

# Uber Case Study

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# Objective

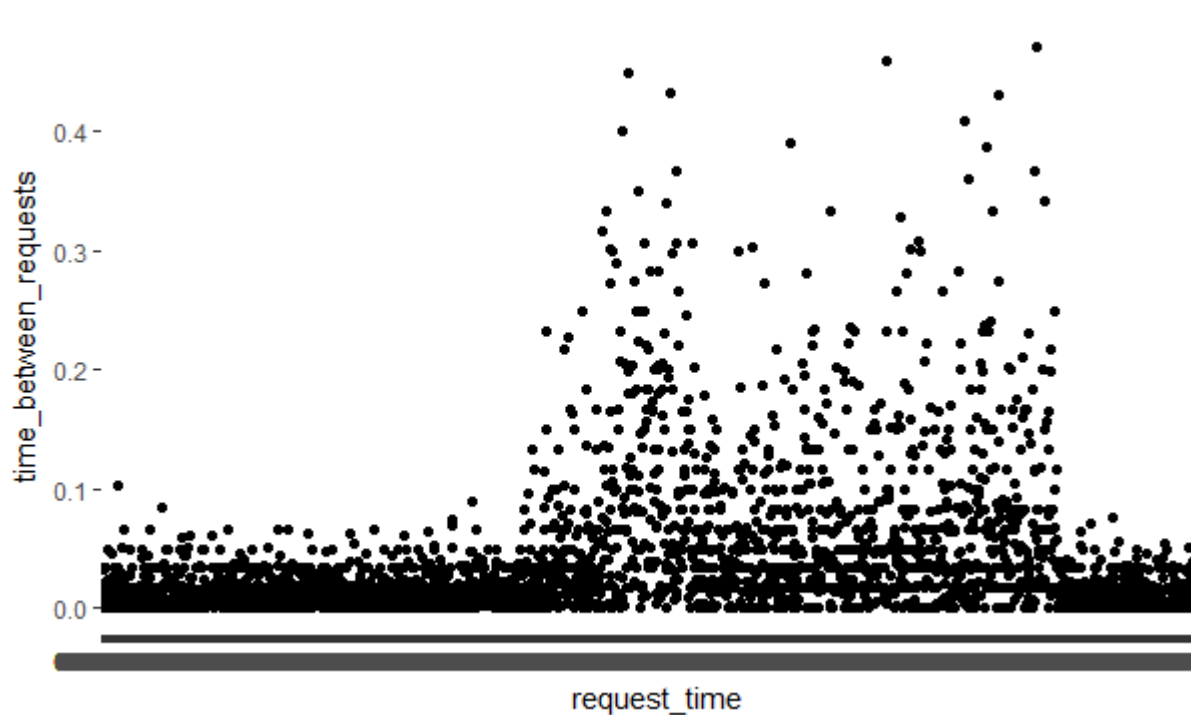
- Analysis of the Uber data and identify patterns in trips to and from the airport
- Idle time analysis
- Study of the trip request completion data as a function of time of the day
- Identification the demand-supply gap in the airport and city at different times of the day
- Suggestions to solve the problem

# Data Cleaning

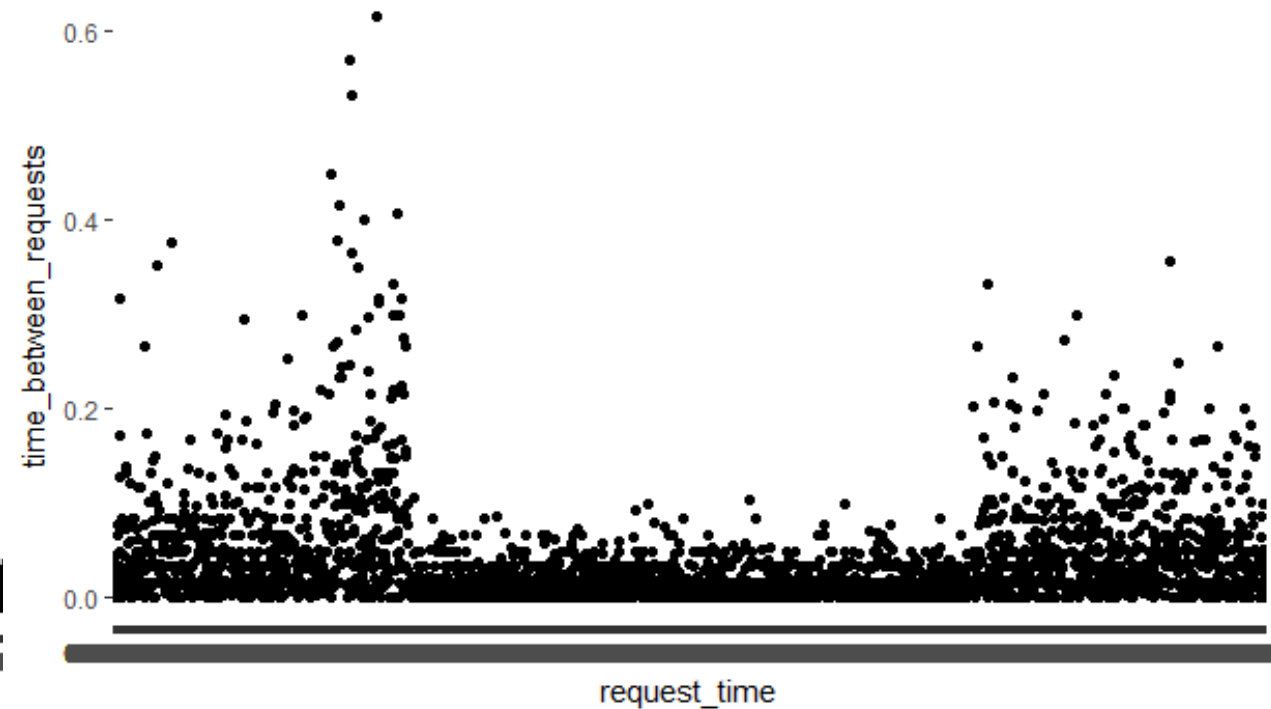
- Conversion of Null values to NA done
- There are no duplicate rows
- Time stamp exists in two different formats
  - dd/mm/yyyy HH:MM Eg 11/7/2016 11:51
  - dd-mm-yyyy HH:MM:SS Eg 13-07-2016 08:33:16
  - Converted the time stamps to a common format
- Extracted time from the datetime column to get request time and drop time

# Analysis

- Idle time = Time difference between consecutive requests



Idle /Waiting time at the airport peaks at late morning ,afternoon and continues till evening



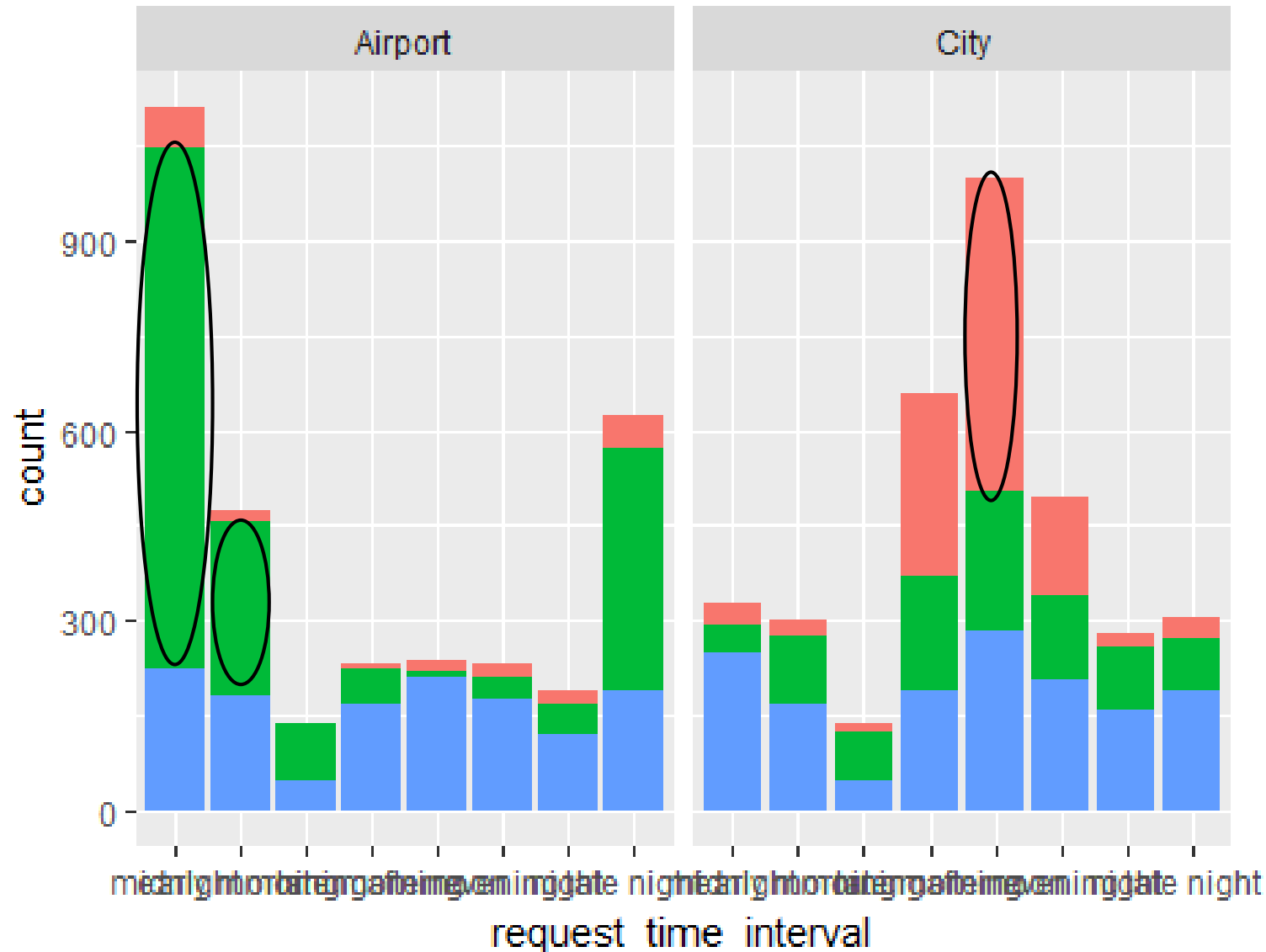
Idle /Waiting time at the city in the early morning and night

# Analysis

- Calculated the median trip time as 52 mins
- Converted the request time continuous time variable to categorical variable by creating time intervals
  - 8 intervals of 3 hours each created to analyse the supply and demand

Time	Time Interval
00:00:00 - 03:00:00	midnight
03:00:00 – 06:00:00	early morning
06:00:00 – 09:00:00	morning
09:00:00 – 12:00:00	late morning
12:00:00 – 15:00:00	Afternoon
15:00:00 – 18:00:00	evening
18:00:00 – 21:00:00	night
21:00:00 – 00:00:00	late night

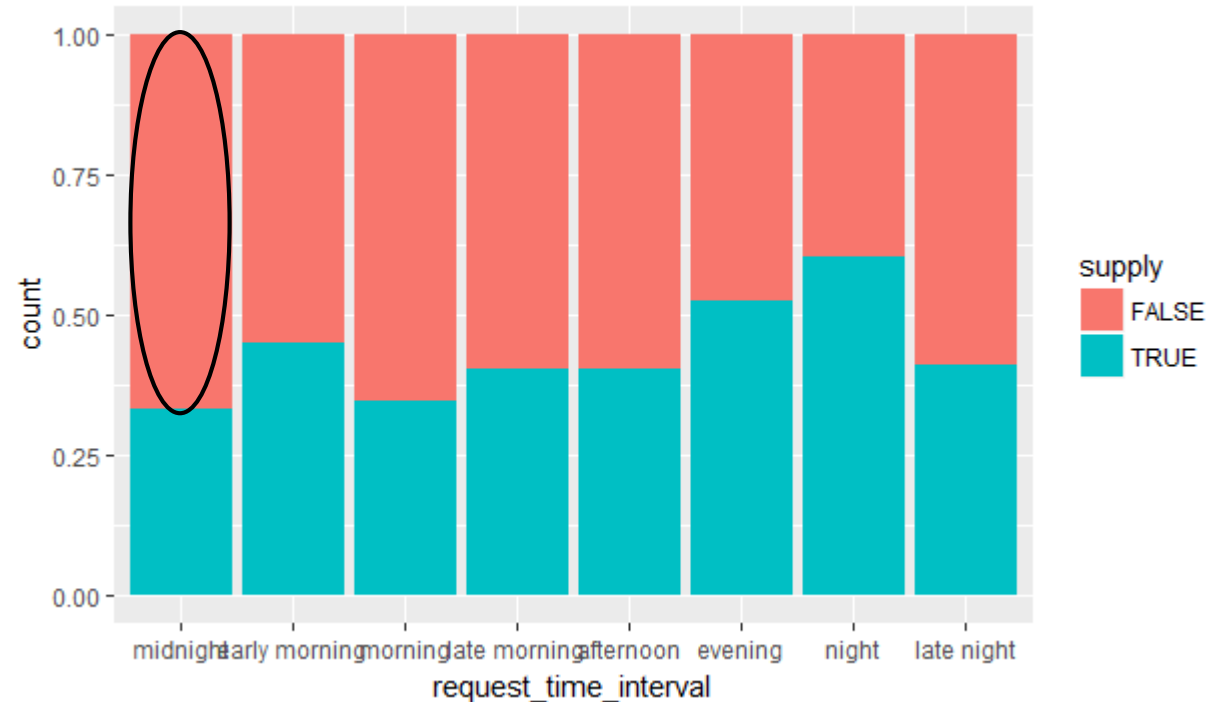
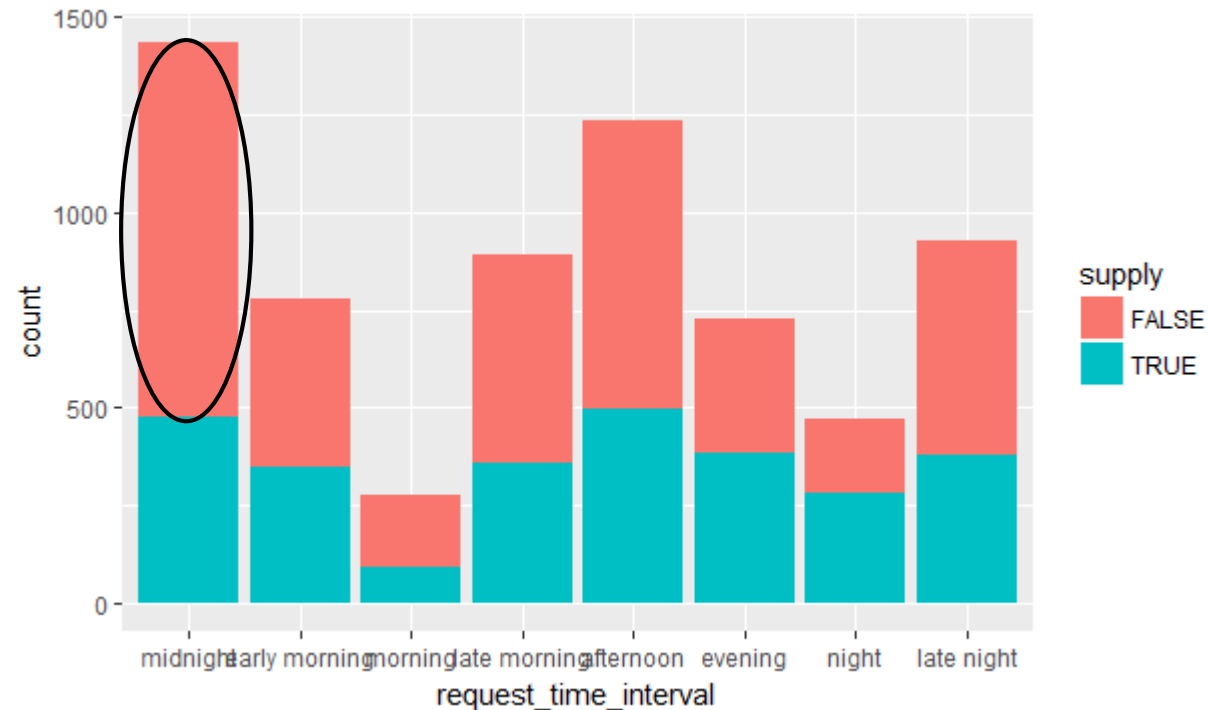
# Uber's problem



- 1) Huge demand in the midnight at airport ;Most of them are not met due to "No Cars Available)
- 2) This continues in the early morning
- 3) Large number of cars get cancelled from the city to airport in the afternoon due to driver anticipation of idle time in airport

# Supply-Demand problem

- Demand = Number of requests
- Supply = Number of requests with the Status = “Trip Completed”



Overall supply shortages in midnight, early morning, late morning, afternoon and late night with peak shortage at midnight

# Supply-Demand problem



Airport

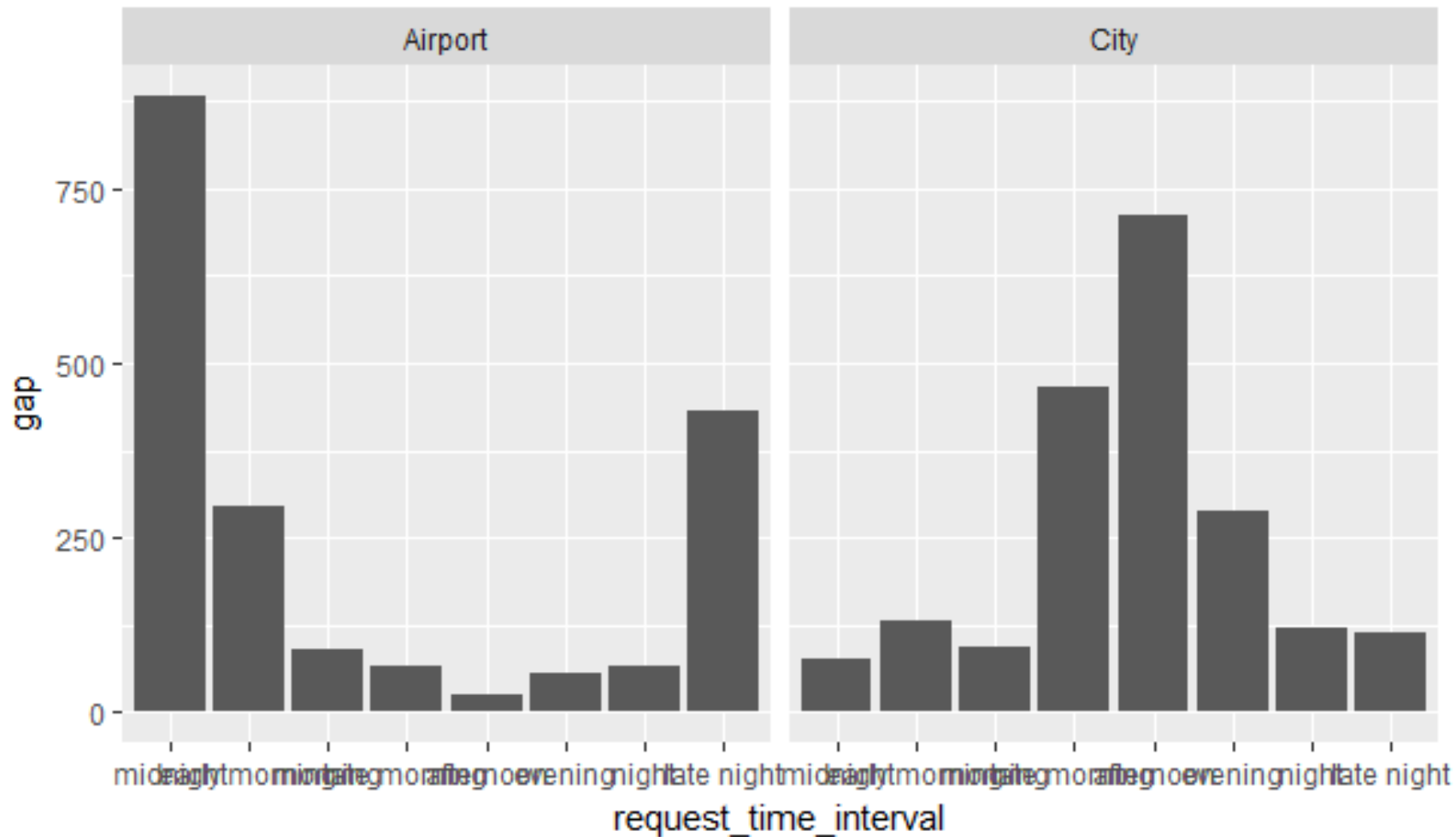
Time slot	Dem and	Supply	% completion	Gap
midnight	1107	226	20.41554	881
early morning	475	181	38.10526	294
morning	138	49	35.50725	89
late morning	235	170	72.34043	65
afternoon	236	211	89.40678	25
evening	234	177	75.64103	57
night	190	123	64.73684	67
late night	623	190	30.49759	433

City

Time slot	Dem and	Supply	% completion	Gap
midnight	327	250	76.45260	77
early morning	302	170	56.29139	132
morning	139	47	33.81295	92
late morning	658	191	29.02736	467
afternoon	999	286	28.62863	713
evening	495	206	41.61616	289
night	282	162	57.44681	120
late night	305	192	62.95082	113



# Supply-Demand problem



- The peak demand of midnight at airport is not met and a huge gap 881 is seen
- The peak demand of city is at afternoon and gap of 713 is seen

# Suggestions to solve the Problem

- Uber can start a shift at midnight when demand peaks. 800 uber taxis can start at airport and travel to city
- The City internal rides can be taken till demand for an airport drop peaks at 12
- The same taxis can end the shift back to airport at 12 noon ie from city to airport and finish the shift
- The idle time at airport can be avoided by ending the shift and resuming it at midnight again