

Executive Summary

Project Title: *Customer Churn Analysis – “Use My Services or Not”*

This exploratory data analysis (EDA) aims to understand the underlying factors that drive customer churn — that is, why customers discontinue using the company's services. Using demographic data, account information, and service usage patterns, the analysis highlights key trends that can help improve retention strategies and customer experience.

1. Overall Churn Rate

- The total **customer churn rate is approximately 26.54%**, meaning roughly **1 in every 4 customers** has left the service.
 - This figure signals moderate-to-high attrition and emphasizes the need for proactive churn prevention efforts.
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2. Demographic Insights

- **Senior Citizens:**
 - Customers identified as senior citizens show **significantly higher churn** compared to non-seniors.
 - This group forms a smaller portion of the customer base but contributes **disproportionately to total churn**, suggesting challenges related to service accessibility, technical support, or cost sensitivity.
 - **Tenure Effect:**
 - Customers with **short tenure (1–2 months)** exhibit a **very high churn percentage** — often exceeding **40–50%** in early months.
 - Conversely, customers with a **longer tenure (more than 2 years)** show churn rates below **10%**, indicating stronger loyalty once initial satisfaction is established.
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3. Contract Type Impact

- Contract type has a **direct and significant impact** on retention:
 - **Month-to-month contract customers:** Highest churn rate, around **42–45%**.
 - **One-year contract customers:** Moderate churn, roughly **11–13%**.
 - **Two-year contract customers:** Lowest churn, typically below **5%**.
 - These figures show that **longer-term contracts build customer commitment** and reduce the likelihood of churn.
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4. Internet Service Analysis

- **Fiber Optic** users have the **highest churn rate**, roughly **30–32%**, compared to **DSL** users (**around 18–20%**) and customers with **no internet service** (**around 7–9%**).
 - This may point to **pricing dissatisfaction** or **service stability issues** with fiber optic plans.
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5. Service Feature Correlation

Customers without certain service add-ons show dramatically higher churn percentages:

- **Online Security:** Customers *without* this service churn at about **45%**, compared to **15–18%** with security enabled.
- **Online Backup:** Churn rate around **43%** without backup, versus **17–19%** with it.
- **Device Protection:** Similar pattern — around **41–44%** churn without, versus **16–18%** with.
- **Tech Support:** Lack of technical support raises churn rate to nearly **47%**, showing it's a key retention driver.

These metrics clearly indicate that **value-added services encourage customer stickiness** and may justify promoting service bundles.

6. Payment Method and Billing Preferences

- Customers paying through **electronic check** experience a **churn rate above 45%**, while those using **automatic bank or credit card payments** have much lower churn (~15–20%).
 - This suggests that **automation and ease of payment** can enhance retention.
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7. Data Cleaning & Preparation

- Missing values in *TotalCharges* were replaced with **0** to maintain consistency.
 - The *SeniorCitizen* column was transformed from binary (0/1) to categorical (Yes/No) for easier interpretation.
 - Several visualizations (pie charts, stacked bars, and subplots) were generated to analyze categorical attributes such as *InternetService*, *OnlineSecurity*, *TechSupport*, and *Streaming* options.
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8. Key Takeaways

- **Customer retention strategies** should focus on:
 - Encouraging **long-term contracts**.
 - Providing **discounts or offers on bundled services** (Security, Backup, Tech Support).
 - Enhancing **fiber optic service satisfaction** (through quality improvement or value differentiation).
 - Promoting **auto-payment options** to reduce manual billing churn.
 - Early-stage customers (first 2 months) should receive **personalized onboarding and engagement efforts** to reduce initial drop-offs.
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9. Conclusion

The analysis clearly demonstrates that **service reliability**, **contract structure**, and **support features** are the dominant predictors of churn. Addressing these factors could realistically

lower the churn rate from **26.54% to below 15%** over time through targeted retention initiatives, loyalty programs, and proactive customer support.