

Health Insurance Price Prediction using Machine Learning

Abstract

The escalating costs and complexities in the healthcare sector underscore the necessity for efficient predictive models to anticipate medical insurance prices. This study explores the application of machine learning techniques for forecasting medical insurance premiums, aiming to provide stakeholders with invaluable insights for pricing strategies and risk management. Using a comprehensive dataset encompassing demographic information, medical history, lifestyle factors, and insurance coverage details, various machine learning algorithms including regression, decision trees, random forests are employed and compared. Feature engineering techniques are applied to enhance model performance and interpretability, ensuring the inclusion of relevant predictors while mitigating overfitting. However, in recent years, the emergence of machine learning techniques has offered promising solutions to enhance medical insurance price prediction. This paper conducts an extensive review of various machine learning approaches utilized for this purpose, covering regression-based methods, time series forecasting techniques, ensemble methods, deep learning strategies, and hybrid models. We delve into the unique strengths, limitations, and practical applications of each technique. Moreover, we address the prevalent challenges associated with employing machine learning in medical insurance price prediction, such as data accessibility, feature selection, model interpretability, scalability, and generalization. Additionally, we look ahead to future research avenues and opportunities aimed at refining the accuracy and utility of machine learning models in predicting insurance prices. Through this comprehensive review, we aim to provide valuable insights for researchers, practitioners, and policymakers, facilitating informed decision-making in healthcare contexts through the utilization of machine learning methodologies.