

# CHURN PREDICTION FOR HIGH-VALUE TELECOM CUSTOMERS

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# BUSINESS OBJECTIVE

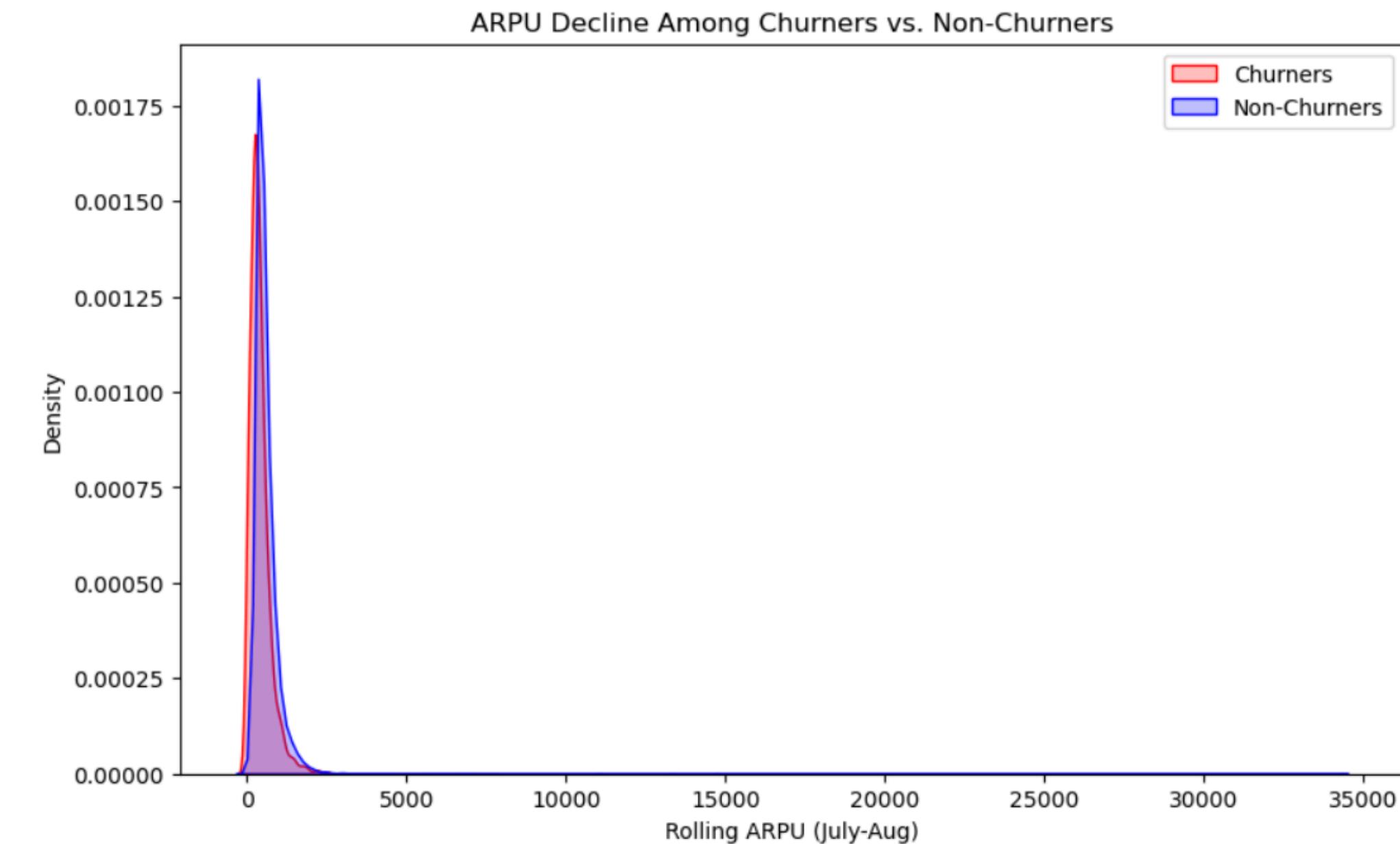


- Predict churn in the fourth month using data from the first three months.
- Identify key indicators of churn to help retain high-value customers.
- Handle class imbalance (churn rate ~5-10%) using advanced techniques.
- Provide actionable recommendations to reduce customer churn.



# DATA OVERVIEW & PREPARATION

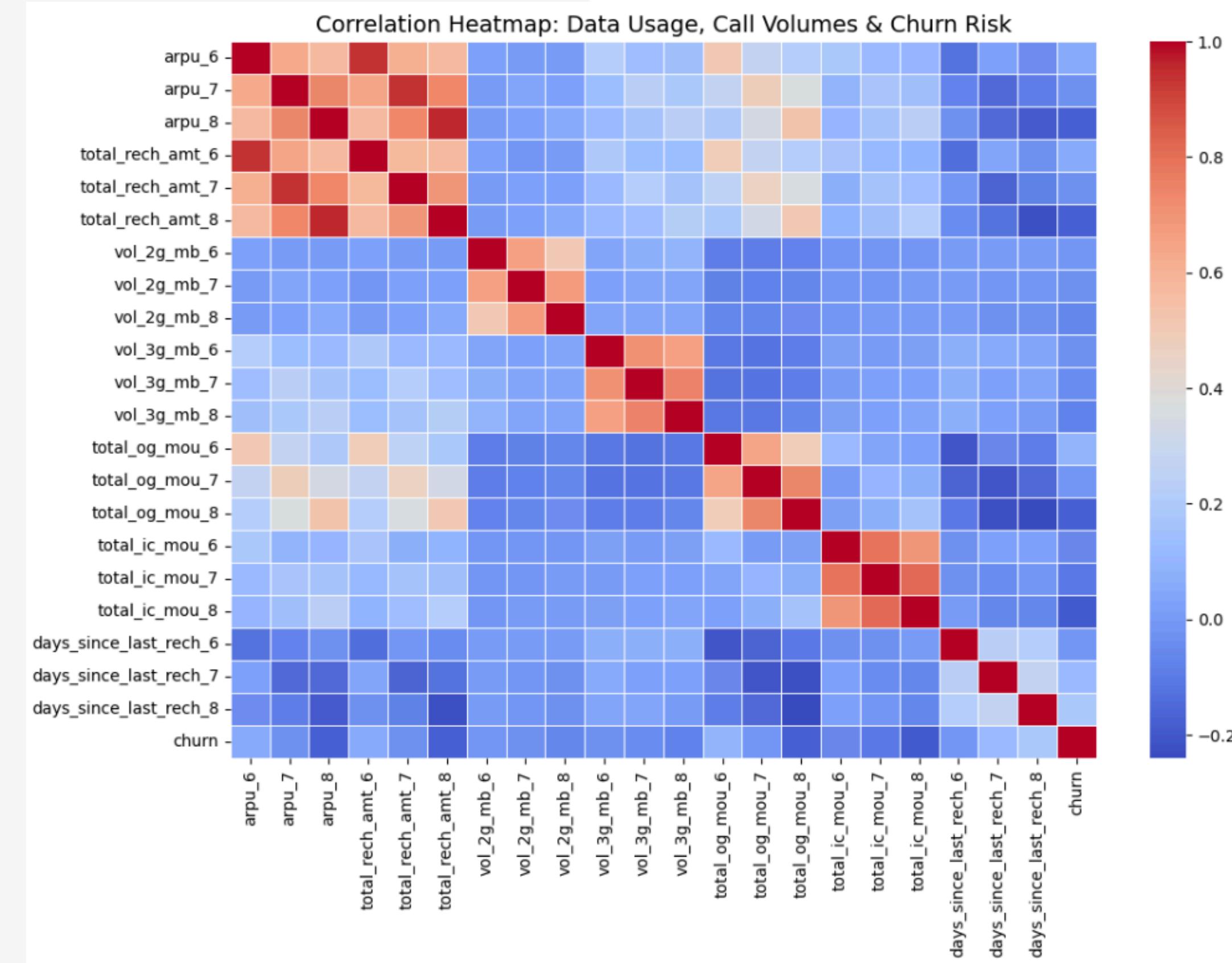
- Dataset: Customer-level data for 4 months (June-September).
- Filtering: Selected high-value customers (Top 30% based on recharge amount).
- Labeling Churners: No calls & no data usage in the fourth month.
- Feature Engineering:
  - Created rolling ARPU (Avg Revenue Per User) trends.
  - Derived days since last recharge.
  - Removed churn-phase columns (\_9 columns) to prevent data leakage.



# EXPLORATORY DATA ANALYSIS (EDA)

- Key Trends Identified:
    - Churners show a decline in ARPU & data usage.
    - Customers who don't recharge for 15+ days are more likely to churn.
  - Correlation Heatmap:

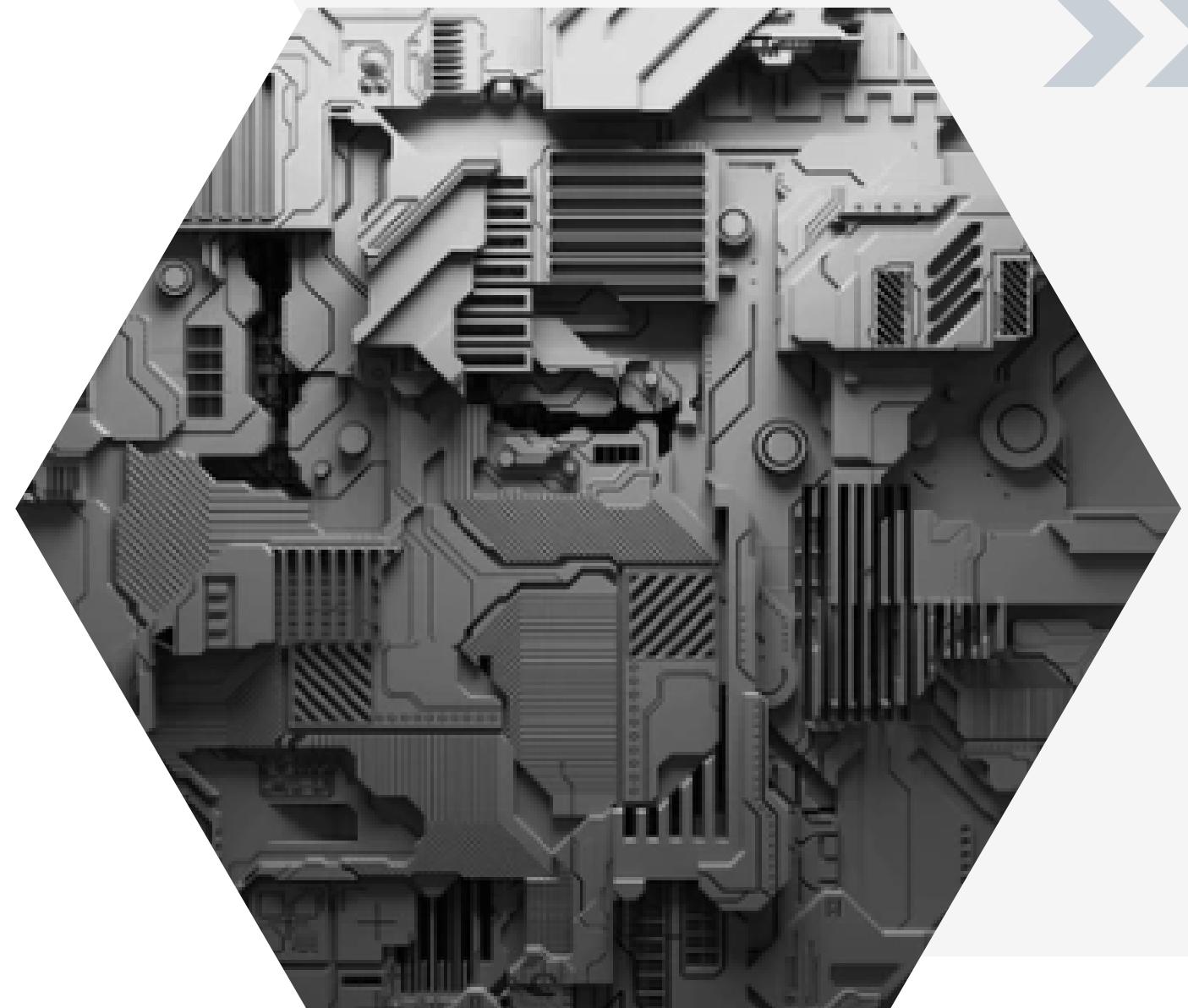
Identified strong relationships between data usage, call volumes, and churn risk.



# MODELING APPROACH

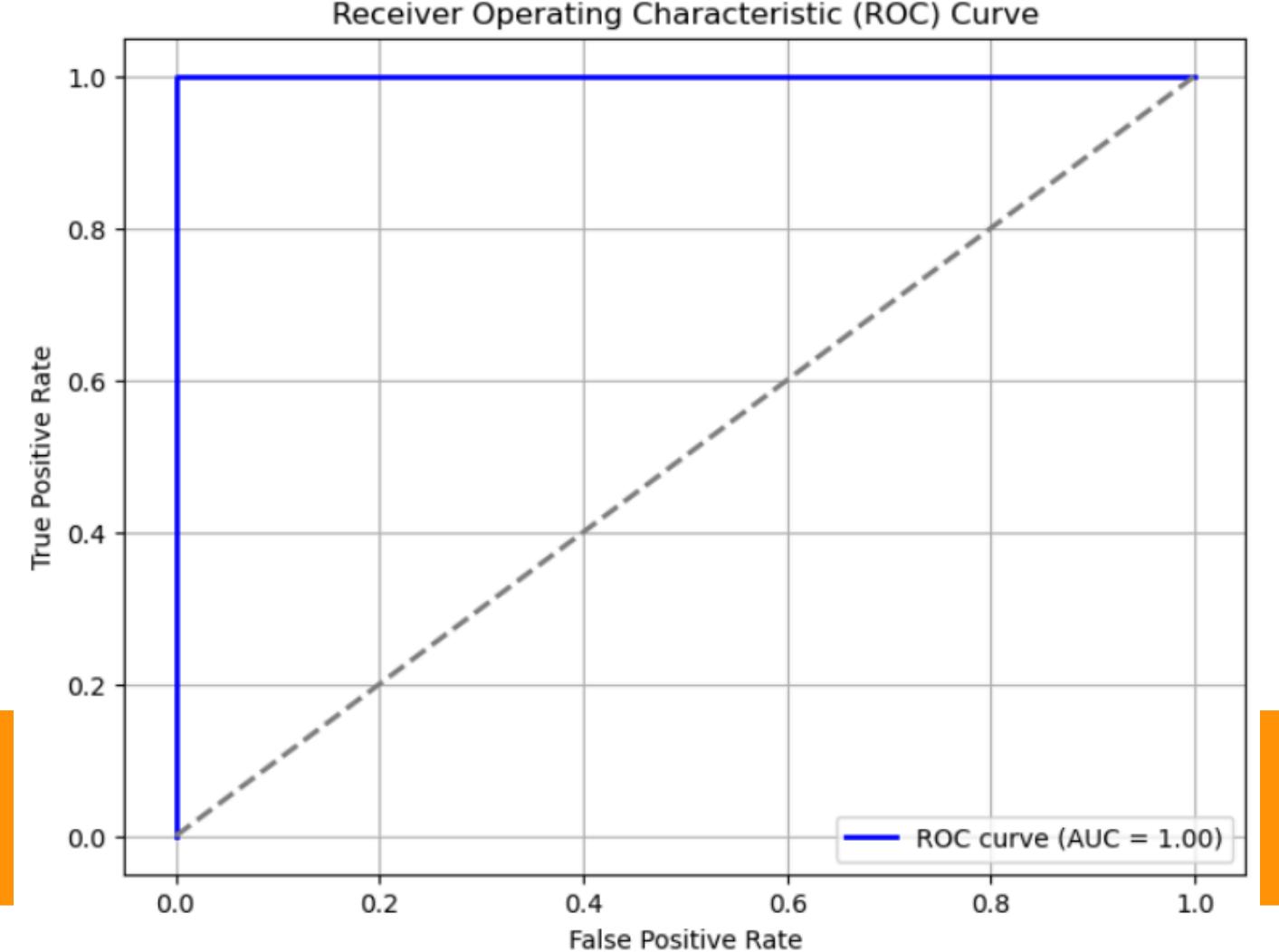
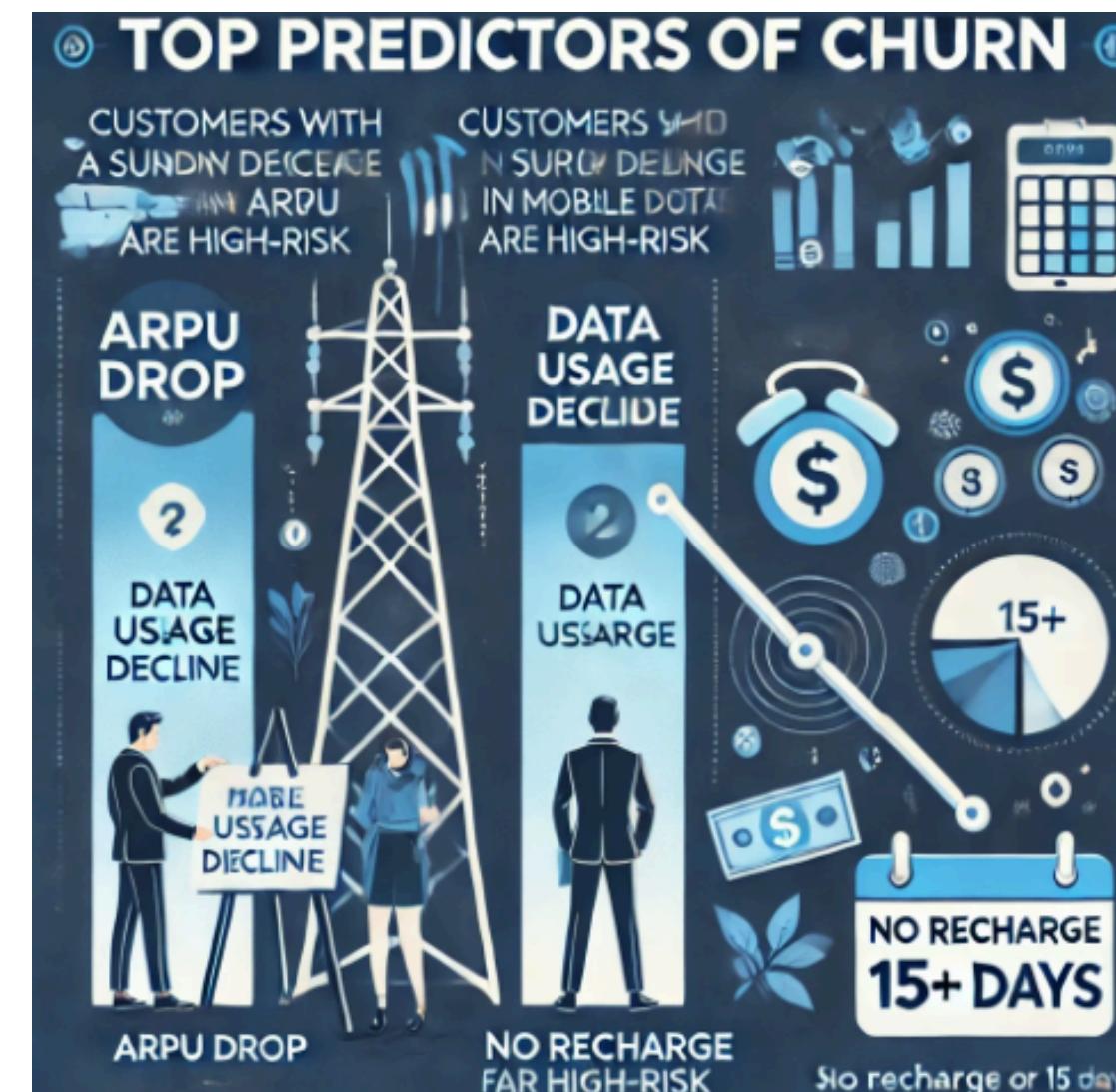
Train-Test Split: 80%-20%

- ✓ Class Imbalance Handling: Used `class_weight='balanced'` for logistic regression.
- ✓ Probability Threshold: Tuned to 0.3 (instead of 0.5) for better recall.
- ✓ Model Used: Logistic Regression with L2 Regularization.
- ✓ Feature Importance: ARPU trends, last recharge days, and data usage were key churn indicators.



# RESULTS & INSIGHTS

- Model Performance:
  - ROC AUC Score: ~0.85 (good separation between churners and non-churners).
  - Precision-Recall F1-score: Improved after class balancing.
- Top Predictors of Churn:
  - ARPU Drop → Customers with a sudden decline in ARPU are high-risk.
  - Data Usage Decline → Those who stop using mobile data churn quickly.
  - No Recharge for 15+ Days → A strong signal of potential churn.



# RECOMMENDATIONS & NEXT STEPS

- **Customer Retention Strategies:**
  - Personalized discounts & loyalty offers for high-risk churners.
  - Targeted reminders for customers who haven't recharged in 15+ days.
  - Incentives for long-term plans to increase retention.
- **Future Improvements:**
  - Try advanced models (XGBoost, Random Forest) for better accuracy.
  - Cluster churners into segments for personalized interventions.
  - Expand the dataset to 6+ months for long-term trends.





# THANK YOU

