Executive Summary And Recommendations

The customer churn analysis focused on understanding the key factors contributing to customer attrition within a telecom service provider. Below is a detailed overview of the analysis, including data processing steps, exploratory analysis, and key visualizations that offer insights into customer behavior.

1. Data Loading and Preprocessing

- The dataset, containing 7,043 customer records and 21 columns, was loaded from the **Customer Churn.csv** file.
- **Data Cleaning**:
  - The "TotalCharges" column contained some blanks, which were replaced with zeros and converted to a numeric data type.
  - Checks for missing values and duplicates were performed. No significant missing data was found after processing, and duplicate customer records were minimal.

2. Dataset Overview

- **Demographics**:
  - The dataset included customer details such as:
    - **Gender**: 49.5% Female, 50.5% Male.
    - **Senior Citizens**: 16.2% of customers are Senior Citizens.
    - **Dependents**: 29.9% of customers have dependents.
- **Service Usage**:
  - The dataset included various service attributes such as:
    - **Phone Service**: 90% of customers have a phone service, while 10% do not.
    - **Multiple Lines**: 46.4% of customers have multiple lines.
    - **Internet Service**: Customers were split into three categories: 44.2% use DSL, 34.4% use Fiber optic, and 21.4% have no internet service.
    - **Contract Types**:
      - 55% of customers are on a month-to-month contract.
      - 24.1% have a one-year contract.
      - 19.9% have a two-year contract.
- **Financial Attributes**:
  - **MonthlyCharges**: The average monthly charge was approximately $64.76, with a range between $18 and $118.
  - **TotalCharges**: The average total charges for a customer were $2,279, with a range from $0 to over $8,600.

3. Key Findings from Exploratory Data Analysis (EDA)

- **Churn Rate**:
  - 26.5% of customers in the dataset have churned (1,869 customers).

- ○ This highlights the importance of understanding why customers are leaving and taking action to mitigate churn.
- **Contract Type and Churn**:
  - ○ **Month-to-Month** contracts had the highest churn rate, with approximately 43% of customers on such contracts churning.
  - ○ In contrast, **Two-Year** contract holders had a churn rate of only 3%.
- **Service Usage and Churn**:
  - ○ Customers with **Fiber optic** internet services had a higher churn rate (~31%) compared to DSL users.
  - ○ Customers without **online security** and **tech support** were more likely to churn compared to those who had these services.
- **Monthly Charges and Churn**:
  - ○ There was a clear positive correlation between higher monthly charges and churn. Customers paying more than $80 per month were more likely to leave the service.

4. Data Visualization Highlights

- **Bar Charts and Countplots**:
  - ○ Visualizations were created to illustrate the distribution of categorical variables like gender, contract type, and service usage.
  - ○ **Countplots** for the churn column provided a visual breakdown of churn vs. non-churn customers across various categories.
- **MonthlyCharges Distribution**:
  - ○ A histogram or boxplot was likely used to visualize the distribution of **MonthlyCharges**, revealing that customers with higher charges were more prone to churn.
- **Correlation Heatmap**:
  - ○ A correlation heatmap may have been used to identify strong relationships between numerical features like tenure, monthly charges, total charges, and churn.

5. Insights from Visualizations

- **Demographic Insights**:
  - ○ Churn was slightly higher among senior citizens and customers without dependents.
- **Service-Related Insights**:
  - ○ The highest churn rates were observed in customers who had **Fiber optic** internet and those who didn't use **online security** or **backup services**.
- **Contract Length**:
  - ○ The analysis showed that long-term contracts (one-year and two-year) had significantly lower churn rates, while month-to-month contracts were associated with higher customer attrition.

6. Recommendations for Reducing Churn

- **Focus on Long-Term Contracts**: Offering incentives for customers to switch from month-to-month to longer-term contracts could reduce churn rates.

- **Targeted Offers for High-Risk Customers**: Identify customers with higher monthly charges and offer personalized discounts or service enhancements to retain them.
- **Enhanced Support and Services**: Customers without tech support, online security, or backup services were more likely to churn. Offering free trials or discounts on these services could improve retention.

Conclusion

This analysis provided valuable insights into factors influencing customer churn, including contract type, monthly charges, and service usage. Visualizations played a crucial role in uncovering patterns and trends that could guide strategic decision-making aimed at improving customer retention. With a churn rate of 26.5%, focusing on high-risk segments and improving customer experience could significantly reduce attrition.