



Coca-Cola

GROUP -7

OUR TEAM



**NISHI
TAYADE**



**GAUTAM
NAIR**



**SANKET
JANOLKAR**



**SARVESH
KELUSKAR**

BUSINESS PROBLEM

BUSINESS PROBLEM



\$60 Million
Annually



94.4%
Efficiency

ANALYTICAL APPROACH

FEATURE
ENGINEERING

BUSINESS
INSIGHTS



FEATURE ENGINEERING

NLP

- Functional_Node_2
- Functional_Node_3
- Functional_Node_4

RISK SCORE

- Lifespan Ratio
- Maintenance Frequency
- Duration Deviation

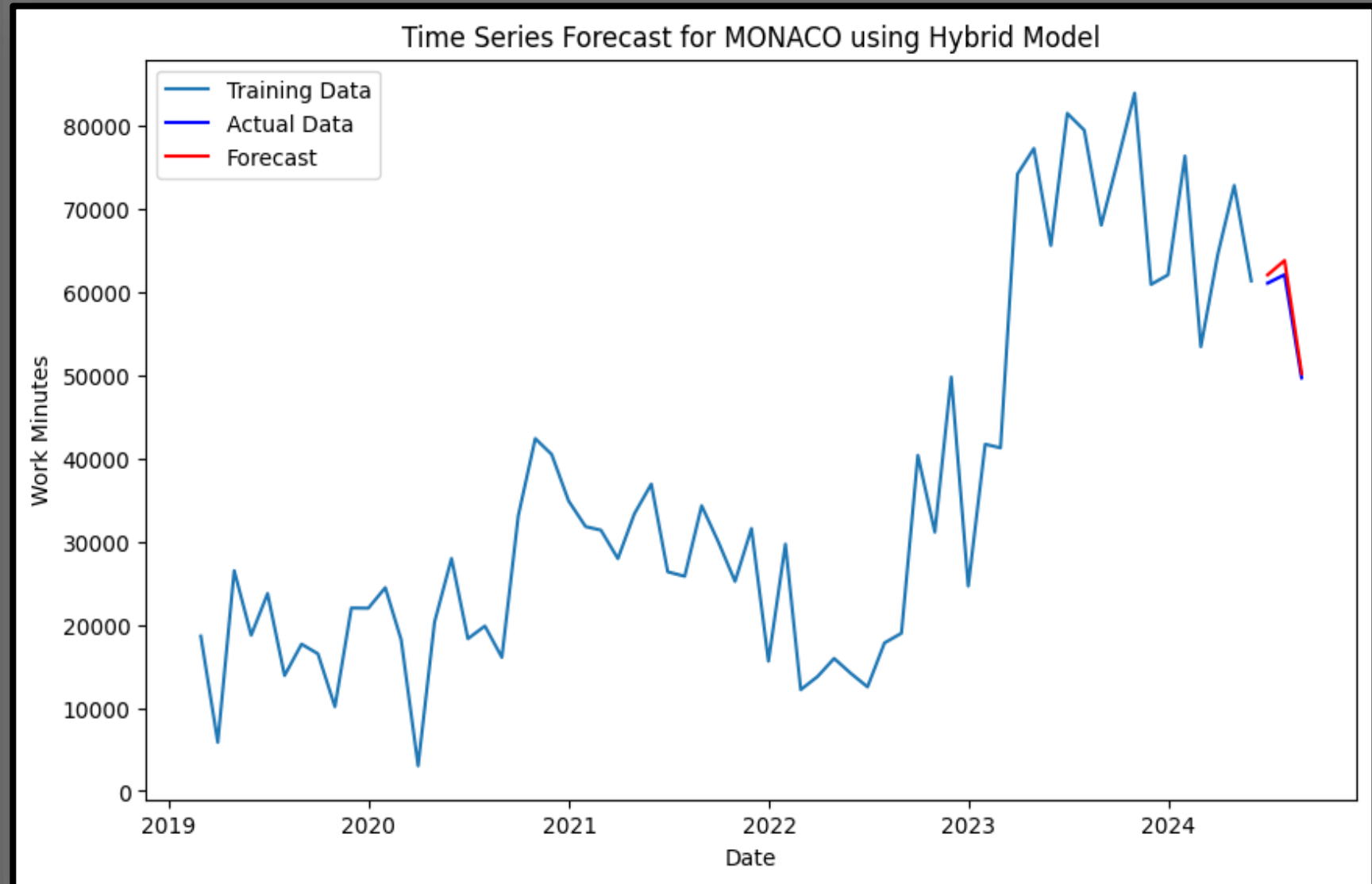
RISK CLASSIFICATION

- Low Risk
- Medium Risk
- High Risk

DATA MODELLING

Time Series Analysis : Maintenance Optimization

TIME SERIES ANALYSIS



TIME SERIES ANALYSIS

FORECAST

- Six-month forecasts for work minutes across all locations.
- Drill-down analysis at the equipment level for precise predictions.

EQUIPMENT MAINTENANCE PREDICTION

- Used Random Forest Regressor to predict maintenance intervals.
- Generated next maintenance dates for each piece of equipment.

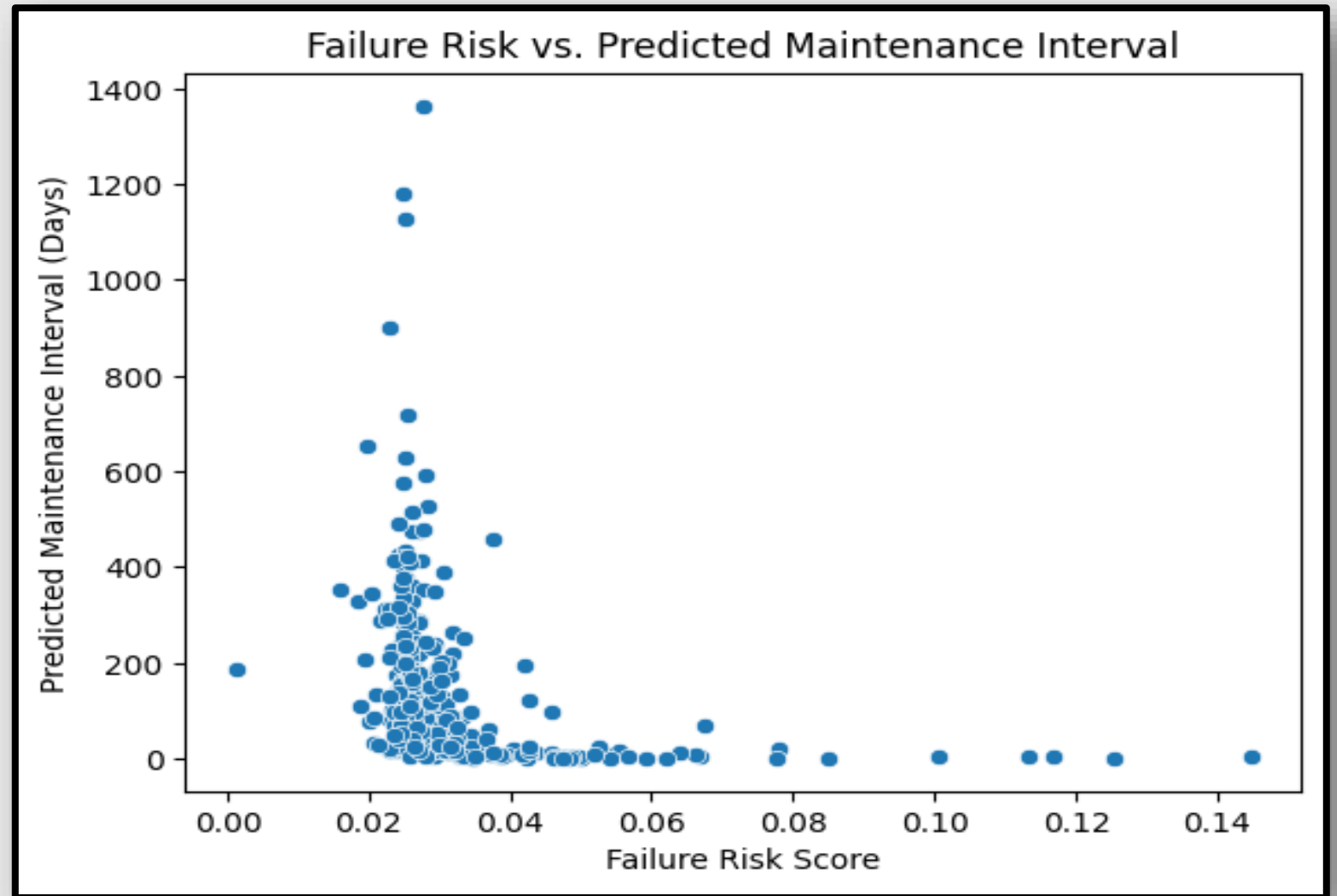
BUSINESS IMPACT

- Enables proactive scheduling of maintenance activities.
- Reduces downtime and enhances operational efficiency.

OPTIMIZATION POTENTIAL

- Focusing on high-risk equipment – Minimized Downtime
- Resource Allocation can be optimized.

TIME SERIES ANALYSIS

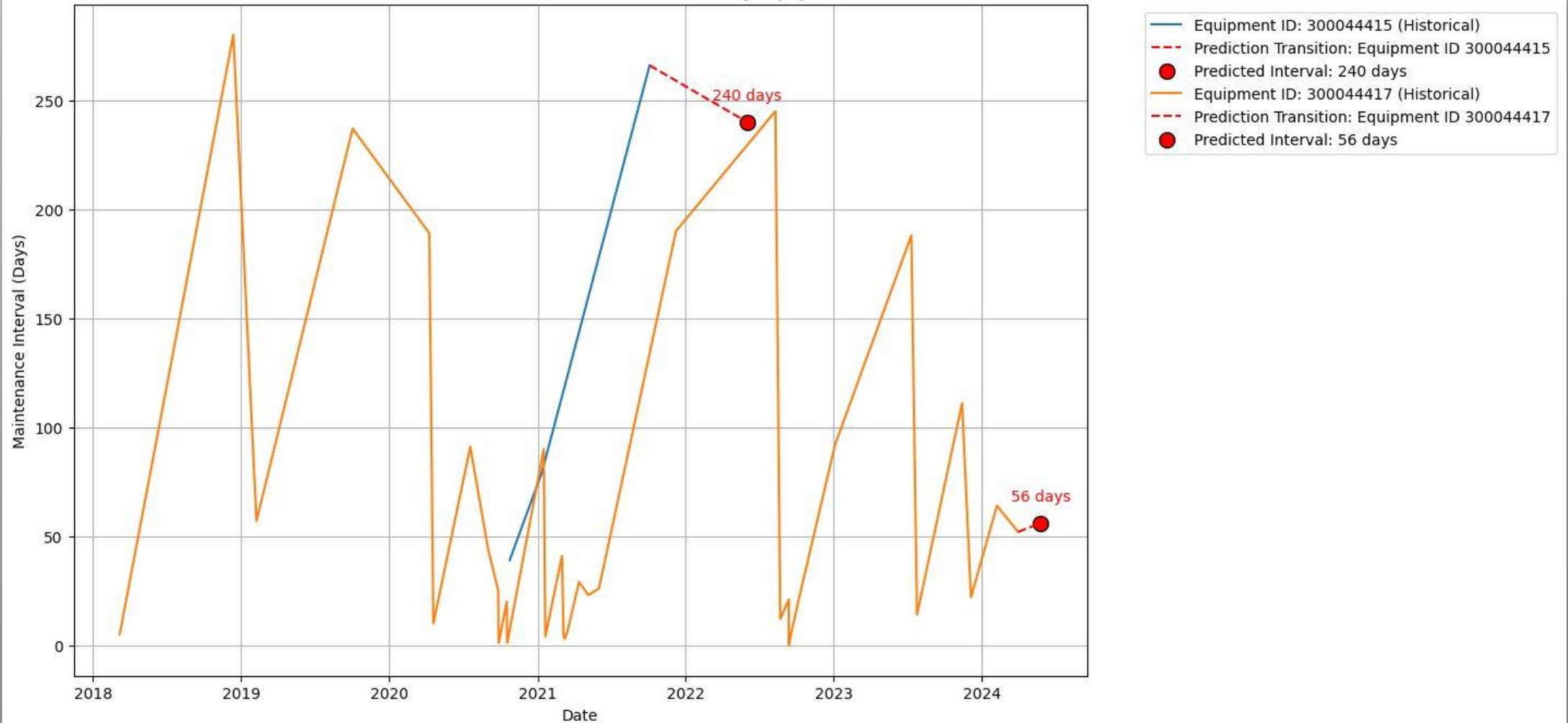


High failure risk scores predict shorter maintenance intervals.

Insights and Forecast Application

DASHBOARD

Historical and Predicted Maintenance Intervals by Equipment



KEY RISK FACTORS

- Maintenance Frequency
- Risk Level
- Failure Risk Score

SURVIVAL ANALYSIS

APPROACH

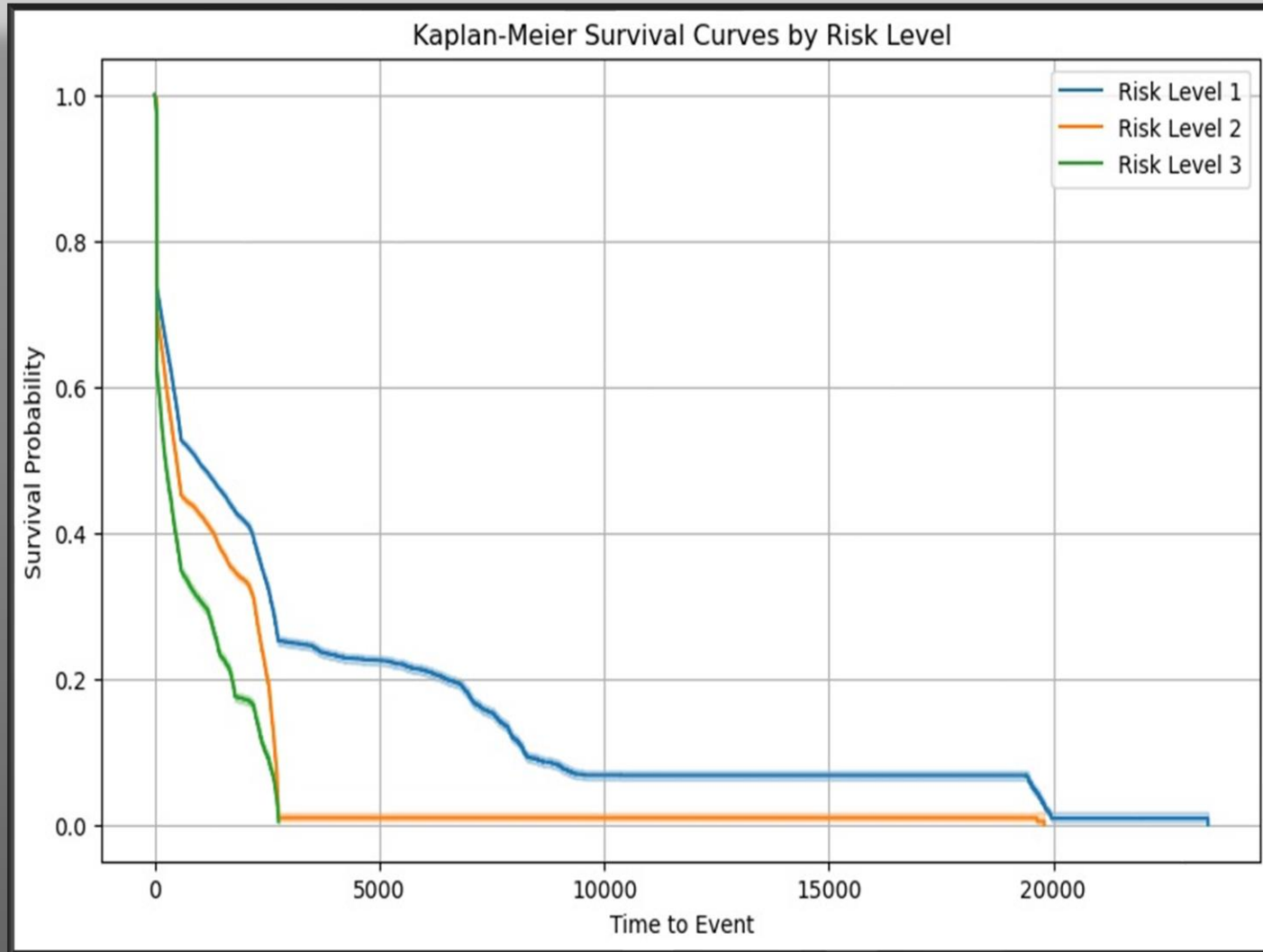
- Cox Proportional Hazards Model
 - Kaplan- Meier Model

NET PROMOTER SCORE



FAILURE RISK SCORE

MEDIAN SURVIVAL TIME



DASHBOARD

HIGH RISK-Level 3

235 Days

MEDIUM RISK-Level 2

484 Days

LOW RISK- Level 1

953 Days

DASHBOARD

SWIRE COCA-COLA

Maintenance Dashboard

COTA

MONACO

MONZA

ROMA

SILVERSTONE

SUZUKA

NODE2

All

NODE3

All

NODE4

All

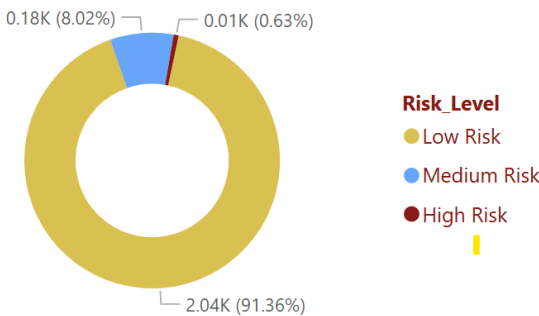
YEAR

All

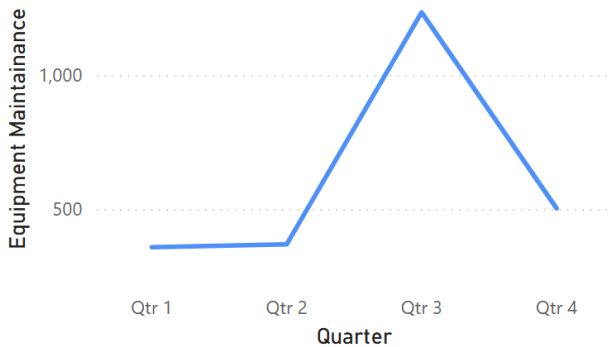
2160
Equipment Count

200.55K
Total Number of Parts

Equipment Count by Risk_Level

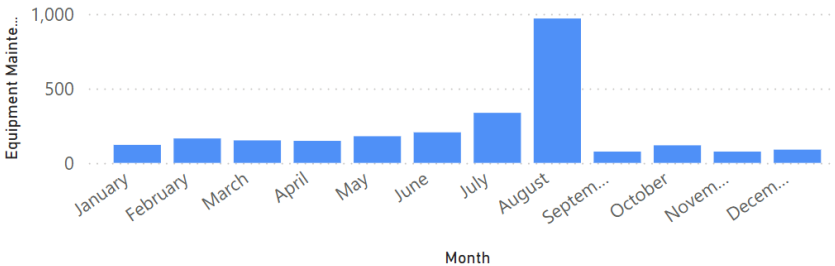


Equipment Maintenance by Quarter



EQUIPMENT_ID	LOCATION	FUNCTIONAL_AREA_NODE	FUNCTIONAL_AREA_NODE_3	FUNC
200110891	ROMA	FLEET FUNCTIONAL AREAS	WAREHOUSE	LABEL
200130411	ROMA	FLEET FUNCTIONAL AREAS	WAREHOUSE	FILLER
200130411	ROMA	FLEET FUNCTIONAL AREAS	WAREHOUSE	MOULDER
300001000	MONZA	RECYCLING	RECYCLING SYSTEM	RECYCLING
300001001	MONZA	RECYCLING	RECYCLING SYSTEM	CONVEYOR
300001001	MONZA	RECYCLING	RECYCLING SYSTEM	DEPALLETIZER
300001001	MONZA	RECYCLING	RECYCLING SYSTEM	PACKAGING
300001002	MONZA	BTL_PET_LINE	LINE #1 - FILLER_ROT_BTL_PET	RINSE

Equipment Maintenance by Month



DASHBOARD

SWIRE COCA-COLA Maintenance Dashboard

COTA

MONACO

MONZA

ROMA

SILVERSTONE

SUZUKA

NODE2

All

NODE3

All

NODE4

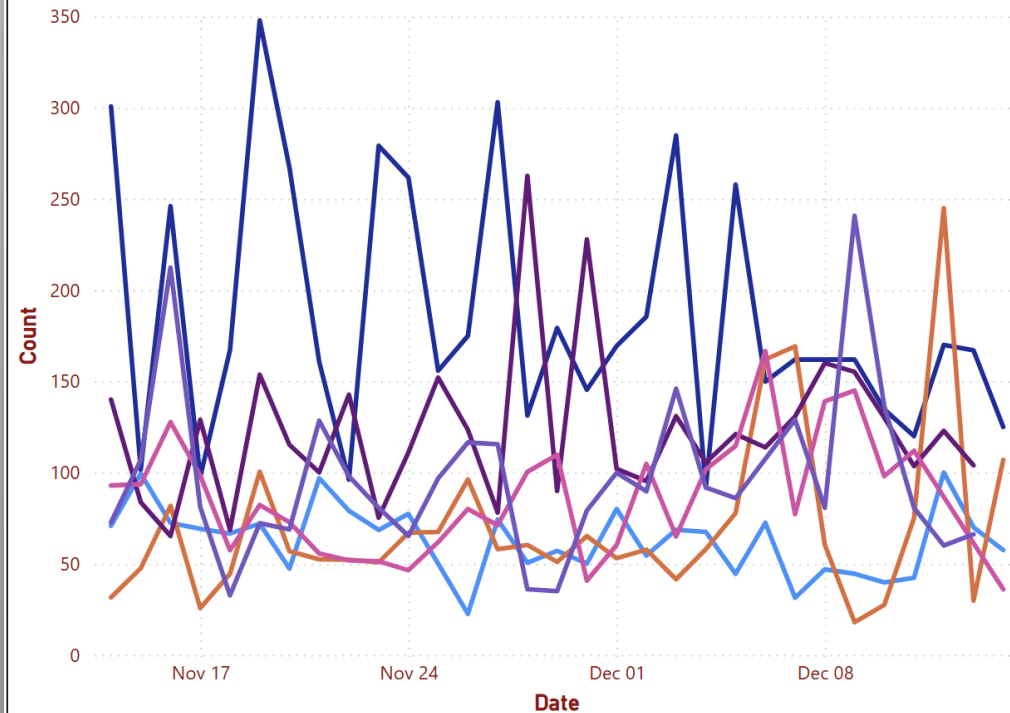
All

Year

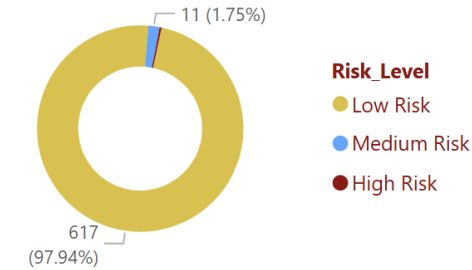
All

Maintenance for the next 30 days

PRODUCTION_LOCATION ● COTA ● MONACO ● MONZA ● ROMA ● SILVERSTONE ● SUZUKA



Count of EQUIPMENT_ID by Risk_Level



EQUIPMENT_ID	LOCATION	NODE_2	NODE_3
300001257	MONZA	BLENDING ROOM	SYRUP AND BLENDING ROOM
300001257	MONZA	BTL_PET_LINE	SYRUP AND BLENDING ROOM
300001257	MONZA	CAN LINE	SYRUP AND BLENDING ROOM
300001257	MONZA	CIP SYSTEMS	SYRUP AND BLENDING ROOM
300001257	MONZA	HEATING SYSTEMS	SYRUP AND BLENDING ROOM
300027048	COTA	BLENDING ROOM	SYRYUP BULK INGREDIENTS
300027048	COTA	BLENDING ROOM	SYRYUP BULK INGREDIENTS
300027057	COTA	CAN LINE	LINE #6-FILLER_ROTARY_BTL_PET
300044438	MONACO	BOTTLE LINE	LINE 3 SMALL PET
300044454	MONACO	BOTTLE LINE	LINE 3 SMALL PET
300045036	MONACO	BOTTLE LINE	LINE 3 SMALL PET
300100602	MONACO	CAN LINE	LINE 1 CAN

FINANCIAL INSIGHTS



\$13.6 Million



\$27 Million

CONCLUSION

MAJOR MAINTENANCE AREAS

- Conveyor and Packaging Line
- Mechanical Repairs and Replacements

CONCLUSION

RECOMMENDATIONS

- Integration of Survival Analysis with IoT
- Updating Risk Model
- Email Triggering to Management
- Inventory Management
- Staff Training

LIMITATIONS

- Absence of Equipment Expiration Date
- Absence of Financial Data
- Absence of Inventory Data
- Absence of Production Data



THANK
YOU