HEART DISEASE DIAGNOSTIC-ANALYSIS

Detailed Project Report

PIYUSH BIRLE

PROJECT DETAILS

Project Title	Heart Disease Diagnostic-Analysis
Domain	Health Care
Technology	Business Intelligence
Programming Language Used	Python
Tools Used	Jupyter Notebook, MS-Excel, Power BI
Project By	iNeuron AI

OBJECTIVE

Heart Disease Diagnostic Analysis Project is to develop a predictive model leveraging key patient features to accurately identify and assess the risk of heart disease. Through comprehensive analysis of demographic, clinical, and diagnostic parameters, the project aims to provide valuable insights into factors contributing to cardiovascular health. Ultimately, the goal is to enhance early detection, risk stratification, and inform targeted interventions for improved patient outcomes in the realm of 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.

DATASET INFORMATION

Age (आयु):Short Name: age English: The person's age in years. Hindi: व्यक्ति की आयु वर्षों में।

Sex: Short Name: sex English: The person's sex (1 = male, 0 = female). (1 = पुरुष, 0 = महिला)।

Chest Pain (सीपी): Short Name: cp English: The chest pain experienced (Value 1: typical angina, Value 2: atypical angina, Value 3: non-anginal pain, Value 4: asymptomatic). Hindi: मुख्य दुखि (सीपी) अनुभव किया गया छाती में दर्द (मूल्य 1: सामान्य एंजाइना, मूल्य 2: असामान्य एंजाइना, मूल्य 3: नॉन-एंजाइनल पेन, मूल्य 4: असंज्ञानात्मक)।

Resting BP (आराम से बीपी): Short Name: trestbps English: The person's resting blood pressure (mm Hg on admission to the hospital). Hindi: व्यक्ति का आराम से ब्लड प्रेशर (हॉस्पिटल में प्रवेश पर मिमीमी ऑफ़ हाइड्राजन पैराबार)।

Cholesterol (कोलेस्ट्रॉल): Short Name: chol English: The person's cholesterol measurement in mg/dl. Hindi: व्यक्ति का कोलेस्ट्रॉल माप (मि.ग्रा./डेसी.एल)।

Fasting Sugar (उपवास शुगर): Short Name: fbs English: The person's fasting blood sugar (> 120 mg/dl, 1 = true; 0 = false). Hindi: व्यक्ति की उपवास से ब्लड शुगर (> 120 मि.ग्रा./डेसी.एल, 1 = सत्य; 0 = असत्य)।

DATASET INFORMATION

Resting ECG (आराम से ईसीजी): Short Name: restecg English: Resting electrocardiographic measurement (0 = normal, 1 = having ST-T wave abnormality, 2 = showing probable or definite left ventricular hypertrophy by Estes' criteria). Hindi: आराम से इलेक्ट्रोकार्डियोग्राफिक माप (0 = सामान्य, 1 = एसटी-टी वेव असामान्यता है, 2 = एस्टेस के मानक के अनुसार संभावित या निश्चित बाएं वेंट्रिक्युलर हाइपरट्रोफी दिखा रहा है)।

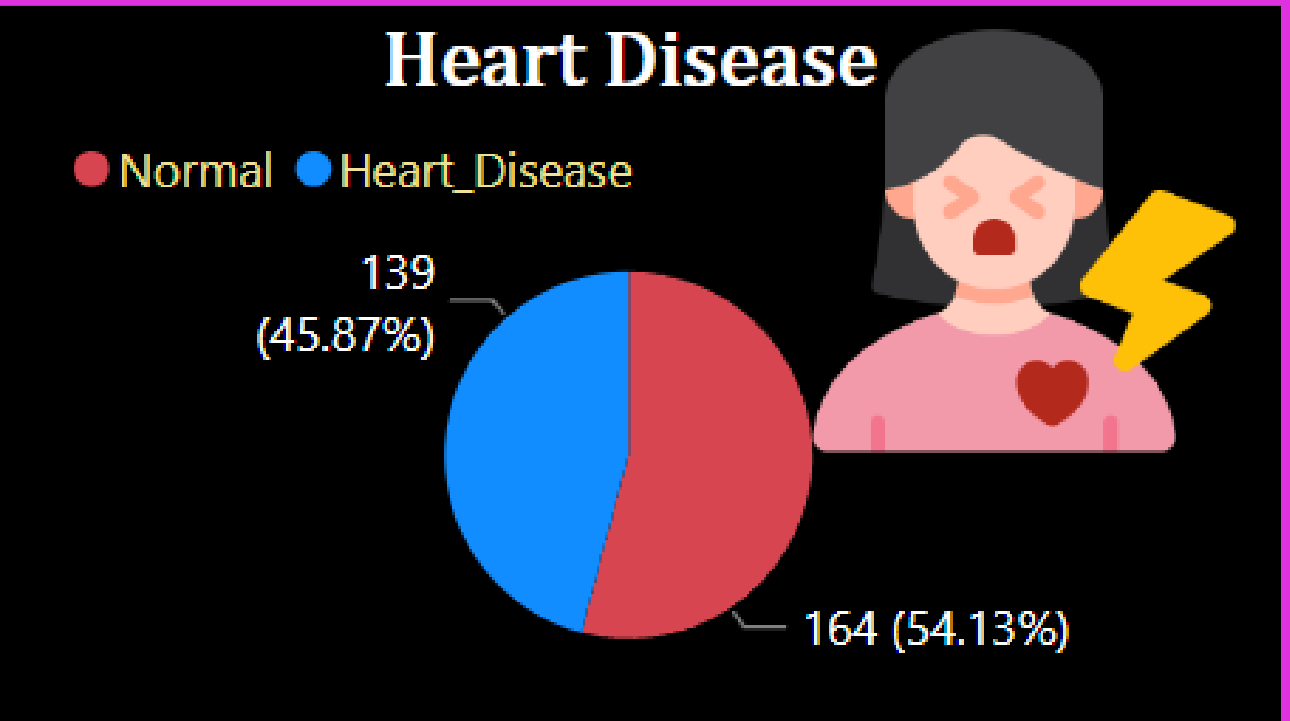
Max Heart Rate (अधिकतम हृदय दर): Short Name: thalach English: The person's maximum heart rate achieved. Hindi: व्यक्ति की अधिकतम हृदय दर जो प्राप्त की गई।

Exercise Angina (व्यायाम एंजाइना): Short Name: exang English: Exercise-induced angina (1 = yes; 0 = no). Hindi: व्यायाम से उत्पन्न एंजाइना (1 = हाँ; 0 = नहीं)।

ST Depression (एसटी डिप्रेशन): Short Name: oldpeak English: ST depression induced by exercise relative to rest. Hindi: विश्राम के साथ तुलनात्मक रूप से व्यायाम द्वारा उत्पन्न एसटी डिप्रेशन।

Slope (ढलान): Short Name: slope English: The slope of the peak exercise ST segment (Value 1: upsloping, Value 2: flat, Value 3: downsloping). Hindi: चरम व्यायाम एसटी सेगमेंट की ढलान (मूल्य 1: ऊपर की ओर, मूल्य 2: समतल, मूल्य 3: नीचे की ओर)।

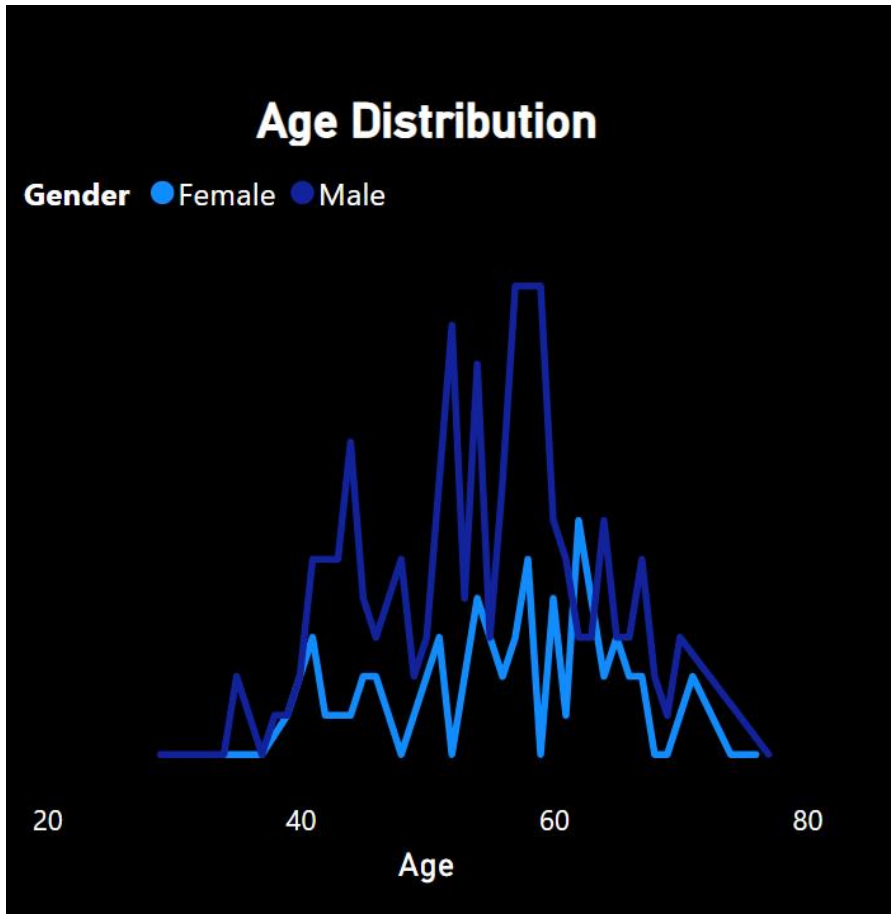
Number of Vessels (नाड़ियों की संख्या): Short Name: ca English: The number of major vessels (0-3). Hindi: प्रमुख नाड़ियों की संख्या (0-3)।



INSIGHTS

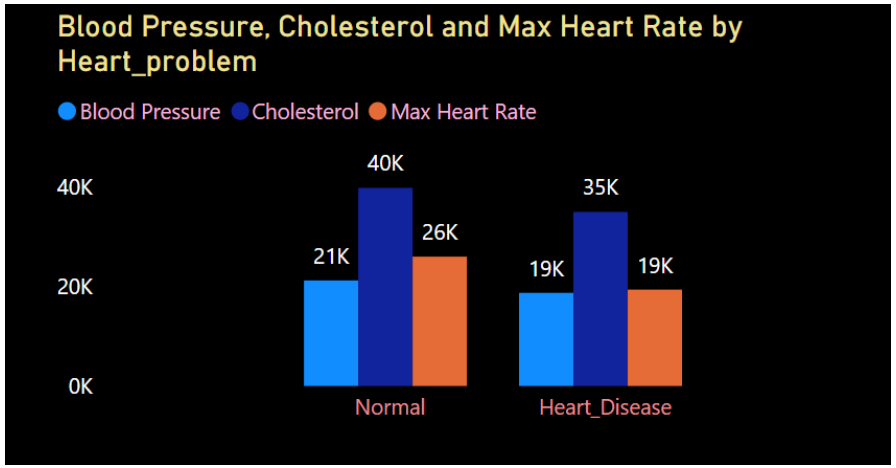
How Many Percent of People Suffers From Heart Disease

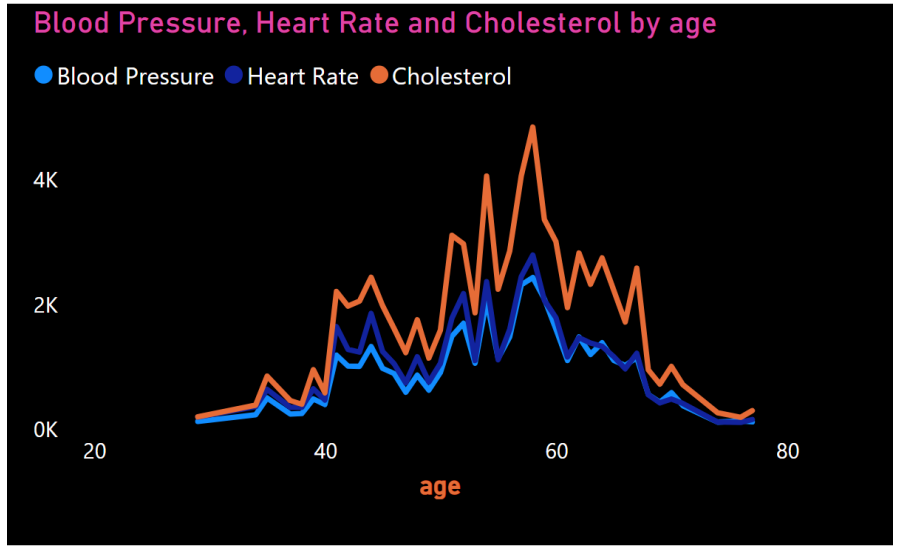
- **45.87% people suffers From Heart Disease**



INSIGHTS

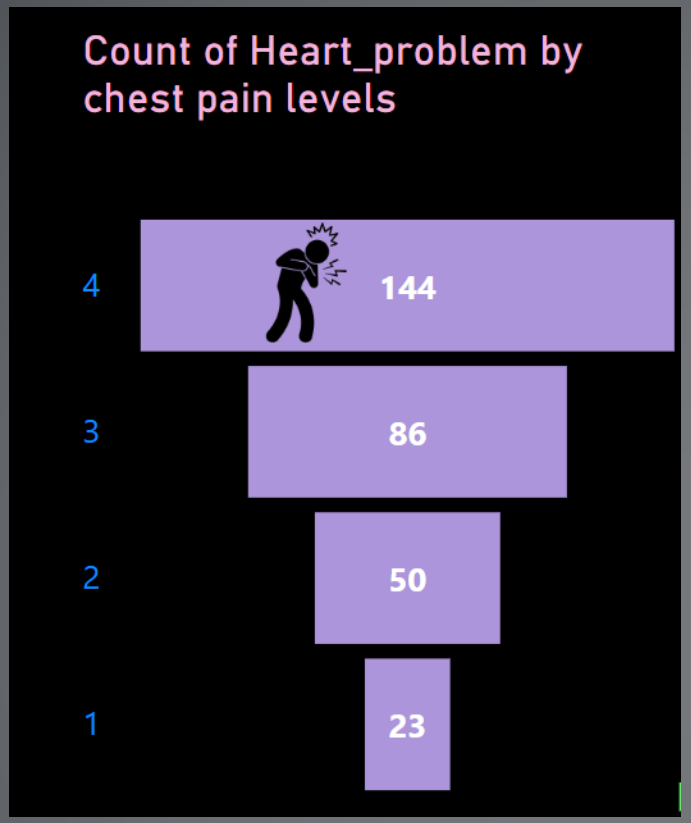
- 45.87% people suffers From Heart Disease.
- Males Are More As Compare To Females and between 50-60 there is a increase in Males and in Female there is a Increase Between 55-65 age

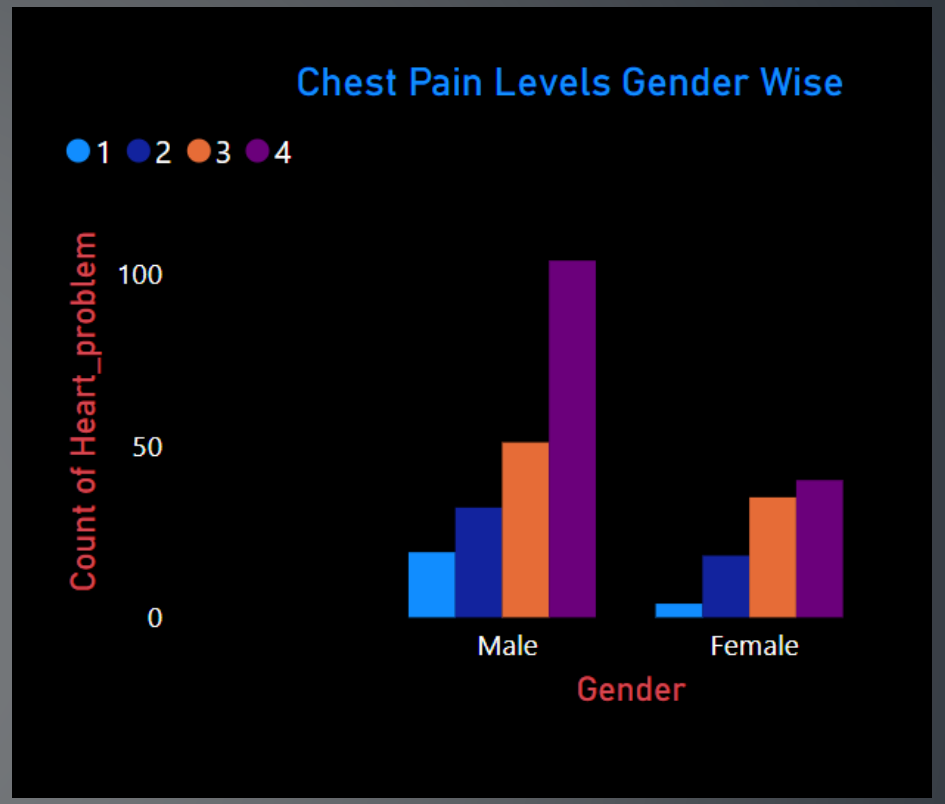




THINGS AFFECTING YOU AND AT WHAT AGE

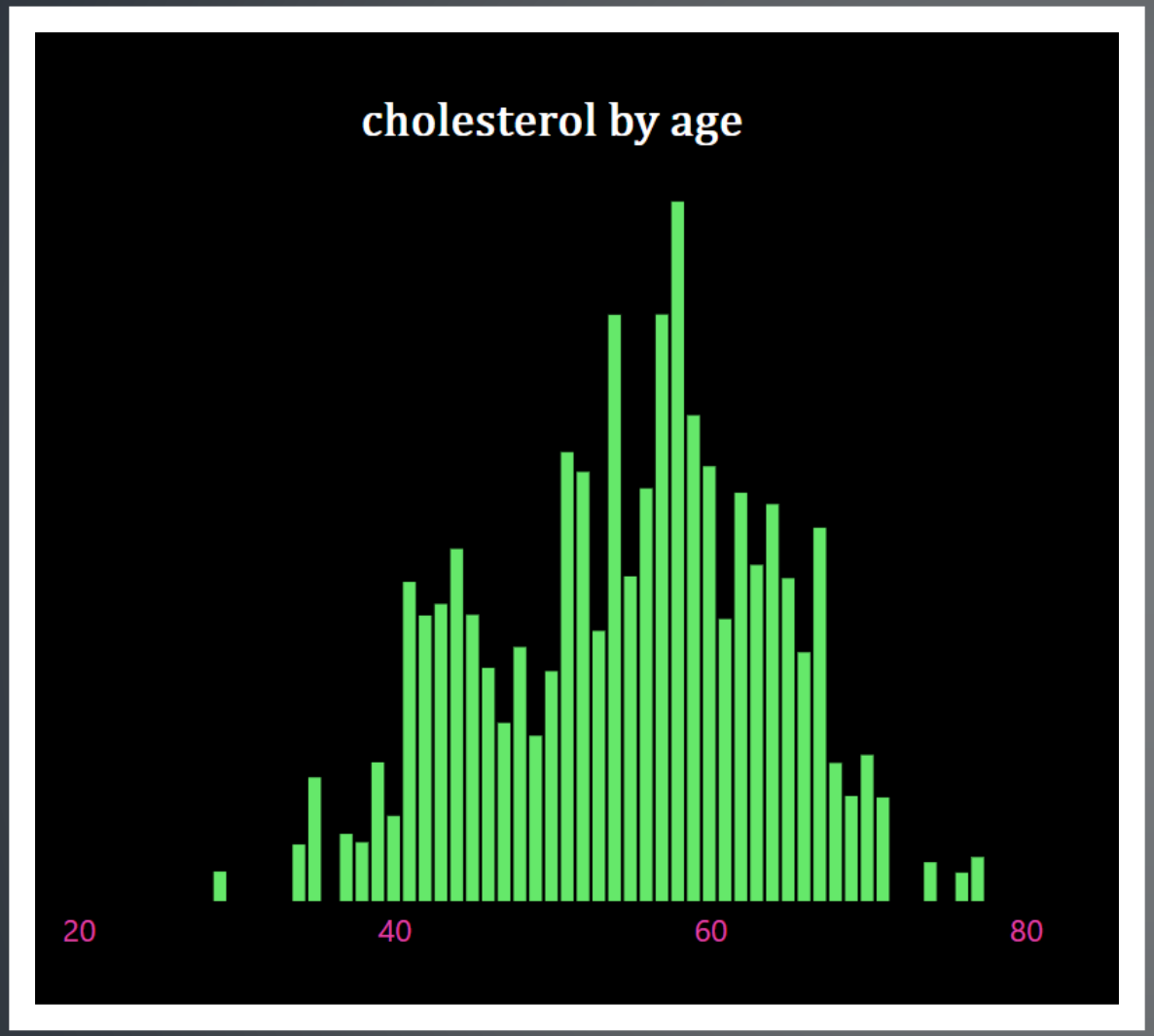
- Here we can observe that Blood Pressure increases between age of 50 to 60 and somehow continue the pattern till 70.
- Similarly, Cholesterol and maximum heart rate Increasing in the age group of 50-60.
- Person who are having more cholesterol are having higher chances of Heart Disease.

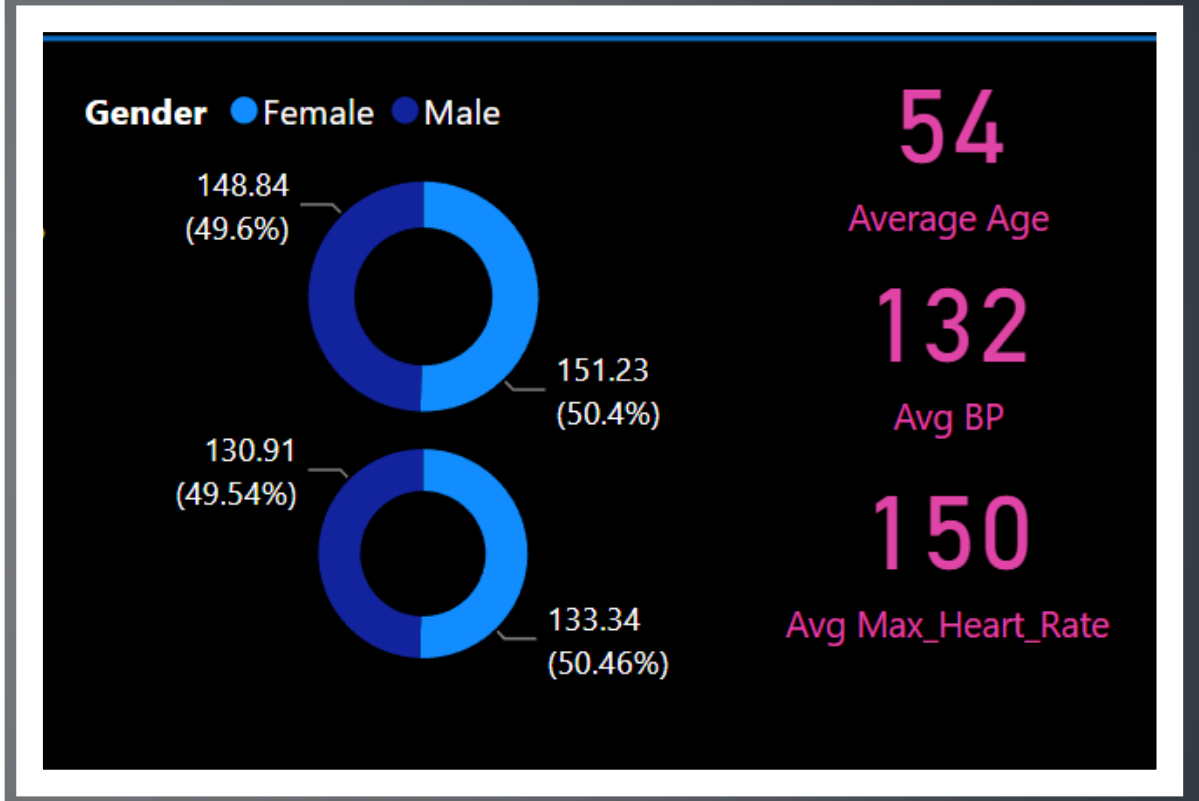




CHEST PAIN EXPERIENCED BY PATIENTS

- 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


cholesterol by age
20
40
60
80


Gender
Female
Male
148.84
(49.6%)
151.23
(50.4%)
130.91
(49.54%)
133.34
(50.46%)
54
Average Age
132
Avg BP
150
Avg Max_Heart_Rate

KPI'S

- Average Age of the Patients and Average Max Heart Rate According To Gender
- Percentage of People Having Heart Disease
- Age Distribution including Gender
- Percentage of Patients Diagnosed with Heart Disease
- Gender Distribution Based on Heart Disease
- Chest Pain Experienced by People Suffering from Heart Disease
- Blood Pressure, Cholesterol Level and Maximum Heart Rate of People According to their Age and Heart Disease Patients.
- ST Depression Experienced by People According to their age and heart disease.

CONCLUSIONS

- 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.

Q1) What was the type of data?

The data was the combination of numerical and Categorical values.

Q2) What's the source of data?

The Dataset was taken from iNeuron's Provided Project Description Document.

Q4) What techniques were you using for data?

-removing unwanted attributes

-visualizing relation of independent variables with each other and outpur variables

- removing outliers

-Cleaning data and imputing if null values are present.

-Converting Numerical data into Categorical values.

THANK YOU