Flights Price Prediction

Ali Albayat – Mozah Alkhaldi

Introduction

Backstory

- New airline company want to operate its flight from different countries of Europe to Riyadh.
- Need to analyse the cost of existing airlines.
- Look at important factors on flight price.

Data Set & Tools

https://www.almosafer.com/en

- Scraping Data from Almosafer.
- 11 Airport to Riyadh.
- First week of December.
- 3986 rows .
- 13 column .

Tools

- Selenium
- BeautifulSoup
- SQL
- Pandas
- Matplotlib
- Seaborn
- Sklearn
- Numpy

Data Cleaning

01

Cheack for NaN and duplicate

02

Convert categorical to numerical

DURATION
09h 25m → 565

03

Drop unwanted columns

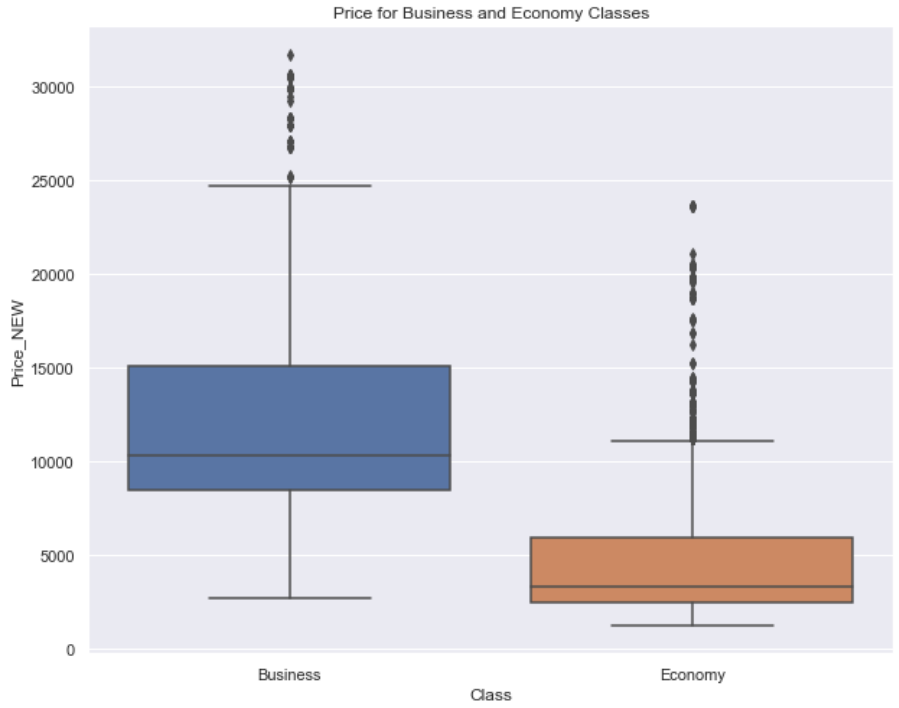
DESTINATION
DATE
FLIGHT NUMBER

04

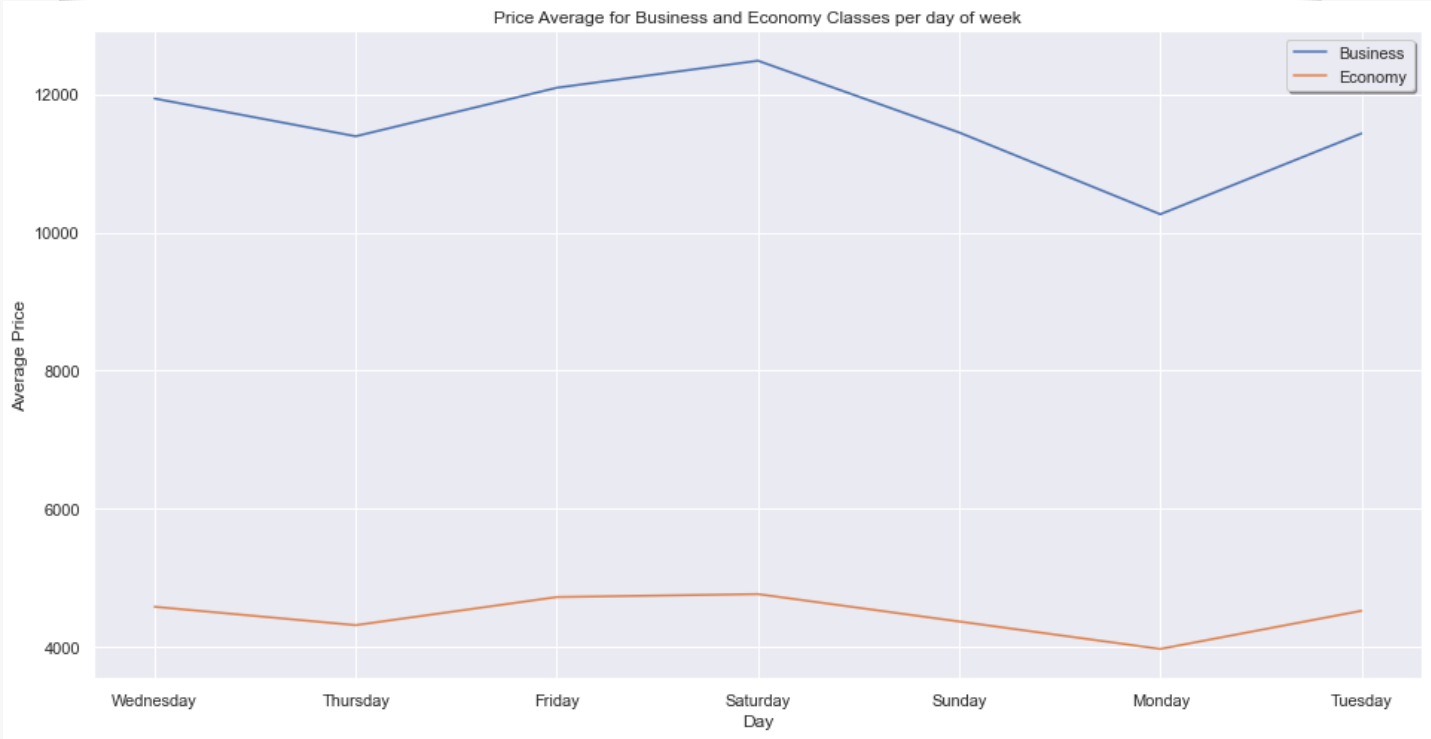
Cheack for outliers

DATA ANALYSIS

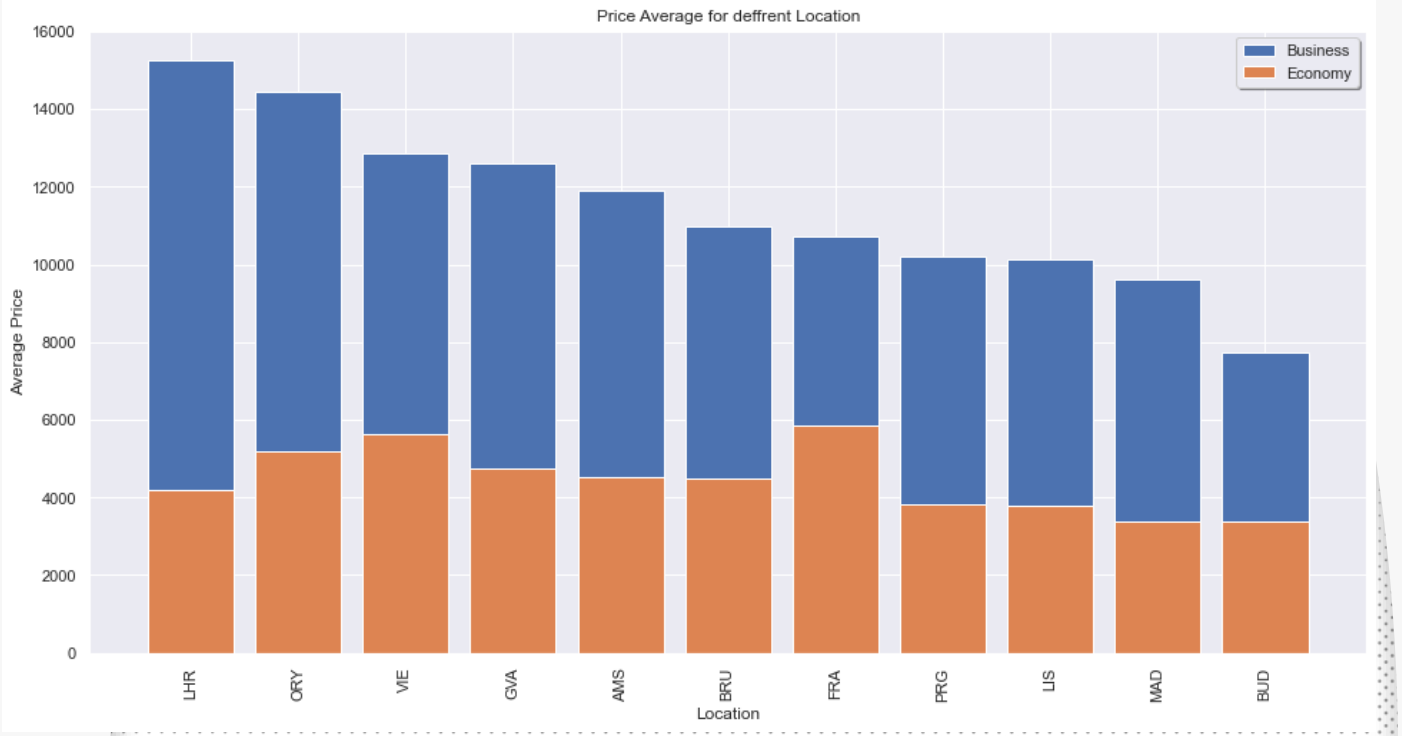
Outliers


Price for Business and Economy Classes
Price_NEW
30000
25000
20000
15000
10000
5000
0
Business
Economy
Class

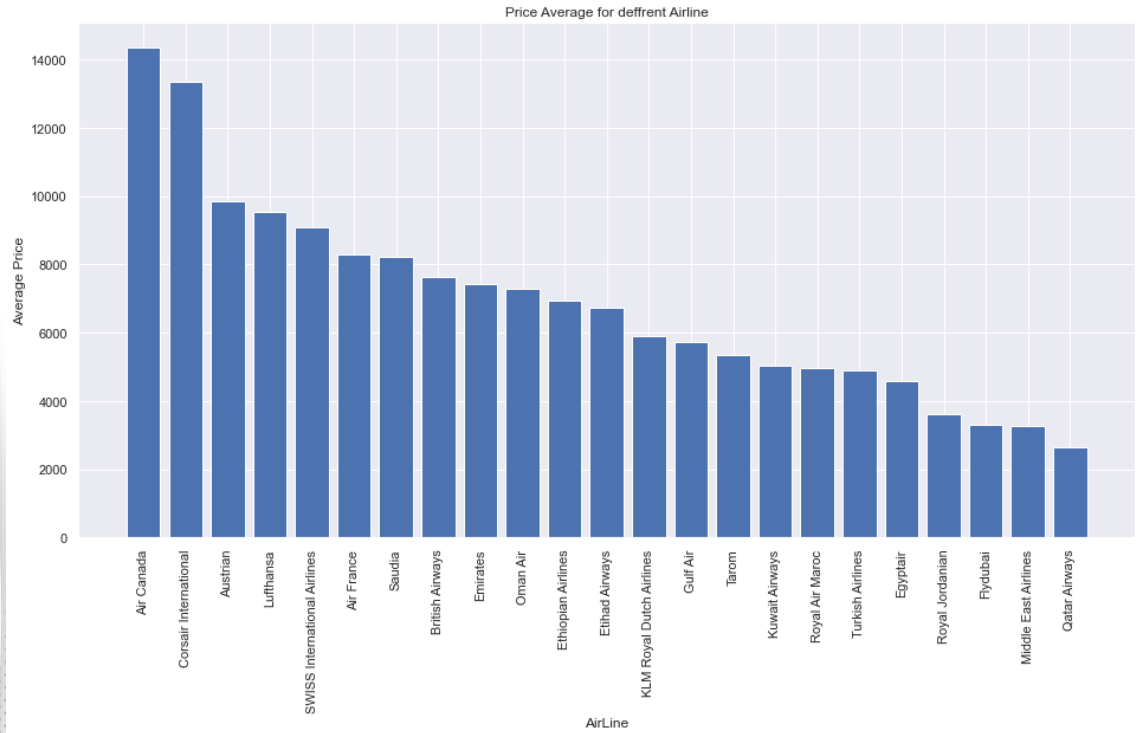
Average Price Per Day



Average Price Per Take-off Location



Average Price Per Airline



Regression Models

Regression Models

Model	Training	Validation	
Linear Regression	0.659	0.654	✓
Degree 2 polynomial Regression	0.827	-4911972.0	✗
Degree 3 polynomial Regression	0.921	-282.521	✗
Ridge Regression ($\lambda = 1$)	0.658	0.657	✓
Lasso Regression ($\lambda = 100$)	0.635	0.645	✓

Regression Models

Cross validation

Model	Validation
Linear Regression	0.64652
Ridge Regression ($\lambda = 1$)	0.64733
Lasso Regression ($\lambda = 100$)	0.54951

Regression Models

LassoCV

Training : 0.65585

Validation : 0.65749

λ : 5.6724

RidgeCV

Training : 0.65530

Validation : 0.65741

λ : 39.6268

Elastic NET

Validation : 0.65750

Regression Models

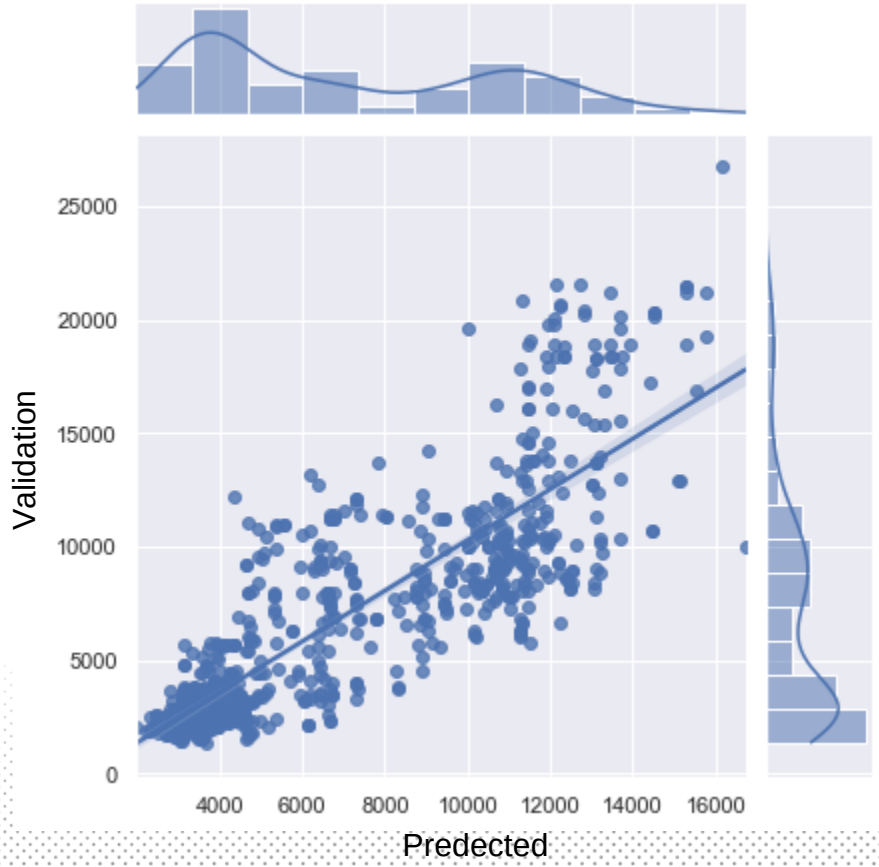
Random Forest

Validation : 0.43793

Gradient Boosting

Validation : 0.69350

Gradient Boosting



Conclusion

Gradient Boosting Test : 0.68298

THANK YOU FOR LISTINING