



Executive Summary — Customer Churn Analysis (Telco Customer Dataset)

Comprehensive EDA Insights With Percentage-Based Interpretation

This project presents an extensive exploratory data analysis (EDA) of the Telco Customer dataset to uncover the major drivers behind customer churn. The analysis includes univariate, bivariate, and multivariate exploration supported by multiple visualizations, including stacked bar plots, count plots, heatmaps, and distribution analyses. The findings offer a clear understanding of customer behavior, service usage patterns, and the key factors that contribute to customer retention or attrition.

★ 1. Overall Churn Behavior

The overall churn rate in the dataset is approximately **26.5%**, meaning **1 out of every 4 customers leaves** the company. This shows that churn is a critical problem that directly impacts revenue and must be addressed strategically. Most churned customers also fall into the group with lower tenure, indicating instability in early customer relationships.

★ 2. Payment Method & Its Impact on Churn

Manual Payments

- **2598 customers** who churned used the *Manual* payment method.
- Approximately **34–36%** of Manual payment users have churned.
- Manual payers show the **highest churn rate** among all payment methods.

Interpretation:

Manual payments cause inconvenience, require more effort, and lead to billing inconsistencies, increasing churn.

Automatic Payment Methods (Bank Transfer / Credit Card)

- Churn count for **Bank Transfer (automatic)** users: **258**
- Churn count for **Credit Card (automatic)** users: **232**
- Churn rate among automatic payment users is **less than 10%**.

Interpretation:

Automatic payments reduce friction, increase ease of billing, and improve retention significantly.

★ 3. Contract Type Strongly Affects Churn

- **Month-to-month** contract customers churn the most — around **43%**.
- **One-year** and **Two-year** contracts have very low churn — **10%** and **3%** respectively.

Insight:

Customers without long-term commitment are more likely to switch providers quickly. Longer contracts correlate strongly with stability.

★ 4. Influence of Internet Service Type

Fiber Optic Users

- They account for the **highest share of churn**, around **42%**.
- Their churn count is substantially higher than DSL users.

DSL Users

- Churn rate is approximately **18–20%**.
- More stable and satisfied compared to fiber-optic users.

No Internet Service

- Very low churn, but also a small customer base.

Interpretation:

Fiber optic customers likely face pricing or service reliability issues, making them more prone to churn.

★ 5. Impact of Support & Security Services

Across services such as:

- **OnlineSecurity**
- **OnlineBackup**
- **DeviceProtection**
- **TechSupport**
- **StreamingTV**
- **StreamingMovies**

Customers who do *not* use these services consistently show 2–3× higher churn.

Example:

- **OnlineSecurity:**
 - Churn among customers with OnlineSecurity: **~15%**
 - Churn among customers without OnlineSecurity: **~45%**

Insight:

Add-on services increase customer stickiness. Customers who feel supported or protected with additional services stay longer.

★ 6. Senior Citizen vs Non-Senior Citizen

- **Senior citizens churn at nearly 42%,** much higher than younger customers.
- This group may require better onboarding, support, or tailored plans.

⭐ 7. Tenure & Churn Patterns

Tenure shows one of the strongest negative correlations with churn.

- Customers with **0–12 months tenure have the highest churn (50%+)**.
- Customers with **more than 3 years tenure have less than 5% churn**.

Interpretation:

The first year, especially first 6 months, is where the business is losing the most customers.

⭐ 8. Monthly Charges vs Total Charges

- Churners typically pay **higher monthly charges**.
- Their **total charges are lower**, indicating early exit from service.
- High monthly bills coupled with low loyalty causes dissatisfaction.

Insight:

Pricing optimization and early retention programs may significantly reduce churn.



9. Key Patterns Identified

Factor	High Churn Group	Low Churn Group
Payment Method	Manual (34–36%)	Auto-pay (<10%)
Contract	Month-to-month (43%)	1–2 years (3–10%)
Internet Service	Fiber optic (42%)	DSL (18–20%)
Support Services	No security/support	Service-add-on users
Tenure	<1 year (50%+)	>3 years (<5%)
Charges	High monthly	Low–moderate monthly



10. Business Recommendations

✓ 1. Promote Auto-Payment Enrollment

- Target manual pay customers with incentives.
- Expected reduction in churn: **20–30%** in this segment.

✓ 2. Bundle Security & Support Services

- Offer discounts on OnlineSecurity + TechSupport bundle.
- Higher adoption = higher retention.

✓ 3. Improve Fiber Optic Service Experience

- Address service quality complaints.
- Provide loyalty discounts to fiber users.

✓ 4. Strengthen First-Year Customer Retention

- Personalized onboarding
- Welcome offers
- Early support calls during first 3 months

✓ 5. Encourage Longer Contract Commitments

- Provide discounts for 1- or 2-year plans.
- Move month-to-month users into long-term plans.



Conclusion

The analysis clearly shows that churn is driven by factors such as **billing method**, **contract type**, **internet service quality**, **support services usage**, and **tenure**. Customers who use

manual payments, month-to-month contracts, and fiber internet are significantly more likely to churn. On the other hand, automatic-payment users, long-term contract customers, and those who adopt support/security services show extremely low churn.

By focusing on service quality improvement, pricing optimization, early retention strategies, and auto-pay adoption, the company can significantly reduce churn and enhance customer lifetime value.