

Executive Summary & Recommendation on Telecom Customer Churn Analysis

Objective: This analysis provides insights into factors contributing to customer churn, based on a telecom dataset. Various data preprocessing steps and visualizations were applied to identify trends and critical areas that influence customer retention.

1. Data Cleaning and Preparation

- **Handling Missing Values:** Missing values in the "TotalCharges" column were addressed by setting blanks to 0 for customers with zero tenure (new customers without charges). This column was then converted to a numeric format.
- **Transformations:** The "SeniorCitizen" column, initially coded as binary (0, 1), was converted into "Yes" and "No" categories for improved interpretability.

2. Descriptive Statistics

- **Customer Profile:** Most customers in the dataset are younger, non-senior individuals with shorter tenure periods. This suggests a larger base of new or relatively new customers who may be more prone to churn.
- **Monthly Spend:** The median monthly charge is around \$70, with an average lifetime spend trending higher for customers with longer tenure and contract terms.

3. Customer Churn Distribution

- **Overall Churn Rate:** Approximately **26.5%** of customers in the dataset have churned, with **73.5%** remaining. This baseline distribution is essential for comparing churn tendencies across different groups and services.

4. Demographic Insights on Churn

- **Senior Citizens:** Seniors make up **16%** of the customer base. Of this group, **34%** have churned, a higher rate than younger customers. This finding highlights an opportunity to explore tailored retention strategies for senior customers.
- **Gender and Churn:** Churn rates do not vary significantly by gender, suggesting gender-neutral factors drive customer retention.

5. Service and Contract Analysis

- **Contract Type Impact:**
 - **Month-to-Month Contracts:** These customers show the highest churn rate at **43%**, indicating a potential vulnerability in short-term retention.

- **One-Year and Two-Year Contracts:** Customers with these contracts have significantly lower churn rates of **11%** and **3%**, respectively, underscoring the stabilizing impact of long-term commitments.
- **Service Bundles:**
 - **Streaming Services:** Customers subscribed to both internet and streaming services have a churn rate of **32%**, whereas those with internet only have a lower churn rate of **21%**.
 - **Dependence on Internet Services:** The majority of churned customers rely heavily on internet services, indicating the critical role of internet quality and satisfaction in retention.

6. Tenure and Monthly Charges Analysis

- **Tenure's Influence on Churn:** A clear pattern emerges with shorter-tenured customers showing much higher churn rates:
 - Customers with tenure under one year have a churn rate of **46%**.
 - In contrast, customers with over two years of tenure have a much lower churn rate of **8%**.
- **Monthly Charges:** Customers facing higher monthly charges (>\$70) are 1.5 times more likely to churn than those with lower charges, pointing to price sensitivity as a possible driver.

7. Recommendations

- **Retention Strategy for New Customers:** As tenure correlates strongly with churn, focusing retention efforts on new customers, perhaps through loyalty incentives in the early stages, could reduce overall churn.
- **Contract Incentives:** Encouraging customers to switch from month-to-month to longer contracts could reduce churn, given the markedly lower churn rates observed in long-term contract holders.
- **Pricing Strategy:** Consider pricing options or bundle discounts for higher-paying, short-tenure customers who may be more inclined to leave due to cost concerns.