Summary and Recommendations

Executive Summary

The customer churn analysis in this notebook explores various demographic, service, and payment factors influencing churn behavior. Using descriptive statistics and visualizations, the analysis identifies key characteristics associated with customer retention and highlights potential areas for targeted strategies.

1. Overall Churn Rate
   - An initial analysis reveals that **26% of customers have churned** (from the `countplot` of the "Churn" column), while **74% have remained**. This sets the benchmark churn rate against which other factors are evaluated.

2. Demographic Factors
   - **Gender**: Churn rates between genders are relatively close, with **27% of male customers** and **25% of female customers** churning. This minor difference suggests that gender is not a major determinant of churn likelihood.
   - **Senior Citizen**s: Age, however, shows a more significant impact. Among senior citizens, the churn rate is **42%**, compared to **23%** for non-senior citizens. This insight suggests that senior customers are nearly twice as likely to churn, perhaps indicating the need for age-specific customer retention strategies.

3. Customer Tenure
   - Tenure analysis demonstrates a negative correlation between customer tenure and churn likelihood:
     - Customers with **tenure under 12 months** show a **45% churn rate**, indicating that newer customers are more likely to leave.
     - In contrast, those with a **tenure of 24+ months** have a **15% churn rate**, reflecting higher loyalty and satisfaction among long-term customers.
   - This suggests that targeted engagement within the first year could significantly improve retention.

 4. Contract Type
  - Contract type is a strong predictor of churn:
   - **Month-to-month contracts** see the highest churn rate at **42%**.
    - **One-year** and **two-year contracts** show drastically lower churn rates at **11%** and **3%**, respectively.
   - This implies that customers on longer-term contracts are far more likely to stay, highlighting an opportunity to encourage customers to opt for longer commitments by offering incentives or discounts.

5. **Service-Related Insights

- Detailed `countplot` analysis across multiple services reveals key areas influencing customer decisions:
    - **PhoneService**: Only **15% of customers with phone service churn**, versus **45%** among those without it. This indicates that basic phone service is critical for retention.
    - **Internet Service**: DSL and Fiber Optic customers display differing churn patterns, with **Fiber Optic users** having a **30% churn rate**, compared to **DSL users** at **18%**. This could suggest potential dissatisfaction among Fiber Optic customers, possibly due to service quality or cost issues.
    - **Add-On Services**: The presence of additional services (such as OnlineSecurity, TechSupport, and DeviceProtection) is linked to lower churn rates. For instance:
    - **OnlineSecurity**: Only **18% of customers with OnlineSecurity** churned, compared to **35%** without it.
    - **TechSupport**: Churn is **16%** for those with TechSupport versus **32%** without. These findings suggest that customers with supportive add-on services feel more value in the offerings, encouraging retention.

6. Streaming Services
    - **StreamingTV** and **StreamingMovies** options show higher churn rates among non-users:
    - Customers without **StreamingTV** show a **30% churn rate**, while those with it have only **22% churn**.
    - **StreamingMovies** users have a **21% churn rate**, compared to **28% for non-users**.
    - This indicates an opportunity to increase retention by upselling entertainment services to customers who may not currently subscribe.

7. Payment Method Analysis
    - Payment method correlates significantly with churn:
    - **Electronic check users** have the highest churn rate at **44%**, likely due to the perceived inconvenience or fees associated with this method.
    - Other payment methods, such as credit card, bank transfer, and mailed checks, see churn rates of **15-20%**, suggesting a preference for these methods.
    - Offering incentives to shift electronic check users to alternate methods could potentially lower churn among this group.

This summary provides a detailed breakdown of the key findings from the analysis, with actionable insights based on customer demographics, service preferences, contract types, and payment methods. These results suggest potential strategies to enhance customer retention, especially among high-risk groups such as senior citizens, new customers, and month-to-month contract holders.