

Executive Summary – Customer Churn Analysis


This analysis investigates churn patterns among **7,043 telecom customers**, using a comprehensive dataset with 21 key features such as customer demographics, contract types, billing details, and service usage. Visual and statistical techniques were applied to uncover hidden trends and derive strategic recommendations.

Key Findings

1. Overall Churn Rate:

- About **26.5%** of customers (nearly 1 in 4) have churned.
- Churn is highest among **new users** and **month-to-month** contract holders.

2. Contract Type & Retention:

- **55%** of customers are on **month-to-month** contracts, yet they contribute to **~88%** of churn.
- Customers on **1-year** or **2-year contracts** only account for **~12%** of churn combined.
-  **Insight:** Long-term contracts are clearly effective in reducing churn.

3. Internet & Streaming Services:

- Customers with **Fiber optic internet** churn more (~40%) than those with **DSL** (~20%).
- Lack of **Tech Support**, **Online Backup**, or **Online Security** doubles the likelihood of churn.
- Users with **StreamingTV + StreamingMovies** show higher retention when combined with other value services.

4. Demographic Trends:

- **Senior Citizens** form **16%** of the customer base but make up **~30%** of churners.
- Churn is especially high (**~45%**) among customers in their **first 5 months**.

- **Gender** has little to no effect on churn, with rates similar for male and female users.

5. 🏠 **Billing & Payment Behavior:**

- Customers paying via **Electronic Check** have the highest churn (~45%).
- Those using **automatic bank transfer, credit card, or mailed check** are more loyal.
- Users with **Monthly Charges > \$80** face churn rates exceeding **40%**, especially when not backed by value-added services.
- **Paperless Billing** users also show slightly elevated churn (~30%).

6. 📱 **Service Combinations:**

- Customers with **Phone Service but without Multiple Lines** churn less.
- Bundled services (Tech Support, Device Protection, Online Security) significantly reduce churn probability.

Visualization & Dashboard Highlights

- Used detailed bar plots, pie charts, and distribution graphs.
- Created a **9-panel grid** showing churn by services (Online Backup, Streaming, etc.).
- Distribution curves for **MonthlyCharges**, **TotalCharges**, and **tenure** helped identify high-risk churn segments.

Strategic Recommendations

- **Boost long-term retention** by offering incentives for 1–2-year contracts.
- **Engage early:** Focus on the first 3–6 months through loyalty perks and onboarding.
- **Bundle value services** like tech support and online backup into core plans.
- **Promote secure payment modes** (e.g., AutoPay) and discourage electronic checks.
- **Target senior citizens** and high-bill customers with tailored support and loyalty benefits.

