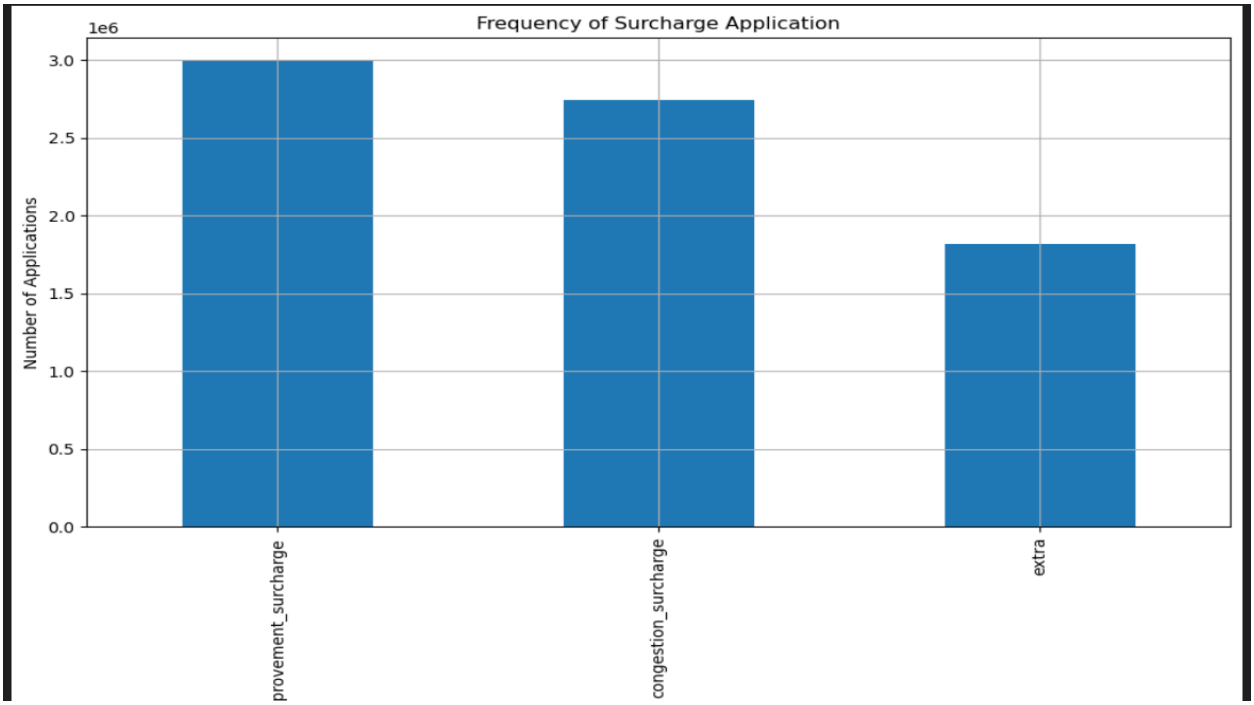
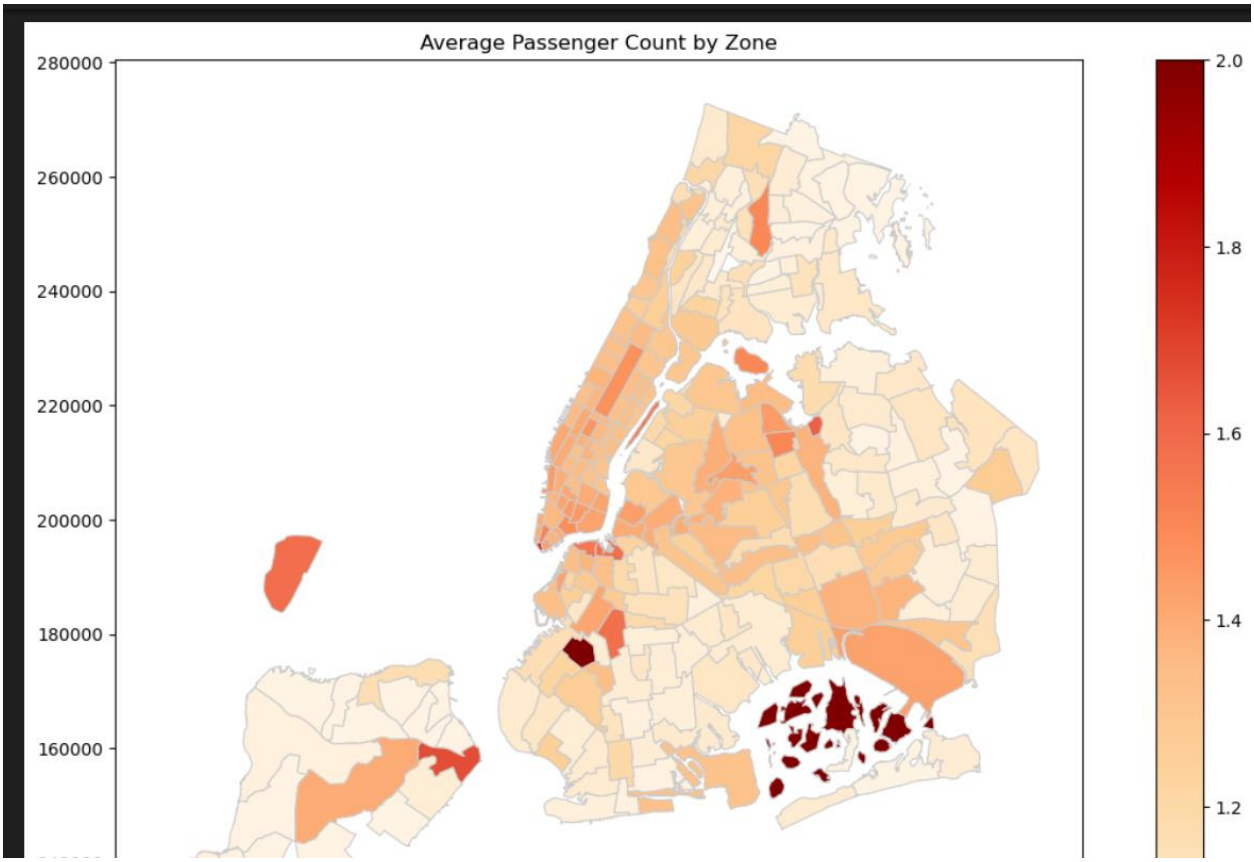
NEW YORK CITY – YELLOW TAXI REPORT 2023





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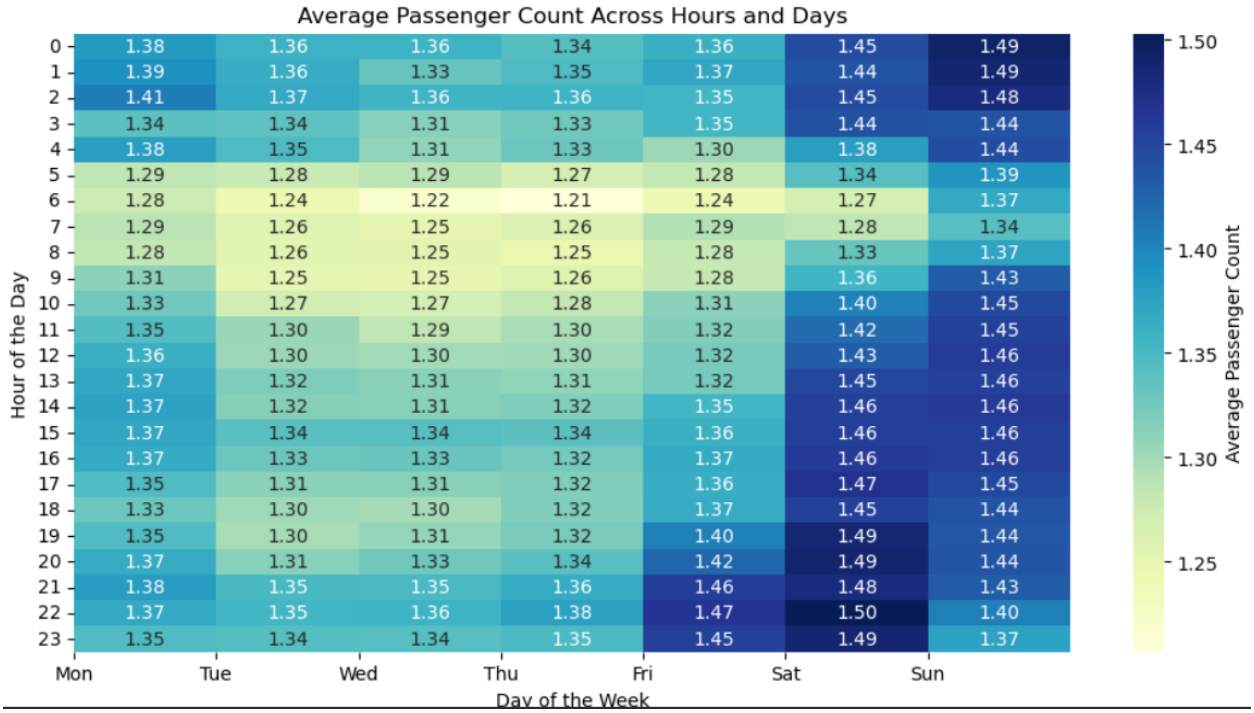
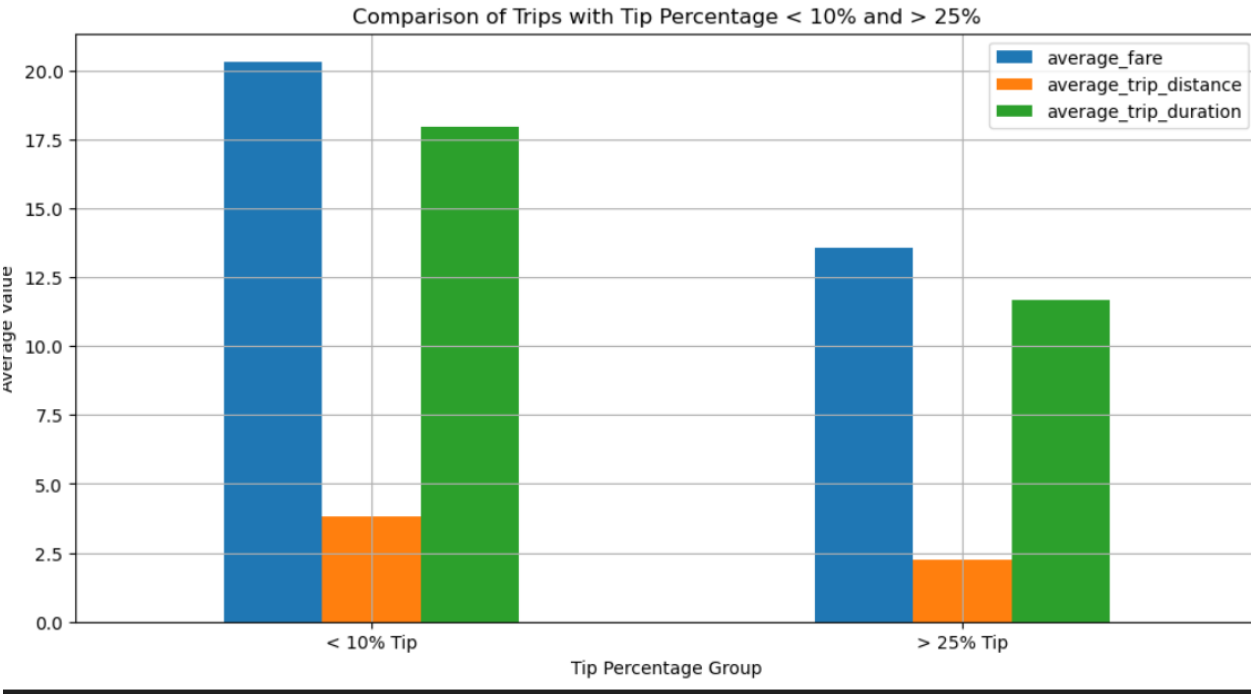
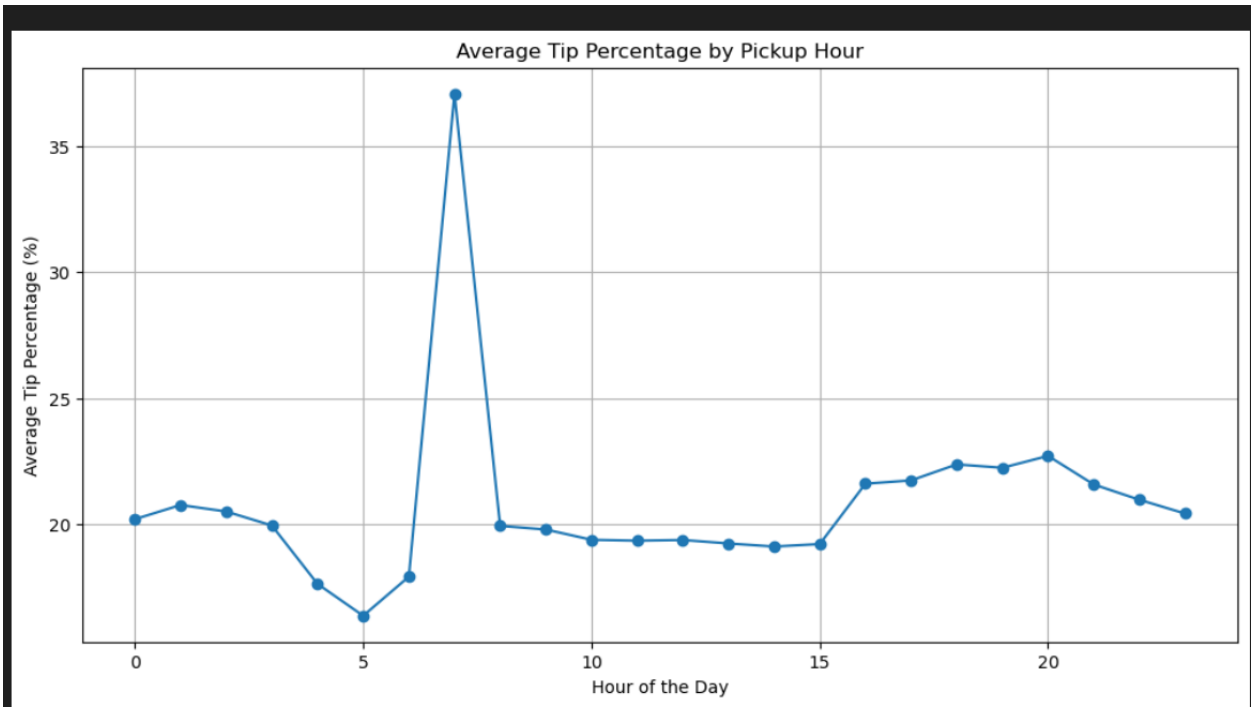
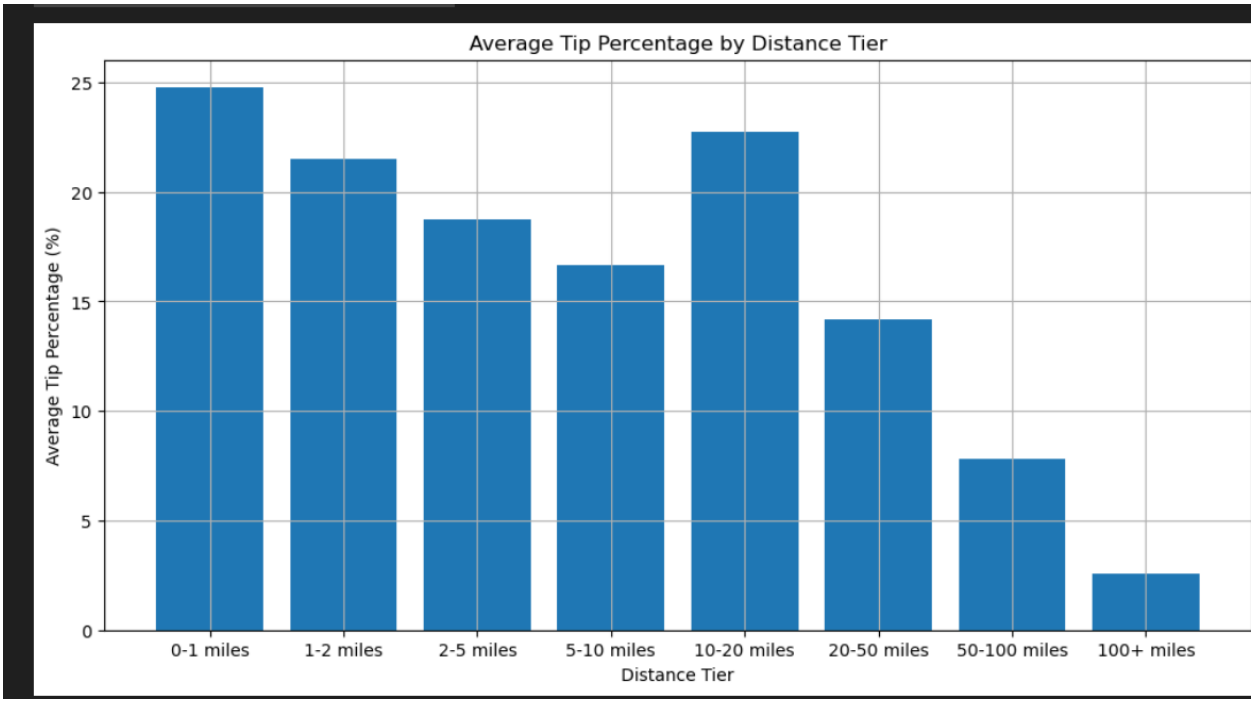
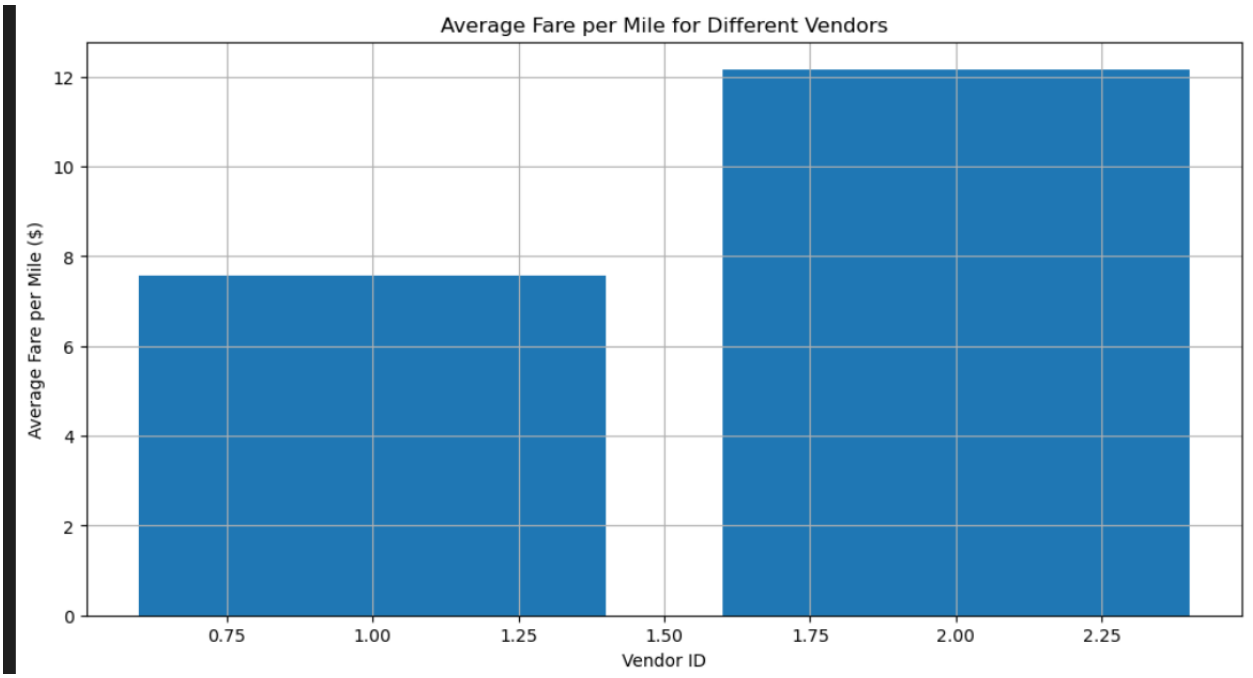
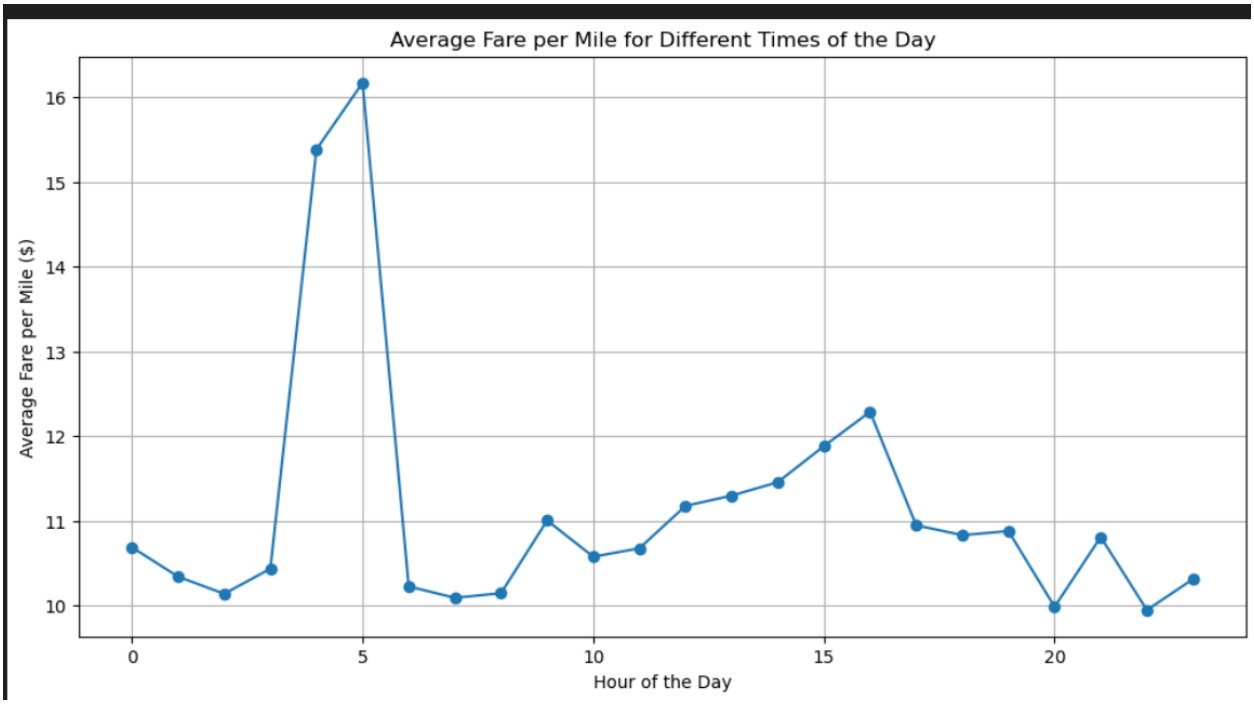


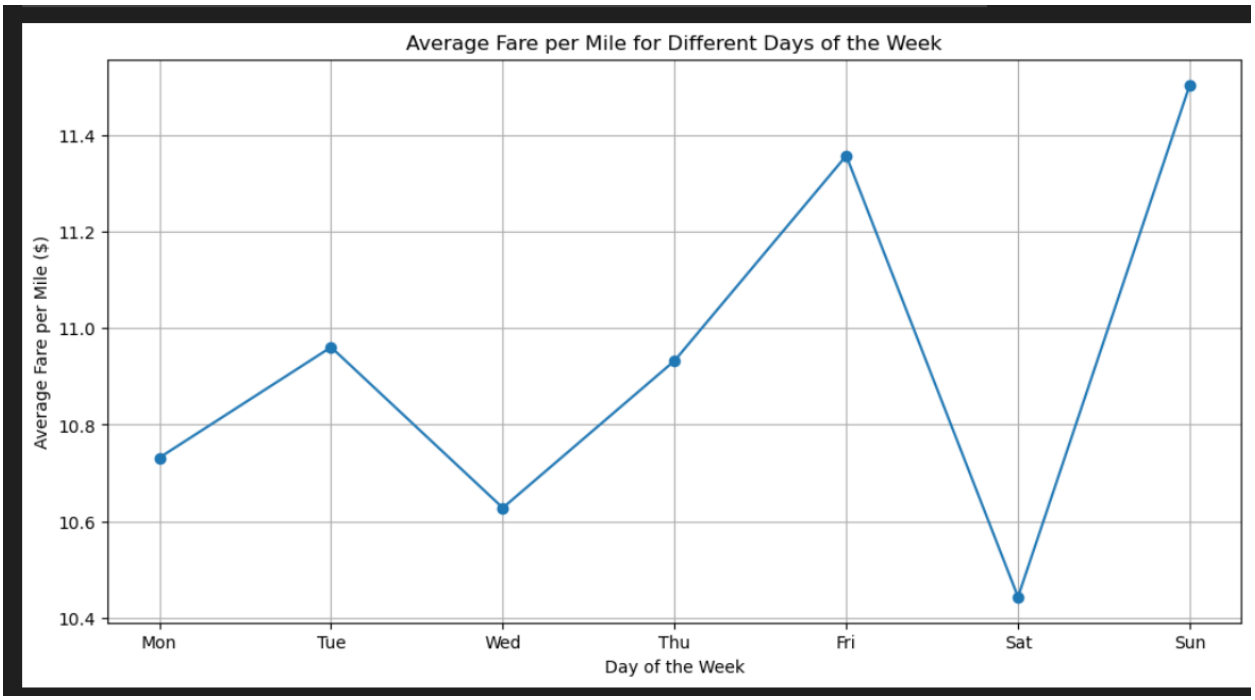


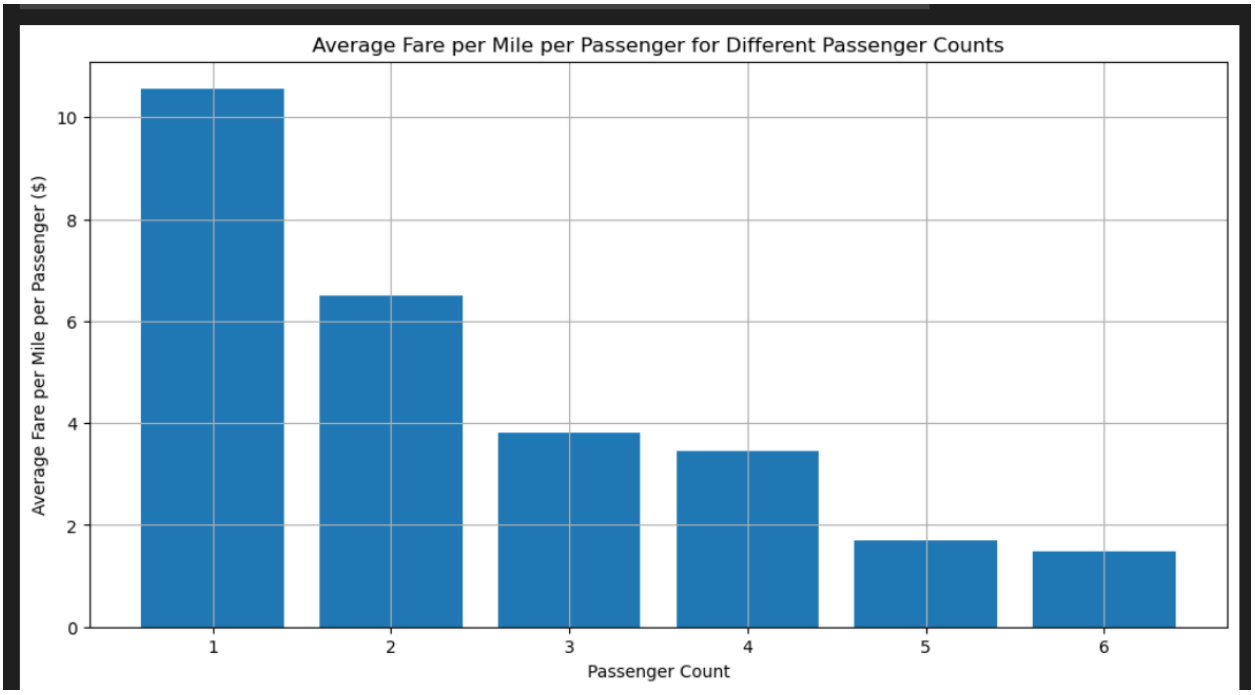

Average Tip Percentage by Pickup Hour
Average Tip Percentage (%)
35
30
25
20
0
5
10
15
20
Hour of the Day

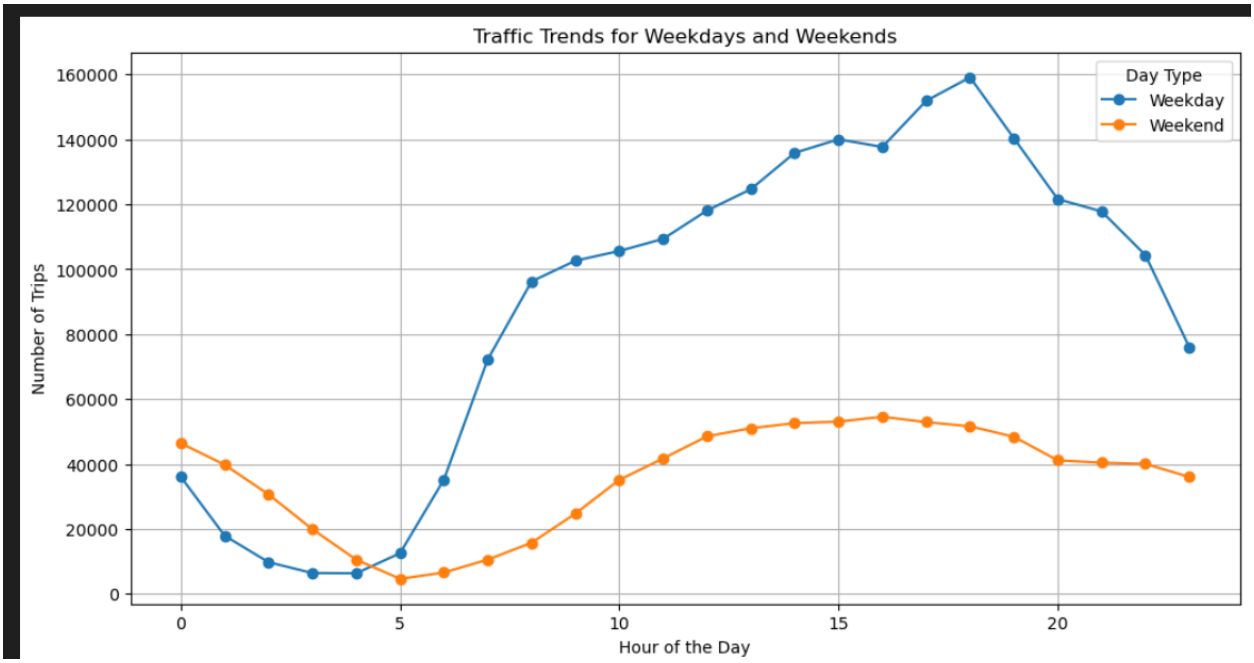

Average Tip Percentage by Distance Tier
Average Tip Percentage (%)
25
20
15
10
5
0
0-1 miles
1-2 miles
2-5 miles
5-10 miles
10-20 miles
20-50 miles
50-100 miles
100+ miles
Distance Tier

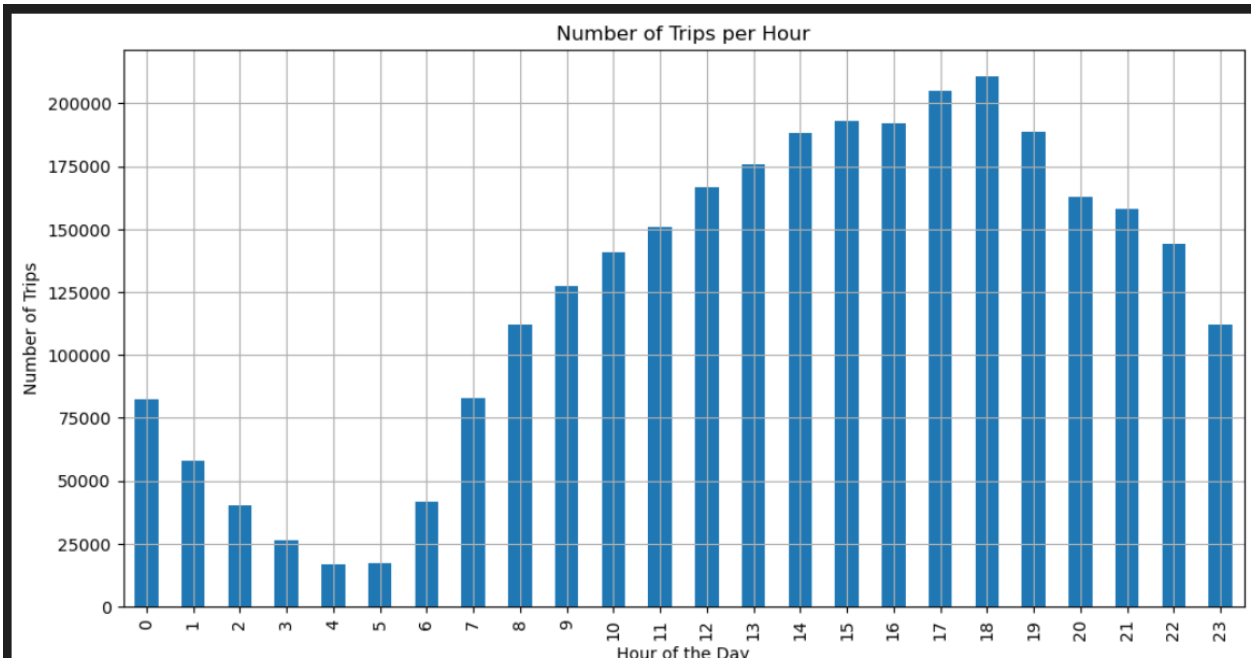

Average Fare per Mile for Different Vendors
Average Fare per Mile ($)
0
2
4
6
8
10
12
0.75
1.00
1.25
1.50
1.75
2.00
2.25
Vendor ID


Average Fare per Mile for Different Times of the Day
Average Fare per Mile ($)
10
11
12
13
14
15
16
0
5
10
15
20
Hour of the Day


Average Fare per Mile for Different Days of the Week
Average Fare per Mile ($)
11.4
11.2
11.0
10.8
10.6
10.4
Mon
Tue
Wed
Thu
Fri
Sat
Sun
Day of the Week


Average Fare per Mile per Passenger for Different Passenger Counts
Average Fare per Mile per Passenger ($)
10
8
6
4
2
0
1
2
3
4
5
6
Passenger Count


Traffic Trends for Weekdays and Weekends
Day Type
Weekday
Weekend
Number of Trips
Hour of the Day
0
20000
40000
60000
80000
100000
120000
140000
160000
0
5
10
15
20


Number of Trips per Hour
Number of Trips
Hour of the Day
0
25000
50000
75000
100000
125000
150000
175000
200000
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

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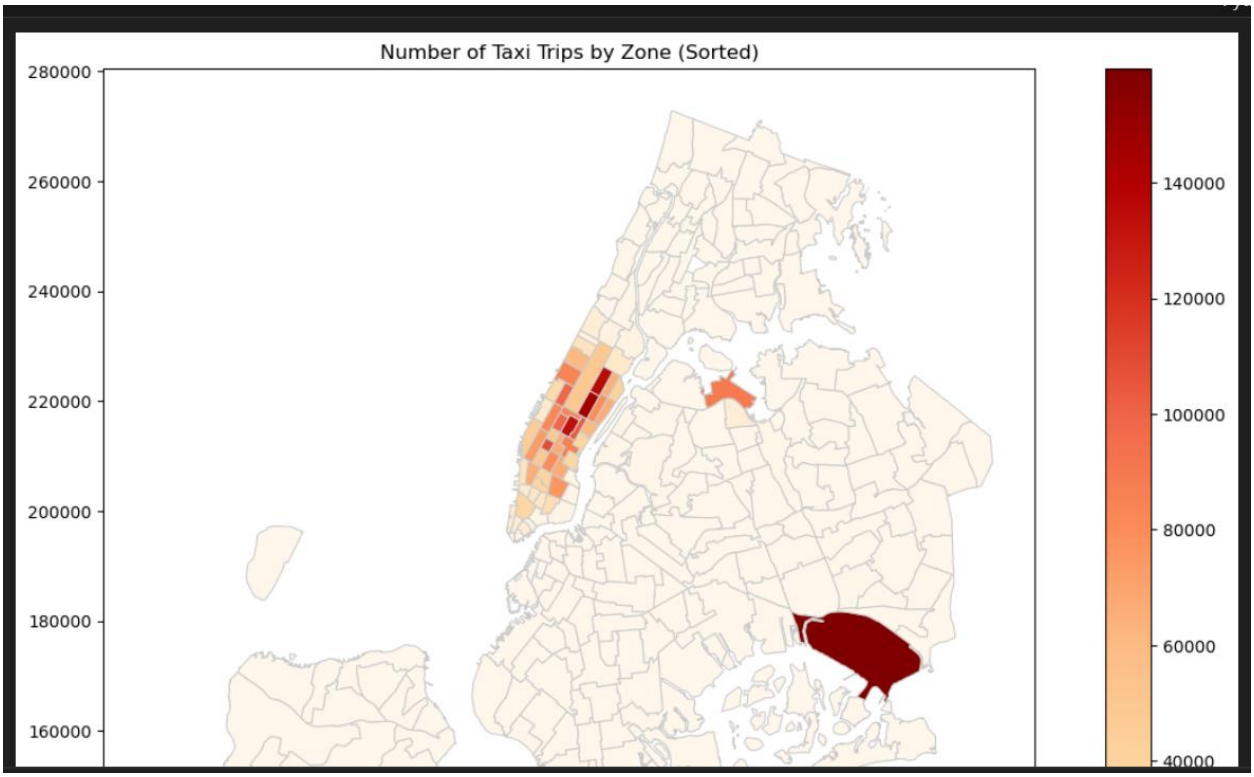
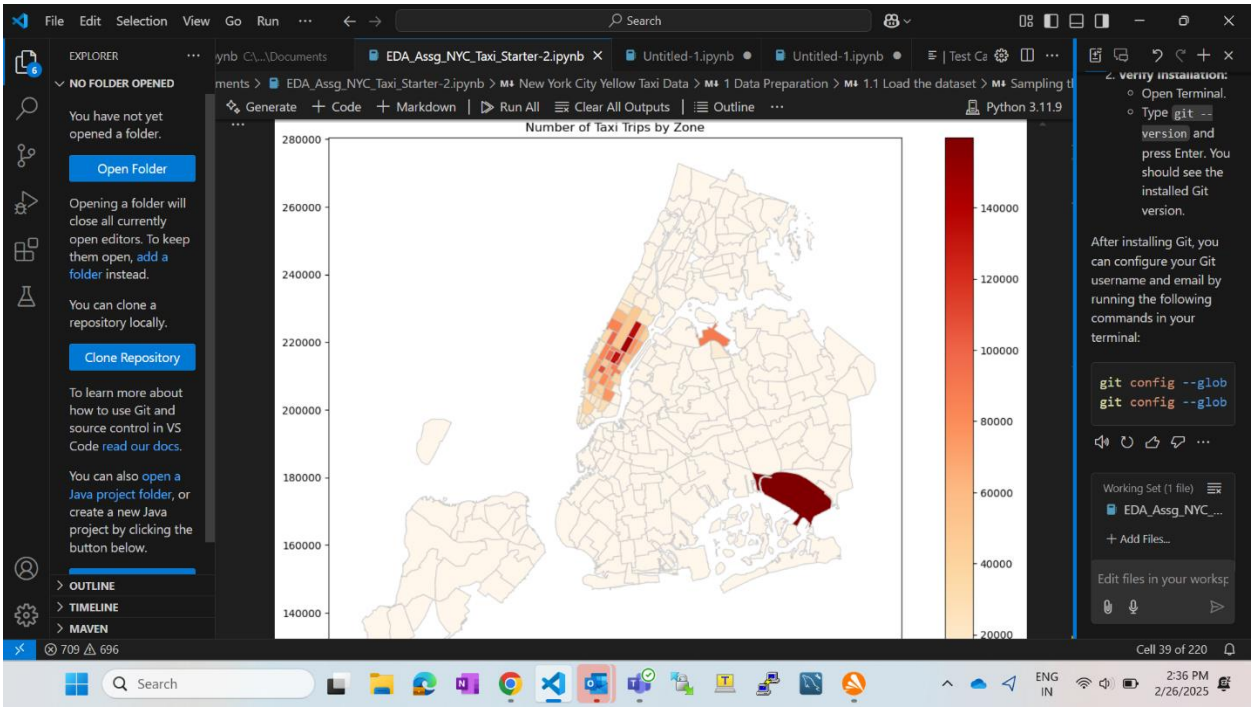
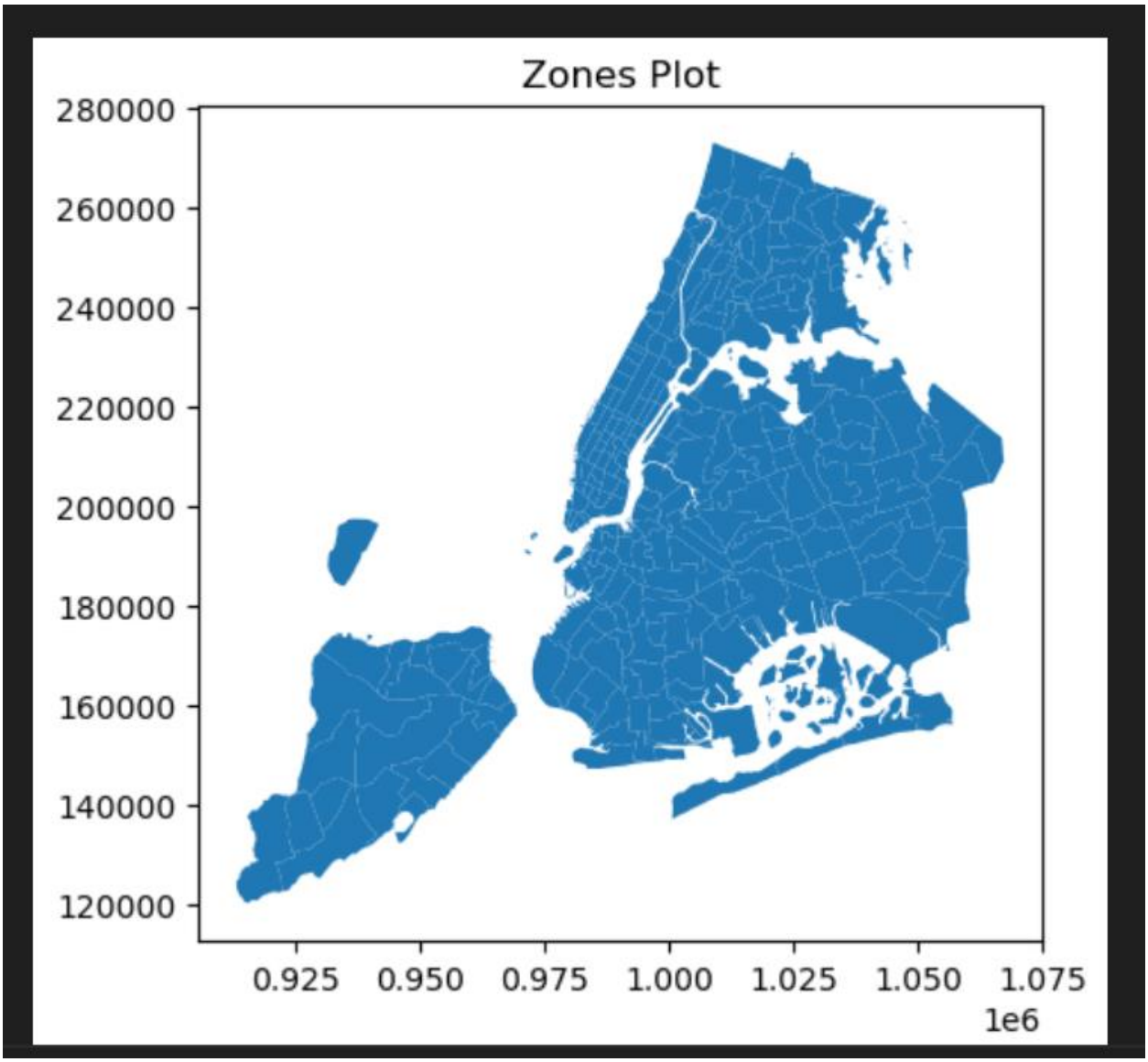
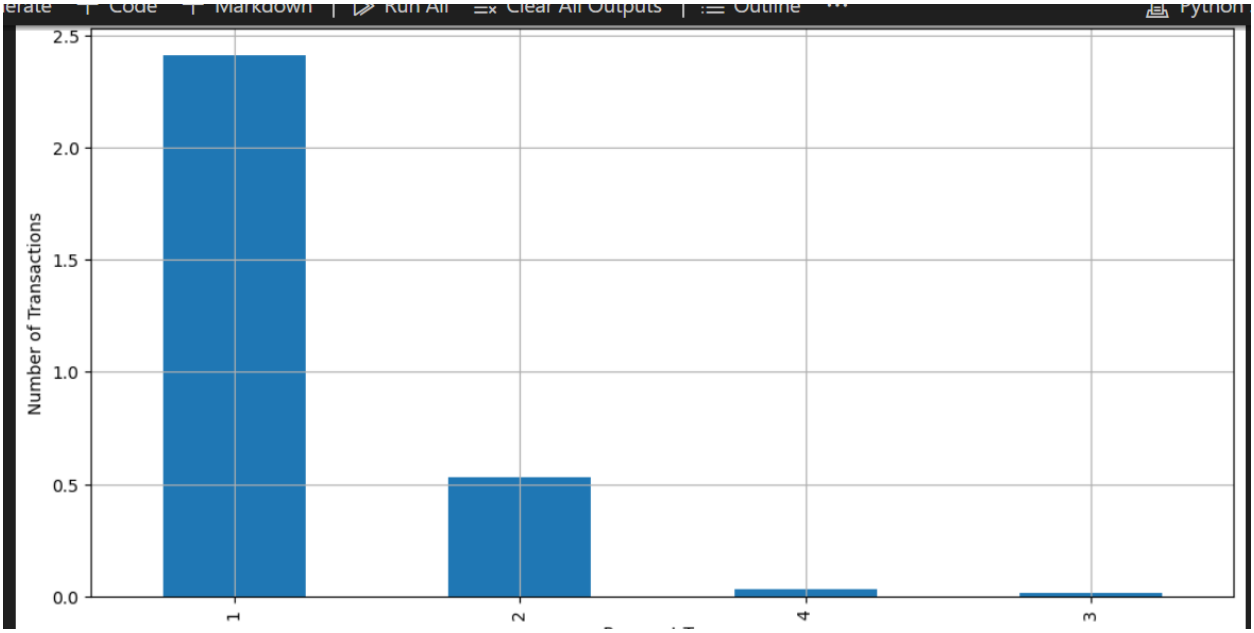
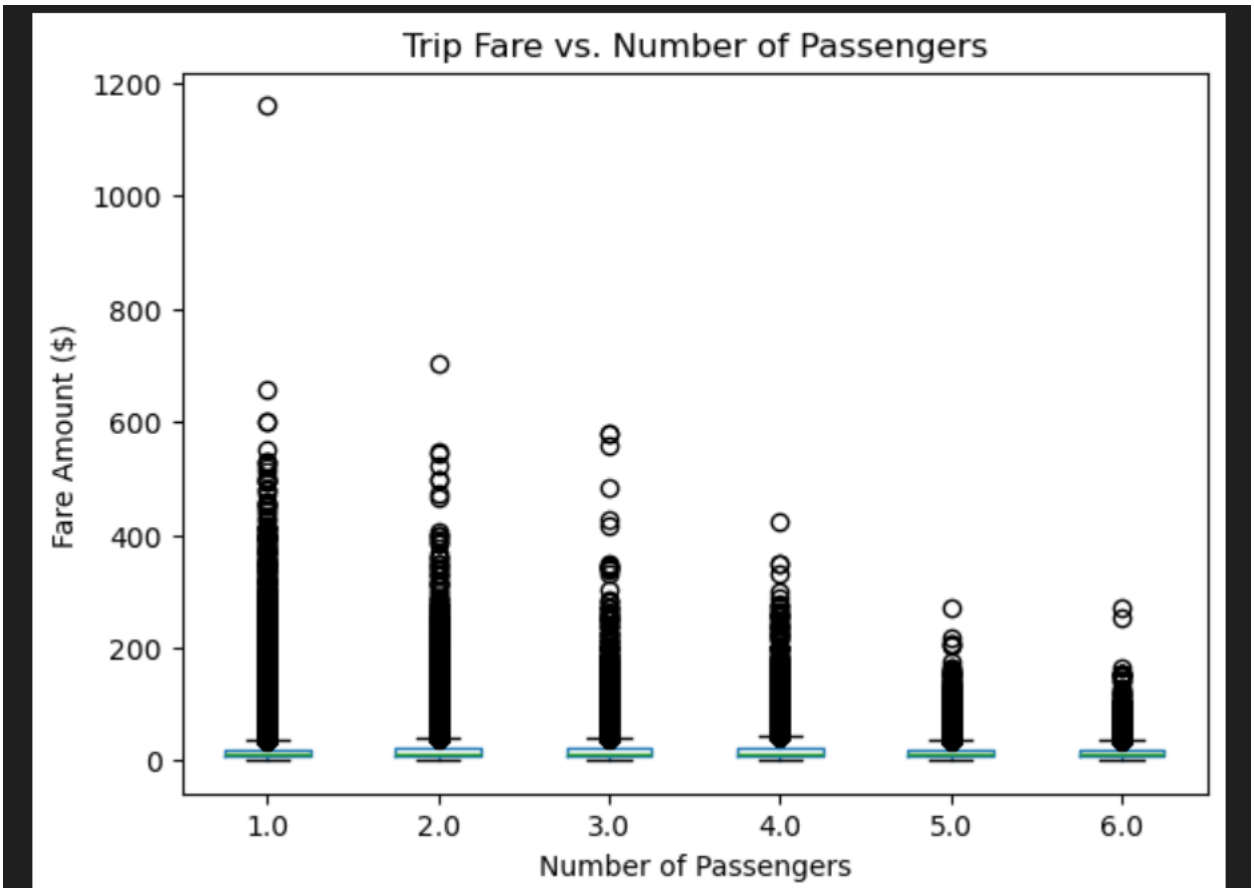
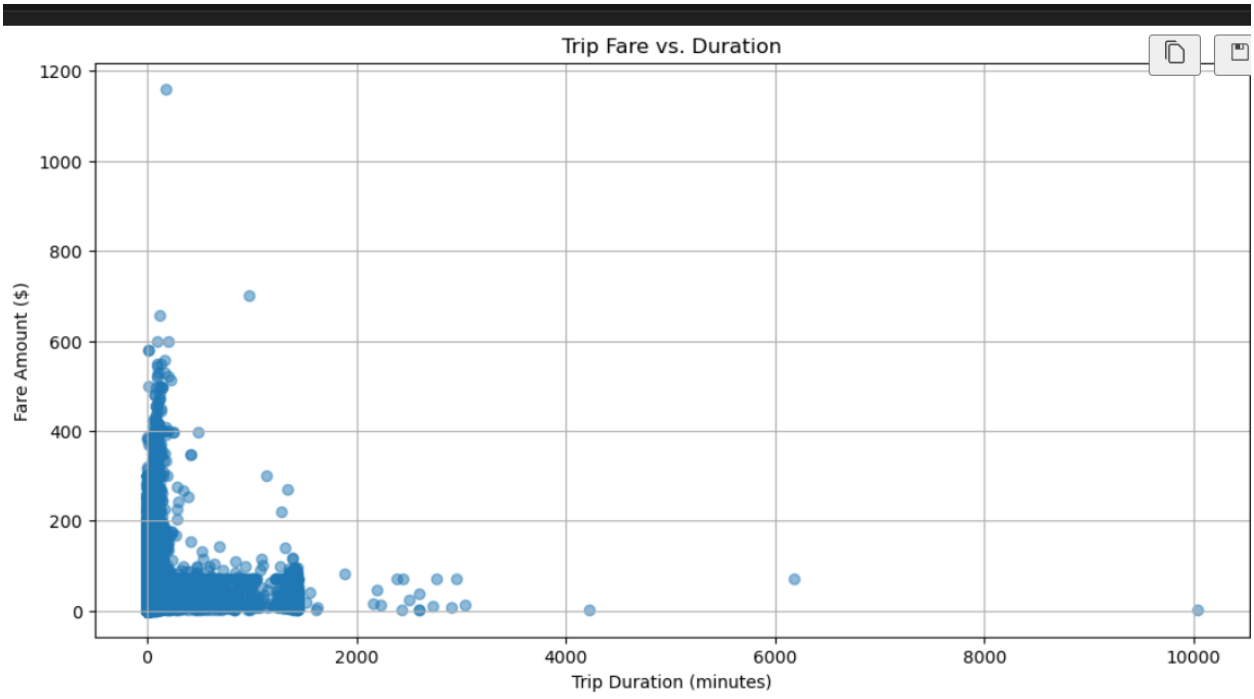


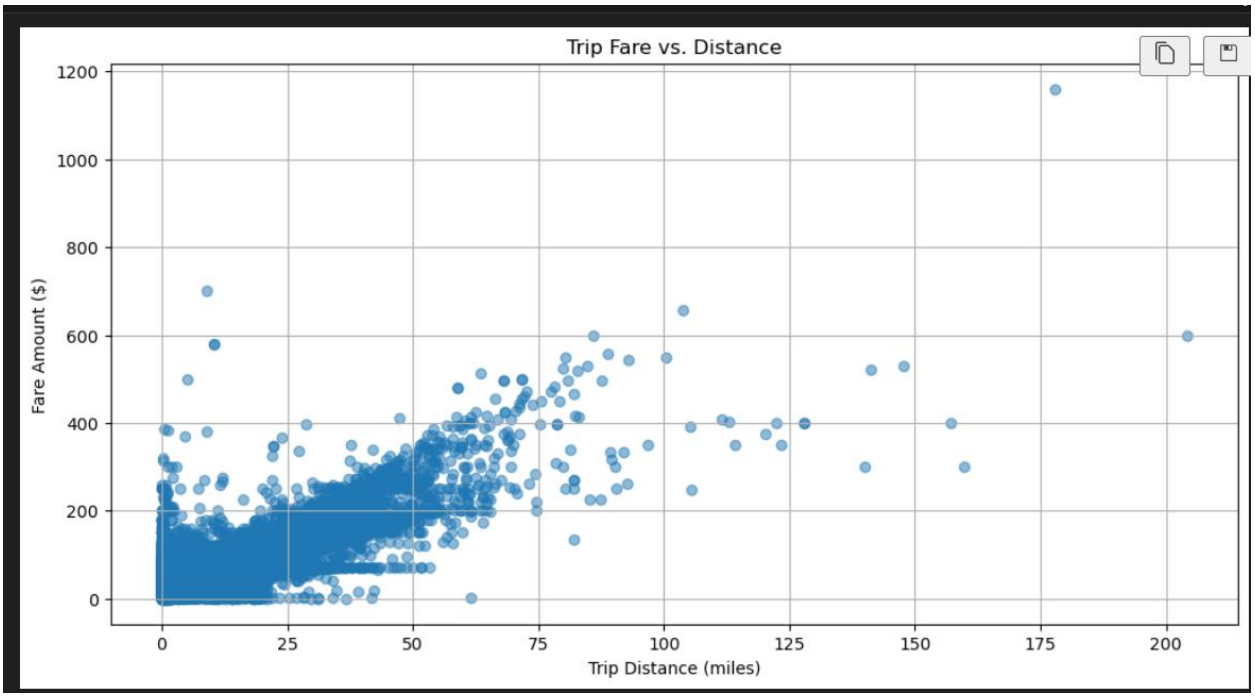



Zones Plot
280000
260000
240000
220000
200000
180000
160000
140000
120000
0.925
0.950
0.975
1.000
1.025
1.050
1.075
1e6


Number of Transactions
2.5
2.0
1.5
1.0
0.5
0.0
1
2
4
3


Trip Fare vs. Number of Passengers
Fare Amount ($)
0
200
400
600
800
1000
1200
1.0
2.0
3.0
4.0
5.0
6.0
Number of Passengers


Trip Fare vs. Duration
Fare Amount ($)
0
200
400
600
800
1000
1200
0
2000
4000
6000
8000
10000
Trip Duration (minutes)



Hourly Trends in Taxi Pickups:

The busiest hour for taxi pickups is around 6 PM, with a significant number of trips occurring during evening rush hours.

Early morning hours (2 AM to 5 AM) have the least number of pickups.

Monthly Trends in Pickups:

There is a noticeable increase in taxi pickups during certain months, indicating seasonal variations in demand.

Financial Parameters:

Some trips have zero or negative values for fare_amount, tip_amount, total_amount, and trip_distance, which were filtered out for accurate analysis.

The average fare per mile varies significantly across different times of the day and days of the week.

Top Pickup and Dropoff Zones:

The top 10 pickup and dropoff zones were identified, with certain zones consistently having higher demand.

During night hours (11 PM to 5 AM), specific zones have higher pickup and dropoff activity, which differs from overall top zones.

Passenger Count Analysis:

Passenger count varies across different hours of the day and days of the week, with peak passenger counts during late evenings and weekends.

The average passenger count also varies across different zones.

Surcharge Application:

The frequency of different surcharges (improvement_surcharge, congestion_surcharge, extra) was analyzed, showing how often each surcharge is applied.

Tip Percentage Analysis:

Tip percentages were analyzed based on distances, passenger counts, and pickup times.

Trips with tip percentages less than 10% and greater than 25% were compared, revealing differences in average fare, trip distance, and trip duration.

Concluding Story

Based on the insights from the analysis, the following strategies can be devised to meet customer demand and optimize supply:

Time of the Day:

Peak Hours: Focus on increasing the supply of taxis during evening rush hours (4 PM to 7 PM) to meet the high demand.

Night Hours: Ensure adequate coverage during night hours (11 PM to 5 AM) in specific zones with higher activity, such as entertainment districts and airports.

Day of the Week:

Weekdays: Optimize supply during morning and evening rush hours to cater to commuters.

Weekends: Increase supply in areas with higher leisure activity, such as shopping districts and nightlife areas, especially during late evenings and nights.

Location:

High-Demand Zones: Prioritize supply in top pickup and dropoff zones identified in the analysis. These zones consistently show higher demand and can benefit from increased taxi availability.

Night Activity Zones: Focus on zones with higher night-time activity to ensure customer demand is met during late hours.

Fare Optimization:

Distance-Based Pricing: Implement dynamic pricing strategies based on trip distance and time of the day to optimize fare revenue.

Surcharge Awareness: Educate drivers and customers about the application of surcharges to ensure transparency and optimize fare collection.

Passenger Count:

Group Travel: Encourage group travel options during peak hours to maximize passenger count per trip and optimize vehicle utilization.

Data-Driven Adjustments to Pricing Strategy

To maximize revenue while maintaining competitive rates with other vendors, taxi service providers can implement a data-driven pricing strategy. Here are some proposed adjustments based on the insights from the trip trend analysis:

Dynamic Pricing:

Peak Hours: Increase fare rates during peak hours (e.g., 4 PM to 7 PM) when demand is high. This can help manage demand and maximize revenue.

Night Hours: Implement higher fare rates during late-night hours (11 PM to 5 AM) to account for the increased demand and the need for drivers to work during less desirable hours.

Distance-Based Pricing:

Short Trips: Implement a minimum fare for short trips to ensure profitability. This can help cover the costs associated with short-distance travel.

Long Trips: Offer competitive rates for long-distance trips to attract more customers. Consider implementing a tiered pricing structure where the per-mile rate decreases after a certain distance threshold.

Zone-Based Pricing:

High-Demand Zones: Increase fare rates in high-demand zones, such as business districts, entertainment areas, and airports. This can help manage demand and optimize revenue in these areas.

Low-Demand Zones: Offer discounts or lower fare rates in low-demand zones to attract more customers and increase utilization of cabs in these areas.

Surcharge Adjustments:

Congestion Surcharge: Apply congestion surcharges in areas with high traffic congestion during peak hours. This can help manage demand and compensate for the additional time spent in traffic.

Event Surcharge: Implement event-based surcharges during special events, holidays, and festivals when demand is expected to be high.

Time-Based Discounts:

Off-Peak Hours: Offer discounts during off-peak hours (e.g., mid-morning and mid-afternoon) to encourage more trips during these times and increase overall utilization.

Weekend Discounts: Provide special weekend discounts to attract more customers and increase weekend ridership.

Loyalty Programs:

Frequent Rider Discounts: Implement a loyalty program that offers discounts or rewards to frequent riders. This can help retain customers and encourage repeat business.

Referral Programs: Offer incentives for customers who refer new riders. This can help expand the customer base and increase ridership.

Real-Time Demand Monitoring:

Surge Pricing: Implement surge pricing based on real-time demand data. Increase fare rates during sudden spikes in demand to manage supply and maximize revenue.

Demand Forecasting: Use predictive analytics to forecast demand patterns and adjust pricing strategies accordingly. This can help optimize fare rates based on expected demand.

Implementation Strategy

Data Collection and Analysis:

Continuously collect and analyze trip data, including fare amounts, trip distances, passenger counts, and pickup/dropoff times.

Monitor competitor pricing to ensure that fare rates remain competitive.

Technology Integration:

Implement dynamic pricing algorithms that adjust fare rates in real-time based on demand patterns.

Use mobile apps or in-car systems to communicate pricing adjustments to drivers and customers.

Customer Communication:

Clearly communicate pricing adjustments and surcharges to customers through mobile apps, websites, and in-car displays.

Provide transparency in fare calculations to build trust and ensure customer satisfaction.

Driver Training and Incentives:

Train drivers on the new pricing strategy and how to effectively communicate fare rates to customers.

Offer incentives for drivers who achieve higher trip counts and revenue through the optimized pricing strategy.

Monitoring and Adjustment:

Continuously monitor the impact of the pricing strategy on revenue and customer satisfaction.

Adjust pricing algorithms and strategies based on feedback from drivers and customers, as well as changes in market conditions.