SkyView Analytics:

Elevating Airline Revenue Management

Purple Team 9

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Problem Statement

Background

- Dynamic Nature of Airline Ticket Pricing.
- Complex Pricing Factor
- Historical data
- Limitations of Traditional Approaches
- Potential Impact

OUR GOAL:

Develop accurate predictive model to effectively estimate fare of airline tickets to JFK airport based on data between Apr 16th,2022 to Oct 5th,2022. Influencing factors are:

search time

depart time

Departing airport

flight duration

cabin code

aircraft info

Non-Stop Flight

Layover Location

Airlines

02

Data Description

Data Description:

Rows 5,999,739
Data size 31 GB

searchDate	flightDate	startingAirport	travelDuration	isBasicEconomy	isRefundable	isNonStop	seatsRemaining	totalTravelDistance	segmentsAirlineCode	baseFare
2022-04-16	2022-04-17	ATL	PT2H15M	False	False	True	7.0	762.0	B6	171.16
2022-04-16	2022-04-17	ATL	PT2H18M	False	False	True	5.0	762.0	DL	171.16
2022-04-16	2022-04-17	ATL	PT2H23M	False	False	True	7.0	762.0	B6	171.16

Airlines

Delta Airlines (DL)
American Airlines(AA)
United Airlines(UA)
Southwest Airlines(WN)
Alaska Airlines (AS)

Depart

ATL, DFW, DEN, ORD, LAX, CLT, MIA,EWR, SFO, DTW, BOS, PHL, LGA, IAD, OAK.

Arrival

JFK

Base fare

Avg. Base Fare: 325
Range: 27-4,444

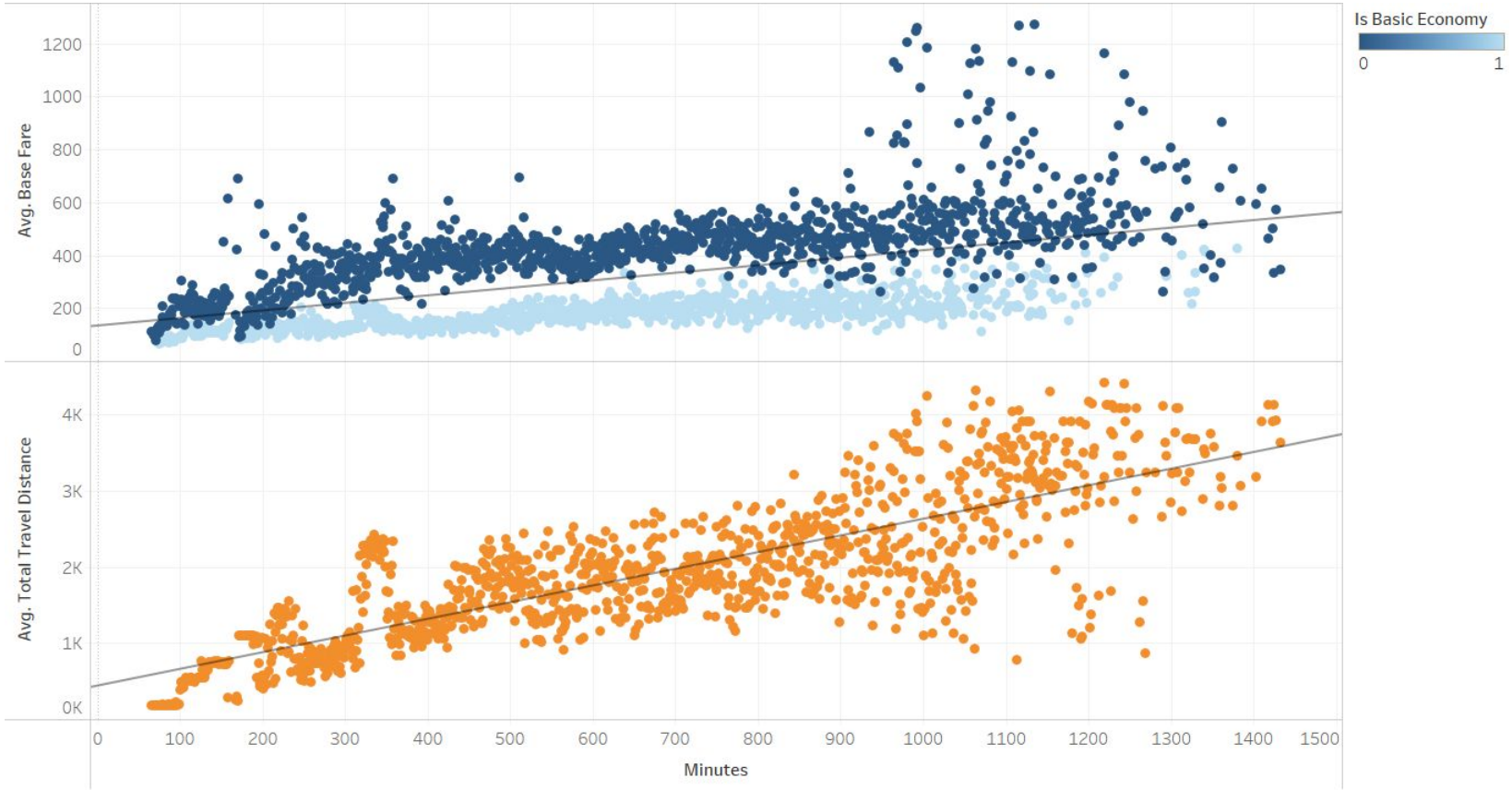
Seats

Seats remaining
- 1 to 10

03

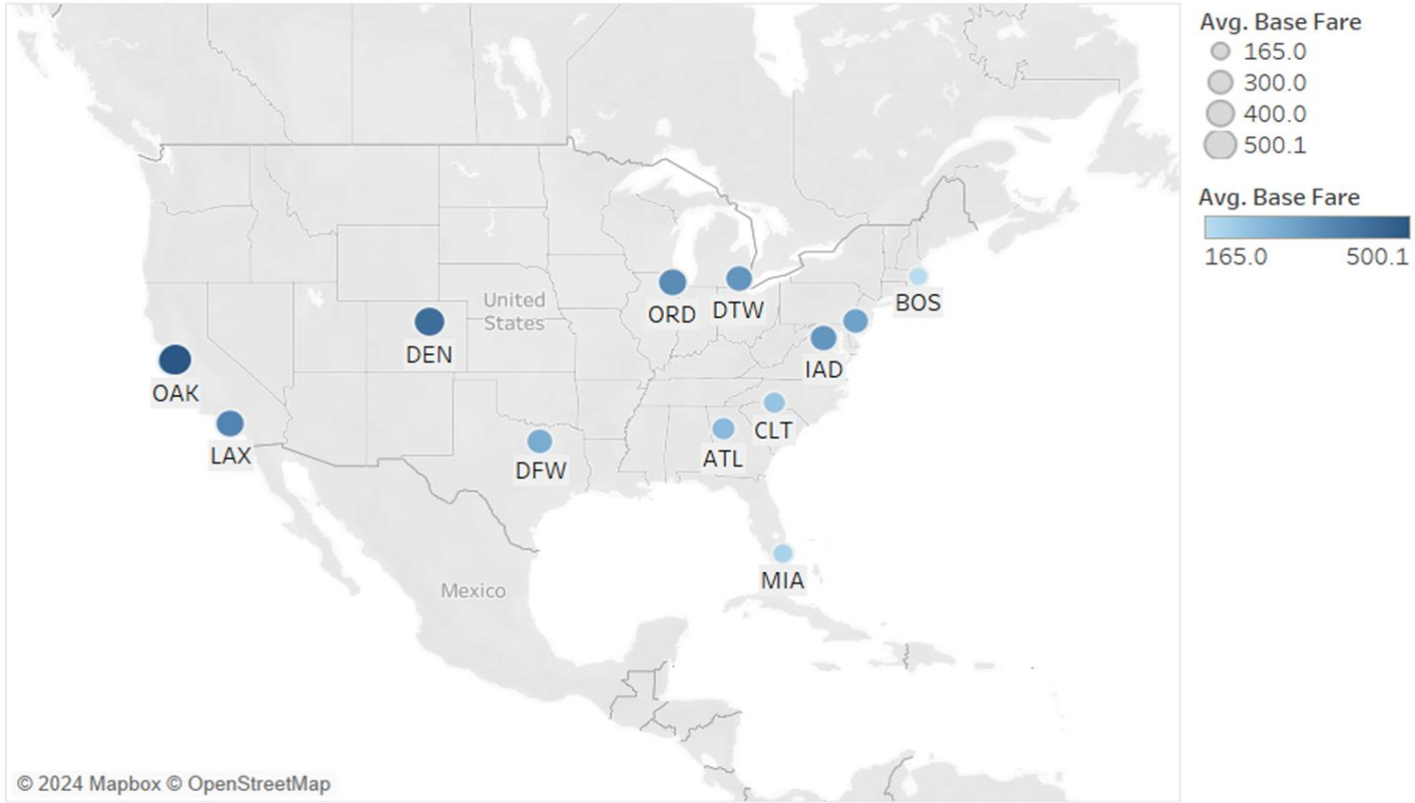
What factors influence flight fare?

Impact of Travel time (minutes) and Travel distance(miles) on Base fare



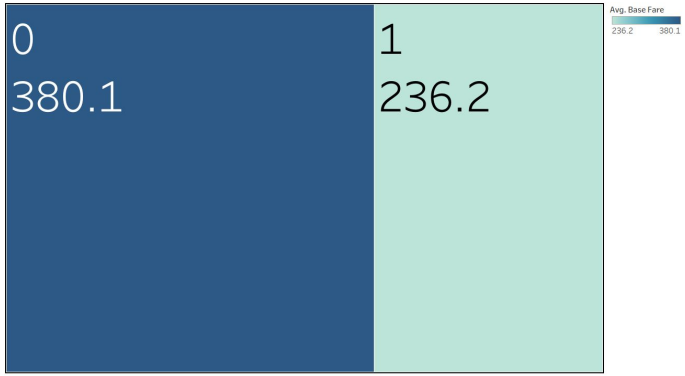
The plots of average of Base Fare and average of Total Travel Distance for Minutes. For pane Average of Base Fare: Color shows details about Is Basic Economy.

Base fare versus Starting Airport



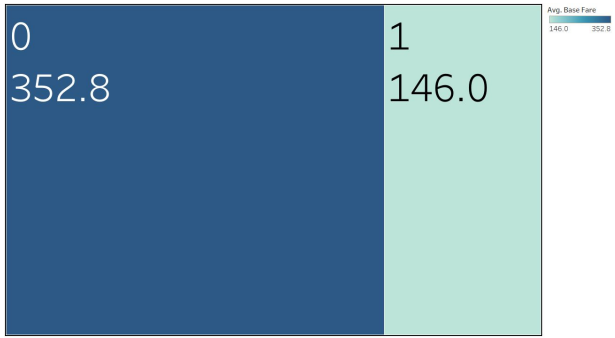
Map based on Longitude (generated) and Latitude (generated). Color shows average of Base Fare. Size shows average of Base Fare. The marks are labeled by Starting Airport. Details are shown for Starting Airport.

Is Non Stop?



Is Non Stop and average of Base Fare. Color shows average of Base Fare. Size shows average of Base Fare. The marks are labeled by Is Non Stop and average of Base Fare.

Is Basic Economy?

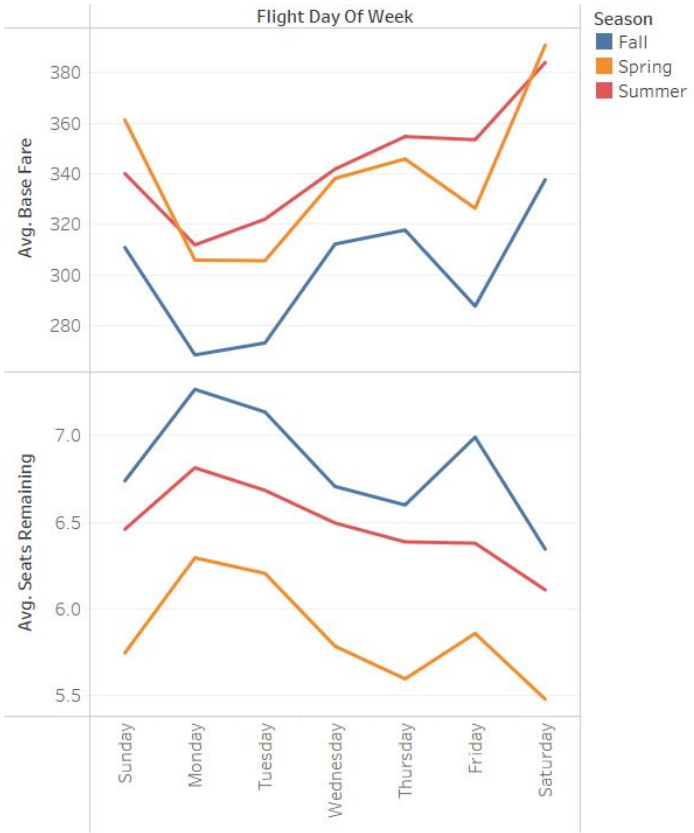


Is Basic Economy and average of Base Fare. Color shows average of Base Fare. Size shows average of Base Fare. The marks are labeled by Is Basic Economy and average of Base Fare.

Is Refundable?

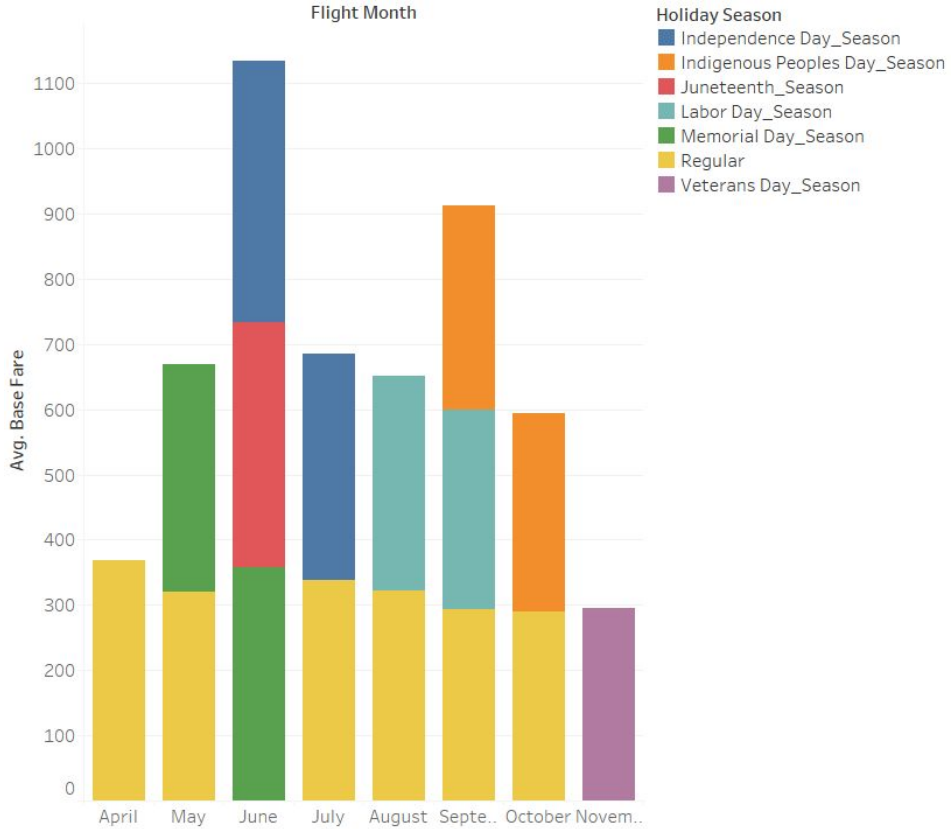
Is Refundable and average of Base Fare. Color shows average of Base Fare. Size shows average of Base Fare. The marks are labeled by Is Refundable and average of Base Fare.

Weekday comparison of Seats Remaining



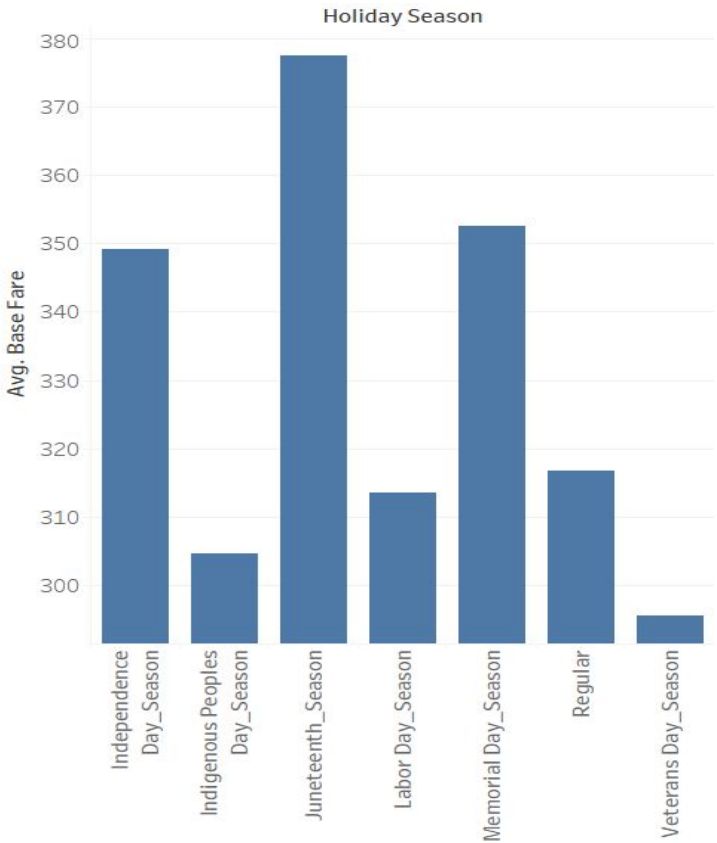
The trends of average of Base Fare and average of Seats Remaining for Flight Day Of Week. Color shows details about Season.

Monthly comparison of base fare



Average of Base Fare for each Flight Month. Color shows details about Holiday Season.

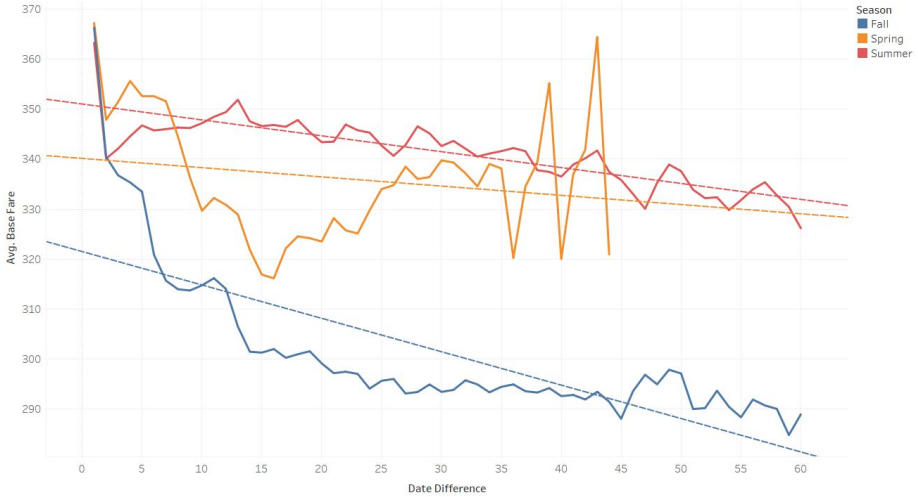
Holiday Season



Seasonal variation in base fare

Average of Base Fare for each Season.

Impact of Advance booking on base fare



The trend of average of Base Fare for Date Difference. Color shows details about Season.

04

ML Modeling

Some Examples of Feature Engineering

Search Date	Flight Date
2022-04-16	2022-04-17
2022-05-15	2022-05-30
2022-05-28	2022-05-30

⇨

days advance
1
15
2

Other time data like weekday, holiday season were also added based on flight date

Similar tricks on most of segments data

segmentsCabinCode
business||coach
coach||coach||first||first
business

⇨

first	business	premium_coach	coach
0	1	0	1
1	0	0	1
0	1	0	0

Model Nominees

Linear Regression

Test R^2: 0.58
Test RMSE: 130.13

MLP

Test R^2: 0.84
Test RMSE: 79.66

Decision Tree Regressor

Test R^2: 0.85
Test RMSE: 77.85

Random Forest Regressor

Test R^2: 0.85
Test RMSE: 75.44

05

Investor Pitch

The Business Model Canvas

Designed for: SkyView analytics | Designed by: Purple team 9 | Date: 2/9 | Version: 1

Key Partnerships

Airlines
Data Providers
Technology Providers
Industry Experts

Key Activities

Data Integration
Advanced Analytics
Dashboard Development
Training and Support

Key Resources

Data Scientists & Analysts
Technology Infrastructure
Strategic Partnerships
Intellectual Property

Value Propositions

Revenue Optimization
Competitive Advantage
Customer Experience Enhancement
Cost Efficiency

Customer Relationships

Account Management
Training and Support
White-Label Solutions

Channels

Direct Sales
Partner Network
Online Platforms

Customer Segments

Airlines
Travel Agencies
Industry Consultants

Cost Structure

Personnel Costs
Technology Investments
Marketing and Sales Expenses
Research and Development

Revenue Streams

Subscription Fees
Licensing Fees
Consulting Services

What Skyline analytics can do for you?

Revenue per Available Seat Mile (RASM)

Load Factor

Ancillary Revenue per Passenger

Customer Lifetime Value (CLV)

THANKS!