Predicting Customer Churn for SyriaTel

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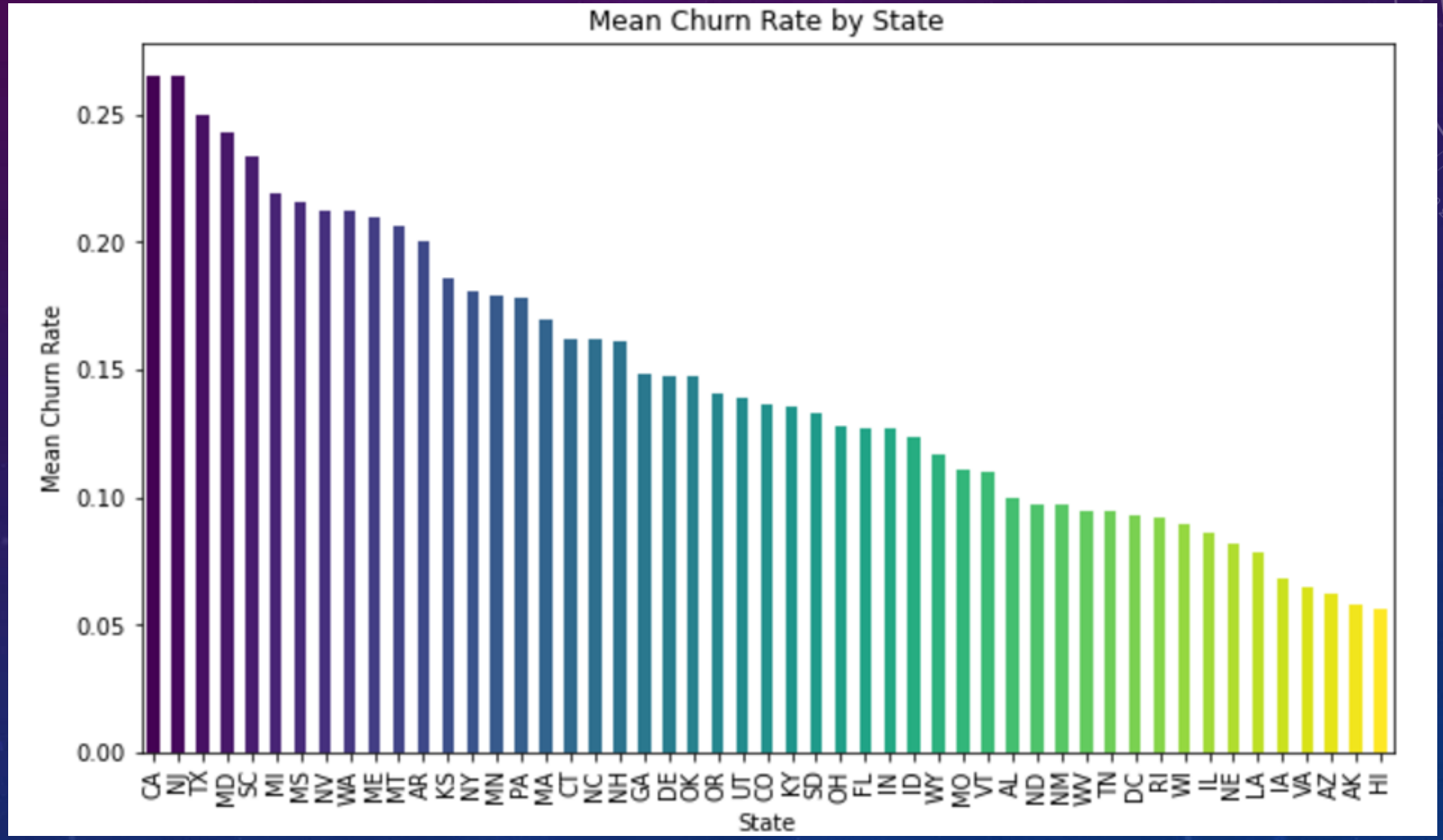
Introduction

- Objective: Analyze customer data for churn patterns.
- Focus: Identify key factors influencing churn.
- Methods: Data visualization and analysis techniques.
- Features: Usage metrics, service plans, demographics.
- Goal: Develop strategies to improve customer retention.
- Outcome: Data-driven insights for decision-making.
- Importance: Enhance understanding of customer behavior.

Data Exploration

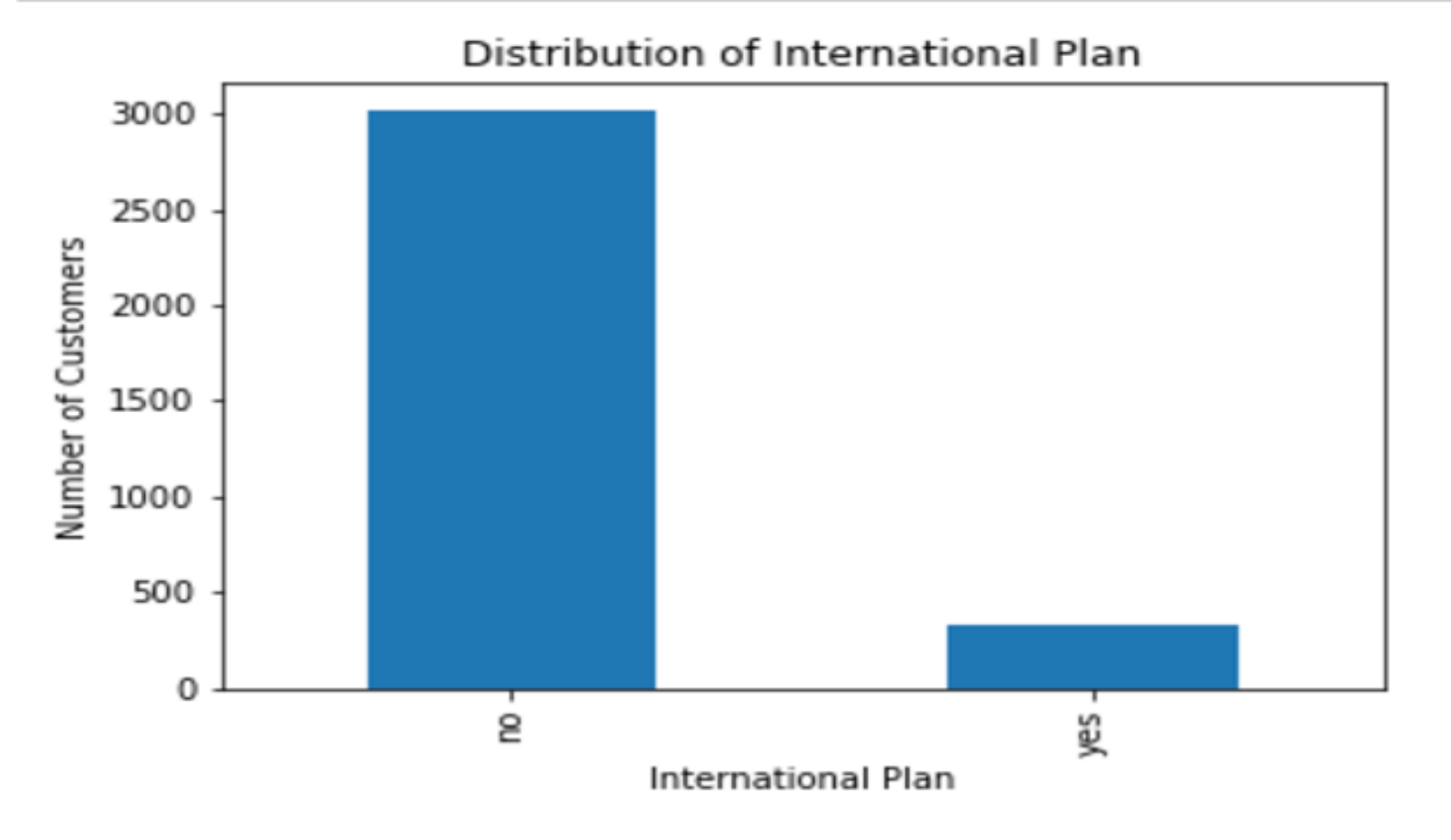
- **State Data**: No unexpected values.
- **Binary Features**: Convert international_plan, voice_mail_plan to boolean.
- **Area Codes**: Analyze churn by area code.
- **Phone Number**: Likely irrelevant, may drop.
- **Account Length**: Represents days with the company.
- **Voicemail Messages**: Keep, potential churn indicator.
- **Service Calls**: No abnormal values observed.

Visualizations

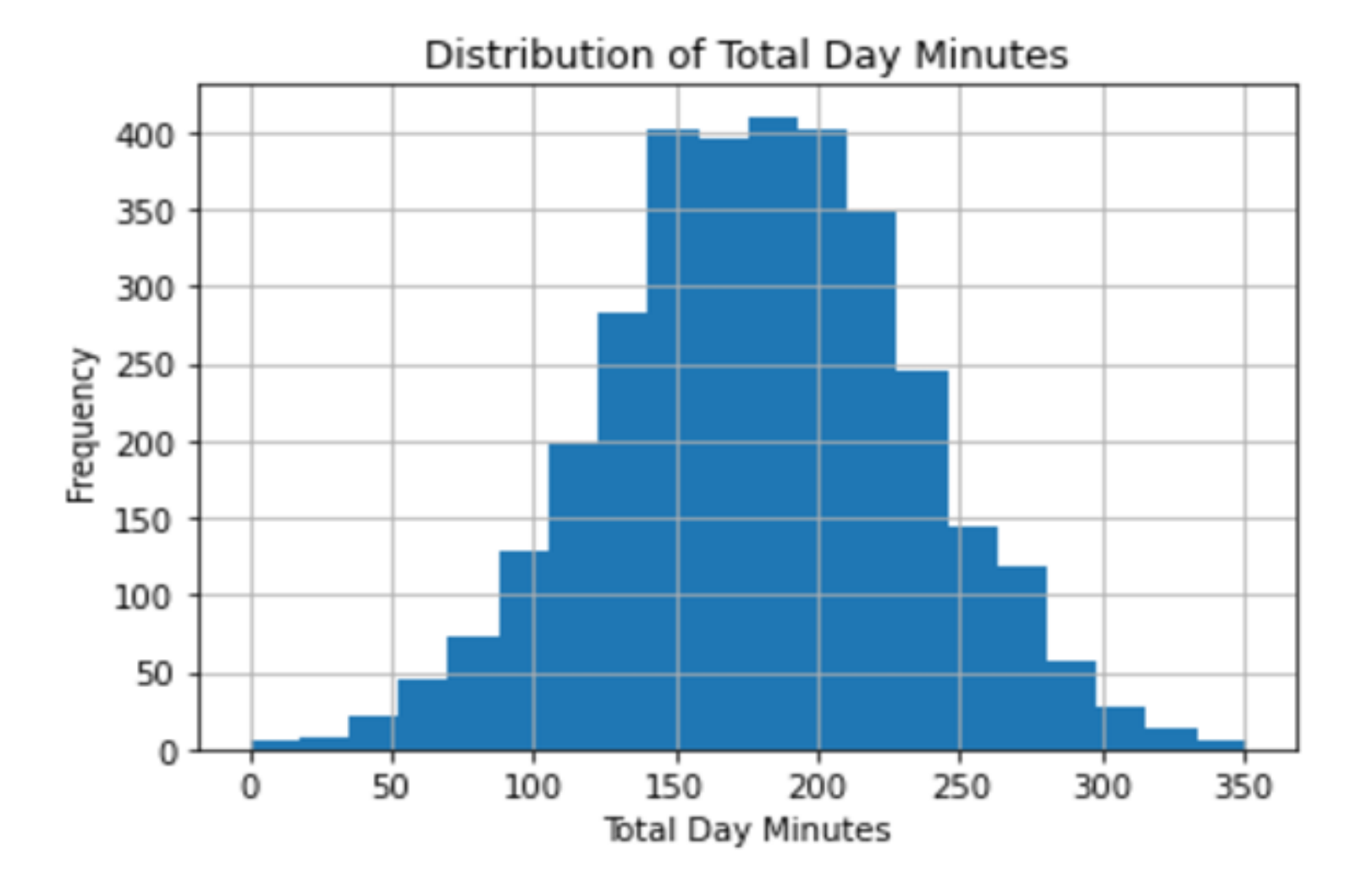


Number of Customers Per Area Code - Split by Churn

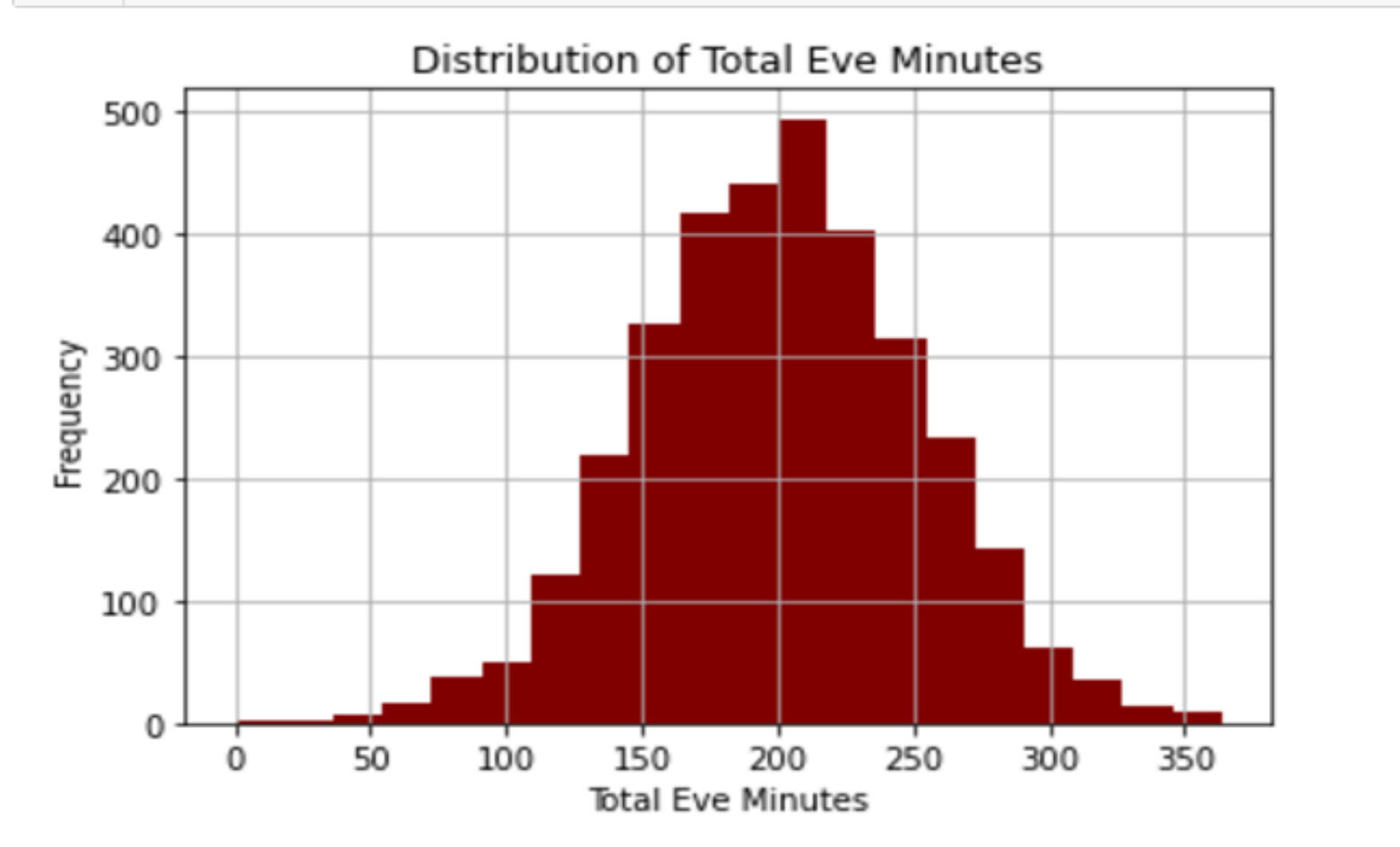
Distribution of International Plan



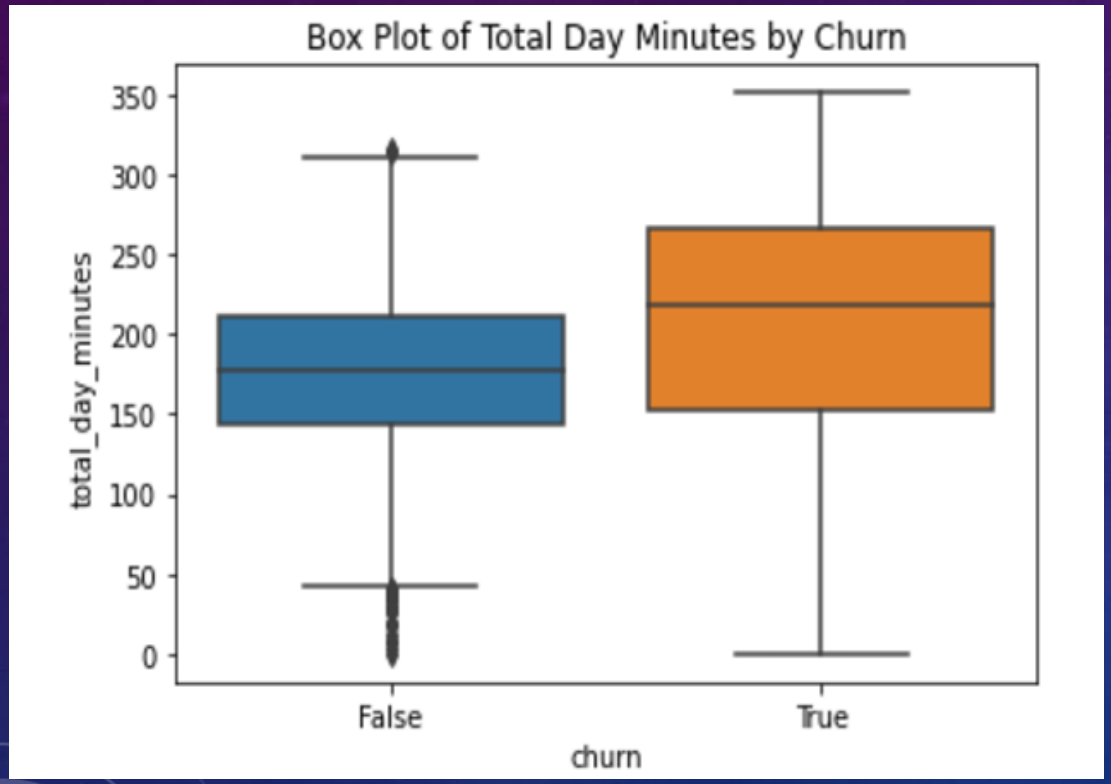
Distribution of Total Day Minutes

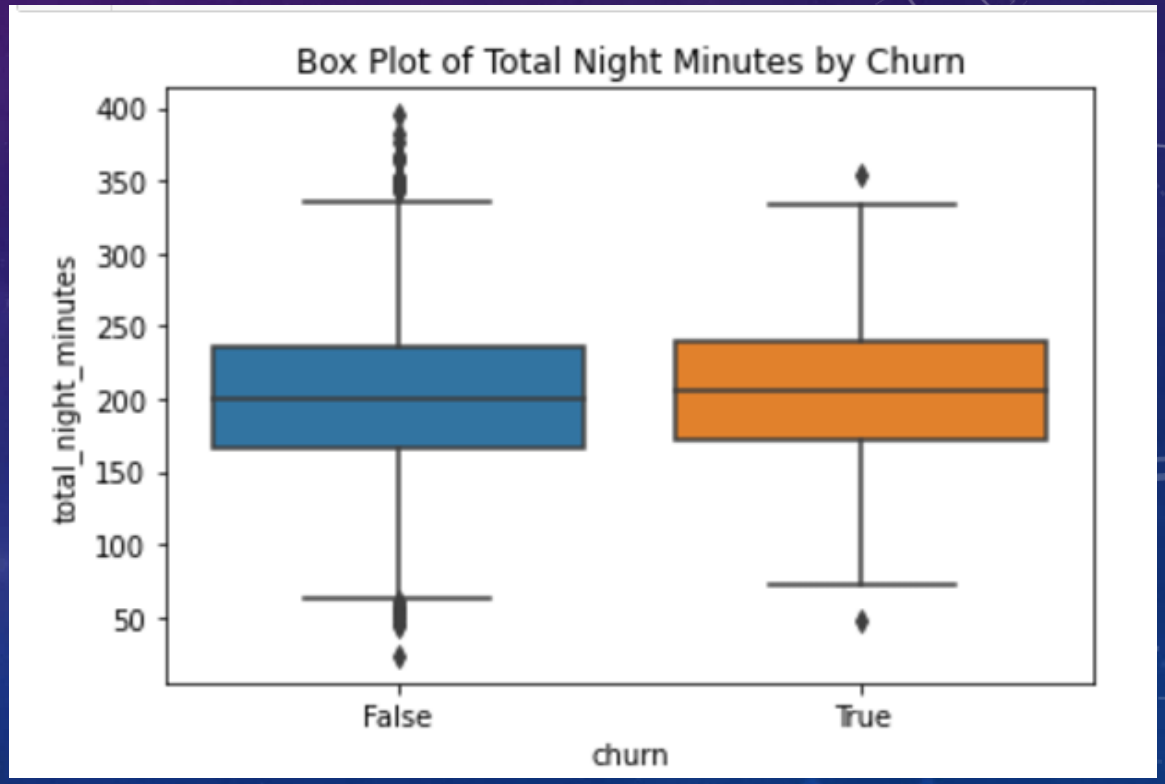


Distribution of Total Eve Minutes

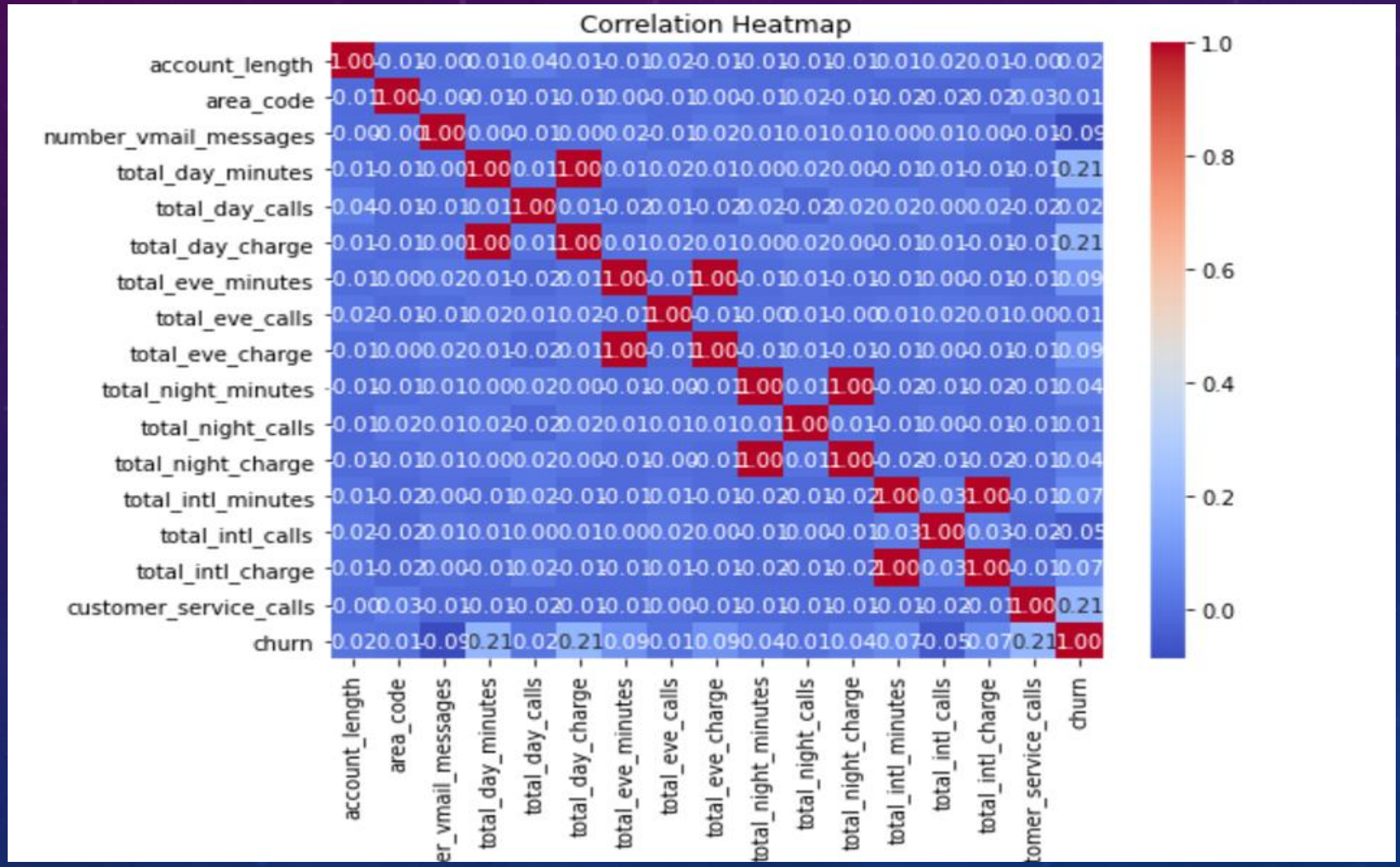


Box Plot of Total Day Minutes by Churn & Box Plot of Total Night Minutes by Churn

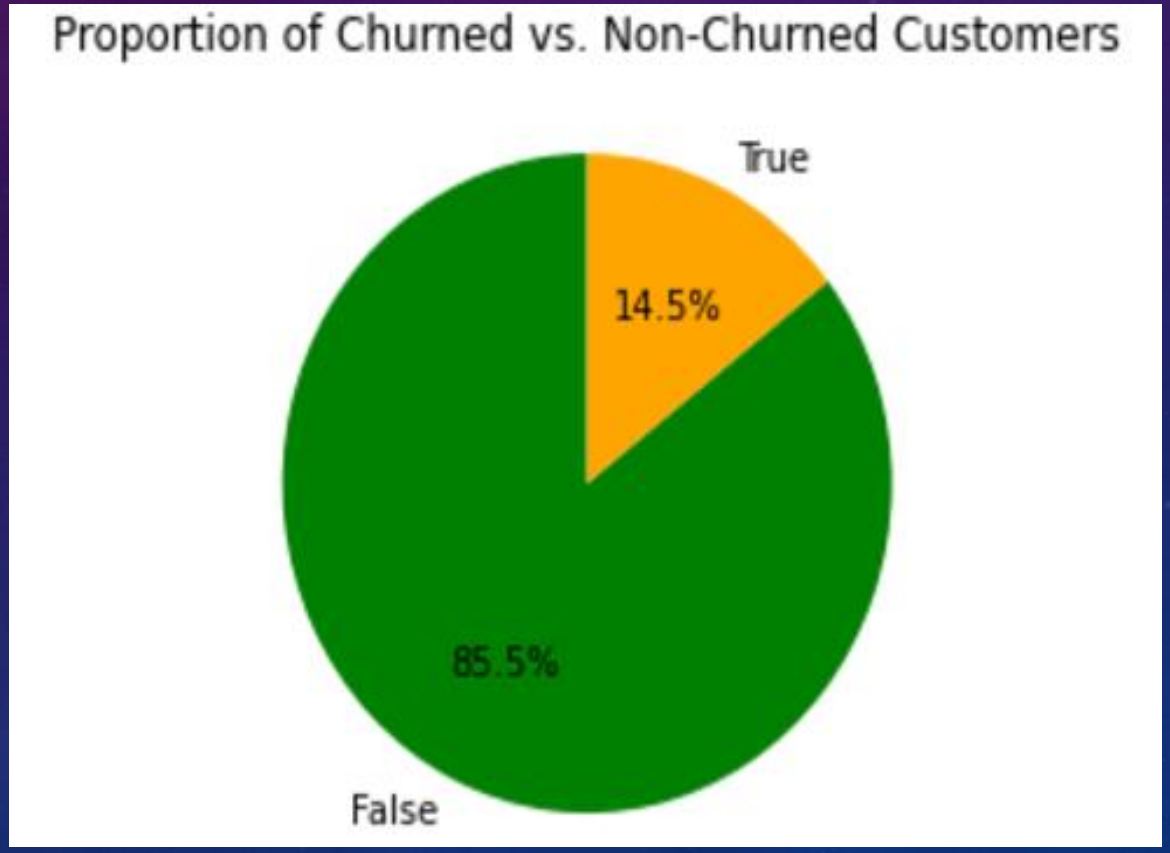




Correlation Heatmap



Proportion of Churned vs. Non-Churned Customers



Analysis

- **Key Factors Identified**:
  - Analyzed usage metrics, service plans, and demographics.
  - Identified patterns leading to customer churn.
- **Visual Insights**:
  - Highlighted areas of high churn.
  - Pinpointed specific regions and customer segments for targeted interventions.
- **Correlation Analysis**:
  - Understood relationships between features and churn.
  - Guided feature selection for predictive modeling.
- **Data Preparation**:
  - Converted binary features.
  - Assessed the relevance of different columns.
- **Modeling**:
  - Implemented various machine learning models.
  - Evaluated model performance using accuracy, precision, and recall metrics.
  - Selected the best-performing model for churn prediction.

Conclusions

- **Predictive Models**: Built to identify at-risk customers for SyriaTel.
- **Best Model**: Decision Tree model with 93% accuracy.
- **Data Enhancement**: Feature engineering and EDA improved dataset quality.
- **Outcome**: Provides actionable insights for improving customer retention.

Recommendations

To enhance customer satisfaction and reduce churn, stakeholders should:

- Implement targeted marketing campaigns and personalized offers for at-risk customers.
- Offer proactive support and improved training for customer service representatives which are crucial in assisting customers.
- Gather and act on customer feedback to drive product and service improvements.
- Increase customer engagement through personalized communication and maintaining transparency in billing to build trust and satisfaction.
- Regular monitoring and updating the churn prediction model to ensure its accuracy, allowing for data-driven decisions. Foster cross-departmental collaboration and exploring partnerships to add value and strengthen customer retention efforts.

Thank You!

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