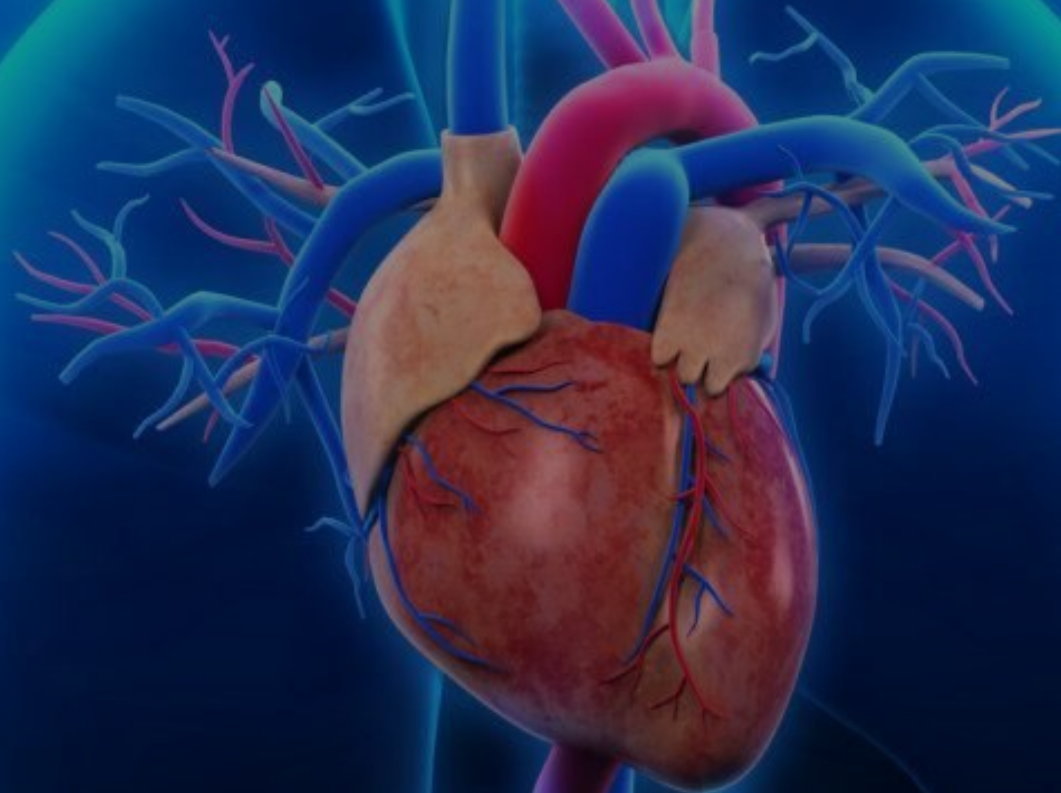


Heart Disease Classification Model



• Anastasiia Leskiv

Overview:

More than 16 million people have heart disease in the USA.

About 7 percent of Americans aged 20 and older have CHD.

Target:

Build classification model to see whether or not patient has heart disease

20%

Percentage of heart attacks that are silent

18.2M

Americans aged 20 and older with coronary heart disease

#1

Number one leading cause of death for men and women in the U.S.

647K

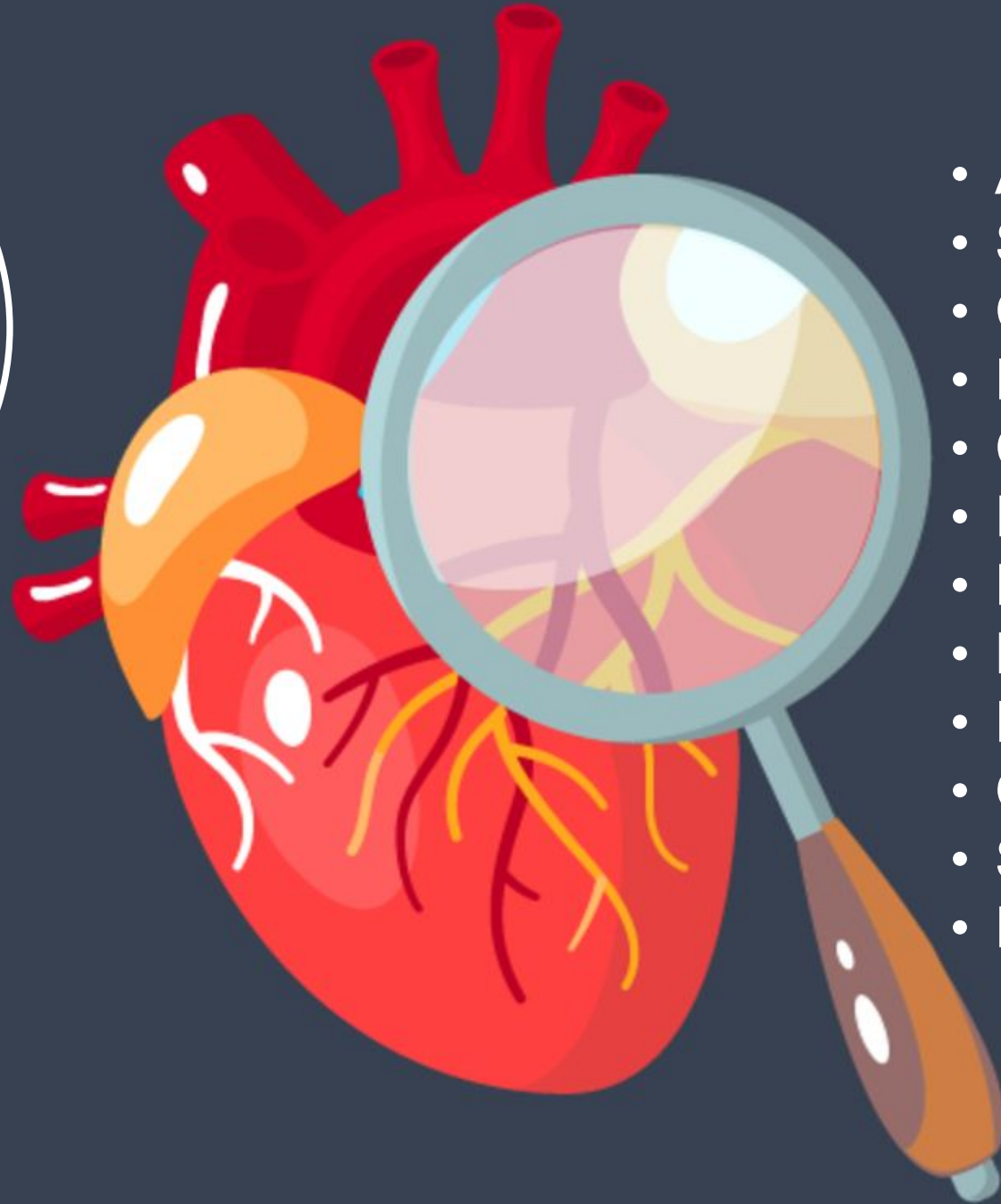
Number of Americans who die from heart disease each year

80%

Percentage of preventable cases of heart disease and stroke



Features



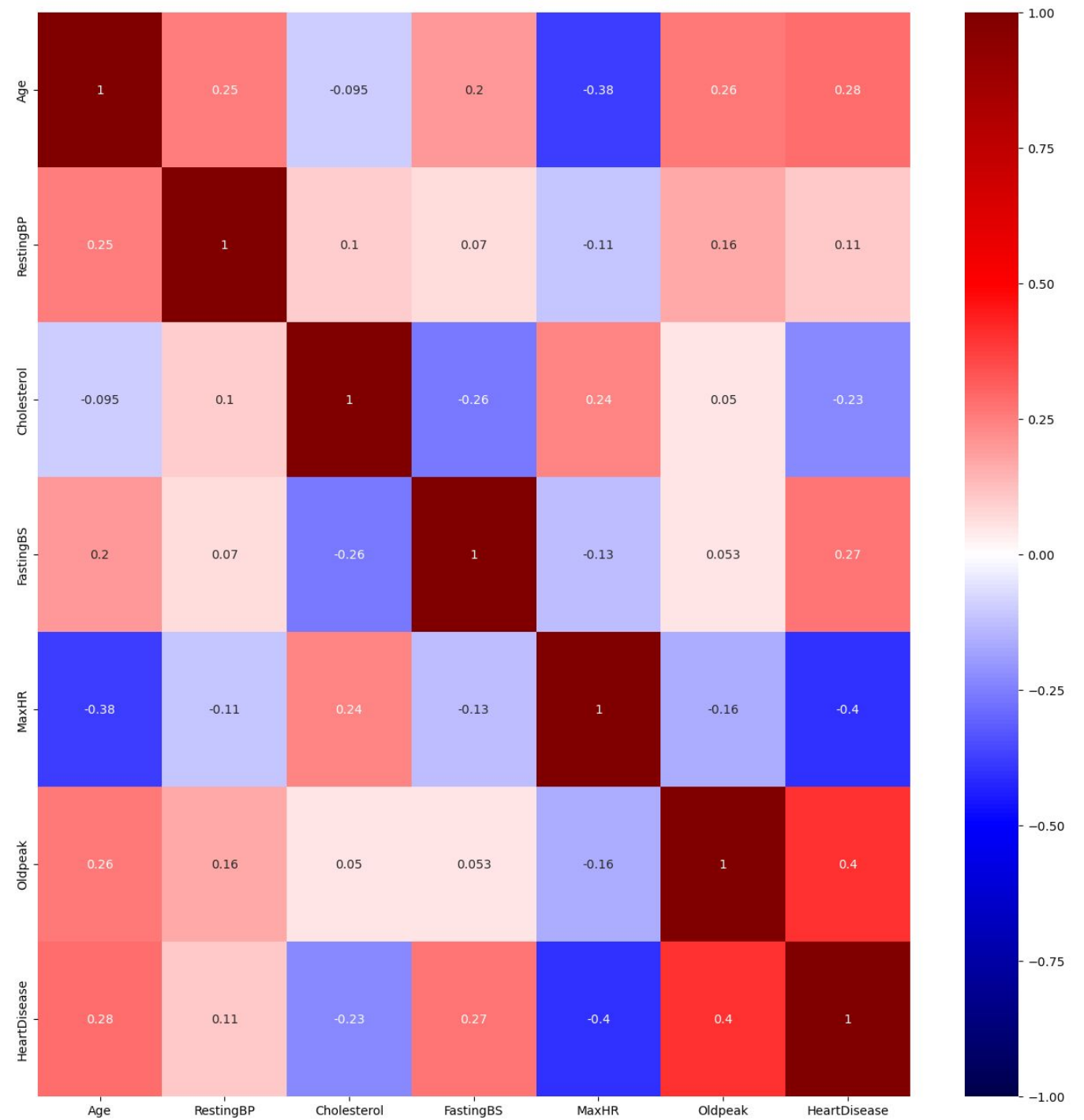
- Age
- Sex
- Chest Pain Type
- Resting Blood Pressure
- Cholesterol
- Fasting Blood sugar
- Resting ECG
- Max Heart Rate
- Exercise Angina
- Oldpeak
- ST_Slope
- HeartDisease



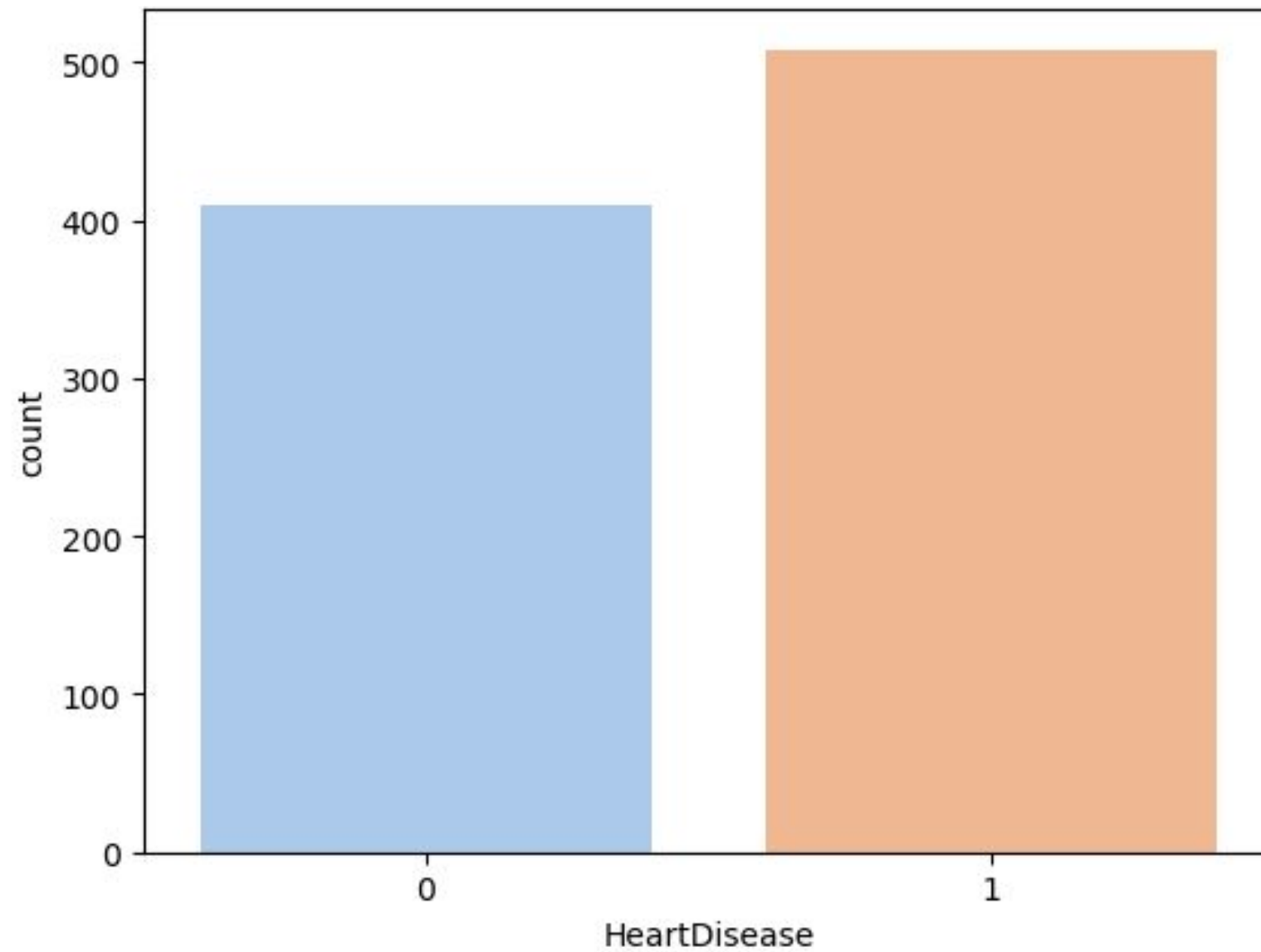
Steps to predict if someone has Heart Disease:

1. EDA
2. Baseline
3. Model Comparing
4. Selecting the best performing model

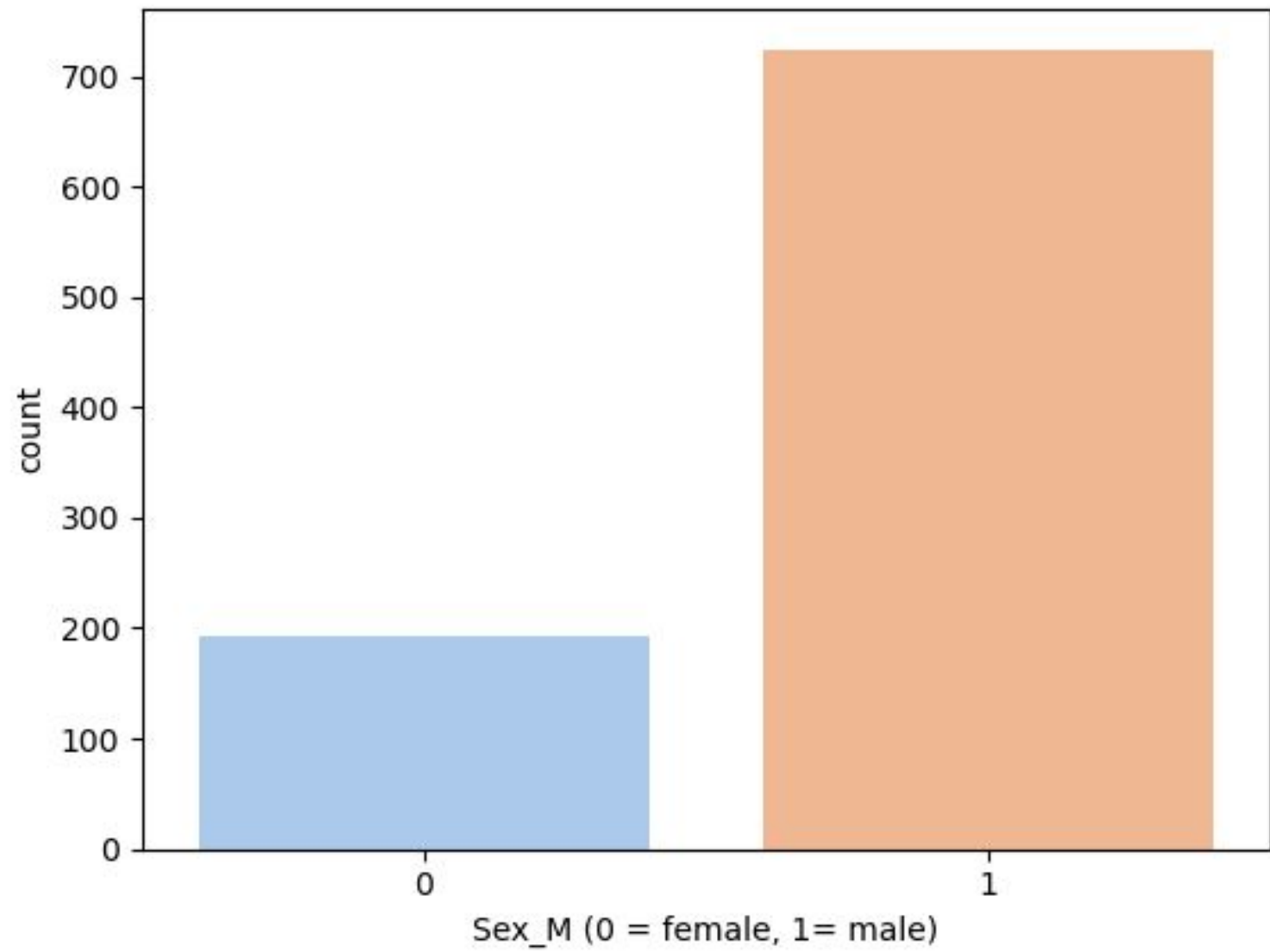
EDA

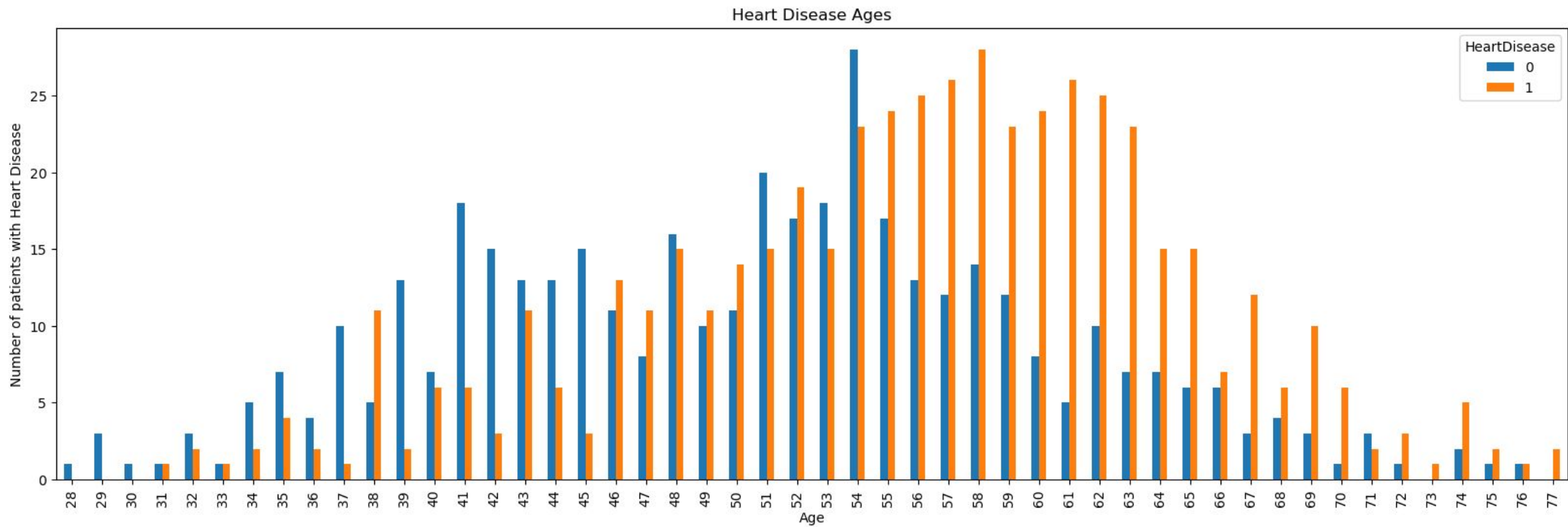


Heart Disease

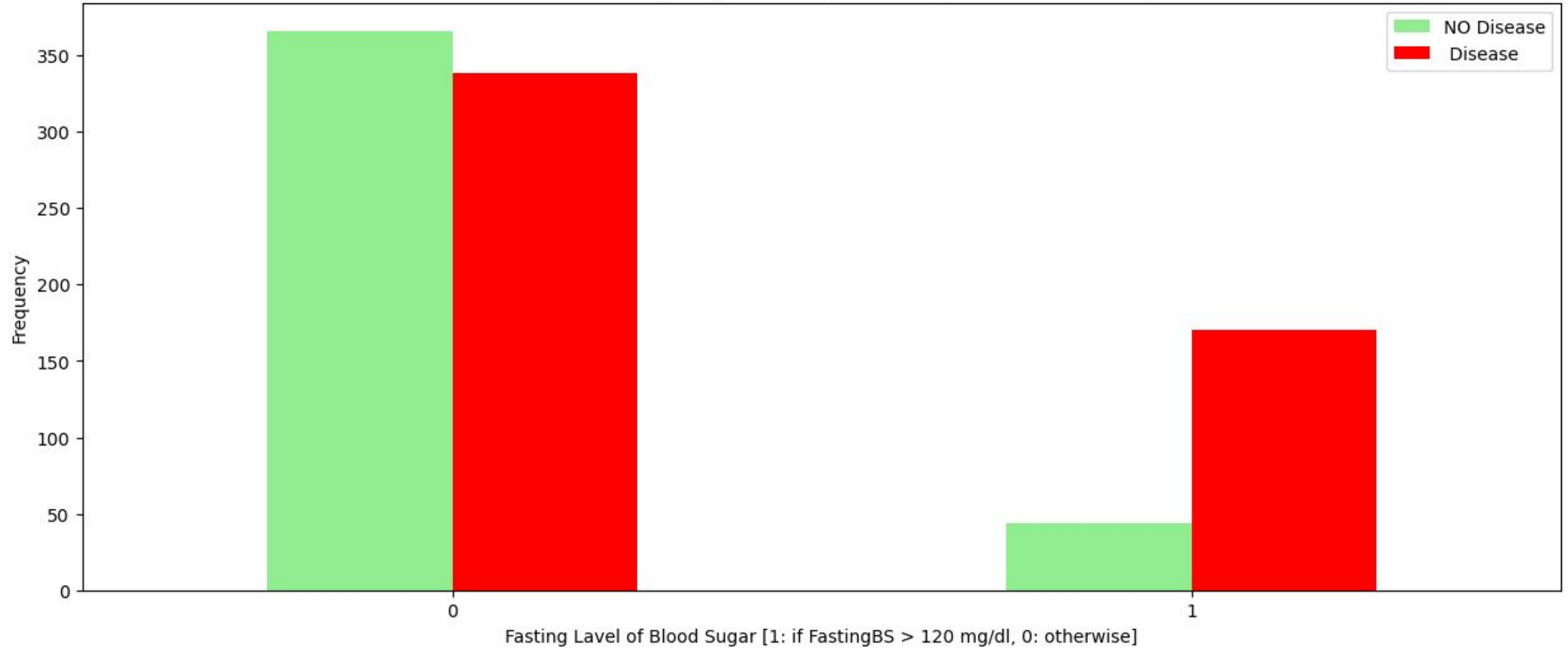


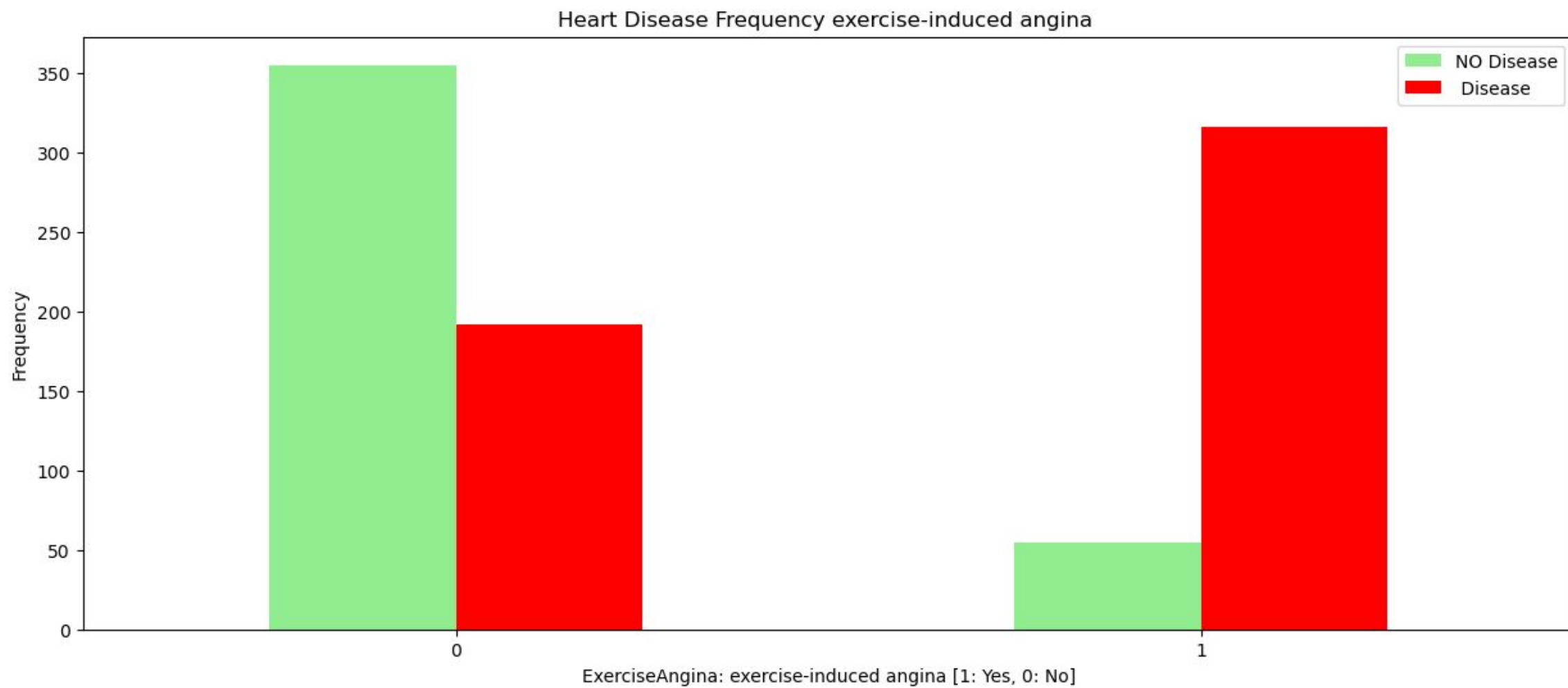
Heart Disease





Heart Disease Frequency According To Fasting Level of Blood Sugar





Hyperparameter Tuning

First Model

Accuracy: 0.6141
Precision: 0.6636
Recall: 0.6822
F1: 0.6728
Cross Validation Accuracy:
Score: 0.6294

Second Model

Accuracy: 0.6033
Precision: 0.6771
Recall: 0.6075
F1: 0.6404
Cross Validation Accuracy:
Score: 0.6280

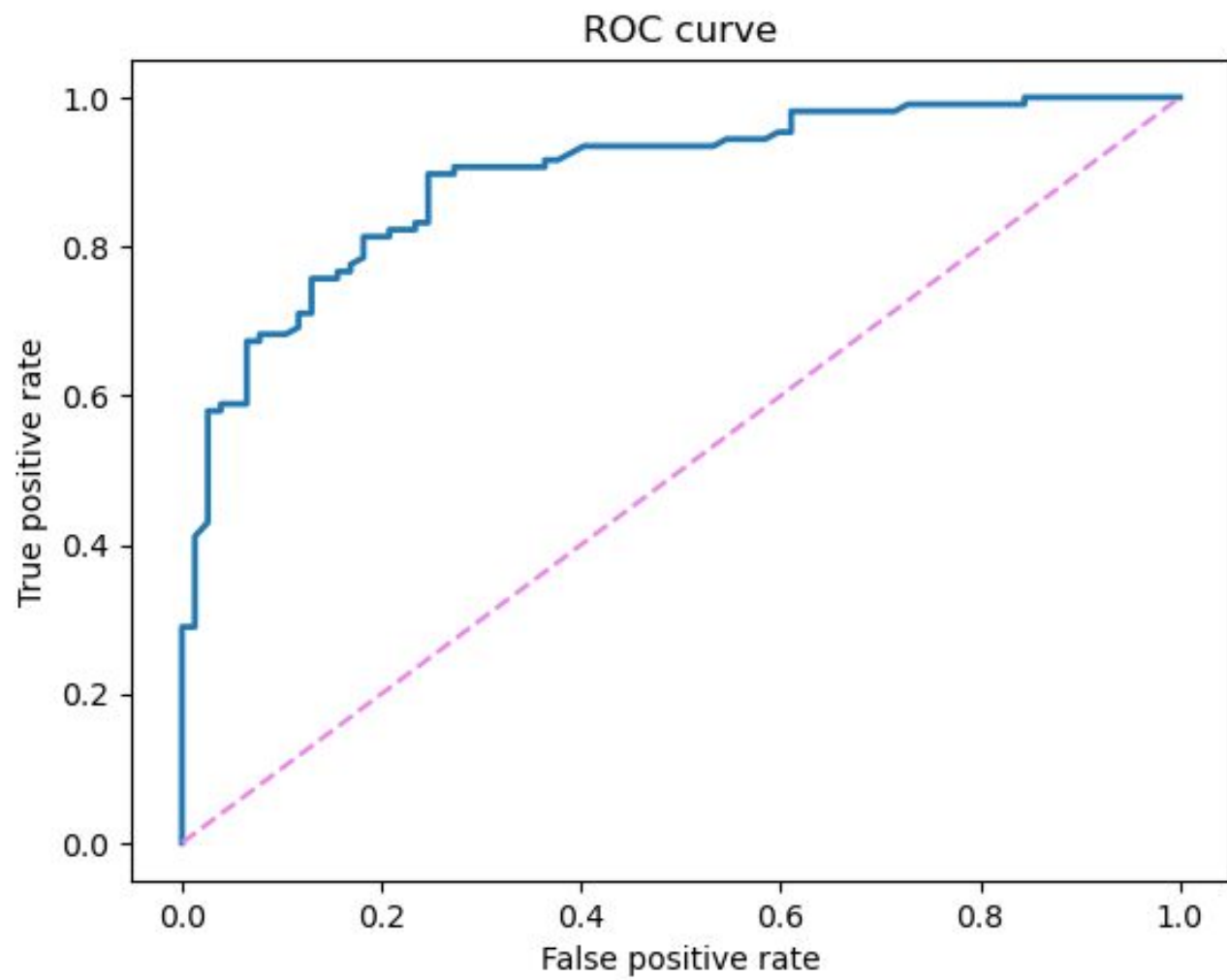
Third Model

Accuracy: 0.6087
Precision: 0.6842
Recall: 0.6075
F1: 0.6436
Cross Validation Accuracy:
Score: 0.6239

Best Model

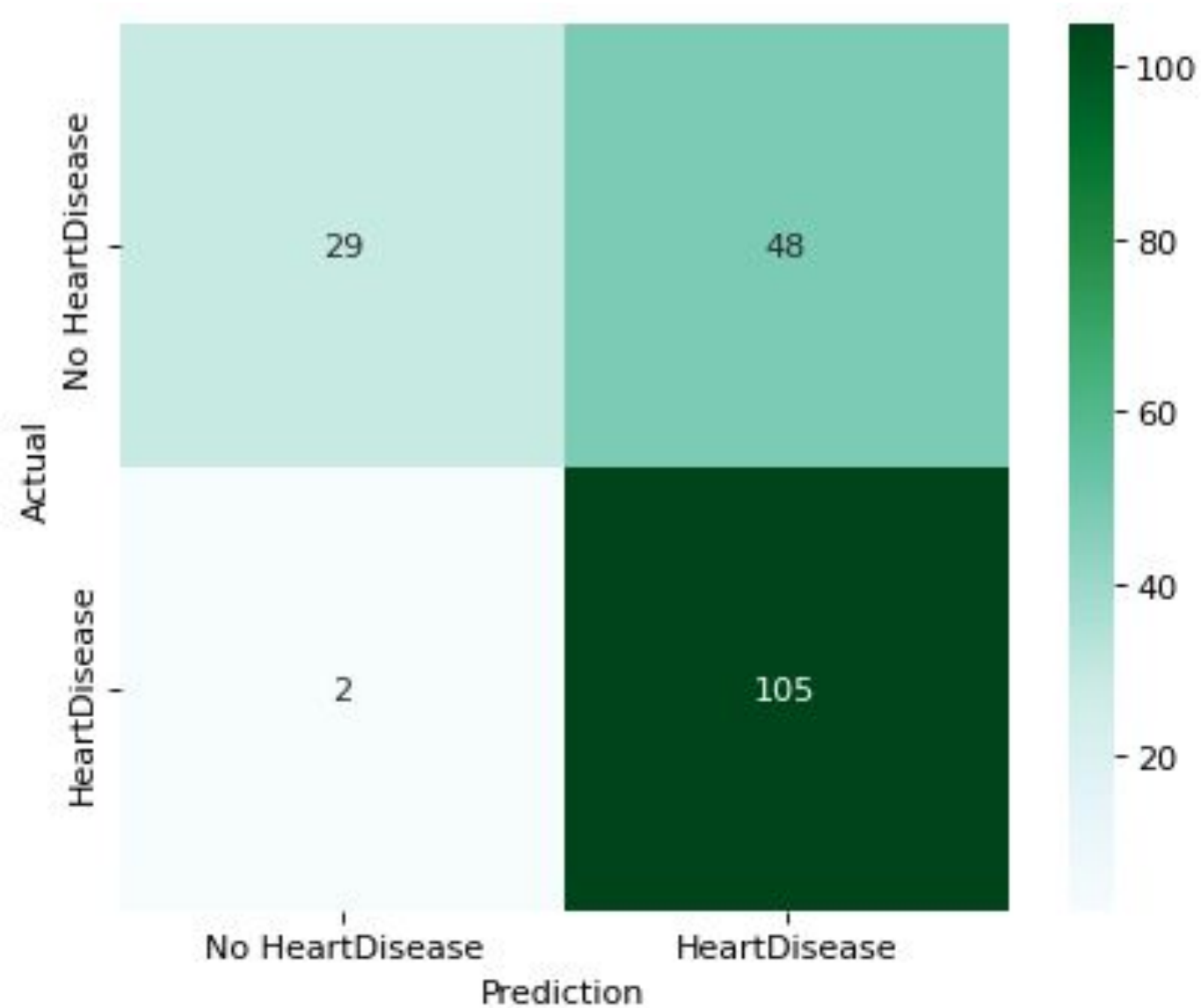
Accuracy: 0.5978
Precision: 0.6051
Recall: 0.8879
F1: 0.7197
Cross Validation Accuracy:
Score: 0.5954

Best model
Random
Forest



ROS AUC Score – 0.9

Best Performance Model Random Forest



Conclusion



Factors that increases the chances of getting heart disease:

- Age
- Gender
- Sugar level
- Angina

My model predicted with

Accuracy: 0.5978

Precision: 0.6051

Recall: 0.8879

F1: 0.7197

The Area under the ROC curve is 0.89

An anatomical illustration of a human heart and lungs. The heart is shown in a realistic reddish-brown color, positioned centrally. It is surrounded by a complex network of blue and red blood vessels. The lungs are depicted in a translucent, glowing blue color, filling the upper and lower portions of the frame. The entire scene is set against a dark blue background. A white, hand-drawn style rectangular border frames the central area. Overlaid on this border is the word "Limitation" in a clean, white, sans-serif font. Below the text, a short white horizontal line is drawn.

Limitation

An anatomical illustration of a human torso from the chest up, showing the heart and lungs. The heart is a reddish-brown organ with a network of blue and red blood vessels branching out to the lungs. The lungs are depicted in a translucent blue color. The word "Recomendation" is written in a white, sans-serif font across the center of the image, positioned over the heart. A thin white horizontal line is drawn beneath the text.

Recomendation



Next Steps



Thank you

Anastasiia Leskiv

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