Diabetes Hospital Readmission Analysis

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Business Problem

- Client: Large U.S. Hospital

- How well can we predict which patients will be readmitted?

- What features are most important to predicting who will be readmitted?
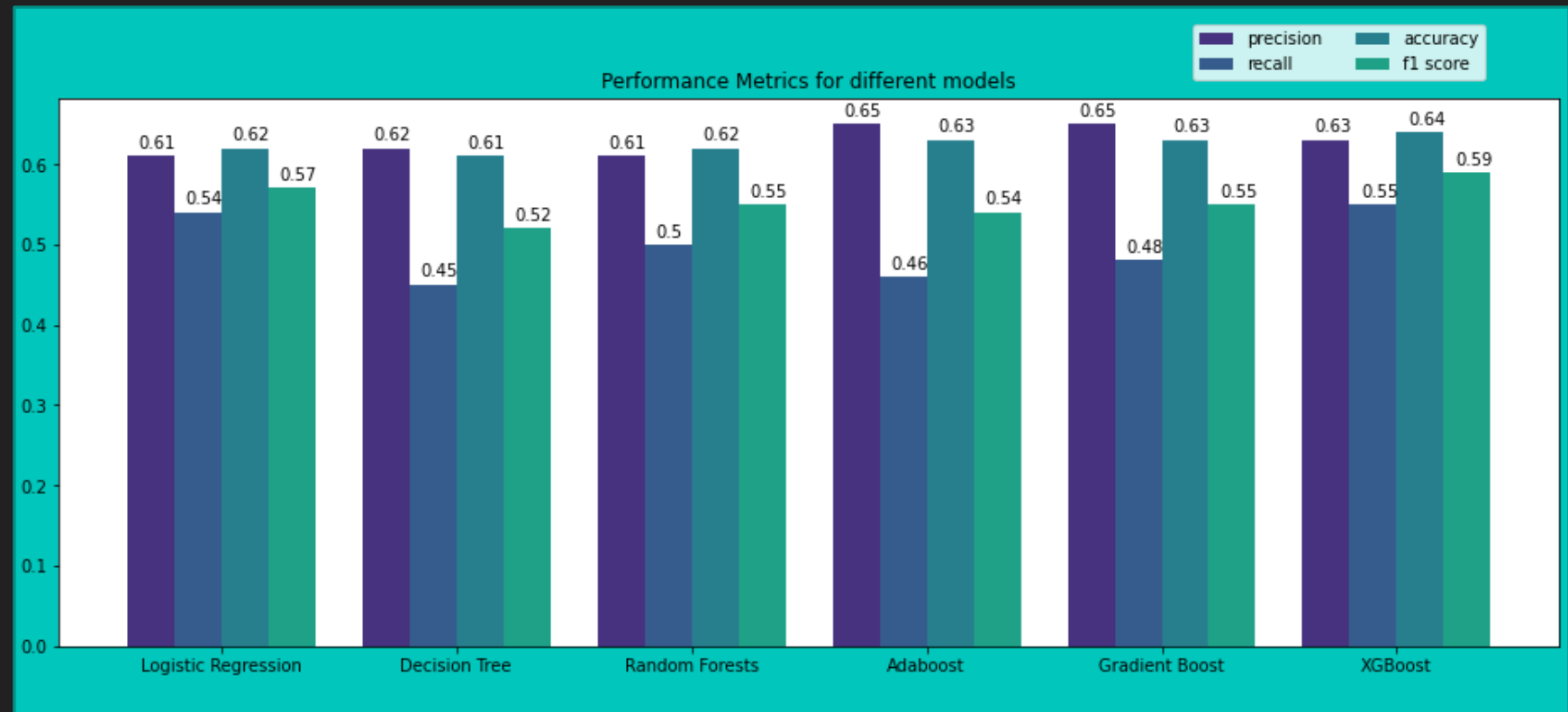
Business Value

- Cost of Readmissions
  - Financially
  - Poor patient outcomes
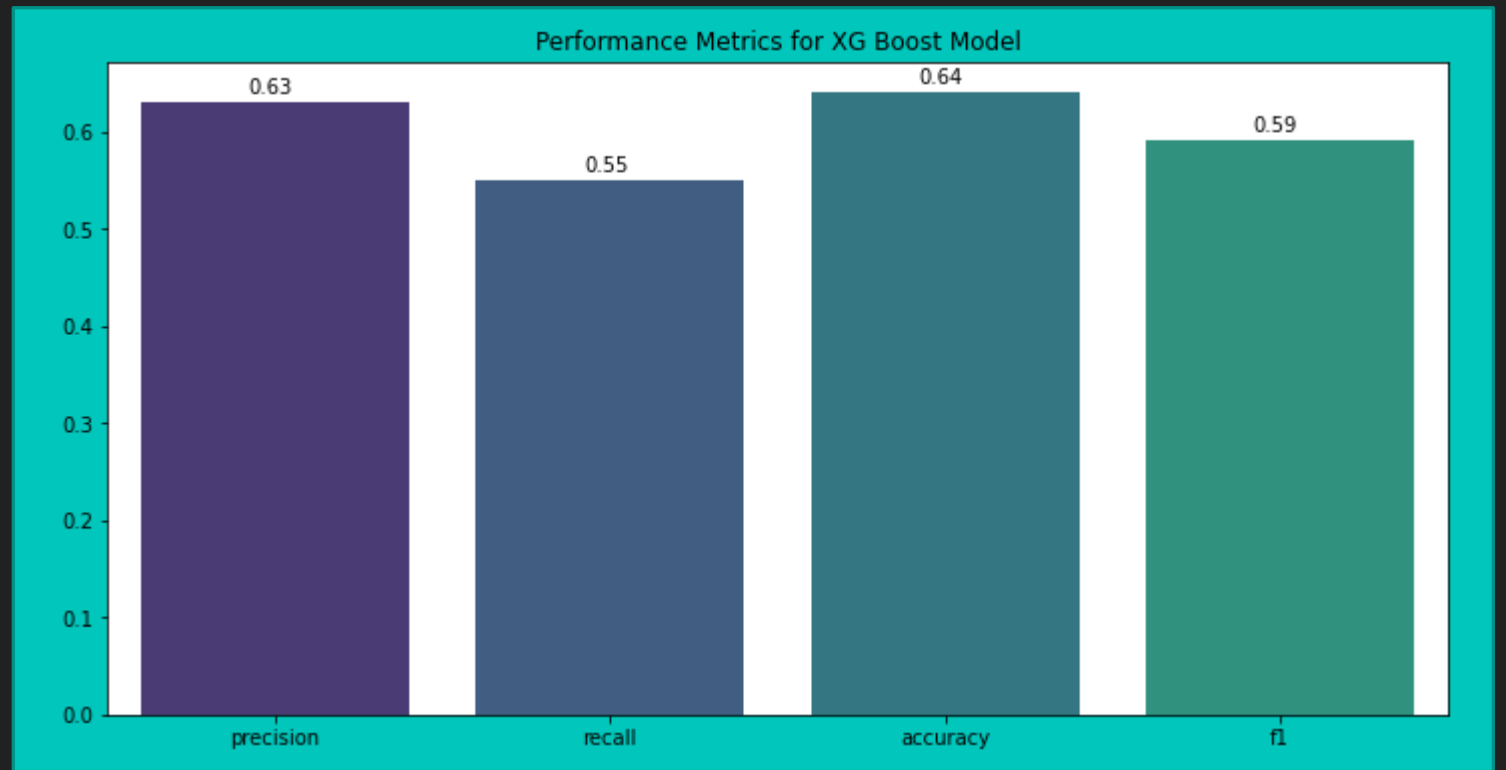- Which patients to focus resources on

Methodology

- Data
  - 130 hospitals: 1999-2008
  - Patient demographics, drugs and dosages, diagnoses, readmission
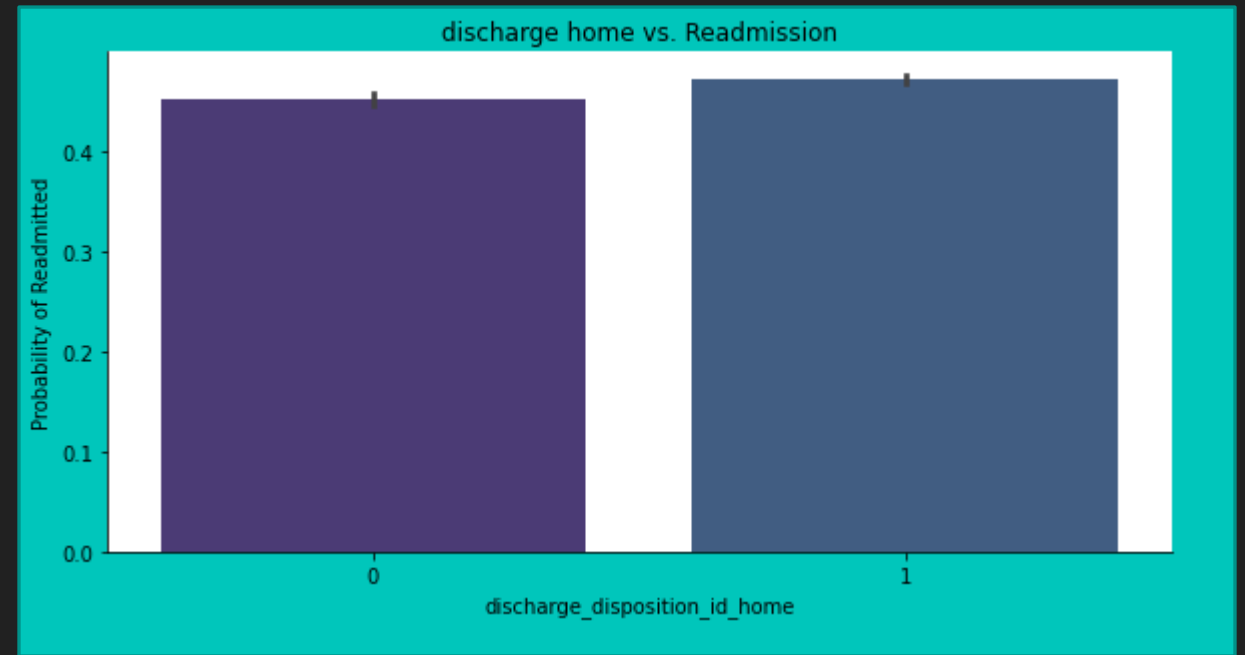- Classification Models
  - Focused on recall (True Positives)

Performance Metrics for different models

Results

- Recall (true positive): 0.55
- Precision: 0.63
- Accuracy: 0.64
- F1 Score: 0.59

Performance Metrics for XG Boost Model

Recommendation 1

- Discharge to Home: Higher likelihood of readmit

discharge home vs. Readmission

Probability of Readmitted (y-axis: 0.0, 0.1, 0.2, 0.3, 0.4)

discharge_disposition_id_home (x-axis: 0, 1)

Recommendation 2

- Diabetes Medication: more likely to be readmitted

Diabetes Medication vs. Readmission
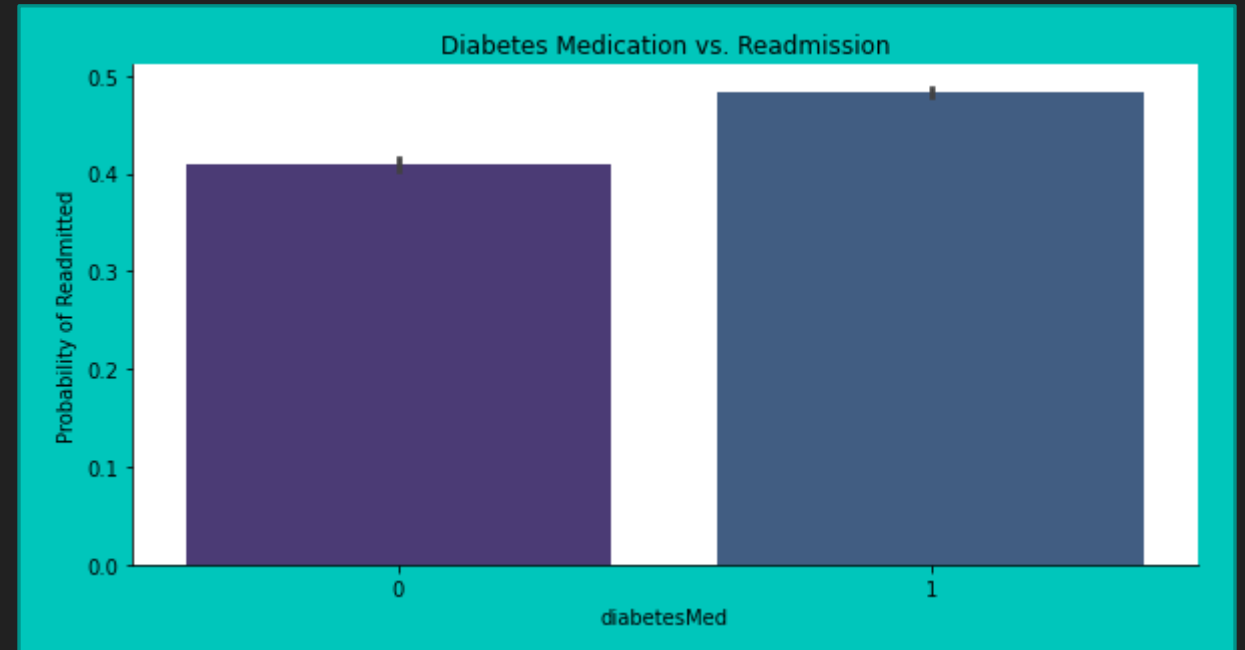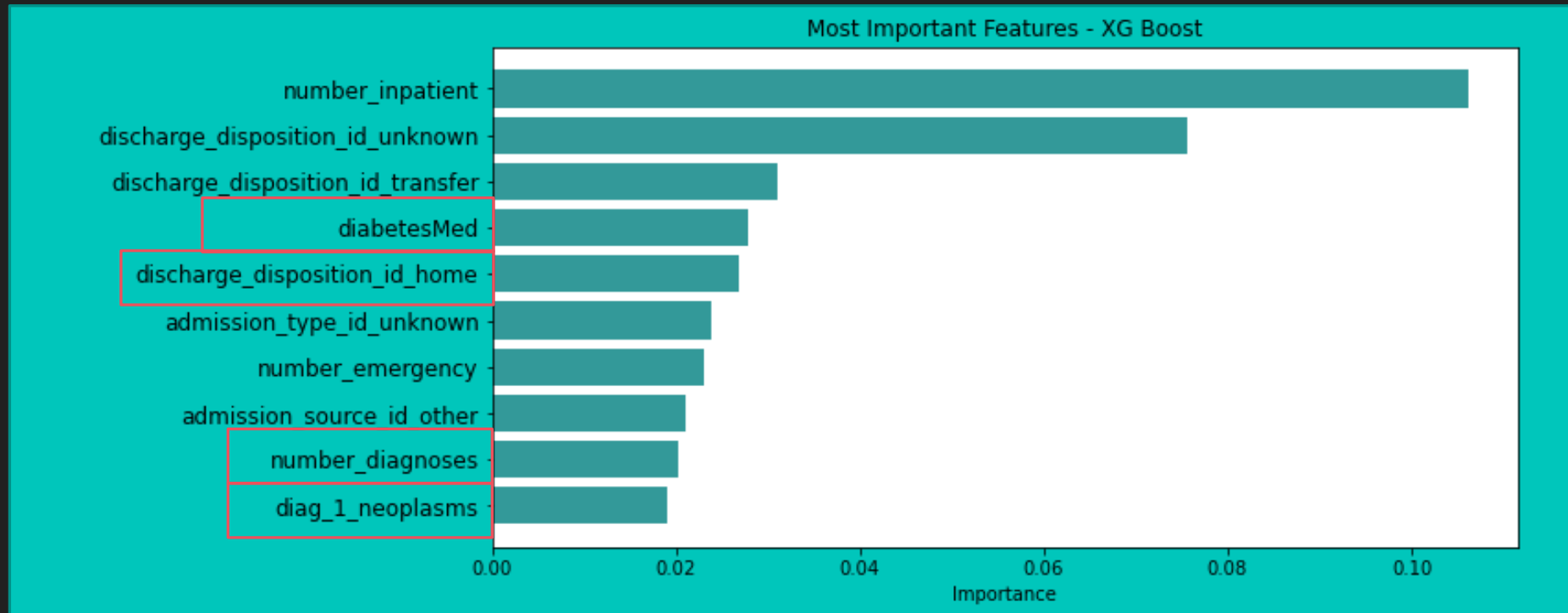
Recommendation 3

- More diagnoses: higher chance of readmission

- Neoplasm diagnosis: less likely to be readmitted

Summary

Most Important Features - XG Boost
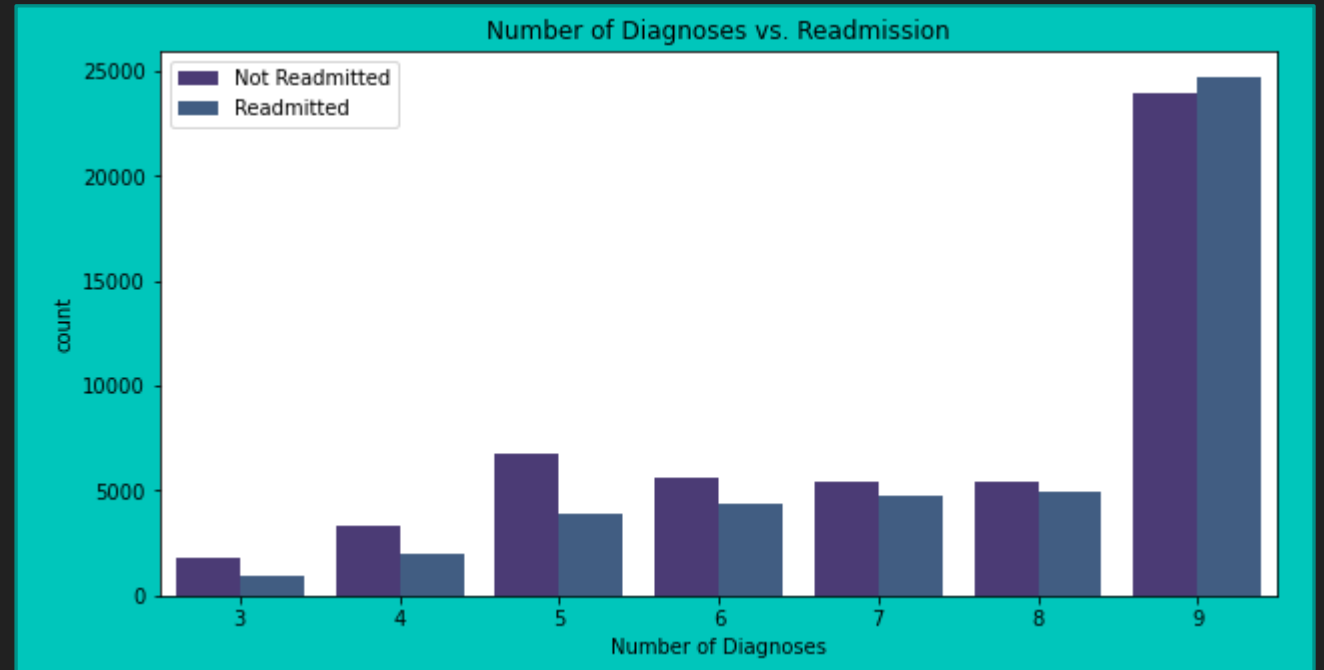
Future Work

Further/Different Cleaning

Sub-analyses of each diagnosis

Altering Model Parameters

Expanding beyond diabetes

Thank You

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