

Executive Summary

This project explores the **customer churn problem** in the telecom sector using comprehensive data visualization and analysis techniques. The goal is to uncover patterns and factors that contribute to customer attrition, enabling businesses to strategize on retention.

Dataset Overview

The dataset contains details on telecom customers including demographics, account information, and subscribed services. It also includes whether a customer has churned or not.

Key Insights from the Analysis

- **Overall Churn Rate:**
The churn rate stands at **26.54%**, indicating that over a quarter of the customers have discontinued their service.
- **Impact of Age & Senior Citizen Status:**
A **greater proportion of senior citizens** tend to churn compared to younger customers, highlighting a need to investigate service satisfaction among older users.
- **Tenure Correlation:**
Customers who have been with the company for **less than 6 months** exhibit **significantly higher churn**. In contrast, **long-term customers** (tenure > 2 years) show high retention, indicating that early-stage experiences heavily influence loyalty.
- **Contract Type:**
 - **Month-to-month contracts** are the most churn-prone, with a **churn rate above 40%**.
 - Customers with **1-year and 2-year contracts** show much **lower churn**, suggesting longer commitments improve customer stability.
- **Internet Service Type:**
 - **Fiber optic users** show a higher churn rate than DSL users.
 - This may indicate performance or cost dissatisfaction with fiber optic plans.
- **Service Engagement:**
 - Customers who do **not subscribe** to additional services like **Online Security, Tech Support, or Online Backup** have a **higher churn percentage**.

- This shows that **value-added services** are linked with higher retention and satisfaction.
 - **Senior Citizens and Service Bundling:**
Senior citizens with **no add-on services** are especially likely to churn, underlining the need for **tailored plans** and **customer support** for older demographics.
 - **Billing Method Influence:**
Customers using **electronic checks** are more likely to churn compared to those using **bank transfer or credit card auto-pay**, possibly due to convenience or automation.
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Visualizations

A range of bar plots, pie charts, and categorical heatmaps were used to bring clarity to the trends. The charts visually support the insights above, highlighting clear churn patterns based on customer demographics, service usage, and contract details.