

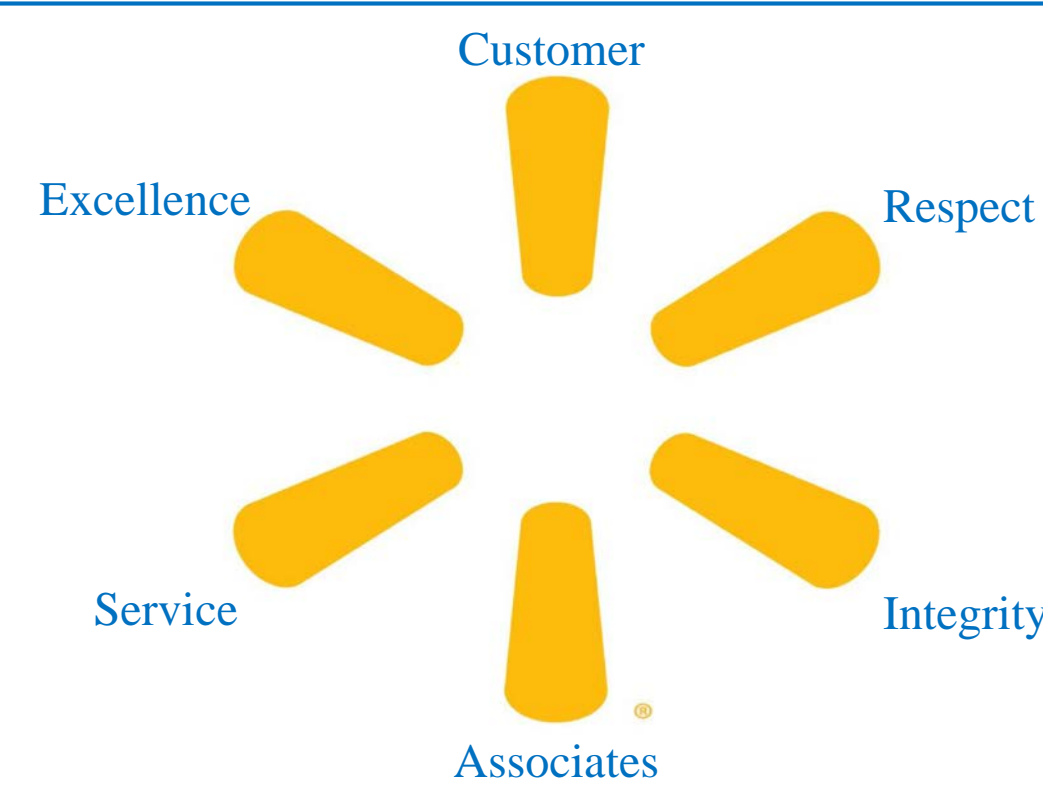
Revamping Workforce Management Processes for Improved Associate Utilization

2nd Annual Industrial Engineering Capstone Symposium

Faculty Advisor:
Gregory Parnell, Ph.D.
Department of Industrial Engineering

Industry Partners:
Jaclyn Johnson, Project Manager, Walmart Supply Chain Engineering
Kyle Kimpel, Sr. Director, Engineering Services at Walmart

Team:
Tony Woods (Project Manager)
Hunter Pauling - Grant Waller - Spencer Kilgore



DC 6094 is one of Walmart's 42 Regional General Merchandise Distribution Centers (DC). This facility is a crucial link in the supply chain, connecting suppliers to over 100 Walmart stores. This facility in particular is recognized as a flagship Distribution Center for Walmart.

Background

Our team was initially informed to explore opportunities within the Receiving department. Our Stakeholder analysis and first-hand observations of the facility directed our attention to Distribution Assembly (DA) Receiving specifically.

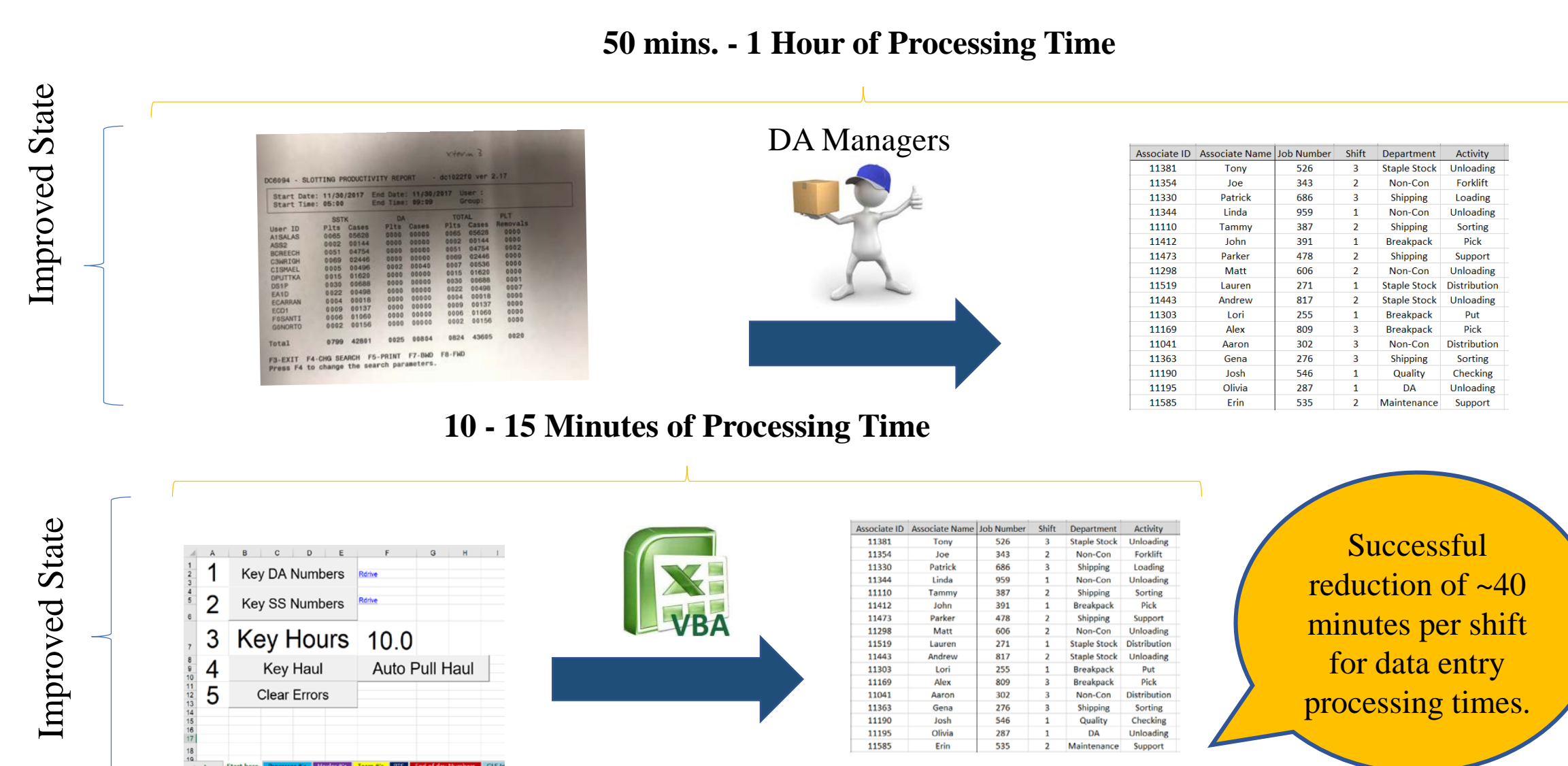
DA Receiving was targeted due to its critical role in DC 6094, because products flowing through DA are expected to flow into the DC then outbound to a store, within 24 hours. This area experiences a high level of volatility in case volume and therefore creates complications in staffing.



Automated Data Transfer

Our team identified the process of manual data entry for DA Receiving daily reports as an area for improvement. This process was tedious and cumbersome for DA manager's and lacked standardization across shifts.

We sought out to simplify, improve, and then standardize the process. This was accomplished through the creation of an automated data transfer tool, and the corresponding training materials in the form of a training video and standard operating document.

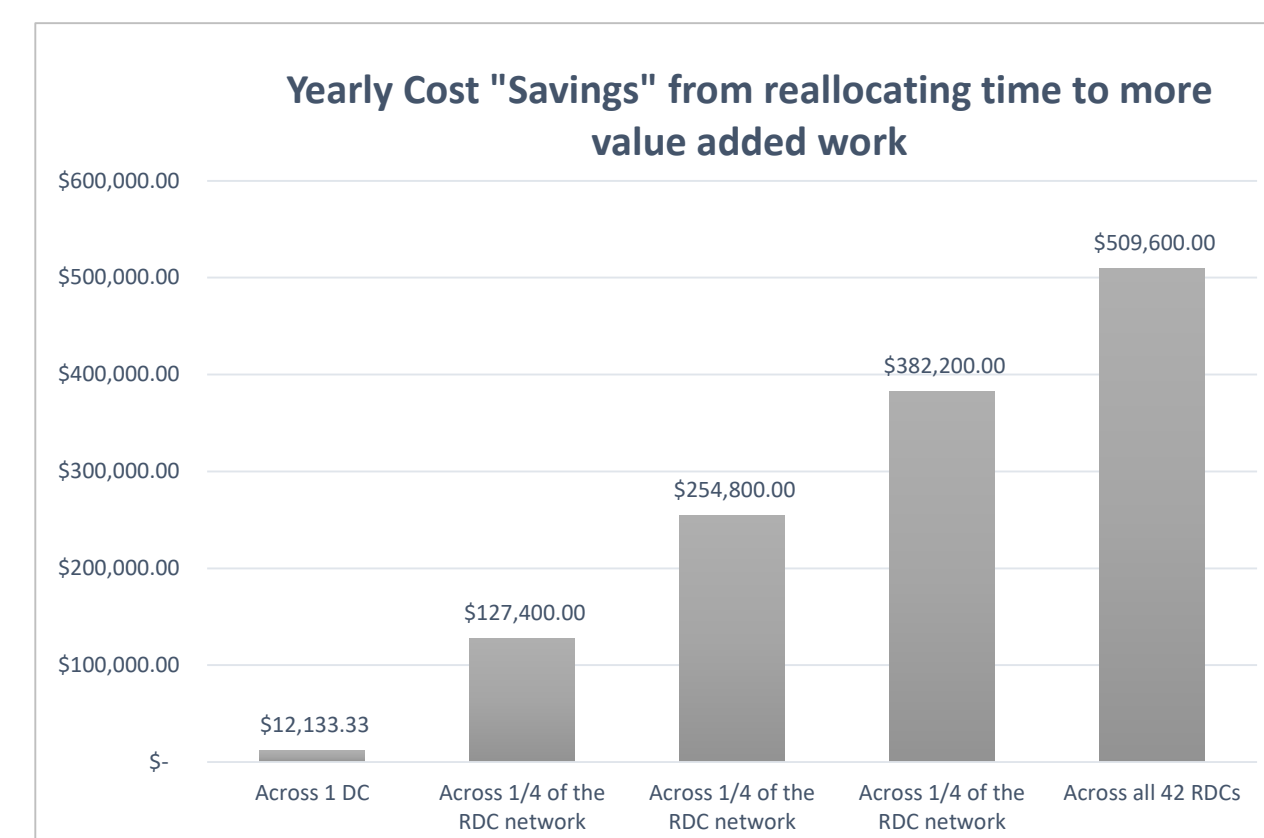


Auto PTS Report Tutorial

This process has been implemented in DC 6094, and has the opportunity to spread to other General Merchandise DC's thanks, in part, to the standardized approach.

Feedback has been positive from managers that have begun to incorporate this process.

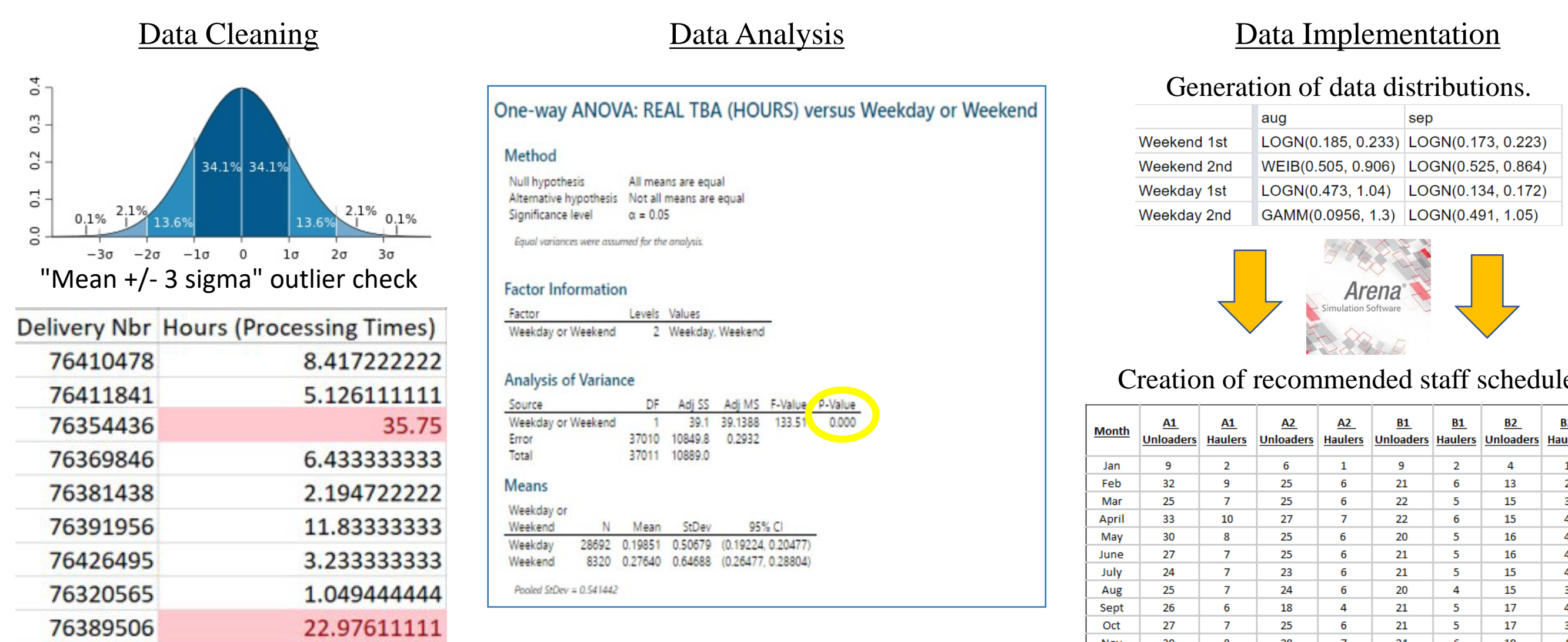
"We love it. It saves us substantial time and is so much simpler." - 1st Shift DA Manager on the improved process



Simulation Staffing Model

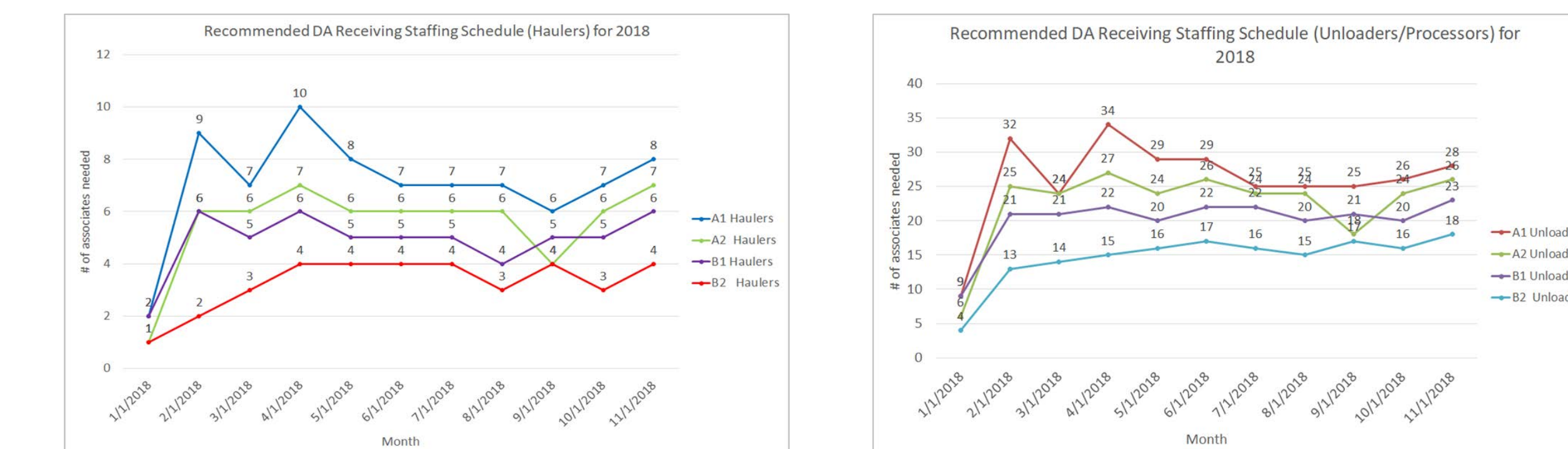
Initial Stakeholder and Preliminary analyses provided indications that proper staffing was vital to efficient workforce management. Our team and Industry Partner saw this as an opportunity to improve overall staffing accuracy. Improvements to staffing accuracies would improve the efficiency of the DC, as well as reduce incurred operating costs. Our team saw it fitting to utilize our simulation skills within Arena software, in order to create a recommended staffing schedule for DA Receiving at DC 6094.

This process required extensive data analysis, which included the inception of a required data set, cleaning and interpretation of this set, and then creation and implementation of data distributions.



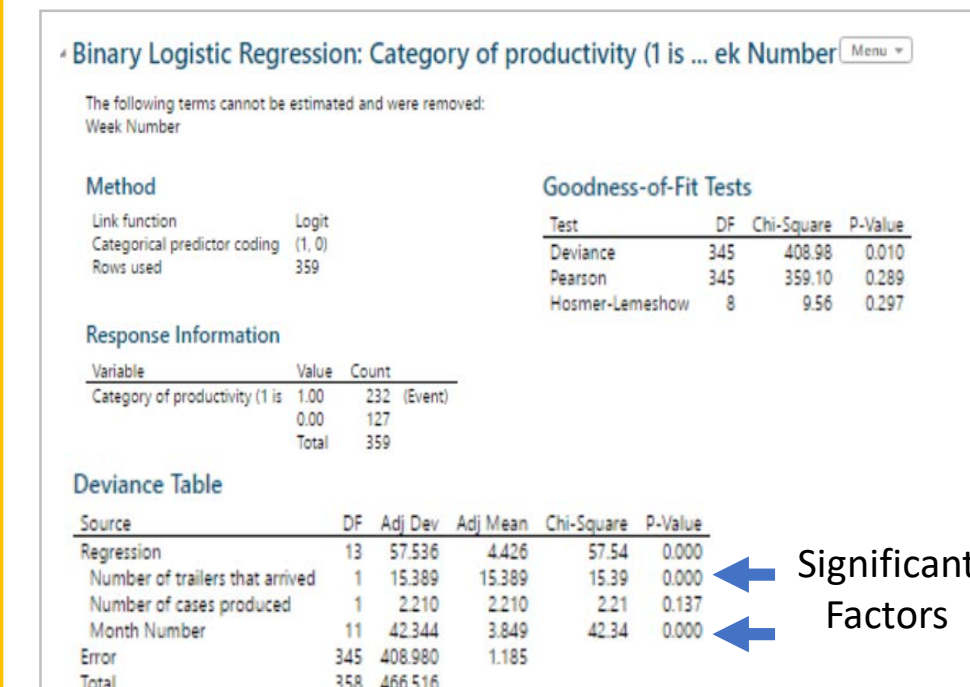
The model was validated and verified by comparisons with historical data, corresponding forecast calculations, and managerial confirmation. The outputs of the model then enabled our team to create a recommended staffing schedule and corresponding decision support tool, which will allow our industry partner to utilize the foundation set by this simulation model for years to come.

Initial calculations estimate a possible \$300,000 - \$600,000 in annual cost savings for DC 6094.

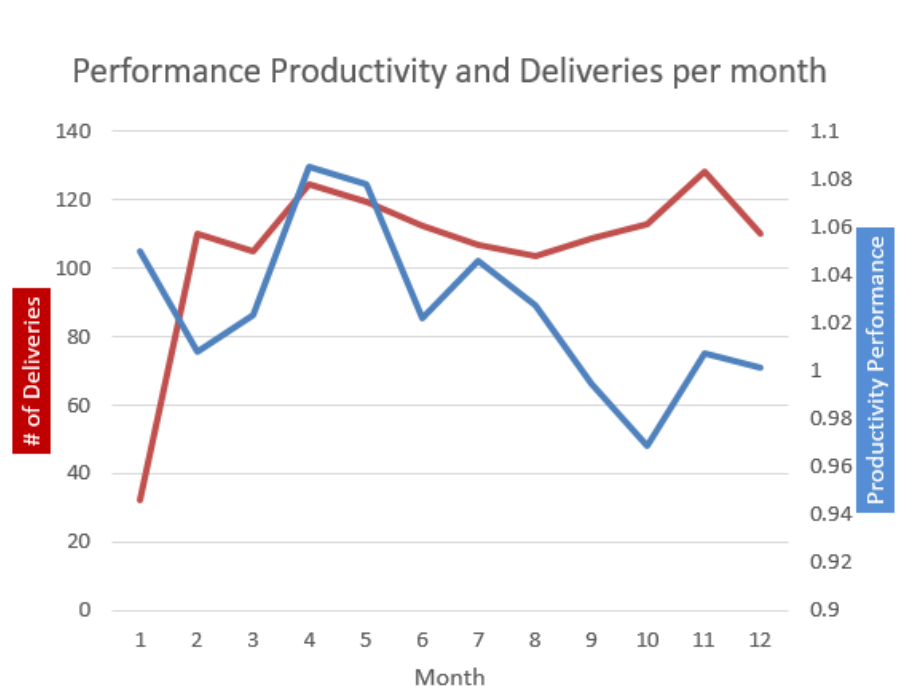


Productivity and Retention Analysis

Productivity and Retention numbers concluded our team's overall analysis. In an effort to highlight the key factors Walmart should be aware of for effective workforce management, our team conducted further data analysis. Our team acquired, cleaned, and analyzed data both productivity and retention metrics.



Statistically significant factors of productivity were identified as Number of Trailer Arrivals per month, and Month Number. These were found by a binary logistic regression model, and led our team to utilize Stakeholder Analysis to highlight other notable factors and generate recommendations.



- Software Implementation
 - Poorly loaded freight
 - Call-ins or PTO
 - Losing multiple associates all at once
- Ensure smooth transitions (ample training resources and support for associates)
 - Work with vendors to ensure freight is loaded freight us loaded appropriately
 - Ensure balanced PTO schedules and increase cross-training.
 - Work with HR and follow the recommendations from the retention/resignation analysis

A retention analysis was performed in an effort to identify factors influential to an associates decision to discontinue his, or her, career at Walmart. Our data analysis highlighted DA with the highest number of resignations for the DC. Within DA, the 2nd shift Unloader job code held the highest rate of turnover. Recommendations for improved retention rates garnered a projected \$16,500 - \$33,000 in reduced costs.

