SUPPLY CHAIN ANALYTICS

CAPSTONE PROJECT

By

Soumya Roy

CLIENT PROBLEM OVERVIEW

- The open-pit mine is facing problems of inefficient production and is losing customers' trust as they are not able to meet their demands even though there has been no surge in demand.
- The mine has operations such as the digging of ore and crushing of ore into a finer composition where this ore gets transported between the diggers and crushers using transportation trucks.
- Need to build a smart live monitoring system and need to understand the key metrics explained by the client.

PRESENTATION FLOW

- Objective
- Key Findings
- Recommendations
- Conclusion and Overview

PROJECT OBJECTIVES

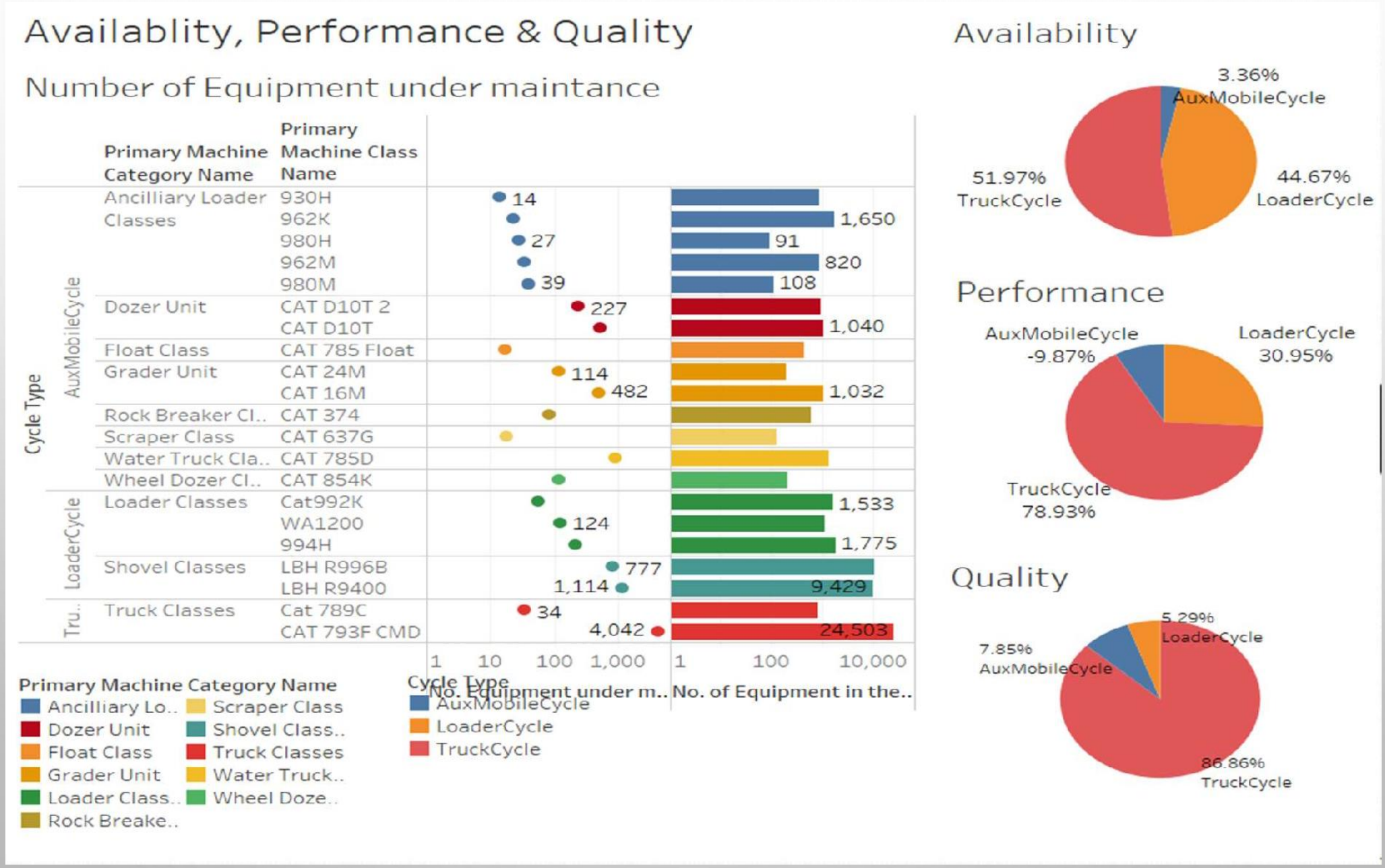
Following task needs to perform to analyze or understand what is happening at ground level location

- Understand the problem faced by the mine and take an understanding of the data shared by the client.
- Since the client is not very tech-savvy, we need to prepare a cleaned dataset using the dataset provided by him.
- Analyze the data using the MySQL Workbench 8.0 and prepare a live tracking system using some set of dashboards using either Tableau or Power BI.
- At last, present the findings or key insights to your senior technical manager using a ppt of not more than 8 - 12 slides who wishes to understand the key workings of your analysis along with the insights derived out it

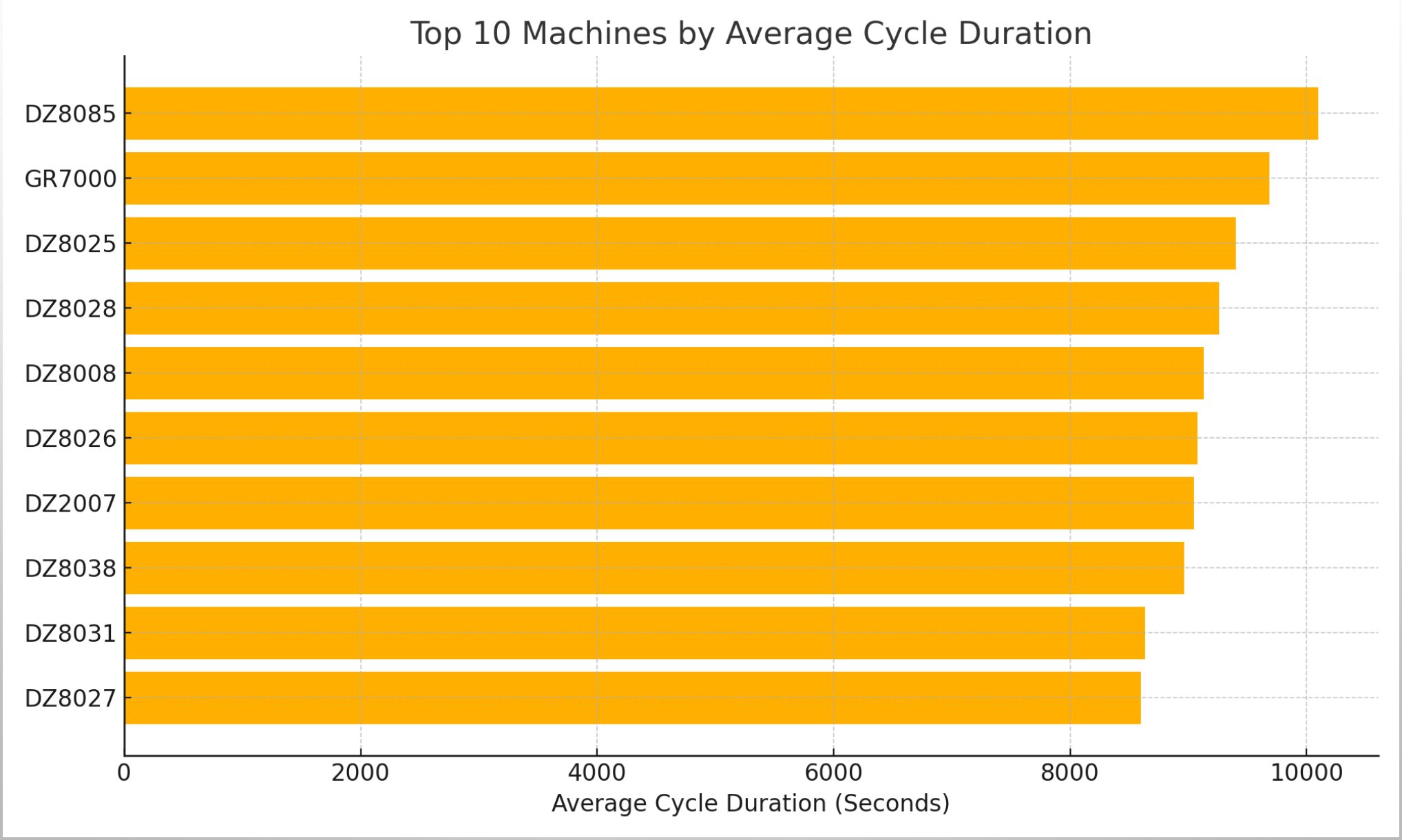
CYCLE & DELAY ANALYSIS

- Availability Performance and Quality
- Cycle Completed and Cycle Duration
- Equipment Level Production
- Efficiency and Accuracy of Operation
- Top and Low – Quality, Performance and Availability Equipments

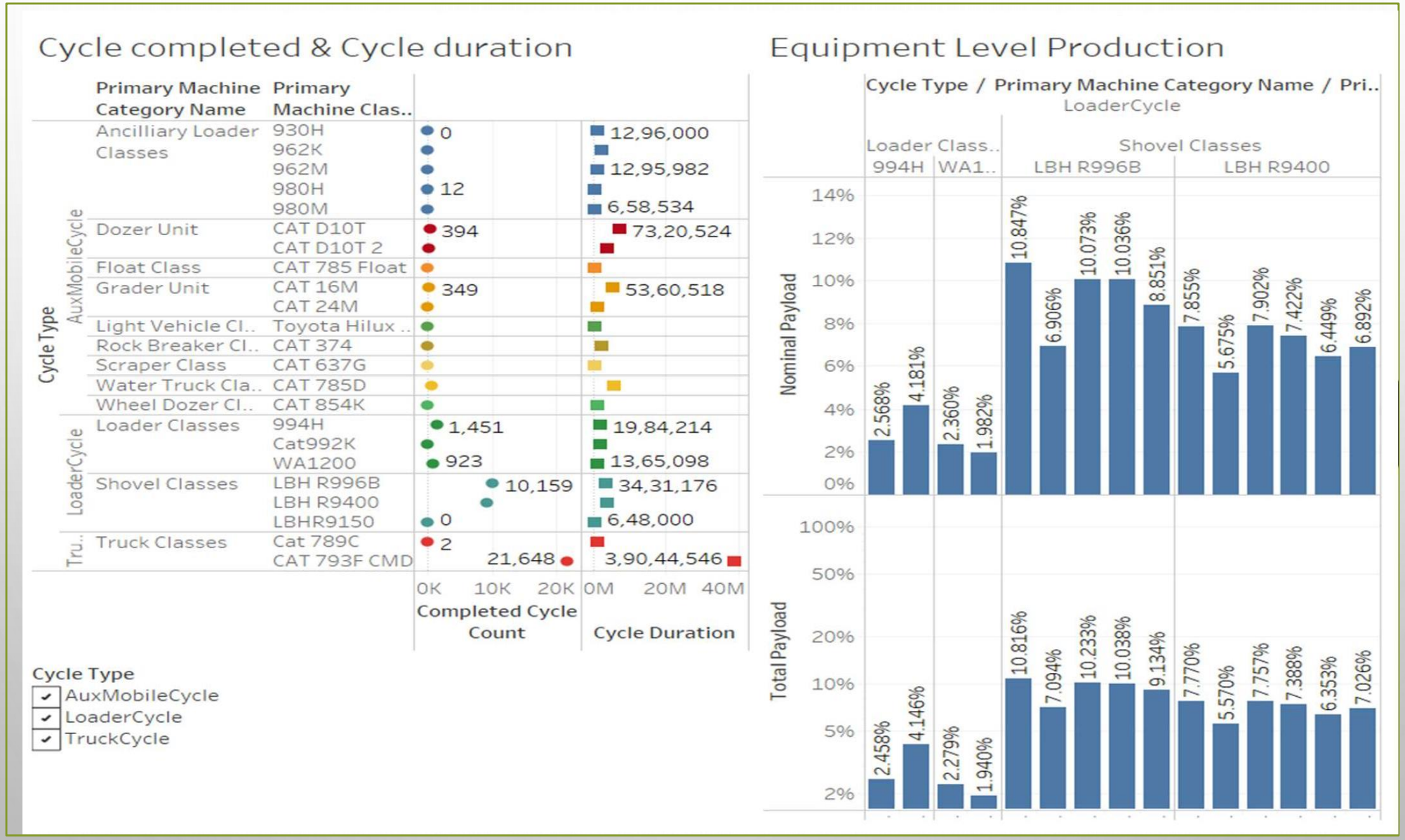
AVAILABILITY, PERFORMANCE & QUALITY DASHBOARD



CYCLE DURATION BY MACHINE

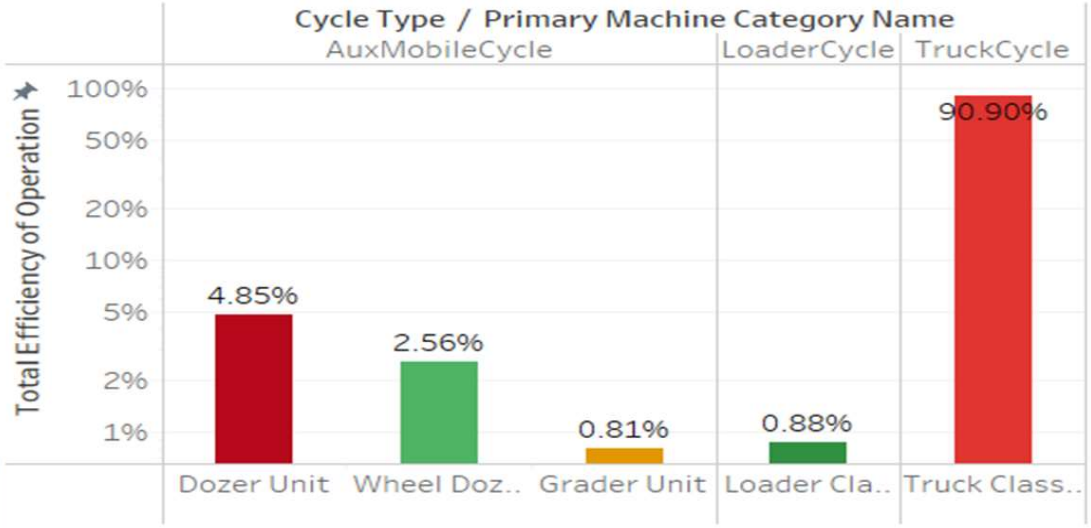


CYCLE COMPLETED & EQUIPMENT-LEVEL PRODUCTION

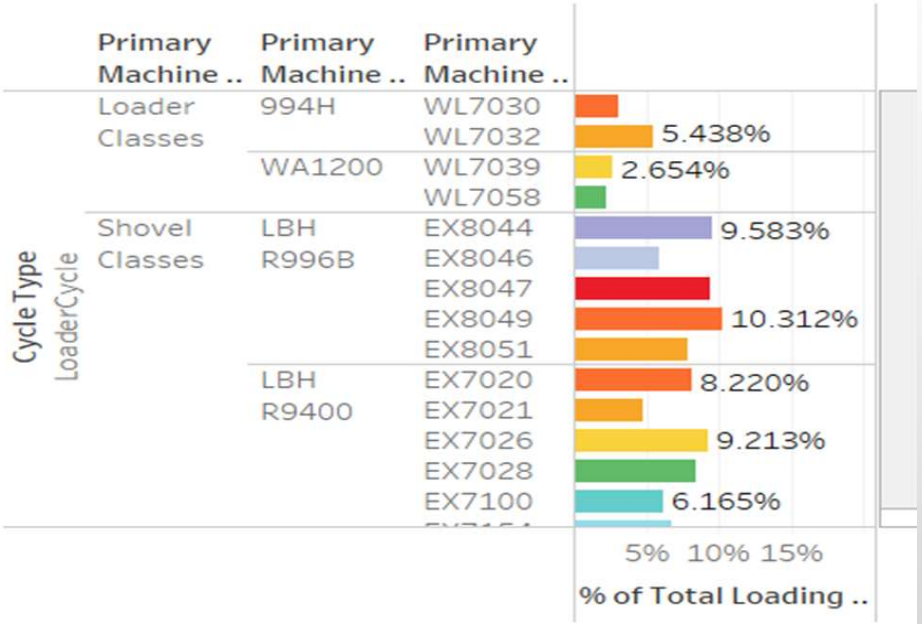


OPERATIONAL EFFICIENCY & ACCURACY

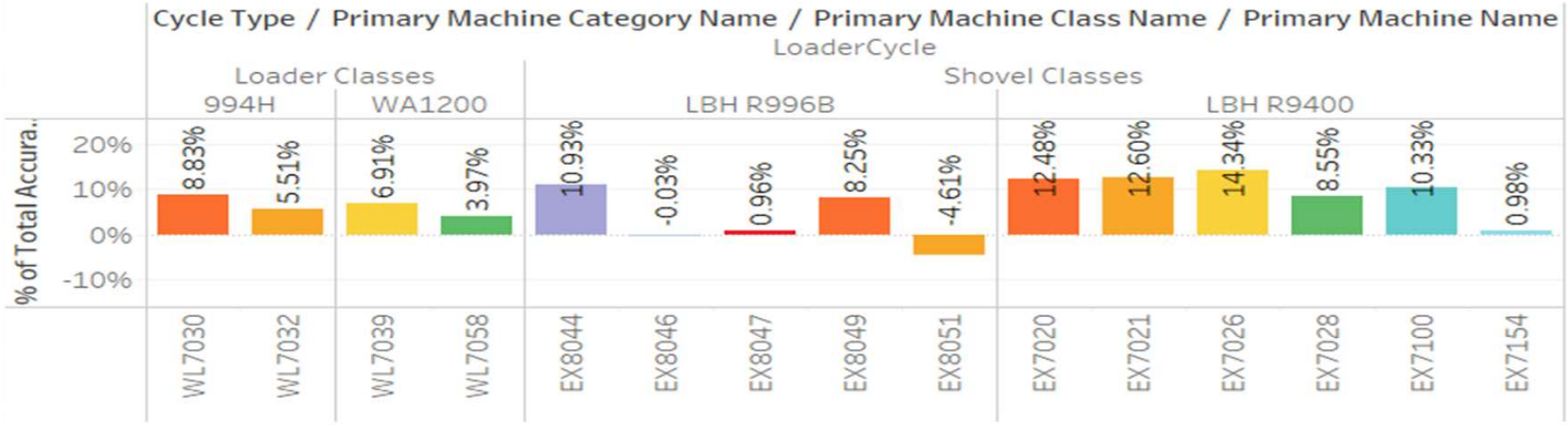
Efficiency of operation



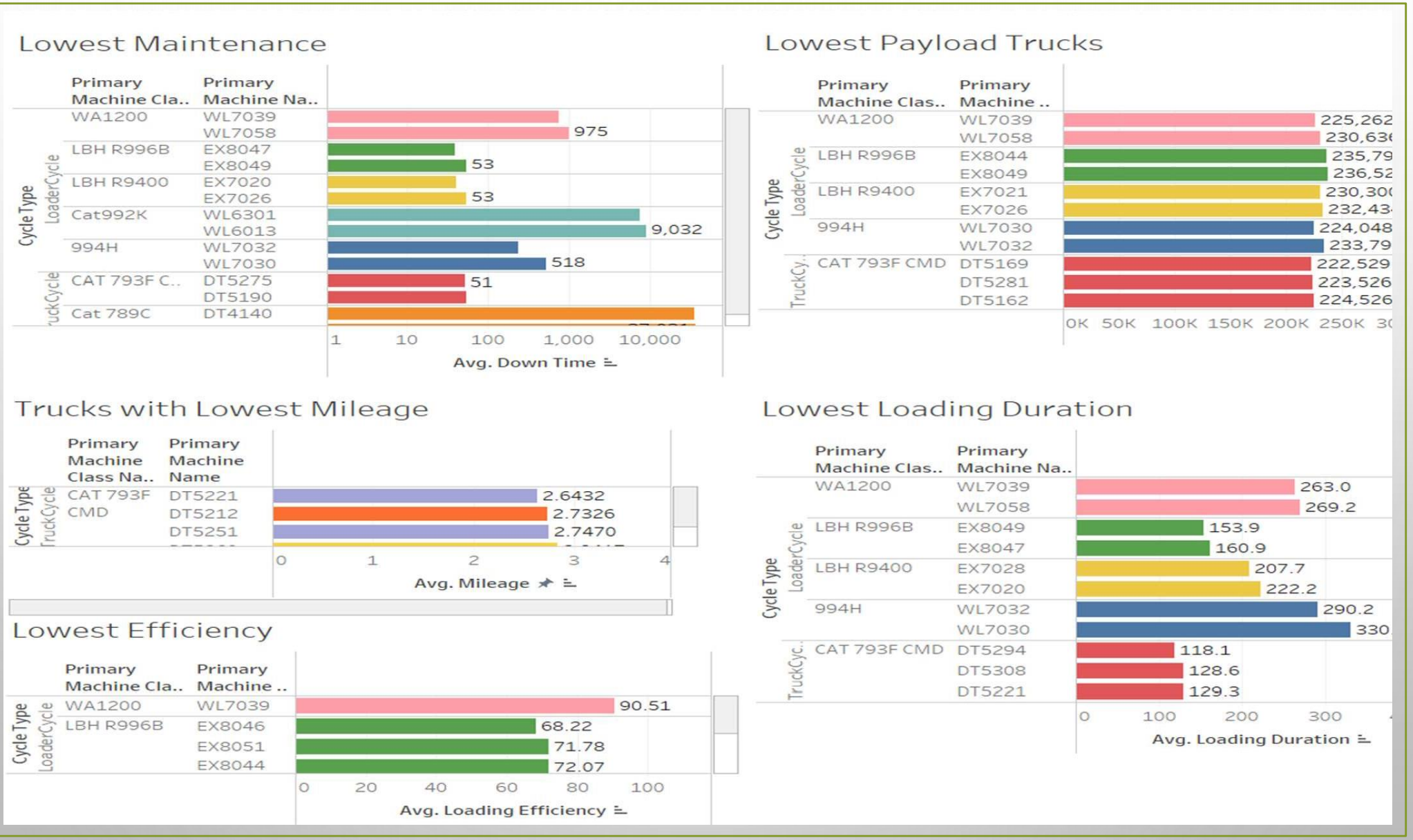
Efficiency



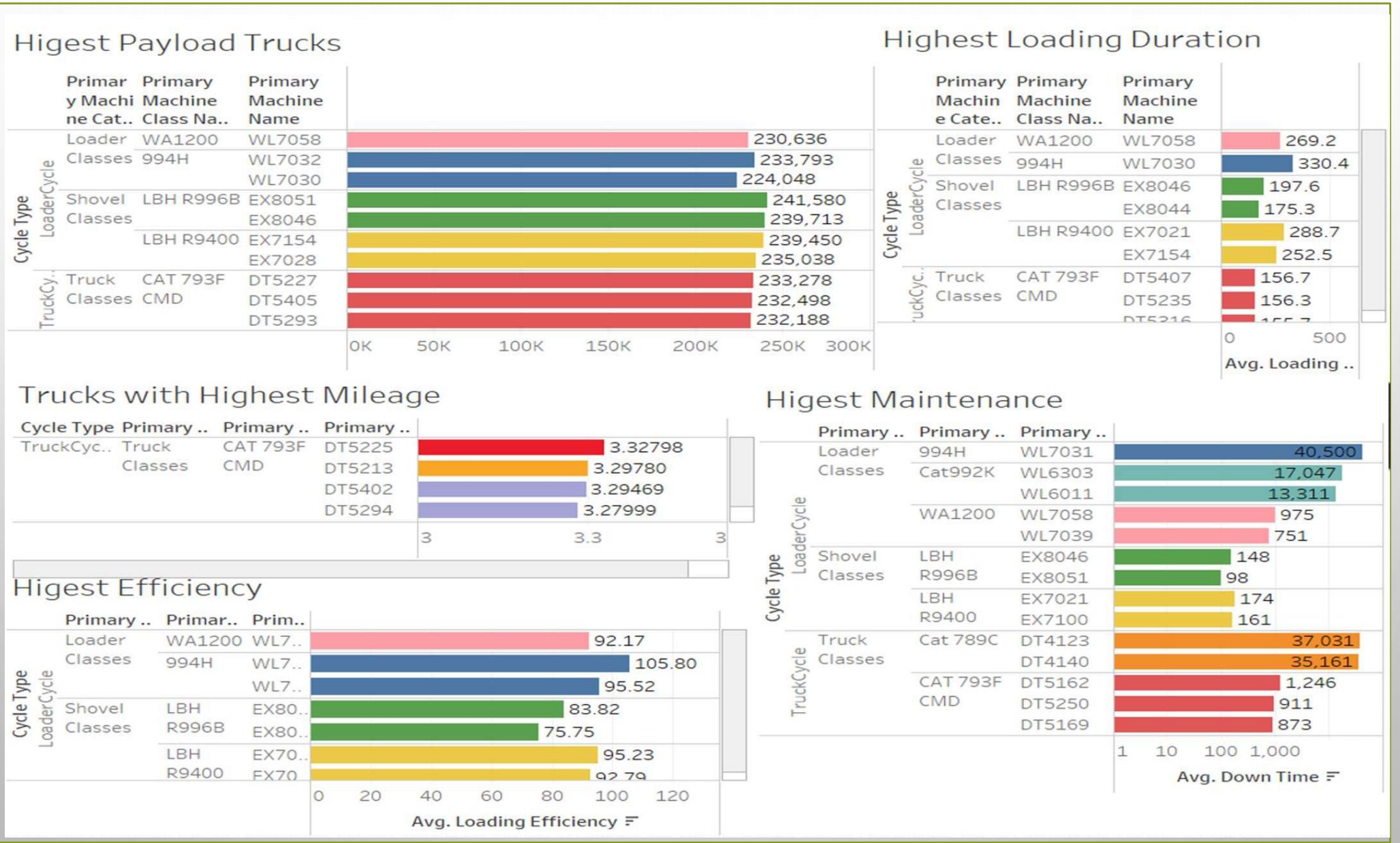
Accuracy



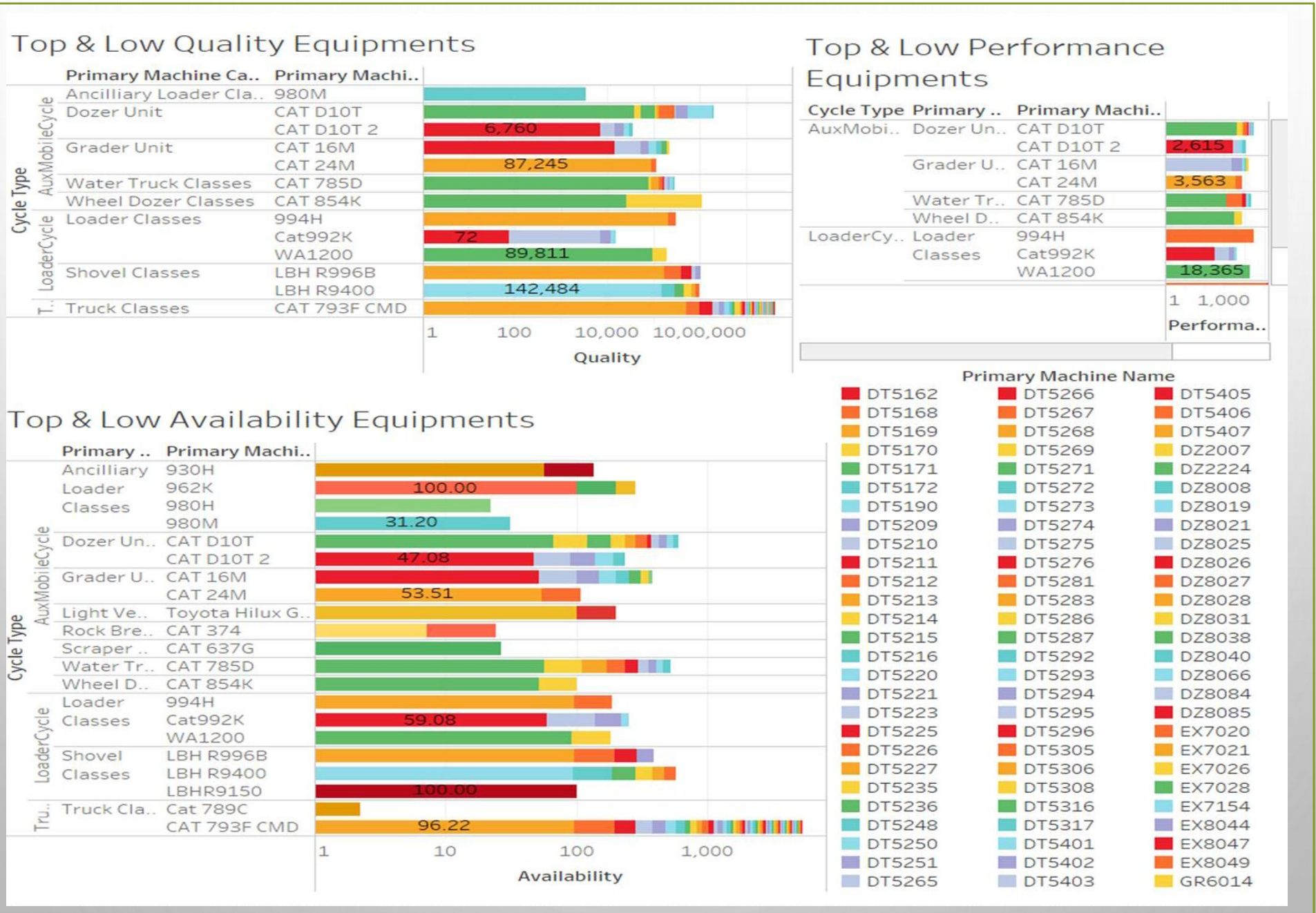
MAINTENANCE, MILEAGE & EFFICIENCY REVIEW



TOP PERFORMERS – PAYLOAD, EFFICIENCY & MAINTENANCE



QUALITY, PERFORMANCE & AVAILABILITY RANKING



DATA-DRIVEN RECOMMENDATIONS

- The loader class which takes major part in production has some defect equipment like EX5108, WL6011 etc. Needs to be taken care of.
- The truck class equipment which covers less distance with more fuel should be taken care.
- The auxmobile class have the highest defect equipment needs to be taken care of.

END-TO-END SOLUTION RECAP

- First the Dataset was loaded in python where the tables were cleaned and created the tables cycle_key, movement_key and delay_key.
- Those three tables were loaded into MySQL. After Loading we created a stored procedure for each table and OEE table also.
- Then with Tableau we connected the cleaned table to form suitable charts and derive key insights.

THANK YOU