

Readmission Prediction of Diabetic Patients

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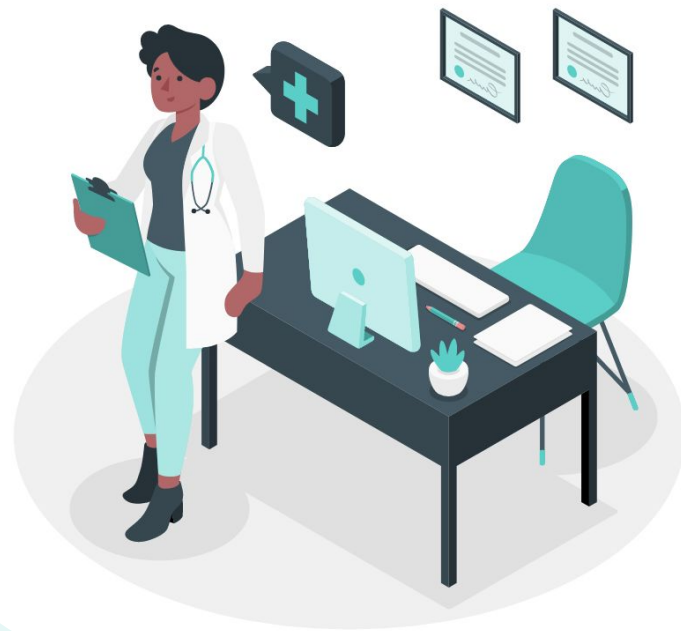


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INTRODUCTION



- Diabetes affect more than **10%** of U.S. Population as of 2020
 - Type II diabetes account for over 90%
- 7.8 million hospital discharges of adults in U.S. had **diabetes** in their diagnosis in 2016
- 16 million **emergency visits** in 2016 had diabetes as a list of diagnosis
 - Over 10% of total emergency visits in U.S. in 2016
- Diabetes directly and indirectly contributed to over **350,000 death** in 2017



Source - CDC, diabetesresearch.org, acepnow.com

DATA



130 Hospitals



Over 50 Features



102,000 Patients



METHODS



Data Acquisition

Downloaded from
Kaggle based on
VCU research

Data Prep

Cleaned missing data

Recategorized features

EDA

Visualization

Statistical Test

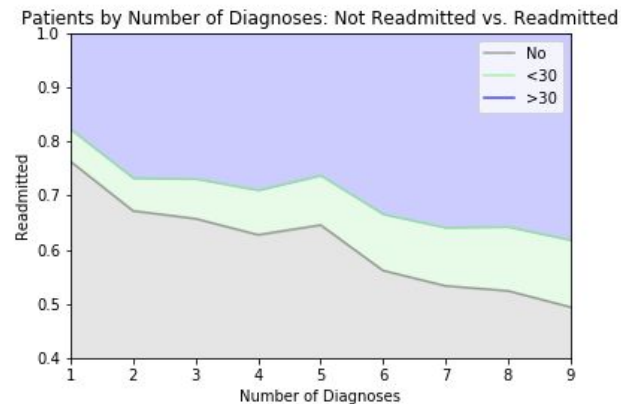
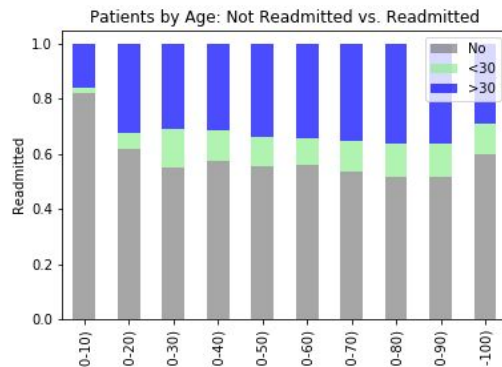
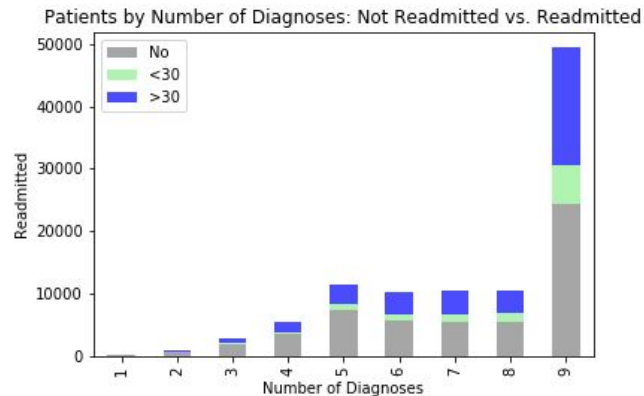
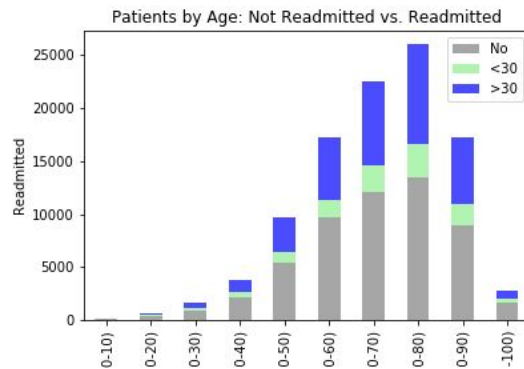
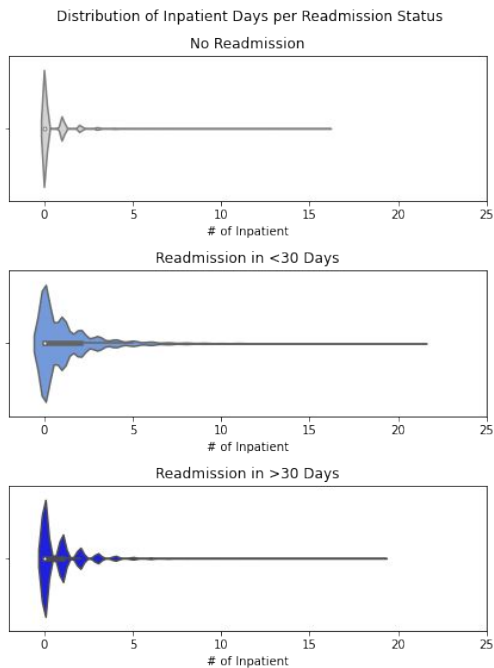
Models: Decision Tree, Random Forest

Metric: Recall, “micro” averaging

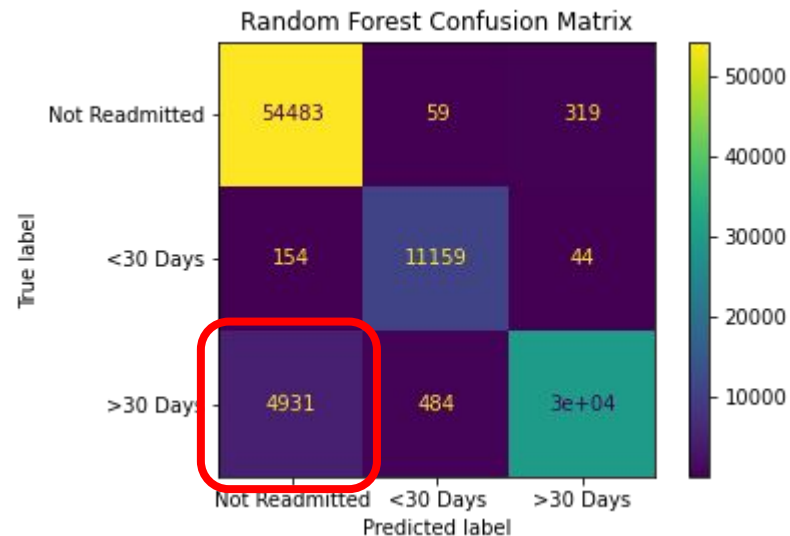
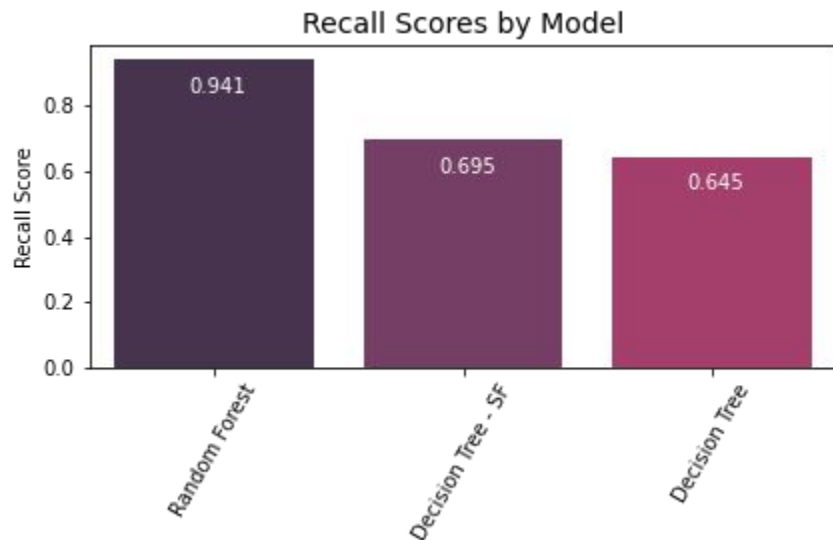
Hypertune: Grid Search Cross Validation

Score: Random Forest: **0.942**

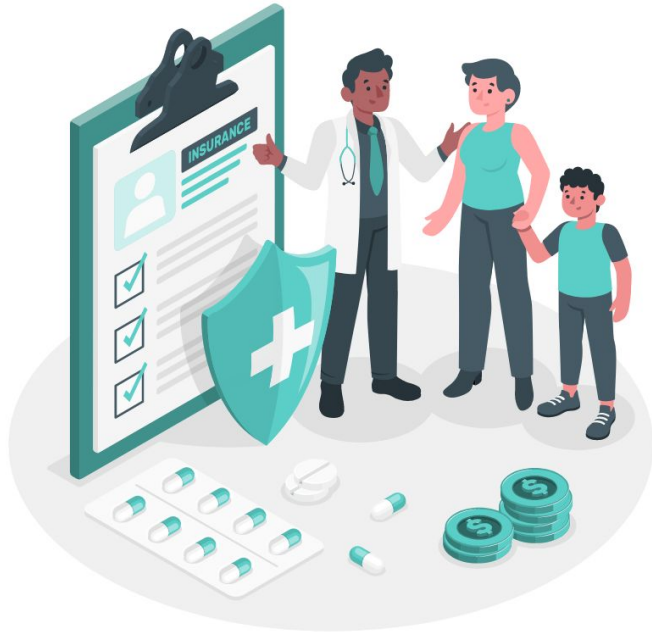
MODELING - Features



MODELING - Performance



Conclusions



- Health Care Providers can **plan future treatments** based on model output.
- Patients with expected readmission greater than 30 days can plan for **future check-ups**.
- Patients with expected readmission within 30 days can receive more **focused treatment**.
- Health Care Providers can plan for potential overcrowding and **resource allocation**.

Future Steps

- Check for new treatment method for **additional features**.
- Predict on recent data to see **change in** treatment or patient **trends**.
- Check for **diabetes types** to check for difference in feature importance.



Thank You

Questions?

[Project Repo](#)

