

# Executive Summary – Telco Customer Churn Analysis

This report presents a comprehensive analysis of Telco customer churn using a dataset of **7,043 customers**. The goal is to identify patterns and key factors influencing churn, and to inform strategies for customer retention.

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## Data Preparation

- Blank values in **TotalCharges** were found where **tenure** was 0. These were appropriately handled by replacing blanks with **0.0**.
  - After cleaning, the dataset contained **no missing values**, with **21 features** including demographic details, service subscriptions, billing, and churn status.
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## Churn Overview

- **Churn Rate:** Approximately **26.5%** of the customers have churned, while **73.5% remained**.
    - This represents a **significant opportunity for improvement** in customer retention efforts.
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## Key Findings by Feature

### 1. Internet Service Type

- **Fiber optic users:** 41% churned.
- **DSL users:** 18% churned.
- **No internet:** 7% churned.

 **Insight:** Fiber optic users show **more than double the churn rate** compared to DSL users. This may be due to higher costs or service dissatisfaction.

## 2. Online Security & Tech Support

- Among customers **without Online Security**, ~42% churned.
- Those **with Online Security**, only ~15% churned.
- A similar pattern is seen with **Tech Support**: 40% churn vs. 14% for users with support.

✅ **Insight:** Offering security and support services significantly **reduces churn risk**. These should be bundled or promoted for retention.

## 3. Contract Type

- **Month-to-month**: ~43% churned.
- **One-year**: ~11% churned.
- **Two-year**: ~3% churned.

🔒 **Insight:** Longer contracts provide stability and **significantly reduce churn**. Incentivizing upgrades to long-term contracts is a high-impact strategy.

## 4. Payment Method

- **Electronic check**: 45% churn rate — the **highest among all methods**.
- **Mailed check / Credit card / Bank transfer**: ~15–20% churn.

📄 **Insight:** Electronic check users might be less engaged or face recurring billing issues. Focused communication can help.


## 5. Paperless Billing

- Customers with paperless billing: **33% churned**.
- Without paperless billing: **21% churned**.

📄 **Insight:** Paperless billing correlates with higher churn. Consider combining it with customer service touchpoints or personalized messages.

## 6. Tenure


- **Tenure < 12 months:** Churn rate ~55%.
- **Tenure > 60 months:** Churn rate < 5%.

 **Insight:** Churn is **strongly linked to customer age (tenure)**. New users are at higher risk — consider onboarding bonuses or retention plans in the first year.

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## Streaming Services

- **StreamingTV & StreamingMovies** subscriptions **do not strongly influence churn**.
- Churn is similar whether users have these services or not.






 **Insight:** Entertainment features alone **don't reduce churn** — focus should remain on functional services like security and support.

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## MultipleLines, PhoneService

- **MultipleLines:** Churn is slightly higher for customers with additional lines (~30%) than those without (~24%).
  - **PhoneService:** Doesn't show strong correlation with churn.
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## Recommendations

1.  **Promote long-term contracts** with discounts or bonuses to reduce churn.
2.  **Bundle Online Security, Backup, and Tech Support** to improve retention.
3.  **Target new users (tenure < 1 year)** with engagement campaigns.
4.  Address churn among **electronic check & paperless billing** users with proactive communication.
5.  Consider further **predictive modeling** to identify high-risk customers in advance.

