

Executive Summary

This telecom customer churn analysis leverages data from **7,043 customers** across 21 attributes. After thorough cleaning (handling missing values, correcting data types, and enhancing column readability), exploratory data analysis revealed critical retention and churn patterns.

Key Insights

1. Demographics & Churn

- Senior citizens make up **16.2%** of the customer base but have a **41% churn rate**, nearly double that of non-seniors (**24%**).
- This highlights age as an important demographic factor for retention strategy.

2. Tenure & Loyalty

- Customers with tenure under 12 months represent **24%** of the base, with a churn rate of **50%**.
- By contrast, customers with tenure over 60 months churn at only **7%**, showing strong loyalty among long-term users.

3. Service Features Impact

- Lack of value-added services like *Online Security* and *Tech Support* correlates with higher churn.
- Customers without these services churn at rates exceeding **40%**, compared to under **15%** for those with them.

4. Contract Type Influence

- Month-to-month contracts account for **55%** of customers and have a churn rate of **43%**.
- One-year and two-year contracts drastically reduce churn to **11%** and **3%**, respectively.

5. Payment Method Trends

- Customers paying via *electronic check* make up **33.6%** of the base but churn at **45%**.
- Other payment methods (automatic bank transfer, credit card, mailed check) have churn rates below **20%**.

Visual Storytelling

The analysis is supported by a range of impactful visualizations:

- **Count plots & stacked bar charts** to compare churn across demographics, service features, and contract types.
- **Distribution plots** illustrating tenure and charge patterns for churned vs. retained customers.
- **Percentage-based visual comparisons** for easier decision-making.

Conclusion

The project identifies clear churn risk factors: short tenure, month-to-month contracts, lack of add-on services, senior citizen status, and electronic check payments. Addressing these through targeted retention offers, service bundling, and contract incentives could significantly improve customer loyalty and reduce churn rates.