

ANALYSIS OF WHETHER A CUSTOMER CHURNS OR NOT

Objectives

- Predict whether a customer will churn out or not
- Look at any predictable patterns

Data Understanding

The data is from Kaggle.
Here's a summary of the columns

- state: The state of the customer.
- account length: The length of the account in days or months.
- area code: The area code of the customer's phone number.
- phone number: The phone number of the customer.

Cont...

- international plan: Whether the customer has an international plan or not.
- voice mail plan: Whether the customer has a voicemail plan or not.
- number vmail messages: The number of voicemail messages the customer has.
- total day minutes: Total minutes of day calls.
total day calls: Total number of day calls.

Cont...

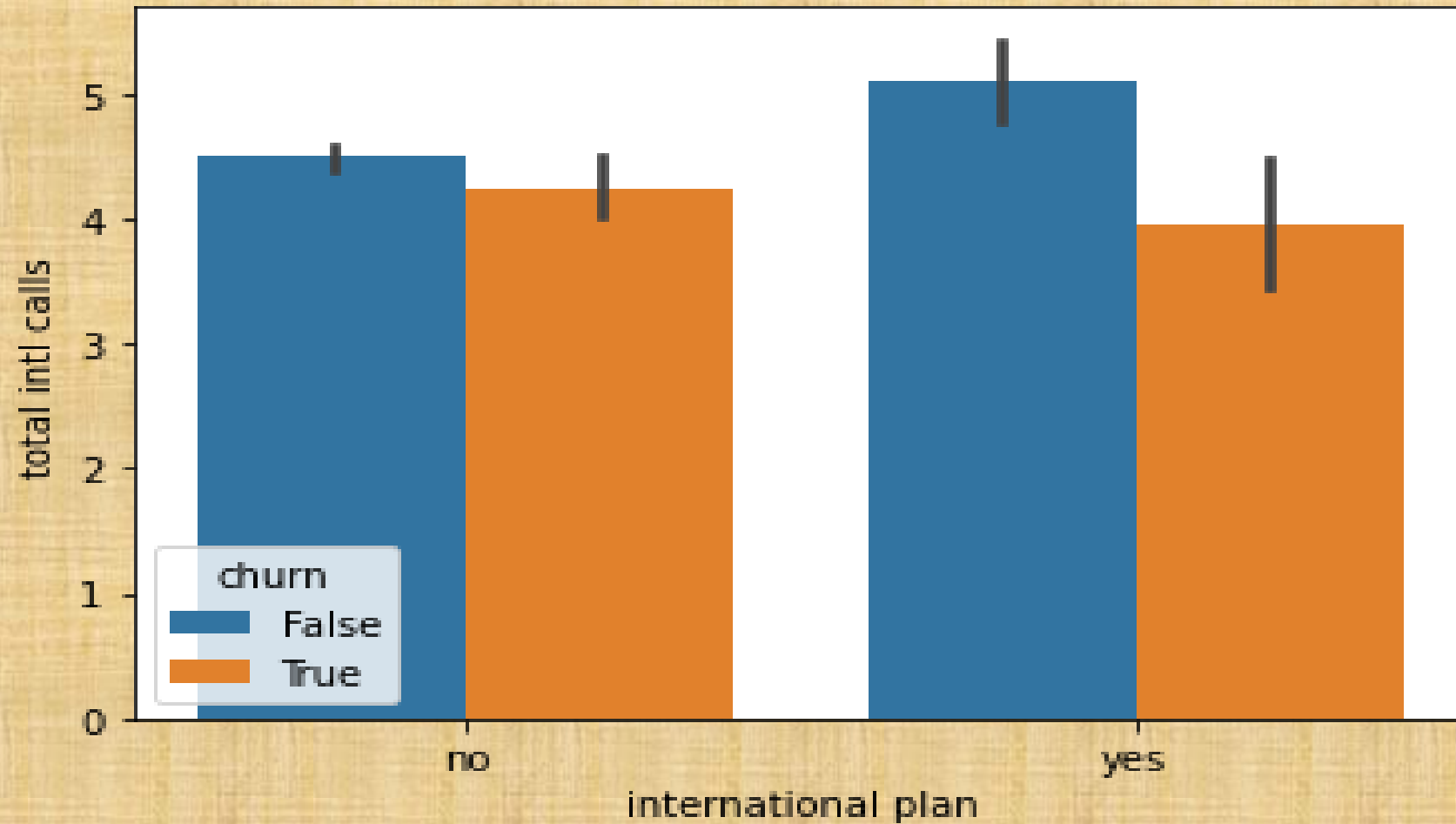
- total day charge: Total charge for the day calls.
- total eve minutes: Total minutes of evening calls.
- total eve calls: Total number of evening calls.
- total eve charge: Total charge for the evening calls.
- total night minutes: Total minutes of night calls.

Cont..

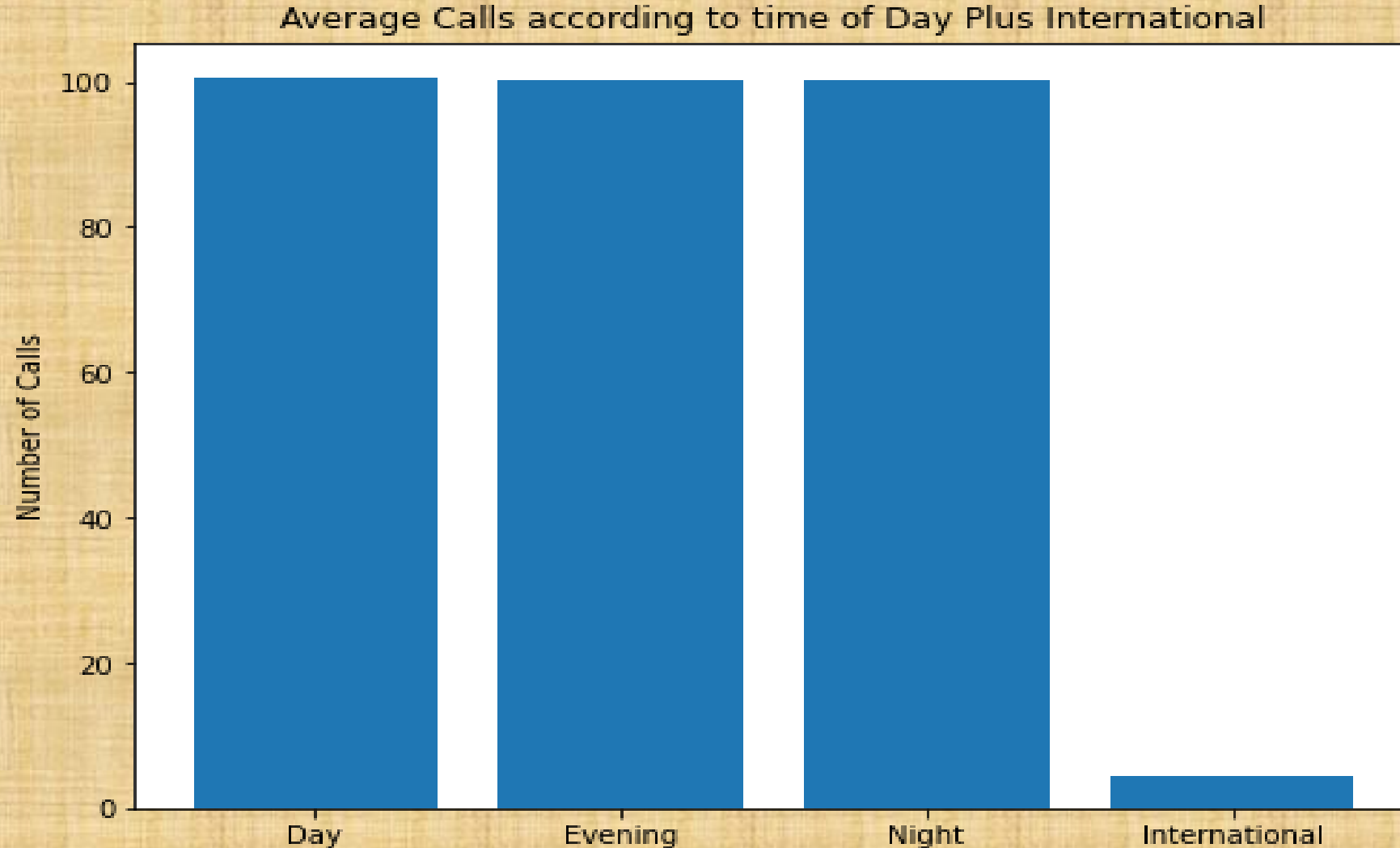
- total night calls: Total number of night calls.
- total night charge: Total charge for the night calls.
- total intl minutes: Total minutes of international calls.
- total intl calls: Total number of international calls.
- total intl charge: Total charge for the international calls.
- customer service calls: Number of times the customer called customer service.
- churn: Whether the customer churned or not (True/False).

VISUALIZATIONS

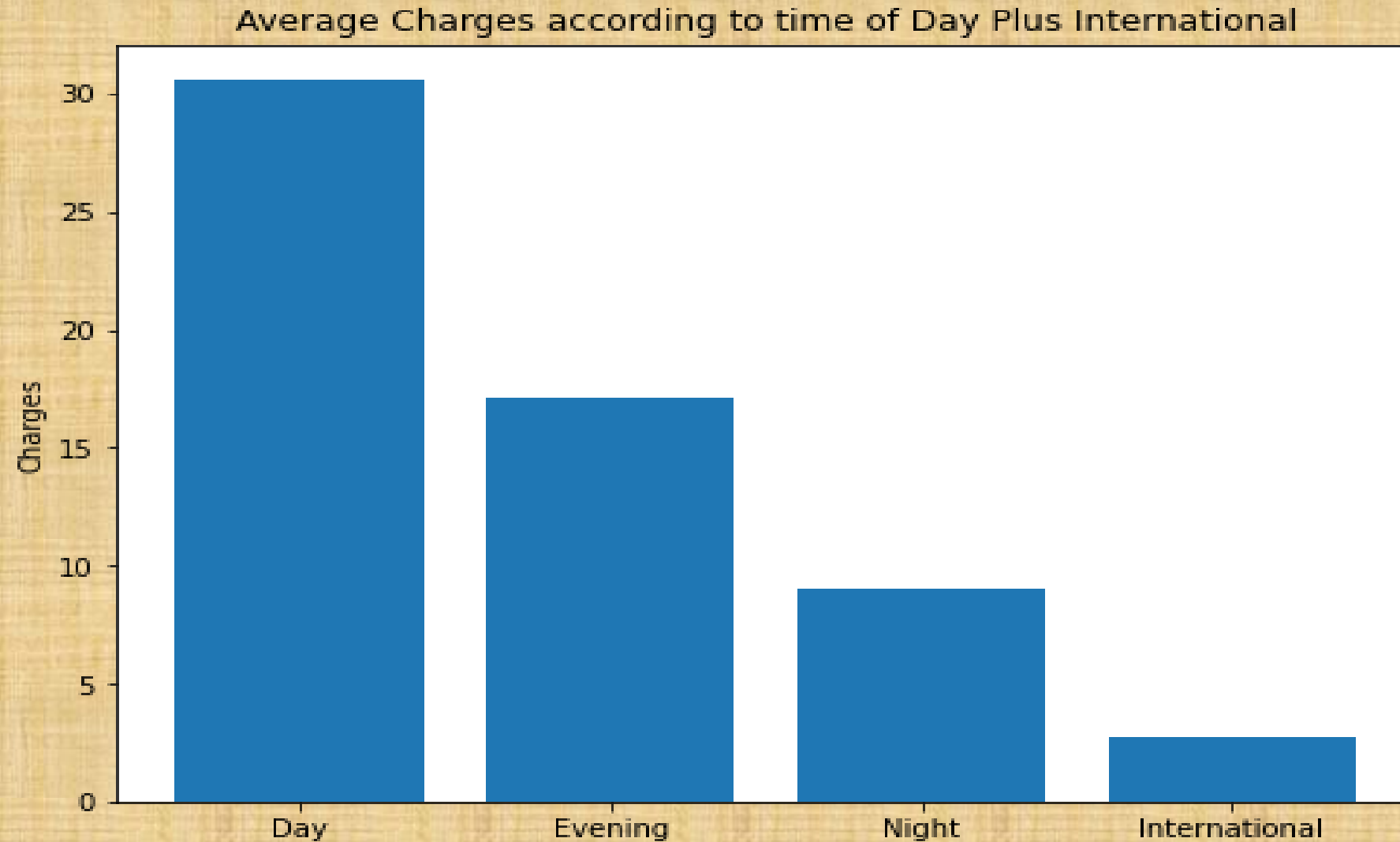
Relationship between churning out and international plan



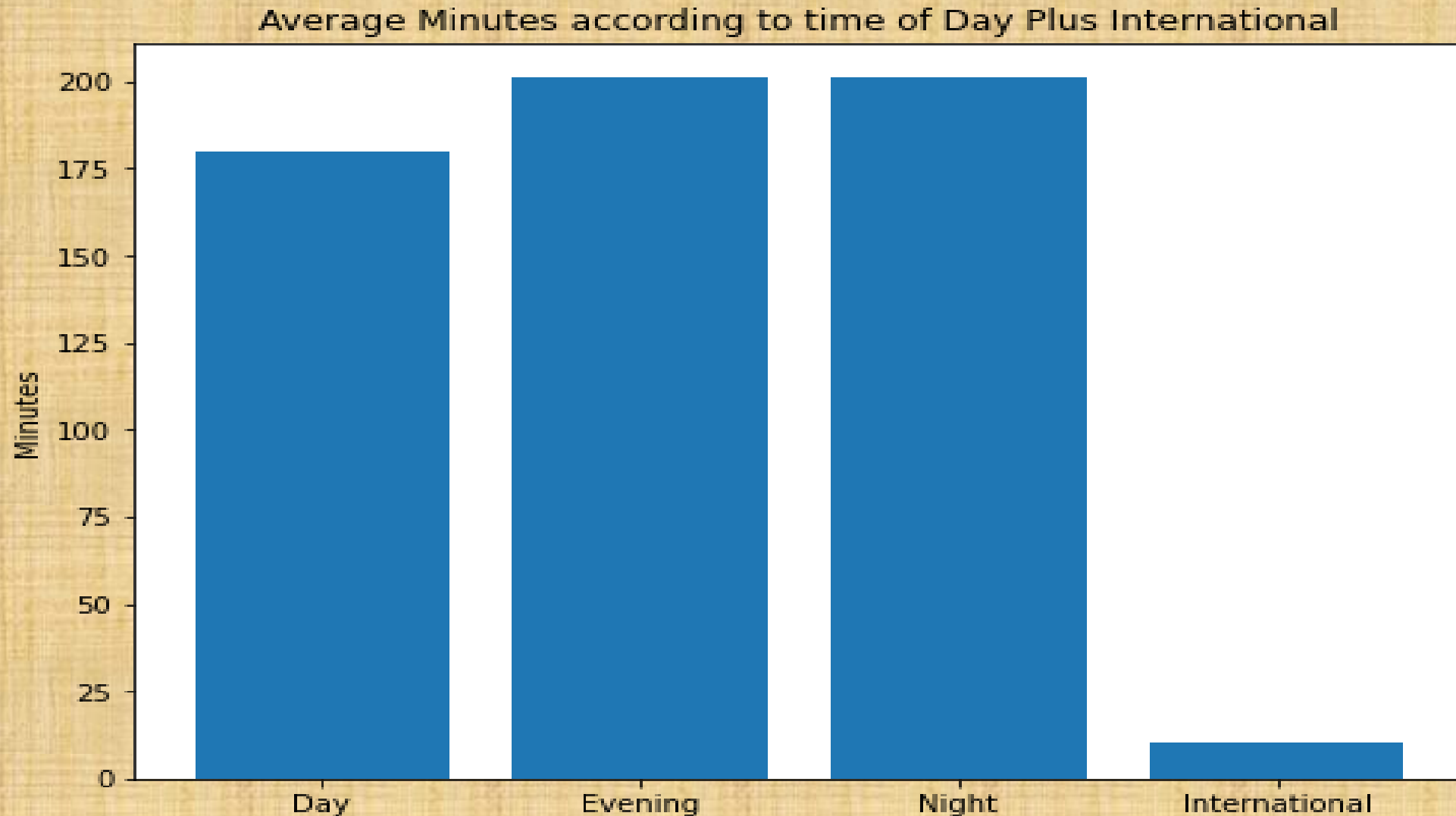
Relationship between number of calls and time of day plus international



Relationship between charges and time of day



Relationship between minutes and time of day



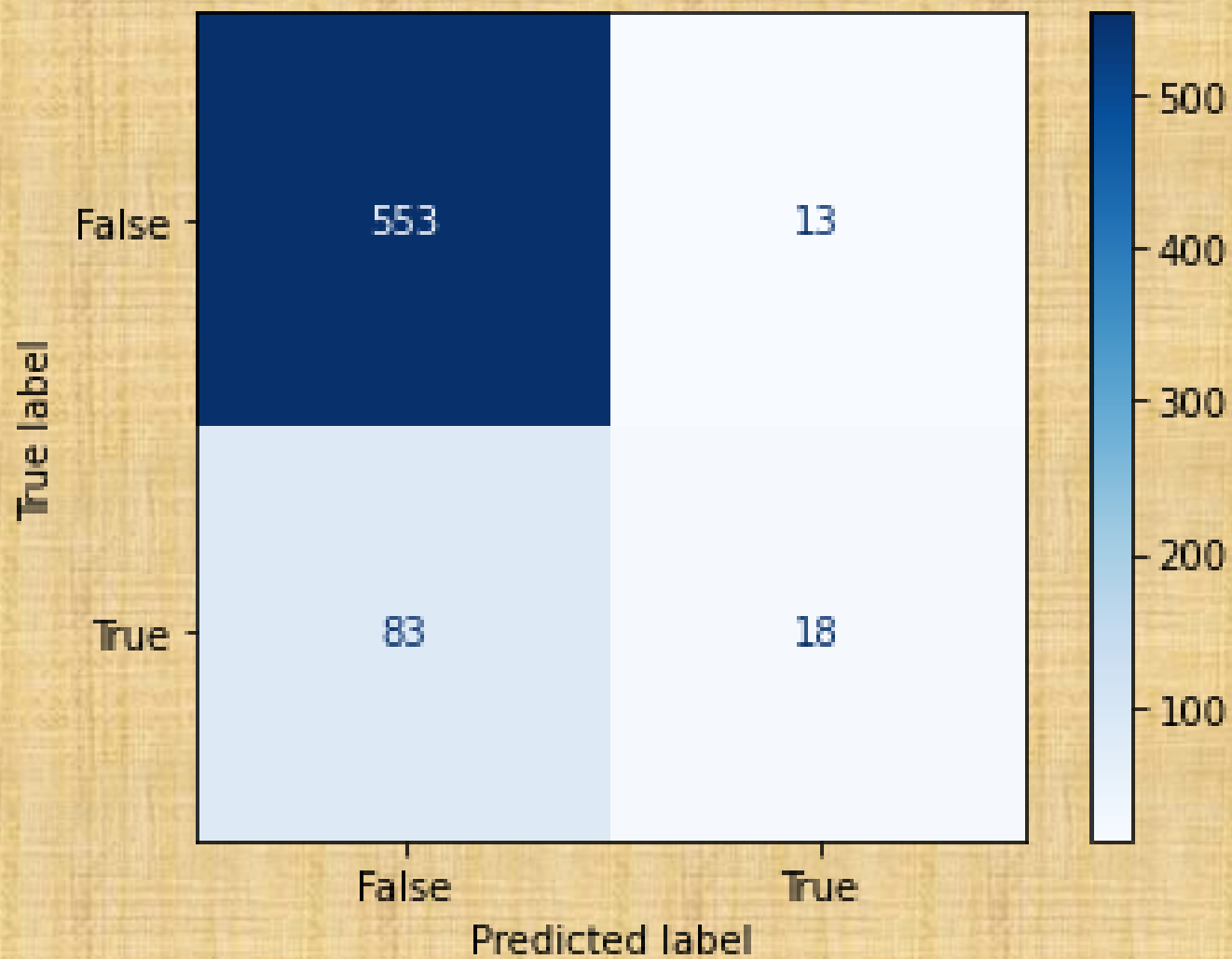
MODELING

1. Logistic Regression

Logistic regression scores:

- Precision: 0.5806451612903226
- Recall: 0.1782178217821782
- f1 score: 0.2727272727272727
- Accuracy: 0.856071964017991
- AUC: 0.8331875590385894

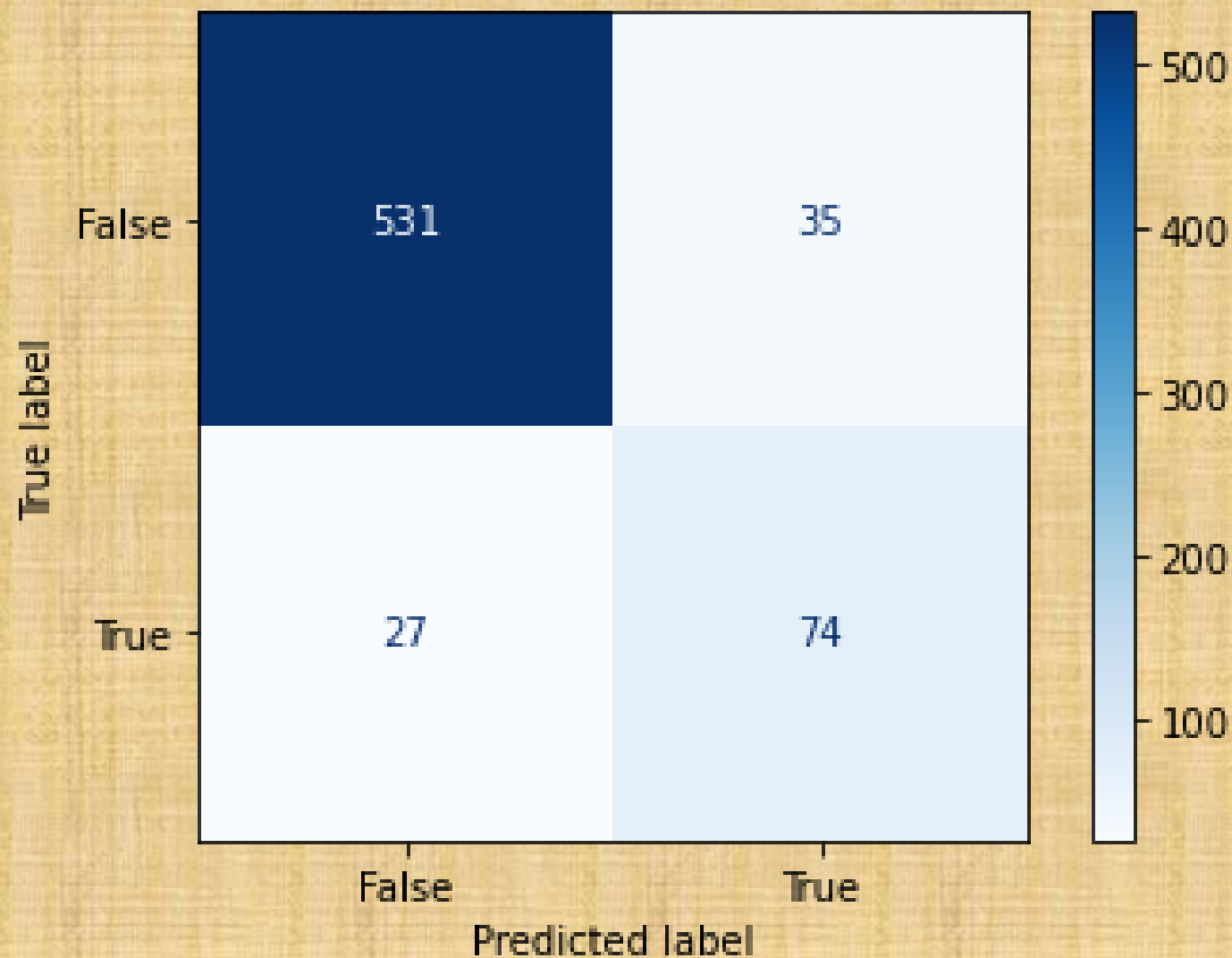
Confusion matrix



2. Decision Tree

- Decision tree scores:
- Precision: 0.6788990825688074
- Recall: 0.7326732673267327
- f1 score: 0.7047619047619047
- Accuracy: 0.9070464767616192

Confusion matrix



Recommendations

These are the recommendations:

- Reduce day charges to lure more customers, since a lot of calls are being during the day
- Another alternative to day charges would be to have offers from the normal charges once in a while to encourage more day calls.
- Improve customer service. If customers make less calls to customer service department, they'll feel less frustrated, and encouraged to stay.