Swire Coca-Cola

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Executive Summary

- What is the problem?
- What are we interested in? - Actual Work in Minutes
- Models in Use
- Business Impacts - Costs and Time
- Next Steps & Business Recommendations

Problem

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Project Objective:

- Develop an unsupervised model to explore which parts of the production process are inefficient.
- Develop a predictive model to Identify processes or parts contributing most to downtime.
- Quantify downtime impact as a cost.

Unsupervised - PCA Analysis

Key Features:

- Description of the order

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- Description of the order
- Equipment being maintained
- Location of the maintenance

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Planned:

- Distinguished by lower sudden instances of maintenance
- Associated with consistent maintenance schedules
- Reduced downtime

Unsupervised - Association Rule Mining

Features:

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- Order Description

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- Maintenance Plan

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- Functional Location

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- Identify most commonly used plans
- Distinguish facilities
- Prepare parts and staff at targeted locations

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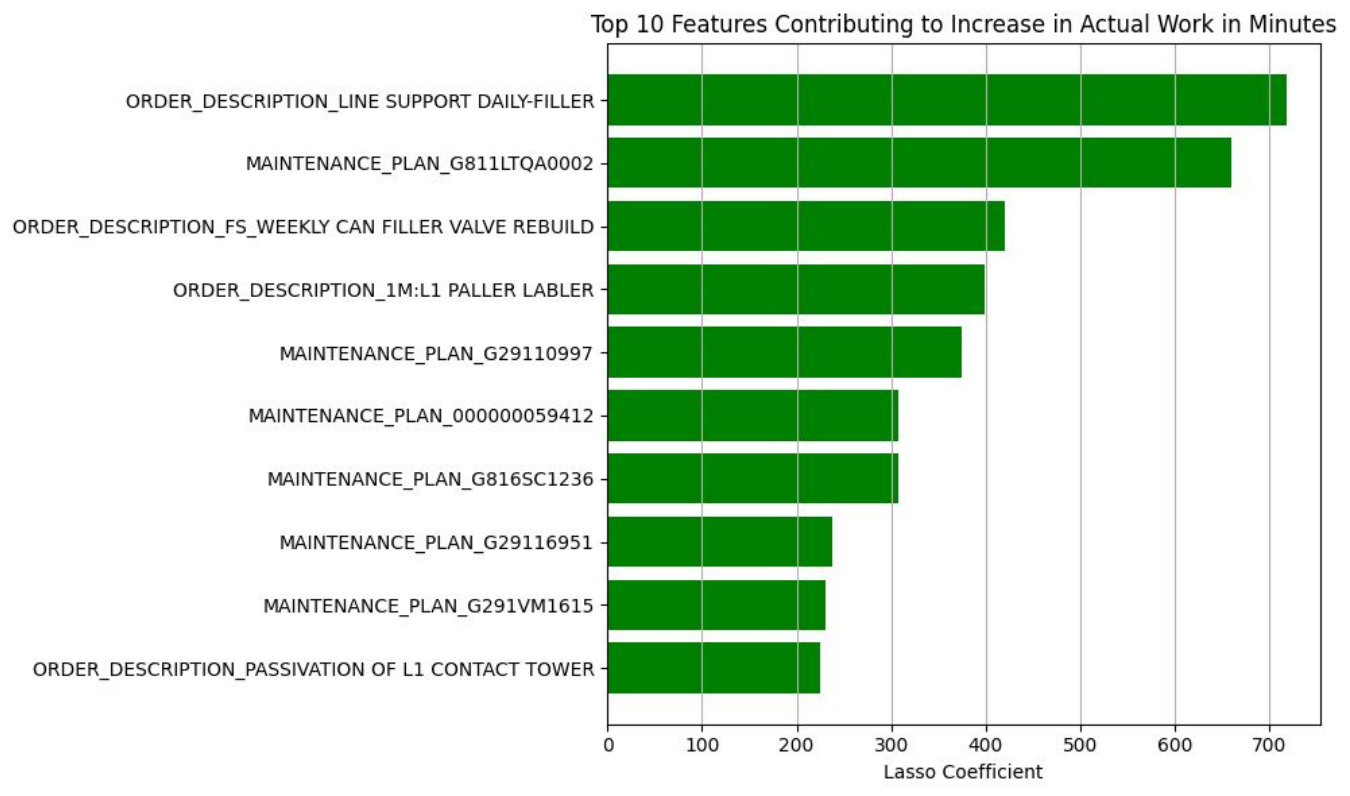
- Highlight largest increases and decreases in downtime

Model Findings



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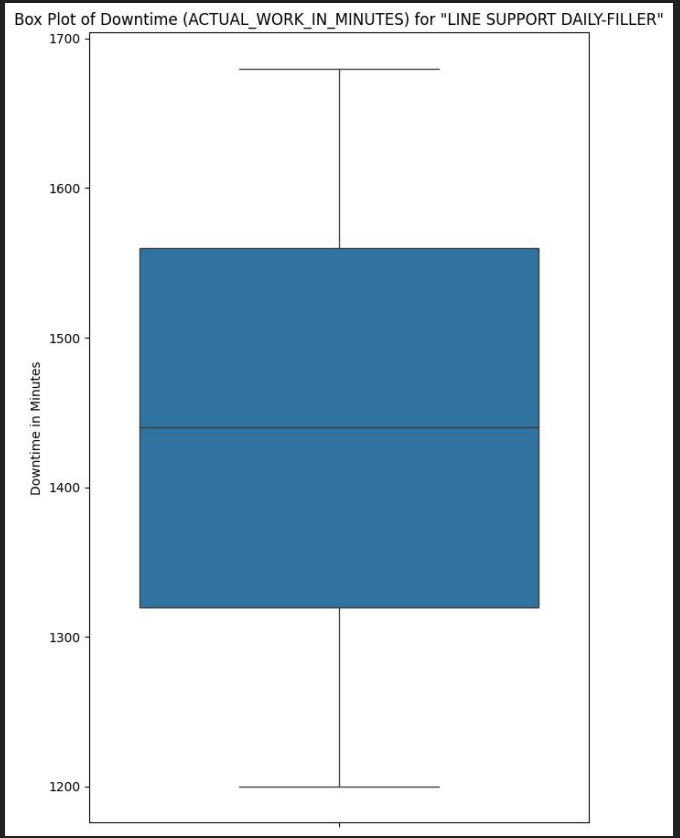
Model Findings

- ORDER Description - Line Support Daily-Filler



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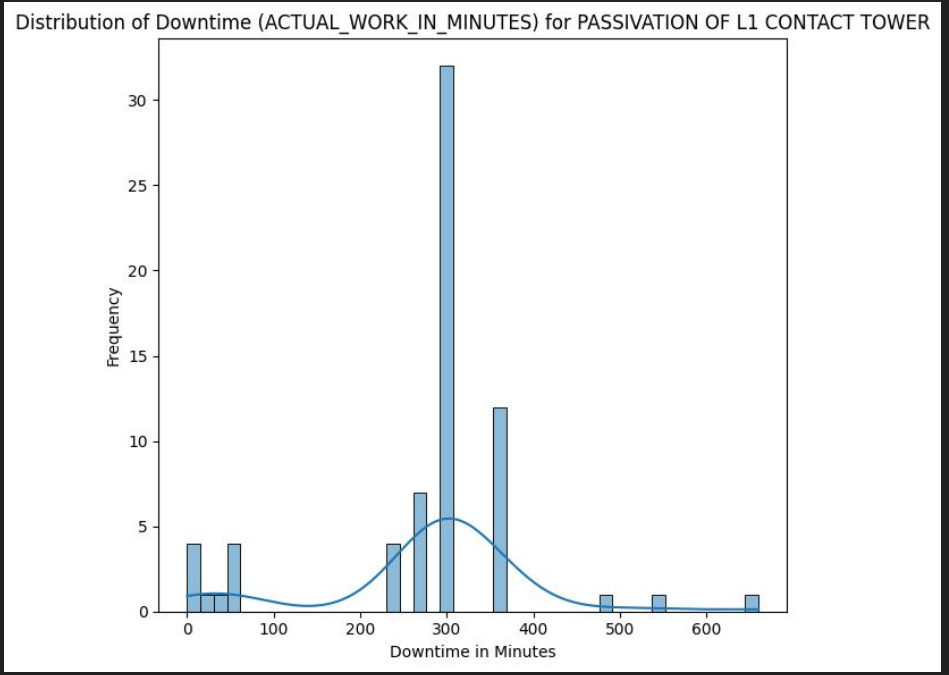
- EQUIPMENT Description - L1 Contact Tower



Model Findings

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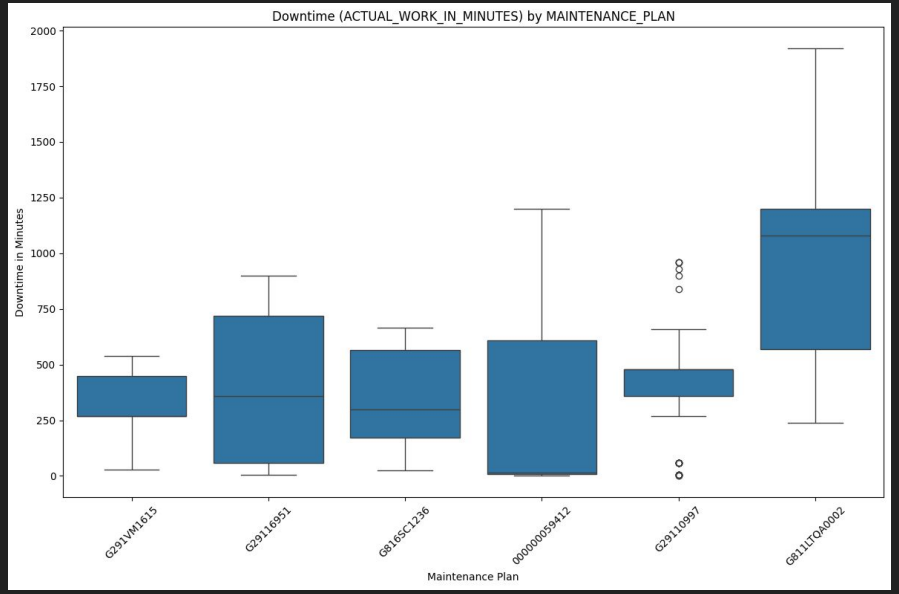
- EQUIPMENT Description - L1 Contact Tower
- Maintenance Plan Items



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- $19.03 * 659.96 = $12,559.04 maintenance cost
- Highest cost predictions should be given highest priority

Recommendations

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- Queuing model to optimize maintenance tasks on dependent lines.
- Training for operators to minimize failures.

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- Complex or manual workflows that extend repair times
- Root cause analysis to address recurring issues.

Questions

Appendix Summary

Model Performance

Model	MSE	RMSE	R2
Baseline	8679.41		
Lasso Regression	5168.63	71.89	0.40
Linear Regression	4567.6	67.58	0.47

Equipment or Process Contributing to Positive Coefficients

- ORDER_DESCRIPTION_LINE SUPPORT DAILY-FILLER: Contributes significantly to unplanned maintenance.

- MAINTENANCE_PLAN_G29160030: Linked to frequent unplanned downtime

- "OUTSOURCED_MAINTENANCE_PLAN_YYY" : Maintenance involving third-party contractors

Equipment or Process Contributing to Negative Coefficients

- "NEW_PALLETIZER_XY2" : Components that are newer or recently upgraded

- INVENTORY_READY : Maintenance tasks what have inventory parts pre-stocked.

- AUTOMATED_FILLER_DIAGNOSTICS : Systems equipped with self-diagnostics that reduce troubleshooting tim