

a. Is it possible to predict passing vs failure with this data and a binary classification model?

-> Accuracy: $0.88 = 88\%$

ROC-AUC Score: 0.82

The model looks to be performing well overall, correctly classifying most of the students.

We can also see that it is predicting "fail" cases more accurately than "pass" cases since the Precision(0) = 0.92 and Recall(0) = 0.96 and the the Recall(1) = 0.40.

This means that the model is doing a fairly good job at predicting pass or fail, although since the data is imbalanced, it seems that the model is favouring "fail" more than "pass".

b. Do absences affect exam performance?

-> Coefficient for Absences = -0.017

The negative sign here indicates that as the number of absences increases, the chances of passing decreases. This number is very small, so the effect that attendance has on passing is therefore also very small.

c. How does parental education impact passing?

-> Mother's Education Coefficient = 0.468

Father's Education Coefficient = -0.395

This shows that the mother's education has a positive correlation on the passing of the student and the father's education has a negative correlation on the passing of the student.

Students with educated mother's are more likely to pass, whereas the father's education has little to no positive impact on the students chances of passing.