**Model Purpose:**

The primary goal of this analysis was to predict customer churn for a telecommunications company. By identifying which customers are at risk of leaving, the company can implement targeted interventions to improve retention. Additionally, the analysis explored how changes in service rates and external economic factors might influence churn predictions.

**Summary of Findings:**

Four different machine learning models were utilised—Random Forest, Logistic Regression, Decision Tree, and Gradient Boosting—to predict customer churn. The **Random Forest model** was identified as the best-performing model, with an **accuracy of 81%**.

The analysis revealed that the most influential features driving churn predictions were:

* **Tenure**: 13.74%
* **Total Charges**: 13.34%
* **Contract Type**: 11.30%
* **Monthly Charges**: 9.72%
* **Adjusted Monthly Charges** (after a 10% simulated increase): 9.54%

These features were the strongest predictors of whether a customer would leave or stay. The simulated rate change showed that pricing adjustments have a significant impact on churn predictions, emphasising the importance of strategic pricing.

**Conclusion:**

The analysis has provided valuable insights into the factors driving customer churn. Customers with shorter tenures, higher total charges, and less favourable contracts are the most likely to churn. The influence of Adjusted Monthly Charges indicates that careful consideration should be given to pricing strategies, as even small adjustments can significantly affect customer retention.

By focusing on these key areas, the company can better target its retention strategies and potentially reduce churn. Additionally, monitoring how external economic conditions might influence customer behaviour can further help in maintaining a stable customer base. This approach will allow the company to implement more effective customer retention programmes, ultimately improving customer loyalty and reducing turnover.

