CUSTOMER CHURN ANALYSIS

Analyzing customer churn for the company's services and finding key insights using Pandas, NumPy, Matplotlib, and Seaborn.

BY - KARTIK

OBJECTIVE OF THIS ANALYSIS?

The objective of this project was to perform a comprehensive churn analysis of the company's services with the aim to :

- Understand customer behavior patterns and identify key characteristics of customers who are more likely to leave.
- Quantify the churn rate and evaluate how different factors such as tenure, service usage, pricing, and customer demographics influence churn.

- Develop data-driven models to predict churn probability and highlight the most significant predictors.
- Provide actionable business insights that can help the company enhance retention strategies, improve service offerings, and reduce customer attrition.
- Support strategic decision-making by delivering visual dashboards and reports that make the analysis accessible to both technical and non-technical stakeholders.

METHODOLOGY USED IN ANALYSIS

Data Import & Preparation

- Imported dataset from GitHub and inspected data types, missing values, and inconsistencies.
- Corrected issues such as blank entries in the Total Charges column and ensured proper data formatting.

Exploratory Data Analysis (EDA)

- Used Pandas, NumPy, Matplotlib, and Seaborn for data manipulation and visualization.
- Conducted univariate, bivariate, and multivariate analysis to understand churn distribution and correlations.

Key Analytical Steps

- Demographic Analysis: Examined churn across gender, senior citizens, and partner/dependents.
- Service Usage Analysis: Evaluated the impact of internet service, phone service, and additional subscriptions (e.g., streaming, online security).

- Contract & Payment Analysis: Assessed churn behavior based on contract type, payment method, and monthly/total charges.
- Tenure Segmentation: Analyzed churn rate across different tenure groups to check loyalty trends.

MY KEY FINDINGS

- Demographics: Senior citizens showed higher churn compared to younger customers. Gender did not have a significant impact on churn.
- Service Influence: Customers using fiber-optic internet had a higher churn rate compared to DSL users. Additional services like online security and tech support were associated with lower churn rates, suggesting value-added services help retain customers

- Contract Type: Month-to-month contracts had the highest churn, while one-year and two-year contracts significantly reduced churn, highlighting the importance of long-term commitments.
- Payment Method: Customers using electronic checks were more likely to churn compared to those paying via credit cards or bank transfers.
- Tenure: New customers (low tenure) had higher churn probability, whereas long-term customers were more loyal.
- Charges: Customers with higher monthly charges tended to churn more, suggesting price sensitivity.
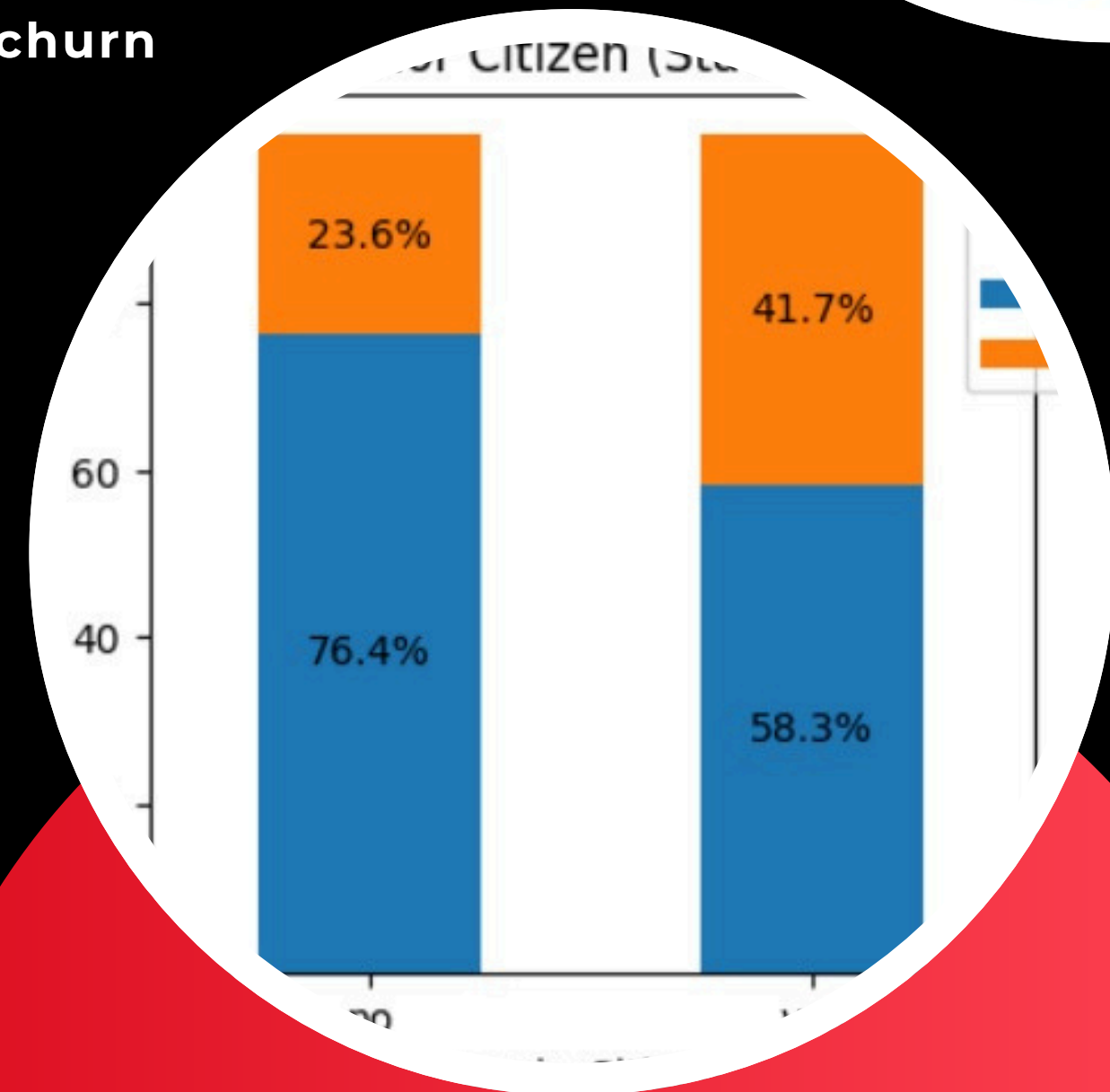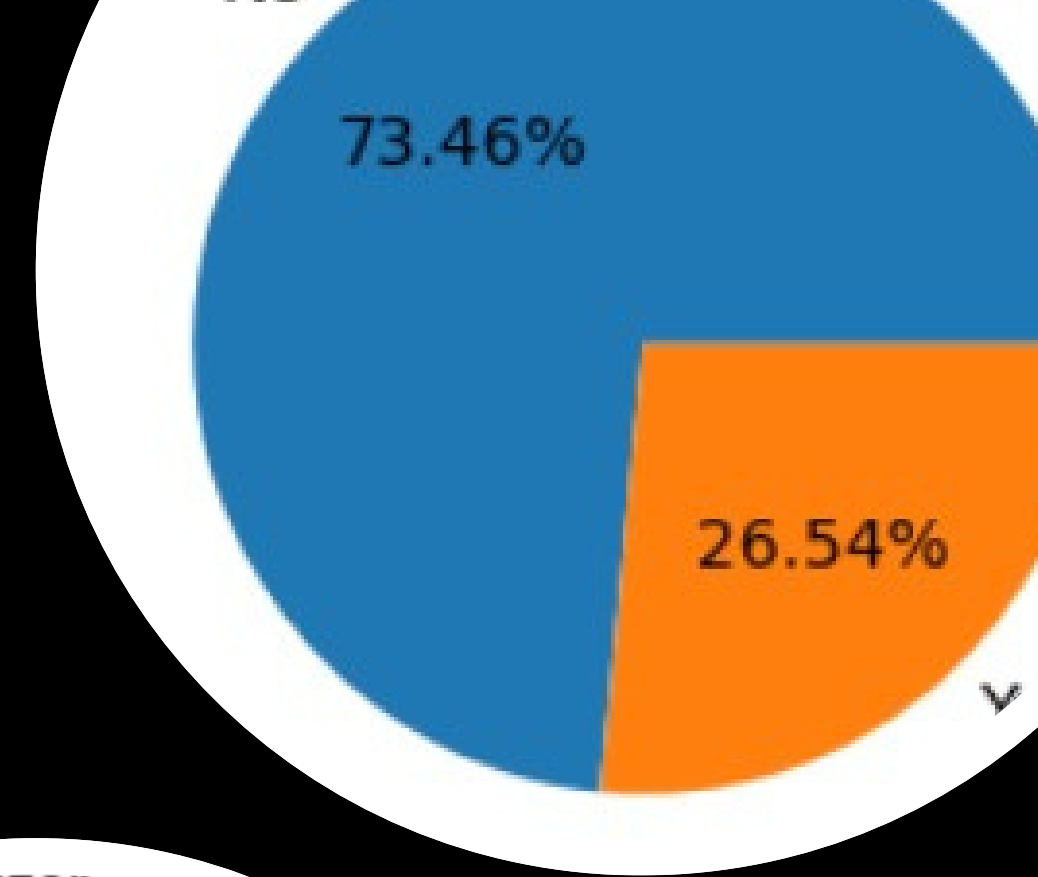
BUSINESS INSIGHTS & RECOMMENDATIONS

- Promote Long-Term Contracts: Encourage customers to move from month-to-month to annual contracts with incentives.
- Improve Fiber-Optic Service Quality: Since fiber-optic users have higher churn, service reliability should be prioritized.

- Value-Added Services: Bundling services like online security and tech support reduces churn and should be promoted.
- Customer Retention Programs: Target new customers (low tenure) with loyalty rewards, discounts, or personalized onboarding support.

- Reduce Payment Friction: Motivate customers to use auto-pay, credit cards, or bank transfers instead of electronic checks.
- Price Strategy: Monitor high-charge customers and offer personalized discounts or bundled packages to reduce churn due to cost sensitivity.

CONCLUSION

Churned Customers by Payment Method
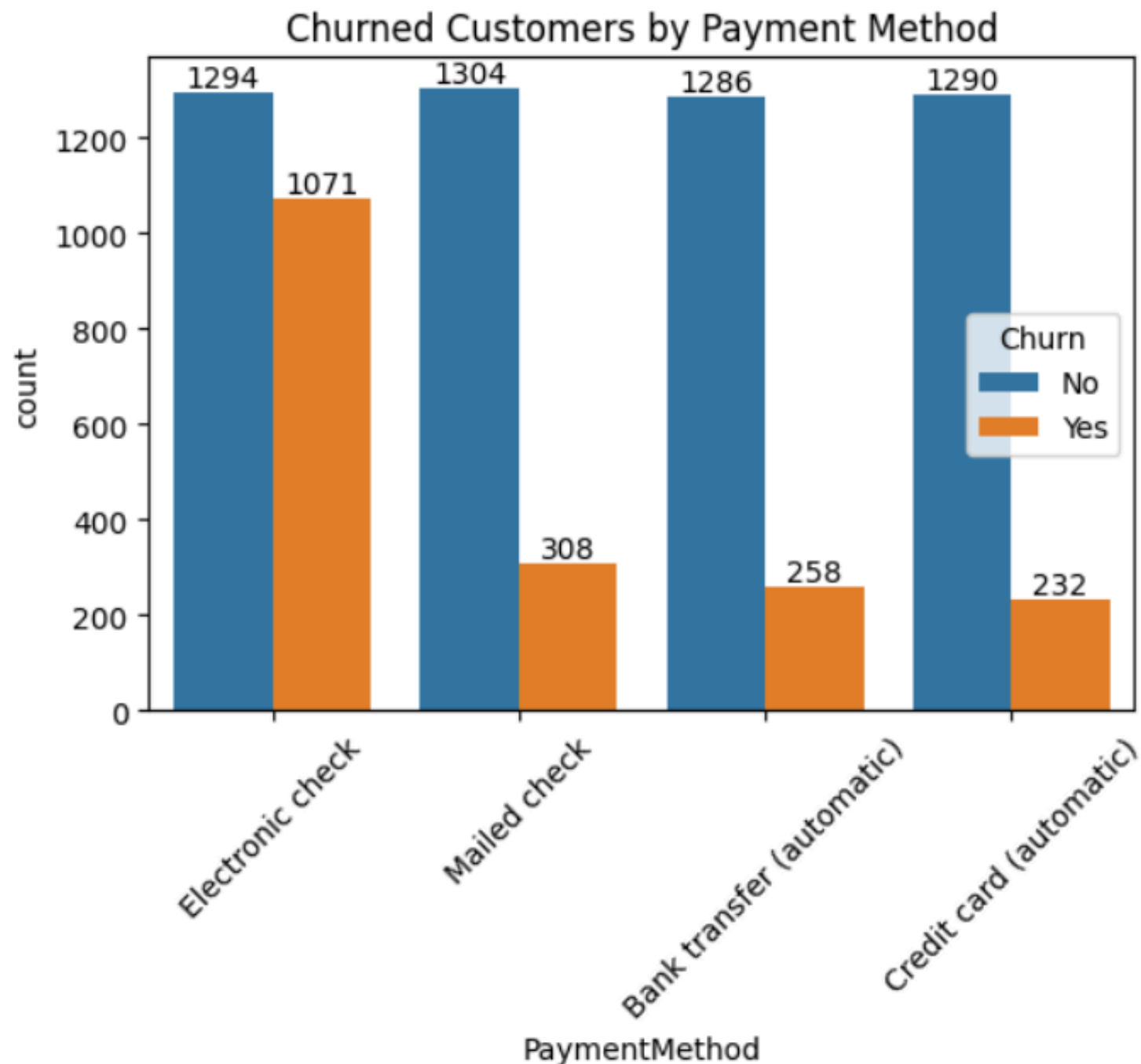
Through exploratory data analysis and visualization, this churn analysis revealed that contract type, tenure, payment method, service quality, and monthly charges are the most critical factors driving churn. Implementing targeted strategies based on these findings can significantly improve retention, reduce revenue leakage, and strengthen long-term customer relationships.

customer is likely to churn when he is using electronic check as a payment method.

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