

Reducing Customer Churn: A Data-Driven Retention Strategy

Overview

Goal: To build a predictive model that identifies customers at high risk of leaving (churning).

Value Proposition: By predicting churn before it happens, the company can proactively intervene with targeted retention offers, saving revenue and reducing customer acquisition costs.

Key Finding: Our models can successfully distinguish between loyal and at-risk clients 81% of the time.

Business and Data Understanding

- **The Problem:** Customer churn directly impacts the bottom line. Understanding *why* and *who* is leaving is critical for growth.
- **The Data:** Analyzed 3,333 customer records containing 21 features, including:
- **Usage Patterns:** Day, evening, and international call minutes/charges.
- **Account Details:** Account length, area codes, and specific service plans (International/Voice Mail).
- **Customer Feedback:** Number of customer service calls made.
- **Data Insight:** Only ~14.5% of customers in the dataset churned, requiring specialized techniques (like SMOTE) to ensure the model could recognize this minority group accurately.

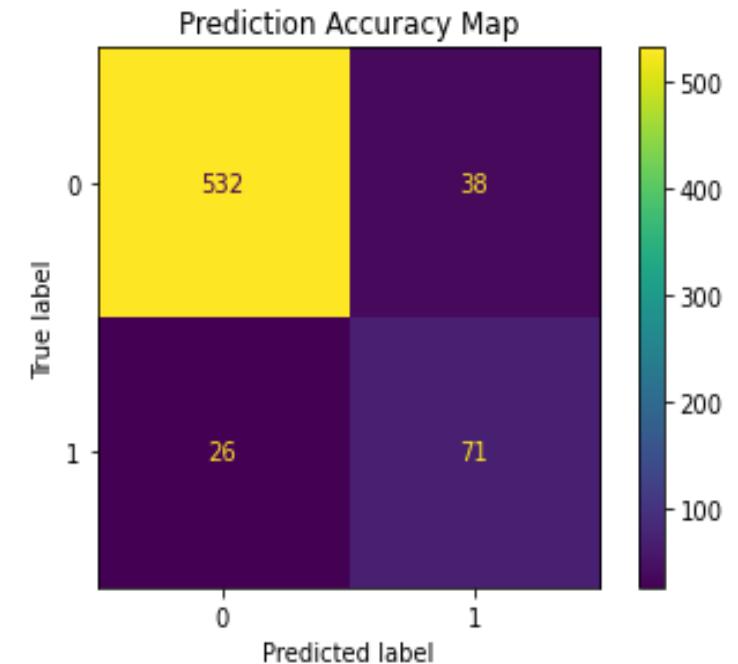
Modeling Strategy

- **Approach:** We tested two primary industry-standard methods to ensure reliability:

- 1. Logistic Regression:** A statistical model used to determine the probability of an event (churn).

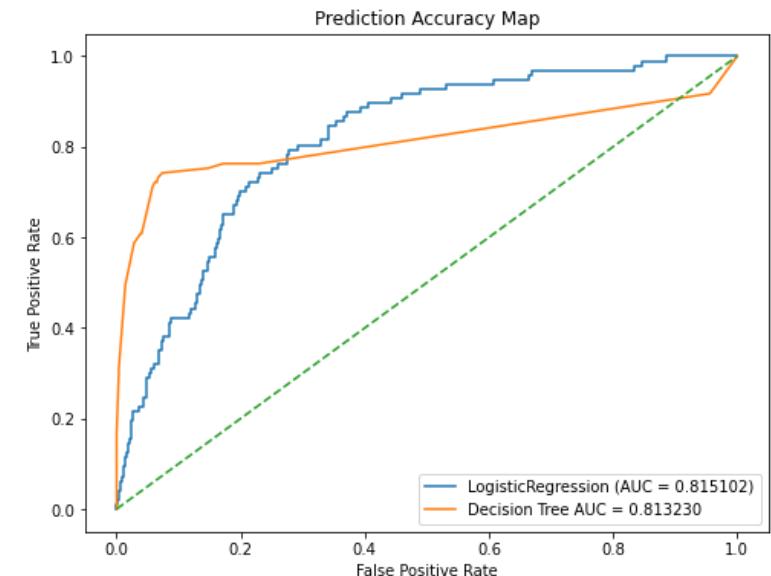
- 2. Decision Tree:** A logic-based model that maps out customer characteristics to reach a prediction.

- **Ensuring Fairness:** We utilized a "Pipeline" approach to standardize data and handle the imbalance in churned vs. non-churned customers, ensuring the results aren't biased toward the majority.



Performance Evaluation

- **Success Metric (AUC):** Both models achieved an **AUC of 0.81**.
- **What this means for you:**
 - The models have "good discrimination ability".
 - In plain terms: If you pick one churned customer and one loyal customer at random, the model will correctly identify the at-risk customer 81% of the time.
- **Consistency:** The identical performance across different model types confirms the stability of our predictions.



Key Drivers of Churn (Recommendations)

- Based on the data analysis, stakeholders should focus on:
- **Customer Service Interventions:** High correlation exists between customer service calls and churn. Customers calling frequently are likely frustrated and need immediate attention.
- **High Usage Costs:** Total day minutes and charges are significant indicators of churn. Consider offering "Unlimited" or "High-Volume" loyalty tiers for these power users.
- **Plan Optimization:** International plans and their associated charges should be reviewed to ensure they remain competitive.

Next Steps

1

Pilot Program: Deploy the Decision Tree model on a small subset of current customers to test real-world predictive accuracy.

2

Proactive Retention: Equip the customer service team with "Save Desk" offers specifically for customers flagged by the model.

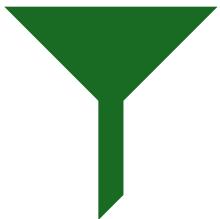
3

Feedback Loop: Regularly update the model with new customer data to account for changing market trends and competitor offers.

Conclusion & Thank You



Summary: We have developed a tool that provides an 81% accuracy rate in identifying at-risk clients, directly supporting a data-backed customer retention strategy.



Call to Action: Let's integrate these insights into the CRM to start reducing churn this quarter.



Questions?

Slide Style Checklist Notes for the Presenter:

- **Visuals:** Use the ROC curves and Confusion Matrices generated in the notebook as visuals for Slides 4 and 5, but label them in plain language (e.g., "Prediction Accuracy Map").
- **Text Density:** Keep bullet points to one line where possible to ensure the slides are light on text and easily readable.