# Leased vs. Owned

# Product Comparison


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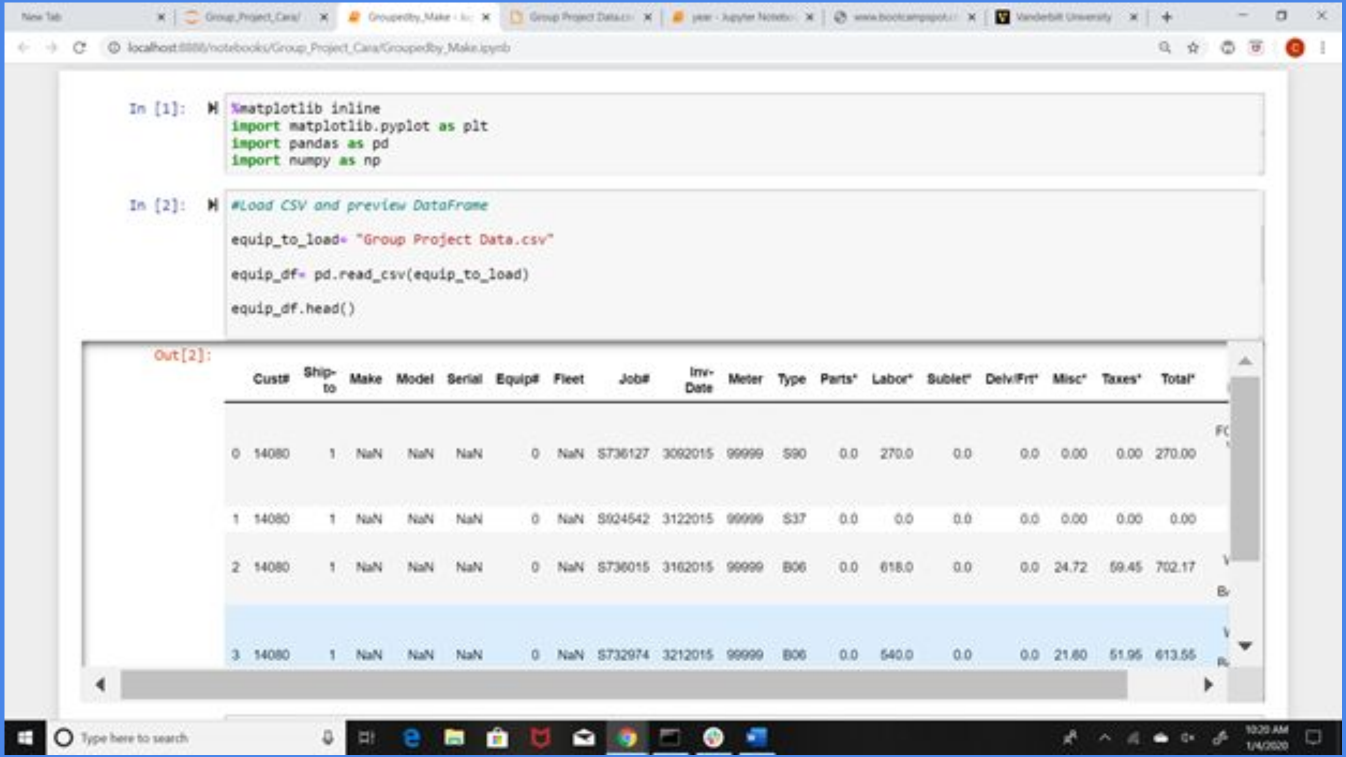
**All raw data was compiled from customer product and maintenance costs csv from 2015 to present.*

# Executive Summary

Analysis was performed based on company data provided by the finance department. We scrubbed data dated back to 2015 until present, to compare the cost efficiency of leased vs. owned equipment.

# Data Sourcing



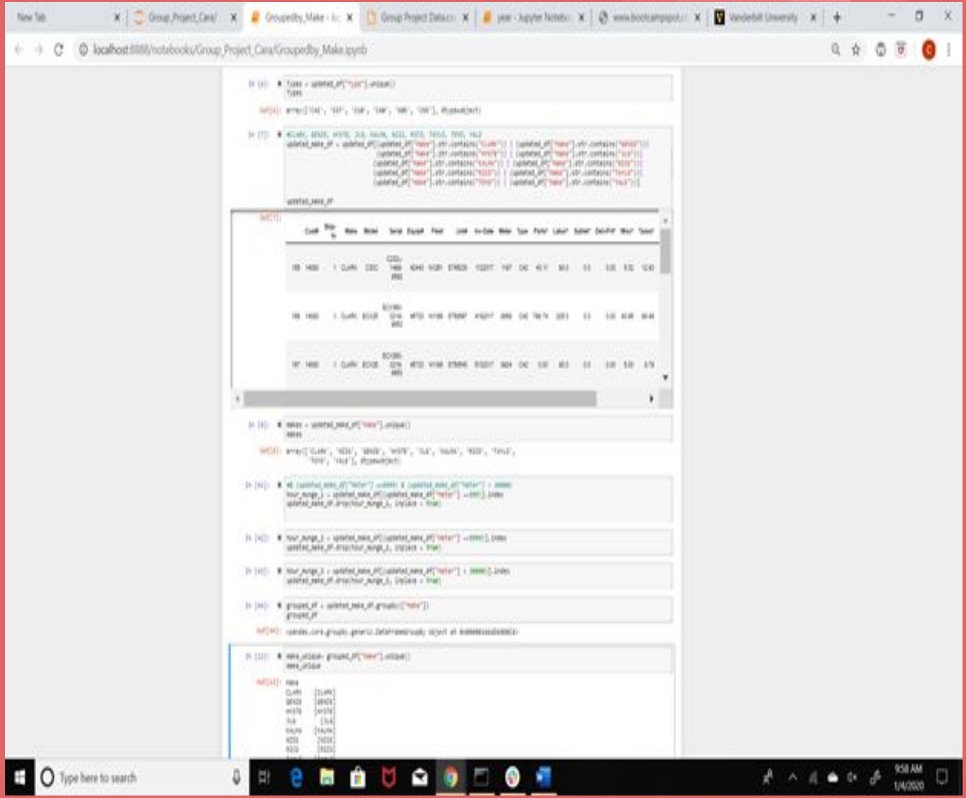
```
In [1]:
%matplotlib inline
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
```

```
In [2]:
#Load CSV and preview DataFrame

equip_to_load= "Group Project Data.csv"

equip_df= pd.read_csv(equip_to_load)

equip_df.head()
```

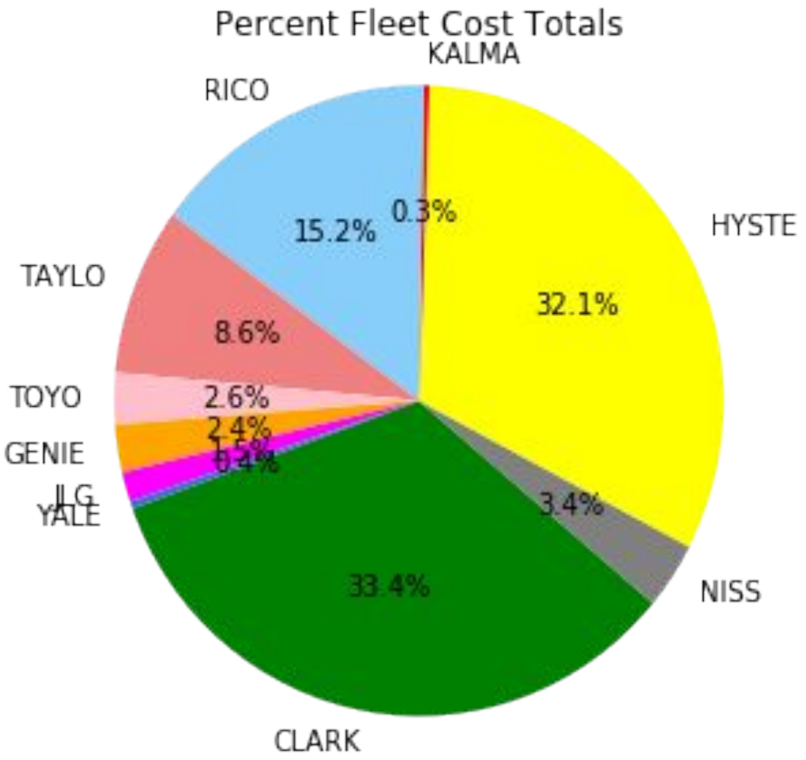
Out[2]:

| | Cust# | Ship-to | Make | Model | Serial | Equip# | Fleet | Job# | Inv-Date | Meter | Type | Parts* | Labor* | Sublet* | Delv/Frt* | Misc* | Taxes* | Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 14080 | 1 | NaN | NaN | NaN | 0 | NaN | S736127 | 3092015 | 99999 | S90 | 0.0 | 270.0 | 0.0 | 0.0 | 0.00 | 0.00 | 270.00 |
| 1 | 14080 | 1 | NaN | NaN | NaN | 0 | NaN | S924542 | 3122015 | 99999 | S37 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 |
| 2 | 14080 | 1 | NaN | NaN | NaN | 0 | NaN | S736015 | 3162015 | 99999 | B06 | 0.0 | 618.0 | 0.0 | 0.0 | 24.72 | 59.45 | 702.17 |
| 3 | 14080 | 1 | NaN | NaN | NaN | 0 | NaN | S732974 | 3212015 | 99999 | B06 | 0.0 | 540.0 | 0.0 | 0.0 | 21.60 | 51.95 | 613.55 |

# Data Munging

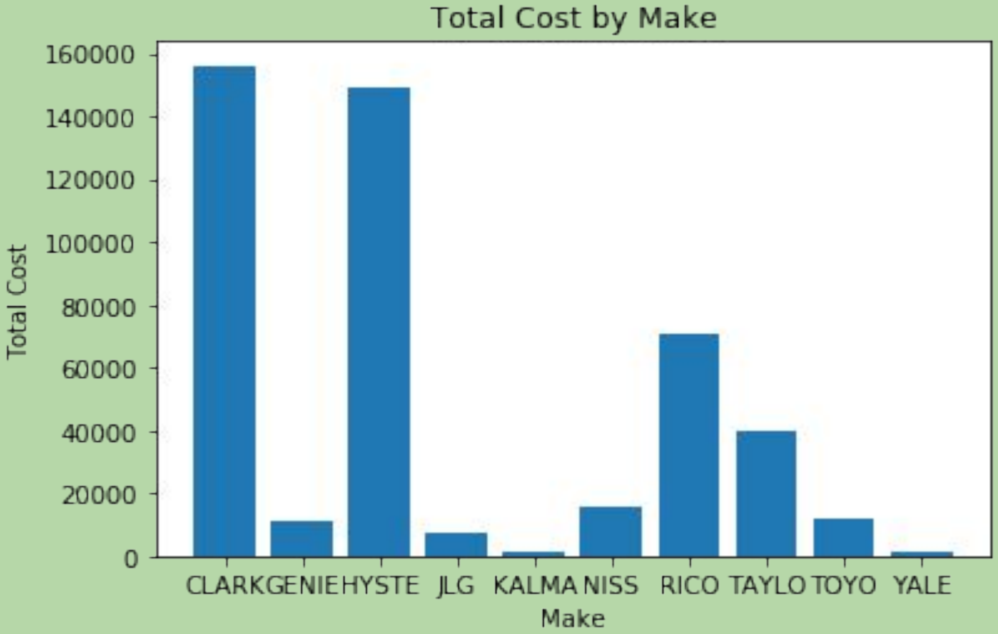



# Make Percentages of Total Cost




- Percentages Pie Chart gives a better perspective CLARK and HYSTE surpass other Fleets in total cost.
- RICO and TAYLO are a distant third and forth cost total in overall comparison.

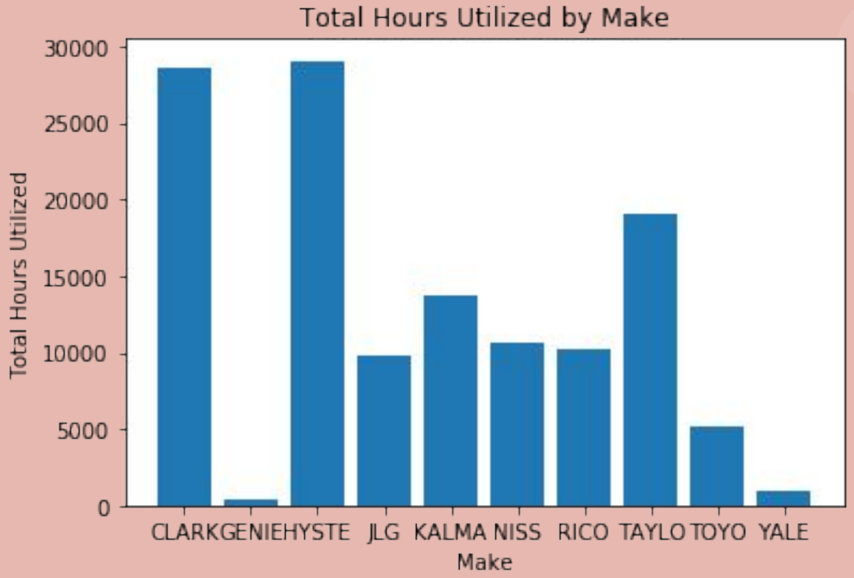
# Analysing Data by Make and Their Total Cost




- CLARK and HYSTE had the total cost amongst fleets/makes.
- However, further depth of calculations was needed to provide the the cost efficiency of each make.

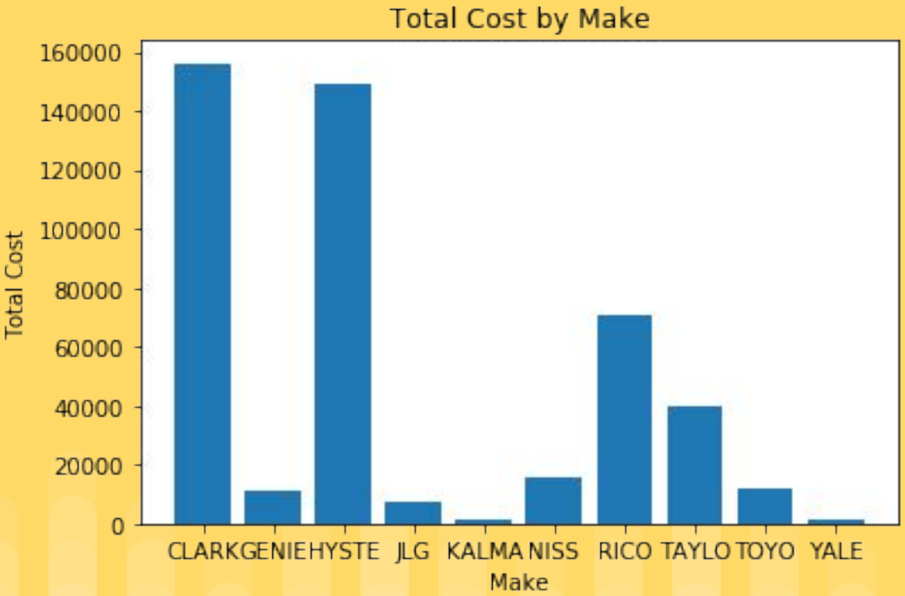
# Total Hours Utilized By Make

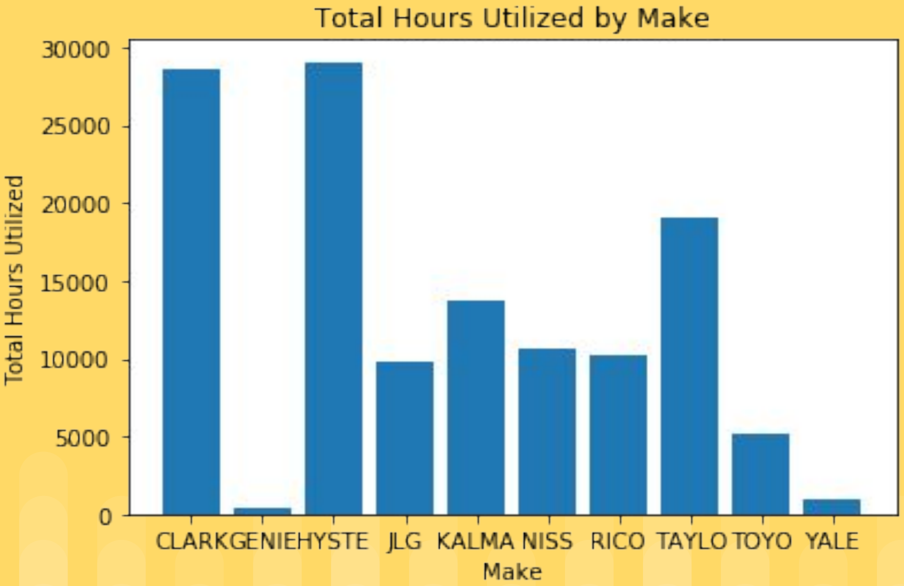
- Hours Utilized are an important variable in Cost Efficiency.
- Total hours utilized are a clear representation CLARK and HYSTE were the two most used Makes.
    - CLARK and HYSTE is trending to be top amongst the  Makes.
- However, notice the GENIE make has extremely low hours utilized.



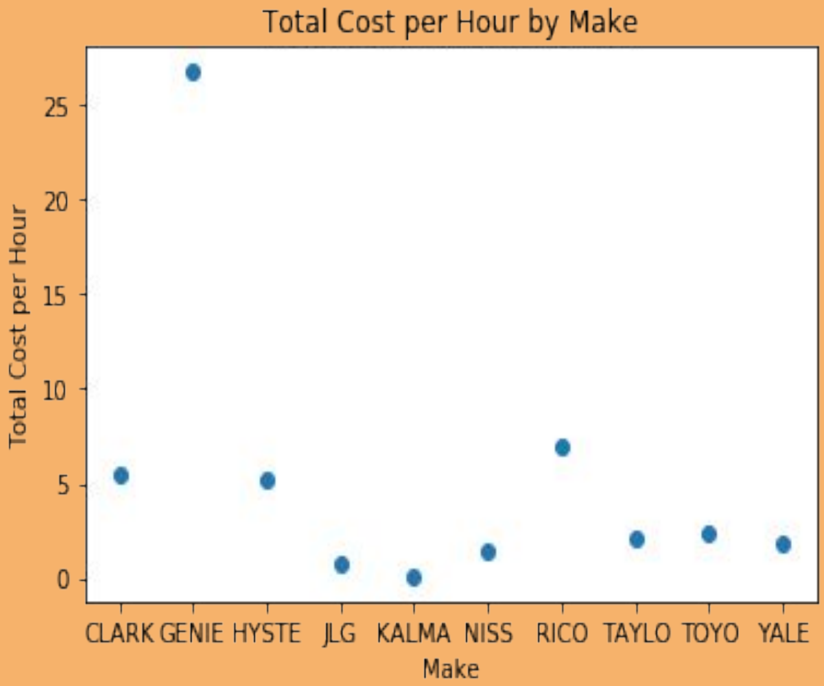
# CLARK and HYSTE Trend

Side By Side COST and HOURS UTILIZED Comparison



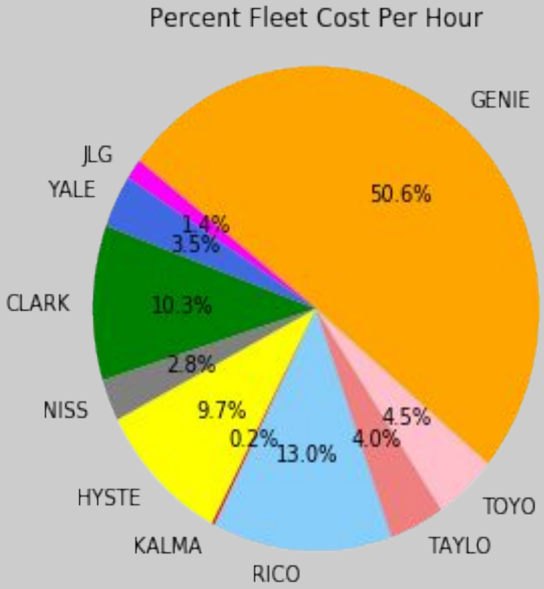
# **Occasions of OUTLIERS in Data**

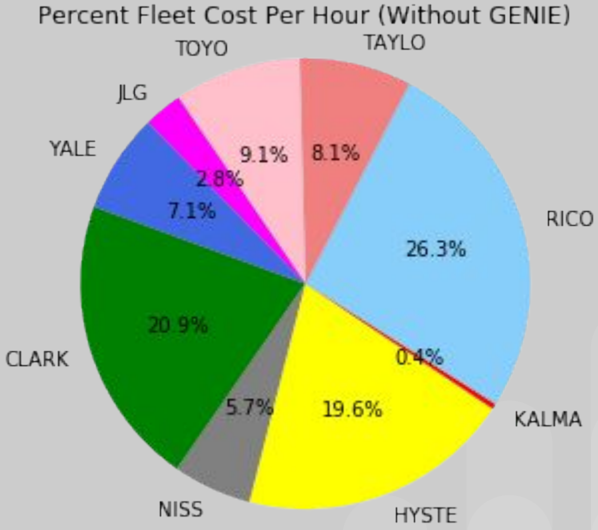



- Given the scatter plot, GENIE surprisingly, although hinted in a previous slide, is the highest Cost per Hour by Make.
    - Even though GENIE has a low overall Total Cost, GENIE's **extremely low** Hours Utilized has skewed its Cost/Hour noticeably higher than other makes.
    - GENIE was clearly not utilized enough to offset initial costs.
- Outliers like this should normally be taken out of a dataset to give a consistent range of mode.

# Perspective of Individual Make Cost Per Hour

*Outlier (GENIE) removed only for individual charting to improve visualization.*



# Cost Per Hour Comparison

**Make: Cost per Hour**

**CLARK: 5.471148**

**GENIE: 26.755201**

**HYSTE: 5.138567**

**JLG: 0.725855**

**KALMA: 0.100409**

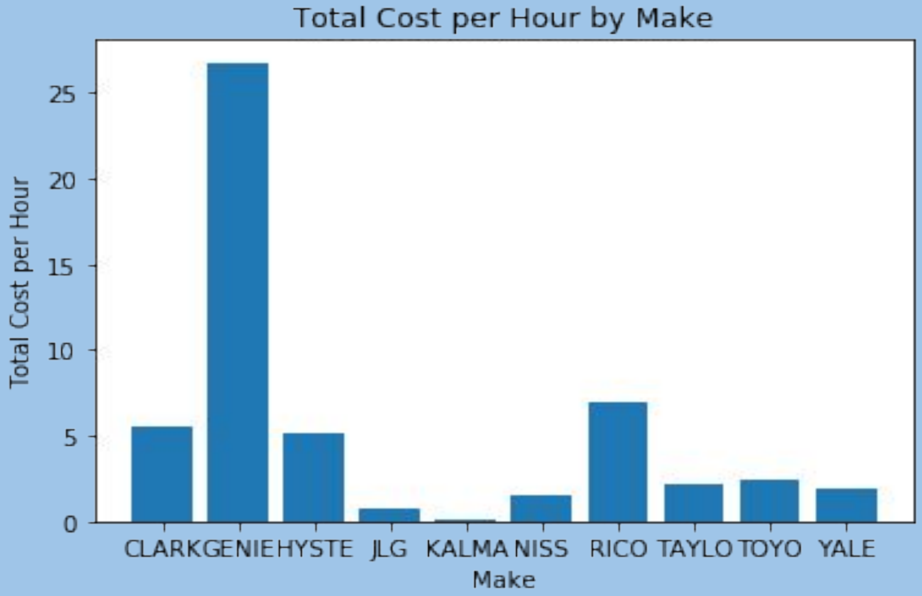
**NISS: 1.484722**

**RICO: 6.894155**

**TAYLO: 2.107753**

**TOYO: 2.393147**

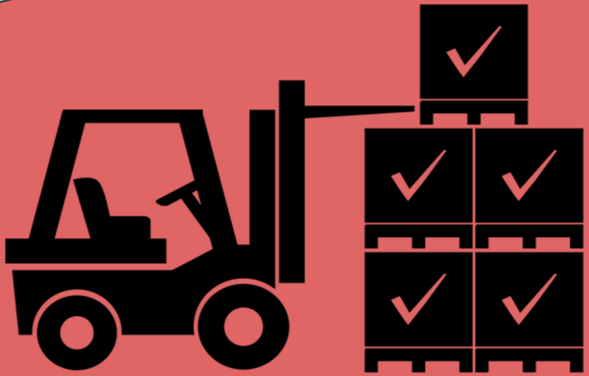
**YALE: 1.862848**

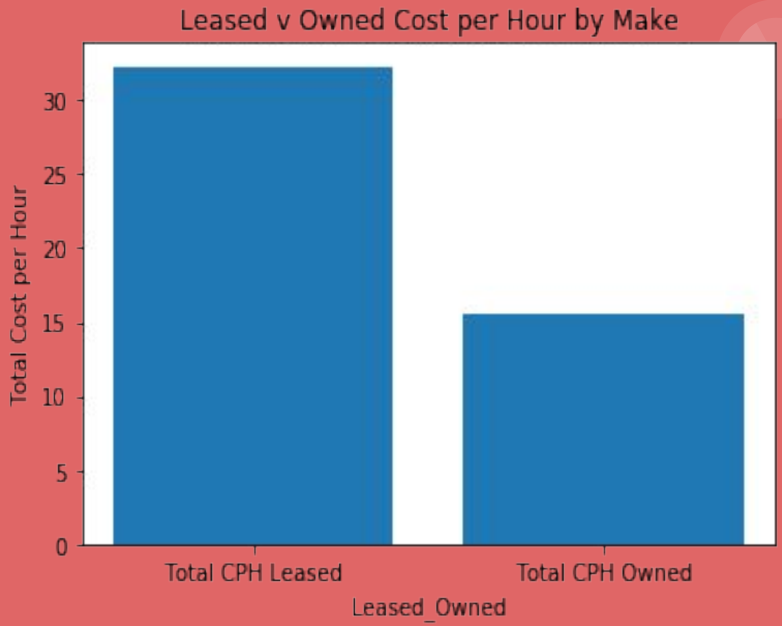



- Given the Data Frame and Bar Chart, CLARK and HYSTE are a reliable trend in comparison.
- The two highest ranking are surpassed by RICO by a full dollar more per hour.
- With the individual Make data, further calculations can be made to give a Cost per Hour Comparison between Leased vs. Owned Makes.

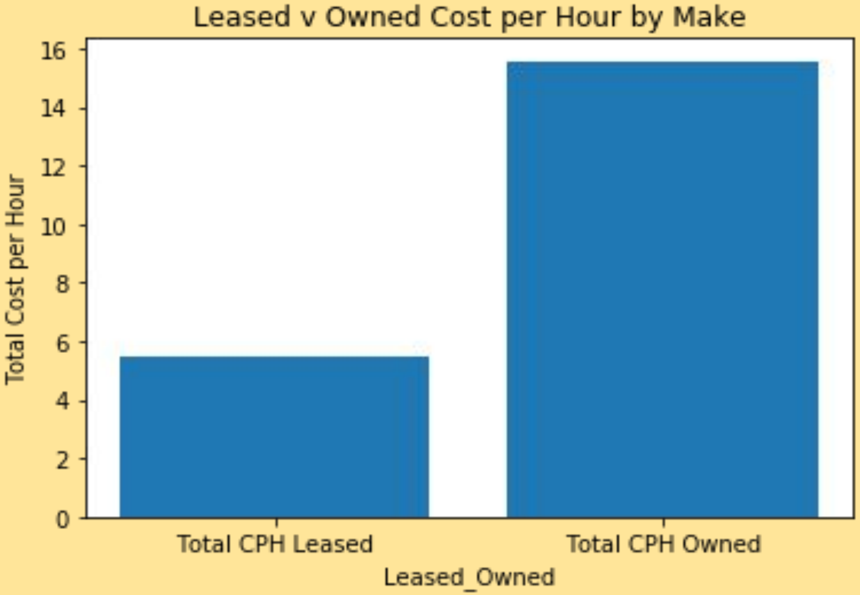
# Leased vs. Owned
# Make Comparison with Genie
# (Cost Per Hour)

| | Total CPH Leased | Total CPH Owned |
|---|---|---|
| Cost per Hour | 32.226349 | 15.568888 |





# Leased vs. Owned Make Comparison (cost per Hour)




| | Total CPH Leased | Total CPH Owned |
|---|---|---|
| Cost per Hour | 5.471148 | 15.568888 |

# Conclusion

The *MAGIC* of *Data Analytics!*