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Springboard DSCT

Capstone Two - Understanding Diabetic Patient Readmission

Data Source: https://archive.ics.uci.edu/ml/datasets/Diabetes+130-US+hospitals+for+years+1999-2008#
Relevant research article: Impact of HbA1c Measurement on Hospital Readmission Rates
Feature Descriptions: https://www.hindawi.com/journals/bmri/2014/781670/tab1/

CSV file containing medical data and hospital readmission data for diabetic patients. Table contains 100,000 records and 55 fields, including a column containing NO, >30, or <30 to indicate if the patient was not readmitted, readmitted after 30 days, or readmitted within 30 days.

We want to answer:

How could a hospital leverage available diabetic patient data to determine the major contributing factors to readmission, when a current patient is at risk for readmission, and if the hospital is at risk of numerous impending readmissions?

Context:

In general, the hope of healthcare practices is to improve the health of a patient, and many times this treatment is meant to 'reverse the curve' of a patient's declining health, especially in the case of illness or disease. A key indicator that this goal has not been achieved with a patient is when they are readmitted and need to be treated again, thereby reusing hospital resources and potential beds. A data-driven analysis of the primary contributors to *diabetic* patient readmission and fitting of a classification model could provide great value to hospitals in the form of readmission prediction and treatment plan adjustment for these individuals.

Criteria for success:

- The data has been analyzed to provide useful insights into the contributing factors of diabetic patient readmission.
- Our model can predict readmission with acceptable uncertainty.
- The project as a whole provides clear and useful insights for hospital and healthcare professional usage.

Scope of solution space:

- Provides a warning to healthcare professionals and hospitals that a patient is at risk for readmission.
- Treatment plans can be adjusted using the feature importance analysis as a direction for investigation into a patient's wellness.
- Can be applied to clinical data of similar circumstance to approximate impending patient readmissions.

Constraints within solution space:

- Any potentially influential factors that have not been captured in the featureset/lack of comprehensive EMR data that would enable a more-detailed analysis.
- Use of the tool as a decision-maker, rather than an information approximator.

Stakeholders to provide key insight:

- Hospital Director, Director of Operations/COO, Director of Information/CIO