

Data Science Approach to Reducing Hospital Stays

- 1) I pick **Hospitals** as the topic for this assignment.

I am concerned about the high rate of patient readmissions to our hospital within 30 days of discharge.

- 2) As a client, this not only affects the quality of care provided but also adds to the overall healthcare cost. I would like to use the data science methodology to identify factors contributing to the readmission rate and develop a predictive model to help reduce it.

As a data scientist, my first step would be to gather relevant data, including patient demographics, medical history, medications, and procedures, as well as the timing and reason for readmission. I would also collect data on hospital processes and staffing, such as the availability of follow-up appointments, discharge planning, and patient education.

Problem Question:

Can we use patient demographics, medical history, medications, procedures, and hospital processes to predict the likelihood of patient readmission within 30 days of discharge?

- 3)

Analytic Approach:

The problem at hand is to predict the length of hospital stays and identify opportunities to optimize patient flow through the hospital. To address this problem, we will use a supervised learning approach and develop a predictive model that can accurately predict the length of hospital stays based on patient demographics, medical history, and hospital processes.

Data Requirements:

To develop the predictive model, we will require data on patient demographics, medical history, and hospital processes.

Data Collection:

We will collect data from the hospital's electronic medical record system, which contains information on patient demographics, medical history, and hospital processes.

Data Understanding and Preparation:

Before developing the predictive model, we will perform exploratory data analysis to gain a better understanding of the data and identify any data quality issues or missing values. We will also perform feature engineering to create new features that may be predictive of the length of hospital stays.

Modeling and Evaluation:

We will develop several predictive models using statistical and machine learning techniques such as linear regression, decision trees, and random forests. We will evaluate the performance of each model using metrics such as mean absolute error, mean squared error, and R-squared.