

# Telecom Churn Analysis Report

## Problem Statement

Churn is a critical concern in the telecom industry as acquiring new customers is significantly more expensive than retaining existing ones.

This project analyzes telecom customer data to identify key drivers of churn and predict customer attrition.

## Tools & Technologies

- Python (Jupyter Notebook)
- pandas & NumPy for data handling
- seaborn & matplotlib for visualization
- scikit-learn for modeling and evaluation

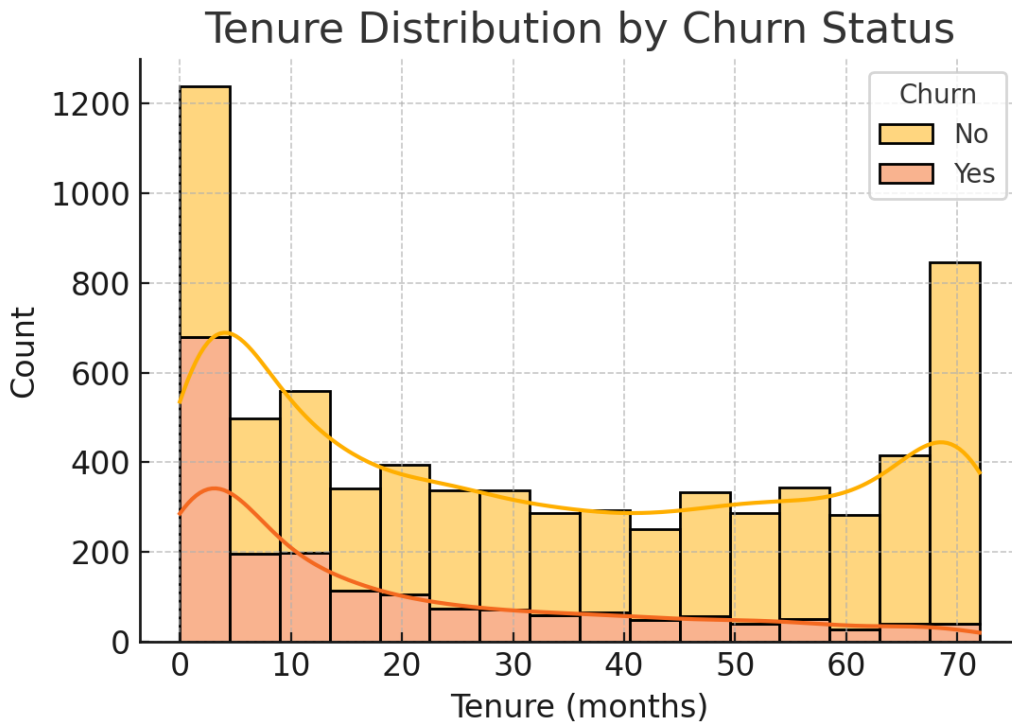
## Approach

1. Load and combine customer, churn, and internet usage data.
2. Clean and preprocess data: handle missing values, encode categoricals.
3. Perform exploratory data analysis (EDA) to identify churn patterns.
4. Build predictive models (e.g., Logistic Regression, Decision Trees).
5. Evaluate models using metrics like accuracy, precision, recall, and AUC.

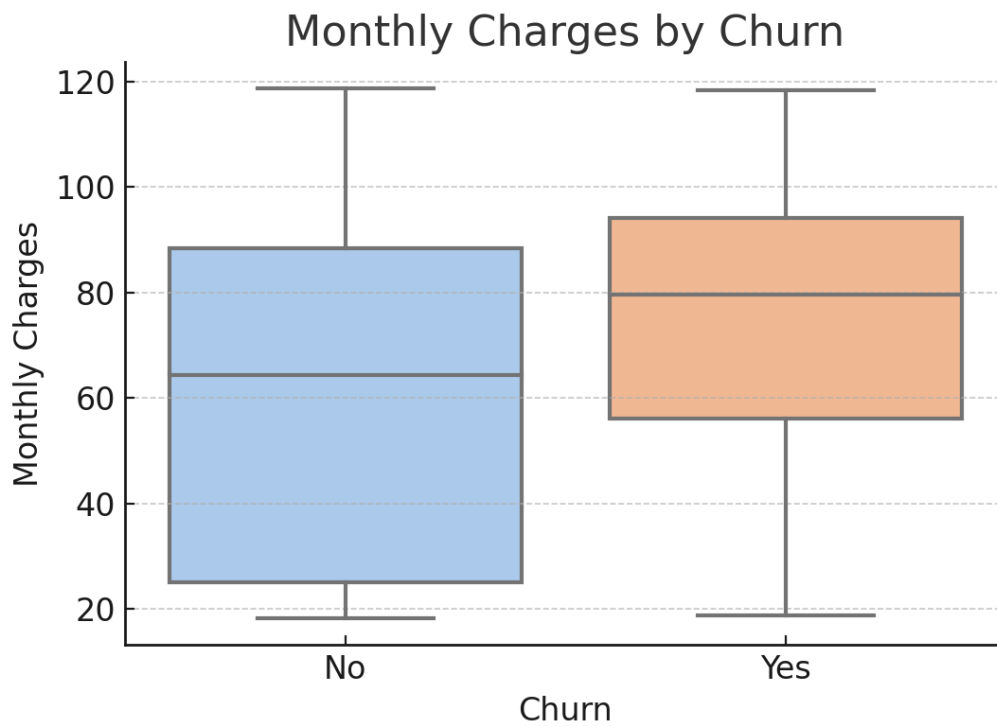
## Visualizations

### 1. Tenure vs Churn

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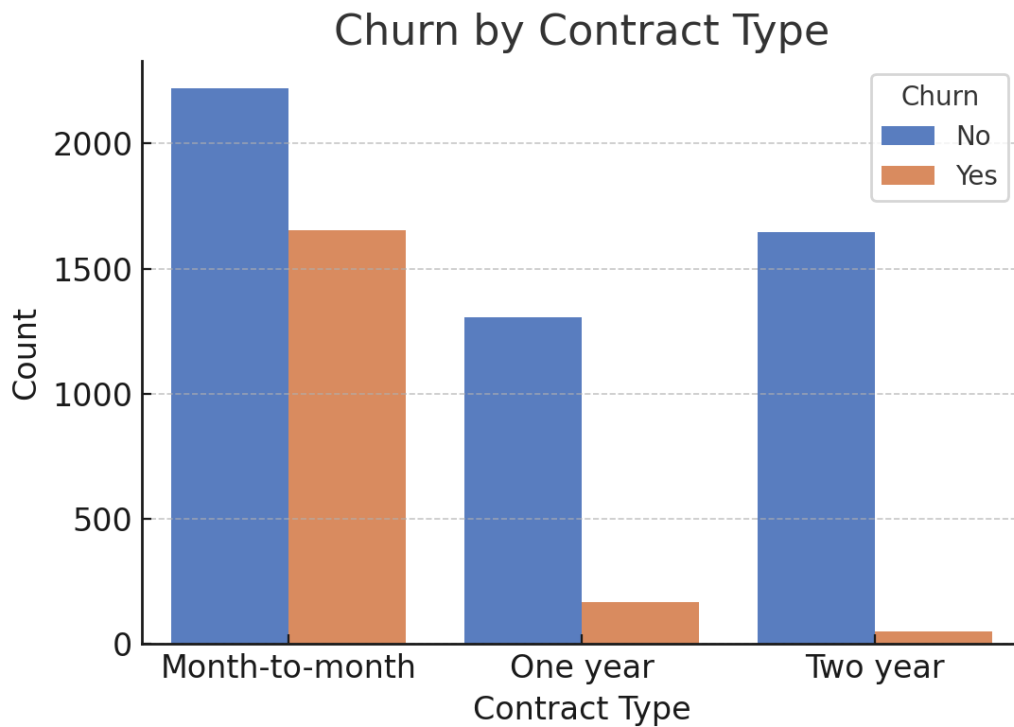


## 2. Monthly Charges by Churn



## 3. Contract Type vs Churn

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## Results Summary

- Customers with longer tenure generally churn less.
- Month-to-month contracts have significantly higher churn rates than one- or two-year contracts.
- Higher monthly charges are somewhat associated with higher churn likelihood.

## Key Learnings

- Churn is influenced by a mix of tenure, contract type, and monthly charges.
- EDA helps uncover valuable patterns in customer behavior.
- Visualization is crucial for interpreting model features and business impact.
- Contract locking (annual plans) and improved customer engagement can reduce churn.