

RIDE-HAILING DYNAMIC PRICING

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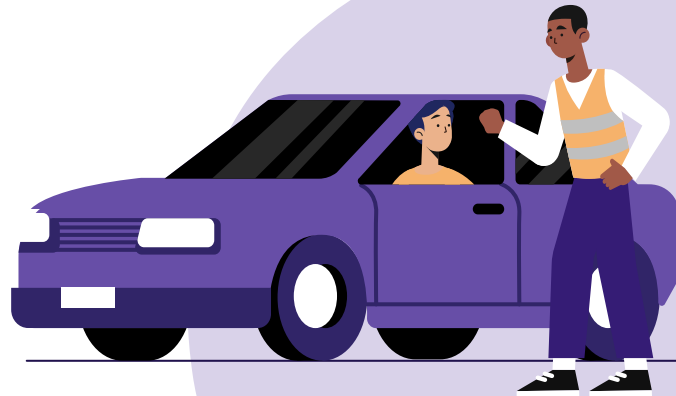


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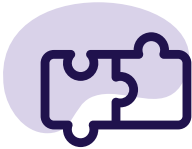
01

PROBLEM & DATA



PROBLEM STATEMENT

CONTEXT



Currently, the ride-hailing platform only uses ride duration to determine ride fares

PROBLEM



The company wants to implement dynamic pricing to optimize fares based on real-time market conditions

OBJECTIVE



Develop a dynamic pricing model that considers various factors and enhance the potential revenues

DATASET OVERVIEW

1,000 OBSERVATIONS
10 VARIABLES
0 NULL VALUES

NUMERICAL

Number of Drivers → SUPPLY

Number of Riders →

DEMAND

Expected Ride Duration

Ride Fare

CATEGORICAL

Vehicle Type (Premium / Economy)

Time of Booking

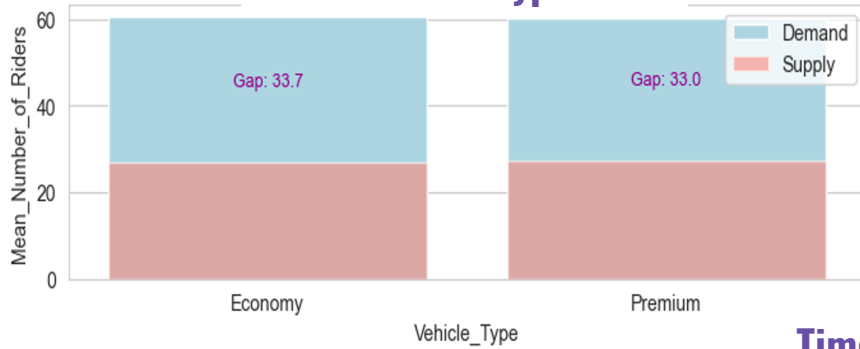
Ride Location

Customer Loyalty Status

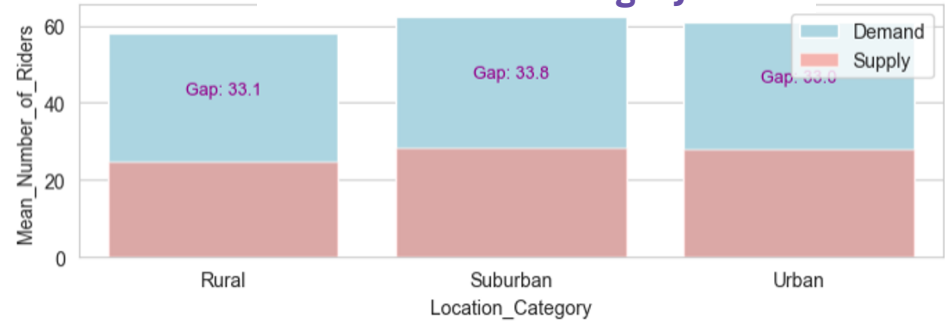
EXPLORATORY DATA ANALYSIS

The dataset reveals a consistent deficit in supply compared to demand, and this persists across all examined variables and categories

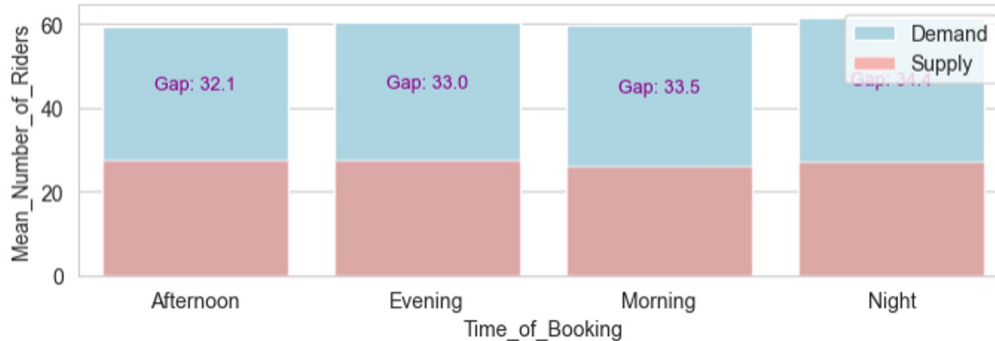
Vehicle Type



Location Category

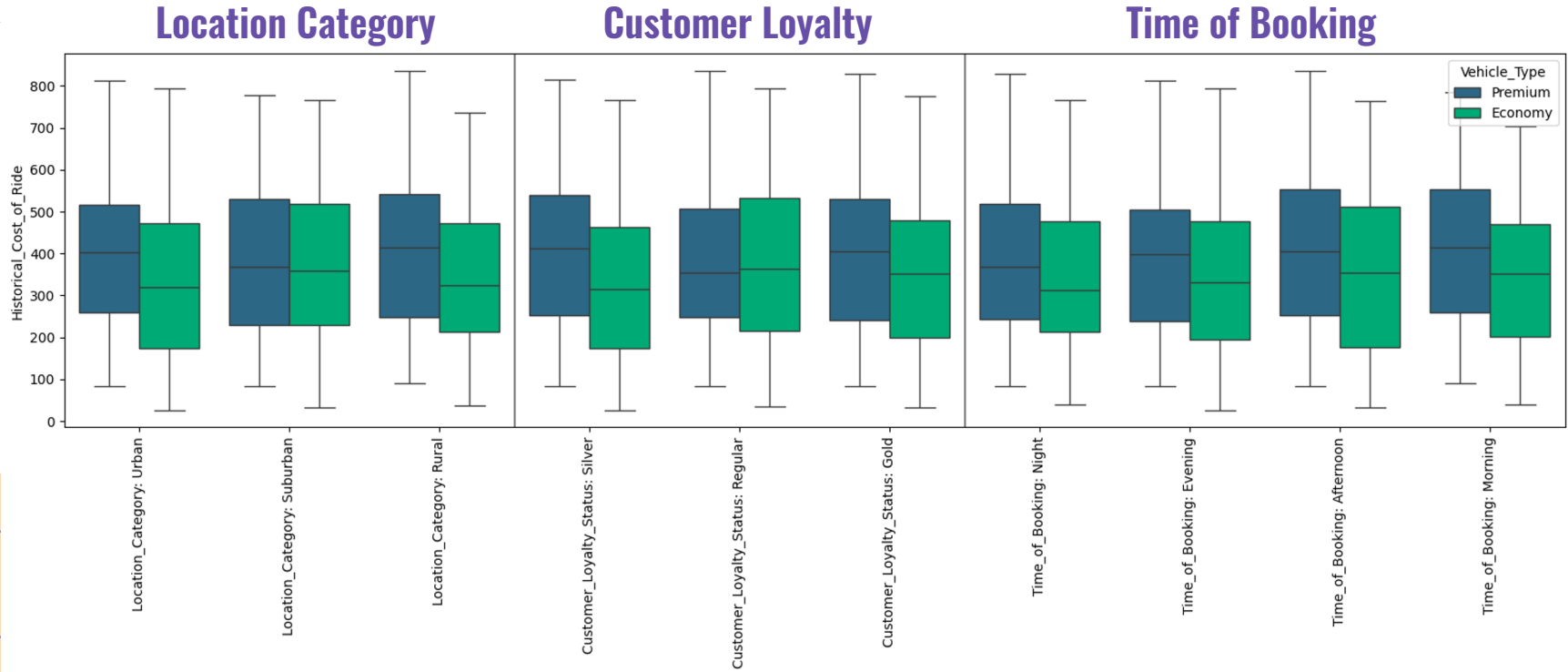


Time of Booking



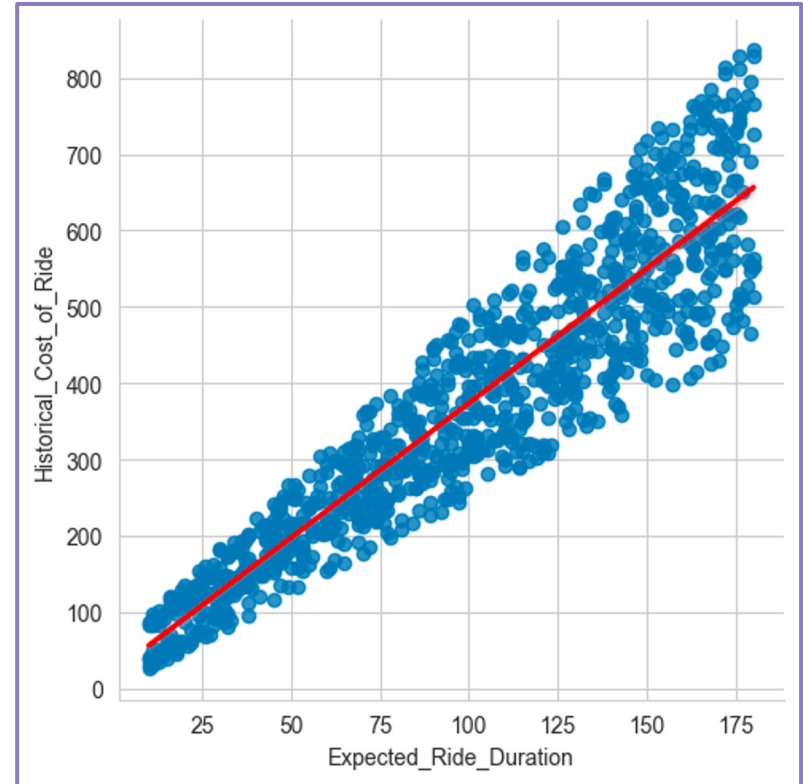
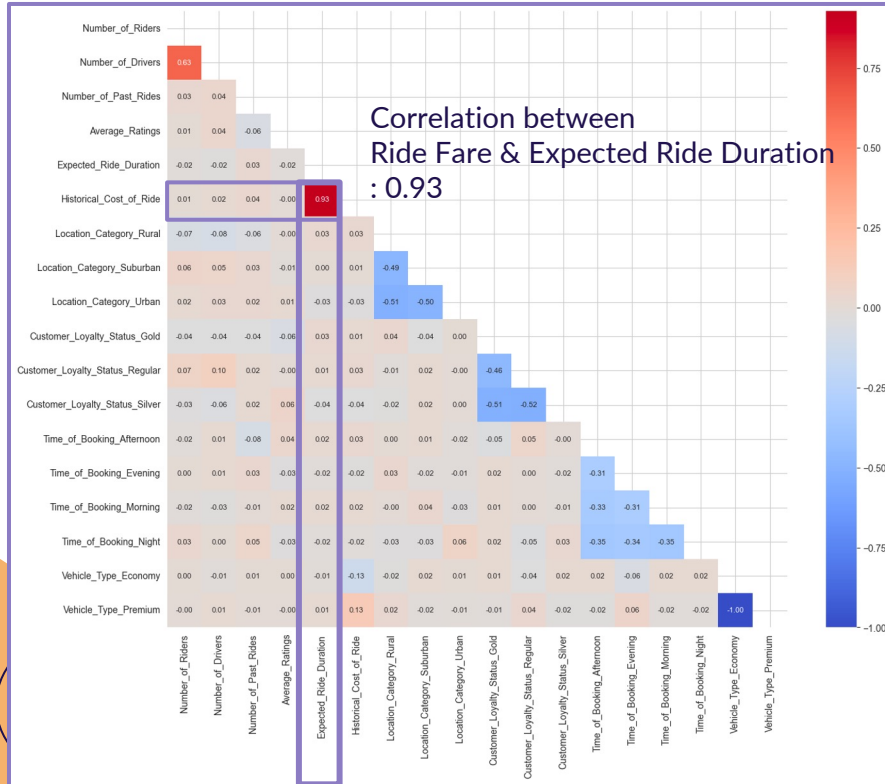
EXPLORATORY DATA ANALYSIS

There's a consistent price differences between premium and economy ride fares across all categories, with minimal variation within each vehicle type.

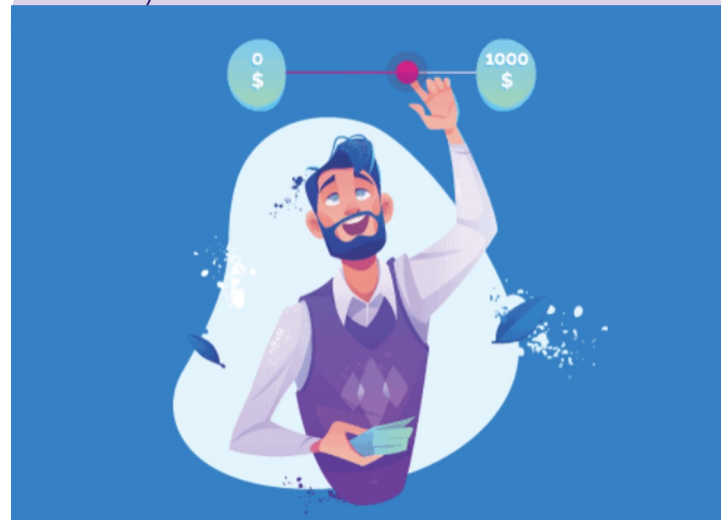


EXPLORATORY DATA ANALYSIS

Currently, the Ride Fare is predominantly based solely on Expected Ride Duration, with correlation 0.93



02 DYNAMIC PRICING STRATEGIES



INTRODUCTION TO DYNAMIC PRICING

Dynamic Pricing:

a strategy in which product or service prices continue to adjust in response to the real-time supply and demand.



Static pricing (single price point)



Dynamic pricing (multiple price point)

WHY NOT JUST COMPARE DEMAND TO SUPPLY?

Direct comparison can cause extreme price swings due to temporary market conditions, potentially alienating customers.

- **Statistical Basis:** Percentiles provide a consistent and objective way to define what 'high' and 'low' demand and supply look like within historical data.
- **Market Stability:** Using percentiles helps stabilize pricing by smoothing out anomalies and not reacting to every fluctuation.
- **Long-Term Strategy:** Focuses on sustainable pricing that supports business growth and customer retention.

IMPLEMENTING DEMAND & SUPPLY MULTIPLIERS

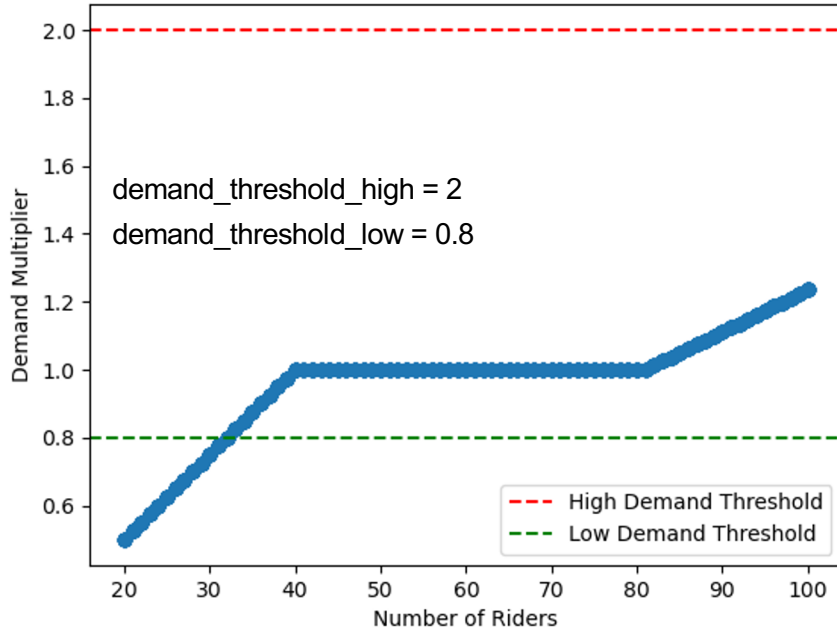
	25 Percentile	50 Percentile	75 Percentile
Demand (Riders)	40	X	81
Supply (Drivers)	X	22	38

If Demand > High_Demand_Value → Demand / High_Demand_Value (“Surge Multiple”)
Demand < Low_Demand_Value → Demand / Low_Demand_Value

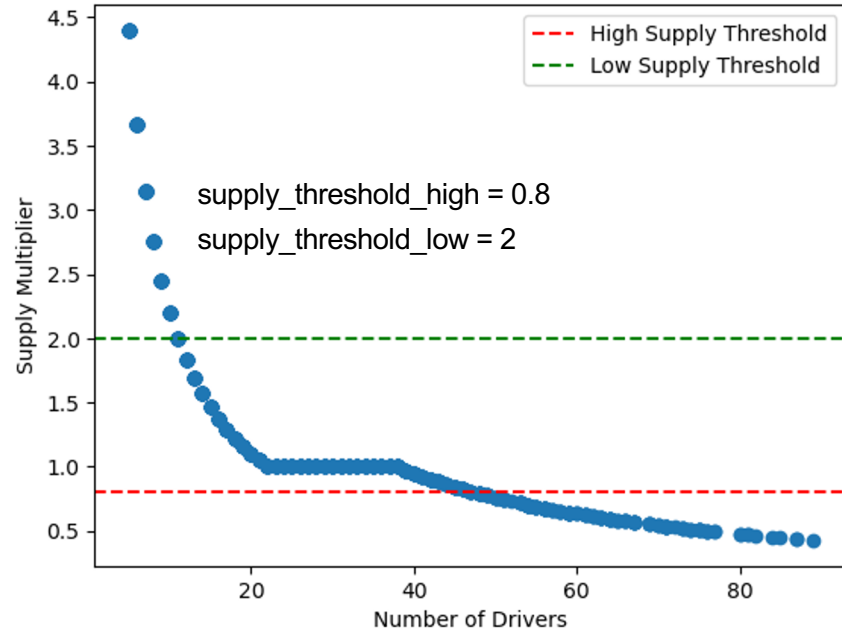
If Supply < Low_Supply_Value → Low_Supply_Value / Supply (“Surge Multiple”)
Supply > High_Supply_Value → High_Supply_Value / Supply

IMPLEMENTING DEMAND & SUPPLY MULTIPLIERS

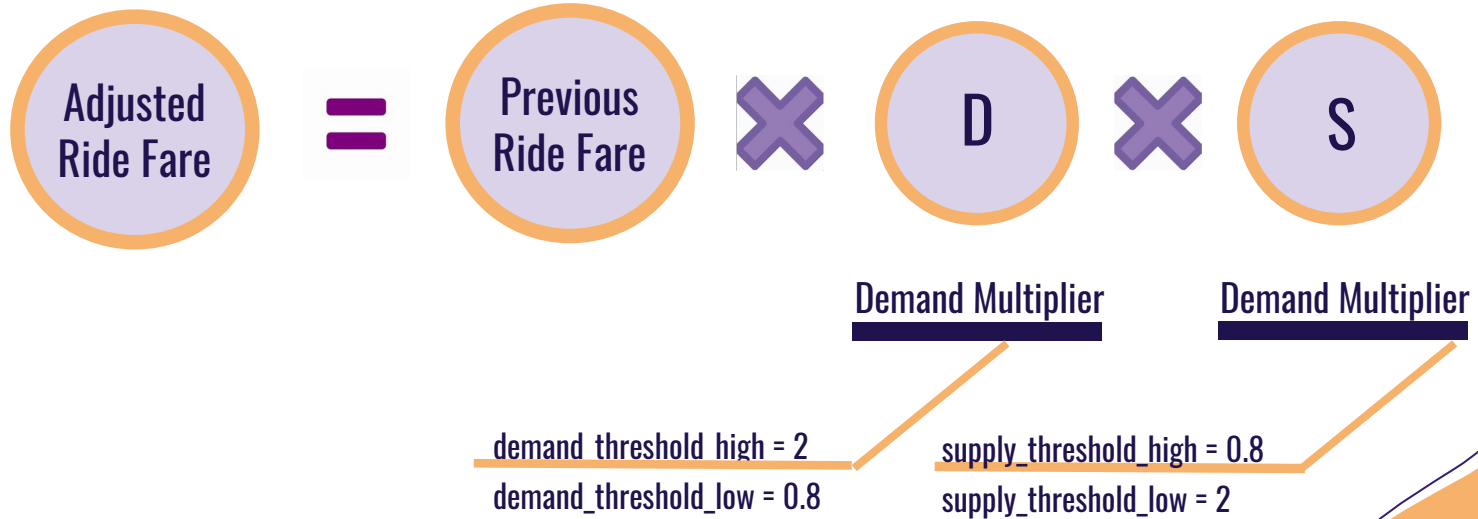
Demand Multiplier with Thresholds



Supply Multiplier with Thresholds

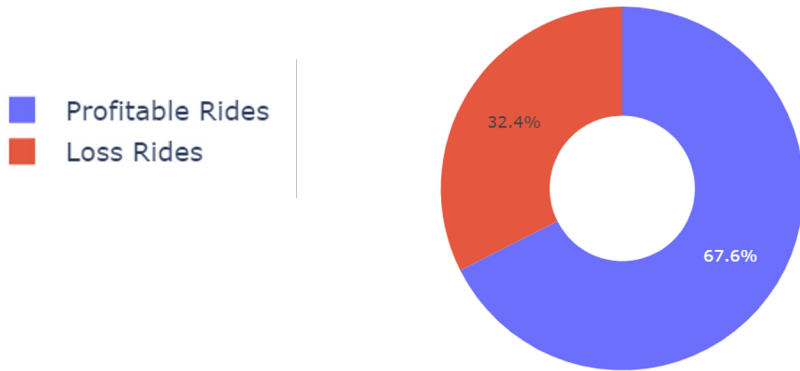


IMPLEMENTING DEMAND & SUPPLY MULTIPLIERS



RESULTS OF OUR NEW PRICING STRATEGY

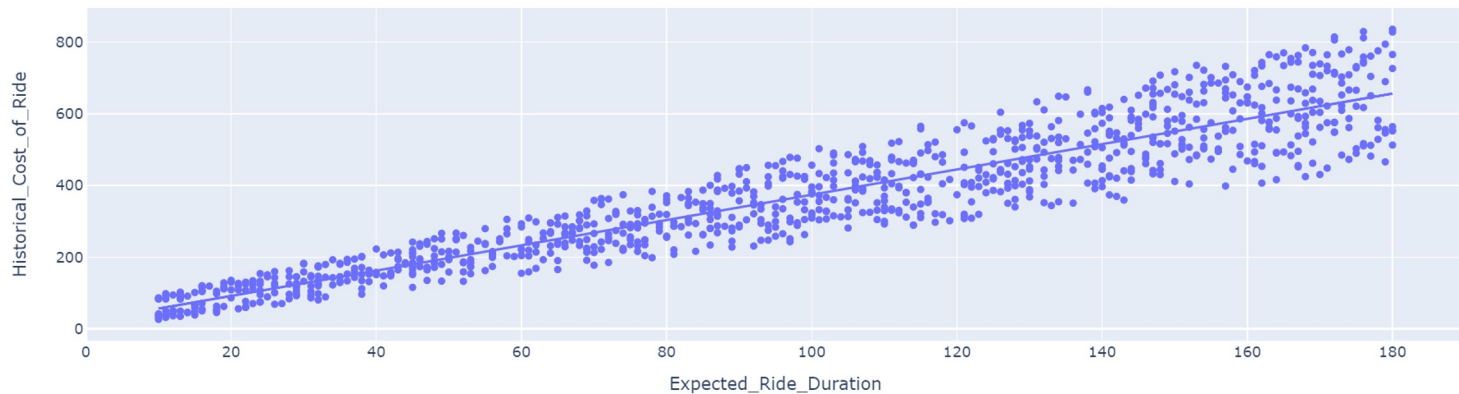
Profitability of Rides (Dynamic Pricing vs Historical Pricing)



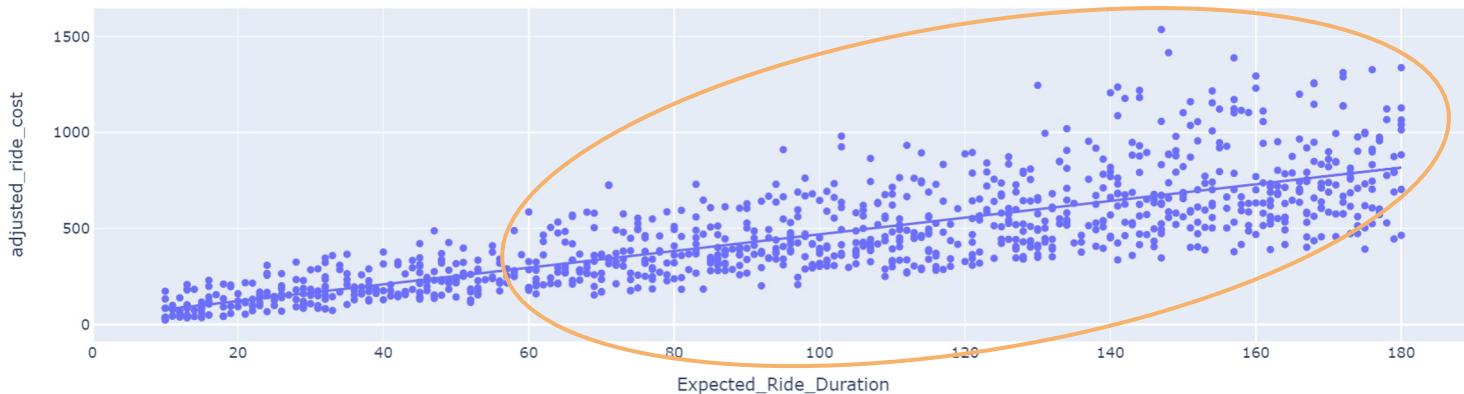
Expected Revenue Comparison

Previous Revenue	Adjusted Revenue	▲	%
\$372,503	\$467,199	\$ 94,696	25.42%

Previous Ride Fares vs Expected Ride Duration



Our Adjusted Ride Fares vs Expected Ride Duration



03

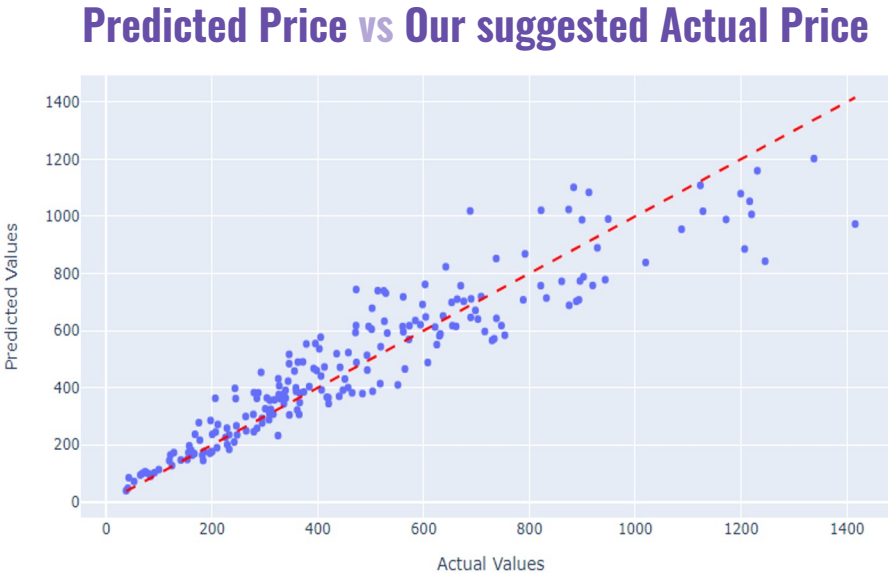
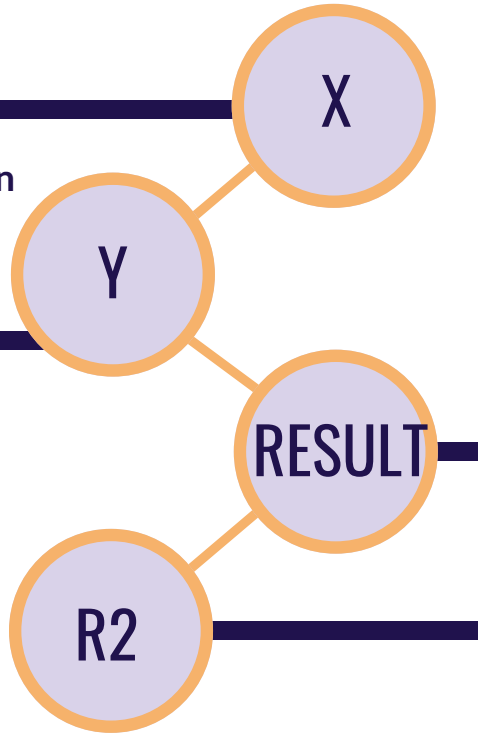
MODELING & SIMULATION



MODEL - RANDOM FOREST

- Number of Riders
- Number of Drivers
- Vehicle Type
- Time of Booking
- Expected Ride Duration

- Adjusted Ride Cost



86.85

SIMULATION

	1	2	3	4	5	6
Number of Riders	40 → 100	100	100	100	100	100
Number of Drivers	40	40 → 30	30	30	30	30
Vehicle Type	Economy	Economy	Economy	Economy → Premium	Premium	Premium
Time of Booking	Afternoon	Afternoon	Afternoon → Evening	Evening	Evening	Evening
Expected Ride Duration	40	40	40	40	40 → 60	60
Predicted Ride Cost	154.99	162.08	174.31	175.36	186.01	265.63

+7.09

+12.23

+1.05

+10.65

+79.62

04

CONCLUSIONS



CONCLUSIONS & TAKEAWAYS



DISTRIBUTION & CORRELATION

- Supply is consistently lower than Demand
- Original price is highly correlated with ride duration



PRICING STRATEGY ADJUSTMENT

- Supply and Demand should play more important roles when it comes to pricing
>> Multiplier



PRICE PREDICTION

- Build price prediction model based on the adjusted price

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THANK YOU!