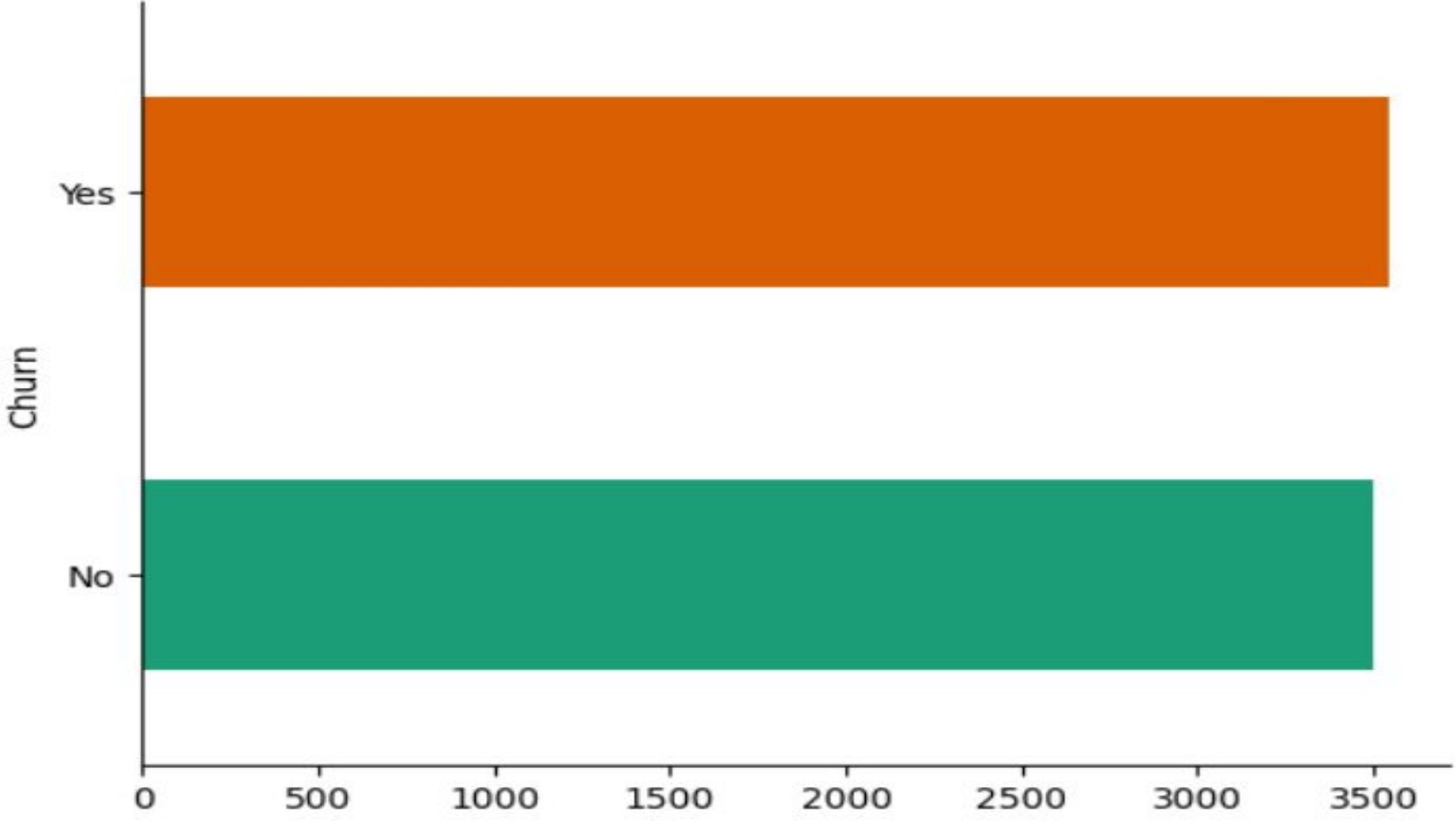
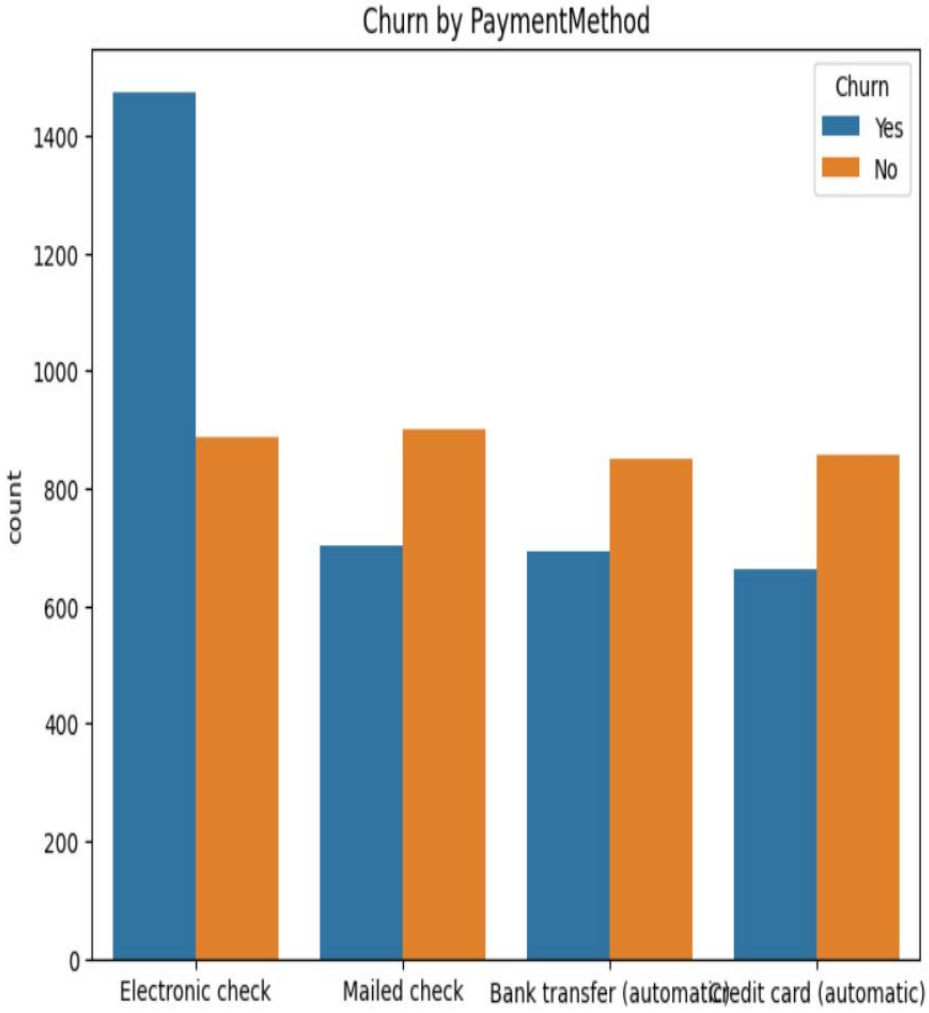
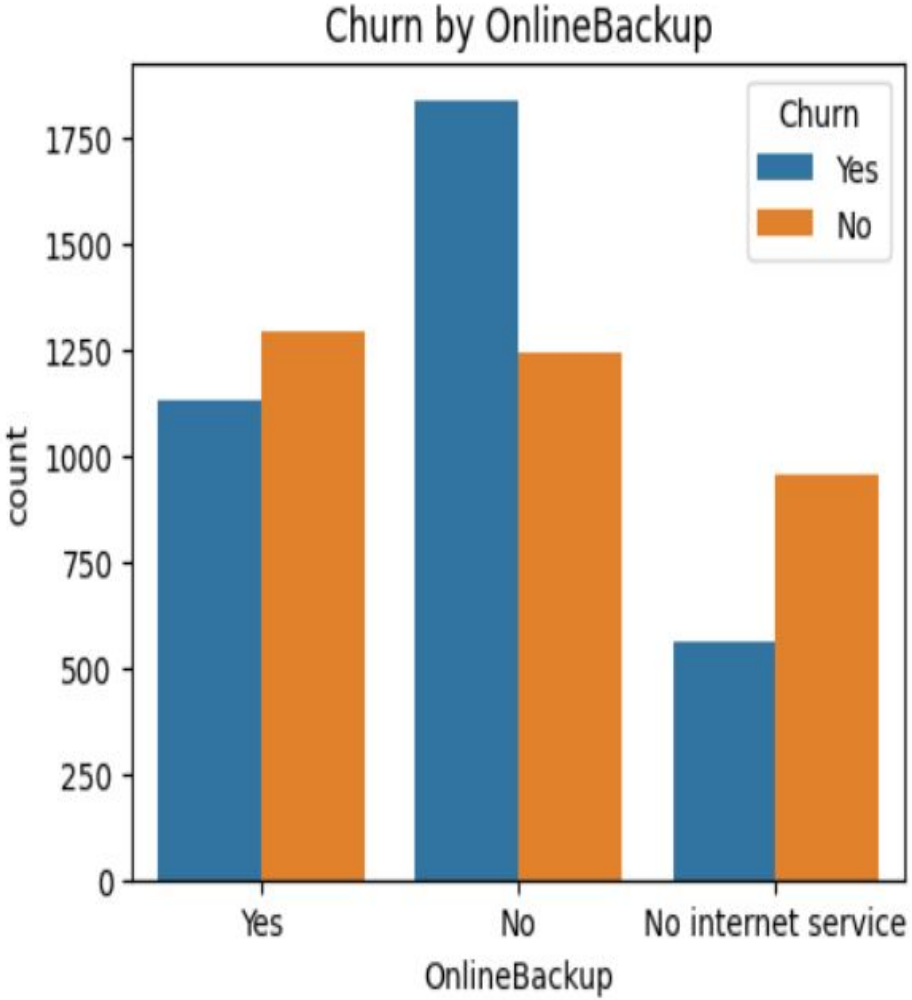
Context: DMResources Limited, a Fintech in Mexico, provides personalized microcredits to small and medium businesses.

Problem: Higher-than-expected default rate in the credit portfolio, leading to regulatory liabilities and impacts on available capital.

Objective: Develop a robust predictive model to reduce churn, optimize profit, and comply with Mexican regulations.


Churn
Yes
No
0
500
1000
1500
2000
2500
3000
3500


Churn by PaymentMethod
Churn
Yes
No
count
0
200
400
600
800
1000
1200
1400
Electronic check
Mailed check
Bank transfer (automatic)
Credit card (automatic)


Churn by OnlineBackup
Churn
Yes
No
count
0
250
500
750
1000
1250
1500
1750
Yes
No
No internet service
OnlineBackup

```
Accuracy: 0.6265344664778093
Confusion Matrix:
 [[667 400]
 [391 660]]
Classification Report:
              precision    recall  f1-score   support

           0       0.63      0.63      0.63      1067
           1       0.62      0.63      0.63      1051

    accuracy                           0.63      2118
   macro avg       0.63      0.63      0.63      2118
weighted avg       0.63      0.63      0.63      2118
```

Model Selection: Used Random Forest Classifier for its balance of accuracy, interpretability, and robustness.

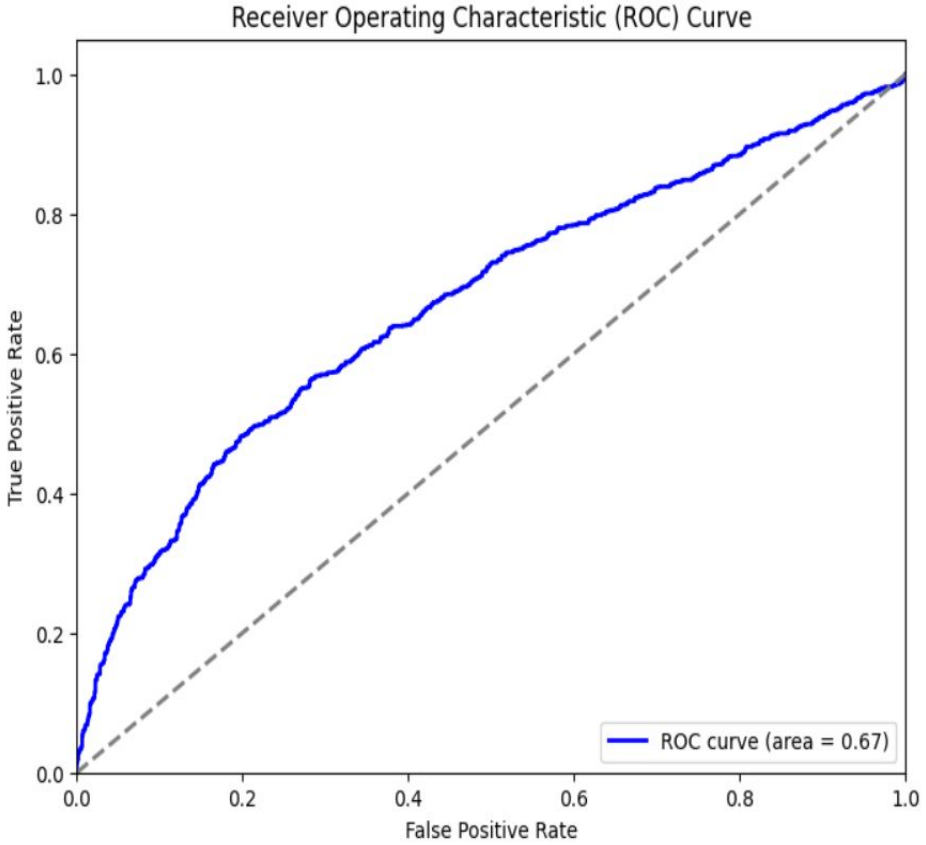
Evaluation Metrics:

Accuracy: Overall correctness of the model.

Precision: Proportion of true positives among predicted positives.

Recall: Proportion of true positives among actual positives.

F1 Score: Harmonic mean of precision and recall.



Google

Reproducibility: The model is designed to be reproducible and scalable for continuous improvement.

Balanced Approach: Addressed class imbalance with SMOTE, ensuring the model accurately predicts both churned and non-churned customers.

Regulatory Compliance: Meets Mexican regulations by accurately predicting and managing the default risk.

Business Impact: Provides actionable insights for customer retention strategies, focusing on high-risk segments.