Executive Summary and Recommendations

Objective:

The primary objective of this exploratory data analysis (EDA) is to identify key factors influencing customer churn and provide actionable insights to improve customer retention. Through comprehensive data cleaning, visualization, and analysis, this project aims to highlight patterns in customer behavior, service usage, and pricing to assist in reducing churn rates and enhancing customer satisfaction.

Detailed Executive Summary of Analysis:

1. Data Cleaning and Preprocessing:

- **Objective**: Ensure data integrity and handle missing or erroneous values.
- Actions: Missing values in the `TotalCharges` column were replaced with 0 for new customers (with tenure of 0), and appropriate data types were assigned to key fields for better analysis.

2. Key Customer Demographics and Service Usage:

- **Objective**: Understand how different service subscriptions impact customer retention.
- Insights:
    - **Tenure**: Customers with shorter tenures churn more frequently, indicating that early engagement is critical. Long-term customers (higher tenure) are more stable.
    - **Service Usage**: Customers not subscribing to services like `OnlineSecurity`, `TechSupport`, and `StreamingTV` show higher churn rates. Providing bundled services could increase retention.
    - **Churn by Internet Service Type**: Fiber-optic internet users churn at significantly higher rates than DSL users, pointing to potential issues in service quality or cost that need addressing.

3. Contract Type and Billing Preferences:

- **Objective**: Identify which contract and billing models are most associated with churn.
- Insights:
    - **Month-to-Month Contracts**: Customers with month-to-month contracts churn more often compared to those with longer-term contracts. This suggests offering incentives to shift customers toward annual or multi-year contracts.
    - **Paperless Billing**: Paperless billing is associated with higher churn, possibly due to dissatisfaction among tech-savvy customers or poor communication. This

could be addressed by improving digital engagement or offering personalized billing experiences.

4. Financial Analysis (Monthly and Total Charges):

- **Objective**: Explore how pricing impacts customer churn.
- Insights:
    - **Monthly Charges**: Higher monthly charges correlate with increased churn rates. This indicates pricing sensitivity, and offering discounts or added value for high-paying customers could reduce churn.
    - **Total Charges**: Higher total lifetime charges (indicating longer tenure) stabilize churn, suggesting that increasing customer lifetime value through long-term engagement could be a valuable retention strategy.

5. Churn by Service Availability:

- **Objective**: Analyze the impact of specific services on churn rates.
- Insights:
    - Customers without key services like `PhoneService`, `MultipleLines`, `OnlineSecurity`, `DeviceProtection`, and `TechSupport` are more likely to churn. Providing attractive packages or upselling these services can lower churn.

6. Technical Support and Service Reliability:

- **Objective**: Assess the role of technical support in customer retention.
- Insights:
    - Customers lacking `TechSupport` experience higher churn. Proactive technical assistance could help reduce customer frustration, leading to better retention rates.

Conclusion and Recommendations:

1. **Service Bundling and Upselling**:
    - Objective: Reduce churn by enhancing customer engagement through bundled services.
    - Recommendation: Encourage customers to adopt multiple services by offering discounted bundles (e.g., streaming + security + backup). This could significantly reduce churn among customers with fewer subscriptions.
2. **Improve Fiber-Optic Service Quality**:
    - Objective: Address the high churn rates among fiber-optic users.
    - Recommendation: Investigate and resolve underlying issues such as performance, cost, or support for fiber-optic users, as this service shows a higher risk of churn.

3. **Incentivize Long-Term Contracts**:
    - ○ Objective: Decrease churn by reducing the risk associated with month-to-month contracts.
    - ○ Recommendation: Offer discounts, bonuses, or exclusive features to customers who commit to one-year or two-year contracts, ensuring a more stable customer base.
4. **Address Price Sensitivity**:
    - ○ Objective: Mitigate churn among high-paying customers.
    - ○ Recommendation: Introduce tailored offers or loyalty programs for customers with higher monthly charges to reduce pricing dissatisfaction and reward long-term value.
5. **Enhance Technical Support and Communication**:
    - ○ Objective: Reduce churn by improving customer support.
    - ○ Recommendation: Invest in proactive and responsive technical support services. Additionally, focus on improving digital communication and experience for paperless billing users.