

Capstone Two - Predicting Patient Readmission

Data Source: <https://www.kaggle.com/dansbecker/hospital-readmissions>

CSV file containing medical data and hospital readmission data. Table contains 25,000 records and 65 fields, including a binary classification of 1 or 0 for 'readmitted' and 'not-readmitted', respectively.

We want to answer:

How could this hospital leverage available patient data to determine the major contributing factors to patient 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 the patient is readmitted and needs to be treated again, thereby reusing hospital resources and potentially occupying valuable beds at the hospital. A data-driven analysis of the primary contributors to patient readmission and fitting of a classification model could provide great value to hospitals in the form of readmission prediction and treatment plan adjustment.

Criteria for success:

- The data has been analyzed to provide useful insights into the contributing factors of patient readmission.
- Our model can predict patient readmission within an acceptable margin for error.
- The project as a whole provides clear and useful insights regarding this issue 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