

Cab Demand and Supply Analysis Documentation

Introduction

Comprehending the relationship between demand and supply is crucial for businesses to enhance their operations, maximize profits, and make well-informed decisions. Analyzing the dynamics of demand and supply in the context of cab ride businesses such as Ola and Uber presents a challenging scenario for demand and supply analysis. Cab services have become indispensable for urban transportation, with people heavily relying on them for their daily commutes. By understanding the patterns of demand and supply in cab services, it becomes possible to optimize their operations and provide customers with an enhanced user experience.

My task is to analyze the demand for rides and the supply of cabs by examining these features. This analysis will provide insights into the patterns of demand and supply, allowing for a better understanding of their dynamics.

Data Summary

In this particular dataset, we have information regarding the demand for rides and the supply of drivers in a specific city. The dataset includes the following features:

Drivers Active Per Hour: Indicates the number of drivers active during each hour.

Riders Active Per Hour: Represents the number of riders seeking rides within each hour.

Rides Completed: Denotes the number of rides that have been successfully completed.

Question 1:

a- What is the relationship between the number of drivers active per hour and the number of rides completed?

b- How does the number of riders active per hour correlate with the number of rides completed?

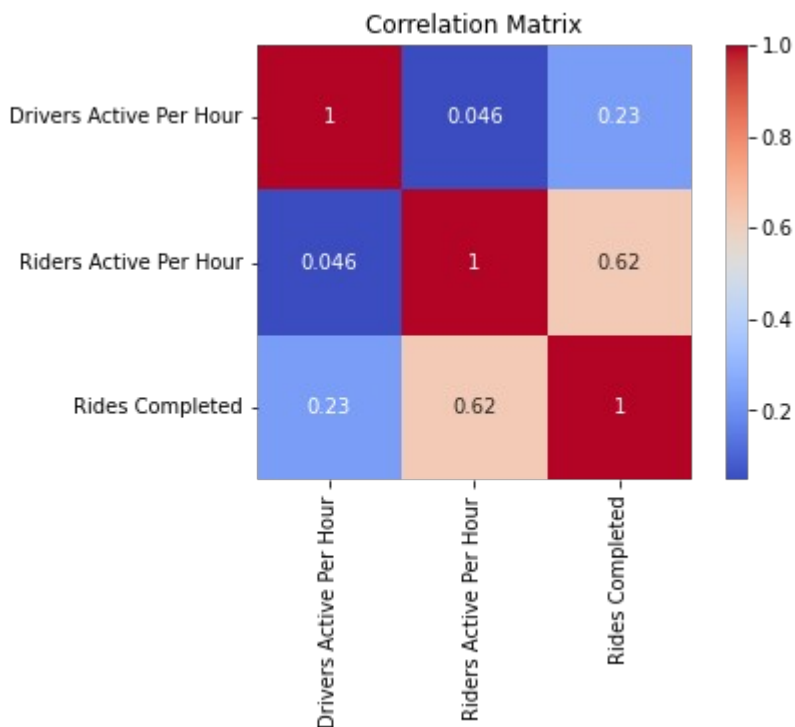
c- Is there a correlation between the number of drivers active per hour and the number of riders active per hour?

a- The relationship between the number of drivers active per hour and the number of rides completed is positively correlated with a correlation coefficient of 0.23. This suggests that there is a weak positive relationship between the two variables. As the number of drivers active per hour increases, there is a slight tendency for the number of rides completed to also increase. However, it is important to note that the correlation is relatively weak, indicating that other factors beyond the number of drivers may also influence the number of rides completed.

b- The number of riders active per hour correlates moderately positively with the number of rides completed, with a correlation coefficient of 0.62. This indicates that there is a meaningful relationship between the number of riders actively seeking rides and the number of rides completed. As the number of riders active per hour increases, there is a tendency for the number of rides completed to also increase. This suggests that the demand for rides plays a more significant role in determining the number of rides completed compared to the number of drivers active per hour.

c- There is a very weak positive correlation between the number of drivers active per

hour and the number of riders active per hour, with a correlation coefficient of 0.046. This implies that there is minimal or no significant relationship between the number of drivers active per hour and the number of riders actively seeking rides. The correlation coefficient being close to zero suggests that changes in the number of drivers active per hour do not strongly influence the number of riders actively seeking rides, and vice versa.



Question 2:

a- What is the average number of drivers active per hour?

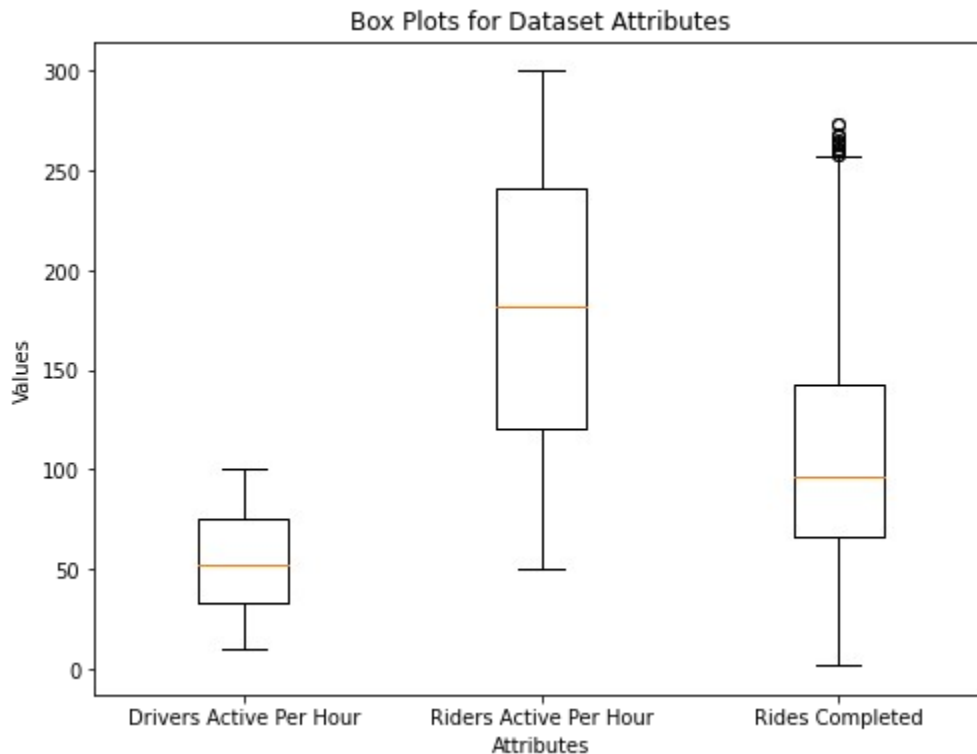
b- What is the average number of riders active per hour?

c- What is the average number of rides completed per hour?

a- Based on the provided dataset, the average number of drivers active per hour is approximately 53.64. This indicates that, on average, there are around 53.64 drivers actively offering their services per hour.

b- The average number of riders active per hour is approximately 181.17. This suggests that, on average, there are around 181.17 riders actively seeking rides per hour.

c- Lastly, the average number of rides completed per hour is approximately 107.49. This implies that, on average, around 107.49 rides are completed per hour.



Drivers Active Per Hour:

Median: Approximately 53.5 drivers active per hour. **Interquartile Range (IQR):** The range between the 25th percentile (Q1) and the 75th percentile (Q3) is around 30 to 75 drivers.

Minimum and Maximum: The minimum and maximum values within the whiskers are around 13 and 100 drivers, respectively. **Outliers:** No outliers are observed beyond the whiskers.

Riders Active Per Hour:

Median: Approximately 181 riders active per hour. **Interquartile Range (IQR):** The range between the 25th percentile (Q1) and the 75th percentile (Q3) is around 120 to 220 riders.

Minimum and Maximum: The minimum and maximum values within the whiskers are around 45 and 300 riders, respectively. **Outliers:** No outliers are observed beyond the whiskers.

Rides Completed:

Median: Approximately 107.5 rides completed per hour. **Interquartile Range (IQR):** The range between the 25th percentile (Q1) and the 75th percentile (Q3) is around 75 to 145 rides.

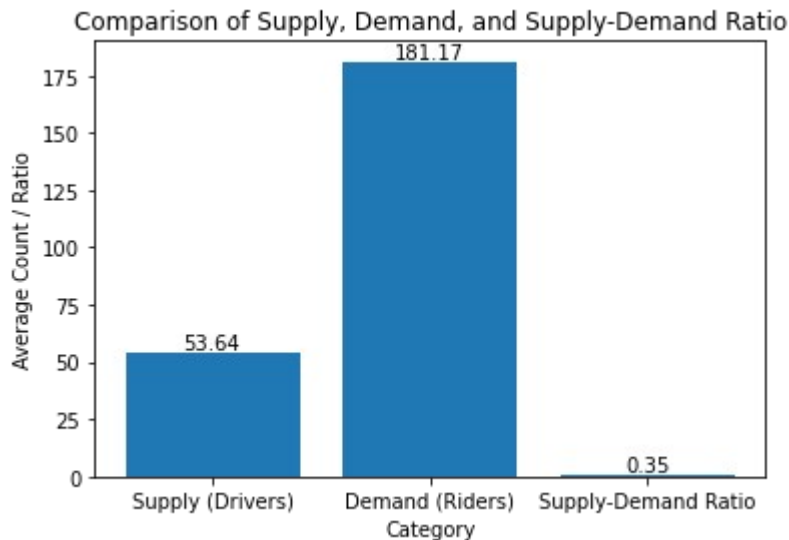
Minimum and Maximum: The minimum and maximum values within the whiskers are around 0 and 250 rides, respectively. **Outliers:** There are outliers observed beyond the whiskers.

Question 3: How does the supply of drivers compare to the demand for rides?

The supply-demand ratio of 0.35 indicates that the supply of drivers is relatively lower compared to the demand from riders. This suggests that there may be insufficient drivers available to meet the demand for rides.

The supply of drivers is estimated to be approximately 53.64. This means that, on average, there are around 54 drivers available per hour.

The demand from riders is estimated to be approximately 181.17. This means that, on average, there are around 182 riders seeking rides per hour.



Conclusion

In this analysis of cab demand and supply dynamics, we have gained valuable insights into the intricate relationship between the number of drivers active per hour, the number of riders actively seeking rides, and the number of rides completed. It is evident that the demand for rides, represented by the number of riders active per hour, plays a substantial role in determining the number of rides completed, while the influence of the number of drivers active per hour is relatively weak. This underscores the importance of understanding and catering to rider demand to optimize cab service operations.

Moreover, the average statistics provide a snapshot of the typical scenario in this specific city, with an average of approximately 53.64 drivers active per hour, 181.17 riders actively seeking rides per hour, and 107.49 rides completed per hour. These figures offer valuable benchmarks for businesses in this industry.

Lastly, the supply-demand ratio of 0.35 indicates that the supply of drivers falls short of meeting the demand from riders, potentially leading to unmet requests and frustrated customers. Addressing this imbalance between supply and demand is vital for improving service quality and ensuring customer satisfaction in the cab ride industry.

In conclusion, this analysis serves as a foundational tool for cab ride businesses like Ola and Uber to make data-driven decisions, allocate resources effectively, and ultimately enhance the user experience by aligning their services more closely with rider demand.