Analysis of Ride Patterns and Fare Dynamics in New York City TLC Trips

Unlocking potential of iconic NYC transportation.

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Project Proposal & Motivation

Trip parameters

Time-series Analysis

Customer Behaviour

Independent Factors

Adverse Weather

Rainfall

Holidays & Events

Data Source

Yellow & Green

Data Cleaning

NYC Taxi and Limousine Commission Data

Column	Description
1. PULocationID	TLC Taxi Zone in which the taximeter was engaged
2. DOLocationID	TLC Taxi Zone in which the taximeter was disengaged
3. passenger_count	The number of passengers in the vehicle. This is a driver-entered value
4. trip_distance	The elapsed trip distance in miles reported by the taximeter
5. fare_amount	The time-and-distance fare calculated by the meter
6. tip_amount	This field is automatically populated for credit card tips. Cash thps are not included
7. tolls_amount	Total amount of all tolls paid in trip
8. total_amount	The total amount charged to passengers
9. total_surcharge	The sum of miscellaneous extras, improvement surcharge, congestion surcharge
10. payment_type	A numeric code signifying how the passenger paid for the trip 1= Credit card, 2= Cash, 3= No charge, 4= Dispute, 5= Unknown, 6= Voided trip
11. pickup_date	The date when the meter was engaged
12. pickup_time	The time when the meter was engaged
13. dropoff_date	The date when the meter was disengaged
14. dropoff_time	The time when the meter was disengaged

Types of Analysis

Customer Pattern Analysis

Uncover rider behaviors and preferences.

Resource Allocation Analysis

Optimize fleet deployment and efficiency.

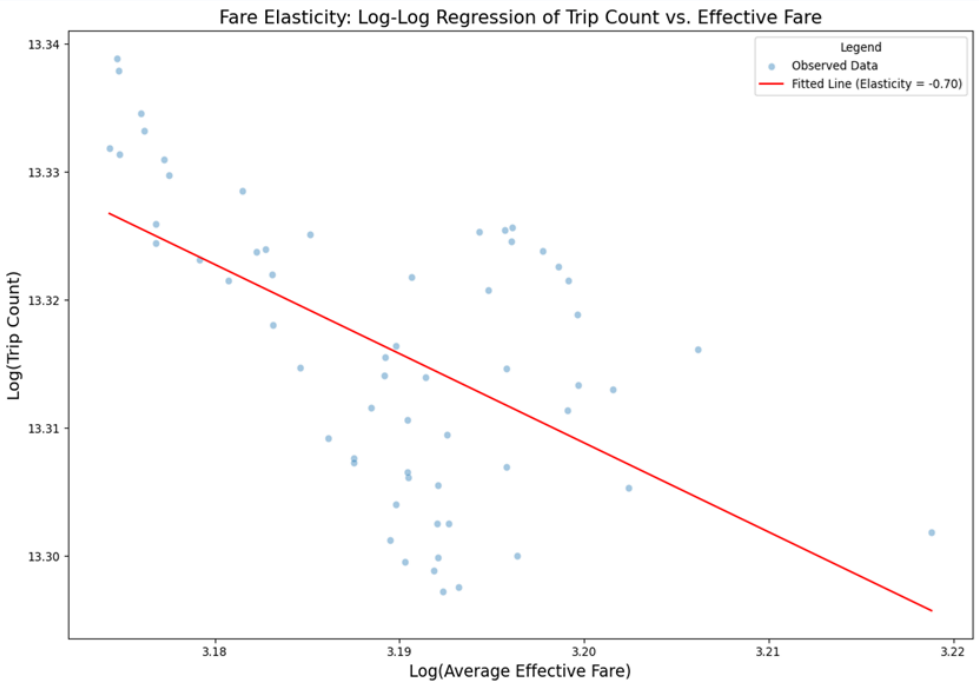
Revenue Generation Analysis

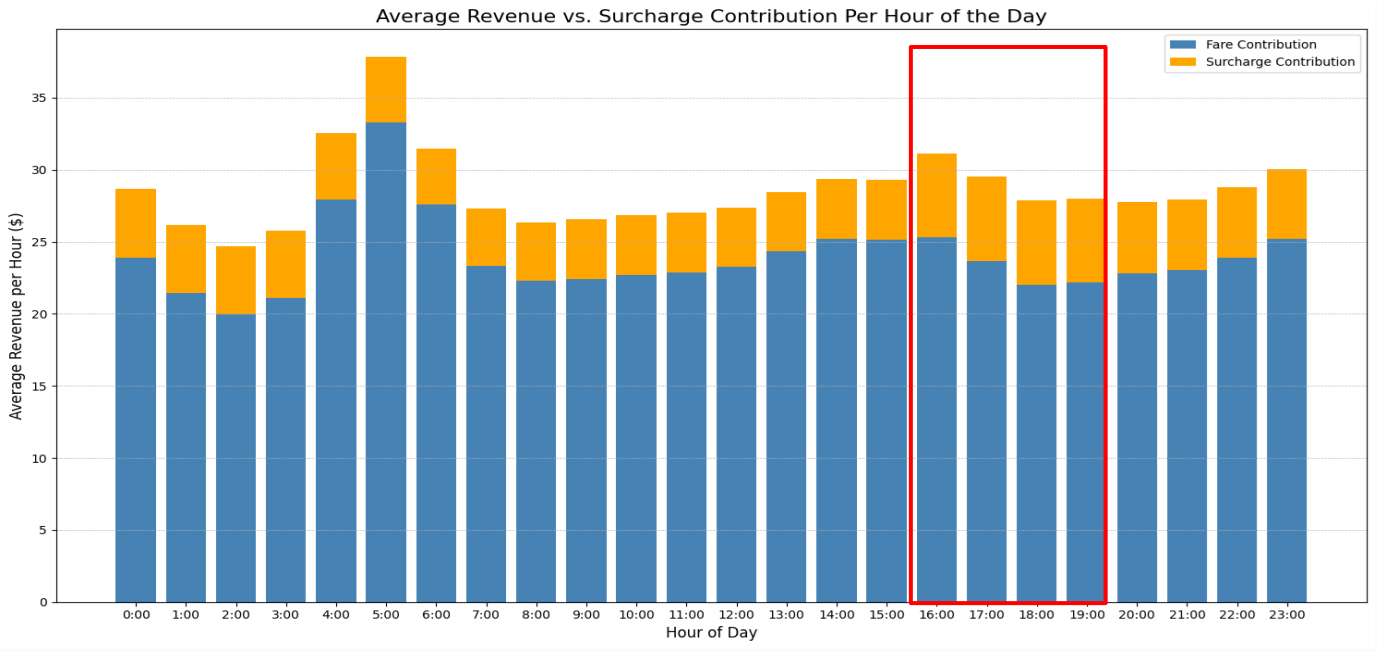
Identify opportunities to maximize earnings.

Fare and Trip Pattern Analysis

Fare Increase	Trip Demand Change
1%	-0.7%

- Moderate customer price sensitivity observed.
- Balance revenue growth with ridership retention.





Revenue and Surcharge Analysis

1

Early Morning Peak

Highest revenue 4-6 AM with significant surcharges.

2

Evening Surcharge Spike

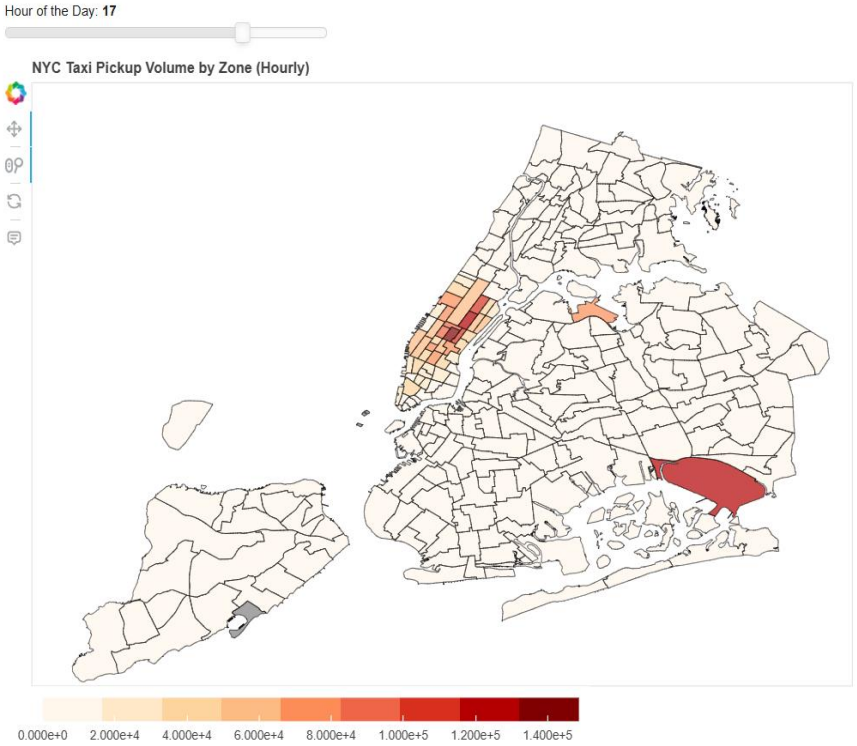
Highest surcharges 4-7 PM despite revenue decline.

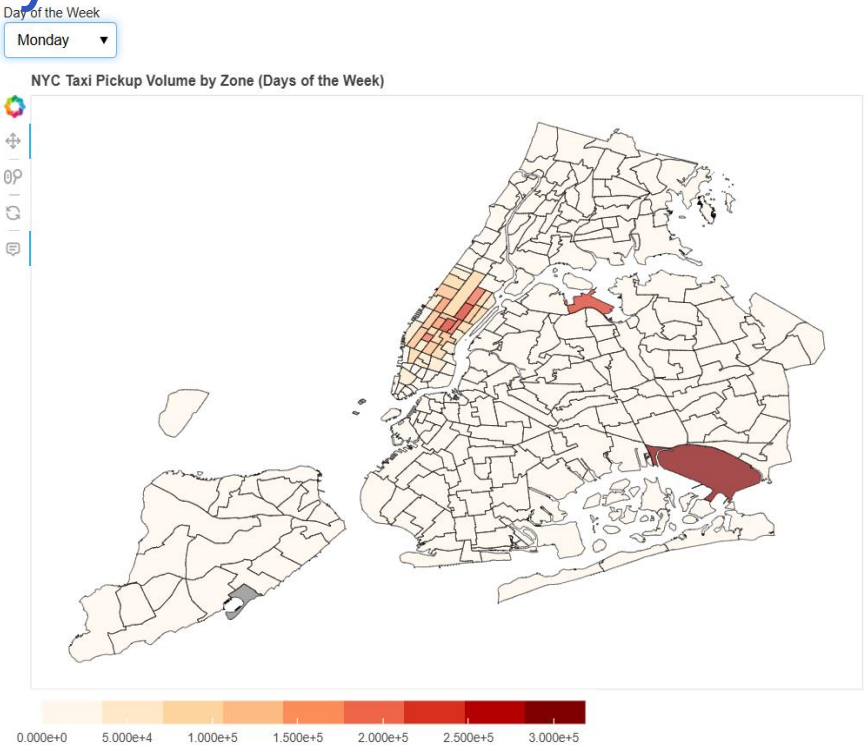
3

Strategic Pricing

Optimize fare structure based on demand patterns.

Resource Allocation Analysis





Pickup Locations

Visualize high-demand areas for strategic deployment.

Bokeh visualizations

Customer Pattern Ana

Single-Passenger Dominance

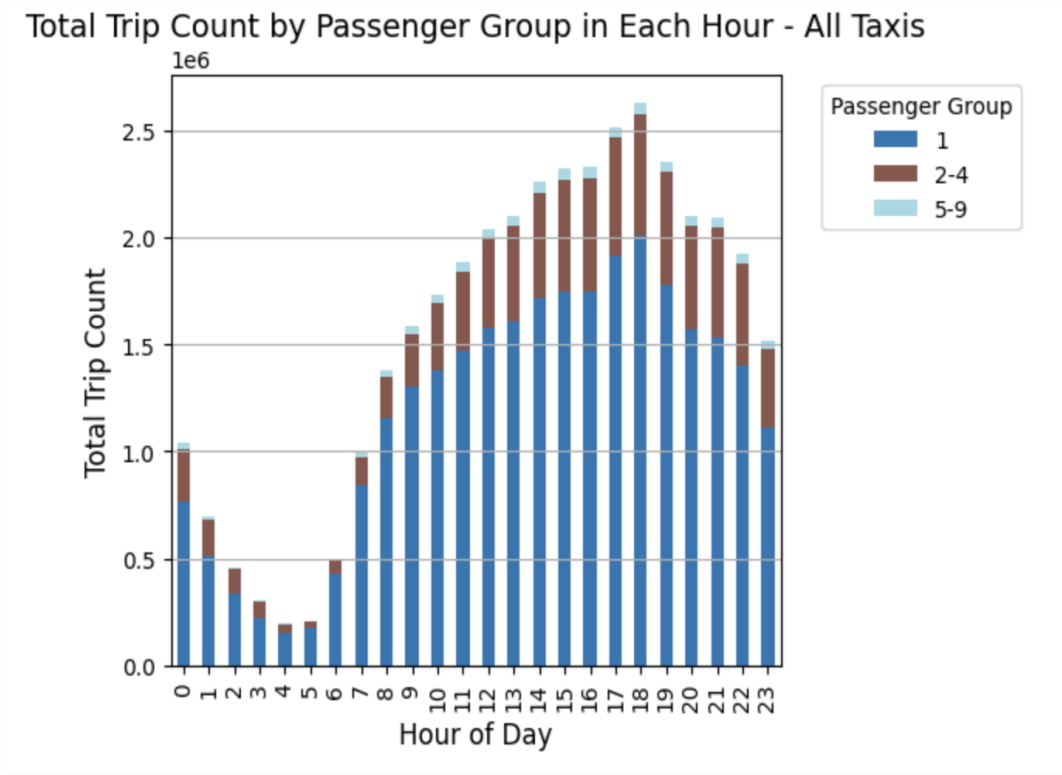
80% single-passenger trips indicate inefficient seat utilization.

Peak Demand Window

Highest demand between 2-6 PM.

Shared Ride Potential

Opportunity to optimize fleet during peak hours.



Recommendations for the Future

Targeted Fleet Allocation

Utilize trip volume trends based on weekends v/s weekdays, weather, holidays, etc

Cashless Transactions

Encourage the use of digital payment options to unlock new revenue streams and enhance the passenger experience.

Adaptive Pricing Strategies

Implement dynamic pricing models to balance revenue growth and ridership retention, responding to changing market conditions.

Thank You!

Q & A