

# Summary And Recommendation

## Executive Summary: Customer Churn Analysis

This customer churn analysis examines patterns and behaviors associated with attrition in a telecommunications dataset. The goal is to identify key drivers of churn and provide actionable insights to improve customer retention.

### ♦ Overall Churn Rate

- Approximately **26.5%** of customers have churned, as indicated by pie chart visualizations.
- This suggests over a quarter of the customer base is not being retained, highlighting a critical business challenge.

### ♦ Demographic Analysis

- **Gender** shows minimal influence on churn, with similar churn percentages between male and female customers.
- However, **Senior Citizens** exhibit significantly higher churn rates:
  - Around **42%** of senior citizens churned compared to only **24%** of non-senior citizens.
  - Indicates a need for more targeted engagement or service customization for older customers.

### ♦ Tenure Distribution

- Churn is **highest among customers with shorter tenures**, particularly those below 12 months.
- A visible decline in churn is seen as tenure increases, implying the importance of onboarding and early engagement strategies.

### ♦ Contract Type

- Contract type is a strong predictor of churn:
  - **Month-to-month contracts** have the highest churn rate at approximately **43%**.

- In contrast, **one-year and two-year contracts** show churn rates of around **11%** and **3%** respectively.
- This underlines the value of promoting longer-term contracts to improve retention.

#### ♦ Service Features and Churn

Based on a set of count plots, several service-related patterns emerge:

Feature	Churn Rate (Approx)	Insight
OnlineSecurity: No	~40%	Customers without this feature churn more.
OnlineBackup: No	~35%	Suggests backup services aid retention.
DeviceProtection: No	~36%	Device safety may influence customer decisions.
TechSupport: No	~38%	Tech help correlates with lower churn.
StreamingTV/Movies	Slight churn influence	Entertainment offerings have a modest effect.
PhoneService/MultipleLines	Minimal impact	Not significant churn drivers.

#### ♦ Data Quality Enhancements

- Preprocessing steps included fixing missing or incorrect **TotalCharges** values and converting encoded values (e.g., **SeniorCitizen** from 0/1 to "No"/"Yes") for better interpretability.

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## Recommendations

- **Promote longer-term contracts** through discounts or loyalty programs.
- **Improve onboarding experience** to engage customers early in their tenure.
- **Upsell value-added services** like Online Security and Tech Support which show correlation with lower churn.

- **Develop targeted strategies for senior citizens**, who represent a high-risk churn group.