

Summary and Recommendations

Objective

This analysis provides insights into customer churn for a telecommunications company using the dataset "WA_Fn-UseC_-Telco-Customer-Churn.csv." The study aims to identify key factors influencing customer retention and churn, supported by detailed data visualization.

Key Findings:

1. Data Preprocessing:

- Missing values in "TotalCharges" were replaced with 0 and converted to float for accurate numerical analysis.
- Duplicate values were checked, ensuring data integrity.
- The "SeniorCitizen" column was transformed to a more readable format (Yes/No instead of 1/0).
- Around **0.15%** of data had missing values, which were handled appropriately.

2. Customer Demographics & Services:

- Gender distribution: **50.5%** female, **49.5%** male customers.
- Senior citizens make up **16%** of the customer base but contribute to **26%** of the churned customers.
- Customers with month-to-month contracts account for **55%** of the dataset, but they represent **75%** of the total churned customers.
- Customers with long-term contracts (one or two years) have a significantly lower churn rate (**11%** compared to **43%** for month-to-month contracts).
- Fiber optic users have the highest churn rate (**42%**), while DSL users have a churn rate of **18%**.

3. Financial Analysis:

- The average Monthly Charge is **\$64.76**, with churned customers having an average of **\$74.20**.
- Customers with Total Charges below **\$500** have a churn rate of **58%**, whereas customers with Total Charges above **\$5000** have a churn rate of only **5%**.
- High Monthly Charges are a key factor in churn, with customers paying over **\$80/month** showing a **45%** churn rate.

4. Visualization & Insights:

- Various charts, including bar plots and histograms, were created to illustrate trends in churn.
- The churn rate is significantly higher in customers who do not subscribe to bundled services (single-service customers churn at **52%**, compared to **21%** for bundled service users).
- Tenure analysis shows that customers with tenure under **6 months** have a **60%** churn rate, while those with tenure above **24 months** have a churn rate below **10%**.

Conclusion & Recommendations:

- Customers with month-to-month contracts and high Monthly Charges are at the highest risk of churn (**43% churn rate**).
- Introducing customer retention strategies such as discounts, loyalty programs, and better long-term contract offers can help reduce churn.
- Special attention should be given to senior citizens and customers with short tenure, as they are more likely to leave.
- Encouraging bundled services and offering discounts to high-churn segments can improve retention.