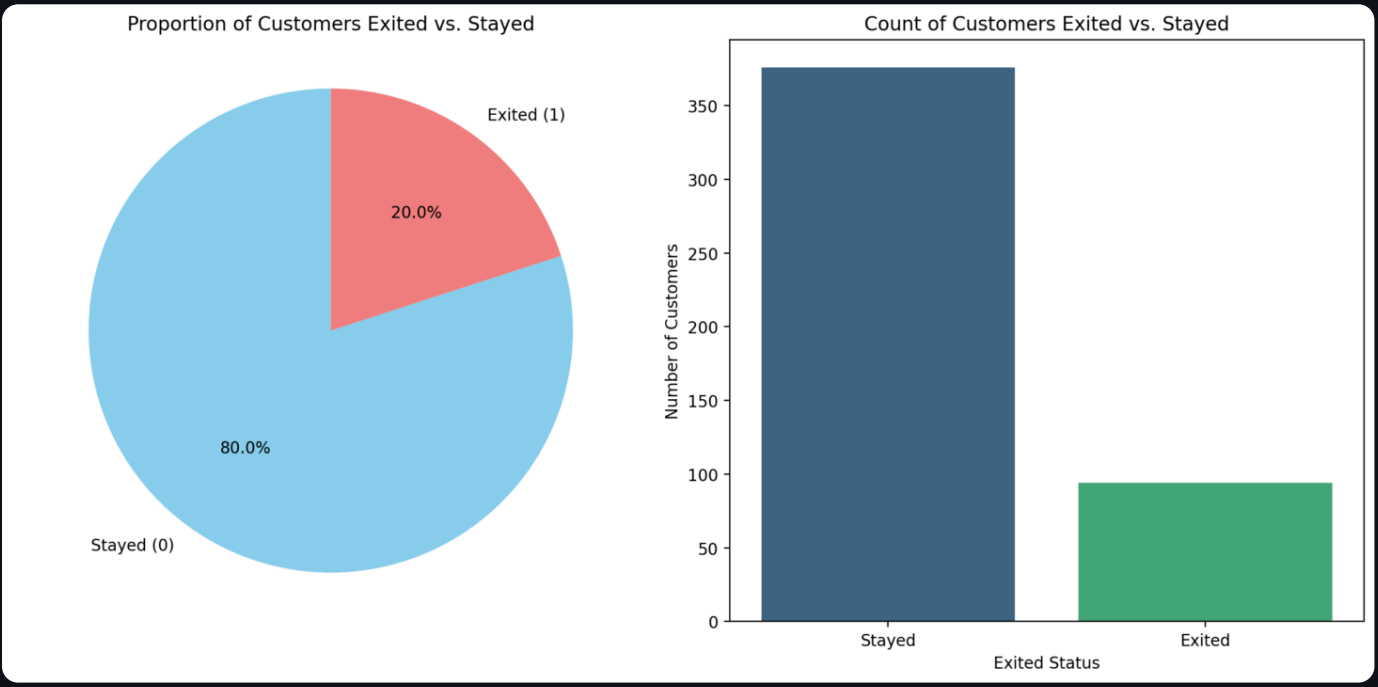
Customer Churn Prediction & Analysis

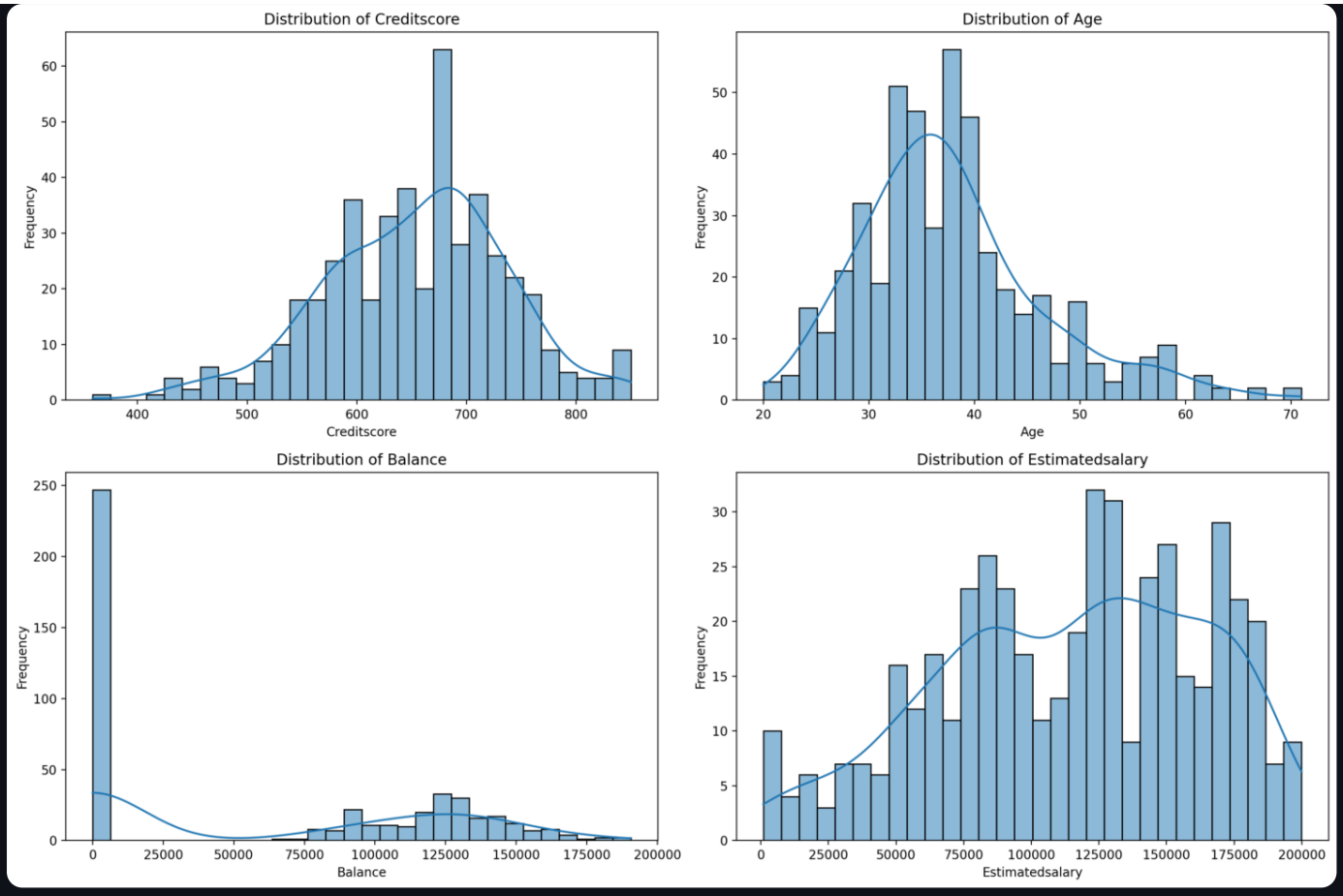
This application analyzes customer data to predict churn and visualize key insights.

1. Exploratory Data Analysis (EDA)

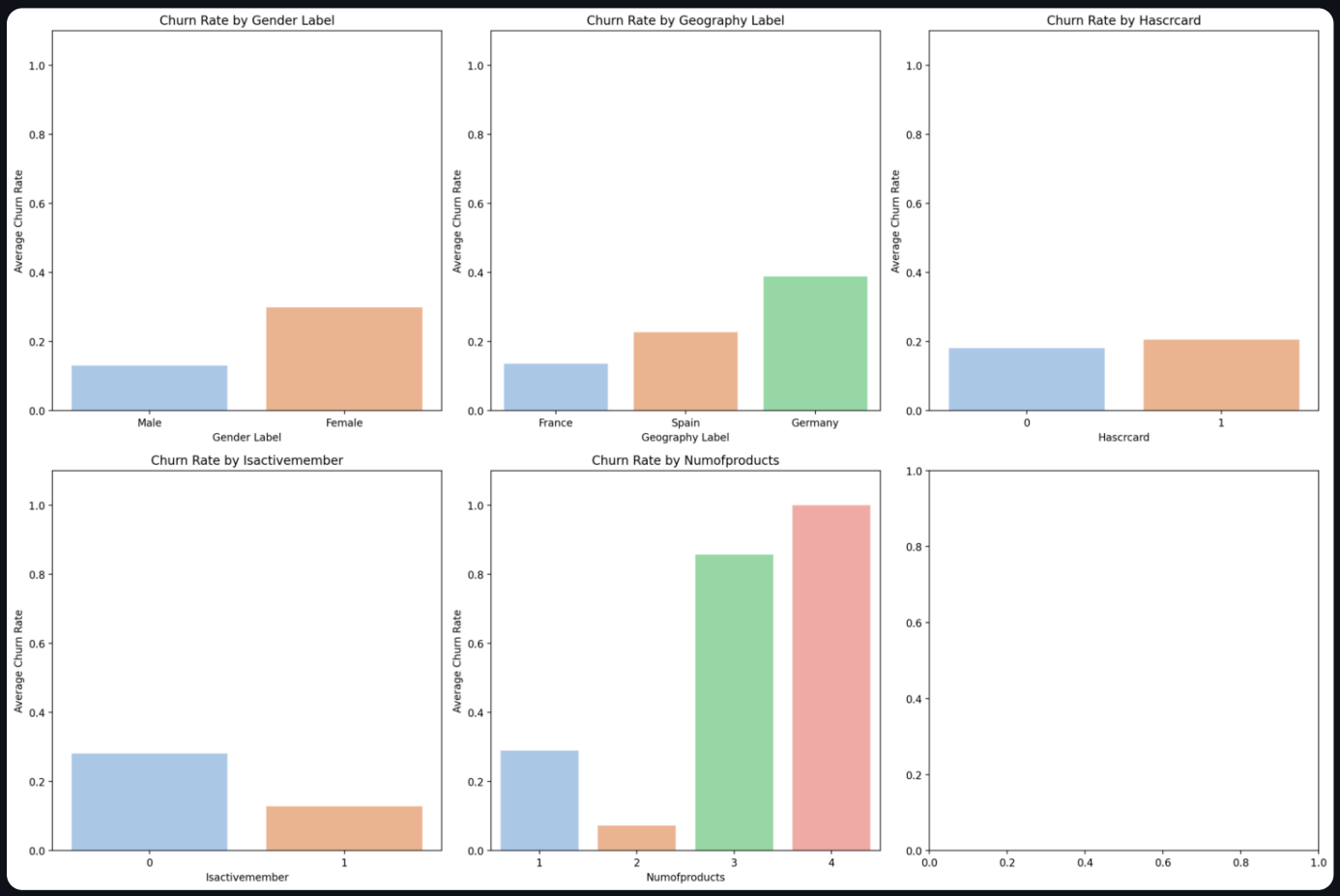
1.1 Churn Distribution



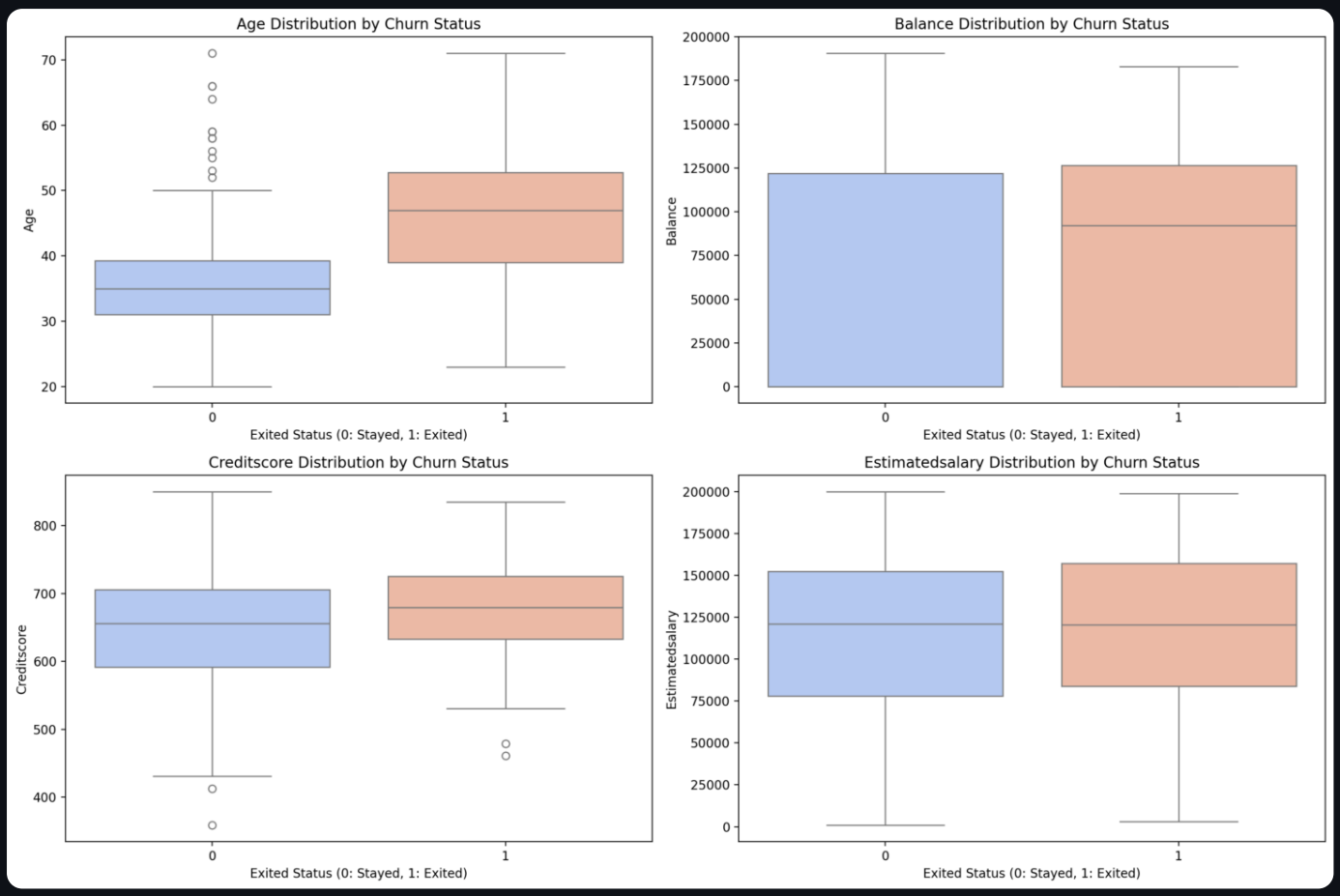
1.2 Numerical Features Distribution



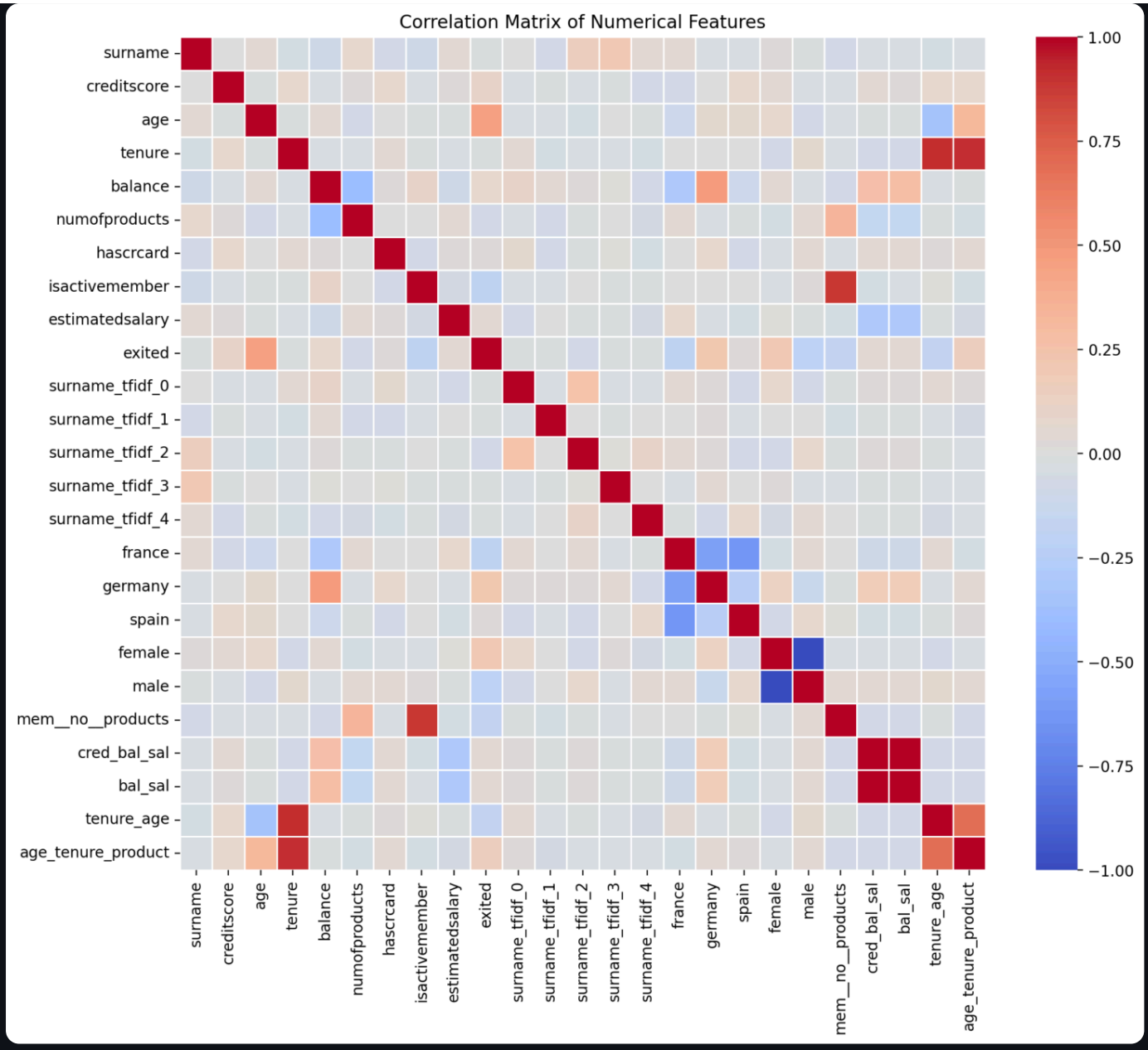
1.3 Categorical Features vs. Churn



1.4 Numerical Features vs. Churn (Box Plots)



1.5 Correlation Heatmap



2. Churn Prediction Model

Model Performance Report

Model Type: Logistic Regression

	precision	recall	f1-score	support
Stayed (0)	0.82	0.99	0.90	75
Exited (1)	0.75	0.16	0.26	19
accuracy			0.82	94
macro avg	0.79	0.57	0.58	94
weighted avg	0.81	0.82	0.77	94

Overall Model Accuracy: **0.82**

Key Takeaways from Model Performance

Our Logistic Regression model achieved an **overall accuracy of approximately 82%**.

- It is **very effective at identifying customers who will stay** (nearly 99% recall for 'Stayed' customers).
- However, its primary challenge lies in predicting actual churners: it **only correctly identifies about 16% of all customers who ultimately leave** (low recall for 'Exited' customers).
- When the model *does* predict someone will churn, it's quite reliable, being **correct 75% of the time** (high precision for 'Exited' customers).

In essence, while the model helps pinpoint some high-probability churn risks with good confidence, its ability to capture the full scope of customer attrition needs significant improvement, likely due to the inherent class imbalance where fewer customers churn than stay.