SYRIATEL TELECOMMUNICATIONS

CUSTOMER CHURN PREDICTION

BY CHARLES OWITI

AGENDA

- **Business Problem:** Why Churn Matters
- **Our Approach:** Workflow
- **Data Insights:** Understanding Customers
- **Model Performance:** Logistic Regression and Decision Tree Results
- **Key Predictors:** What Drives Churn
- **Recommendations:** Reducing Churn and Revenue Loss
- **Next Steps:** Implementation and Iteration

Business Problem

BUSINESS PROBLEM

- The goal is to predict whether a customer will "soon" stop doing business with SyriaTel, in order to reduce revenue loss due to customer churn.
- By identifying customers at risk of churning, SyriaTel can implement targeted retention strategies, such as offering discounts, personalized plans, or improved customer service, to keep these customers.

Key Business Questions

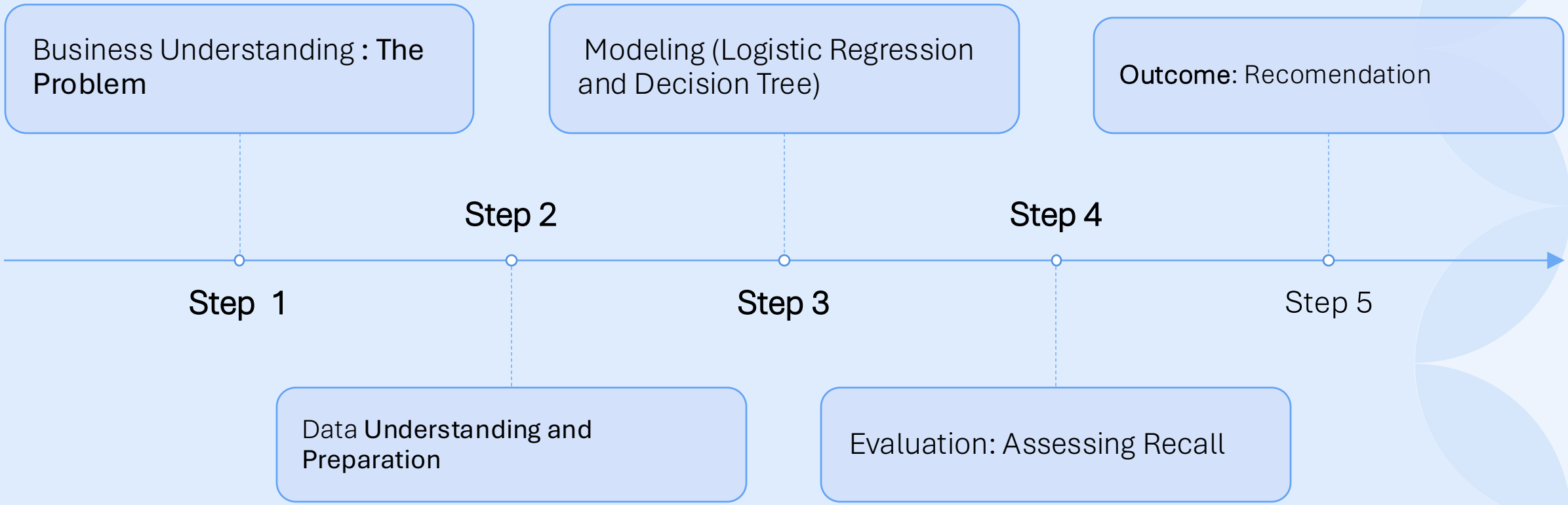
- Are there specific customer behaviors or account characteristics that predict churn?
- Can we build a reliable model to identify at-risk customers early enough to intervene?
- Which factors are most influential in driving churn, and how can the business address them?

BUSINESS PROBLEM

Expected Outcomes / Objectives

- Identify key predictors of churn e.g high customer service calls, voice mail plans.
- Develop targeted retention programs to reduce churn rates.
- Optimize resource allocation by focusing on high-risk customers.

OUR APPROACH



Data Understanding

DATA INSIGHTS

DATA SOURCE

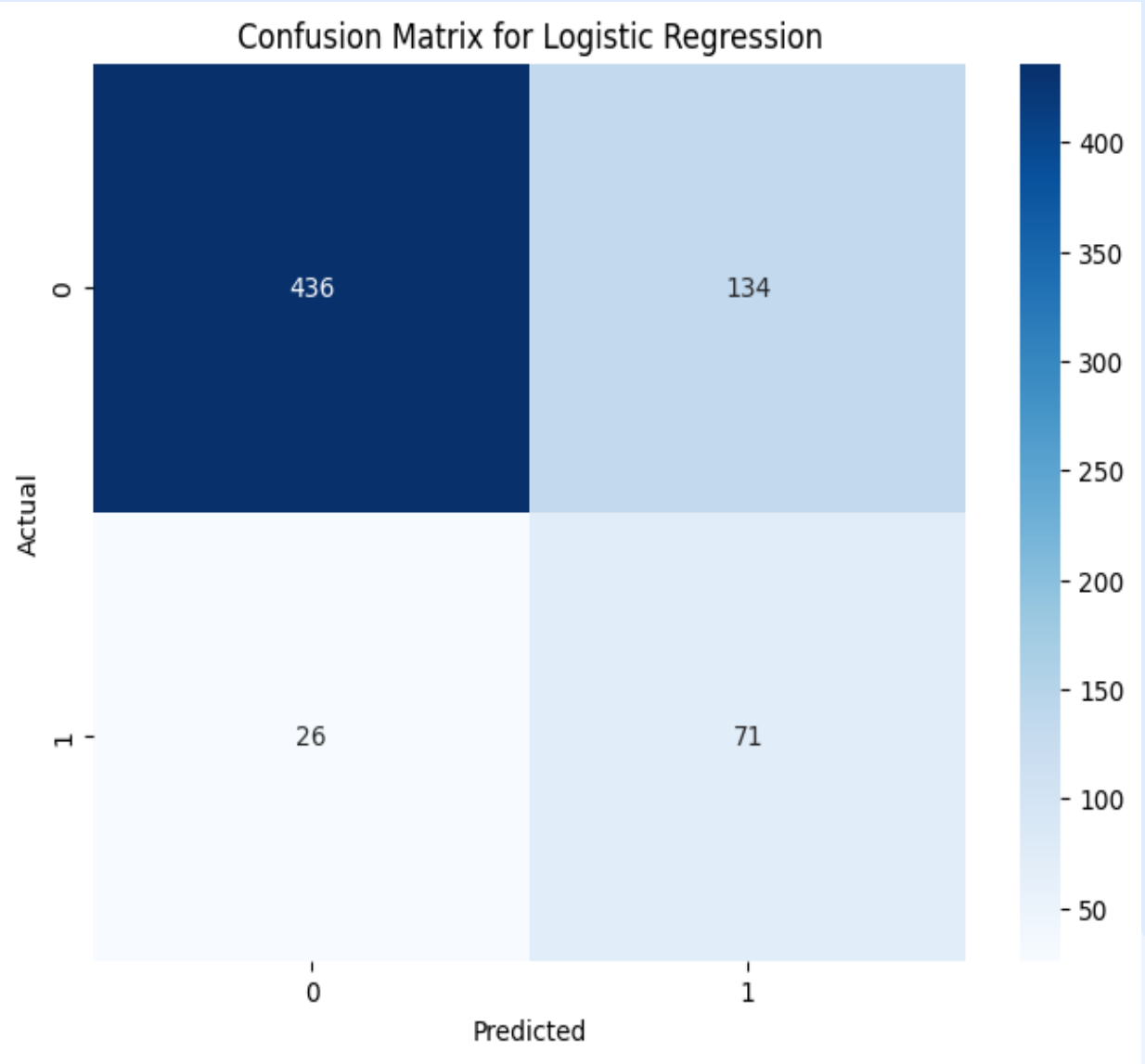
- The dataset is sourced from: https://www.kaggle.com/datasets/becksddf/churn-in-telecoms-dataset/data

DATASET OVERVIEW

- **Size**: The dataset contains 3,333 rows (customers) and 21 columns (features, including the target variable).
- **Target Variable**: **churn** which is **True** for customers who left and **False** for those who stayed.
- **Features:** The dataset includes a mix of numerical and categorical features related to customer demographics, account details, usage patterns, and interactions with customer service.

Model Performance

LOGISTIC REGRESSION PERFORMANCE



1. **True Negatives (TN) = 436**: Correctly predicted as non-churners .
2. **False Positives (FP) = 134**: Incorrectly predicted as churners .
3. **False Negatives (FN) = 26:** Incorrectly predicted as non-churners .
4. **True Positives (TP) = 71:** Correctly predicted as churners.

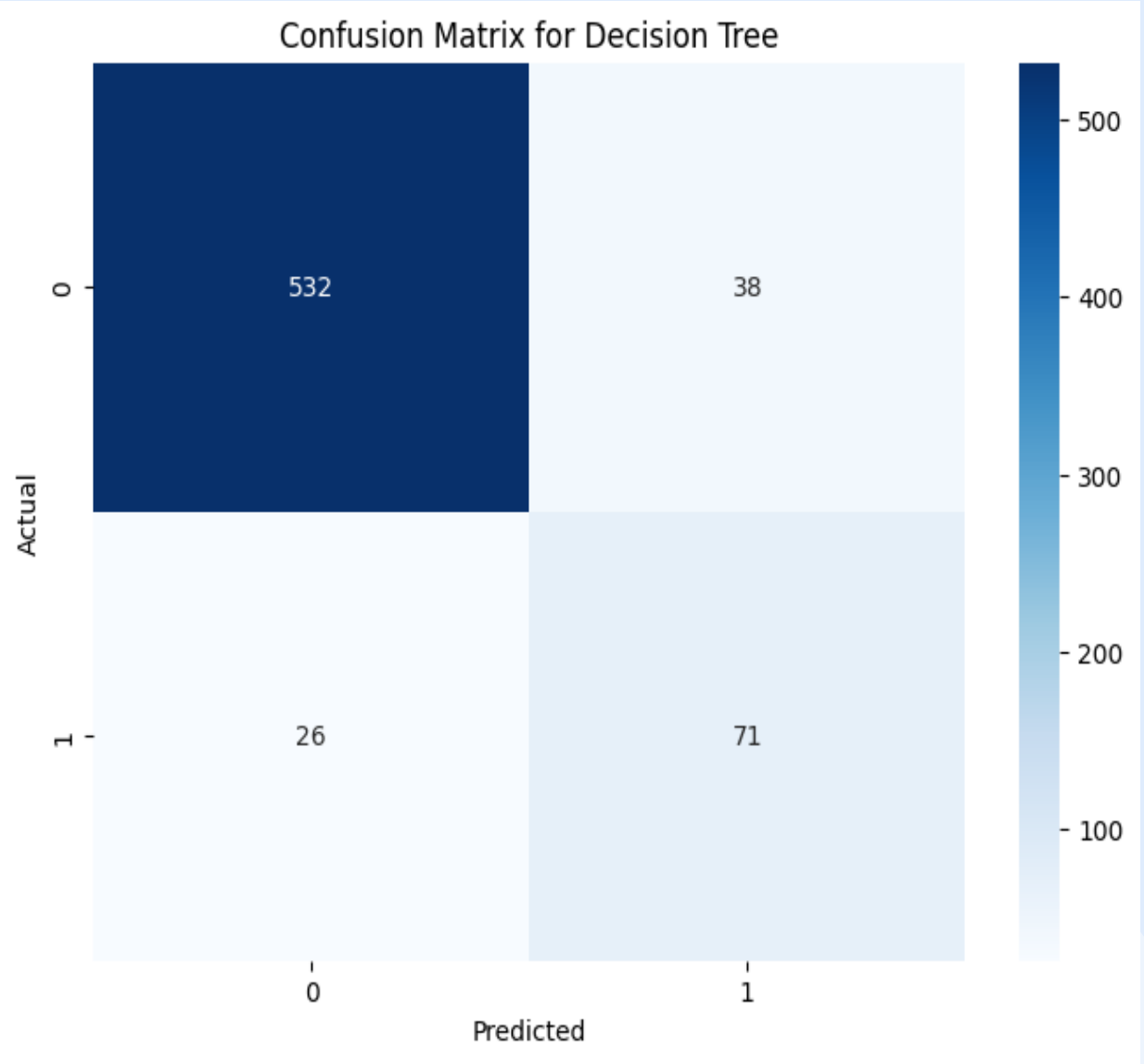
Strengths

- **Recall (73.20%)**: The model identifies 73.20% of actual churners (71 out of 97),
- **Accuracy (76.01%)**: The model correctly predicts most cases

Weaknesses

- **Precision (34.63%)**: Only about one-third of customers predicted to churn actually do.

DECISION TREE PERFORMANCE



1. True Negatives (TN) = 532: Correctly predicted as non-churners .
2. False Positives (FP) = 38: Incorrectly predicted as churners .
3. False Negatives (FN) = 26: Incorrectly predicted as non-churners .
4. True Positives (TP) = 71: Correctly predicted as churners.

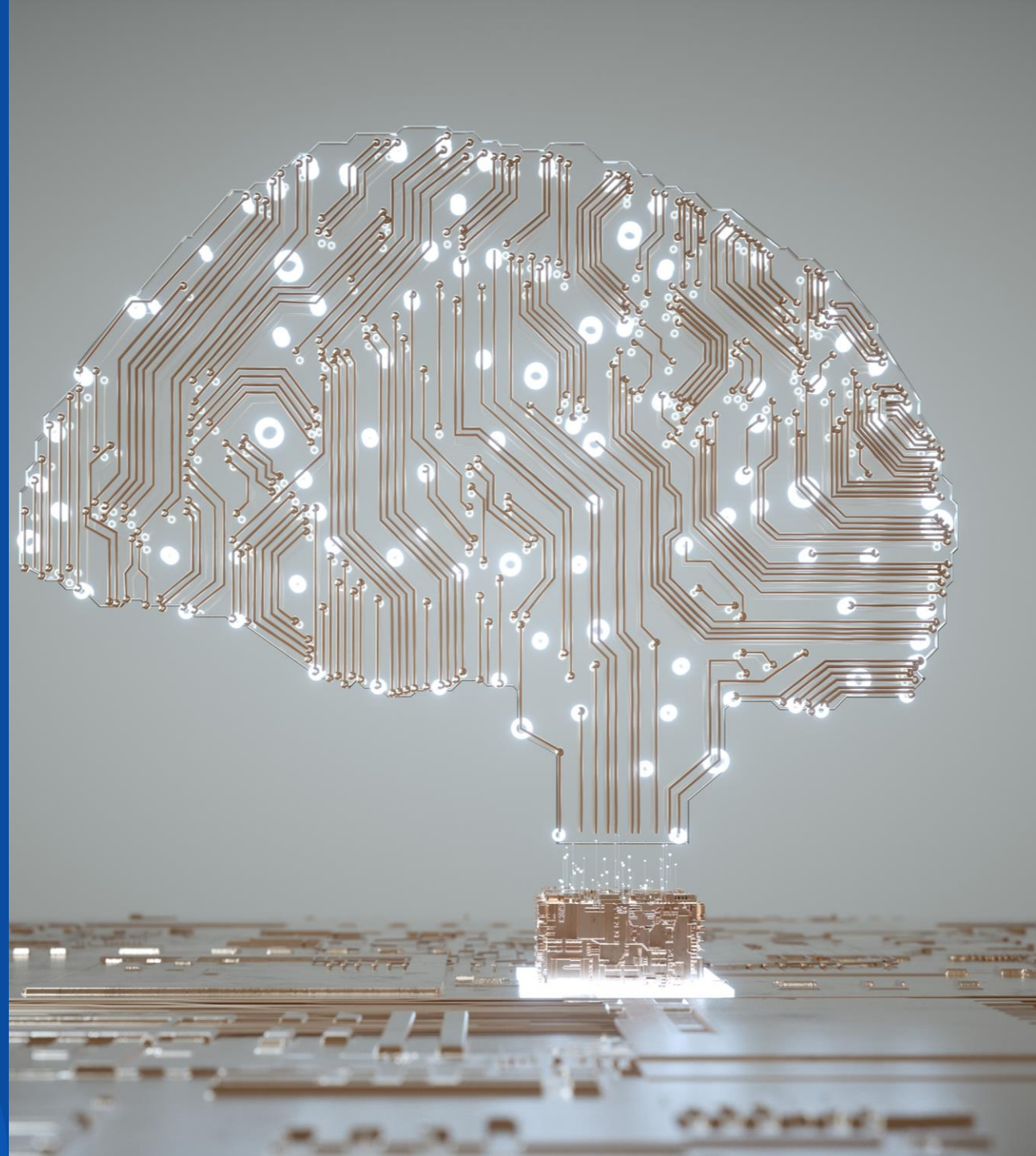
Strengths

- Recall (73.20%): The model identifies 73.20% of actual churners (71 out of 97),
- Accuracy (90.4%): The model correctly predicts most cases

Weaknesses

- Precision (645.14%): Means 34.86% of predicted churners (38) are non-churners

Key Predictors

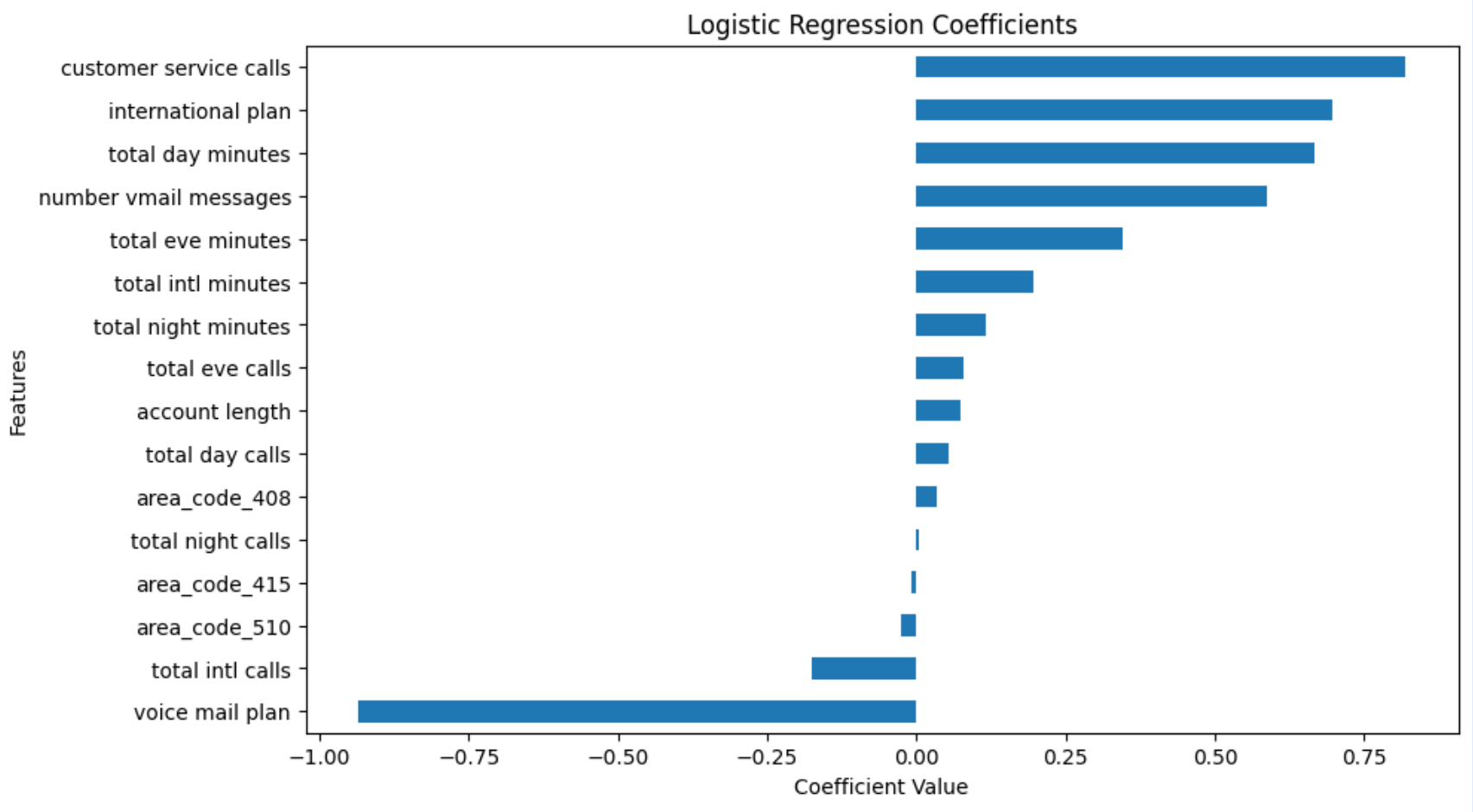


FEATURE IMPORTANCE

Customer Service Calls: High calls indicate dissatisfaction

International Plan: Higher churn risk, possibly due to cost

Total Day Minutes: linked to cost-driven churn



RECOMMENDATIONS AND NEXT STEPS

1. **Deploy the Decision Tree:** Integrate into the CRM system to flag 109 predicted churners (71 TP + 38 FP) for targeted interventions.

2. **Target Key Predictors:**

Offer personalized support for customers with high **customer service calls.**

Provide discounted plans for high **total day minutes** users.

Review **international plan** features to address churn drivers.

Promote **voice mail plans** to enhance engagement.

3. **Minimize False Negatives:** Analyze the 26 missed churners to improve recall, possibly by adjusting the classification threshold.

4. **Optimize Costs:** Prioritize high-probability churners to reduce the impact of 38 false positives.

Thank You

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