Summary and Recommendations

The analysis investigates customer churn in the telecommunications sector, identifying key factors contributing to customer dissatisfaction and providing actionable insights to reduce churn rates. The focus is on demographic, service-related, and financial factors.

Dataset Overview:

- **Dataset Size:** 7,043 customers with 21 features.
- **Key Features:**
  - **Demographics:** Gender, senior citizenship, dependents.
  - **Services:** Internet service type, phone service, streaming services.
  - **Financials:** Monthly charges, total charges, and payment methods.
- **Target Variable:** Churn (Yes/No) indicating whether the customer left the company.

Key Findings and Insights:

1. **Churn Distribution:**
   - **Overall Churn Rate:** Approximately **26.5%** of customers have churned, while **73.5%** remain loyal.
   - Visual analysis reveals that churn is significantly influenced by factors such as tenure, contract type, and payment method.
2. **Contract Type and Churn:**
   - **Month-to-Month Contracts:** Account for **42.3%** of the total customers, but they represent **75% of churned customers.**
   - **Yearly Contracts:** Customers with one or two-year contracts show significantly lower churn rates, contributing to only **25% of churned customers.**
   - **Insight:** Long-term contracts enhance customer retention.
3. **Internet Service and Churn:**
   - Customers with **fiber optic internet** services contribute to nearly **70%** of churned customers, even though they make up about **50%** of the total customer base.
   - DSL users have a churn rate of **15%**, while those with no internet service have the lowest churn at **5%.**
4. **Payment Methods:**
   - Customers using **electronic checks** for payments have the highest churn rate at **40%**, while other payment methods like bank transfers and credit cards show lower churn rates (10-15%).
   - **Insight:** Payment method dissatisfaction is a potential driver of churn.
5. **Customer Tenure and Churn:**
   - Customers with a tenure of **less than 12 months** have a churn rate exceeding **50%**.
   - Long-term customers (tenure > 36 months) contribute to only **5% of churned customers**, highlighting the importance of customer loyalty programs.
6. **Demographics and Churn:**

- ○ Gender has minimal impact, with nearly equal churn rates for males and females (**27% vs. 26%**).
- ○ Senior citizens have a **30% churn rate**, slightly higher than non-senior citizens.

Visual Insights:

The following visualizations were created to support the analysis:

- **Bar Charts:** Detailed comparisons of churn rates by contract type, internet service, and payment method.
- **Heatmaps:** Correlation between numeric variables like monthly charges, tenure, and churn, showing strong negative correlations with tenure.
- **Histograms and Pie Charts:** Proportions and distributions of churn rates for categorical and numerical features.

Recommendations:

1. **Improve Retention for Month-to-Month Customers:**
   - ○ Offer incentives like discounts or loyalty points for switching to yearly contracts.
   - ○ Enhance customer engagement programs targeting new customers within the first 12 months of service.
2. **Address Fiber Optic Service Issues:**
   - ○ Investigate customer complaints related to fiber optic services to identify root causes of dissatisfaction.
   - ○ Offer bundled services or discounts to improve perceived value.
3. **Simplify and Improve Payment Methods:**
   - ○ Introduce user-friendly payment options, such as mobile wallets or auto-pay systems, to reduce churn among customers using electronic checks.
   - ○ Conduct a survey to identify specific payment-related pain points.
4. **Loyalty Programs for Long-Term Customers:**
   - ○ Reward long-term customers with exclusive benefits to reinforce loyalty and encourage them to remain with the service.
5. **Personalized Services for Senior Citizens:**
   - ○ Provide tailored service plans and support options for senior citizens to address their specific needs.