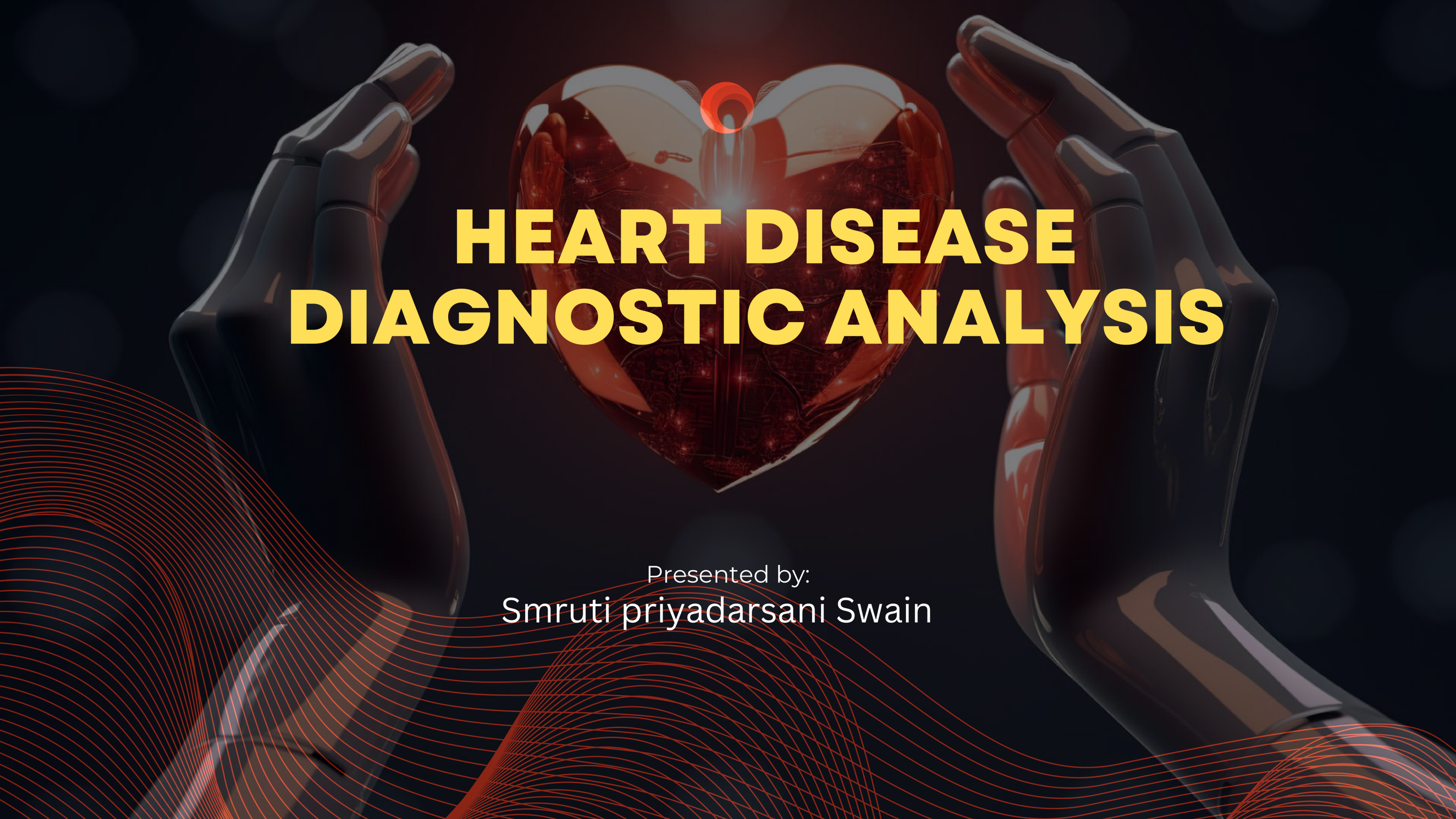


HEART DISEASE DIAGNOSTIC ANALYSIS

Presented by:
Smruti priyadarsani Swain

PROJECT DETAILS

- Project Title- Heart Disease Diagnostic Analysis
- Technologies- Data Science
- Domain- Healthcare
- Project Difficulties level- Intermediate
- Programming Language - Python
- Tools Used-Jupyter Notebook, Ms-excel, Power bi

OBJECTIVES

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

Architechture

Raw data collection

Importing Libraries

Load Dataset

Handeling Outliers

Data Cleaning

EDA

Modelling

Power bi Desktop

Insights

Deployment

REAL WORLD

DATASET INFORMATION

age: The penson's age in years

exang: Exercise induced angina \ 1 =y\#z 0 nol

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

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

oldpeak: ST depression induced by exercise neiative to rest

tresibps: The person is resting blood pressure (mm Hg on admission to the hospita)

chol: The person's cholesterol measurement in mg/dl

slope: the slope of the peak exercise ST segment (Value 1: upsloping. Value 2: fiat, Value 3: down sloping)

j = j fbs: The person's fasting blood sugar p > 120mg / d * l, 1 true: Omega = f*phi(so)

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

restecg: Resting electrocardiographic measurement (normal, 1-naving ST-1 left ventricular wave abnormality 0.2 = varsigma showing probable or definite left hypertrophy by Estes criteria)

that: A blood disorder called thalassemia (3 normal: 6 fixed detect: 7-

reversable defect)

thalach: The person's maximum heart rate achieved

num: Heart disease (O) = cap O r =yes)

WHY THIS PARAMETERS ARE USED?

Age: Age is the most important risk factor in cliveloping coadiovascular or heart diseasm, with approximately a sipling of sk with each decade of Ife. Coronary fatty streaks con begin to form in adolescence it is estimated that 82 percent of peocle who die of coronary heart disease are 45 and older Simultaneously, the risk of smoke doubles every decade after age 55.

Sex: Men are af greater mk of heart daeose than pre-menopausal women. Once past menopause, it has been orgued that a woman's risk is simiar to a man's although more rocant data from the WHO and UN disputes this. If a female has diabetes, she is more likely to develop heart disease than a male with diabetes

Resting Blood Pressure: Over time, high blood pressure con damage orteries that teed your hean. High blood pressure Ihat occurs with other conditions, such as abiesity, high cholesterol or diabetes, increases your sisk even more

Fasting Blood Sugar Not producing enough of a hormone secrated by your pancmos (nsain) or not responding to main

propery couses your body's blood sugar levels to dise, increasing your risk of heart attack

Cholesterol: A high level of low-density ipoprotein (LDL) cholesters (the bad cholesterol) is most likely to naraw arterim Ahigh level of higrycetides, a type of blond fat related your diet, aho on your the of heart attack. However, a high lever of high-density lipoprotein (HDL) cholesterol (the "good cholesterol) lowers your risk

of neort omack Resting ECG: For peoplie al ow risk of cardiovascular disease, the USPSTF concludes with moderate ceriamy that the potential harms of screening with resling or exercise ECG equo of exceed the polentia benelils. For people al imermediate to high risk. current evidence is insufficient to assess the balance of benefits and harms of screening.

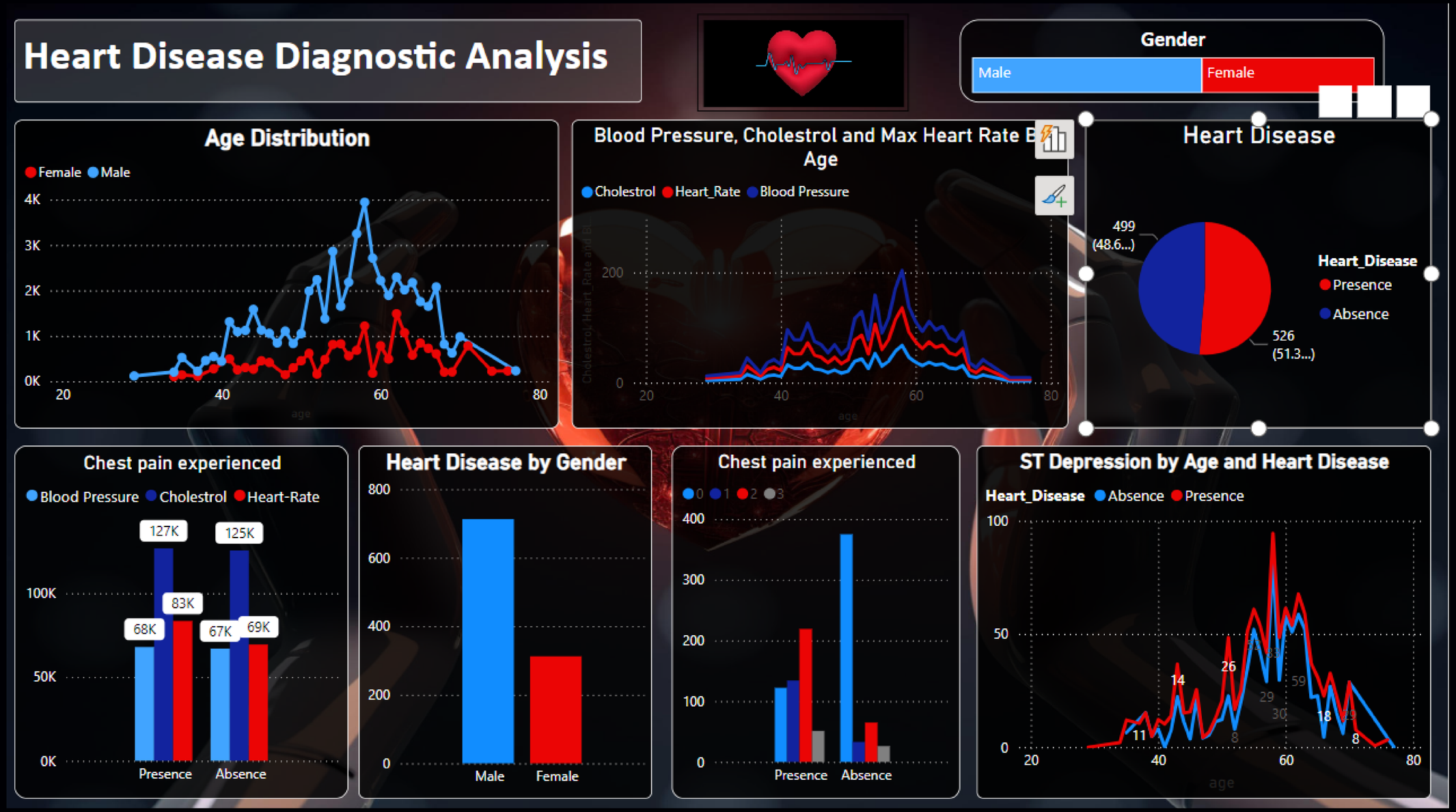
Max heart rate achieved: The increase in the cordiovascular rise associated with the acceleration of heart rate, was comparable to the ricrease in tisk observed with high blood pressure. It has been shown that an increase in heart rate by 10 beats per minule was associated with an increase in the risk of cardiac death by of least 20%, and this increase in the

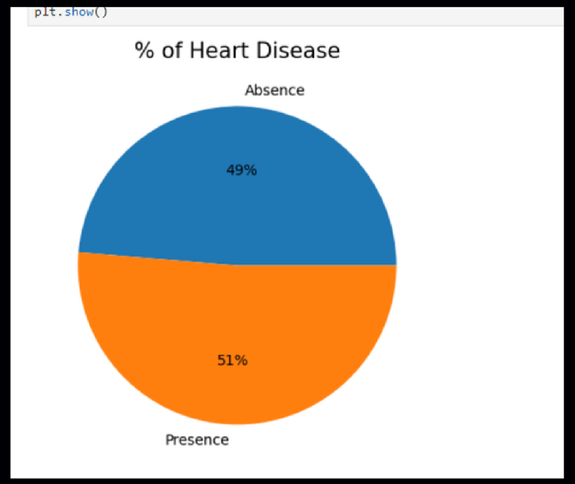
nk is similar to the one observed with an increase in systolic blood pressure by 10 mm Hg.

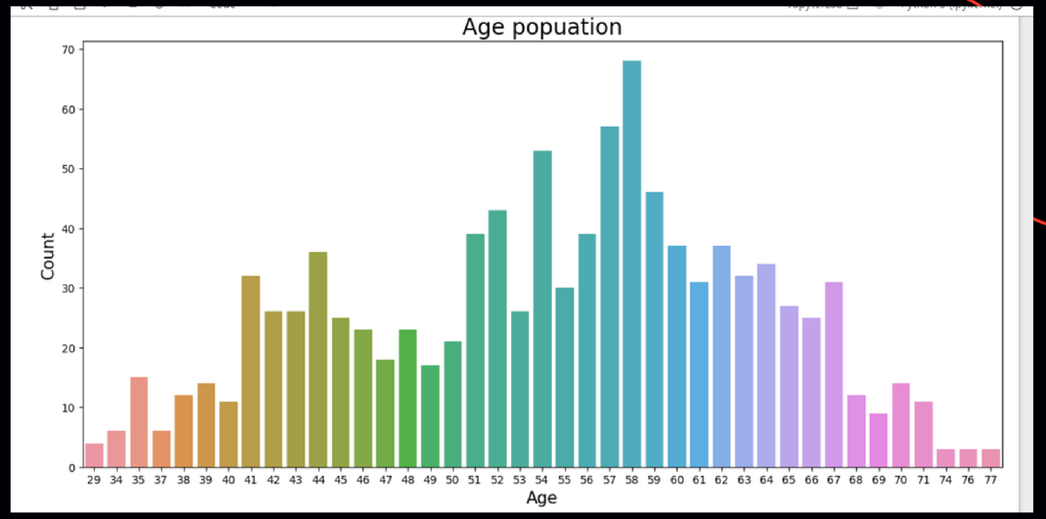
ST Depression: in unstable coronary artery disease ST-segment depression is associated with a 100% increase in the occurrence of fivee-vessel/left main disease and to an increased risk of subsequent cardiac events, in these patients an

early invasive strategy substantialy decreases death/myocaria nfarction

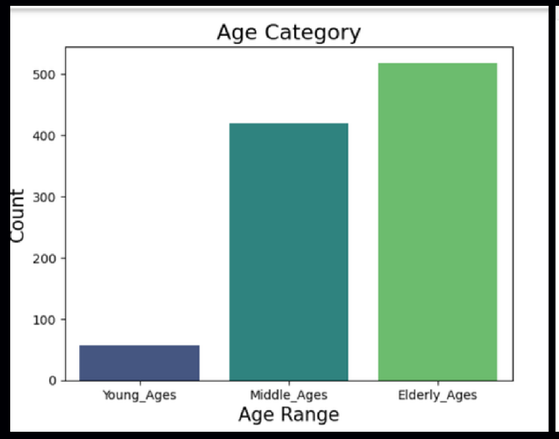
INSIGHTS

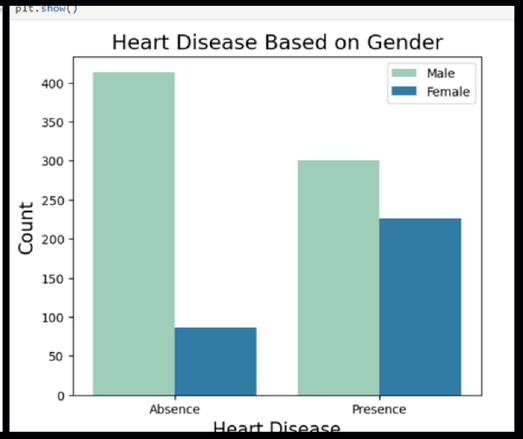

Heart Disease Diagnostic Analysis
Gender
Male
Female
Age Distribution
Female
Male
4K
3K
2K
1K
0K
20
40
60
80
Blood Pressure, Cholestrol and Max Heart Rate By Age
Cholestrol
Heart_Rate
Blood Pressure
200
0
20
40
60
80
Heart Disease
499
(48.6...)
526
(51.3...)
Heart_Disease
Presence
Absence
Chest pain experienced
Blood Pressure
Cholestrol
Heart-Rate
127K
125K
83K
68K
67K
69K
100K
50K
0K
Presence
Absence
Heart Disease by Gender
800
600
400
200
0
Male
Female
Chest pain experienced
0
1
2
3
400
300
200
100
0
Presence
Absence
ST Depression by Age and Heart Disease
Heart_Disease
Absence
Presence
100
50
0
20
40
60
80
14
26
11
8
29
30
59
18
8

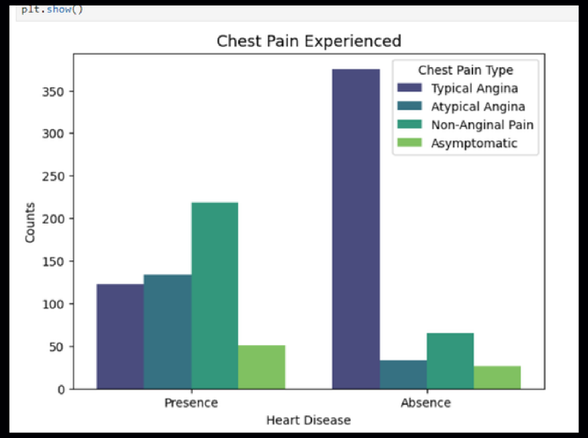

plt.show()
% of Heart Disease
Absence
49%
51%
Presence

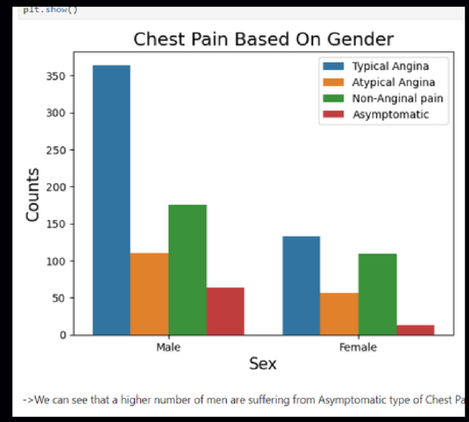

Age popuation
Count
Age

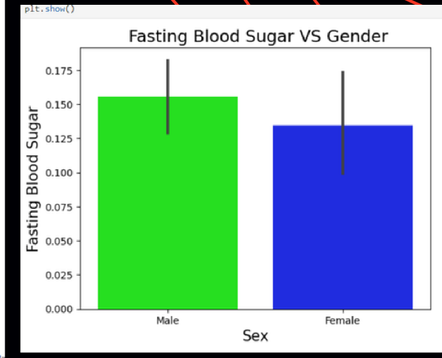

Heart Disease in function of Age and Max Heart Rate
Disease
No Disease
Max Heart Rate
Age


Age Category
Count
Young_Ages
Middle_Ages
Elderly_Ages
Age Range

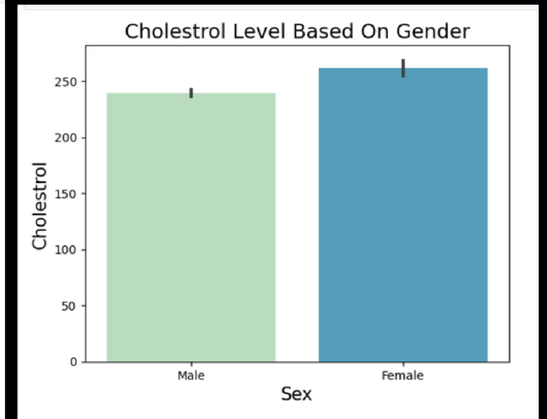

plt.show()
Heart Disease Based on Gender
Male
Female
Count
Absence
Presence
Heart Disease

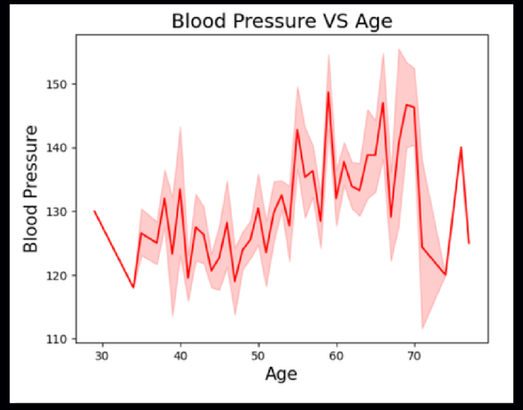

plt.show()
Chest Pain Experienced
Chest Pain Type
Typical Angina
Atypical Angina
Non-Anginal Pain
Asymptomatic
Counts
Presence
Absence
Heart Disease

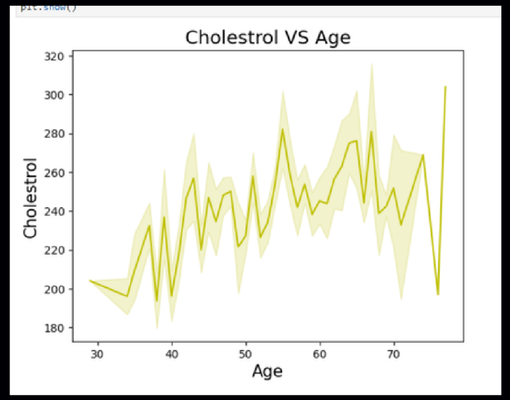

plt.show()
Chest Pain Based On Gender
Typical Angina
Atypical Angina
Non-Anginal pain
Asymptomatic
Counts
Male
Female
Sex
->We can see that a higher number of men are suffering from Asymptomatic type of Chest Pa

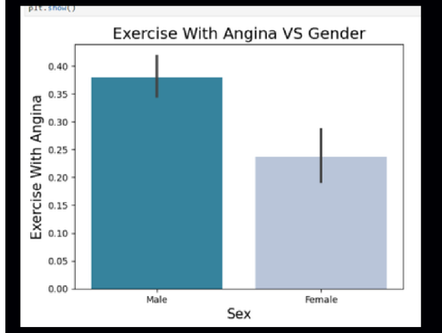

plt.show()
Fasting Blood Sugar VS Gender
Fasting Blood Sugar
Male
Female
Sex


plt.show()
Blood Pressure
Person's Resting Blood Pressure (mm Hg)
Male
Female
Sex


Cholestrol Level Based On Gender
Cholestrol
Male
Female
Sex


Blood Pressure VS Age
Blood Pressure
Age


Cholestrol VS Age
Cholestrol
Age


plt.show()
Exercise With Angina VS Gender
Exercise With Angina
Male
Female
Sex

KEY PERFORMANCE INDICATOR

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

-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.


Thank you