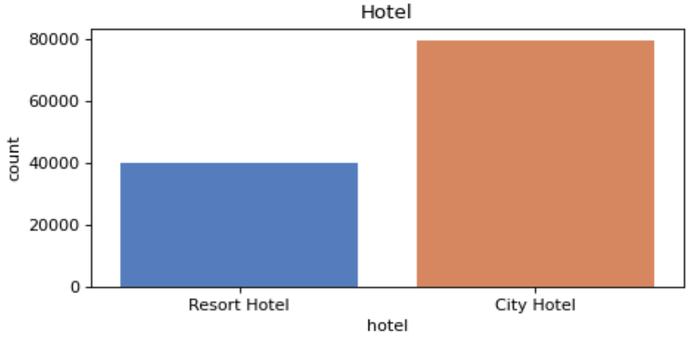
★★★★★

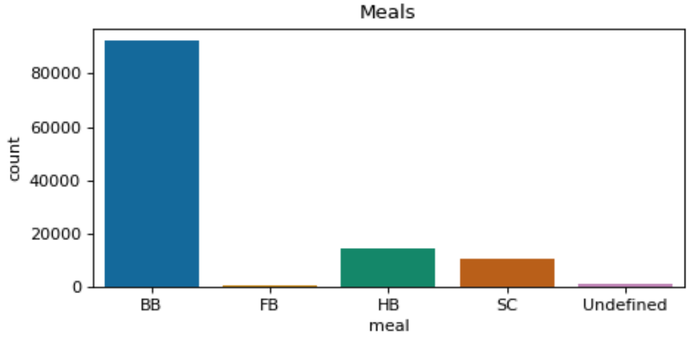
Predictive Model for Hotels

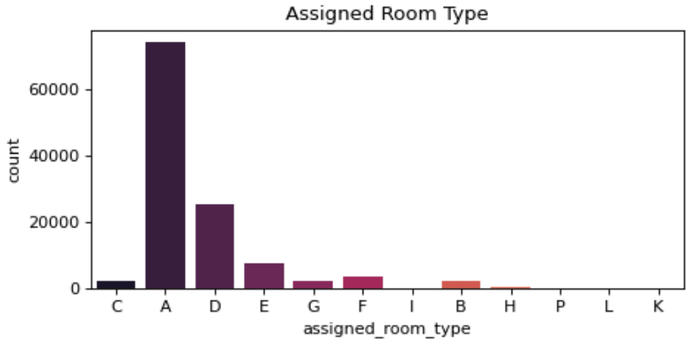
Jewel & Saksham

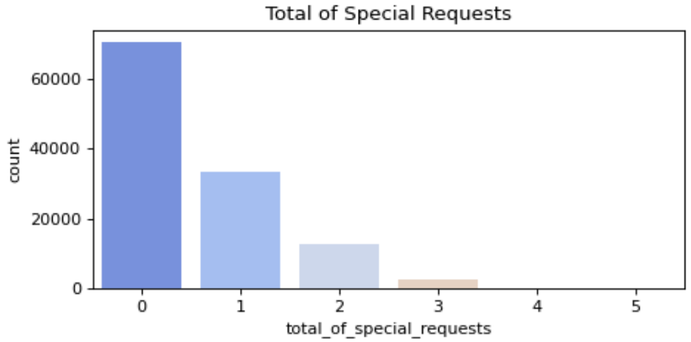
Contents

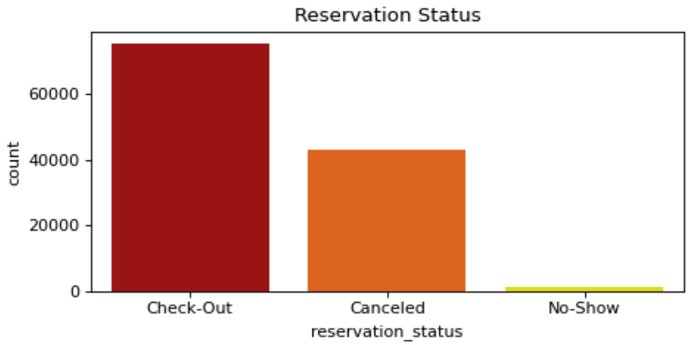
Visualization

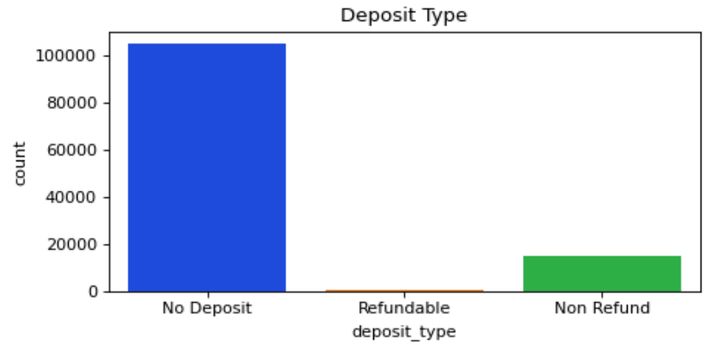


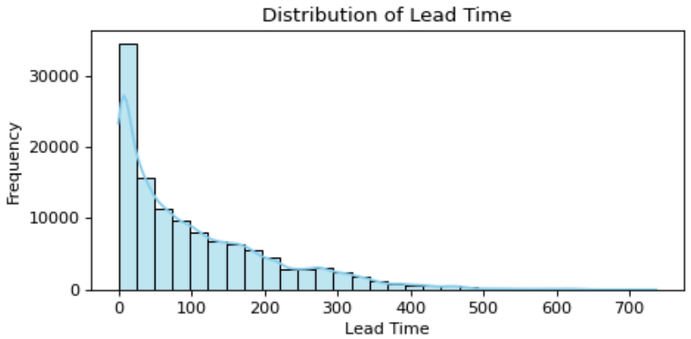




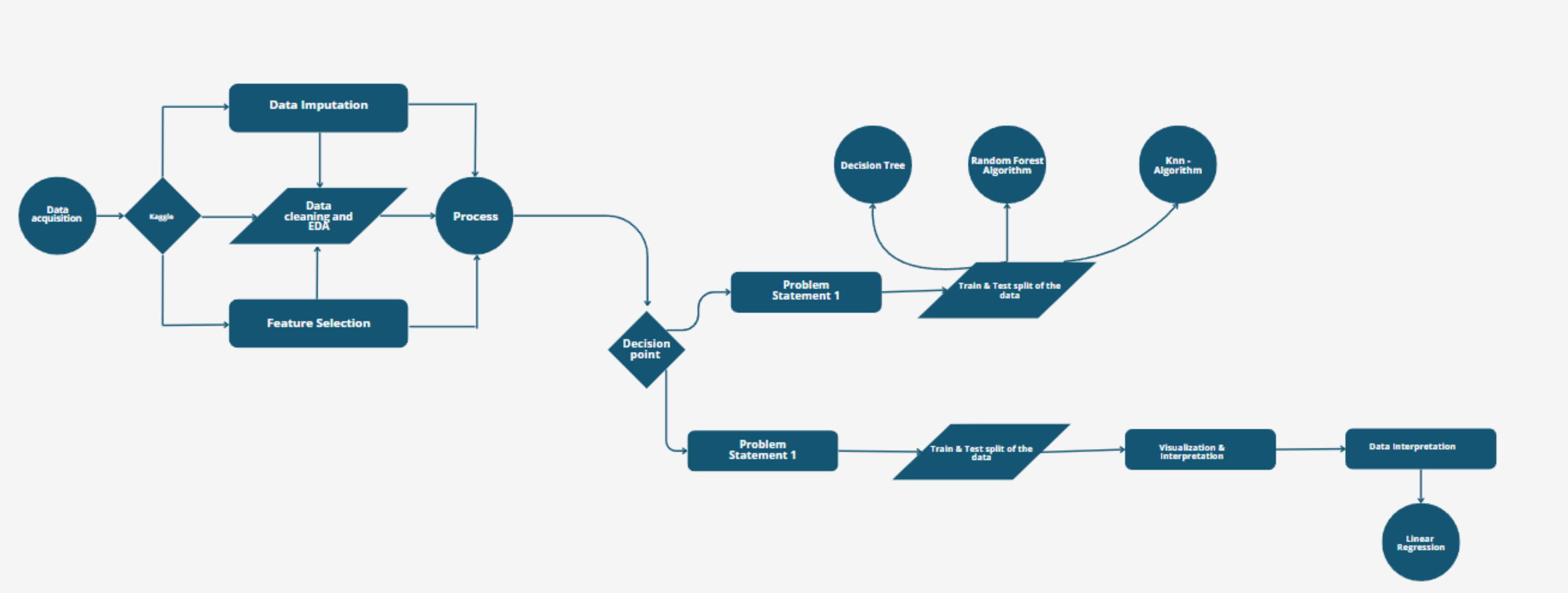




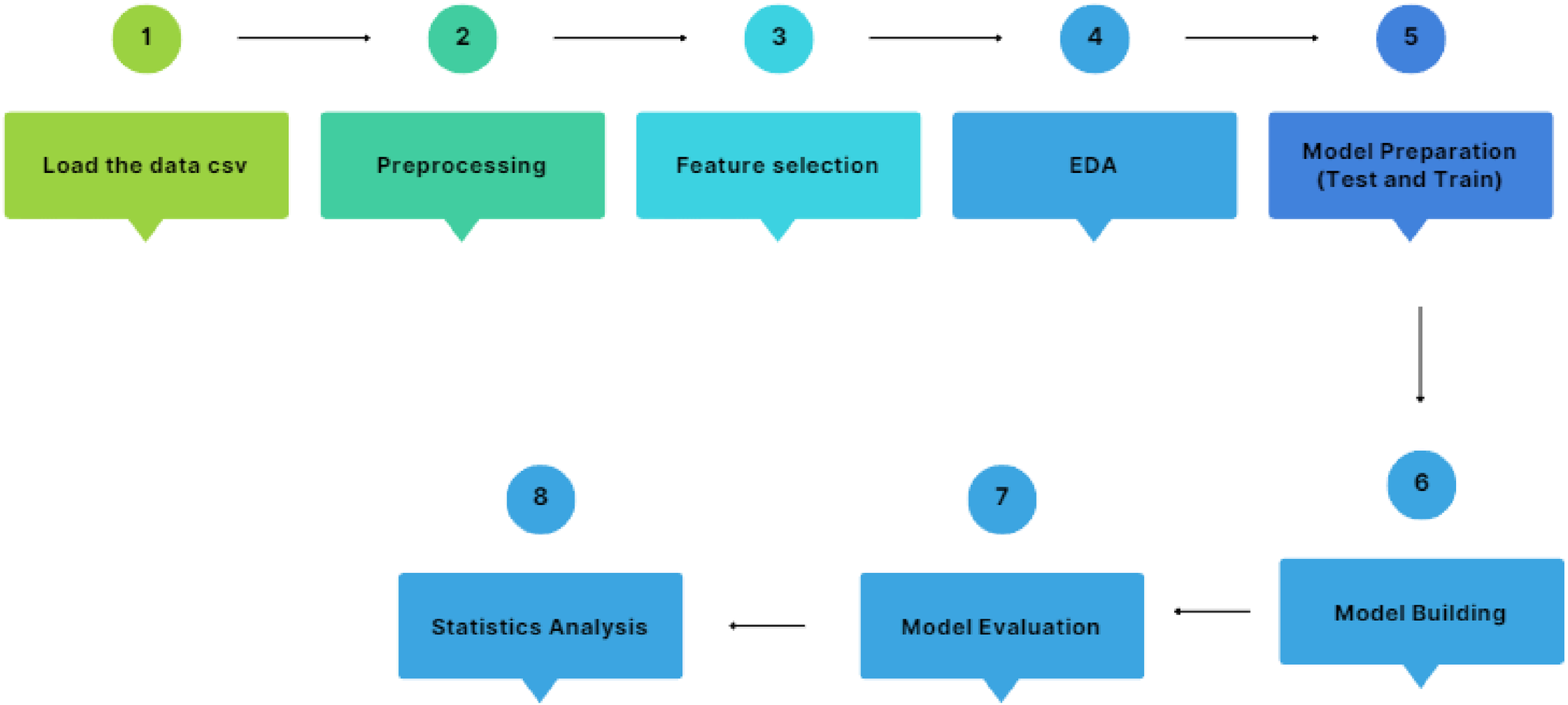




Block diagram



Project Flowchart

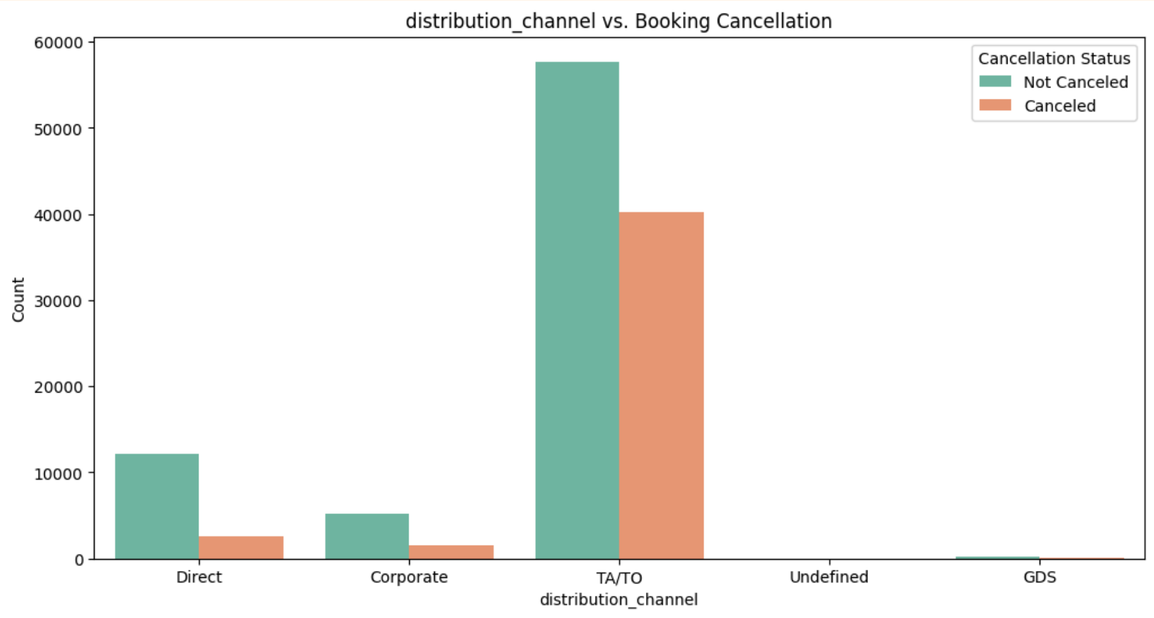


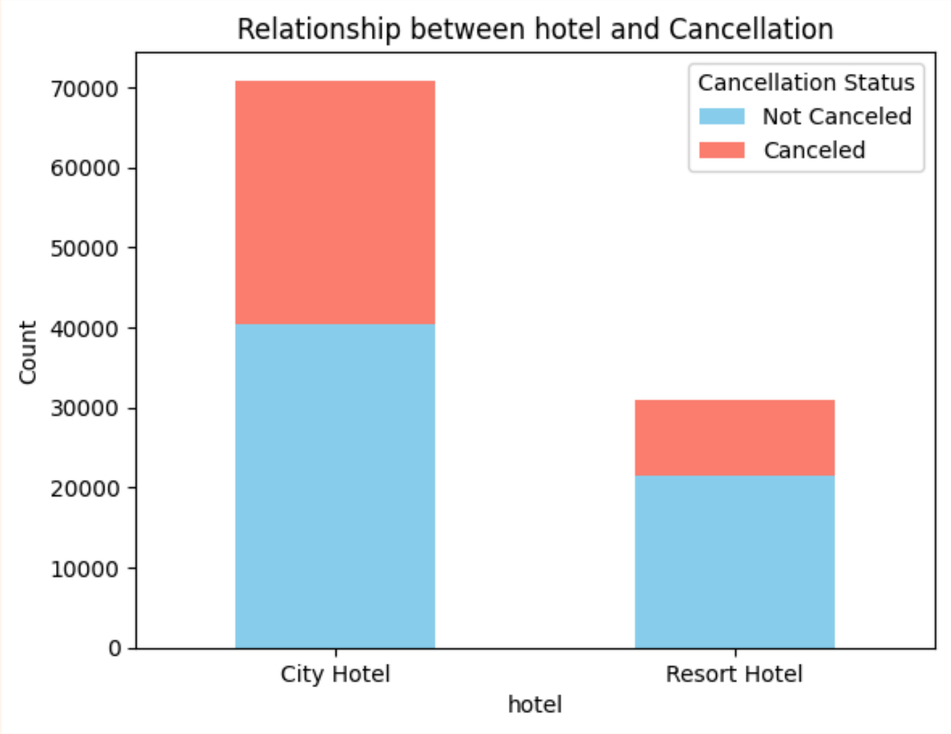
1

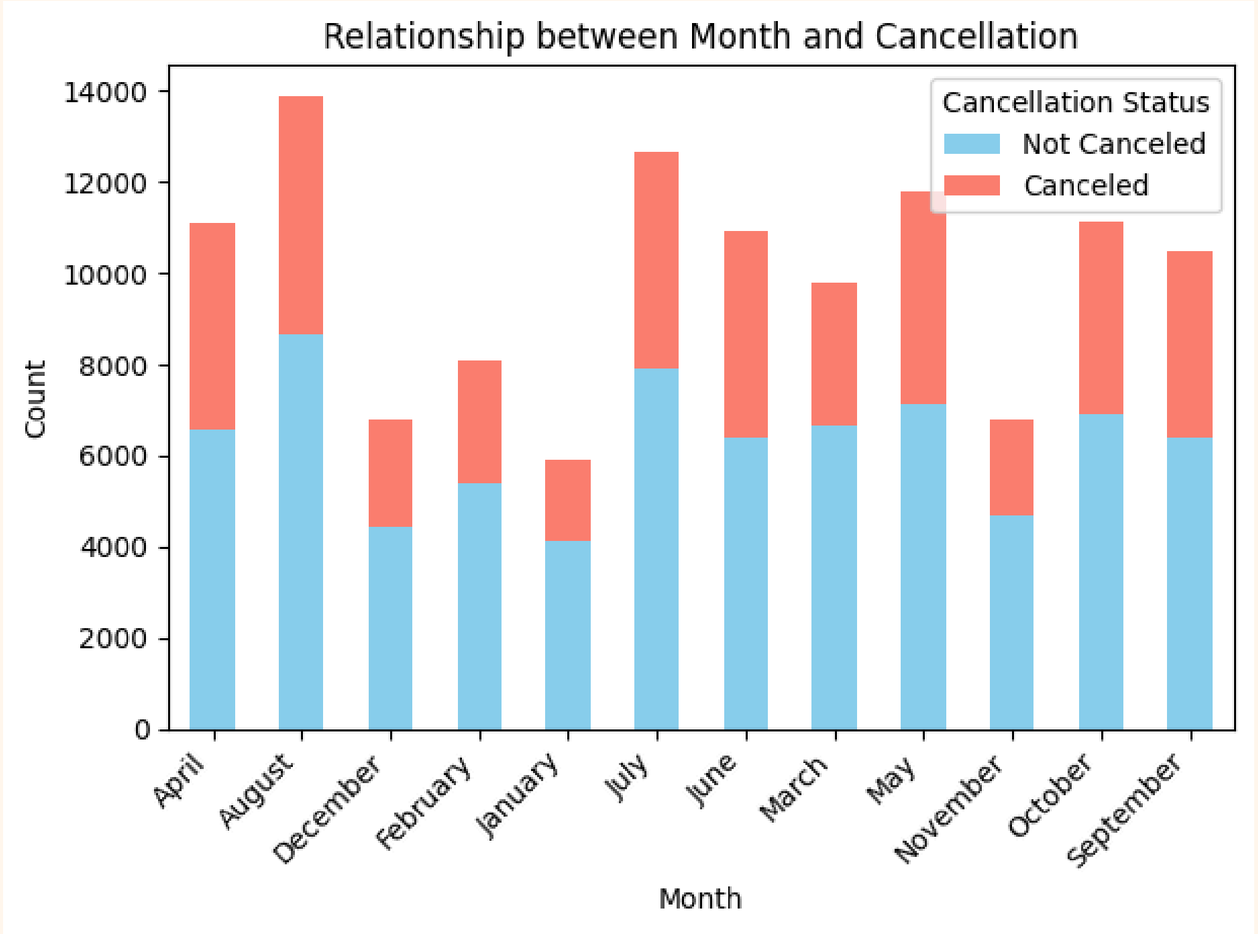
Problem Statement 1 : Whether the customer will cancel their booking or not?

Data Model:- x= 1,00,000 and p = 15

	Lodge service	Kids	Adult	Updates	Repeated	Payment Type	Parking spots	...
Customer 1								
Customer 2								
Customer n								


distribution_channel vs. Booking Cancellation
Cancellation Status
Not Canceled
Canceled
Count
distribution_channel
Direct
Corporate
TA/TO
Undefined
GDS
0
10000
20000
30000
40000
50000
60000


Relationship between hotel and Cancellation
Cancellation Status
Not Canceled
Canceled
Count
hotel
City Hotel
Resort Hotel
0
10000
20000
30000
40000
50000
60000
70000


Relationship between Month and Cancellation
Cancellation Status
Not Canceled
Canceled
Count
Month
0
2000
4000
6000
8000
10000
12000
14000
April
August
December
February
January
July
June
March
May
November
October
September

Result

1

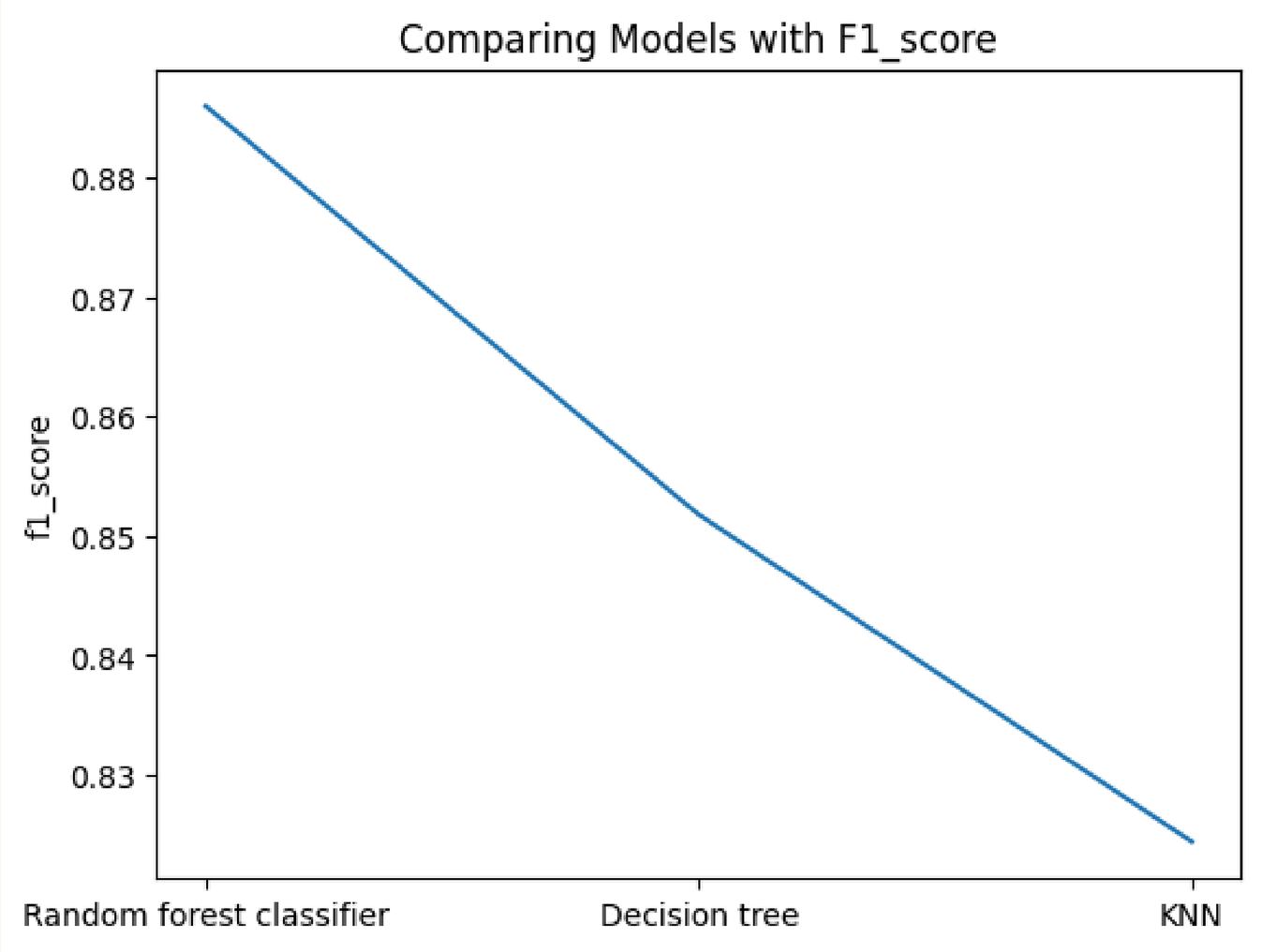
KNN

2

Decision Tree

3

Random Forest Classifier



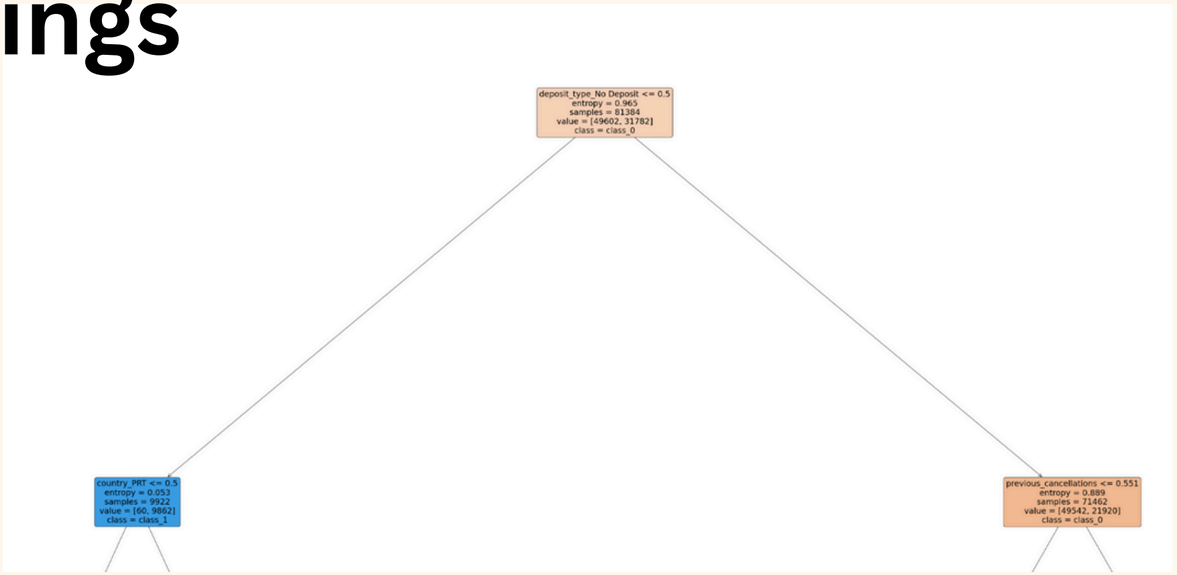
Decision Tree Testing & findings

```
Accuracy: 0.995785412366067
Classification Report:
              precision    recall  f1-score   support

           0       1.00      1.00      1.00     49602
           1       0.99      1.00      0.99     31782

    accuracy                           1.00     81384
   macro avg       1.00      1.00      1.00     81384
weighted avg       1.00      1.00      1.00     81384

Confusion Matrix:
[[49402   200]
 [  143 31639]]
```




```
Accuracy: 0.88809161055688388
Classification Report:
              precision    recall  f1-score   support

           0       0.89      0.93      0.91     12289
           1       0.89      0.82      0.85      8058

    accuracy                           0.89     20347
   macro avg       0.89      0.88      0.88     20347
weighted avg       0.89      0.89      0.89     20347

Confusion Matrix:
[[11462   827]
 [ 1450  6608]]
```

Problem

Customer Keeps cancelling

Solution

1. This model will help you plan your business in a better manner
2. If as a hotel or resort manager I think someone is going to cancel, I can send those customer a 10% to 15% off coupon.

2

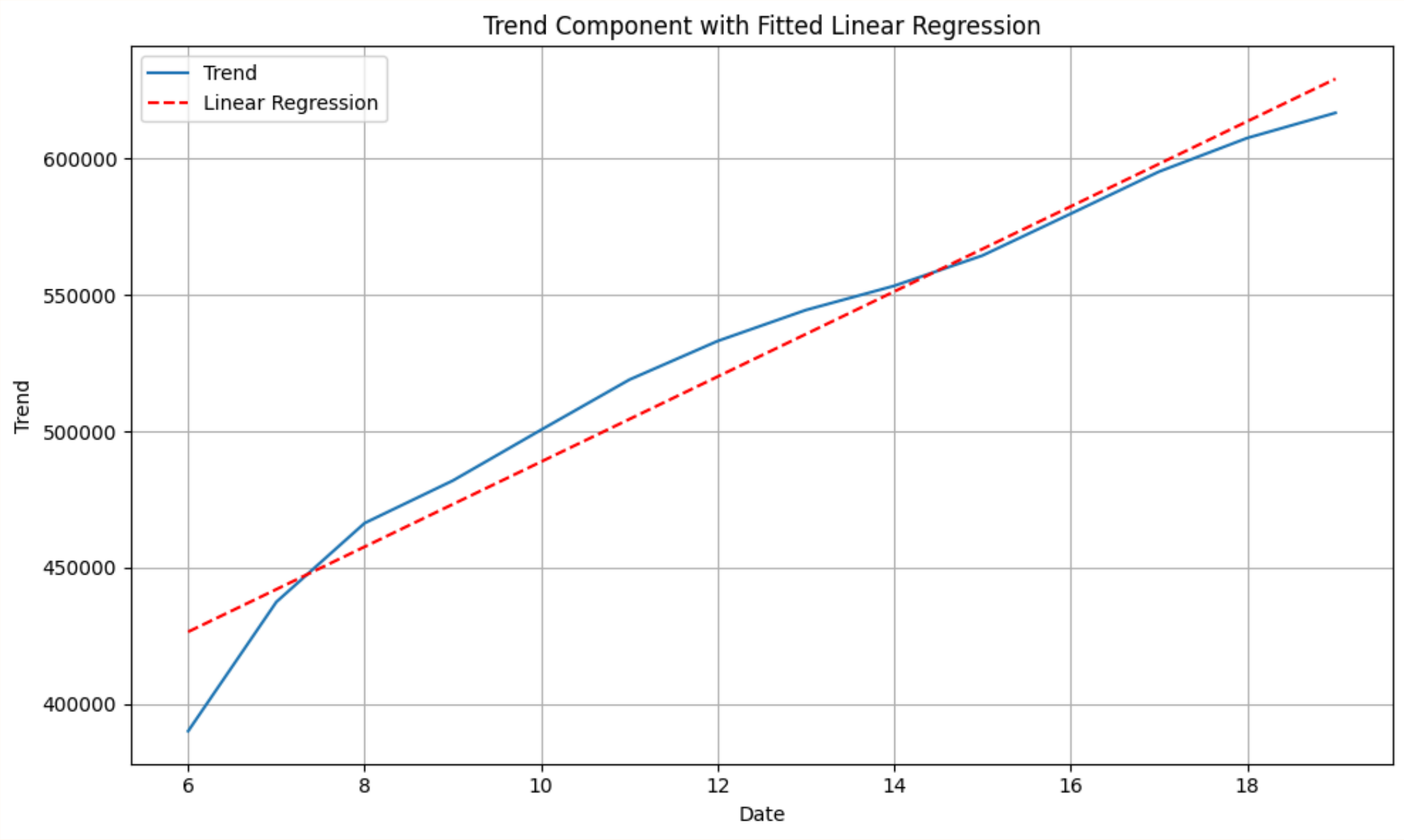
Problem Statement 2 : Predicting Revenue for future (seeasonality)

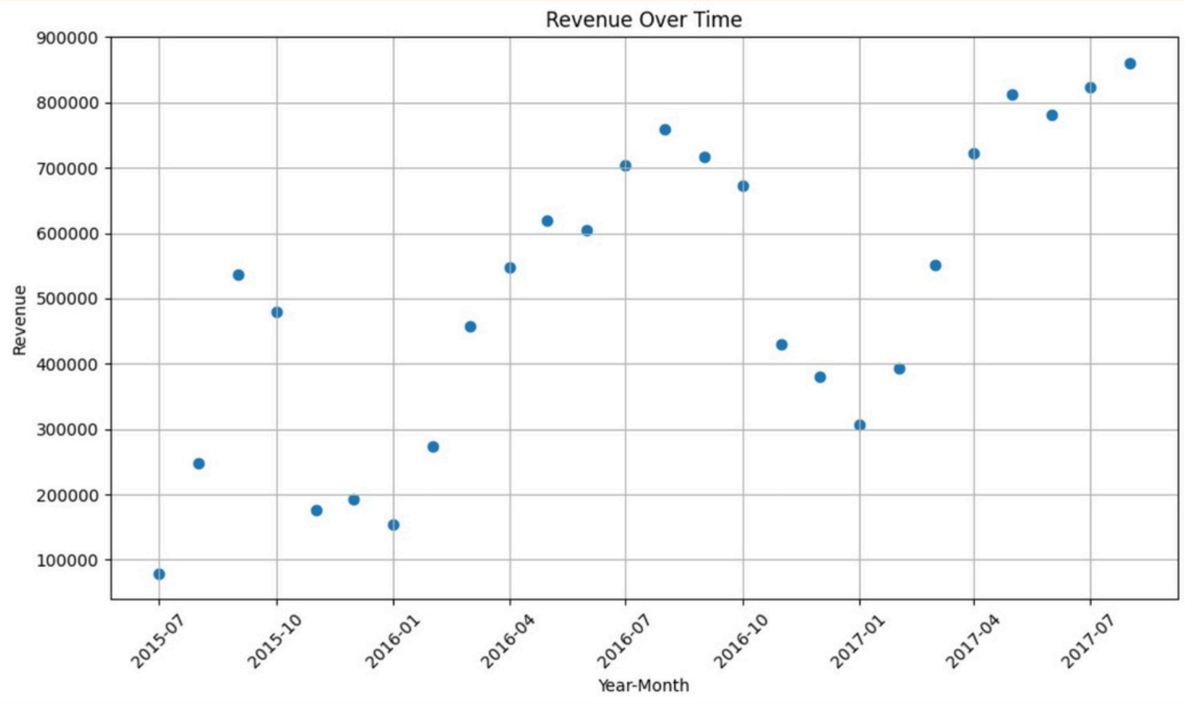
Data Model:-

	arrival_date_year	arrival_date_month	revenue
0	2015	July	79190.69
1	2015	August	247092.96
2	2015	September	536038.37
3	2015	October	480417.21
4	2015	November	176768.18
5	2015	December	192857.14
6	2016	January	154246.84
7	2016	February	272730.39

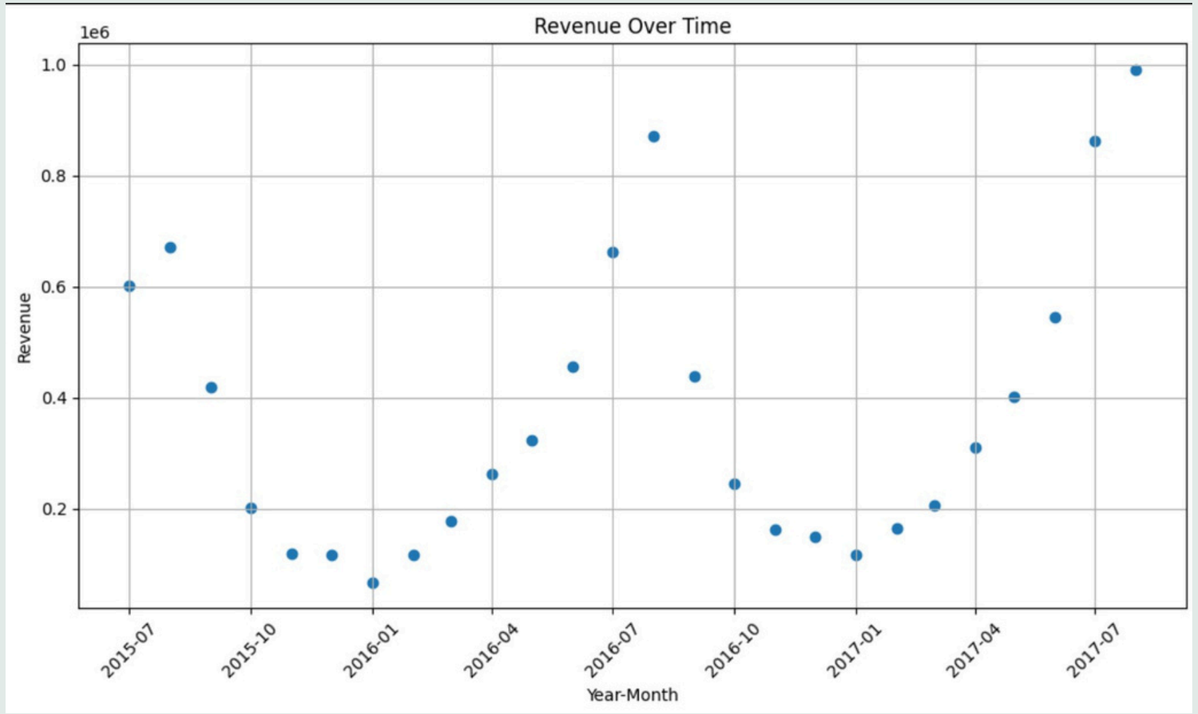
Revenue: - adr * (Weekend_stay + week_stay)

Why Linear Regression Model?



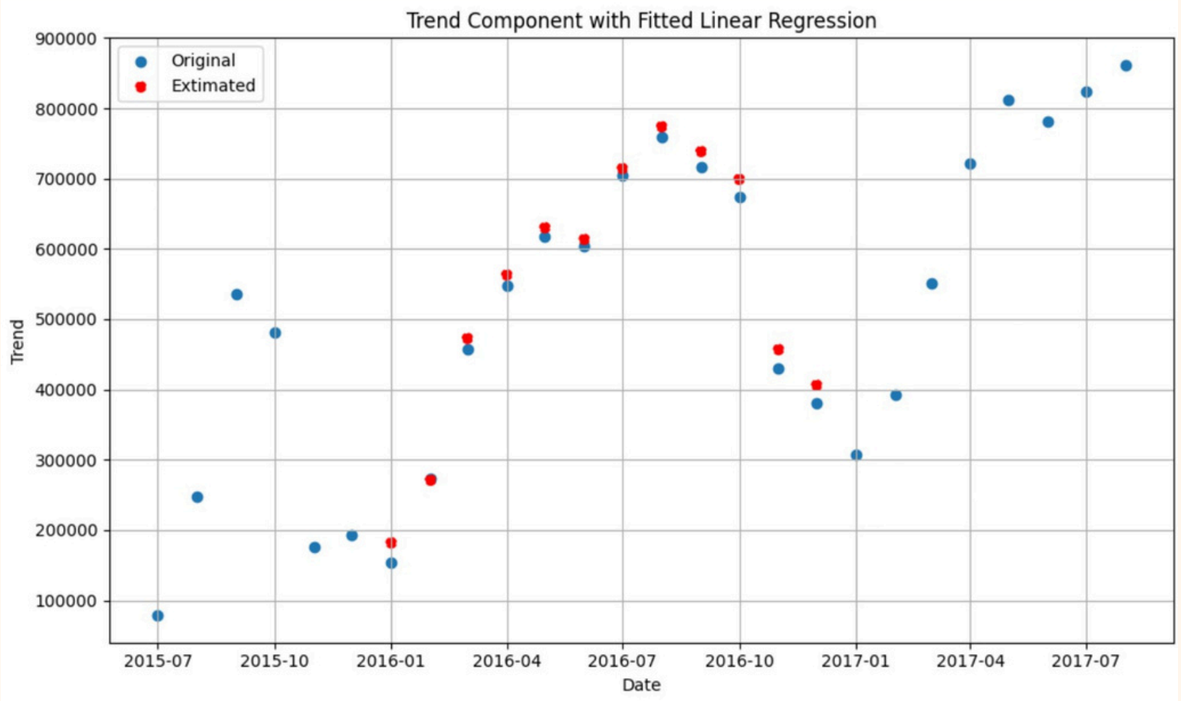


Revenue over time In City hotel

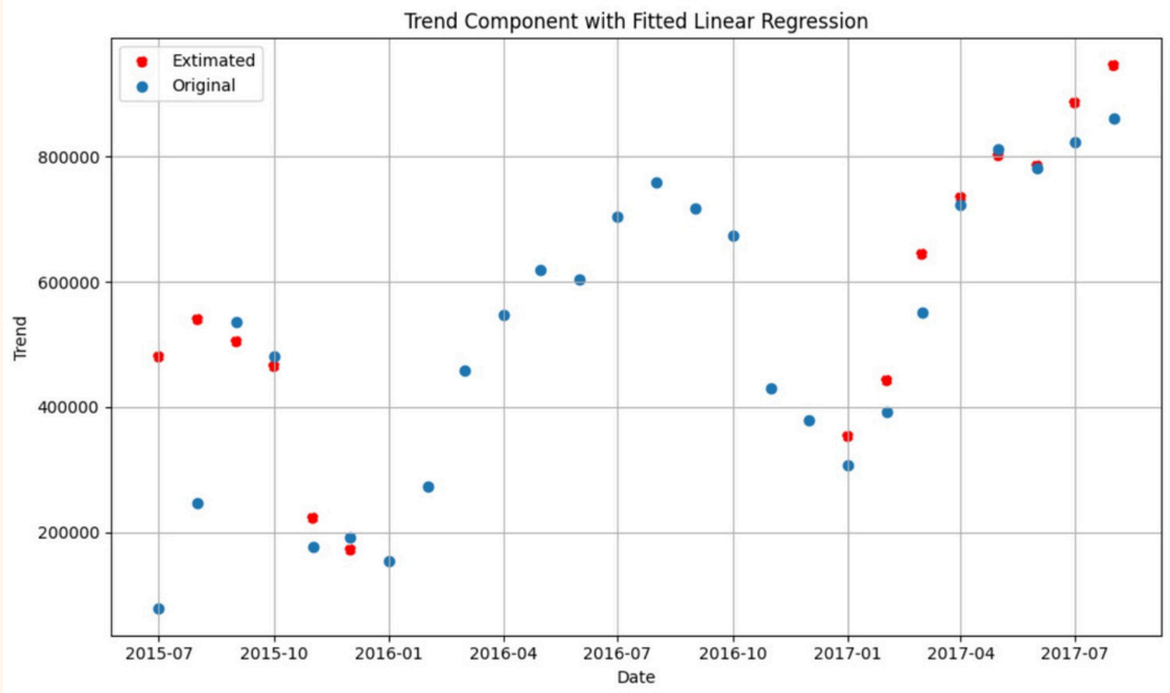


Revenue over time in Resort hotel

Model Prediction On train and test data



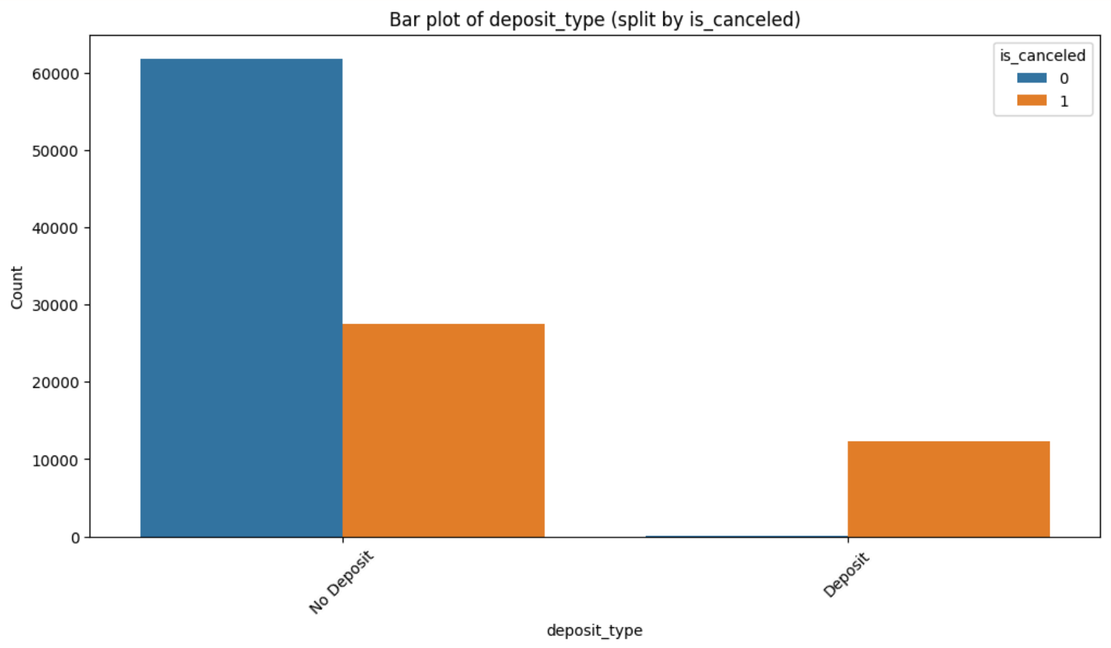
Train data



Test Data

Problem

Predictive Revenue?



Solution

1. As a hotel, if I know the revenue going to be generated in the future, I will increase man power in that month.
2. Better Pricing strategy
3. Increase the resources according to the seasonality
4. Making a only 60% refund policy

Thank-you