

Summary

Telecom Customer Churn Analysis

This report presents a detailed analysis of customer churn within a telecommunications company, aimed at uncovering the underlying factors that drive customer attrition. By understanding the patterns and profiles associated with churned customers, the analysis supports strategic decision-making to enhance customer retention and long-term profitability.

1. Objective

The primary objective of this analysis is to:

- Quantify the extent of customer churn
 - Identify key drivers and risk segments
 - Provide actionable insights to reduce churn and improve customer lifetime value
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2. Data Overview & Preparation

The dataset comprises customer demographic information, subscription details, service usage behavior, and churn status. Key preprocessing steps included:

- Handling missing values in the **TotalCharges** field by replacing blanks with 0 and converting to float.
 - Recasting binary fields like **SeniorCitizen** into interpretable categories ("Yes"/"No") to enhance readability.
 - Ensuring all fields are formatted correctly for analysis.
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3. Key Insights

3.1 Overall Churn Rate

- **26.54%** of customers have churned (1,869 out of 7,043).

- This indicates that over a quarter of the customer base is not retained, representing a significant revenue risk.

3.2 Gender-Based Churn

- Churn is relatively balanced across genders:
 - **Male:** ~26.2%
 - **Female:** ~26.9%
- Gender does not appear to be a significant factor in predicting churn.

3.3 Impact of Senior Citizenship

- Churn among senior citizens is significantly higher:
 - **Senior Citizens: 41.7%**
 - **Non-Senior Citizens: 24.0%**
- Although senior citizens make up only ~16% of the base, they are disproportionately more likely to churn.

3.4 Tenure and Churn Relationship

- A clear inverse correlation exists between tenure and churn:
 - Customers with **<6 months tenure** have churn rates exceeding **50%**
 - Customers with **>24 months tenure** show churn rates below **10%**
- Retention improves markedly over time, indicating early customer experience is crucial.

3.5 Contract Type as a Churn Predictor

- Contract length strongly influences churn likelihood:
 - **Month-to-Month: 43.9%**
 - **One-Year Contract: 11.5%**
 - **Two-Year Contract: 2.8%**

- Longer contracts are associated with significantly lower churn, likely due to higher commitment and bundled incentives.
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4. Visual Analytics Summary

The following visual tools were utilized:

- **Pie charts** to illustrate churn proportions
- **Bar plots** to compare churn across gender, senior citizenship, and contract types
- **Stacked bar charts** to show percentage churn by senior citizen status
- **Histograms** to depict churn frequency across customer tenure

These visualizations reinforce and clarify the key patterns observed in the data.

5. Strategic Recommendations

To mitigate churn and improve customer retention, the following actions are recommended:

- **Focus on early engagement:** Prioritize onboarding and satisfaction efforts for new customers (<6 months tenure).
 - **Target high-risk segments:** Develop specific retention campaigns for:
 - Senior citizens
 - Customers on month-to-month contracts
 - **Promote long-term contracts:** Offer incentives for switching to annual or biennial plans to lock in longer customer lifecycles.
 - **Build loyalty programs:** Implement tailored loyalty or rewards programs for at-risk groups to increase engagement.
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6. Next Steps

To extend this analysis, the organization could:

- Develop a **churn prediction model** using machine learning techniques
 - Perform **cohort analysis** to track churn trends over time
 - Use **customer segmentation** to further personalize retention strategies
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