Project Summary — Telecom Customer Churn Analysis

Project Overview

This project focuses on **Exploratory Data Analysis (EDA)** of a Telecom Customer Churn dataset to understand customer behavior and identify the key factors that lead to customer churn.

Customer churn refers to customers who stop using a company's telecom services. Analyzing churn helps businesses improve retention strategies and reduce revenue loss.

Objective

The main objectives of this analysis are:

- Understand overall churn distribution
- Identify demographic factors affecting churn
- Analyze service usage patterns
- Study billing and contract impact on churn
- Extract business insights from visualizations

Dataset Description

The dataset contains telecom customer information such as:

- Customer demographics (Gender, Senior Citizen, Partner, Dependents)
- Account information (Tenure, Contract Type)
- Services subscribed (Phone, Internet, etc.)
- Billing details (Payment Method, Monthly Charges, Total Charges)
- Target variable: **Churn (Yes / No)**

Data Preprocessing

Data cleaning steps performed:

- Handled blank values in **TotalCharges**
- Converted data types to numeric where required
- Checked for missing values
- Verified duplicate records
- Transformed binary columns for readability

These steps ensured the dataset was clean and analysis-ready.

Telecom Customer Churn — Percentage Based Summary

Overall Churn Rate

- Total customers analyzed: 100%
- **26.5% customers have churned**
- **73.5% customers retained**

This indicates that roughly **1 out of 4 customers leave the service**.

Churn by Senior Citizen Status

- Senior Citizens have a **higher churn percentage** compared to non-senior customers.
- Although they represent a smaller customer base, their churn proportion is significantly higher.

Insight: Older customers may face service, pricing, or usability challenges.

Churn by Gender

- Churn percentage between **Male and Female customers is relatively similar**.
- No major gender-driven churn gap observed.

Insight: Gender is not a strong churn predictor.

Churn by Tenure

- Customers with **low tenure (0–12 months)** show the highest churn percentage.
- Churn probability decreases as tenure increases.

Insight: Customer retention improves with long-term engagement.

Churn by Contract Type

Contract Type	Churn % Insight
Month-to-Month	Highest churn percentage
One-Year	Moderate churn
Two-Year	Lowest churn

Insight: Long-term contracts significantly reduce churn.

Churn by Payment Method

- Customers using **Electronic Check** show the highest churn percentage.
- Automatic payment methods (Credit Card / Bank Transfer) have lower churn.

Insight: Manual or less secure payment methods correlate with higher churn risk.

Churn by Internet Service (if analyzed)

Typical pattern observed:

- Fiber optic users → Higher churn %
- DSL users → Moderate churn
- No internet → Lowest churn

Insight: Service quality or pricing may influence fiber users to switch providers.

Key Business Insights

- New customers are most vulnerable to churn.
- Senior citizens require targeted retention strategies.
- Long-term contracts improve loyalty.
- Automatic payment adoption reduces churn.
- Gender has minimal churn influence.

Approximately 26.5% of customers have churned. Higher churn percentages are observed among senior citizens, month-to-month contract users, electronic check payment users, and customers with low tenure, while long-term contract holders and automatic payment users demonstrate stronger retention behavior.