

# UBER SUPPLY DEMAND GAP

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# ABSTRACT

The aim of Uber Supply-Demand Gap 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 analysis, we 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. Solving this assignment will give us an idea about how problems are systematically solved using EDA and data visualization.

# PROBLEM SOLVING METHODOLOGY

Business and Data Understanding



Data Cleaning & Preparation



Data Visualization



To identify the gap between supply and demand.



To Identify the reason for the supply-demand gap.



Recommendation to resolve the supply-demand gap.

# DATA UNDERSTANDING

There are six attributes associated with each request made by a customer:

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

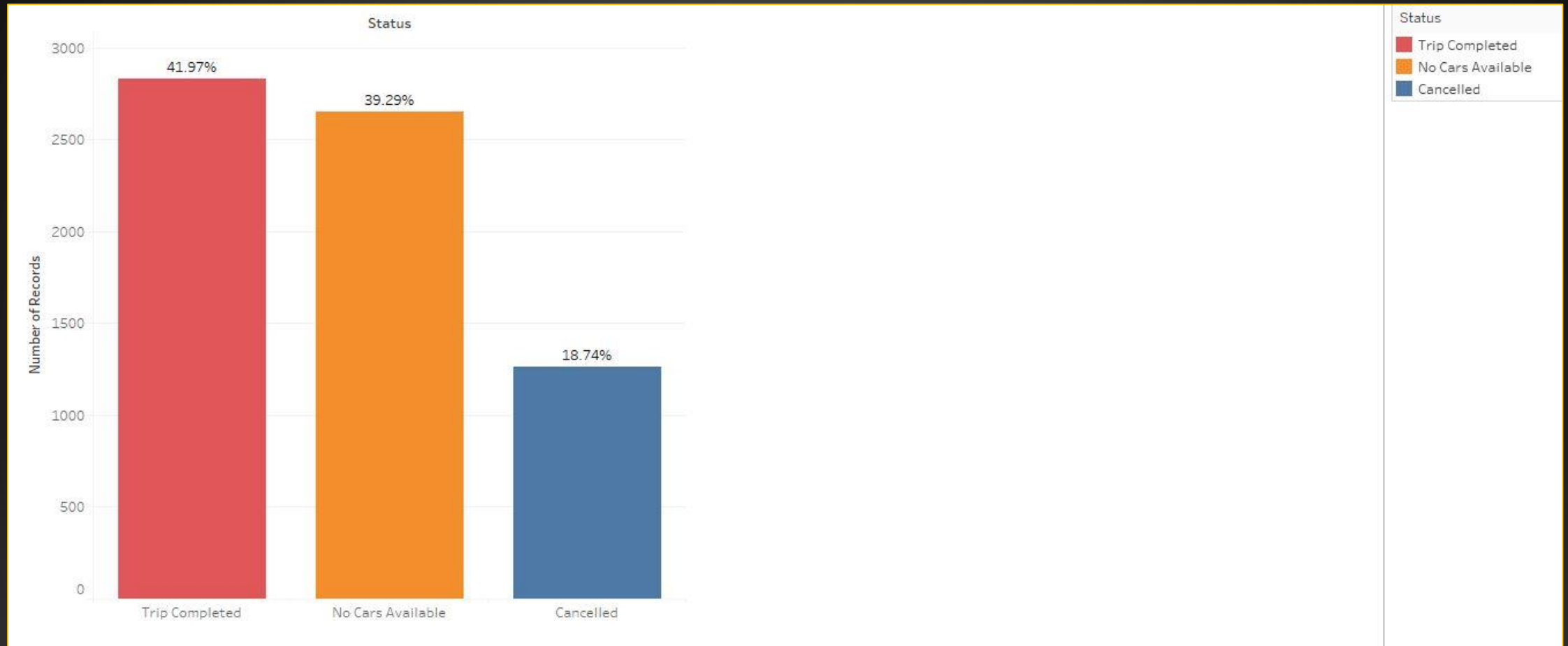
# DATA CLEANING & PREPARATION

- Identification and treatment of duplicate and missing values in data.
- Rearranging Request and Drop timestamps column to datetime format.
- Creating derived columns from Request and Drop timestamps as Day, Time and hours.
- Creating a derived column from day columns as time of the day.

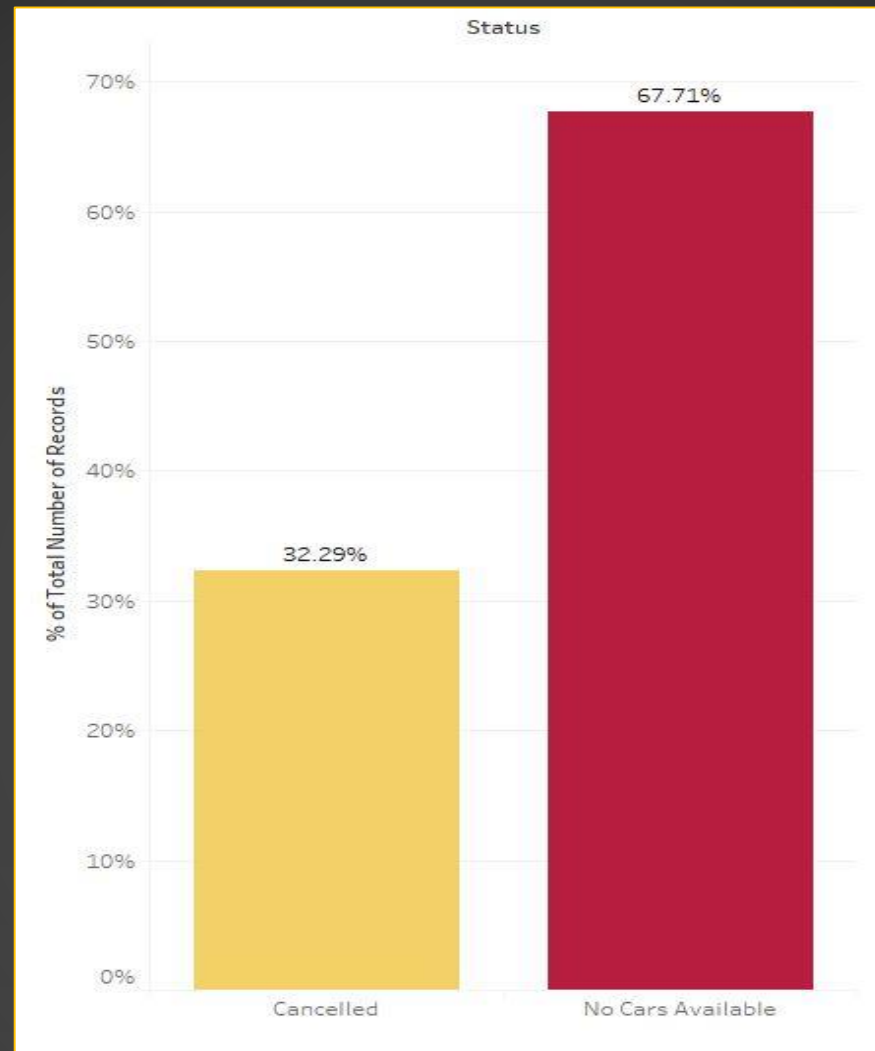
Day	Time
<b>Morning</b>	05:00 AM to 12:00 PM
<b>Afternoon</b>	12:00 PM to 03:00 PM
<b>Evening</b>	03:00 PM to 07:00 PM
<b>Late Evening</b>	07:00 PM to 09:00 PM
<b>Night</b>	09:00 PM to 12:00 AM
<b>Mid Night</b>	12:00 AM to 05:00 AM



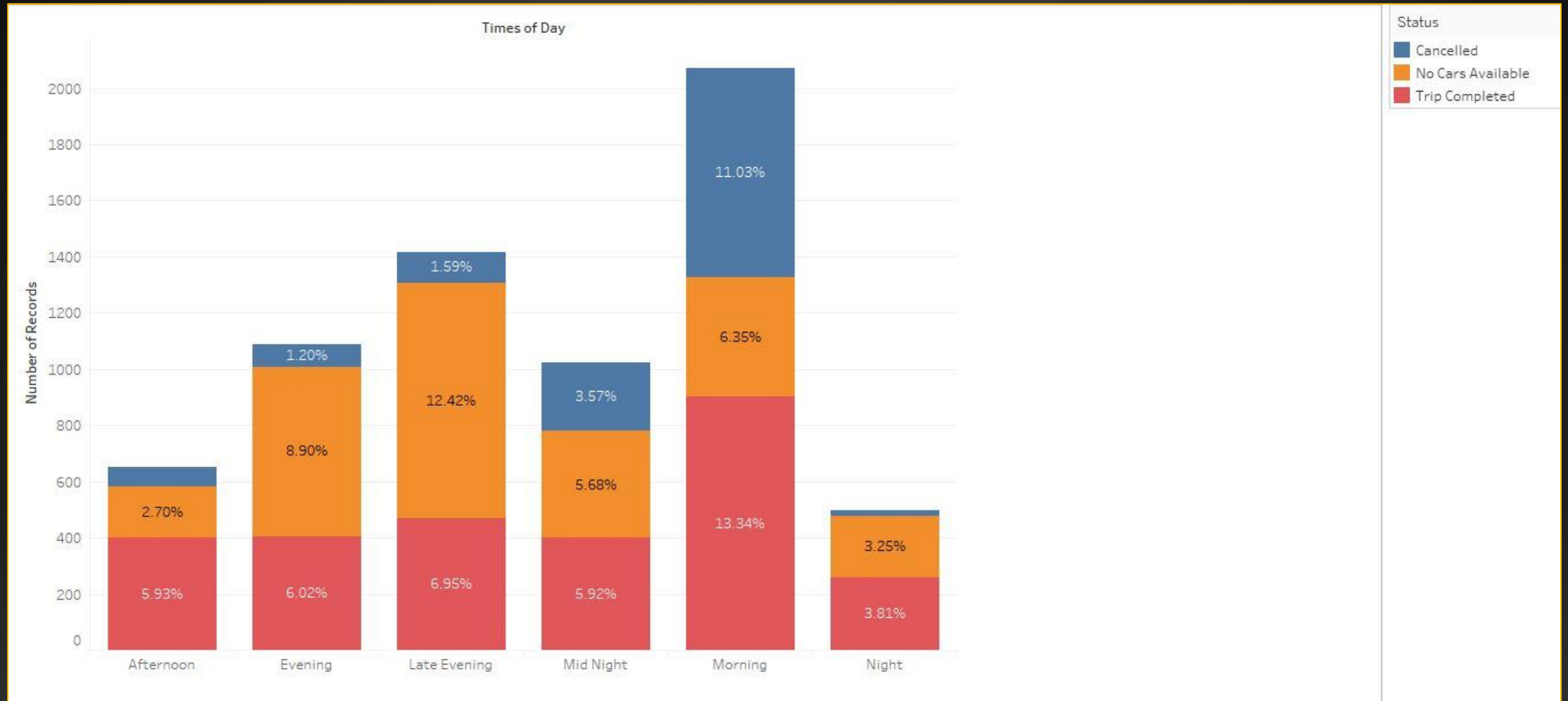
# DATA VISUALIZATION



In a given dataset overall trip status shows 41.97% of the trips were completed, 39.29% cars were not available and 18.74% trips were cancelled.



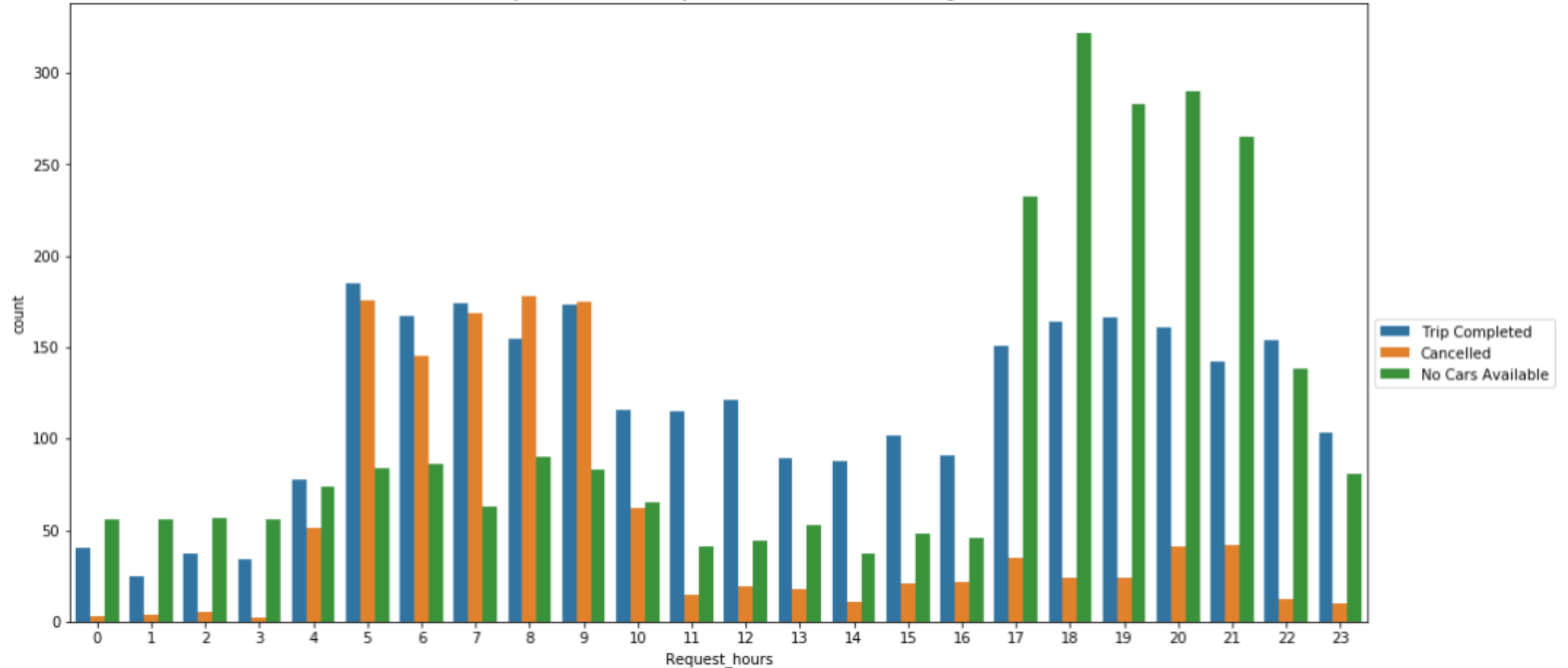
It can be seen that out of trips which are not completed, cars unavailability is the major issue (67.71%) compared to trips cancelled (32.29%)



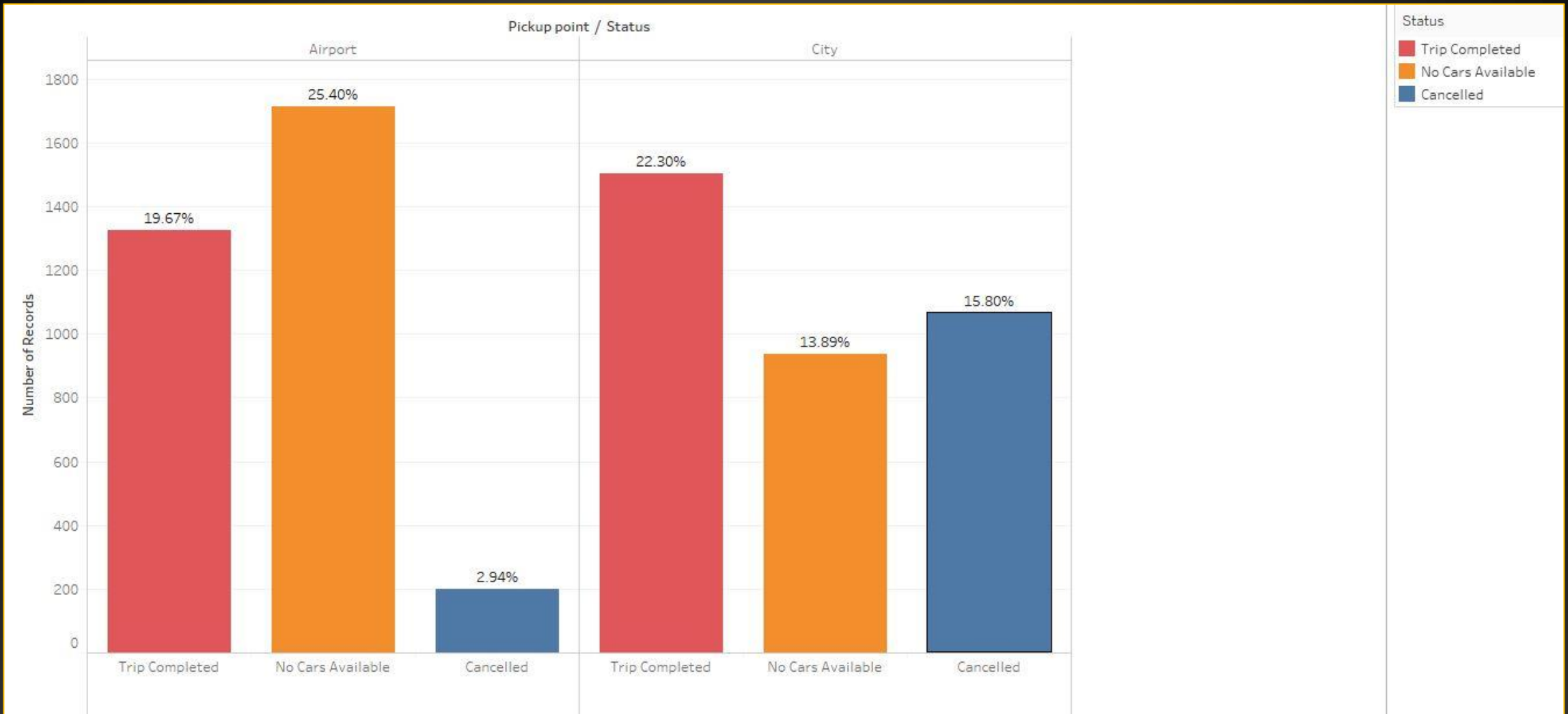
Major issues of trips not being completed arises in morning, evening and late in evening.



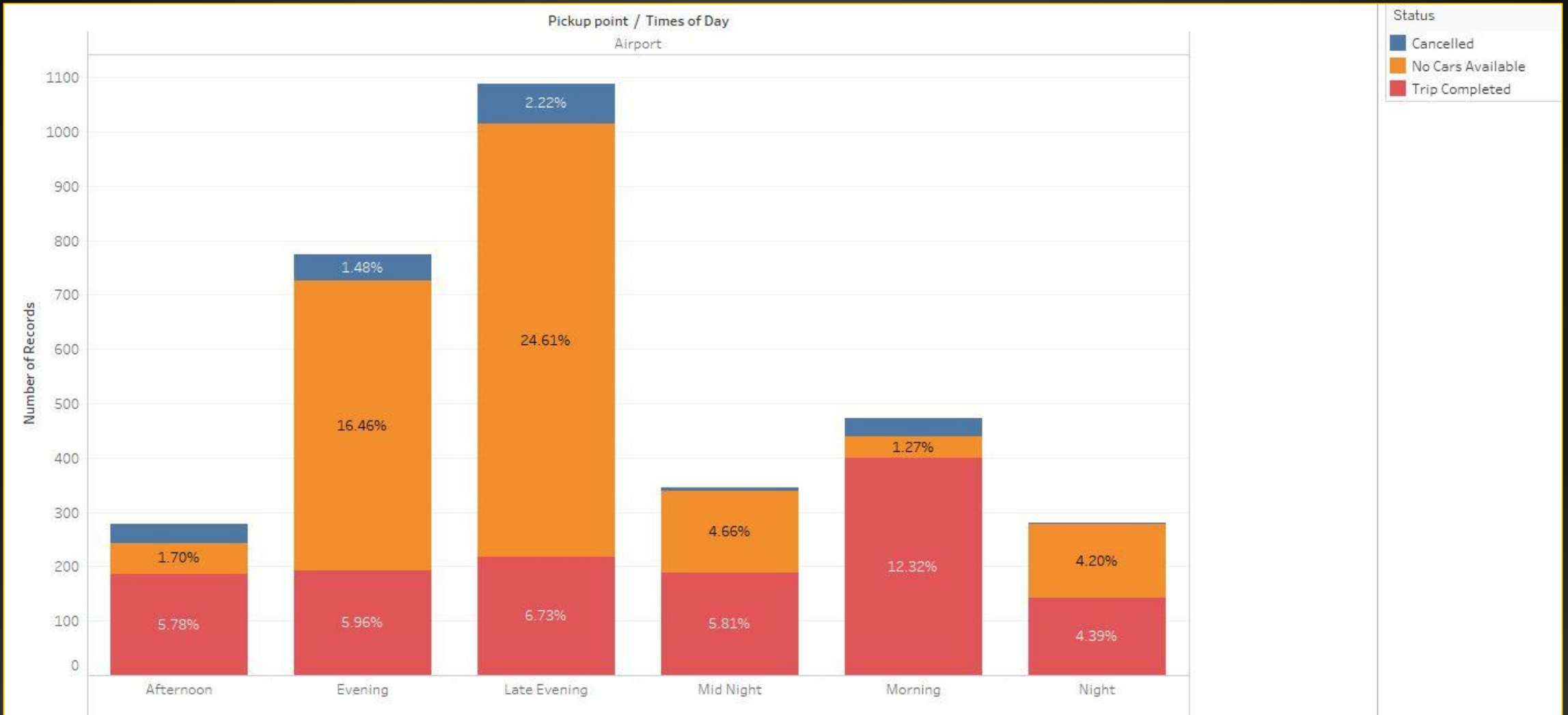
Trip status as per hour of the day



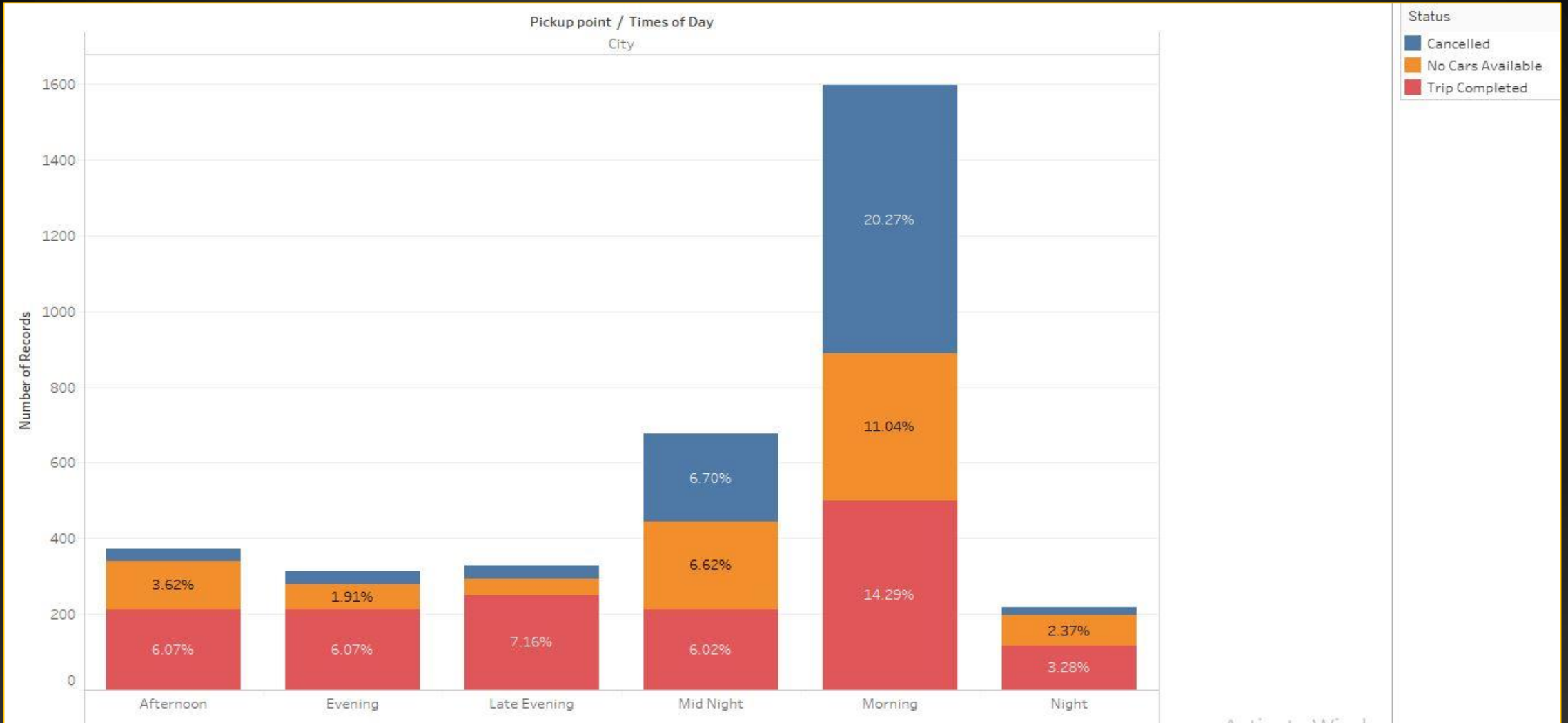
Trip cancellations is the major issue in morning, and car unavailability in evenings which can be identified on hourly basis.



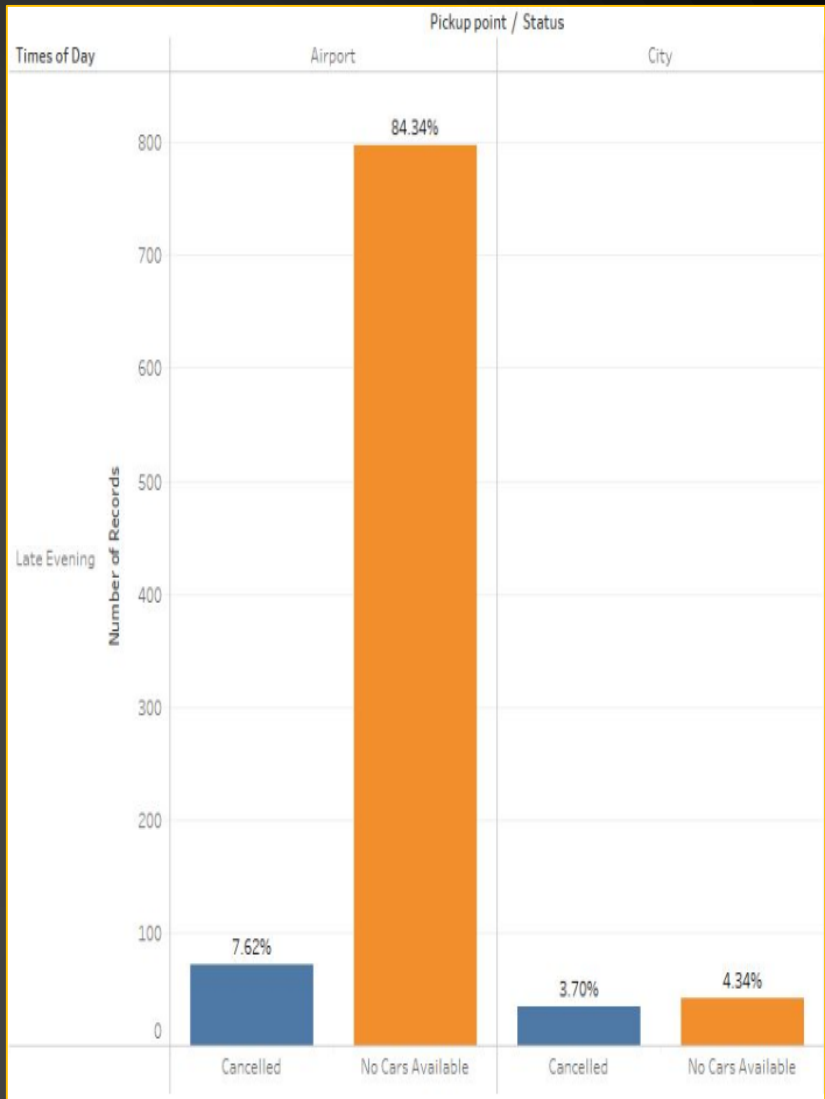
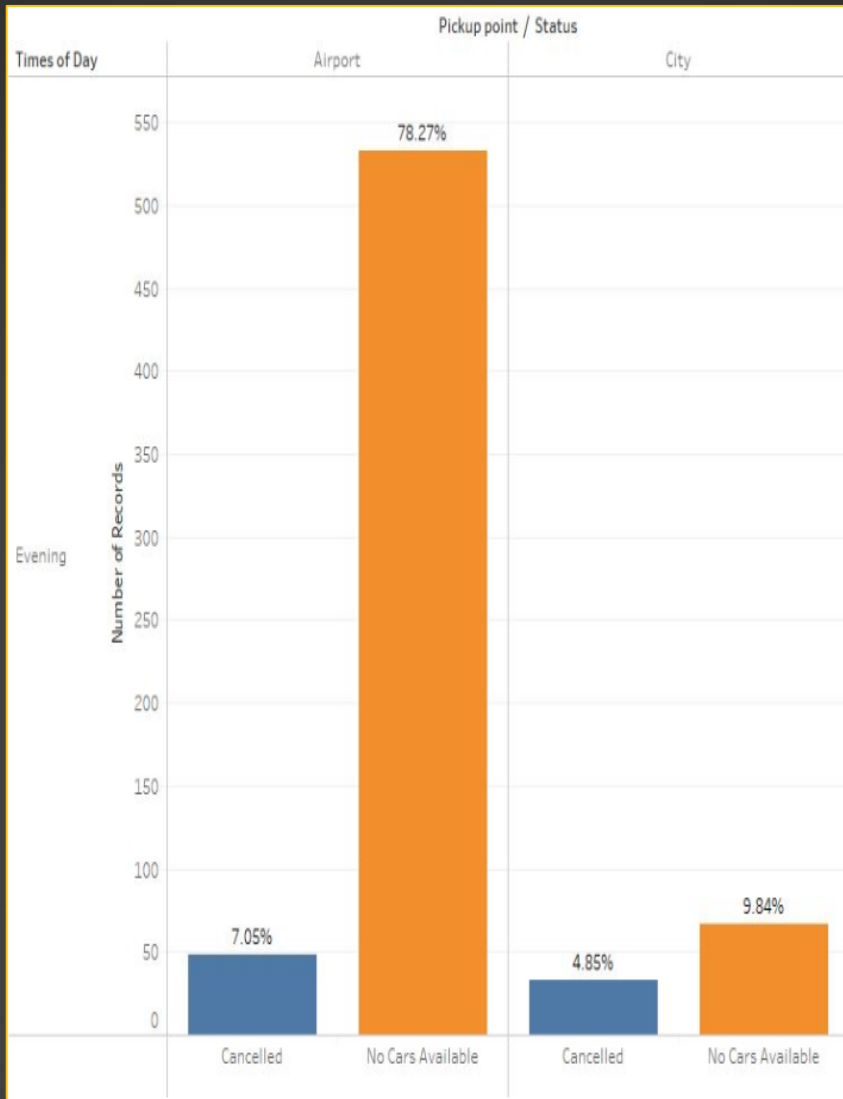
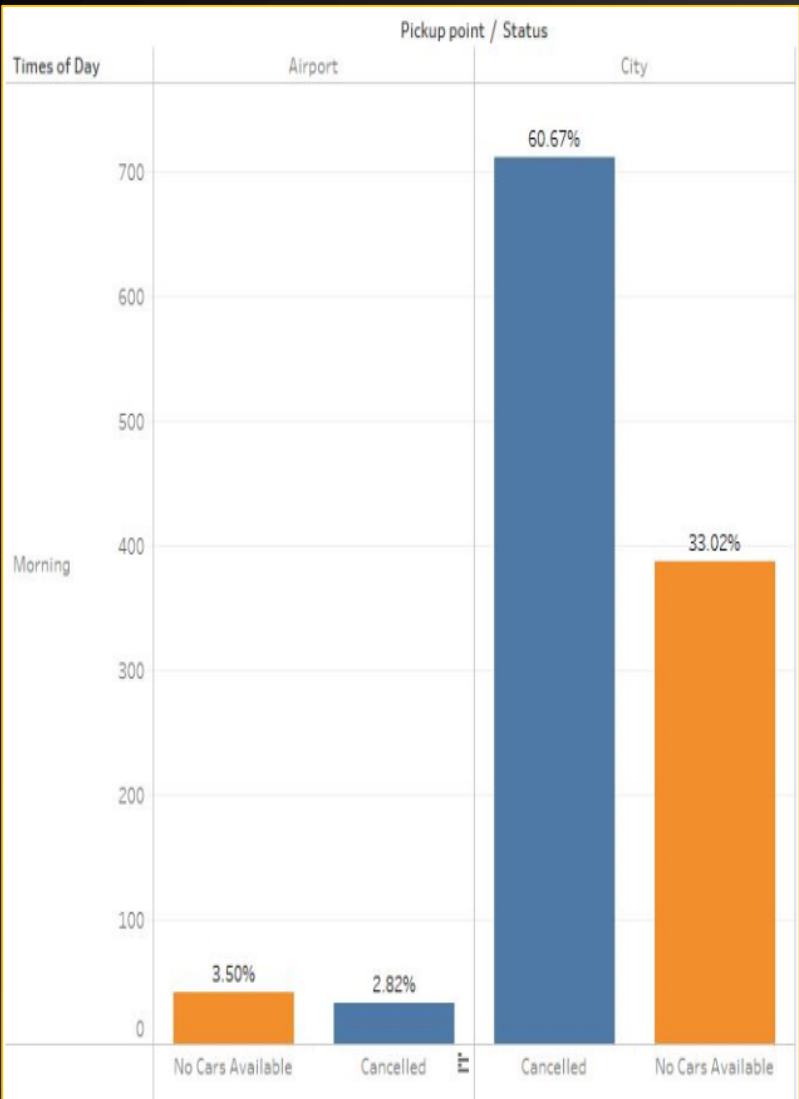
Issues like car unavailability is the major issue from airport and from cities both car unavailability & cancellations are almost equal.



It can be identified that car unavailability is the major issue from airport in evening and late evenings.



It can be identified that trip cancellation is the major issue from cities in morning and mid night.



If we compare issues as per time of the day from pickup points, it can be seen that car unavailability is the most pressing problems for Uber.



# TO IDENTIFY THE GAP BETWEEN SUPPLY AND DEMAND.

**Trip status as per time of the day form Airport.**

	Total	Trip Completed	Cancelled (A)	No Cars Available (B)	(A+B)	% (A+B)
Afternoon	278	187	36	55	91	32.73
Evening	774	193	48	533	581	75.06
Late Evening	1087	218	72	797	869	79.94
Mid Night	345	188	6	151	157	45.51
Morning	473	399	33	41	74	15.64
Night	281	142	3	136	139	49.47

- ✓ **Evening and late evening is the time of day where issue exist the most for trips from airport**
- ✓ **The major issue is the unavailability of cars in all time zones for trips from airport.**

**Trip status as per time of the day form City.**

	Total	Trip Completed	Cancelled (A)	No Cars Available (B)	(A+B)	% (A+B)
Afternoon	373	213	33	127	160	42.90
Evening	313	213	33	67	100	31.95
Late Evening	327	251	35	41	76	23.24
Mid Night	678	211	235	232	467	68.88
Morning	1599	501	711	387	1098	68.67
Night	217	115	19	83	102	47.00

- ✓ **Morning and mid night is the time of day where issue exist the most for trips from cities.**
- ✓ **The major issue is the cancellation of cars for trips from cities.**

## **Trip status as per time of the day for overall trips.**

	<b>Total</b>	<b>Trip Completed</b>	<b>Cancelled (A)</b>	<b>No Cars Available (B)</b>	<b>(A+B)</b>	<b>% (A+B)</b>
<b>Afternoon</b>	651	400	69	182	251	38.56
<b>Evening</b>	1087	406	81	600	681	62.65
<b>Late Evening</b>	1414	469	107	838	945	66.83
<b>Mid Night</b>	1023	399	241	383	624	61.00
<b>Morning</b>	2072	900	744	428	1172	56.56
<b>Night</b>	498	257	22	219	241	48.39

- ✓ **Morning, evening and late evening is the time of day where issue exist the most.**
- ✓ **The major issue is the unavailability of cars in all time zones for overall trips.**

# SUPPLY-DEMAND GAP ANALYSIS

The supply-demand gap :

	Airport	City	Overall
<b>Demand</b>	3238	3507	6745
<b>Supply</b>	1327	1504	2831
<b>Supply-Demand Gap</b>	1911	2003	3914
<b>Percentage (%Gap)</b>	40.98	42.88	41.97

- ✓ It can be seen that 40.98% is the supply demand gap for trips from airport.
- ✓ It can be seen that 42.88% is the supply demand gap for trips from cities.
- ✓ It can be seen that 41.97% is the supply demand gap for overall trips.

# TO IDENTIFY THE REASON FOR THE SUPPLY-DEMAND GAP.

## **Trips from City to Airport:**

- ✓ Most people travel from city in Morning (05:00 AM to 12:00 PM)
- ✓ Most flights take off between 5 AM to 12 PM hence, most Uber are booked in these time slots from cities.
- ✓ Most drivers cancel the trip in morning heading towards airport is to avoid traffic jams or with the fear of long idle time.

## **Trips from Airport to City:**

- ✓ Most people travel from airport in evening (03:00 PM to 07:00 PM) and late evening (07:00 PM to 09:00 PM).
- ✓ Most flights land between 3 PM to 9 PM hence, most Uber are booked in these time slots from airport.
- ✓ Most of the times cars are unavailable at airport in evening as cars might be stuck in city traffic jams.



# RECOMMENDATION TO RESOLVE THE SUPPLY-DEMAND GAP.

- ✓ Special promotions or offers to be rolled out to encourage passengers to travel during non peak hours.
- ✓ Increase the prices at peak hours to increase the profit and take the advantage of demand supply taking in consideration with competitors price.
- ✓ Reward points to be allocated to drivers sincerely driving in peak hours.
- ✓ Special incentives can be given to loyal drivers and create awareness about the same among other drivers.
- ✓ Constant motivation and awareness to all drivers through text messages, email and videos stating we value our people.
- ✓ Heavy penalty and strict actions to be taken against the driver for repetitive cancellation of bookings.

THANK YOU