Flight Price Prediction

The aim of this project is to analyze historical flight price data and develop a predictive model.

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Objective

Flight ticket prices can be something hard to guess, today we might see a price, check out the price of the same flight tomorrow, it will be a different story. We might have often heard travelers saying that flight ticket prices are so unpredictable. That's why we will try to use machine learning to solve this problem. This can help airlines by predicting what prices they can maintain.

To analyze historical flight price data and develop a predictive model that accurately forecasts future flight prices. This will enable customers to plan their journeys more efficiently and make informed decisions, ultimately saving money and time.

Process Flow

Data Understanding.

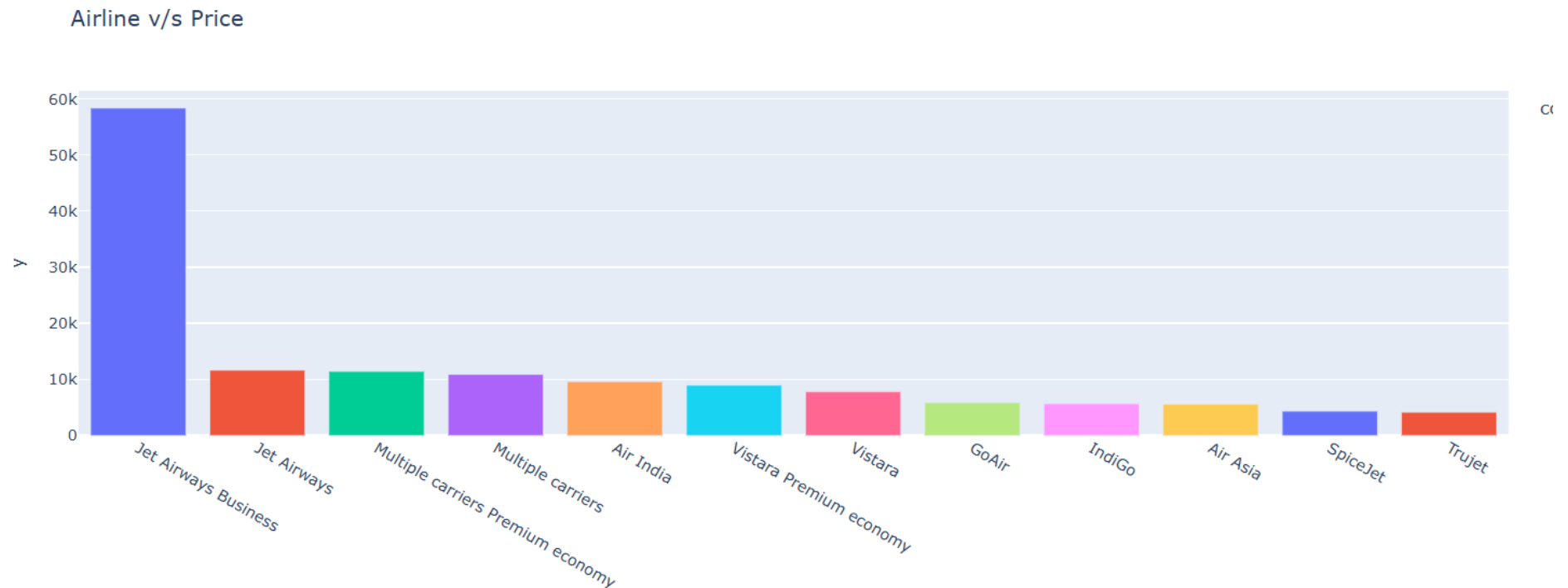Performing Exploratory Data Analysis (EDA).

Gather Insights and Create Visualizations.

Data Preprocessing and Feature Engineering
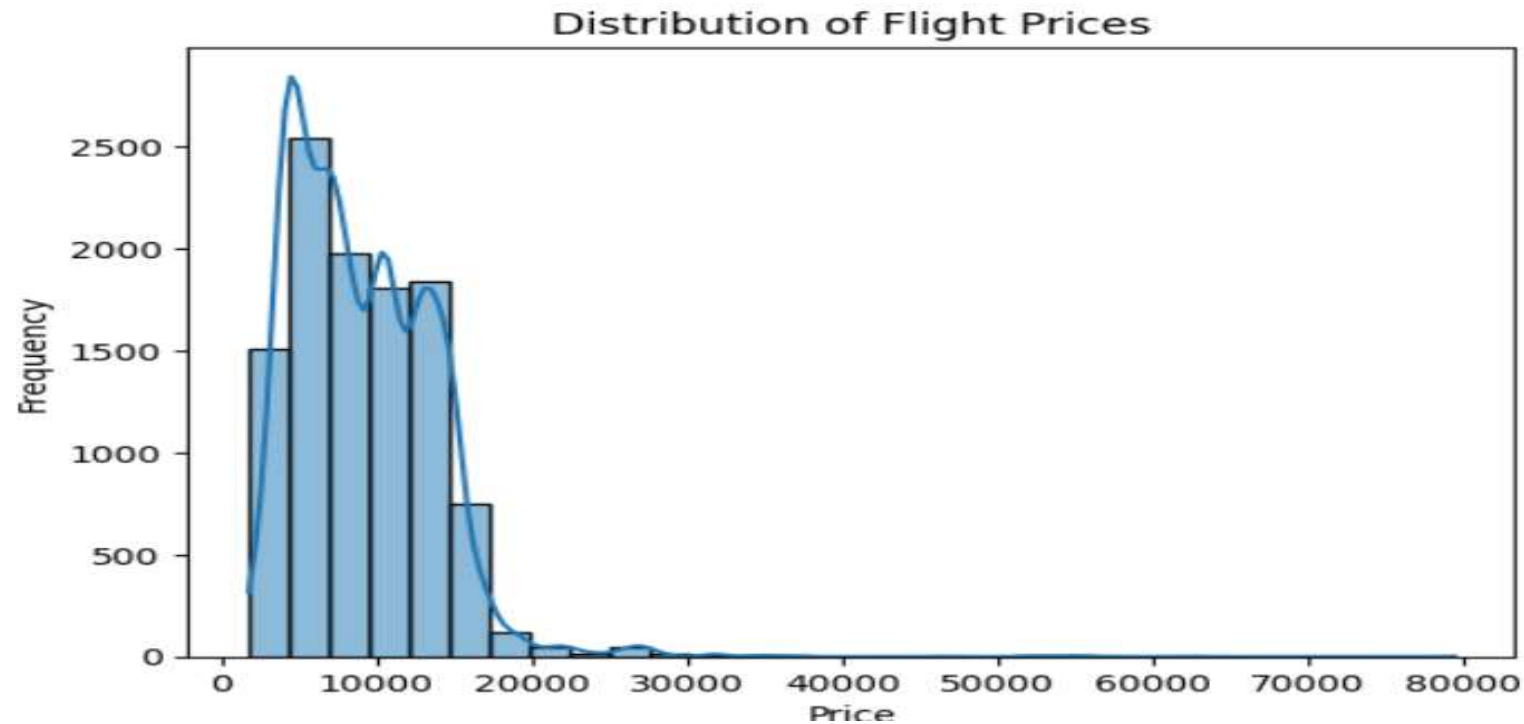
Prediction using Machine Leaning models

Ticket Price of Airlines

- Jet Airways Business has highest ticket price compared to other airlines.
- Remaining airlines prices are more or same.
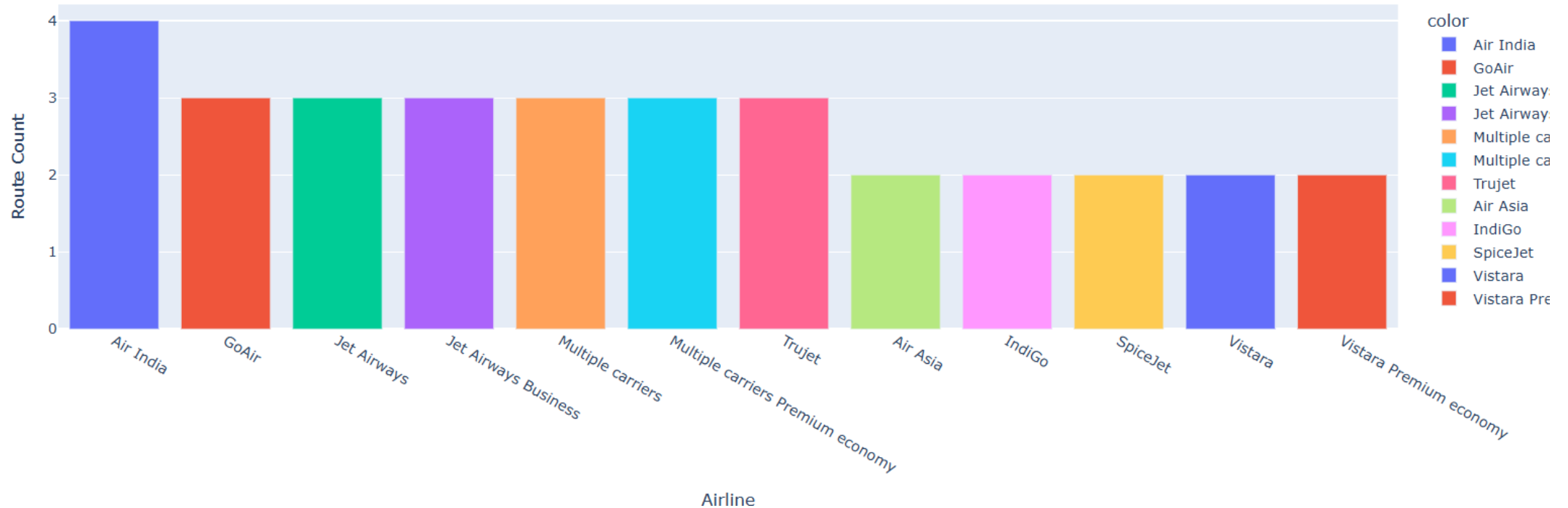
Airline v/s Price

Distribution of Flight Prices

- Most flight fares range from ₹3,500 to ₹15,000.

- However, flight fares can start as low as ₹3,500 and go up to ₹80,000.
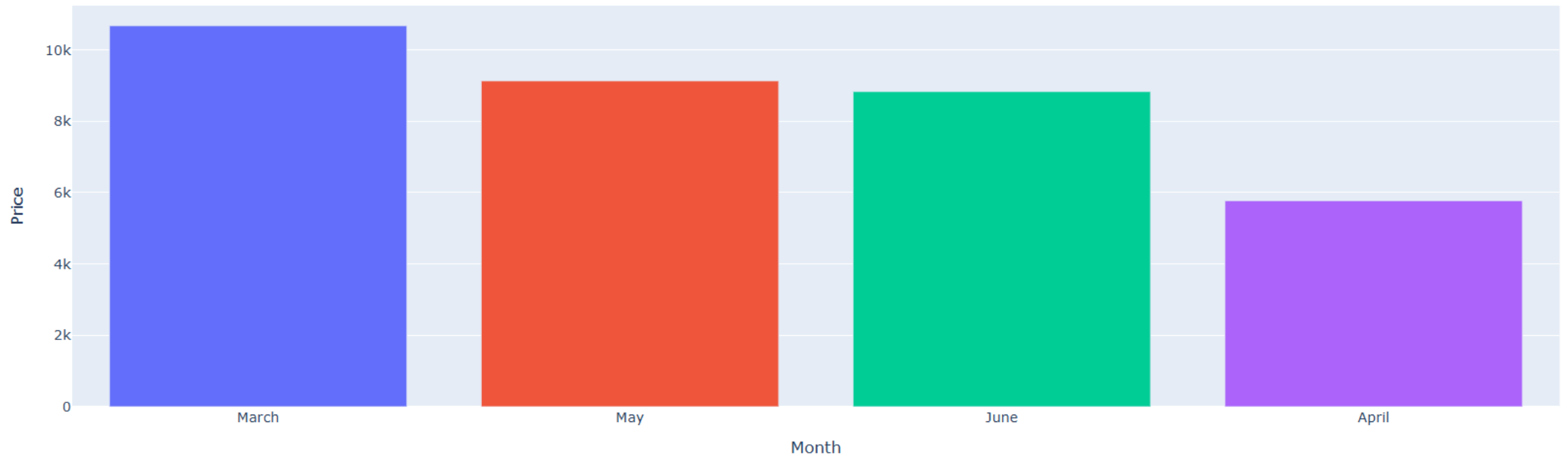

Distribution of Flight Prices

Airline Route Frequency Analysis

- Most flights operated by AirIndia Airlines have 4 routes.
- Most flights operated by GoAir, Jet Airways, Jet Airways Business, Multiple Carriers, Multiple Carriers Premium Economy, and TruJet have 3 routes.
- Most flights operated by the remaining airlines take 2 routes.
- Our in-depth analysis reveals that airlines operating the maximum number of routes tend to charge higher fares and have longer durations for their flights.
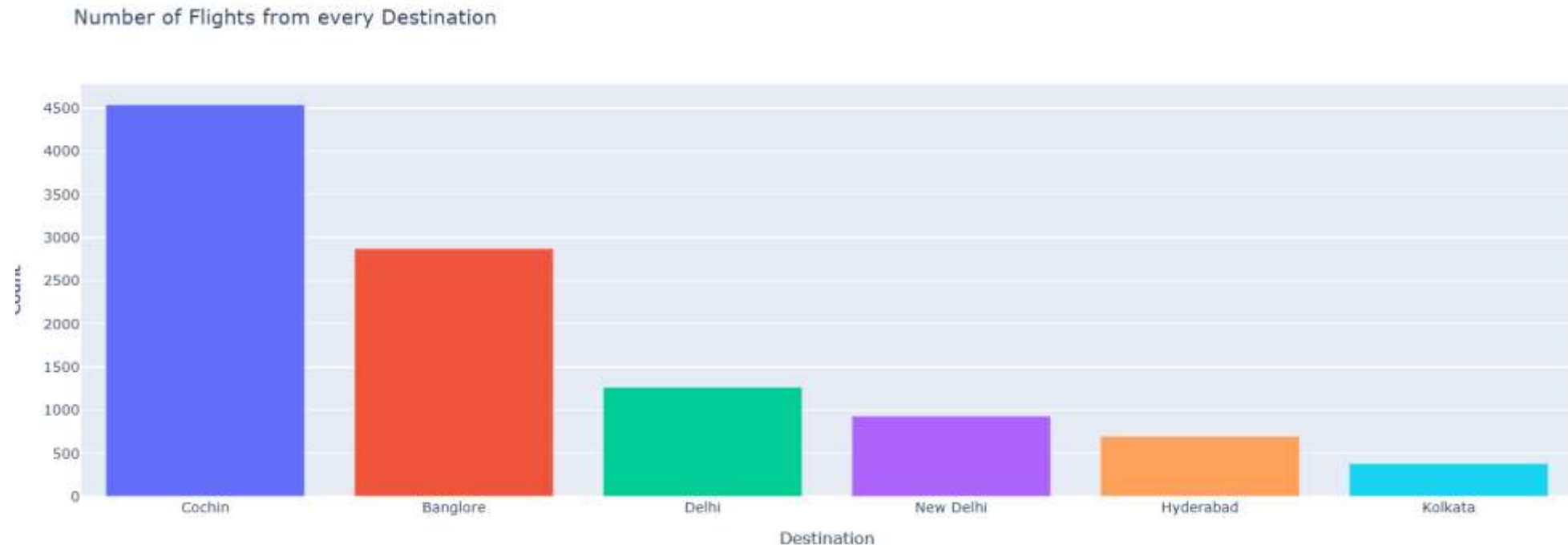
Monthly Flight Price Trends

- **Flight Ticket Prices in March**: The price of flight tickets is highest in the month of March.

- **Flight Ticket Prices in April**: The price of flight tickets is lowest in the month of April.

- **Prices and Number of Flights in May and June**: In the months of May and June, both the price of flight tickets and the number of flights remain relatively consistent.
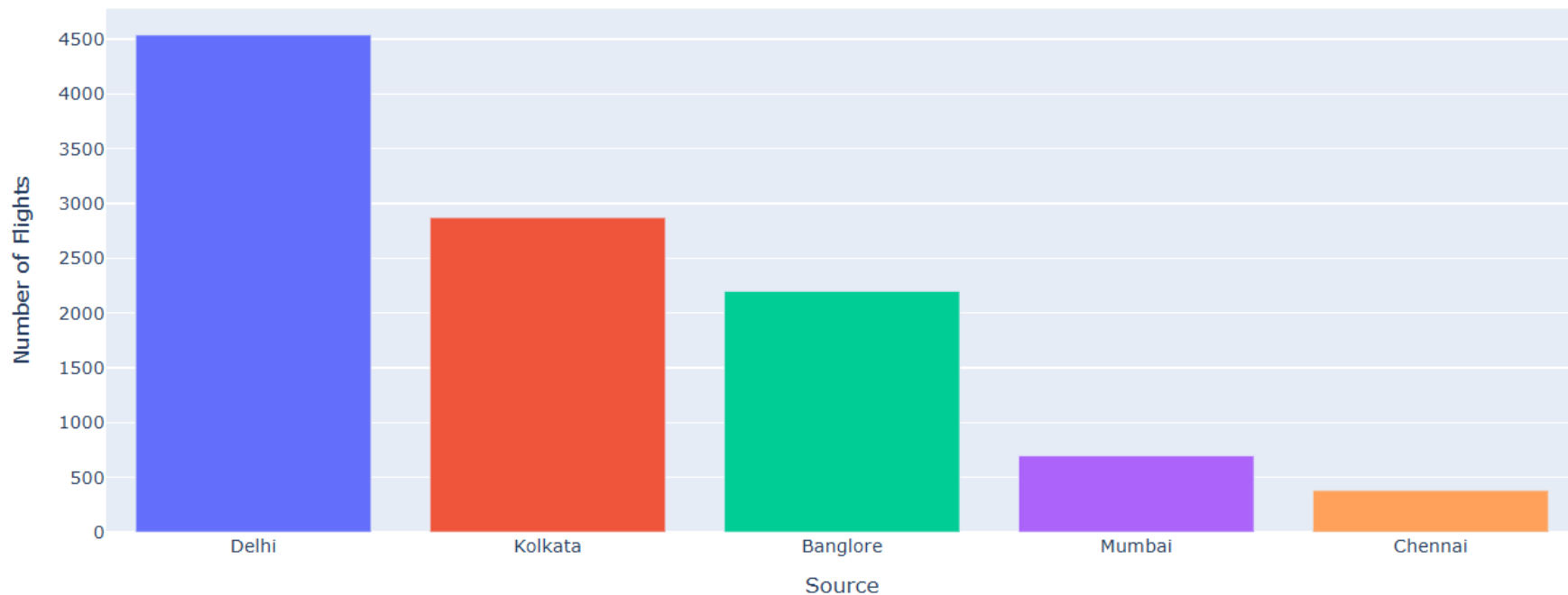
Number Of flights from every Destination

- The price of flights which are land at Delhi are higher.
- Maximum flights are land at Cochin.
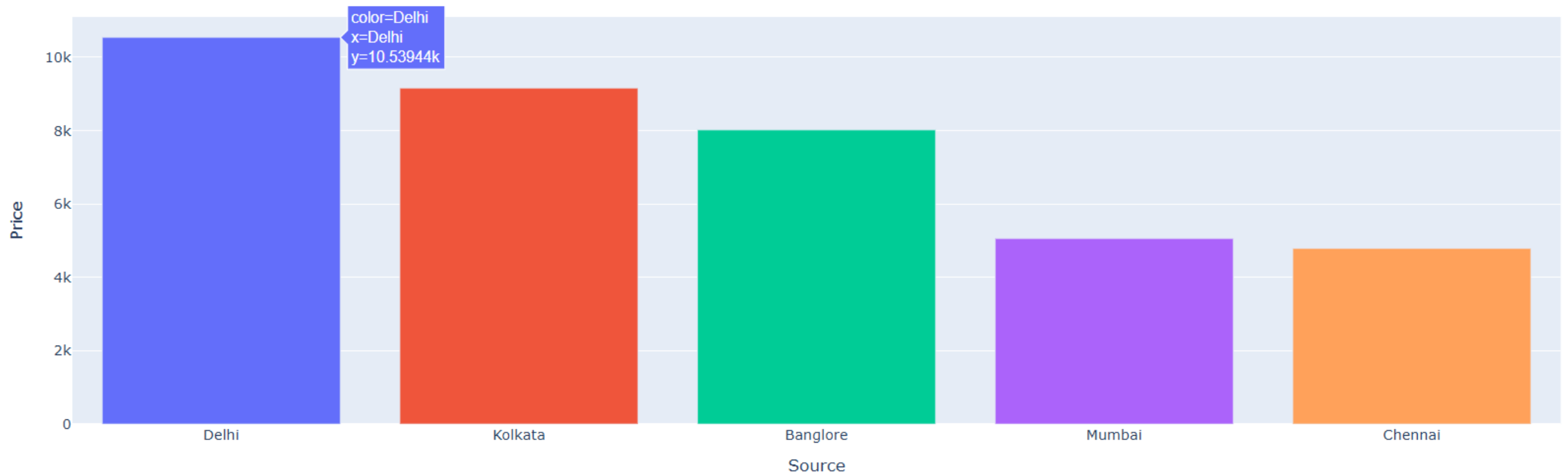
Number of Flights from every Destination

Number of Flights from Each Source

- There are 4,537 flights taking off from Delhi.
- 2,871 flights depart from Kolkata.
- 2,197 flights originate from Bangalore.
- 697 flights take off from Mumbai.
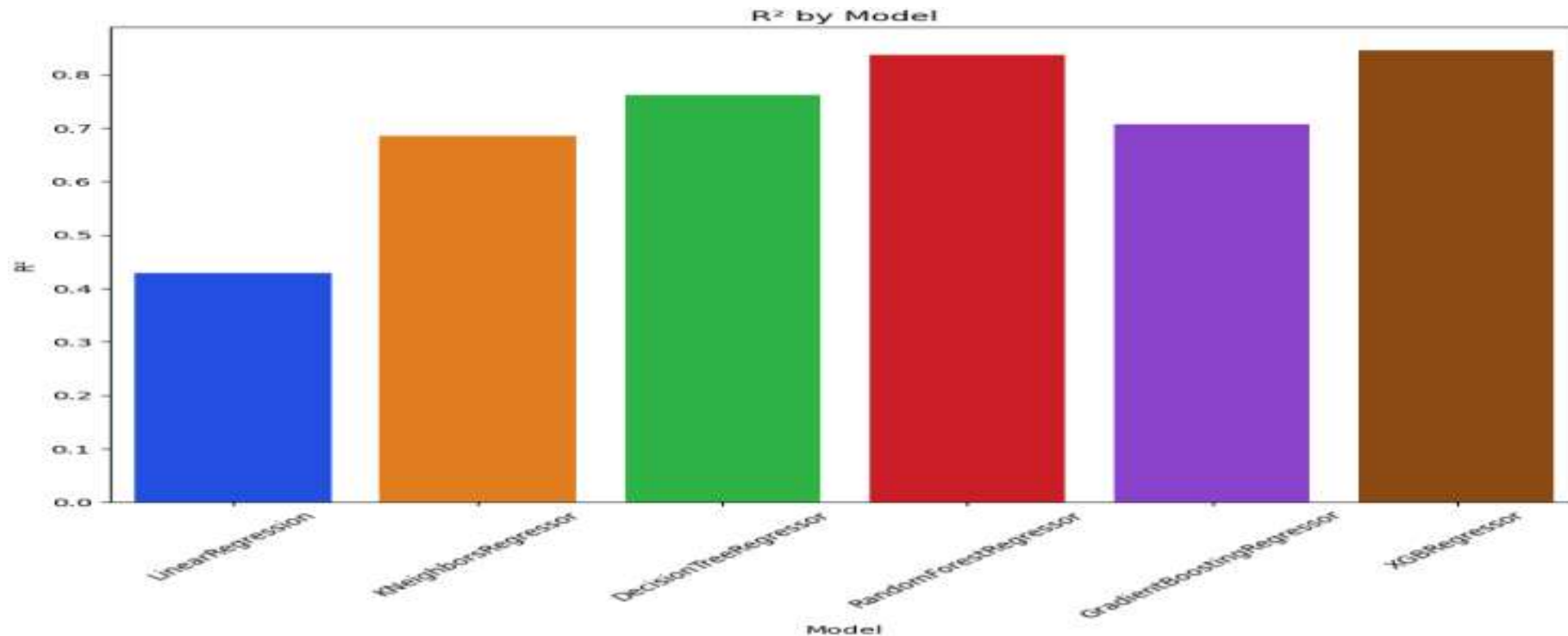- 381 flights depart from Chennai.

Flight Prices by Source City

- 4537 flights are takeoff from Delhi and price is also high.

- 381 flights are takeoff from Chennai and price is low.

Model Evaluation

- XGB Regressor - 0.846320
- Random Forest Regressor - 0.837429
- Decision Tree Regressor - 0.762608
- Gradient Boosting Regressor - 0.707117
- K Neighbors Regressor - 0.685108
- Linear Regression - 0.428617

R² by Model

THANKYOU