Project Summary: Telecom Customer Churn Analysis

In this project, I performed an exploratory data analysis (EDA) on a telecom customer dataset to understand customer churn behavior and identify key factors influencing customer attrition.

Data Exploration & Preprocessing

- Loaded the dataset using **Pandas**.

- Performed initial inspection using `.head()` and `.describe()` to understand structure and statistical distribution.

- Converted numerical churn values (0/1) into categorical labels (Yes/No) for better interpretability.

Key Visualizations & Insights

I created multiple insightful charts using **Seaborn** and **Matplotlib** to analyze churn patterns:

1 Overall Churn Distribution

- Used **countplot** and **pie chart** to visualize churn proportion.

- Found that **26.54% of customers have churned**, which indicates a significant retention concern.

2 Churn by Gender

- Created a countplot with churn as hue.

- Observed that churn distribution is relatively similar across genders, suggesting gender is not a strong churn driver.

3 Churn by Senior Citizen Status

- Visualized churn behavior among senior citizens.

- Found that senior citizens show a relatively higher churn tendency compared to non-senior customers.

4 Tenure Analysis

- Used a histogram to analyze customer tenure.

- Key insight:

    - Customers with **short tenure are more likely to churn**.

    - Customers who have stayed longer tend to remain loyal.

5 Contract Type Impact

- Created a countplot based on contract type.

- Major finding:

    - Customers with **month-to-month contracts are more likely to churn**.

    - Customers with **1-year or 2-year contracts show much lower churn rates**.

This suggests long-term contracts improve retention.

6 Payment Method Analysis

- Visualized churn by payment method.

- Identified certain payment methods (especially electronic check users) having higher churn compared to others.

Overall Conclusion

This analysis clearly shows that churn is strongly influenced by:

- Contract type (Month-to-month contracts increase churn risk)

- Customer tenure (New customers churn more)

- Senior citizen status

- Payment method

Through effective visualizations and grouped analysis, this project successfully identifies actionable business insights that can help telecom companies:

- Improve retention strategies

- Encourage long-term contracts

- Target high-risk churn segments