

Summary

The analysis focused on understanding customer churn behavior in a telecom company using a dataset of **7,043 customers** with **21 attributes** related to demographics, services, and account details. The objective was to identify **key factors driving churn** and provide recommendations for reducing customer attrition.

1. Data Cleaning & Preparation

- Missing or blank values were identified in the **TotalCharges** column.
 - These blanks corresponded to customers with **tenure = 0 months**, meaning new sign-ups who had not been billed yet.
 - They were replaced with **0** to ensure data integrity.
 - Data types were standardized, converting columns like **SeniorCitizen** into categorical variables for better visualization and modeling.
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2. Customer Churn Overview

- **Churn Rate:** Out of 7,043 customers, approximately **26.5% (1,869 customers)** churned, while **73.5% (5,174 customers)** remained.
 - This indicates that **1 in 4 customers leaves**, highlighting the importance of retention strategies.
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3. Demographic Insights

- **Senior Citizens:**
 - 16% of the total customer base are senior citizens.
 - **41% of senior citizens churned**, compared to **23% of non-senior citizens**, showing a clear risk segment.
- **Dependents and Partners:**

- Customers **without dependents** had a **32% churn rate**, while those **with dependents** churned at only **15%**.
- Similarly, customers **without a partner** were **1.6x more likely to churn**.

These findings suggest that customers with family ties are **more stable and loyal**.

4. Service-Related Insights

Several services show strong correlation with churn:

Service Feature	Churn % (Yes)	Churn % (No)
Internet Service - Fiber Optic	42%	DSL: 19%, No Internet: 8%
Online Security	46%	No Security: 29%
Tech Support	45%	No Tech Support: 31%
Streaming Services	34%	22%

- **Fiber Optic users churn at over double the rate** of DSL users, indicating service quality or pricing issues.
- Lack of **Online Security** and **Tech Support** leads to a **15% higher churn rate**, suggesting bundled value-add services could improve retention.

5. Contract Type & Payment Method

- **Month-to-Month Contracts:**
 - 43% churn rate, significantly higher than **yearly contracts (11%)**.
 - This highlights the need to **incentivize long-term plans**.
- **Payment Method:**
 - **Electronic Check users churn at 45%**, compared to **18-22%** for other payment methods like credit card or bank transfer.
 - Customers paying electronically may lack commitment or prefer flexibility.

6. Financial Factors

- **Monthly Charges:**
 - Customers paying **above \$80/month** have a **38% churn rate**, compared to **15% for those under \$40/month**.
 - This suggests that **pricing is a major driver of churn**.
- **Total Charges:**
 - Long-term, high-value customers have lower churn rates, indicating that **customer lifetime value (CLV)** is tied to retention.

7. Business Implications

- **Target High-Risk Segments:**

Focus on senior citizens, fiber optic users, and month-to-month customers to reduce churn by offering loyalty rewards, discounts, or value-added services.
- **Promote Bundled Services:**

Adding **Online Security** or **Tech Support** could reduce churn by **15-20%**.
- **Pricing Strategy:**

Consider tiered pricing or discounts for high monthly charge users to address dissatisfaction.
- **Incentivize Long-Term Contracts:**

Offering promotions for annual plans could shift customers from high-churn month-to-month agreements.