OPEN-PIT MINING

CAPSTONE PROJECT

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AGENDA

OBJECTIVE

KEY FINDINGS

RECOMMENDATIONS

APPENDIX

- DATA ATTRIBUTES
- DATA METHODOLOGY
- DATA ASSUMPTION

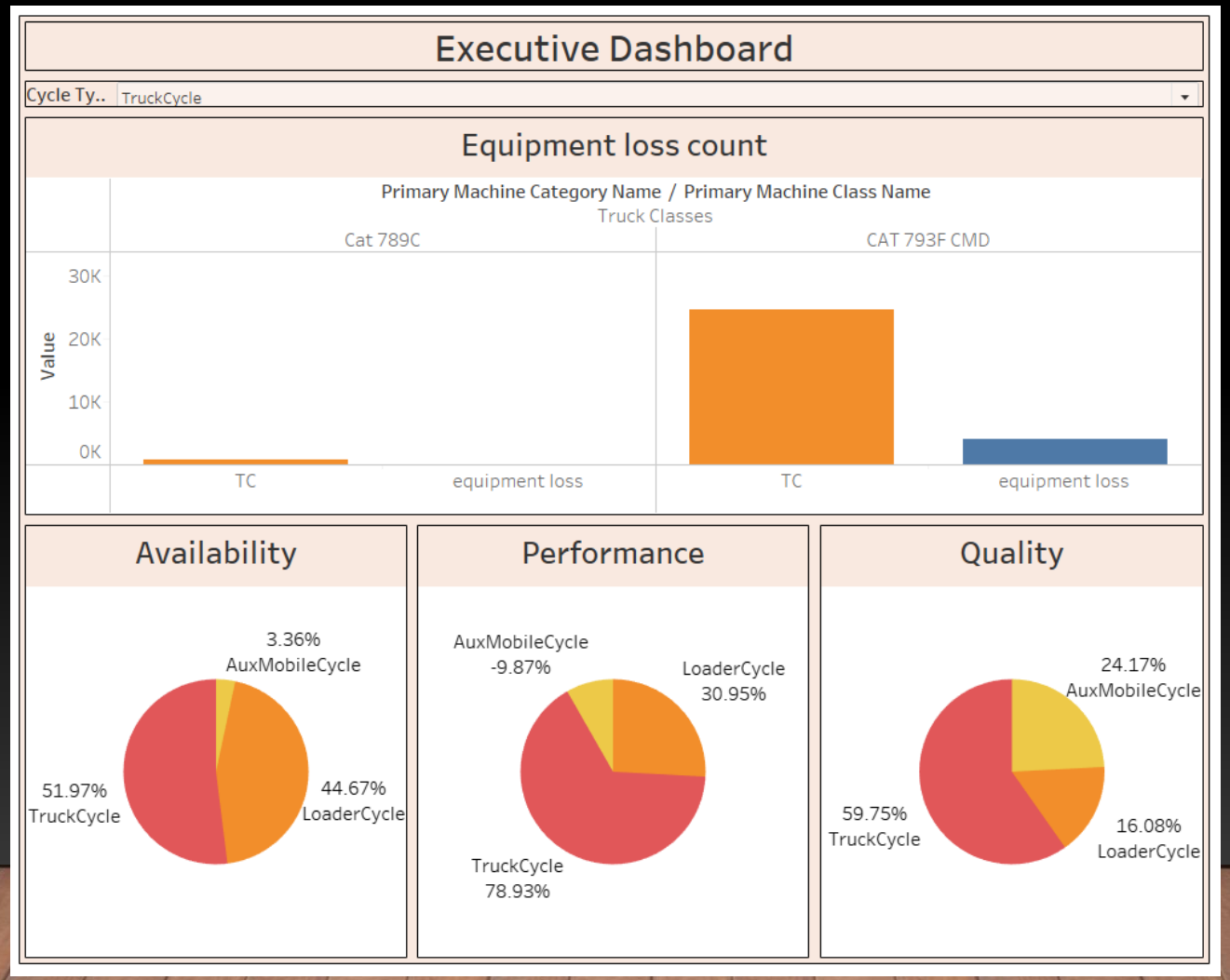
OBJECTIVE

- Inefficient production and losing customers trust as they are not able to meet their demands even though there has been no surge in demand.
- Build a smart live monitoring system using Key metrics.
- Track inventory and quantity available and understand what is happening on the ground at each location.
- Areas of improvement to recover the production and customer trust.

KEY FINDINGS

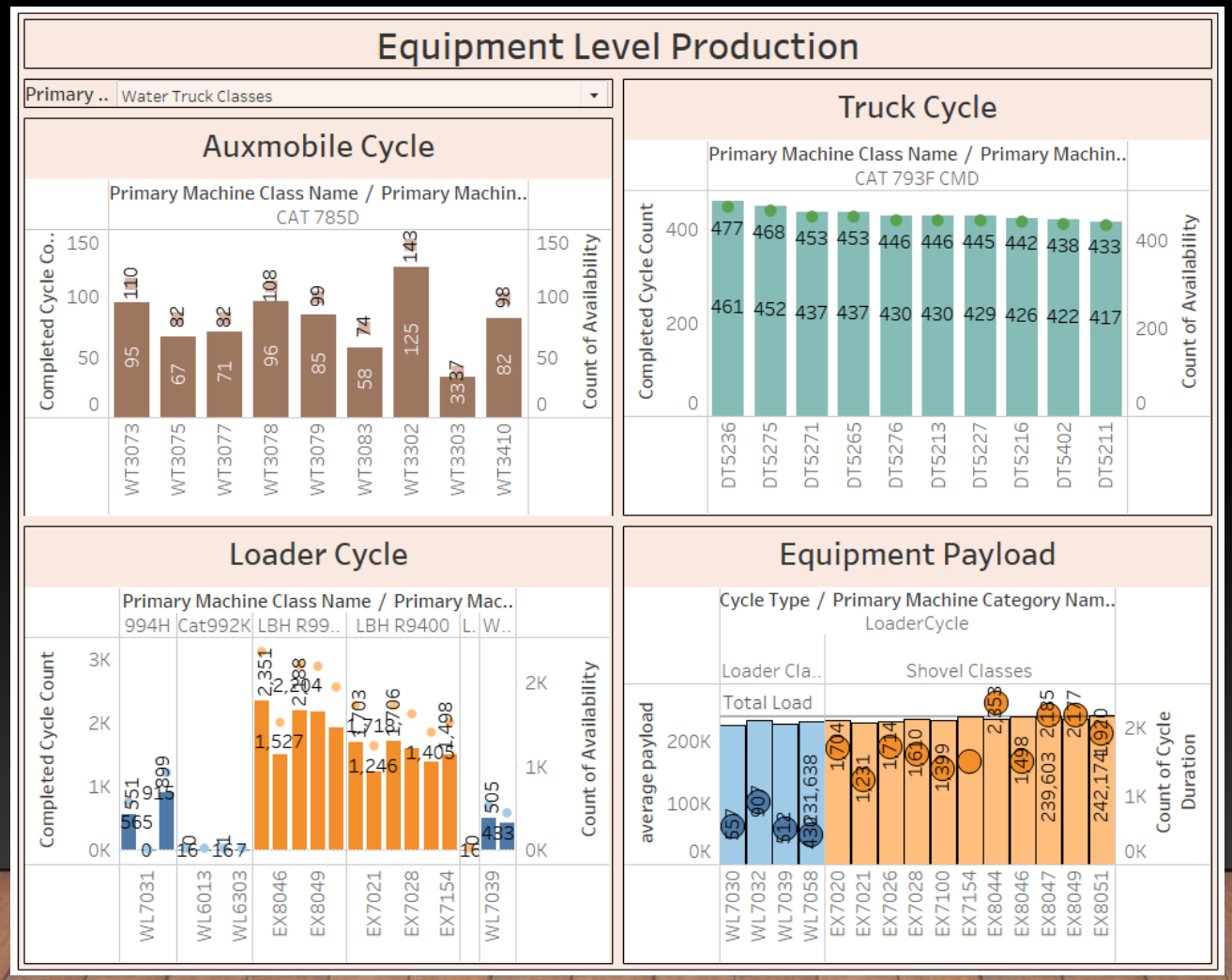
Over all Findings.

- The **Availability , Performance and Quality** rate of **Truck cycle is *50%*** over other cycles .
- The equipment loss is less for **CAT793F CMD** which has over ***90%*** of over all total cycle.



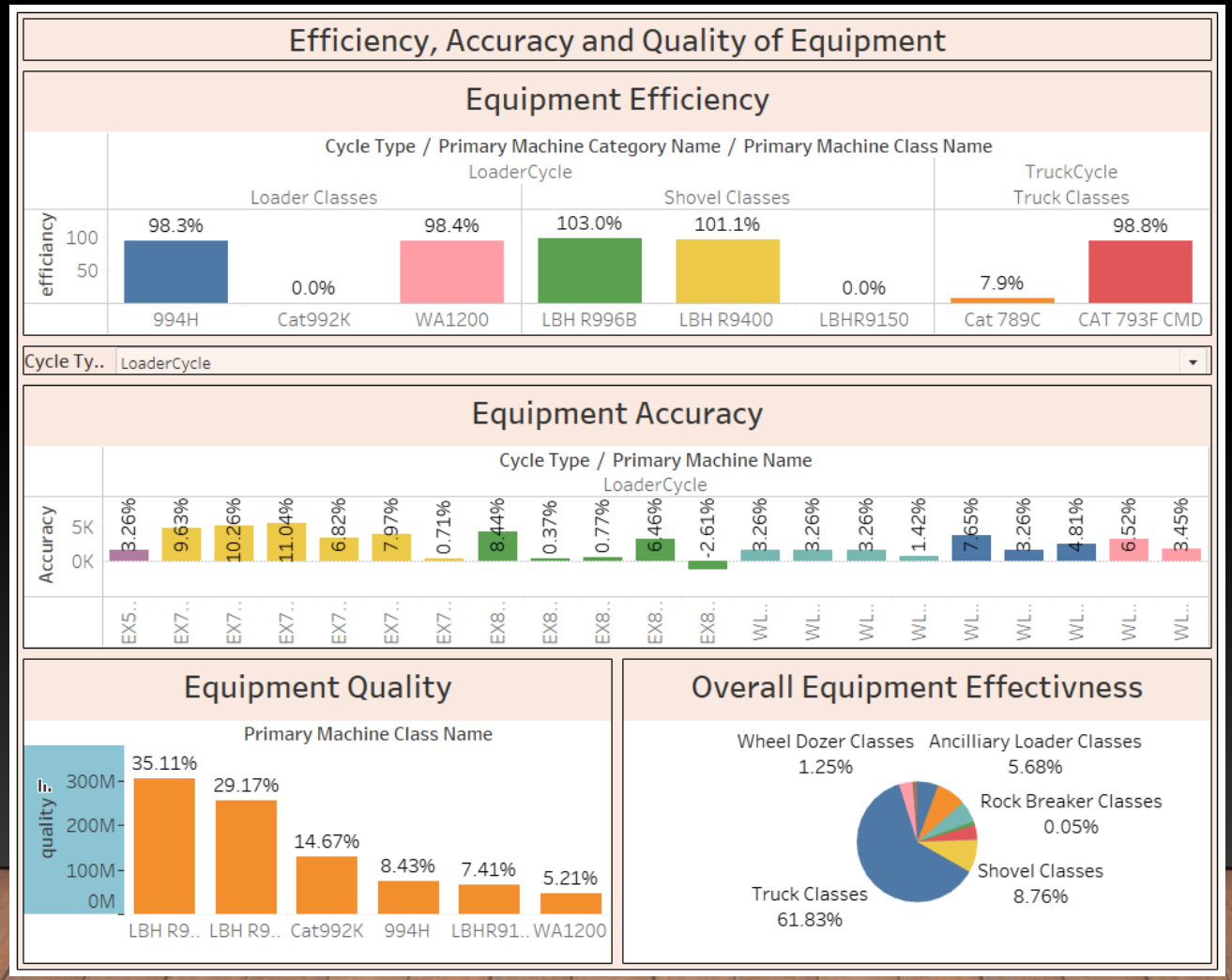
Equipment Production

- In Truck cycle, **DT5236** has higher TC and Completed cycle.
- In Loader cycle **EX8044** has higher TC and completed cycle but **EX8051** has a higher AVG payload.



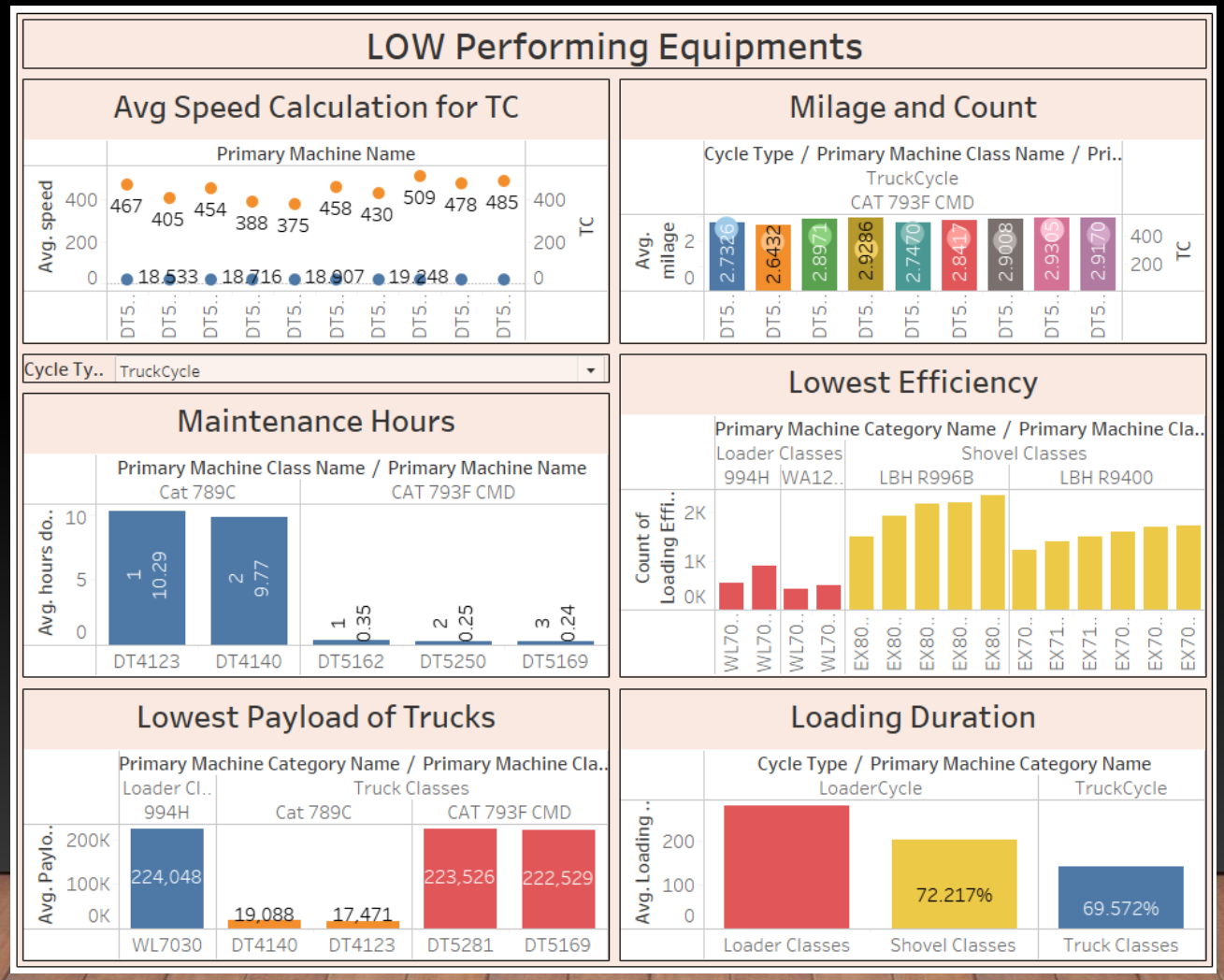
Overall Equipment Effectiveness

- The Loader cycle has higher efficiency then truck cycle.
- The equipment **DT5248** has ***2.2%*** Average Accuracy in truck cycle and **EX7026** has ***11%*** accuracy in Loader cycle over other equipment.
- The Truck class has a **OEE** of ***62%*** over other classes.



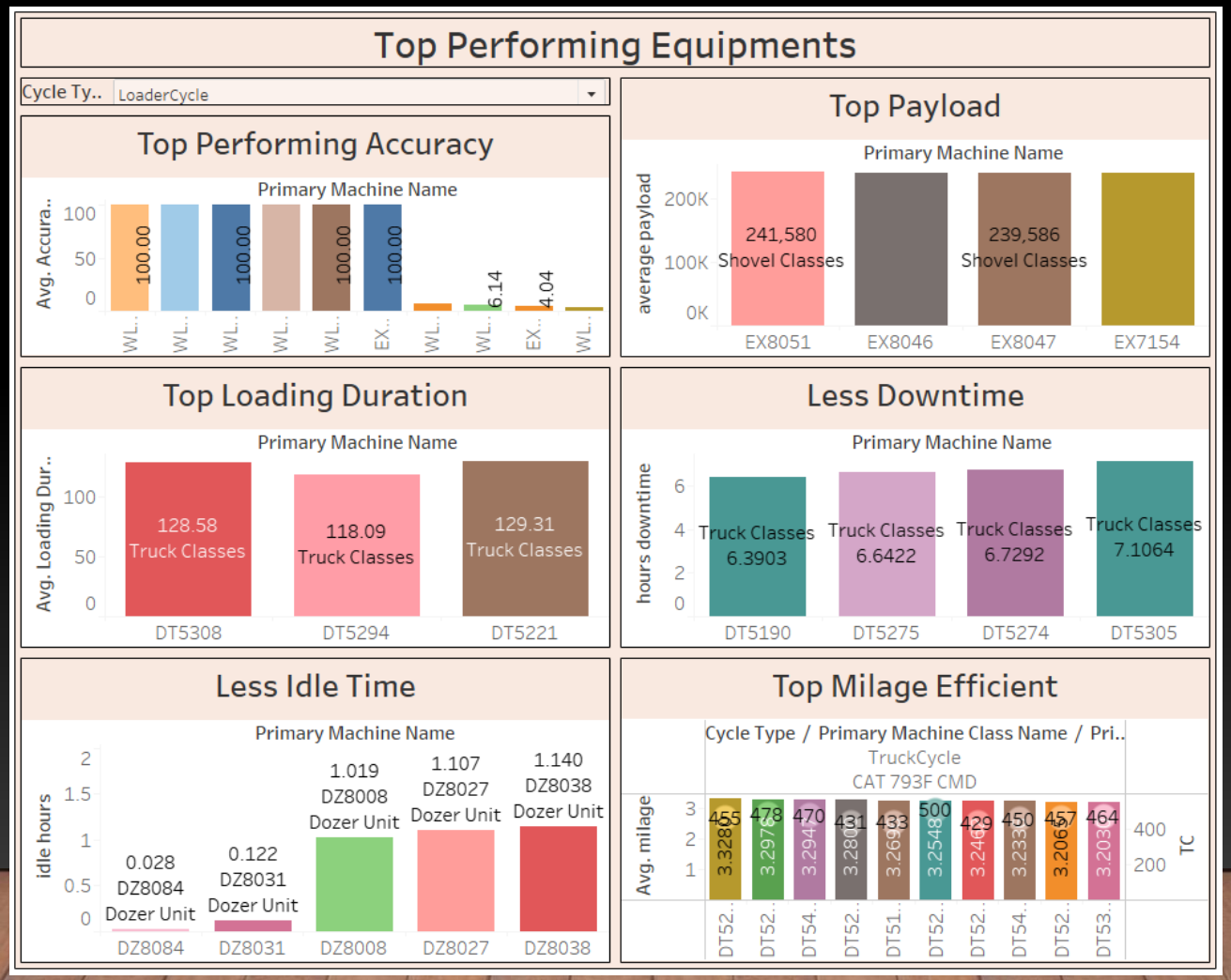
Low Performance Equipments.

- Some equipment like **DT4123** has a ***10 hours*** of average maintenance and lowest payload over total cycle.
- The loader class equipment take ***30%*** more time then truck class for loading .



High Performance Equipments.

- The loader class equipment have higher accuracy rate than other classes.
- The loading duration on truck class is higher and has less downtime.
- The Dozer unit has less Idle time than other unit types.



RECOMMENDATION

- The mining owner has to make use of high performing equipment in respected cycle to get more production.
- For instance, **CAT793F CMD** in truck cycle performs well compared to **CAT789C** and has good average speed and milage over the total cycle.
- The quality produced by equipment varies among classes , by selecting the good equipment the quality is further improved, the production and customer trust can be gained .

APPENDIX

Data Attributes

- The source of the data : Cycle data, Location data and Delay data.
- Cleaning the data and making joints based on data.

Data Methodology

- Used MySQL 8.0 for creating SQL file with store procedure.
- Used Tableau for visual analysis.

Data Assumption

- Converted Durations from seconds to hours.
- Converted fuel used from meters per liter to miles per liter.
- Assumed 1 and 0 for Y and N in data.