PREDICTING READMISSIONS IN DIABETIC PATIENTS

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SUMMARY

Predictive modeling of a clinical care dataset reveal opportunities to improve patient care:

- Utilize the Logistic Regression Classifier to identify patients at a high risk of readmission.
- Leverage insights from the model to inform decisions concerned with resource allocation and care coordination.

OUTLINE

- Business Problem
- Data and Methods
- Results
- Conclusions

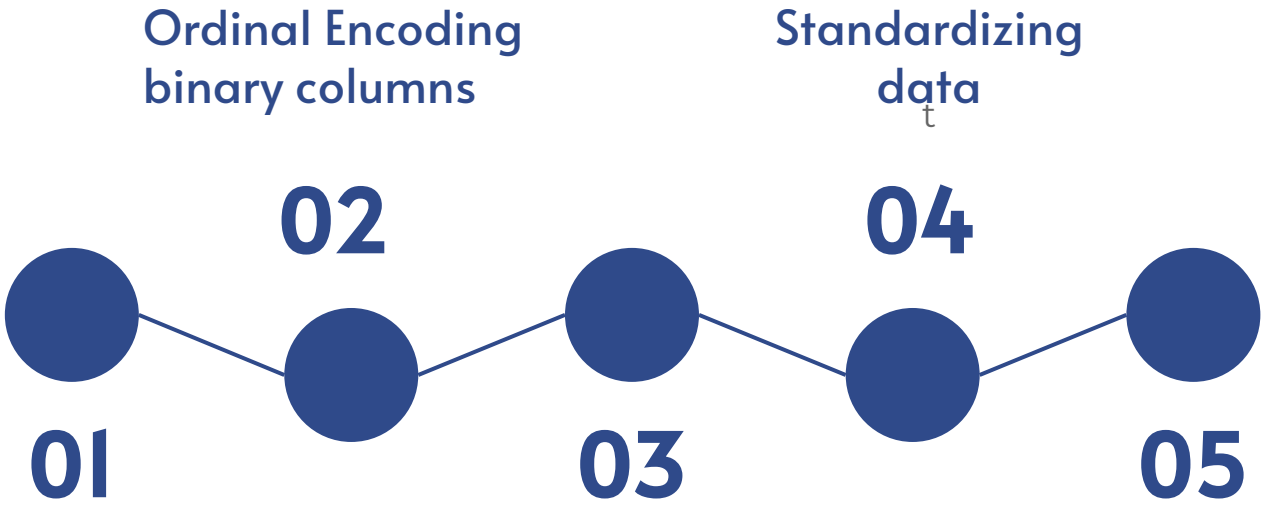
Business Problem

- Reduce readmission rates
- Improve patient care
- Minimize mortality and morbidity
- Improve resource allocation

Data & Methods

- The dataset represents 10 years (1999-2008) of clinical care at 130 US hospitals.
- It includes over 50 features representing patient and hospital outcomes and 101766 instances.
- Data cleaning methods were performed on the data to prepare it for modeling.
- Several predictive models were generated to obtain the best performing model.

DATA PREPROCESSING STEPS



Modeling Process

Baseline Model

Logistic Regression Model

2nd Model

Decision Tree Classifier Model

3rd Model

KNeighbors Classifier Model

4th Model

Improved Logistic Regression Model

5th Model

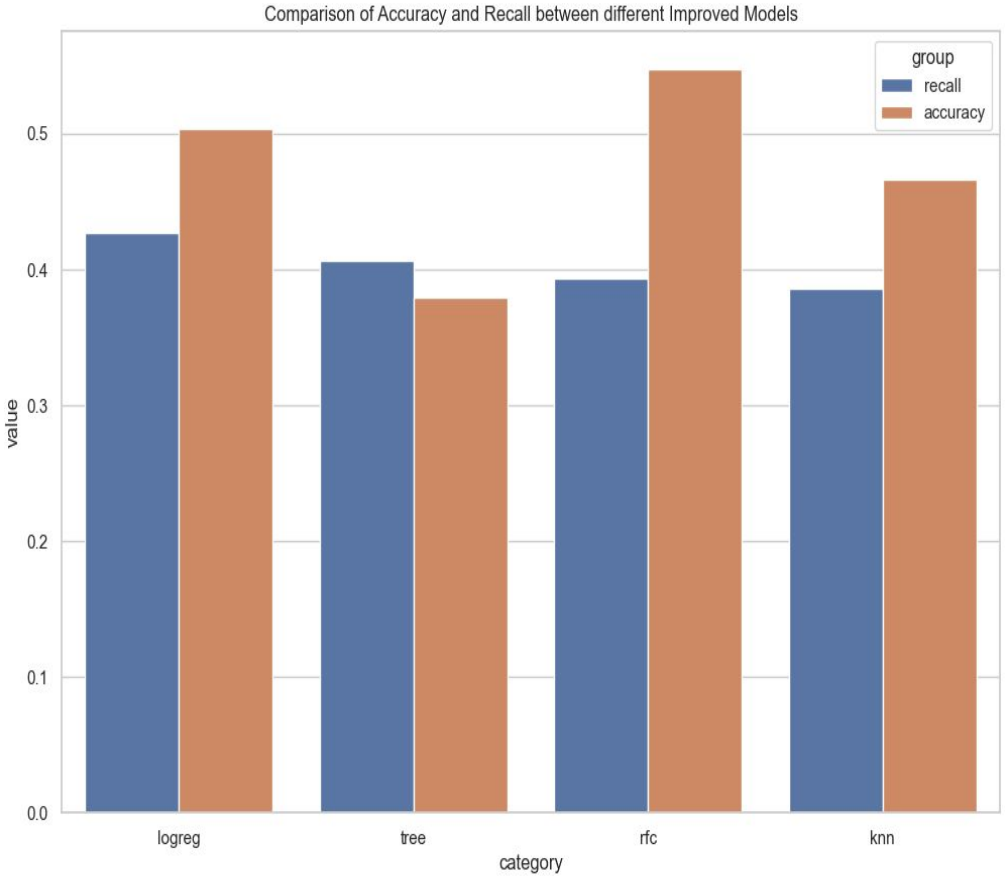
Hyperparameter Tuned Decision Tree Classifier Model

6th Model

Improved KNeighbors Classifier Model

Results

- The Logistic Regression Classifier was selected as the best model because it had the best overall metric scores and its computational complexity was low.



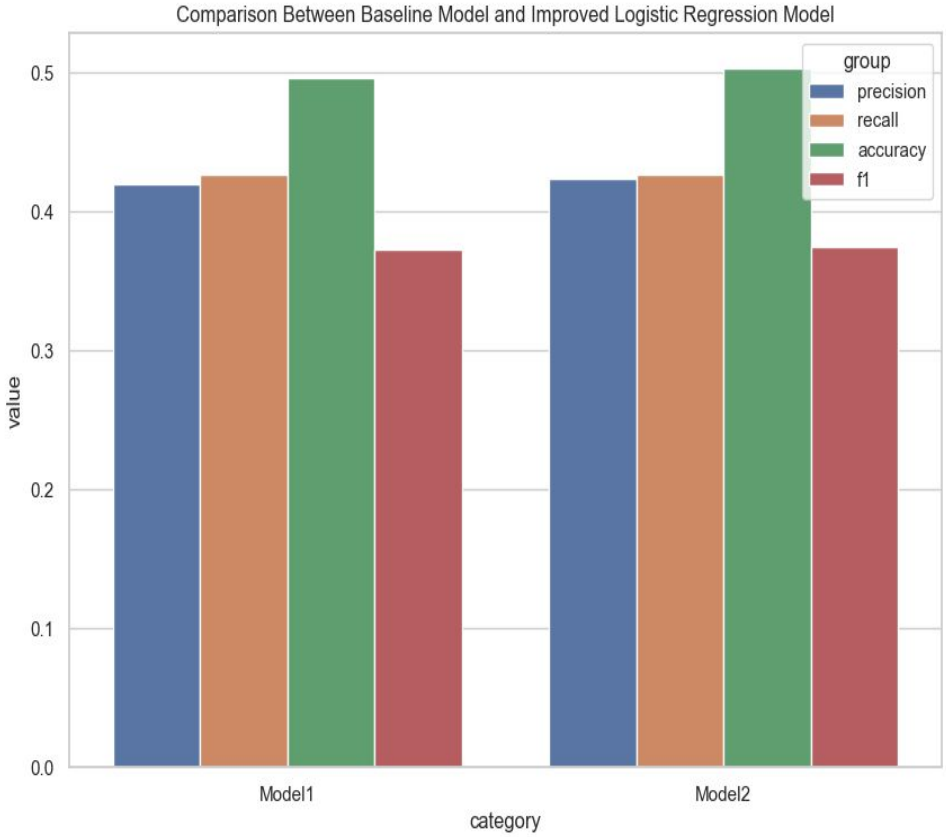
Results

The Logistic Regression Classifier Model had the following results:

a. Recall Score
0.426829236483637

b. Accuracy Score
0.503308221421526

c. Cross Validation Score
(-0.4520046256610761, -0.4503294864706085)



Recommendations

- Utilize the Logistic Regression Classifier as a toll to identify patients at a high risk of readmission
- Leverage insights from the model to inform decisions concerned with resource allocation and care coordination
- Recalibrate the model as often as required to align with changing patient demographics, treatment guidelines and healthcare practices.

Next Steps

- Deploying the model by creating APIs or building user interfaces
- Exploring opportunities to enhance the predictive performance of the model
- Web scraping to acquire more current relevant data
- Addressing ethical concerns by ensuring that the model's predictions are fair and unbiased

THANK YOU!

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