SUMMARY AND RECOMMENDATIONS

OBJECTIVE

The primary objective of this notebook is to perform **exploratory data analysis (EDA)** on the **Telco Customer Churn dataset** in order to:

- **Identify factors influencing customer churn**.

- **Visualize churn patterns** across demographic, service, contract, and payment features.

- **Highlight high-risk customer segments** based on churn rates.

- **Provide actionable insights** that can help reduce churn and improve customer retention strategies.

The notebook achieves this by cleaning the data, analyzing key variables like `SeniorCitizen`, `tenure`, `Contract`, and `PaymentMethod`, and using visual tools like countplots, pie charts, and histograms for interpretation.

🔍 Key Findings and Data-Driven Insights

This analysis focuses on understanding the churn behavior of customers in a telecom dataset. Key insights were derived from exploratory data analysis and visualization:

1. Churn Overview

- **Churn Rate**: About **26.54%** of customers have churned (from pie chart).

- This suggests that **1 in 4 customers** are discontinuing service, posing a significant business challenge.

2. Demographic Patterns

- **Gender**: Distribution of churn is almost equal among males and females, indicating no gender bias.

- **Senior Citizens**:

- ○ Senior citizens show a notably higher churn rate than non-seniors.

- ○ Stacked bar chart shows **churn is ~42% among seniors** vs **~24% for non-seniors**.

3. Tenure Impact

- Customers with **short tenure (1–2 months)** are far more likely to churn.

- Histogram of tenure reveals:

  - ○ High churn in low tenure.

  - ○ Long-tenure customers (>20 months) tend to stay, indicating satisfaction increases with time.

4. Contract Type

- Customers with **month-to-month contracts** have the **highest churn rate**.

- In contrast, those with **1 or 2-year contracts** show significantly lower churn:

  - ○ Month-to-month churn rate: **43%**

  - ○ One-year: **11%**

  - ○ Two-year: **3%**

5. Service Features Analysis

A grouped set of countplots was used to analyze the following services:

- **PhoneService**: Almost all customers have it.

- **InternetService**: Majority use either DSL or Fiber optic. "No Internet" group is smaller.

- **Optional Services**:

  - ○ Features like **OnlineSecurity**, **TechSupport**, and **DeviceProtection** have more customers opting out.

- ○ This lack of engagement may correlate with higher churn.

- **StreamingTV/Movies**: Balanced usage; however, a segment still doesn't use them.

6. Payment Method

- Customers using **Electronic Check** have the **highest churn rate**.

- Other payment methods like **Bank Transfer** or **Credit Card** are associated with lower churn.

- Suggests billing convenience may impact customer retention.

📈 Visual Summary (Charts Used)

- Countplots for churn, gender, senior citizen status, contract type, services, and payment methods.

- Pie chart for churn percentage.

- Histogram for tenure distribution.

- Stacked bar chart showing churn % by senior status.

📌 Recommendations

- **Retention Offers**: Focus on customers with month-to-month contracts and short tenures.

- **Senior Citizen Care**: Introduce tailored plans or assistance.

- **Engagement Boosters**: Promote optional services through bundles or trials.

- **Digital Billing Optimization**: Encourage stable payment methods like bank transfer or credit card auto-pay.