**Executive Summary**

**Motivation**:

* Most hospitals can agree that their main goals are centered on improving outcomes, creating more satisfied patients, and better value.
* For these reasons, it is important for the hospitals to improve focus on reducing readmission rates.
* Higher readmission rate could tarnish hospital quality and make it potential to face with regulatory concerns. Goal is to help hospitals to understand patients better for superior health service

**Objective:**

* To build a model which captures maximum variance of features in the data and Predict accurate readmission rates by applying different classification algorithms
* To assess the impact of outpatient quality of care on 30-day readmission among patients with diabetes models

**Message:**

* Most hospitals can agree that their main goals are centered on improving outcomes, creating more satisfied patients, and better value.
* For these reasons, it is important for the hospitals to improve focus on reducing readmission rates.
* Higher readmission rate could tarnish hospital quality and make it potential to face with regulatory concerns. Goal is to help hospitals to understand patients better for superior health service

**Process followed:**

1. Data Collection
2. Data Wrangling
   1. Data Cleaning
   2. Data Transformation
   3. Feature Creation
3. Data Visualization and EDA
4. Modeling
   1. Logistic Regression
   2. Decision Tree
   3. Random Forest
   4. AdaBoost Classification
   5. AdaBoost Classification with hyper tuning

**Business Recommendation:**

As Our Model give us good accuracy, and able to determine factors that lead to higher readmission in such patients

Algorithm is predicting which patients will get readmitted can help hospitals save millions of dollars while improving quality of care

Hospitals can use this Machine learning algorithm in their hospital before discharging any diabetics patient which will save the quality of the hospital and penalties which applied by the Hospital Readmission Reduction Program before they diabetics add there into the list