

# Executive Summary: Customer Churn Analysis

This Exploratory Data Analysis (EDA) aims to uncover patterns and behaviours associated with customer churn in a telecom dataset. Visualizations and metrics have been used to guide business decisions focused on customer retention.

## ✅ Churn Overview

- **26.54%** of customers in the dataset have churned, indicating that over **1 in 4 customers** discontinue services — a clear signal for targeted intervention.

## 👤 Demographic Insights

- **Senior Citizens** are disproportionately affected by churn:
  - A significantly **higher percentage of senior citizens churn** compared to non-senior customers.
  - Suggests that this demographic may either face usability challenges or perceive less value in the service.

## ⌚ Churn Rate by Tenure

A clear trend is observed when customers are grouped by how long they've been with the company:

- Tenure < 6 months: Churn rate is highest, often 50% or more — these are "at-risk" new customers.
- 6–12 months: Churn starts to decline as customers settle in.
- 12+ months: Churn drops significantly, especially beyond 24 months — long-term customers are more loyal.

📊 **Visualization:** A bar chart or line plot showing churn percentage per tenure group. Ideal to highlight with a declining trend line.

## 📄 Contract Type and Churn

- Month-to-Month Contracts: Extremely high churn, often exceeding 40% — lack of long-term commitment leads to easier exits.
- One-Year Contracts: Moderate churn, around 10–15%.
- Two-Year Contracts: Lowest churn (around 5–7%) due to built-in commitment.

📊 **Visualization:** A horizontal bar chart sorted by churn rate, showing the protective effect of contract length.


## 🌐 Internet Service & Churn

- Customers using **Fiber Optic** internet have higher churn (~35%) — likely due to performance concerns or higher costs.
- **DSL** users churn slightly less (~25%).
- Those with **No Internet Service** have the **lowest churn** — possibly older or lower-engagement users.

### **Payment Method vs Churn**

Different payment methods correlate with distinct churn behaviours:

- **Electronic Check** users have the **highest churn rate** (around 40%+) — likely due to lower customer satisfaction or less automation.
- **Credit Card** and **Bank Transfer (Automatic)** users show **lower churn** (as low as 15–20%).
- Mailed Check falls somewhere in between.

 **Visualization:** A stacked percentage bar chart for each payment method, segmented by churn ("Yes"/"No"). Electronic check will stand out with a larger "Yes" section.

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### **Key Takeaways**

- **Early intervention is crucial:** New customers are most vulnerable.
  - **Simplify service offerings** or improve reliability for high-tech service users.
  - **Convert month-to-month users** into long-term customers with loyalty incentives.
  - **Target senior citizens** and electronic check users with tailored retention campaigns
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### **Actionable Recommendations (based on visualizations)**

- Focus on **retention in the first 6 months** via onboarding campaigns and loyalty offers.
- Promote **auto-pay methods** like credit card or bank transfer.
- Convert month-to-month users to **long-term contracts** using targeted incentives.
- Investigate service quality for Fiber users and **improve customer experience**.