

Summary And Recommendations

Objective

The goal of this project was to analyze customer churn data from a telecom company to identify key factors influencing customer attrition. The dataset includes **7,043 records** with **21 variables**, covering demographics, service usage, billing details, and churn status. The analysis aimed to uncover trends and patterns to help reduce churn rates and improve customer retention strategies.

Key Findings

1. Data Overview & Cleaning

- **Dataset Structure:**
 - **7,043 customers, 21 features** (e.g., gender, tenure, MonthlyCharges, TotalCharges, Churn).
 - **No duplicates** in customerID, ensuring data integrity.
 - **No missing values**, but TotalCharges had blank entries (replaced with "0" and converted to float).
- **Data Transformations:**
 - Converted SeniorCitizen from binary (0/1) to categorical ("no"/"yes") for clarity.
 - Ensured numerical columns (tenure, MonthlyCharges, TotalCharges) were correctly formatted for analysis.

2. Churn Distribution

- **Overall Churn Rate:**
 - **26.5% of customers churned** (1,869 out of 7,043).
 - **73.5% remained active** (5,174 customers).
 - **Visualization:** A countplot clearly displayed this imbalance, emphasizing the need for retention strategies.

3. Customer Demographics & Behavior

- **Senior Citizens:**
 - Only **16.2%** of customers were seniors (SeniorCitizen = 1).
 - Further analysis could determine if seniors have a higher churn rate.
- **Tenure Analysis:**
 - Average customer tenure: **32.4 months** (median: **29 months**).

- Customers with **shorter tenure (≤12 months)** may be more likely to churn.
- **Monthly Charges:**
 - Average: **64.76** (median: **64.76** (median: **70.35**)).
 - Customers with **higher monthly fees** may be more prone to attrition.

4. Contract & Billing Impact

- **Contract Type:**
 - **Month-to-Month** contracts likely have a higher churn rate than **1-year or 2-year** contracts.
 - **Hypothesis:** Longer contracts reduce churn; further statistical testing needed.
- **Paperless Billing:**
 - Customers using **paperless billing** may churn more frequently due to billing issues or lack of engagement.

5. Service Usage Patterns

- **Internet Service:**
 - Customers with **Fiber Optic** may churn more than **DSL** users due to cost or service dissatisfaction.
- **Add-on Services:**
 - Customers **without** OnlineSecurity, TechSupport, or DeviceProtection may have higher churn.

Customer Churn Overview

- The overall churn rate stands at **26.54%**, indicating that more than a **quarter of customers** have left the service.
- **73.46%** of the customers have remained, showing a relatively stable core base.

Demographics & Churn Behavior

Senior Citizens

- **41.67%** of senior citizens have churned compared to only **24.03%** of non-senior citizens.
- This highlights senior citizens as a **vulnerable segment** prone to churn, possibly due to usability issues or lack of personalized services.

Partnership & Dependents

- Customers **without partners or dependents** show higher churn rates.
 - Those with partners and family responsibilities tend to be more stable customers.
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Tenure-Based Insights

- Customers with **tenure < 2 months** show churn rates as high as **58%**, indicating dissatisfaction or weak onboarding.
 - As tenure increases, churn dramatically reduces:
 - 12–24 months: ~**16%** churn
 - 48–72 months: only **7–8%** churn
 - This implies the **first few months** are **critical** to ensure customer satisfaction and engagement.
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Service Usage Patterns

- Most customers subscribe to **Phone Services**, yet **lack of additional digital services** (like **Online Security**, **Tech Support**, or **Device Protection**) correlates strongly with churn.
 - Customers who actively use **Streaming TV** or **Streaming Movies** tend to churn **less**, indicating these are sticky services that promote retention.
 - "**No Internet Service**" users churn very little, but they also represent a **less engaged, low-value segment**.
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Payment Methods & Churn

- Customers using **Electronic Checks** have the **highest churn rate (~45%)**.
 - Those using **Credit Card**, **Mailed Check**, or **Bank Transfer** show significantly **lower churn rates** (between **15–25%**).
 - This suggests that **manual or less convenient payment methods** may signal **lower engagement or satisfaction**.
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Recommendations

1. **Targeted Retention Campaigns** for senior citizens with better onboarding and support.
2. Offer **discounts or incentives** to customers in their **first 3 months** to reduce early churn.
3. Promote bundling of **streaming services and tech support** to increase stickiness.

4. Incentivize switching from **electronic checks** to **automated payment methods**.