UBER
SUPPLY DEMAND PROBLEM
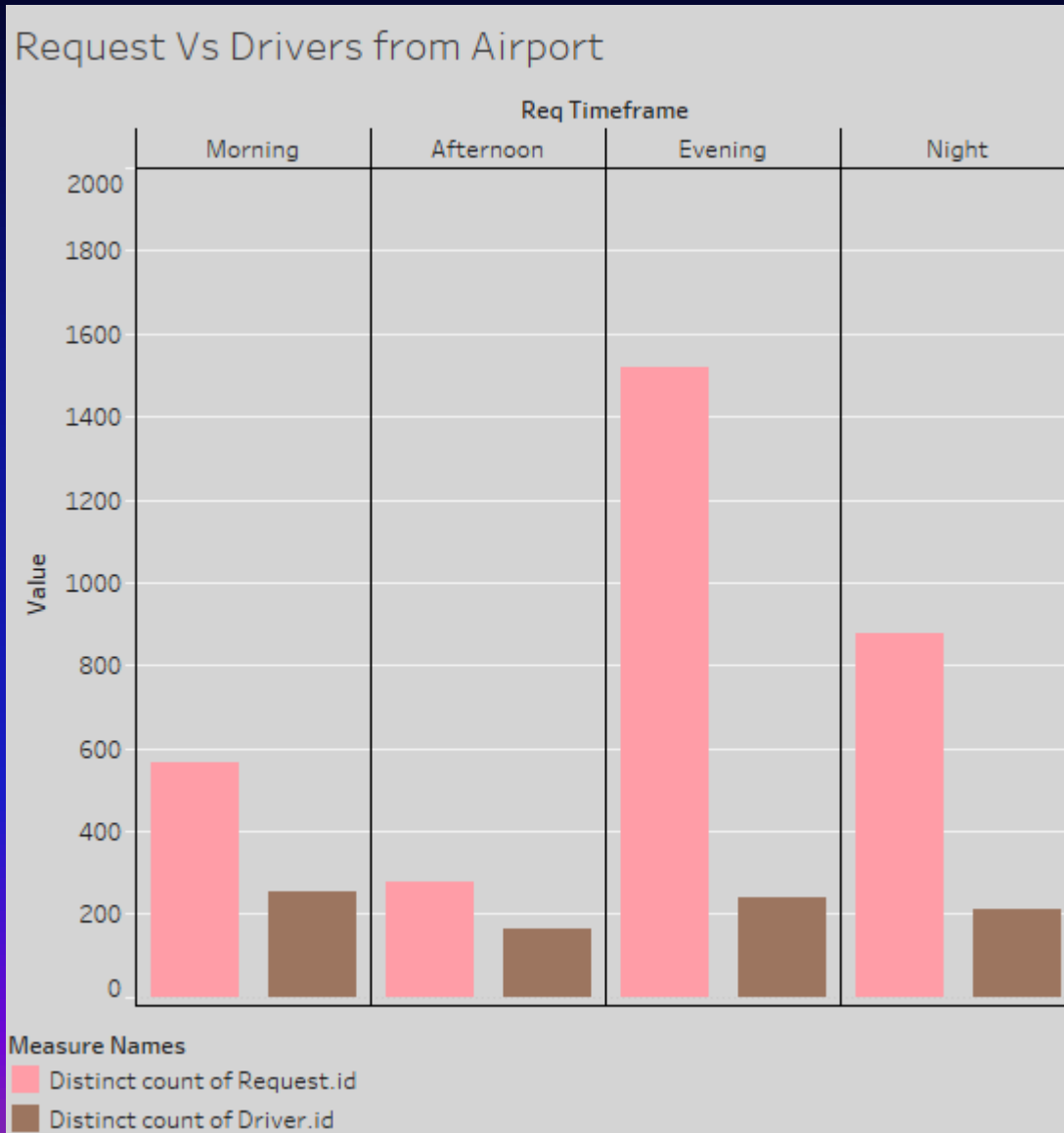
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Problem Description:

- You may have some experience of travelling to and from the Airport. Have you ever used Uber or any other cab service for this travel? Did you at any time face the problem of cancellation by the driver or non-availability of cars?

- Well, if these are the problems faced by customers, these very issues also impact the business of Uber. If drivers cancel the request of riders or if cars are unavailable, Uber loses out on its revenue. Let's hear more about such problems that Uber faces during its operations.

- The aim of analysis is to identify the root cause of the problem (i.e. cancellation and non-availability of cars) and recommend ways to improve the situation. As a result of your analysis, you should be able to present to the client the root cause(s) and possible hypotheses of the problem(s) and recommend ways to improve them.

Data Understanding:

The data provided to us only contains information about trips from Airport to City and vice versa

Column Name	Information
Request id	A unique identifier of the request
Time of request	The date and time at which the customer made the trip request
Drop-off time	The drop-off date and time, in case the trip was completed
Pick-up point	The point from which the request was made
Driver id	The unique identification number of the driver
Status of the request	The final status of the trip, that can be either completed, cancelled by the driver or no cars available

Number of Requests vs. Drivers from Airport to City
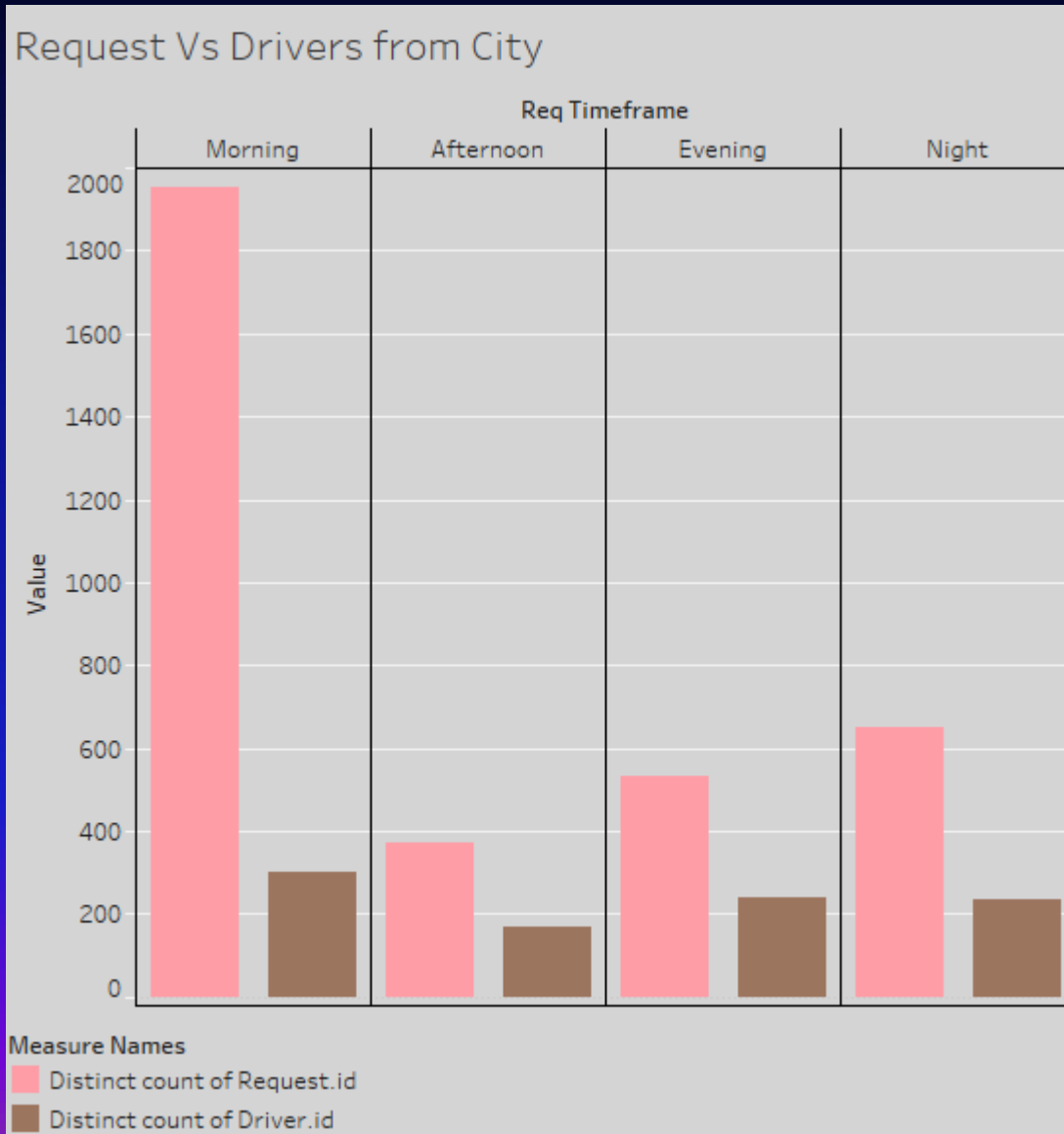

Request Vs Drivers from Airport

As you can observe that number of Requests are much high than drivers going from Airport to City in the Evening

So the Demand is high and supply is low in the evening at the Airport

Therefore more drivers/Cars should be introduced in the Evening going from Airport to City

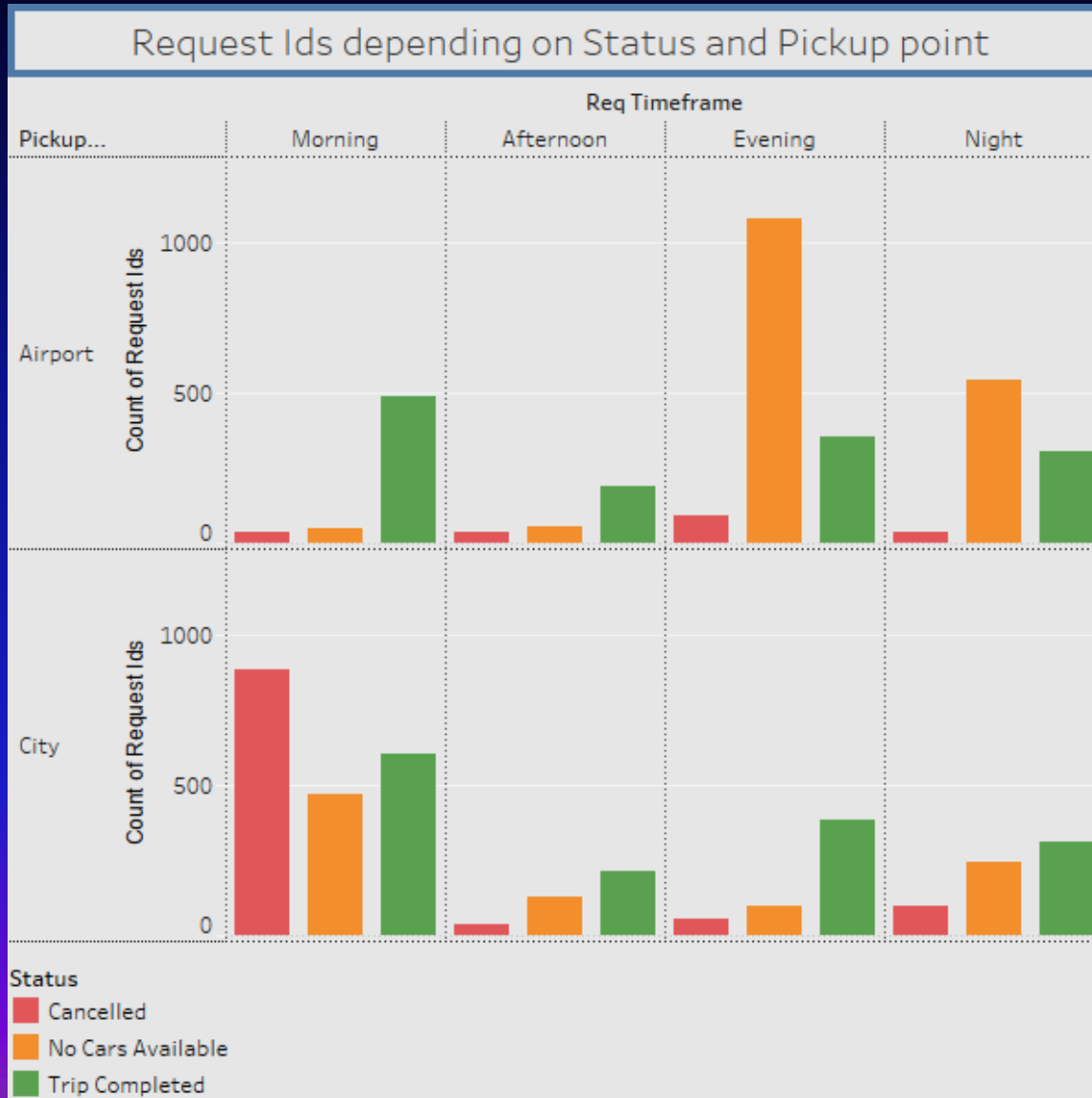# Number of Requests vs. Drivers from City to Airport

As you can observe that number of Requests are much high than drivers going from City to Airport in the morning

So the Demand is high and supply is low in the morning

What might be the reason. Lets check according to Status

Status wise count of Requests

Request Ids depending on Status and Pickup point

- As we can see, the highest number of "**No cars available**" are in the **Evening** from **Airport**

- Also highest number of "**Cancelled**" requests are in the **Morning** from the **City**

- These two issues are highly impacting the business of Uber. Lets look into them in detail

Cause of the Problem

There are two causes for the problem of Higher Demand and Lower Supply

1.   Higher number of Cancelled trips in the Morning from City

2.   Higher number of No Cars Available in the Evening from Airport

Lets look at these two problems one by one in the coming slides. We have to get to the root cause of these problems and find some tactics to handle them
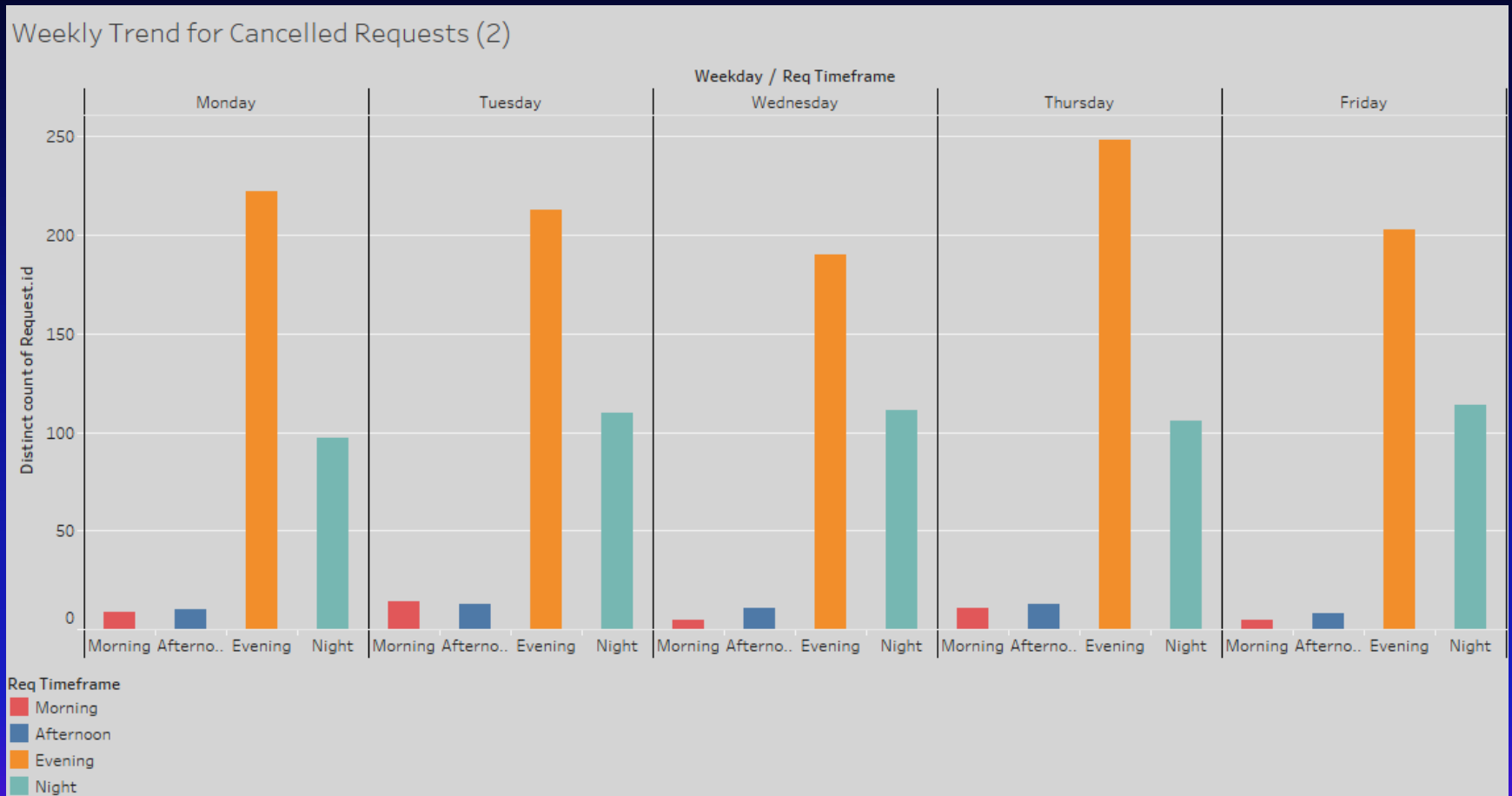
No Cars Available in the Evening at the Airport

No Cars are available in the Evening from Airport to City, The following may be the reasons

1. The flights departing from Airport are is high in the morning, due to which there are more passengers who want to go to the Airport in the morning.

2. Due to higher number of flights traffic is caused for the route from City to Airport in the morning

3. The drivers are cancelling the rides due to high traffic

Weekly Trend for No Cars Available from Airport

The above graph shows the **plot for Only No Cars Available Weekly across Each Day from Airport.** Here we can see that on each day, No Cars Available are high in the evening, so change in the weekdays doesn't effect the Daily Trend of **No Cars Available in the evening**

Average Drivers in The Evening

Total Drivers/Cars Available=301

Supply	
Total Trips Completed from Airport to City in the Evening	350
Current Average Trips per Driver in the evening from Airport to City	350/301 = ~1

Demand	
Total Requests from Airport to City in the Evening	1518
Needed Average Trips per Driver in the Evening from Airport to City	1518/301 = ~5

We need 80% more requests to be completed in the evening hours for Airport to City Trips

Tips for No Cars Available in the Evening at Airport

1. Extra bonus amount should be provided to the drivers taking trips from Airport to City in the evening peak hours

2. Daily evening surge pricing to be implemented at the Airport in the Evening on Prime Cabs.

3. More Drivers/ Cars should be introduced in the Evening at the Airport

4. Coupons for Airport to City share rides should be introduced helping to ease City traffic and reducing the load of the drivers.
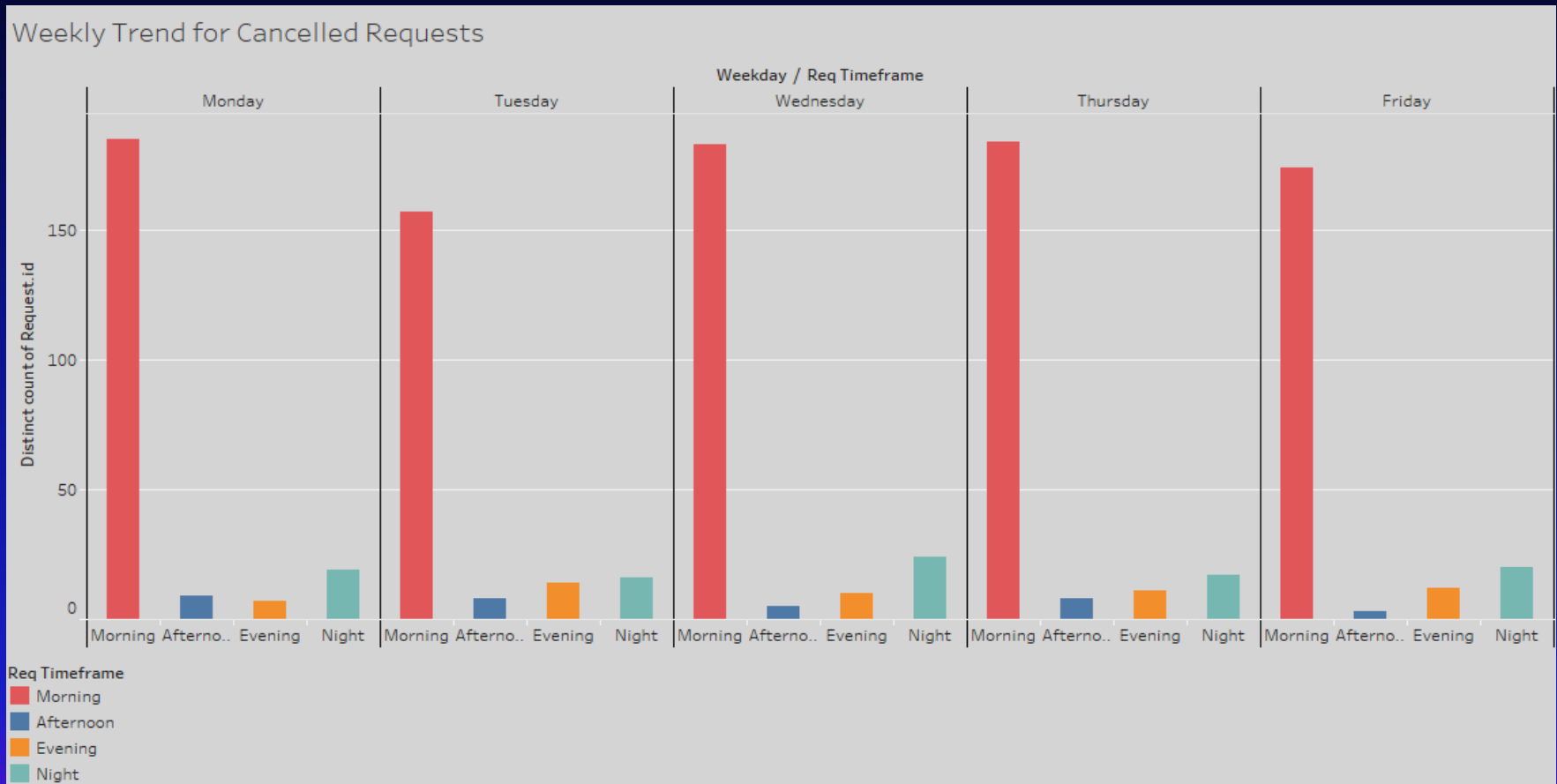
Cancelled Requests in the morning

Number of Cancelled Cars in a Day

- Higher requests are cancelled by the drivers in the morning from City to Airport, The following may be the reasons:

1. The flights landing at the Airport are is high, due to which there are more passengers then drivers/cars

2. The route from Airport to City may be crowded at evening due to which more cabs are not able to reach the Airport.

3. Drivers need to unnecessarily wait at the Airport due to which their is time wastage where they could have completed some other rides instead

Weekly Trend for Cancelled Requests from City

The above graph shows the **plot for Only Cancelled Requests Weekly across Each Day from City**. Here we can see that on each day, Cancelled trips are high in the morning, so change in the weekdays doesn't effect the **Daily Trend of Cancelled Requests in the morning**

Average Drivers in The Morning

Total Drivers/Cars Available=301

Supply	
Total Trips Completed from Airport to City in the Morning	601
Current Average Trips per Driver in the evening from Airport to City	601/301 = ~2

Demand	
Total Requests from Airport to City in the Morning	1952
Needed Average Trips per Driver in the Evening from Airport to City	1952/301 = ~6

We need 66% more requests to be completed in the morning hours for City to Airport Trips

Tips for No Cars Available in the Morning in the City

1. Fine should be imposed on drivers for cancelling more than a certain amount of rides per day

2. Surge pricing should be imposed for Airport rides in the morning during heavy requests.

3. Shared pool must be more available in the morning from City to Airport

4. Since the demand is high the Drivers/Cars should be substantially increased in the morning from City to Airport Rides

Thank You