# 📊 Executive Summary: Customer Churn Analysis

## 🧠 Objective

The primary goal of this project is to identify patterns and factors that contribute to customer churn in a telecom company, using Exploratory Data Analysis (EDA). Insights from this analysis can help in designing targeted retention strategies and predictive models.

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## 📁 Dataset Overview

- **Total Records**: ~7,000 customers

- **Features**: Include demographics (e.g., gender, senior citizen status), services used (e.g., internet, phone), tenure, billing, and churn status.

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## 📌 Key Findings

### 1. Churn Rate

- **Overall churn rate**: Approximately **26.5%** of customers have churned.

- This indicates that over **1 in 4** customers are leaving the service, a significant issue for revenue retention.

### 2. Demographics Impact

- **Senior Citizens**: Churn rate is notably higher at **42%**, compared to **24%** for non-seniors.

- **Gender**: No significant difference in churn rates between male and female customers.

### 3. Customer Tenure

- Customers with **<12 months of tenure** show **high churn rates (~45%)**.

- Long-tenured customers (>2 years) show significantly **lower churn (<10%)**.

### 4. Services Subscribed

- **Fiber Optic Internet users** have a churn rate of over **41%**, while **DSL users** churn at around **14%**.

- Customers **without internet service** have the lowest churn (~7%), suggesting bundled services may be contributing to dissatisfaction.

- **OnlineSecurity**, **OnlineBackup**, and **TechSupport** services: Customers **not subscribed** to these features are **more likely** to churn.

### 5. Contract Type

- **Month-to-month** contract holders churn at **45.6%**.

- **One-year** contracts show a churn rate of **11%**, and **two-year** contracts show only **2.8%**.

- Strong correlation between long-term commitment and customer retention.

### 6. Payment Method

- Customers using **Electronic Check** have the highest churn (**33.7%**).

- **Bank transfer**, **Credit card**, and **Mailed check** users show lower churn rates (~15–18%).

### 7. Billing Behavior

- **Monthly Charges**: Customers with **higher charges (> $70)** churn more often.

- **Total Charges**: New customers with **low total charges and high monthly bills** tend to churn quickly.

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## 📈 Visual Insights

- Multiple well-designed charts were created using seaborn and matplotlib:

    - **Bar plots** for contract types vs churn.

    - **Histograms** showing tenure distribution.

    - **Pie charts** for churn breakdown by gender, senior citizen status, etc.

    - **Heatmaps** showing correlation among variables.

## 📌 Recommendations

1. **Targeted Retention**: Focus retention campaigns on customers with:

   ○ Month-to-month contracts

   ○ Electronic check payments

   ○ High monthly charges

   ○ Fiber optic internet service

2. **Bundled Service Incentives**:

   ○ Encourage use of OnlineSecurity, Backup, and TechSupport to reduce churn likelihood.

3. **Contract Strategy**:

   ○ Provide incentives for longer contracts, e.g., discounts for annual plans.

4. **New Customers**:

   ○ Focus on the first 6–12 months as a critical period to engage and retain.