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Coding Dojo: April 2023

Class Presentation

Overview:

Data Source

-National Health and Nutrition Examination Survey

-The target is Metabolic Syndrome

-Each row represents a patient

-This is a classification problem

Business Problem

-To predict Metabolic Syndrome based on common risk factors.

Stakeholders

-Patients. Patients make decisions in consultation with their doctors.

-Doctors & Medical Groups.

-Insurance Companies (Payors)

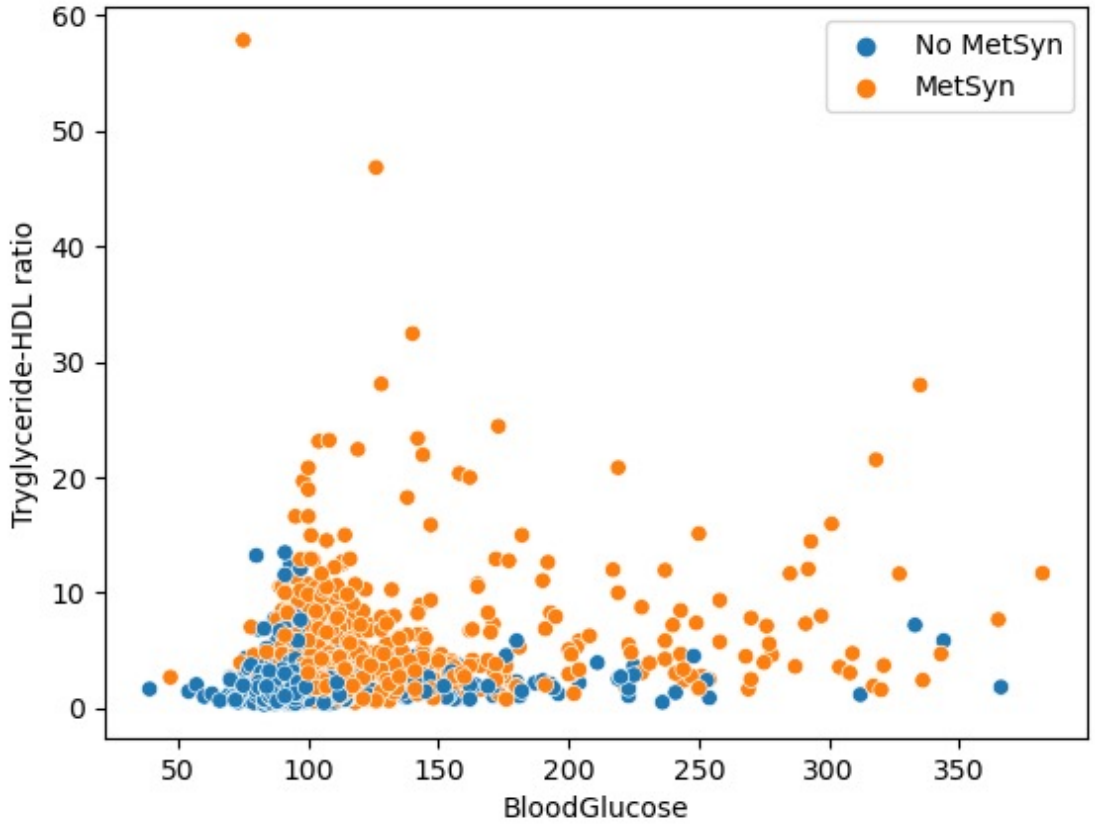
-Regulatory Bodies.

What is Metabolic Syndrome?

- Obesity
- Insulin Resistance (prediabetic/diabetic)
- Hypertension (high blood pressure)
- High Triglycerides (fat in blood)
- Low HDL Cholesterol (good cholesterol that flushes out the bad cholesterol in body)

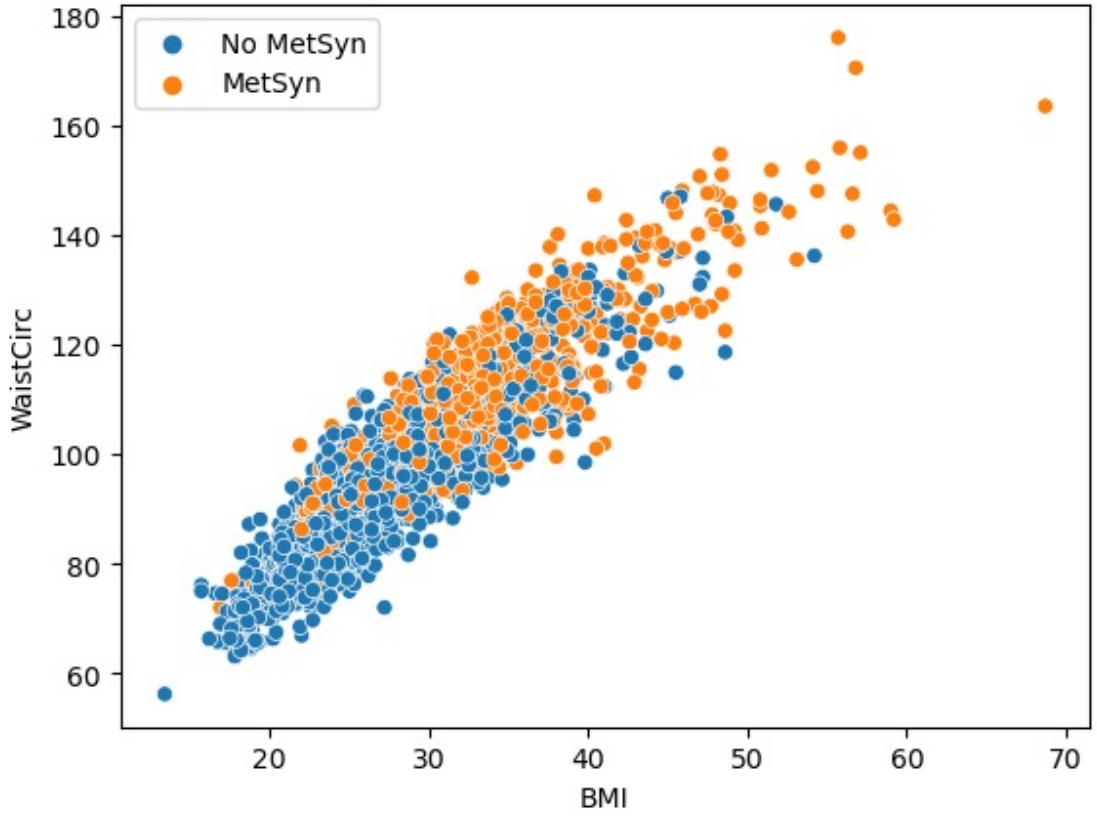
Using Scatterplot to display the relationship of Blood Glucose vs Triglyceride-HDL ratio

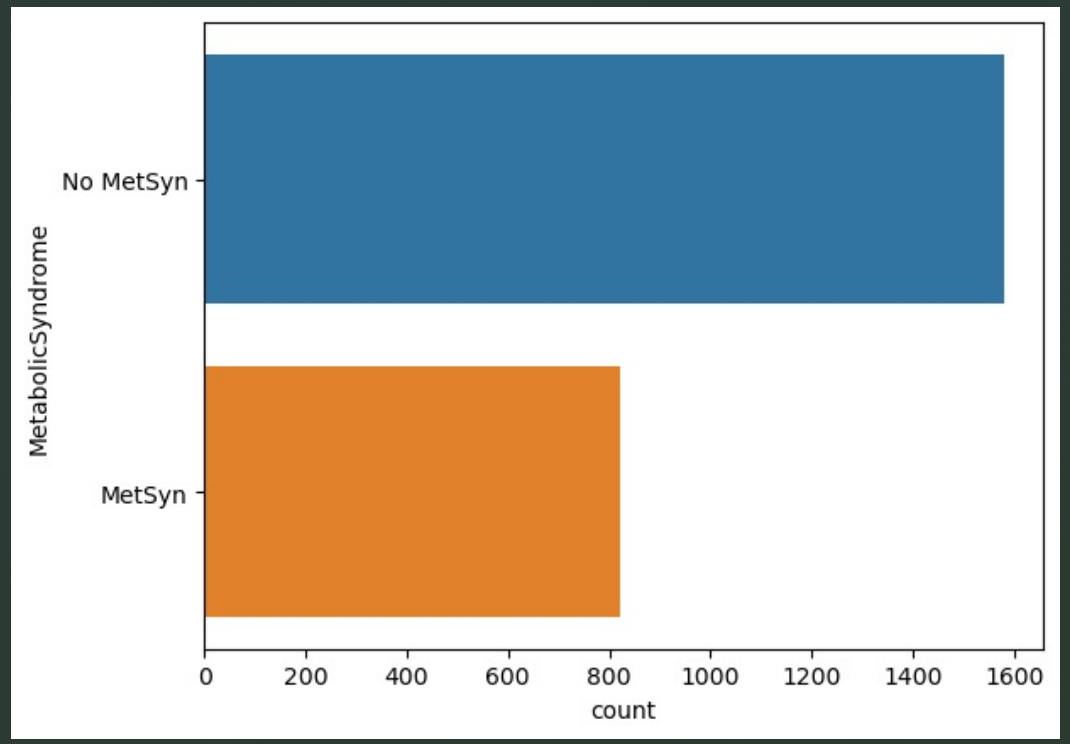
- positive relationship between patients who have metabolic syndrome and high blood glucose tended to have heart conditions by having higher Triglyceride-HDL ratios. Ideally a ratio of 2 or lower is healthy.



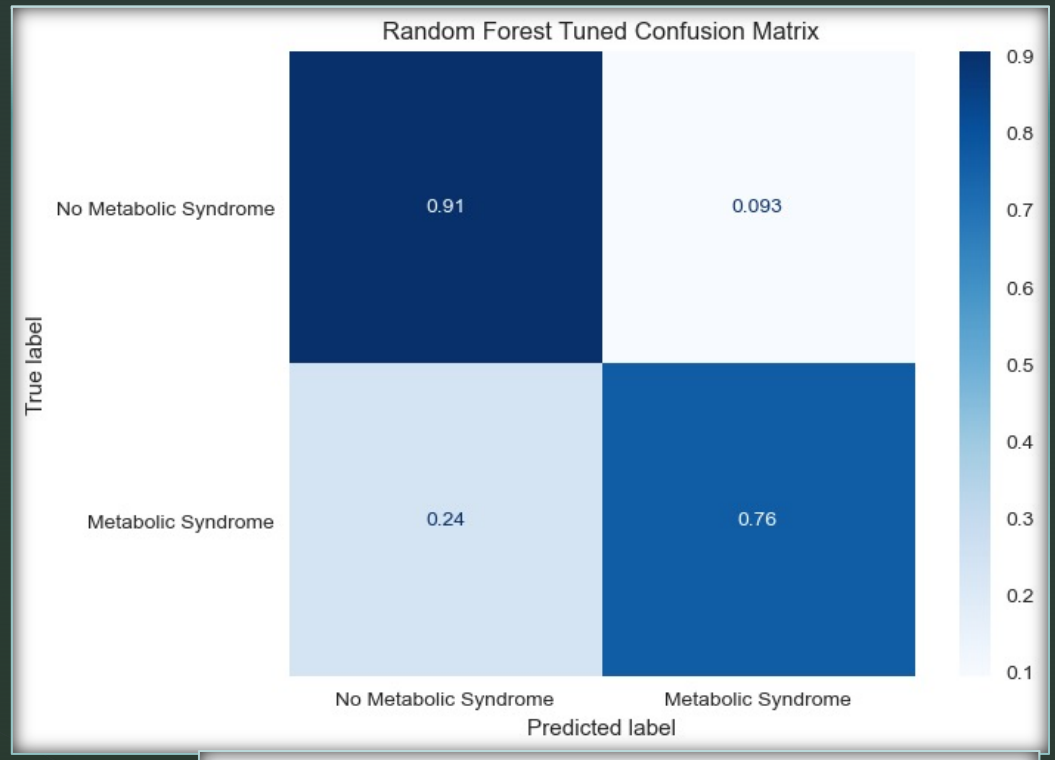
Relationship of BMI vs Waist Circumference

- positive relationship between patients who have metabolic Syndrome and high BMI and Waist circumference.





Class Imbalance

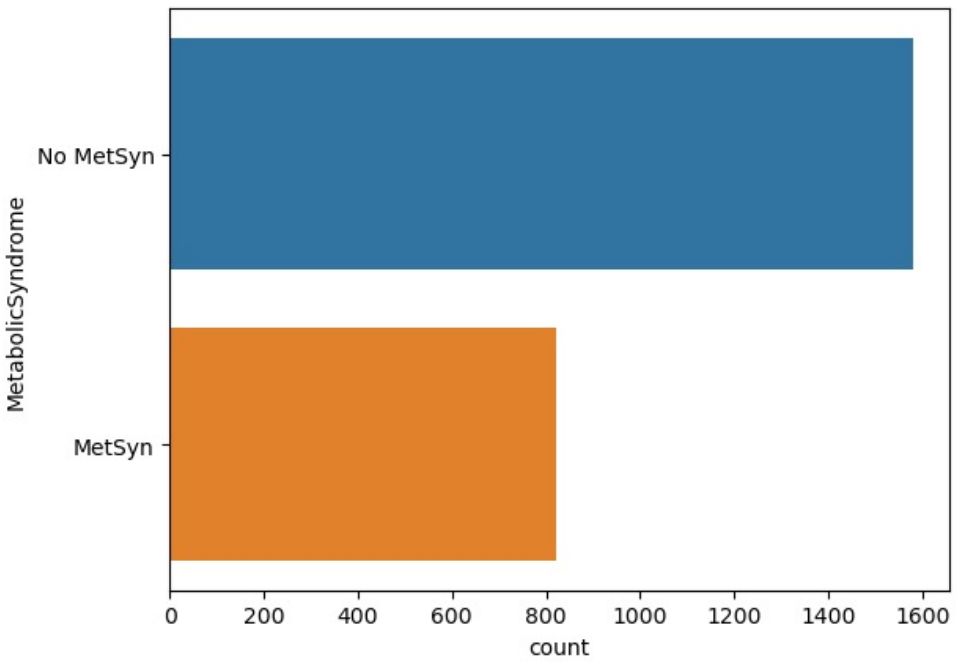


	precision	recall	f1-score	support
0	0.88	0.91	0.89	397
1	0.81	0.76	0.79	204
accuracy			0.86	601

Machine Learning Prediction Model: Random Forest

Class Imbalance:

- One class roughly double of the other class.



Final recommendations

- Based on the 2 scatterplots from earlier above, we can correlate elevated waist circumference, BMI, Triglyceride-HDL ratio, and glucose levels to a patient having metabolic syndrome. All these features are an indicator of obesity. Below are 2 recommendations that are highly effective that medical professionals can consult with their patients.

- * Weight loss
- * Diet and lifestyle changes