

## Executive Summary

### Telcom Customer Churn Analysis

This project focuses on analyzing customer churn for a telecom company to understand **why customers leave** and to identify **key factors that influence retention**. The analysis uses exploratory data analysis (EDA) and well-structured visualizations to study customer demographics, service usage, contract details, tenure, billing behaviour, and payment methods.

#### **Overall Churn Overview**

The dataset shows that **approximately 26–27% of customers have churned**, while around **73–74% remain active**. This indicates a significant churn rate and highlights the importance of identifying high-risk customer segments to improve retention strategies.

#### **Tenure and Churn Behaviour**

Tenure emerges as one of the **strongest predictors of churn**.

- Customers with a tenure of **less than 12 months contribute to more than 50% of total churn**.
- In contrast, customers with **longer tenure (above 24 months)** show much lower churn rates, indicating stronger loyalty and satisfaction over time.

This trend clearly shows that **early-stage customers are the most vulnerable**, and targeted engagement during the initial months is critical.

#### **Contract Type Impact**

Contract duration has a strong influence on churn:

- Customers on **month-to-month contracts account for nearly 55–60% of total churn**.
- Customers with **one-year or two-year contracts churn significantly less**, with churn rates dropping below **15%** for long-term contracts.

This suggests that **longer contract commitments improve customer retention** and reduce churn risk.

#### **Monthly Charges and Billing**

Billing analysis shows a clear relationship between cost and churn:

- Customers with **higher monthly charges are more likely to churn**, especially those paying above the average monthly fee.
- Customers with **lower or moderate charges demonstrate better retention**, indicating price sensitivity among high-paying users.

This insight suggests that customers paying higher charges may expect better service quality or additional value.

#### **Demographic Insights**

- **Senior citizens churn at a higher rate**, with churn close to **40%**, compared to non-senior customers, whose churn rate is around **23–24%**.
- Gender does not show a significant difference in churn behaviour, indicating that churn is **not strongly gender-dependent**.

## Service Usage and Value-Added Services

Customers who **do not subscribe to value-added services** show noticeably higher churn:

- Lack of services such as **Online Security, Tech Support, and Device Protection** is associated with churn rates exceeding **35%**.
- Customers using these services churn far less, indicating that **additional services improve customer engagement and loyalty**.

## Payment Method Analysis

Payment behaviour also influences churn:

- Customers using **electronic check** as a payment method show the **highest churn rate (around 45%)**.
- Customers using **automatic bank transfers or credit cards** show significantly lower churn, typically below **20%**.

This suggests that **payment convenience and automation play an important role** in customer retention.

## Key Business Insights

- Customers are **most likely to churn during their early tenure**
- **Month-to-month contracts** carry the highest churn risk
- **Higher monthly charges** increase churn probability
- **Senior citizens** are a high-risk demographic group
- **Value-added services** significantly reduce churn
- **Automated payment methods** are associated with better retention

## Conclusion

The visualizations and analysis in this project clearly demonstrate how customer churn is influenced by multiple interconnected factors. By focusing on **early customer engagement, promoting longterm contracts, bundling value-added services, and improving billing experiences**, businesses can significantly reduce churn and improve customer lifetime value.