SyriaTel Customer Churn Prediction

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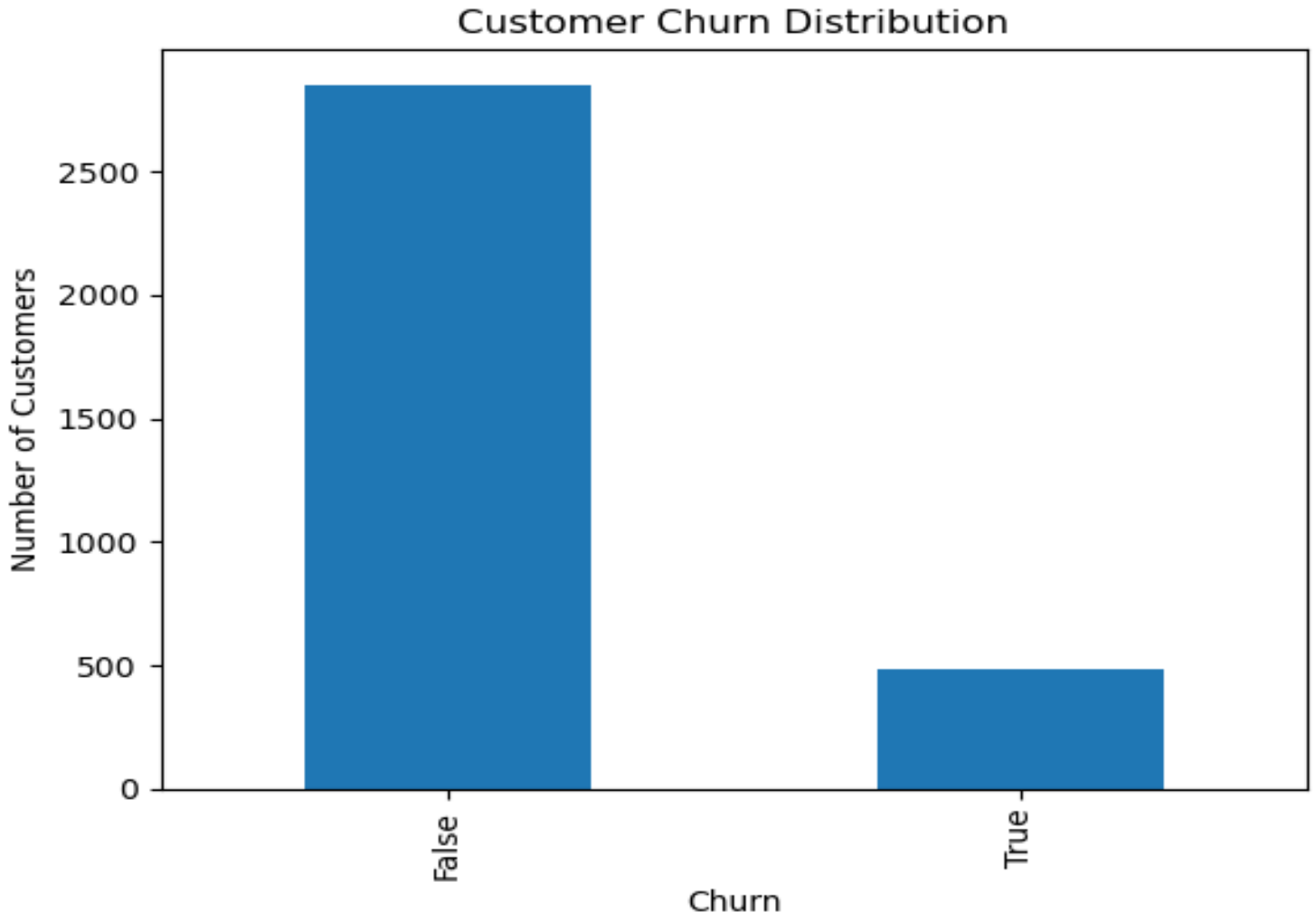
Overview

Customer churn is a major challenge for telecommunications companies because losing customers reduces revenue and increases the cost of acquiring new ones. This project uses historical customer data and machine learning to predict which SyriaTel customers are most likely to churn. By identifying at-risk customers early, the company can take proactive retention actions that improve customer satisfaction and reduce long-term revenue loss.

Business and Data Understanding

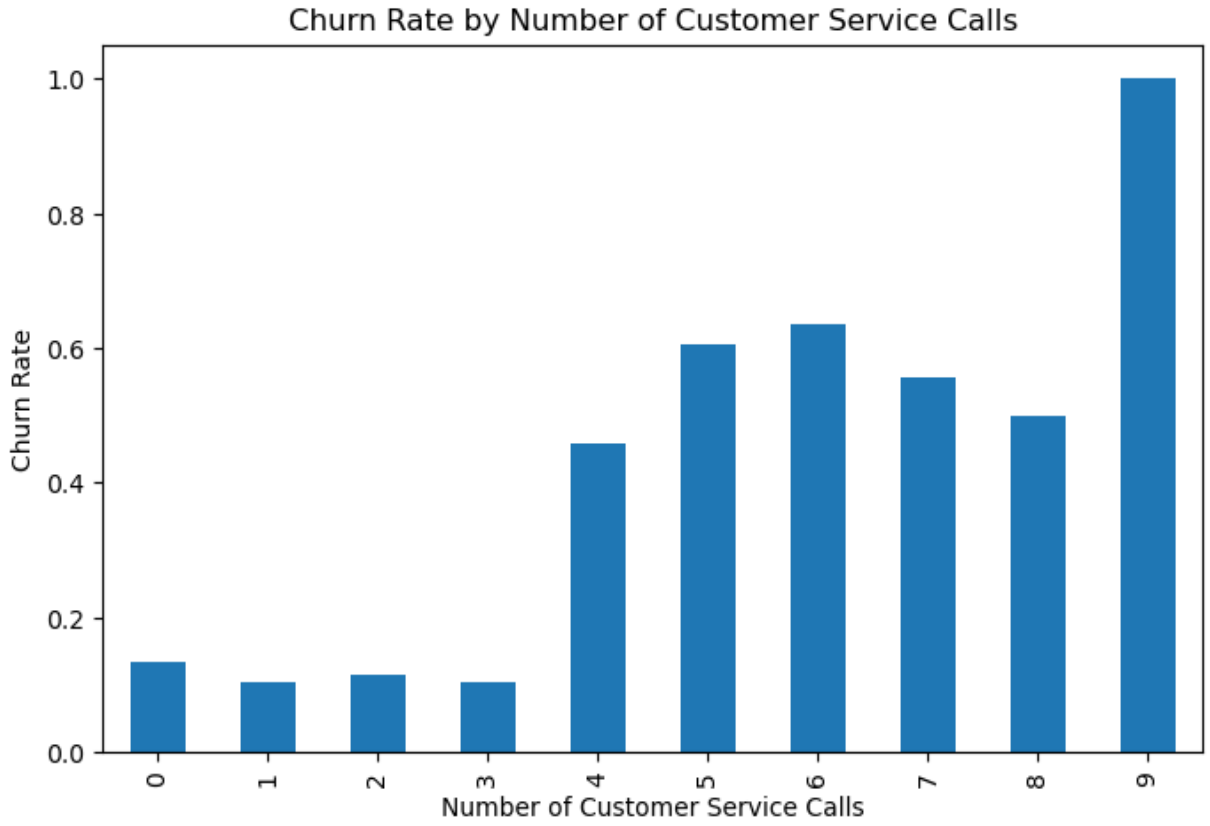
- Strategic Priority: Retaining existing customers is more cost-effective than acquiring new ones in a competitive market.
- Early Warning System: SyriaTel needs to identify potential churners proactively for targeted interventions rather reactive responses.
- Dataset Snapshot: 3,333 customer records with service usage, plans, and customer service interactions.
- Churn Impact: About 15% of customers churn, a rare but financially significant event.



The chart highlights a significant imbalance: most customers do not churn, while a smaller proportion does, emphasizing the financial mpact of each churned customer.

Exploratory Insights: Service Calls

Customers with frequent customer service calls are much more likely to churn. Churn risk increases sharply after the third interaction, suggesting unresolved issues drive dissatisfaction.



Modeling Approach

01.

Binary Classification

Framed as predicting churn vs. non-churn.

02.

Baseline Model

Established initial performance and interpretability.

03.

Non-Parametric Model

Introduced to capture non-linear customer behavior.

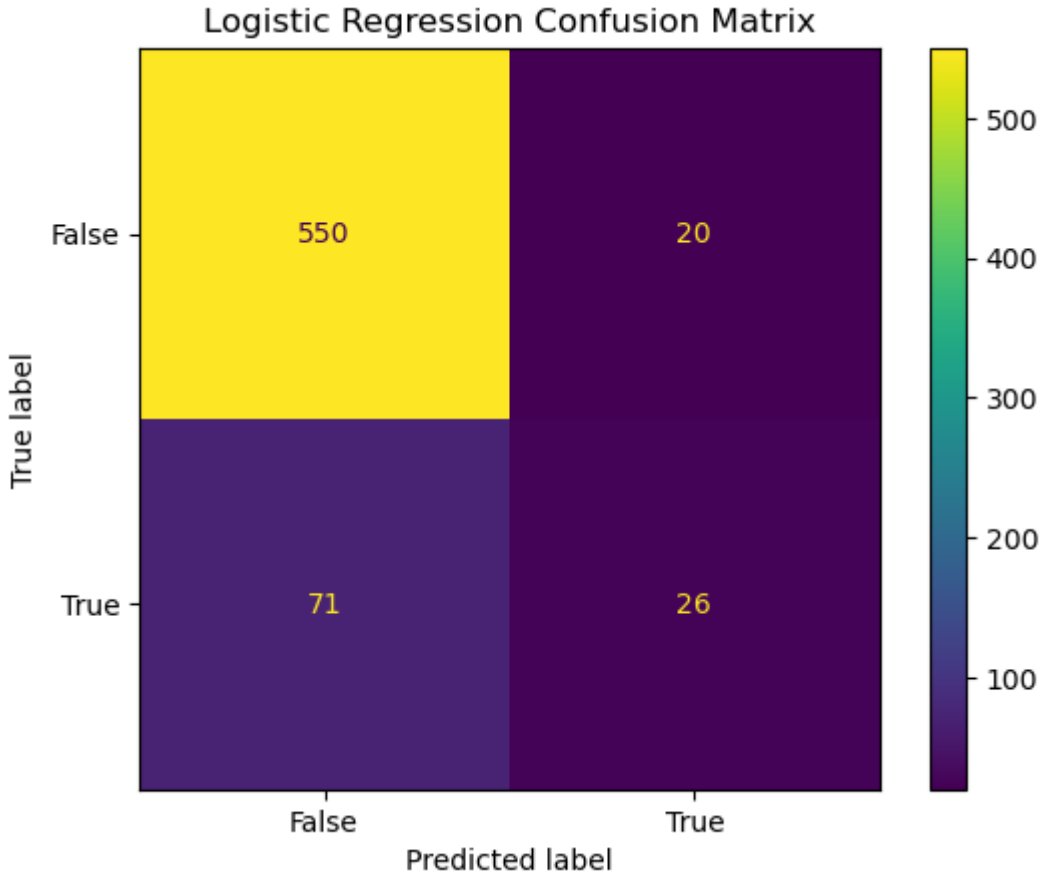
04.

Iterative Refinement

Models refined to align with business goals and improve performance.

Evaluation & Recall Priority

Model performance was assessed with business impact in mind. Recall was prioritized as missing a churn-prone customer is costly. The final model identified approximately 62% of churned customers.



Final Model: Tuned Decision Tree

1. **Outperformed Baseline:** Better at identifying churn-prone customers
2. **Decision Support:** Performance improvements justify its use as a key tool
3. **Complex Behavior:** Effectively captures intricate customer patterns.

Key Recommendations

✓ **Deploy Early Warning**

Implement the model to identify at-risk customers before

✓ **Prioritize Service Calls**

Focus on customers with frequent calls, indicating dissatisfaction.

✓ **Intervene by Third Call**

Churn likelihood sharply increases beyond this point

✓ **Targeted Incentives**

Offer personalized retention strategies for greater effectiveness.

Next Steps & Contact

Future Enhancements

- Incorporate customer satisfaction data.
- Explore ensemble modeling techniques.
- Integrate predictions into customer service workflows.
- Monitor and retrain the model regularly.

Thank You

Questions?

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