# Data-Driven Approach to Predict Inpatient's Estimated Discharge Date

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**Abstract :** To facilitate discharge planning, doctors are presently required to assign an Estimated Discharge Date (EDD) for each patient admitted to the hospital. This assignment of the EDD is largely based on the doctor's judgment. This can be difficult for cases which are complex or relatively new to the doctor. It is hypothesized that a data-driven approach would be able to facilitate the doctors to make accurate estimations of the discharge date. Making use of routinely collected data on inpatient discharges between January 2013 and May 2016, a predictive model was developed using machine learning techniques to predict the Length of Stay (and hence the EDD) of inpatients, at the point of admission. The predictive performance of the model was compared to that of the clinicians using accuracy measures. Overall, the best performing model was found to be able to predict EDD with an accuracy improvement in Average Squared Error (ASE) by -38% as compared to the first EDD determined by the present method. It was found that important predictors of the EDD include the provisional diagnosis code, patient's age, attending doctor at admission, medical specialty at admission, accommodation type, and the mean length of stay of the patient in the past year. The predictive model can be used as a tool to accurately predict the EDD.