AN EXCEL BASED ANALYSIS ON AIRLINE FLIGHTS

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Submitted to
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1. CONTENTS

2. INTRODUCTION

This Project aims to analyse the *Airline Flights Dataset* Using Excel.

The airline industry is one of the most dynamic sectors, with flight operations constantly influenced by time, distance, demand, and pricing strategies. The Airline Flights Dataset presented here contains detailed information about flights between Delhi and Mumbai. It includes attributes such as airline name, flight number, source and destination cities, departure and arrival times, number of stops, class type, duration, days left for departure, and ticket price.

Objectives

1. To explore and understand the structure and features of the airline flights dataset.
2. To analyse how various factors like airline, class, and days left before departure affect flight prices.
3. To compare flight durations and timings across different airlines.
4. To visualize data through charts and graphs for better interpretation of airline performance and pricing behaviour.

Goal

The main goal of this project is to derive meaningful insights from the airline flights dataset to understand price variations, flight trends, and operational efficiency. The findings can support better decision-making for travellers, airlines, and analysts by highlighting key factors that influence flight pricing and scheduling patterns.

3. Dataset Description

Description of the entire Dataset of Restaurant Sales Data.

Column Name	Description	Data Type
Index	Just number of rows	Integer
Airline	Names of Airlines	Object
Flights	Number of each flights	Object
Source_city	City from which flight takes off	Object
Departure_time	Time of departure	Object
Stops	Stops between source and departure cities	Object
Arrival_time	Time of arriving	Object
Destination_city	City where the flight will land	Object
Class	Information of seat class	Object
Duration	Amount of travel in hours	Float
Days_left	Counting of days left from booking	Integer
Price	Price of ticket	Integer

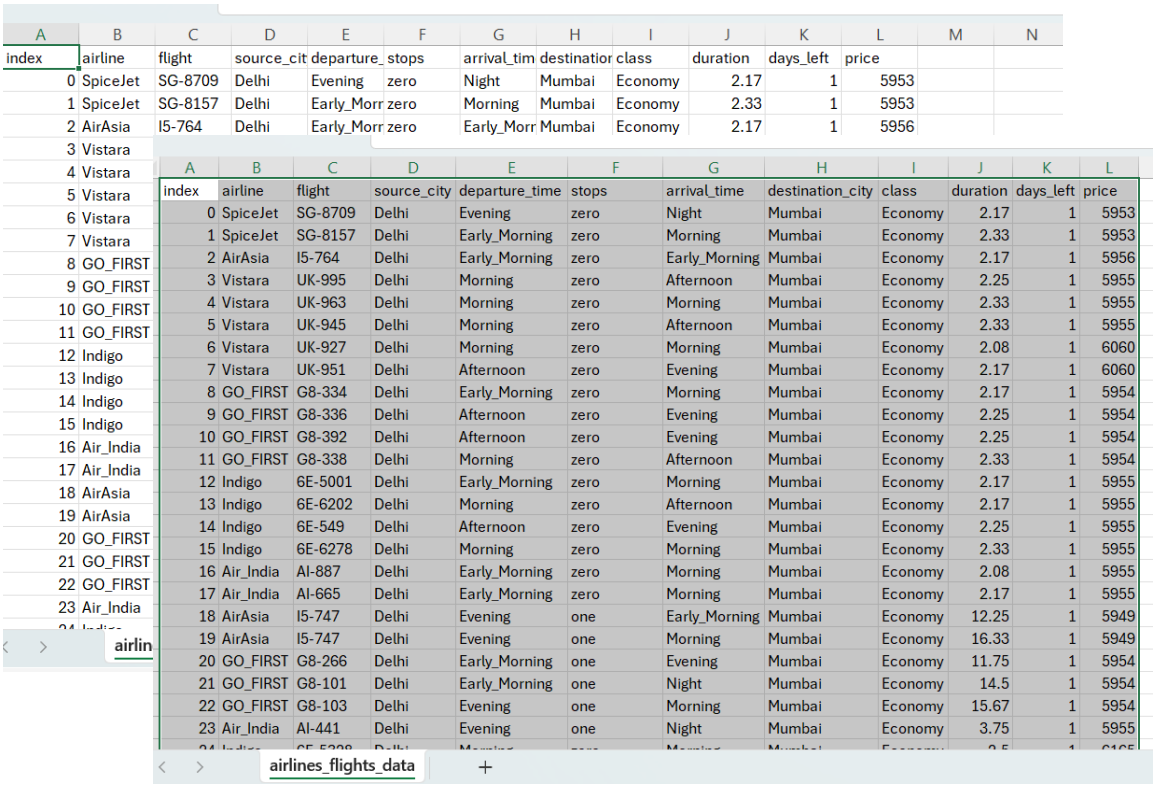
Data Source : Kaggle

Total Columns : 12

Total Rows : 300154

4. Data Cleaning and Processing

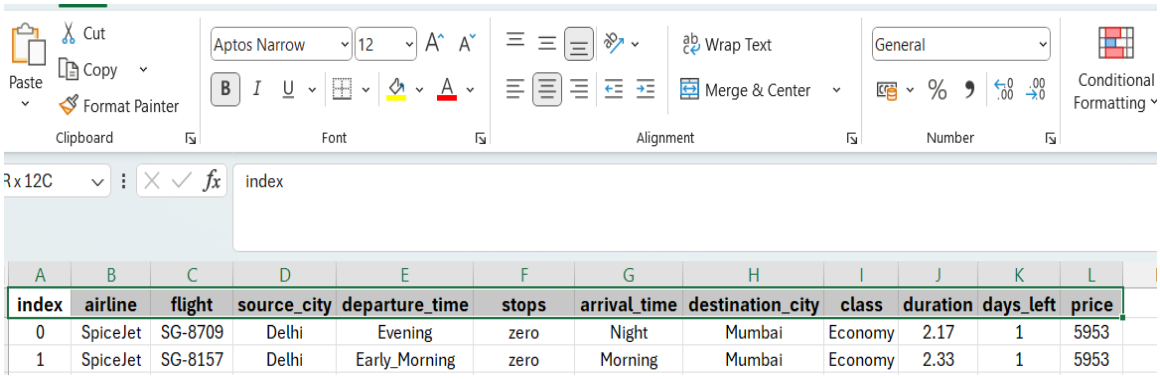
❖ Imported Dataset Arranging Rows and Columns with Alt + H + O + I , Alt + H + O + A



index	airline	flight	source_city	departure_time	stops	arrival_time	destination_city	class	duration	days_left	price
0	SpiceJet	SG-8709	Delhi	Evening	zero	Night	Mumbai	Economy	2.17	1	5953
1	SpiceJet	SG-8157	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.33	1	5953
2	AirAsia	I5-764	Delhi	Early_Morning	zero	Early_Morning	Mumbai	Economy	2.17	1	5956
3	Vistara	UK-995	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.25	1	5955
4	Vistara	UK-963	Delhi	Morning	zero	Morning	Mumbai	Economy	2.33	1	5955
5	Vistara	UK-945	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.33	1	5955
6	Vistara	UK-927	Delhi	Morning	zero	Morning	Mumbai	Economy	2.08	1	6060
7	Vistara	UK-951	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.17	1	6060
8	GO_FIRST	G8-334	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.17	1	5954
9	GO_FIRST	G8-336	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.25	1	5954
10	GO_FIRST	G8-392	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.25	1	5954
11	GO_FIRST	G8-338	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.33	1	5954
12	Indigo	6E-5001	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.17	1	5955
13	Indigo	6E-6202	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.17	1	5955
14	Indigo	6E-549	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.25	1	5955
15	Indigo	6E-6278	Delhi	Morning	zero	Morning	Mumbai	Economy	2.33	1	5955
16	Air_India	AI-887	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.08	1	5955
17	Air_India	AI-665	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.17	1	5955
18	AirAsia	I5-747	Delhi	Evening	one	Early_Morning	Mumbai	Economy	12.25	1	5949
19	AirAsia	I5-747	Delhi	Evening	one	Morning	Mumbai	Economy	16.33	1	5949
20	GO_FIRST	G8-266	Delhi	Early_Morning	one	Evening	Mumbai	Economy	11.75	1	5954
21	GO_FIRST	G8-101	Delhi	Early_Morning	one	Night	Mumbai	Economy	14.5	1	5954
22	GO_FIRST	G8-103	Delhi	Evening	one	Morning	Mumbai	Economy	15.67	1	5954
23	Air_India	AI-441	Delhi	Evening	one	Night	Mumbai	Economy	3.75	1	5955

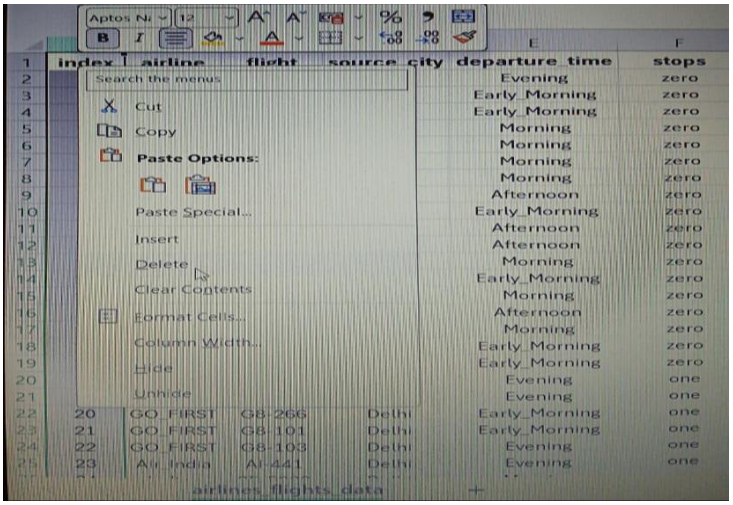
airlines_flights_data

❖ Edited headings with Bold & Justify

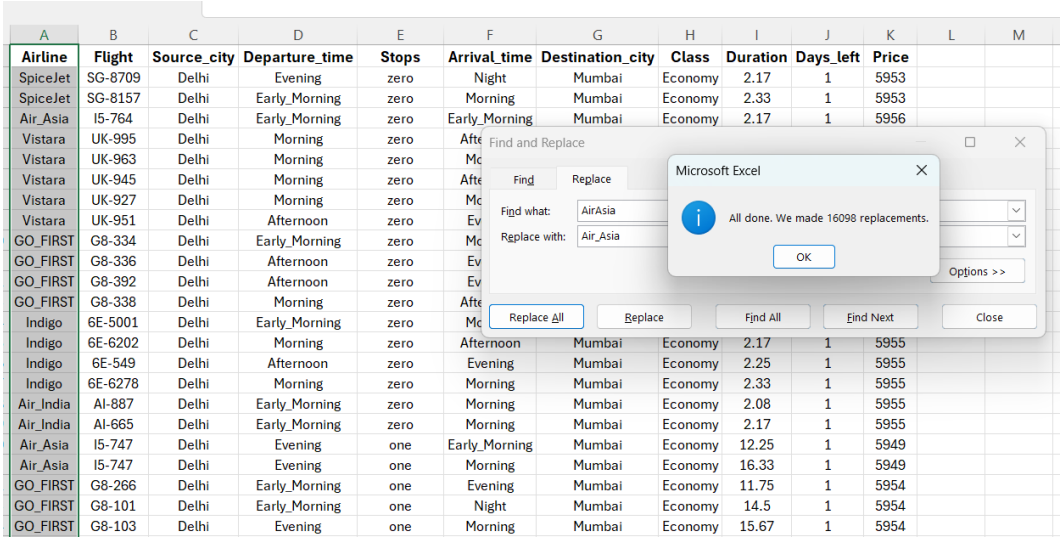


index	airline	flight	source_city	departure_time	stops	arrival_time	destination_city	class	duration	days_left	price
0	SpiceJet	SG-8709	Delhi	Evening	zero	Night	Mumbai	Economy	2.17	1	5953
1	SpiceJet	SG-8157	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.33	1	5953

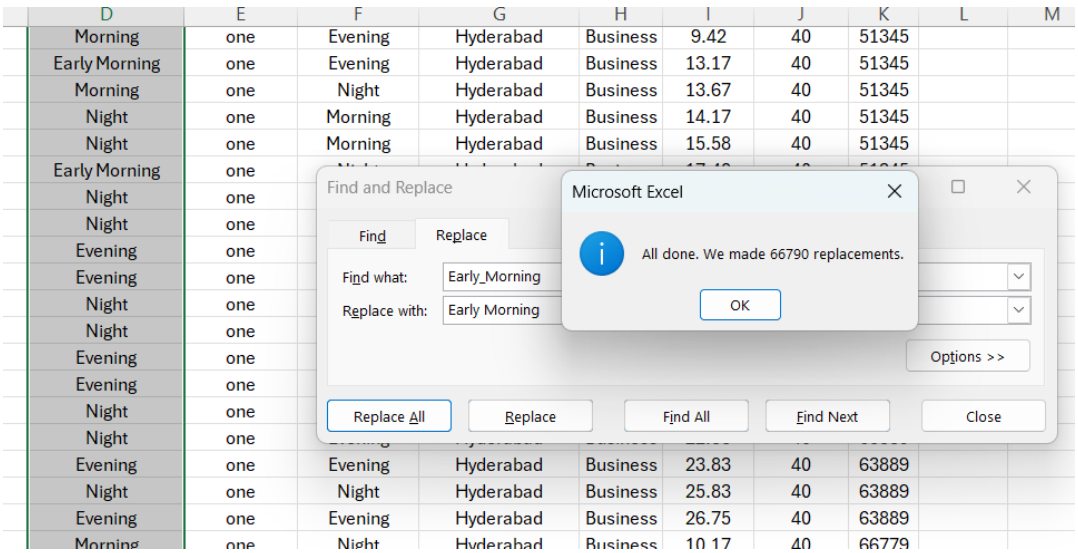
❖ Drop the Index Column



❖ Replace Names

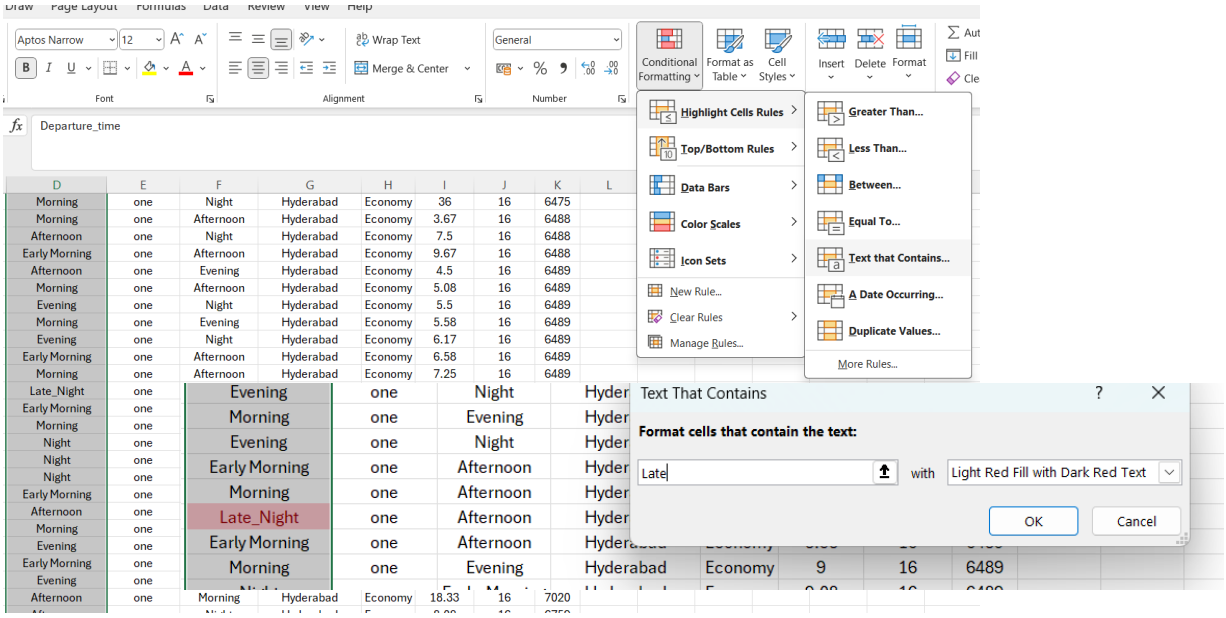


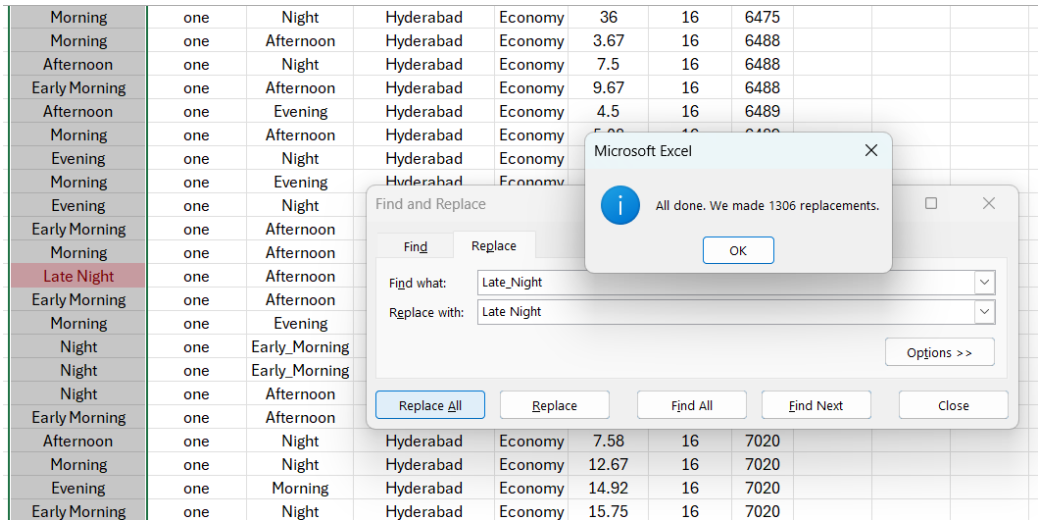
Airline	Flight	Source_city	Departure_time	Stops	Arrival_time	Destination_city	Class	Duration	Days_left	Price
SpiceJet	SG-8709	Delhi	Evening	zero	Night	Mumbai	Economy	2.17	1	5953
SpiceJet	SG-8157	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.33	1	5953
Air_Asia	I5-764	Delhi	Early_Morning	zero	Early_Morning	Mumbai	Economy	2.17	1	5956
Vistara	UK-995	Delhi	Morning	zero	Afte					
Vistara	UK-963	Delhi	Morning	zero	Mo					
Vistara	UK-945	Delhi	Morning	zero	Afte					
Vistara	UK-927	Delhi	Morning	zero	Mo					
Vistara	UK-951	Delhi	Afternoon	zero	Ev					
GO_FIRST	G8-334	Delhi	Early_Morning	zero	Mo					
GO_FIRST	G8-336	Delhi	Afternoon	zero	Ev					
GO_FIRST	G8-392	Delhi	Afternoon	zero	Ev					
GO_FIRST	G8-338	Delhi	Morning	zero	Afte					
Indigo	6E-5001	Delhi	Early_Morning	zero	Mo					
Indigo	6E-6202	Delhi	Morning	zero	Afternoon	Mumbai	Economy	2.17	1	5955
Indigo	6E-549	Delhi	Afternoon	zero	Evening	Mumbai	Economy	2.25	1	5955
Indigo	6E-6278	Delhi	Morning	zero	Morning	Mumbai	Economy	2.33	1	5955
Air_India	AI-887	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.08	1	5955
Air_India	AI-665	Delhi	Early_Morning	zero	Morning	Mumbai	Economy	2.17	1	5955
Air_Asia	I5-747	Delhi	Evening	one	Early_Morning	Mumbai	Economy	12.25	1	5949
Air_Asia	I5-747	Delhi	Evening	one	Morning	Mumbai	Economy	16.33	1	5949
GO_FIRST	G8-266	Delhi	Early_Morning	one	Evening	Mumbai	Economy	11.75	1	5954
GO_FIRST	G8-101	Delhi	Early_Morning	one	Night	Mumbai	Economy	14.5	1	5954
GO_FIRST	G8-103	Delhi	Evening	one	Morning	Mumbai	Economy	15.67	1	5954



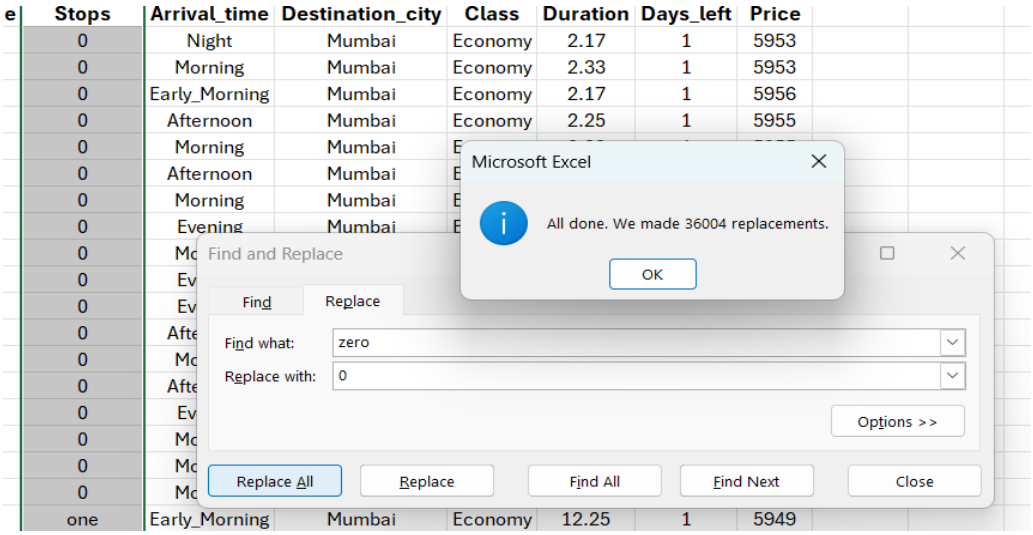
D	E	F	G	H	I	J	K
Morning	one	Evening	Hyderabad	Business	9.42	40	51345
Early Morning	one	Evening	Hyderabad	Business	13.17	40	51345
Morning	one	Night	Hyderabad	Business	13.67	40	51345
Night	one	Morning	Hyderabad	Business	14.17	40	51345
Night	one	Morning	Hyderabad	Business	15.58	40	51345
Early Morning	one						
Night	one						
Night	one						
Evening	one						
Evening	one						
Night	one						
Night	one						
Evening	one						
Evening	one						
Night	one						
Night	one						
Evening	one	Evening	Hyderabad	Business	23.83	40	63889
Night	one	Night	Hyderabad	Business	25.83	40	63889
Evening	one	Evening	Hyderabad	Business	26.75	40	63889
Morning	one	Night	Hyderabad	Business	10.17	40	66779

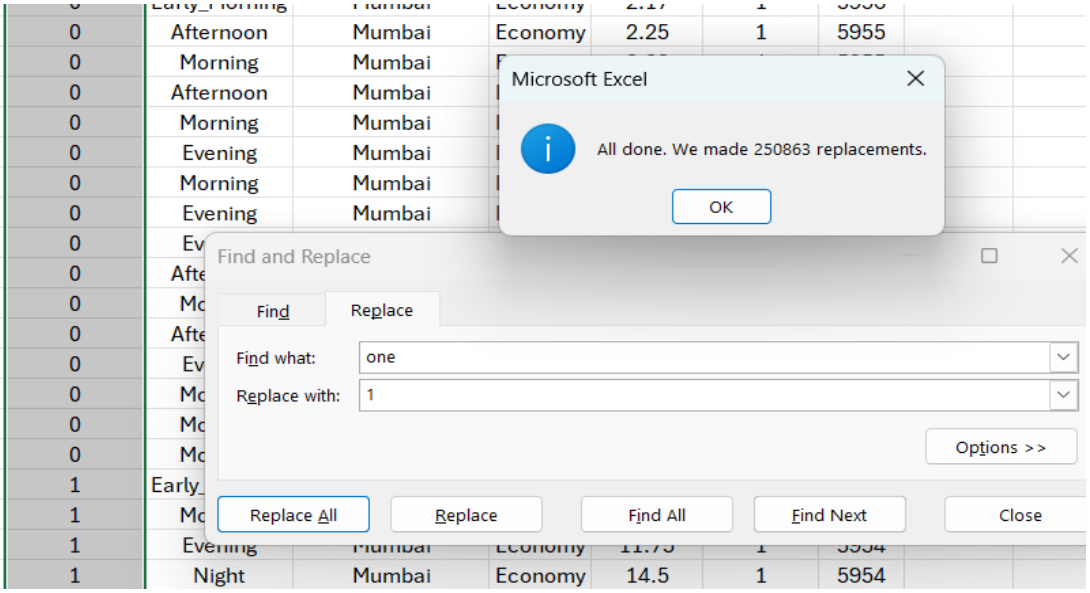
❖ Highlight and Replace





❖ Replace Categorical names with Numerical





❖ Convert to Table view using Ctrl + T

Airlin	Flight	Source_cit	Departure_tim	Stops	Arrival_tim	Destination_cit	Clas	Duratio	Days_le	Pric
SpiceJet	SG-8709	Delhi	Evening	0	Night	Mumbai	Economy	2.17	1	5953
SpiceJet	SG-8157	Delhi	Early Morning	0	Morning	Mumbai	Economy	2.33	1	5953
Air_Asia	I5-764	Delhi	Early Morning	0	Early_Morning	Mumbai	Economy	2.17	1	5956
Vistara	UK-995	Delhi	Morning	0	Afternoon	Mumbai	Economy	2.25	1	5955
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Vistara	UK-945	Delhi	Morning	0	Afternoon	Mumbai	Economy	2.33	1	5955
Vistara	UK-927	Delhi	Morning	0	Morning	Mumbai	Economy	2.08	1	6060
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GO_FIRST	G8-334	Delhi	Early Morning	0	Morning	Mumbai	Economy	2.17	1	5954
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GO_FIRST	G8-392	Delhi	Afternoon	0	Evening	Mumbai	Economy	2.25	1	5954
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Indigo	6E-549	Delhi	Afternoon	0	Evening	Mumbai	Economy	2.25	1	5955
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Air_India	AI-441	Delhi	Evening	1	Night	Mumbai	Economy	3.75	1	5955

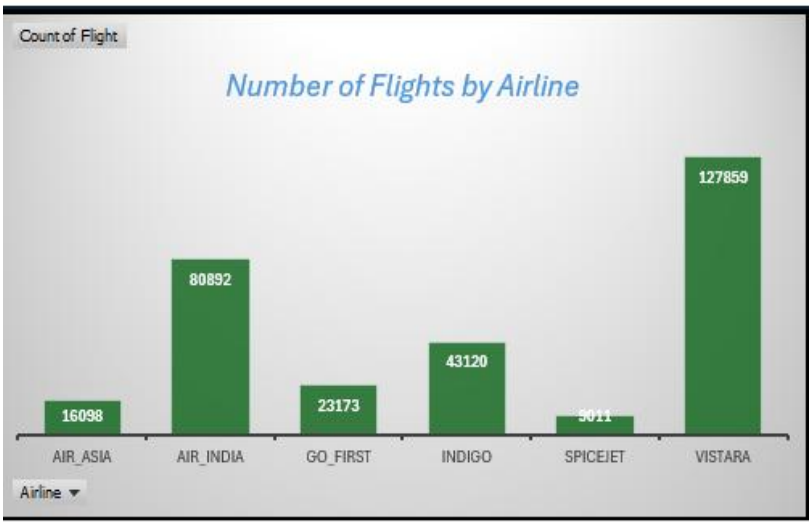
5. Exploratory Data Analysis (EDA)

Visualisation using Pivot table and charts:

❖ Barchart

Row Labels	Count of Flight
Air_Asia	16098
Air_India	80892
GO_FIRST	23173
Indigo	43120
SpiceJet	9011
Vistara	127859
Grand Total	**300153**

Number of flights per Airline

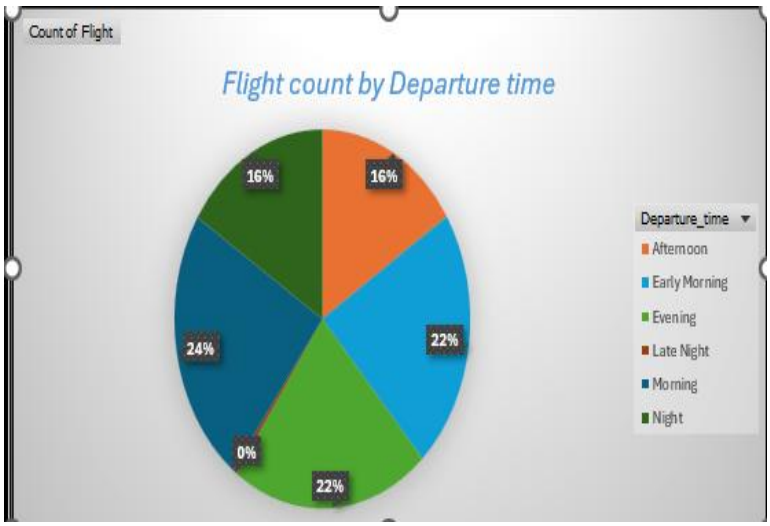


Interpretation: This Barchart shows Number of flights by Airline. Which means, Vistara (127859) has more number of flights than Spicejet (5011).

❖ Pie chart

Row Labels	Count of Flight
Afternoon	47794
Early Morning	66790
Evening	65102
Late Night	1306
Morning	71146
Night	48015
Grand Total	**300153**

Flight Count by Departure Time

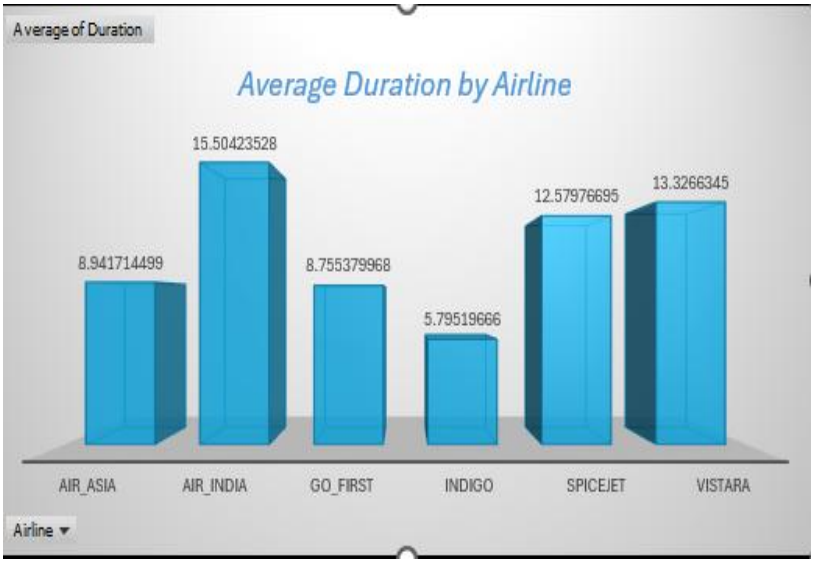


Interpretation: This Pie chart shows that, on the basis of departure time morning flights (24%) more than Late night (0%).

❖ Barchart

Row Labels	Average of Duration
Air_Asia	8.941714499
Air_India	15.50423528
GO_FIRST	8.755379968
Indigo	5.79519666
SpiceJet	12.57976695
Vistara	13.3266345
Grand Total	**12.22102081**

Avg duration by Airline

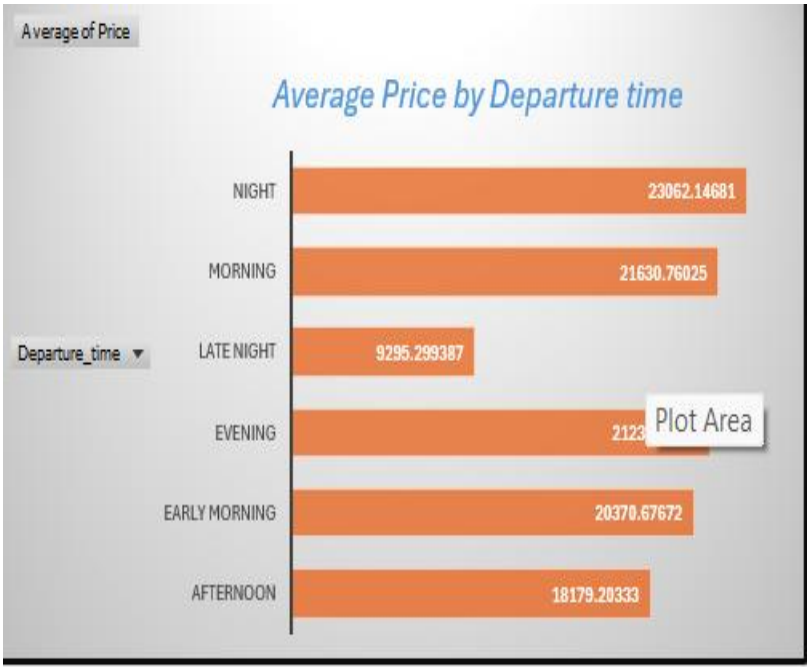


Interpretation: This bar chart shows that Average duration by Airline. Which means, Air India has more duration and less duration has Indigo.

❖ Barchart

Row Labels	Average of Price
Afternoon	18179.20333
Early Morning	20370.67672
Evening	21232.36189
Late Night	9295.299387
Morning	21630.76025
Night	23062.14681
Grand Total	**20889.66052**

Avg Price by Departure time

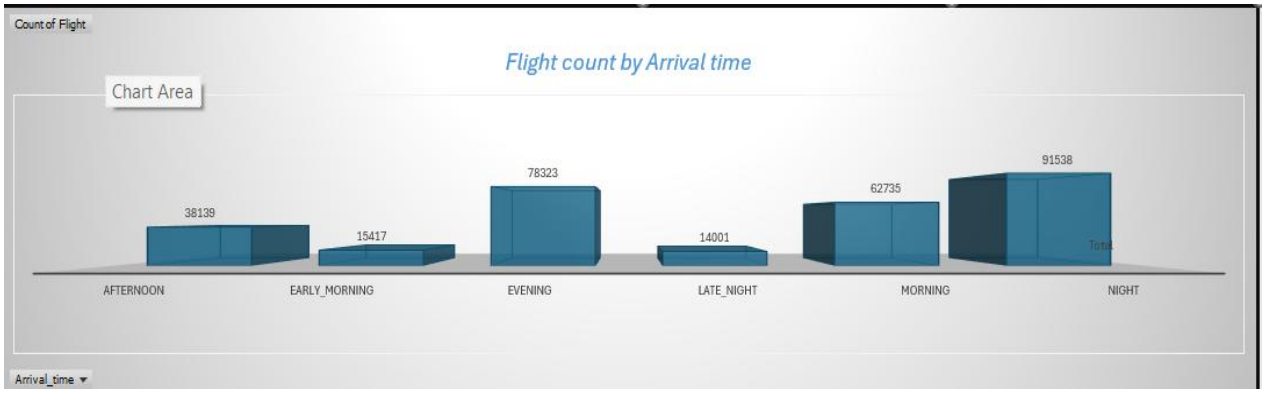


Interpretation: This horizontal bar chart shows that Average price based on the departure time. Which means, more price for night departures and less for Late night.

❖ Barchart

Row Labels	Count of Flight
Afternoon	38139
Early_Morning	15417
Evening	78323
Late_Night	14001
Morning	62735
Night	91538
Grand Total	**300153**

Flights by Arrival time



Interpretation: This bar chart shows that Flight counts based on their arrival time. It means more flights in Night (91538) and less flights in Late night (14001).

❖ Area chart

Row Labels	Average of Price
0	9375.938535
1	22900.99248
2 or more	14113.45078
Grand Total	**20889.66052**

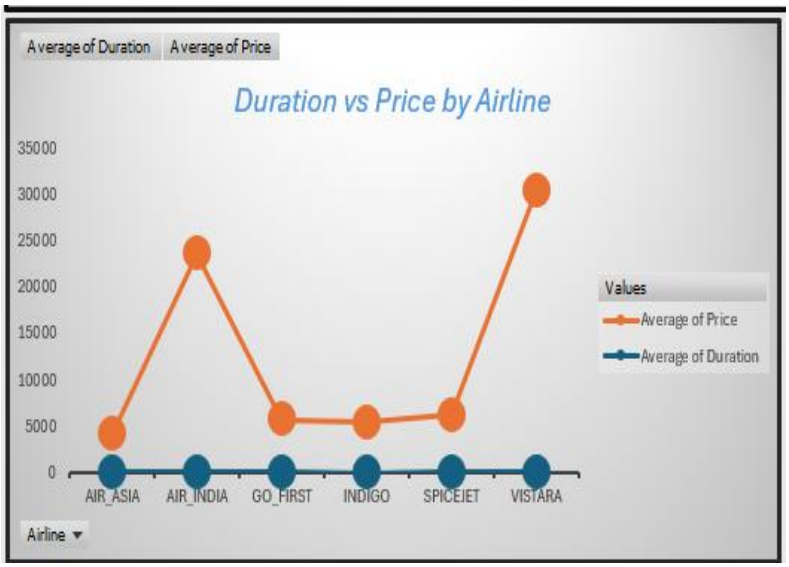
Avg price by stops

Interpretation: This area chart shows that Average price by number of stops and it shows more price for the 1 stop flights and 0 stops flights have less price.

❖ Line chart

Row Labels	Average of Dur	Average of Price
Air_Asia	8.941714499	4091.072742
Air_India	15.50423528	23507.01911
GO_FIRST	8.755379968	5652.007595
Indigo	5.79519666	5324.216303
SpiceJet	12.57976695	6179.278881
Vistara	13.3266345	30396.5363
Grand Total	**12.22102081**	**20889.66052**

Duration vs Price by Airline

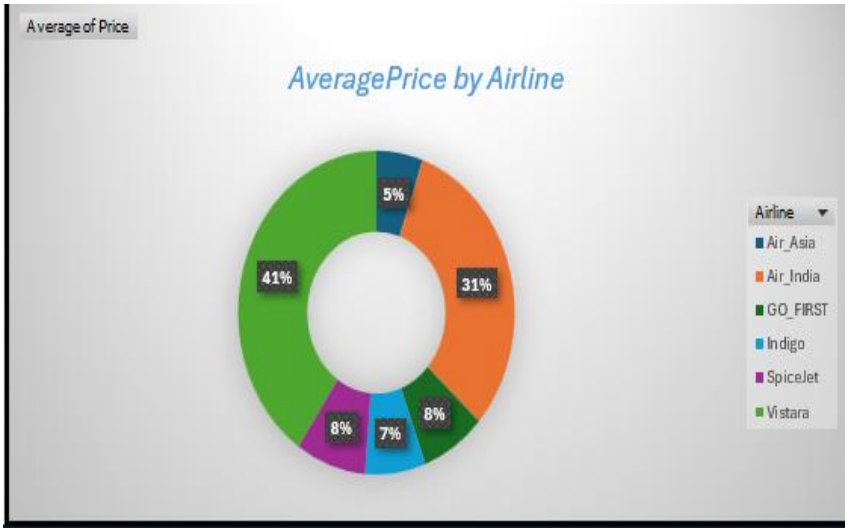


Interpretation: This line chart shows that Duration vs price by Airline. It means Price more in Vistara (35000) on the basis of duration and less price for Air Asia (5000) on the same.

❖ Donut chart

Row Labels	Average of Price
Air_Asia	4091.072742
Air_India	23507.01911
GO_FIRST	5652.007595
Indigo	5324.216303
SpiceJet	6179.278881
Vistara	30396.5363
Grand Total	**20889.66052**

Avg flight Price by Airline



Interpretation: This Donut chart shows Average price by Airline in percentage. It shows Vistara 41% more than Air Asia in 5%.

6. Dashboard


Airline Flights Analysis
Number of Flights by Airline
AIR_ASIA
AIR_INDIA
GO_FIRST
INDIGO
SPICEJET
VISTARA
Flight count by Departure time
18%
22%
24%
0%
22%
Average Duration by Airline
Average Price by Departure time
NIGHT
MORNING
LATE NIGHT
EVENING
EARLY MORNING
AFTERNOON
Flight count by Arrival time
AFTERNOON
EARLY_MORNING
EVENING
LATE_NIGHT
MORNING
NIGHT
Average Price by number of stops
Duration vs Price by Airline
AveragePrice by Airline
5%
31%
8%
7%
8%
41%
Airline
Air_Asia
Air_India
GO_FIRST
Indigo
SpiceJet
Vistara
Departure_time
Afternoon
Early Morning
Evening
Late Night
Morning
Night
Flight
6E-2083
6E-2092
6E-2093
6E-2097
6E-2102
6E-2103
6E-2106
6E-2107
6E-2108
6E-2127

7. Conclusion

The analysis of the Airline Flights Dataset provides valuable insights into flight operations between Delhi and Mumbai. By studying different variables such as airline, departure and arrival times, flight duration, class type, days left before departure, and ticket prices, several meaningful patterns were identified.

The findings reveal that flight prices vary depending on factors like the airline, time of booking, and class category. Early bookings generally offer more affordable prices, while certain airlines maintain consistent pricing based on service quality. Additionally, most flights on this route are non-stop, reflecting the high demand and operational efficiency between these two major cities.

This project demonstrates the importance of data analysis in understanding airline trends and customer behaviour. Such insights can help passengers make smarter travel decisions and assist airlines in optimizing their pricing strategies, scheduling, and overall service performance.