

Telco Customer Churn Prediction

1. Dataset Overview

The dataset comprises 7,043 customer records and 21 attributes related to demographic, service usage, and billing information. Data preprocessing included conversion of the 'TotalCharges' column to numeric and removal of missing or blank values.

2. Overall Churn Rate

The analysis revealed an overall churn rate of approximately 26.54%, indicating that nearly one in four customers discontinued their service. This highlights a significant retention challenge that requires strategic intervention.

3. Demographic Insights

- Gender distribution indicates negligible difference in churn rates between males and females.
- Senior citizens exhibit a higher churn rate (~42%) compared to non-senior customers (~24%), suggesting a need for better service experience or targeted support for elderly customers.

4. Tenure-Based Analysis

Customers with shorter tenures (less than six months) experience high churn levels exceeding 50%. Churn decreases progressively with longer tenure, dropping below 10% for customers with more than four years of engagement. This emphasizes the importance of early retention initiatives.

5. Contract Type and Retention

The contract duration shows a clear correlation with churn behavior:

- Month-to-month: ~43% churn

- One-year: ~11% churn
- Two-year: ~3–4% churn

Longer contractual commitments significantly improve retention rates, demonstrating customer stability when offered extended service plans.

6. Service Utilization Patterns

Customers lacking additional services such as Online Security, Tech Support, or Device Protection churn at higher rates (45–50%). Conversely, those subscribing to multiple or

bundled services exhibit lower churn (<20%). Fiber optic users show relatively higher churn (~42%) compared to DSL users (~18%).

7. Payment Method Insights

Payment behavior strongly influences churn trends. Customers using electronic checks exhibit the highest churn (~45–50%), while automatic bank transfers or credit card payments demonstrate lower churn (~15–20%). Encouraging automated payments may enhance retention.

8. Billing and Charges

Customers who churned generally paid higher monthly charges (≈\$74) but had lower total charges due to early termination. High-spending customers leaving early highlight potential dissatisfaction or perceived lack of value.

9. Key Business Insights

- Senior citizens and short-tenure customers require targeted engagement programs.
- Incentivizing long-term contracts can meaningfully reduce churn.
- Service bundling and loyalty rewards effectively promote retention.
- Promoting auto-pay options could improve billing convenience and satisfaction.
- Addressing pricing transparency and value perception is critical to retaining high-paying customers.

10. Summary of Key Metrics

Overall Churn: 26.54%

Senior Citizen (Yes): ~42%

Senior Citizen (No): ~24%

Contract Type – Month-to-Month: ~43%

Contract Type – One Year: ~11%

Contract Type – Two Years: ~3–4%

Fiber Optic Users: ~42%

DSL Users: ~18%

Electronic Check Payments: ~45–50%

Auto Bank Transfers: ~15–20%

11. Conclusion

The analysis identifies key determinants of customer churn and offers data-driven insights for strategic decision-making. Implementing targeted retention initiatives, promoting bundled services, and simplifying payment processes can substantially reduce churn.

Continuous monitoring and predictive modeling should be considered for proactive customer management.