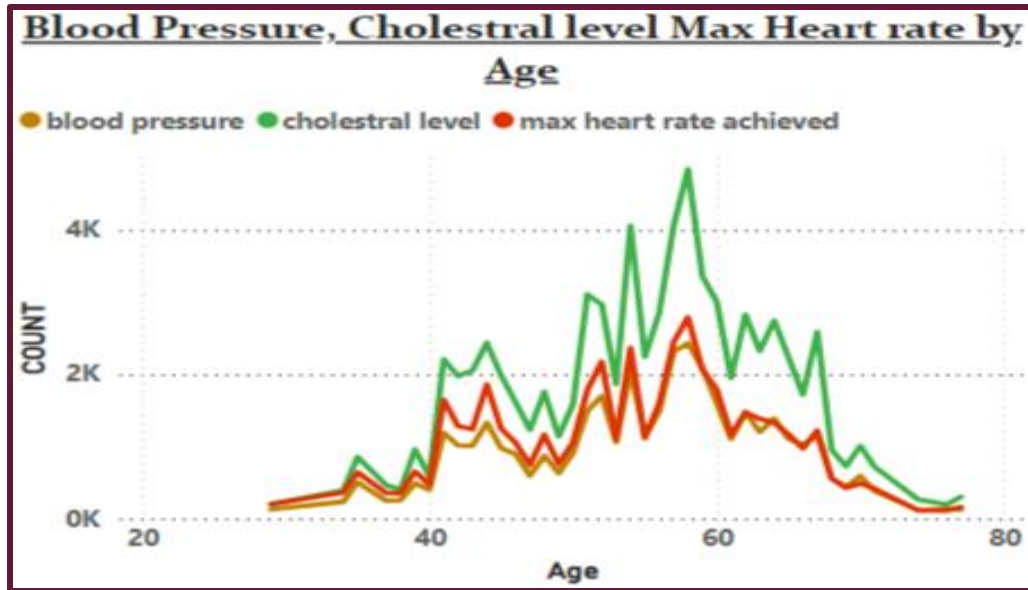


It seems people having asymptomatic chest pain have a higher chance of heart disease.

We can see that a higher number of men are suffering from Asymptomatic type of Chest Pain

There is very high number of Asymptomatic Pain in Elderly age Category

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

# Other symptoms people experience in heart disease

## Blood Pressure, Cholestral level Max Heart rate by Age

● blood pressure ● cholestral level ● max heart rate achieved

COUNT

4K

2K

0K

20    40    60    80

Age

➢ Here we can observe that Blood Pressure increases between age of 50 to 60 and somehow continue the pattern till 70.

➢ Similarly, Cholesterol and maximum heart rate Increasing in the age group of 50-60.

## ST Depression by Age and Heart_Disease

● Absence ● Presence

20

ST Depression

10

0

20    40    60    80

Age

➢ 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. 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

- 45.87% People suffering from heart disease.

- Elderly Aged Men are more (50 to 60 Years) and Females are more in 55 to 65 Years Category

- Males are more prone to heart disease.

- Elderly Aged People are more prone to heart disease.

- People having asymptomatic chest pain have a higher chance of heart disease.

- High number of cholesterol level in people having heart disease.

- Blood Pressure increases between age of 50 to 60 and somehow continue till 70.

- Cholesterol and maximum heart rate Increasing in the age group of 50-60.

- 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 iNeuron's Provided Project Description Document.
https://drive.google.com/drive/folders/165Pjmfb9W9PGy0rZjHEA22LW0Lt3Y-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 5) What were the libraries that you used in Python?**

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

# THANK YOU