<u>Summary</u>

📦 Dataset Overview & Cleaning

You analyzed a telecom customer churn dataset with 7,043 records. The key variable of interest was `Churn`, indicating whether a customer discontinued the service. The dataset required minor cleaning:

- Missing values in the `TotalCharges` column (just whitespace) were replaced with `0` and converted to float.

- `SeniorCitizen` was recoded from 0/1 to "No"/"Yes" for better readability.

- No duplicates or null values were found post-cleaning, so it was a solid base to begin analysis.

📊 Churn Distribution

Out of the entire customer base:

- **73.5%** of customers stayed with the company.

- Only **26.5%** actually churned.

This might look promising on the surface — but 1 in every 4 customers leaving is a major red flag in a subscription business model.

👤 Gender-Based Churn Insights

When analyzing by gender, the churn rate was nearly **identical for males and females**, both hovering around **26–27%**. That means gender plays **no meaningful role** in predicting whether a customer will leave. Any gender-based targeting or interventions are unlikely to affect churn significantly.

🧓 Senior Citizens are at Higher Risk

Even though only about **16%** of customers were senior citizens, their churn rate was alarmingly high:

- **42% of senior citizens** had churned.

- In contrast, only **24% of non-senior citizens** left.

That's almost **double the churn rate**, suggesting senior citizens may face usability issues, lack of support, or unmet service expectations.

This group may benefit from more personalized communication, simplified onboarding, and proactive support.

📅 Tenure: The Longer They Stay, The More They Stay

Tenure emerged as **one of the strongest indicators** of churn:

- Customers who churned typically had tenure of **0–12 months**.

- As tenure increased, churn drastically dropped. For example, customers with **50+ months** of tenure had very low churn — often under **10%**.

This strongly suggests that churn is most likely during the **early phase of the customer journey**, and retention efforts must **target new joiners**. Improving onboarding experience, frequent check-ins in the first year, and early value delivery could reduce churn significantly.

📄 Contract Type Determines Loyalty

The impact of contract type on churn was profound:

- Over **43%** of customers on **month-to-month** contracts churned.

- Those with **1-year contracts** had a churn rate of just **11.5%**.

- And only **2.9%** of customers on **2-year contracts** left the company.

This confirms a simple truth: the longer the commitment, the higher the customer lifetime value.

To reduce churn, the business should **incentivize longer contracts** through discounts, exclusive perks, or bundled services.

🔒 Optional Services & Their Impact on Churn

Here's where things got really interesting. You analyzed multiple service columns like `OnlineSecurity`, `TechSupport`, and `DeviceProtection` — and saw **clear behavioral patterns**.

Let's break it down:

- **Customers with Online Security** had a churn rate of **only ~15%**, while those without it churned at around **45%**.

- **Tech Support** followed the same trend — customers **not using tech support** were **nearly 3x more likely** to churn.

- The same protective effect was seen with **Online Backup** and **Device Protection** — customers using these features consistently showed **lower churn rates**, often under **20%**, compared to **35–45%** among non-users.

On the flip side, **entertainment services** like `StreamingTV` or `StreamingMovies` showed **weaker correlation**. Whether or not someone used them had **little to no impact** on their decision to leave.

This tells us that **utility-based services** (like support and protection) create stickiness and trust, while **entertainment** doesn't significantly influence loyalty.

📞 Phone Service and Internet Type

- Churn was slightly higher for those who had **multiple lines**, but not by much.

- However, customers using **fiber optic internet** churned more than those on DSL or with no internet service.

  - This could be due to **higher expectations** from fiber services — if quality or support falters even slightly, these customers might switch quickly.

🎯 Final Takeaways & Strategy Suggestions

1. **Target new customers hard in their first year** — churn is heavily concentrated in the early tenure window.

2. **Encourage long-term contracts** through pricing strategy. The difference in churn between monthly vs 2-year contracts is massive.

3. **Focus on senior citizens** with improved support, onboarding, and simplified communication.

4. **Push value-added services** like Online Security, Backup, and Tech Support. These clearly anchor loyalty.

5. Don't waste marketing effort on gender-based segmentation — it doesn't affect churn.

6. Identify customers on fiber plans who aren't using additional support services — they are high-risk for churn.