CUSTOMER CHURN PREDICTION

Presentation by Kennedy Owino

Contents

BUSINESS PROBLEM

- Telecommunications companies incur substantial financial losses from customer churn, impacting revenue and profitability.
- Without understanding churn patterns and factors, businesses struggle to retain valuable customers.
- The business problem focuses on the urgent need to accurately identify and predict customer churn to mitigate revenue loss and optimize marketing strategies.

BUSINESS UNDERSTANDING

- In the competitive telecommunications industry, customer retention is essential for long-term profitability and market expansion.
- Predicting and preventing customer churn demands a thorough comprehension of customer behaviour, preferences, and dissatisfaction catalysts.
- Insights from ML model and analytics empower businesses to identify at-risk customers and customize retention strategies effectively.

Target Audience

01

Telecom Executives

02

Marketing and Sales Teams

03

Customer Service Representatives

04

Customers

PROJECT OBJECTIVES

01

Develop a predictive model using historical data and relevant features to identify customers at risk of churn.

02

Identify significant factors influencing customer churn.

03

Provide actionable insights to decision-makers for proactive churn management and resource allocation.

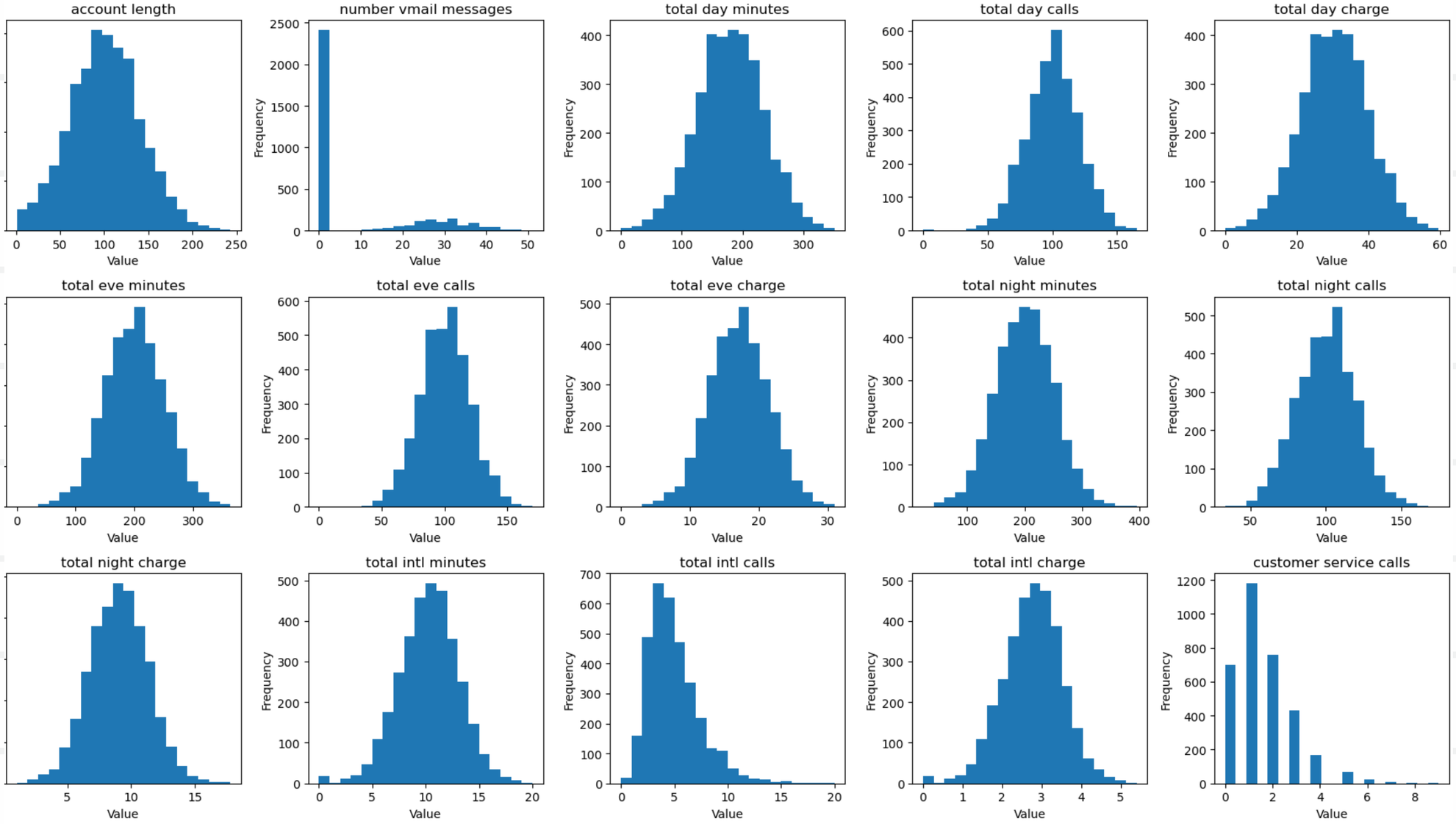
DATA UNDERSTANDING

- The dataset utilized in this project is sourced from SyriaTel published on Kaggle.

Sample features:

- Customers' state of residence
- Account duration
- International plan and voicemail plan
- Number of voicemails received.
- Charges incurred during the day, evening, and night periods.

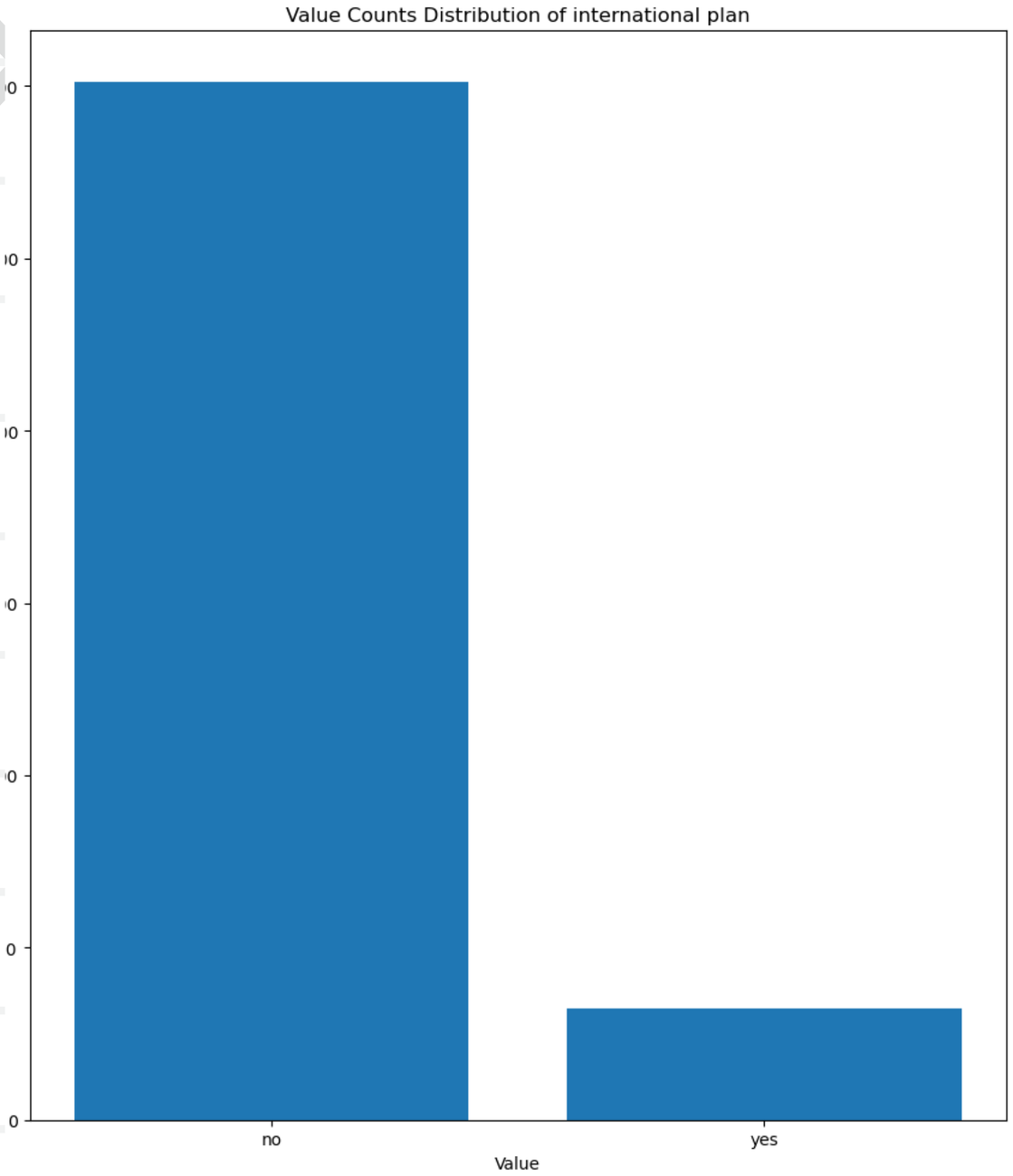
HISTOGRAM OF NUMERICAL FEATURES

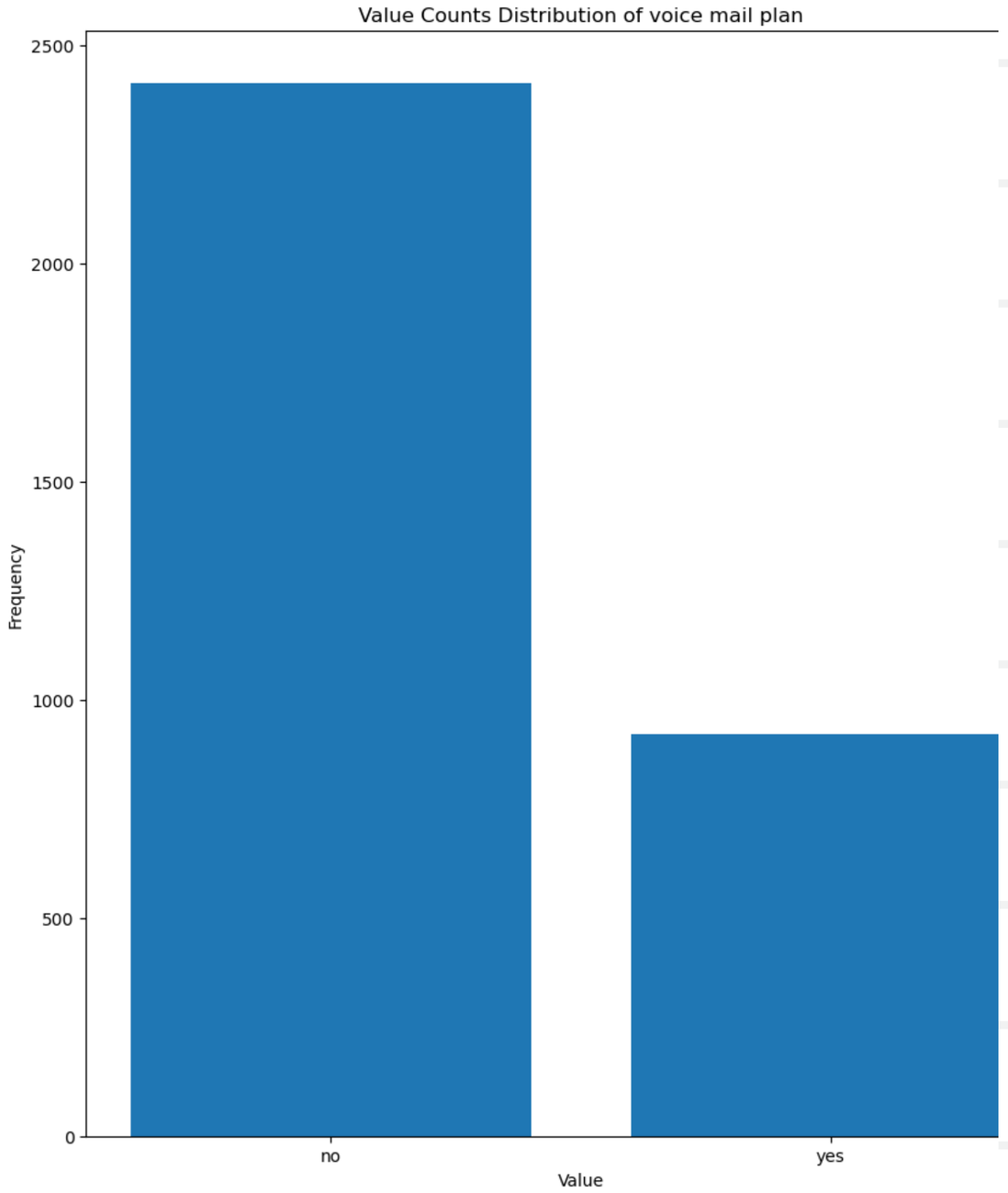


INSIGHT

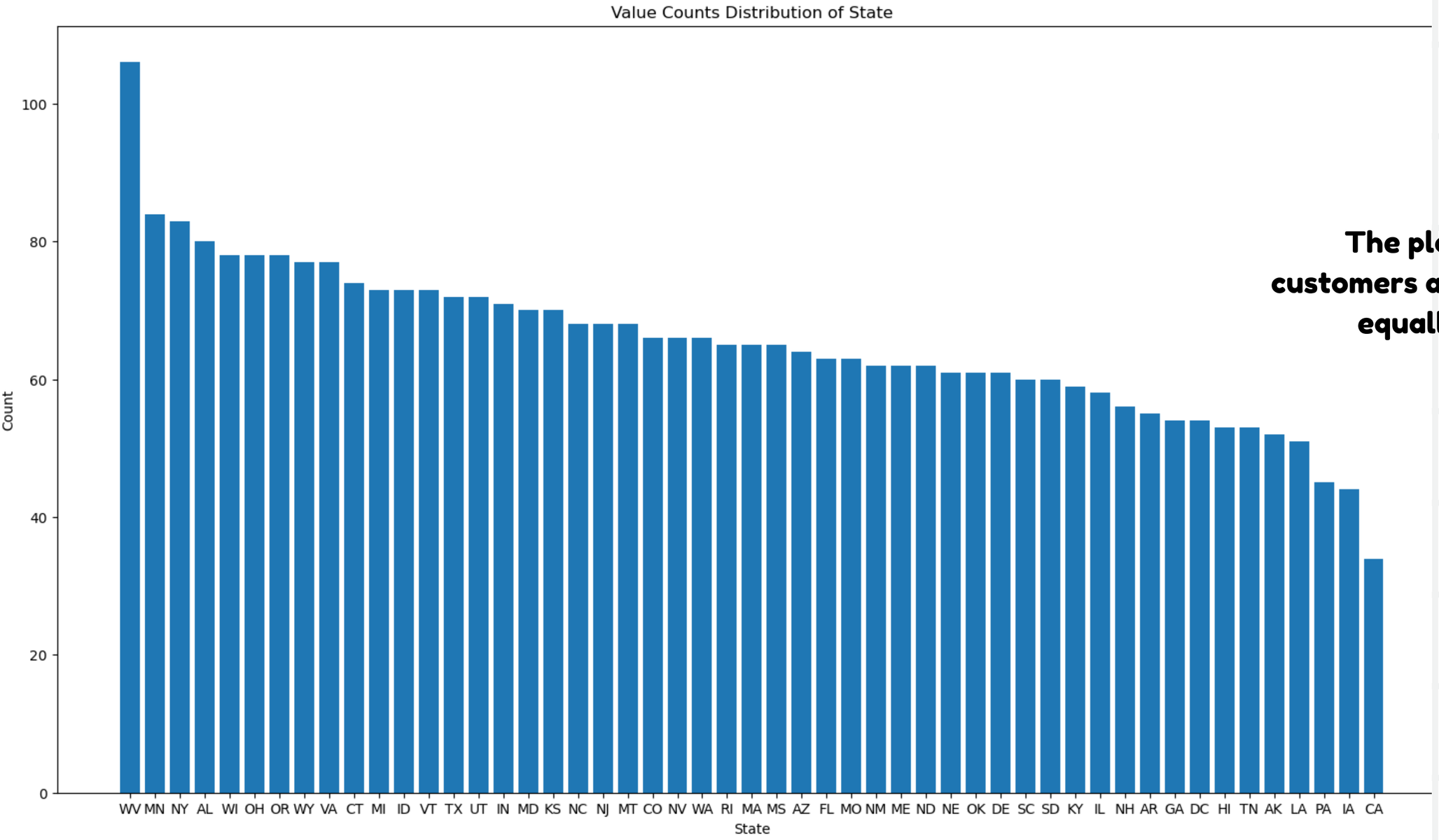
MAJORITY OF FEATURES EXHIBIT APPROXIMATELY NORMAL DISTRIBUTIONS WITH MINIMAL PRESENCE OF OUTLIERS.

DISTRIBUTION OF CATEGORICAL VARIABLES





DISTRIBUTION OF CUSTOMERS BY STATE



INSIGHT

The plot Indicate that the customers are approximately drawn equally from each state

MODELLING

LOGISTIC REGRESSION

Performance:

Accuracy: 80%
Recall: 67%
Precision: 28%
F1-score: 40%
AUC : 74%

DECISION TREE

Performance:

Accuracy: 93%
Recall: 100%
Precision: 60%
F1-score: 74%
AUC : 96%

RANDOM FOREST

Performance:

Accuracy: 97%
Recall: 100%
Precision: 75%
F1-score: 86%
AUC : 98%

INTERPRETATION OF BEST PERFORMING MODEL

Accuracy

The model achieved a 97% accuracy rate, indicating that 97% of the predictions made were correct.

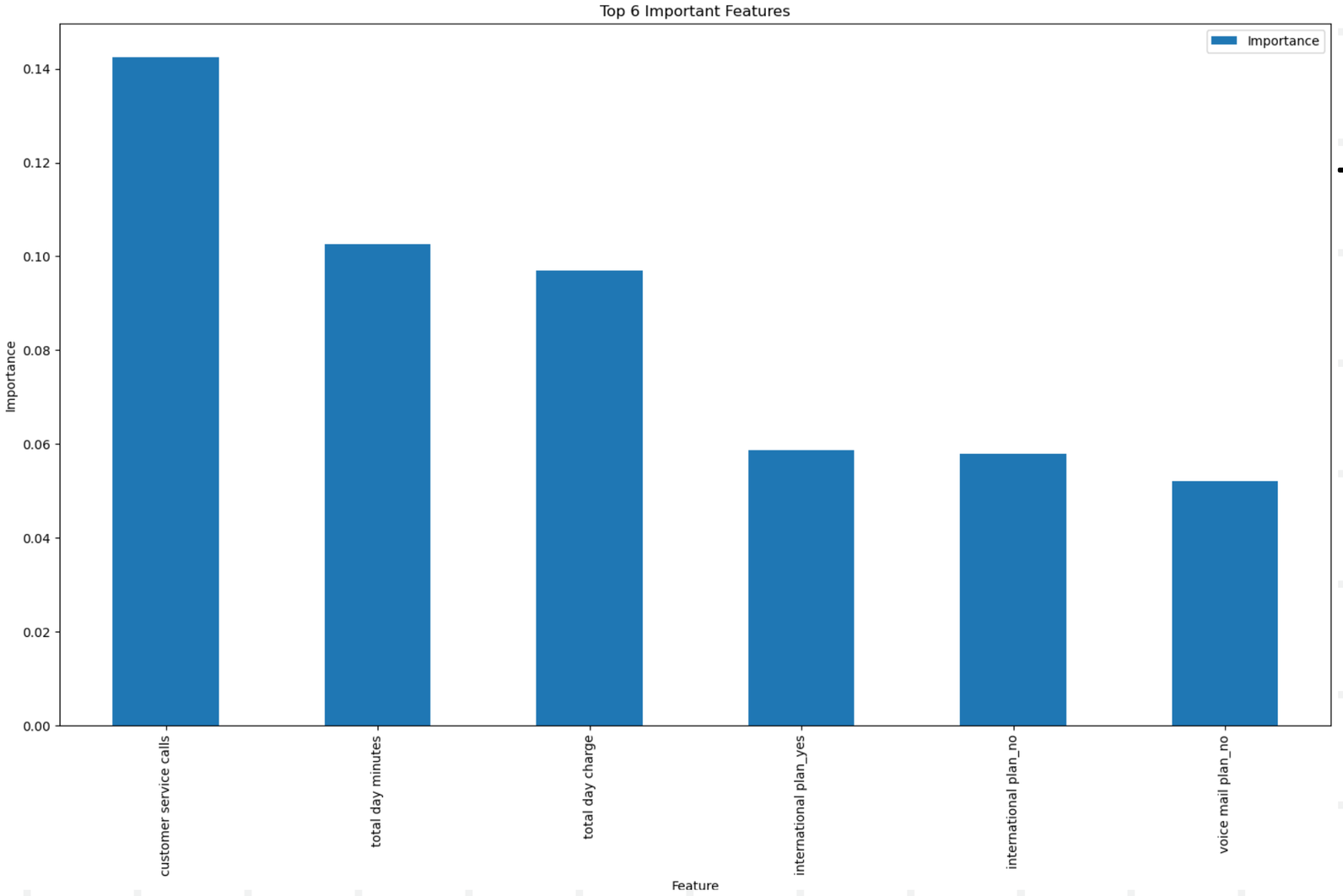
Recall

The model correctly identified all customers who actually churned, achieving a recall rate of 100%.

Precision

Out of all predictions made by the model that a customer would churn, 75% of the customers actually churned

FEATURE IMPORTANCE



INSIGHT

Top three most important features:

- **Customer Service Calls: Most important feature: Customers frequently contacting customer service may be more likely to churn**
- **Total Day Minutes and Total Day Charge: High daytime usage and charges may suggest potential churn behaviour**

CONCLUSION

High-Performance Metrics:
The model demonstrates exceptional accuracy, recall, precision, F1-score, and AUC, indicating its ability to effectively discern between churners and non-churners.

Model Reliability:
The high recall rate suggests the model can accurately identify most actual churners, enhancing its reliability in predicting churn.

Influential Features:
Customer service calls, total day minutes, and day charges emerge as the most influential features, contributing significantly to the model's predictive power.

RECOMMENDATIONS

- **Proactive retention strategies:**

Utilize the insights provided by the model to implement proactive retention strategies for at-risk customers.

- **Establish feedback loop**

- **Regular Model Monitoring and Updates.**

THANK YOU