Executive Summary: Telecom Customer Churn Analysis

This project focused on an in-depth analysis of customer churn in a telecom company, leveraging a dataset of **7,043 customers** to identify patterns and drivers behind churn behavior. The primary objective was to uncover actionable insights that could aid in improving customer retention strategies and reducing churn rates.

Key Findings:

- **Churn Rate**: Approximately **26**% of customers in the dataset had churned. This represents a significant portion of the customer base, with churn rates varying across different services and customer demographics.

- **Tenure Impact**: Customers in their initial months of service had the highest churn rate. As tenure increased, churn rates dropped significantly, emphasizing the need for early-stage customer retention strategies.

- **Service Subscriptions**: Customers lacking additional services such as **OnlineSecurity**, **TechSupport**, and **DeviceProtection** were more likely to churn. Offering bundled services or improving the adoption of these services could help reduce churn.

- **Internet Service Type**: **Fiber optic** internet users exhibited higher churn rates compared to DSL users, indicating potential dissatisfaction or stronger competition in the fiber optic market. This suggests that focusing on service quality improvements for fiber optic customers could be a key area to target.

- **Payment Methods**: Customers using electronic check as a payment method had a noticeably higher churn rate compared to other payment methods, suggesting a need for smoother payment processes or incentivizing alternative payment methods to reduce churn.

Methodology:

The analysis was conducted using Python with key libraries such as **Pandas** for data manipulation, **Seaborn** and **Matplotlib** for data visualization, and exploratory data analysis (EDA) techniques to clean, process, and interpret the data. Special attention was given to data quality issues, including incorrect data types in the 'TotalCharges' column due to missing values, which were addressed to enable accurate analysis.

Conclusion:

This analysis provides critical insights into factors driving customer churn in the telecom industry. By focusing on improving service adoption, addressing dissatisfaction with fiber optic services, and optimizing payment processes, telecom companies can implement targeted strategies to improve customer retention and reduce churn rates.

This project highlights my ability to apply data analysis techniques to real-world business problems, offering actionable recommendations to drive business value.

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