**This is my report and implementation on the given use cases.**

**By: Kunal Jangra**

**Email**: kunal21101998@gmail.com

**Use Case 1**

For generating insights from the data, I wrote a Python script.

* I calculated the Average speed by averaging over the column *speed* given in the dataset for each of the 4 vehicles. The column for speeds was sparse.
* Calculated average drive time by averaging over all drive times given under the column *time\_drive* for each of the vehicles.
* Calculated the average fuel consumed by averaging over the column *total\_fuel\_consumption* for each of the 4 vehicles.

***Queries / Problems***

Since we don’t have the accurate location of start and end for a vehicle, we can’t determine how many trips did the vehicle took on this route. I just calculated minimum and maximum number of trips taken by 4 of the vehicles on any path.

**Use Case 2**

This use case required us to determine the hotspots and plot on the map.

I used 2 methods to fine hotspots

**1**. The K-Means algorithm to determine 4 cluster if time\_idle and plot it on a graph using latitude and longitude.

**2**. Using Tableau and plotting 4 hotspots on graph.

***Queries / Problems***

While calculating the hotspots, I took into account the fact that vehicle needs to stop at that location for at least 4 times.

But since there was no information about the unit in which times used in the data , so I assume unit be in second and I just included time\_idle > 120 (2 min)