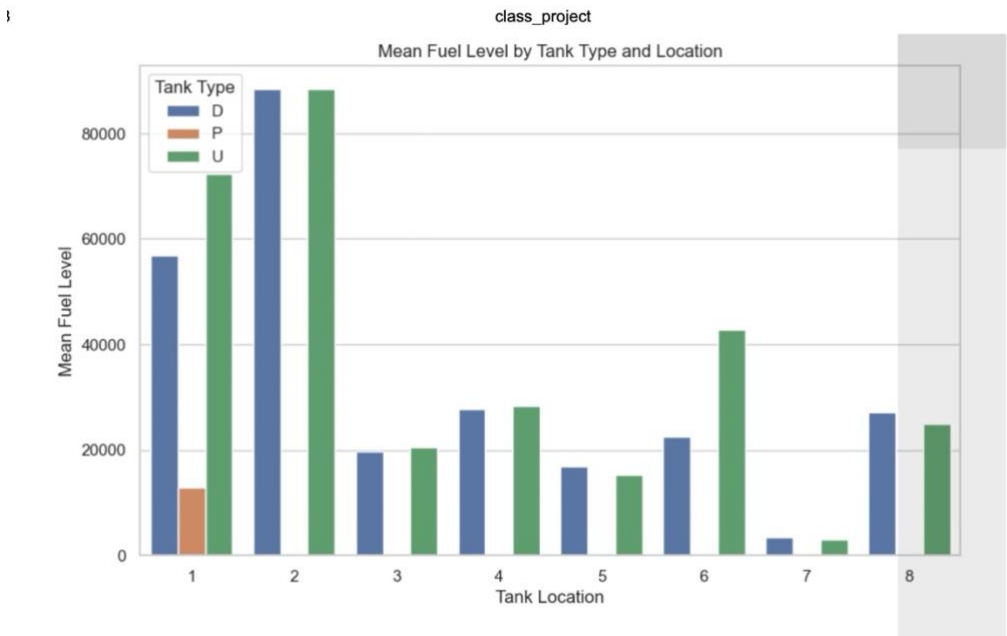


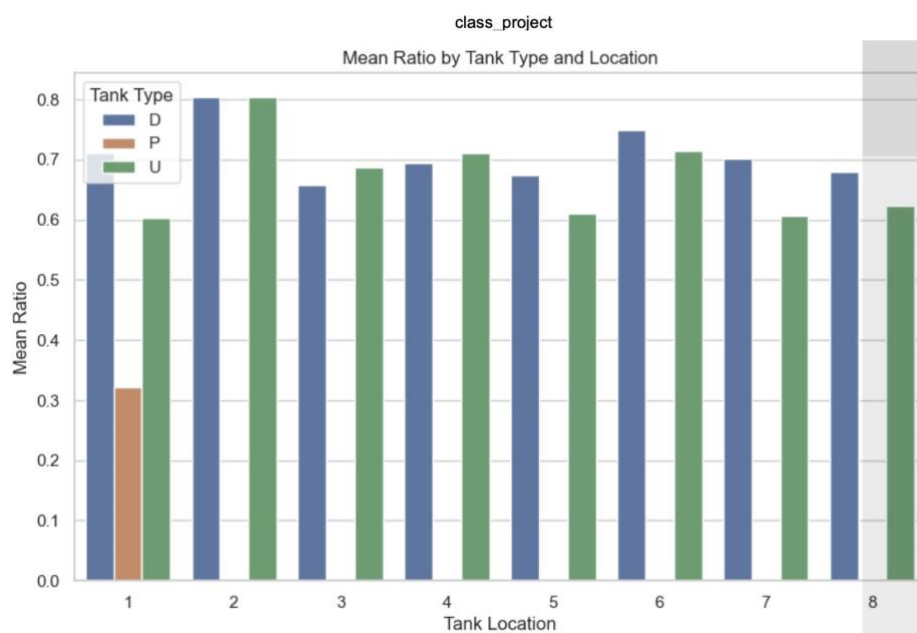
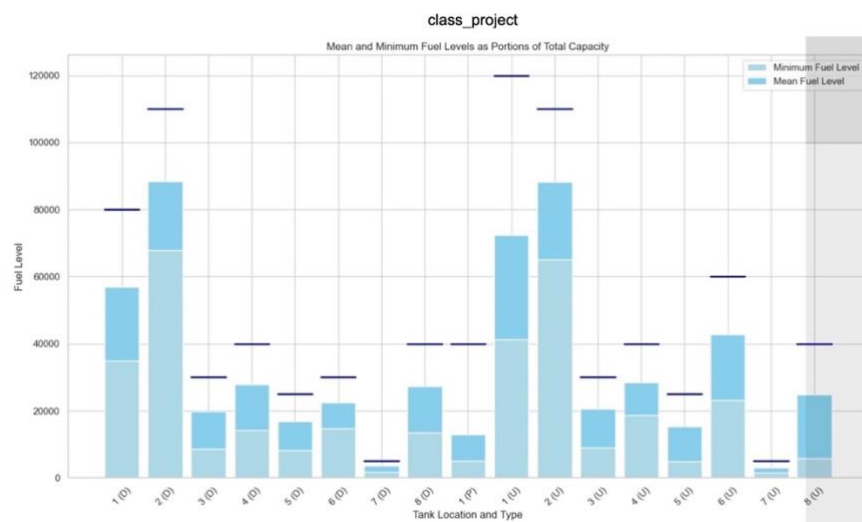
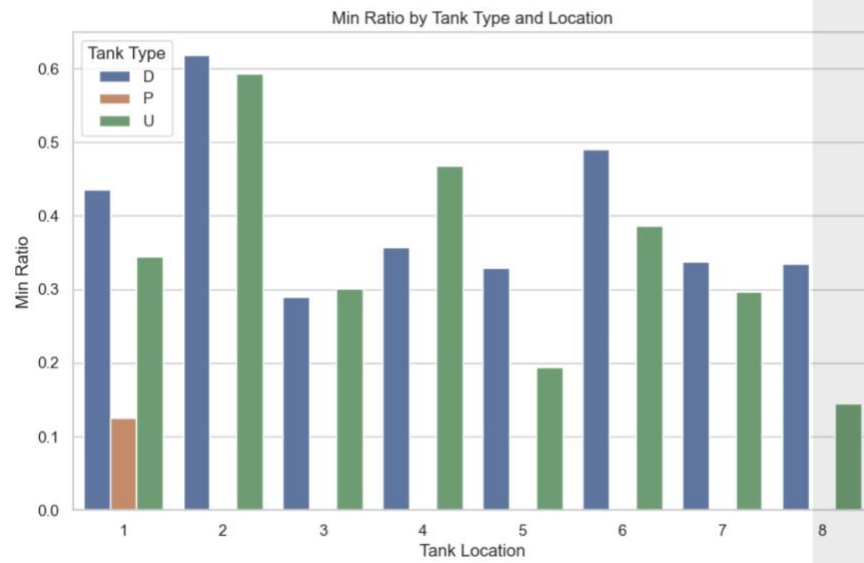
Executive Summary

Our comprehensive assessment of fuel inventory management practices across multiple gas stations aimed to pinpoint cost-reduction opportunities without compromising the reliability of supply, hence averting stockouts. By meticulously examining data on fuel levels, procurement, and supply schedules, we unearthed recurring inefficiencies and patterns within existing methodologies. We propose a strategic shift to dynamic replenishment, recommend evaluating tank capacity expansion at select outlets, and suggest a more calculated approach to capitalizing on bulk purchasing discounts. The implementation of these strategies is projected to deliver substantial cost benefits and bolster operational effectiveness.

Inventory Management Insights

- 1. Assessment of Current Practices: Our scrutiny has revealed a common trend among stations to operate with fuel levels significantly below tank capacity, thus foregoing the economic benefits of bulk purchase discounts. Additionally, the fluctuating daily variations in fuel levels indicate an absence of a consistent inventory strategy, which escalates the risk of either stockouts or excess inventory. This analysis underscores the necessity for a refined approach to managing inventory levels, ensuring optimal balance to capitalize on cost-saving opportunities while maintaining an uninterrupted fuel supply.





These sets of bar charts were generated to visualize the average fuel levels against the total capacity for each tank, highlighting utilization rates and identifying opportunities for optimization.

2. **Dynamic Replenishment Strategy:** We propose a dynamic inventory replenishment policy based on daily fuel consumption patterns, projected demand, and delivery lead times. This strategy involves maintaining a safety stock level to accommodate variations in daily sales and replenishing inventory to maximize bulk purchase discounts without exceeding storage capacity.
3. **Optimizing for Bulk Purchase Discounts:** Our findings indicate that stations could significantly reduce fuel costs by optimizing order quantities to take full advantage of available bulk purchasing discounts. By adjusting order sizes to fall within higher discount brackets, stations can achieve substantial savings over time.

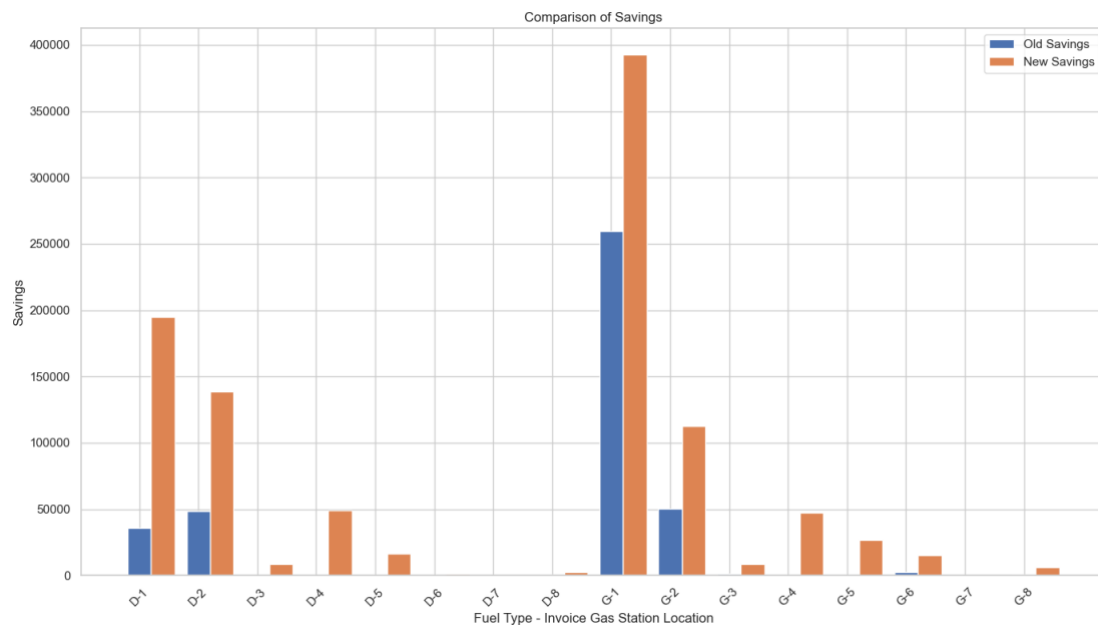
Recommendations for Tank Capacity Expansion

1. **Identifying Candidates for Expansion:** Stations with consistently high fuel turnover and those frequently hitting their tank capacity limits should be considered for tank capacity expansion. Specifically, stations 1 and 2, given their high demand and throughput, would benefit from additional storage capacity, allowing them to better leverage bulk discount opportunities and reduce the risk of stockouts during peak demand periods.
2. **Cost-Benefit Analysis:** Before proceeding with tank expansions, a detailed cost-benefit analysis is recommended to assess the investment's feasibility. This analysis should account for the upfront cost of additional tanks, potential land use issues, and the long-term savings from improved inventory management and purchasing efficiencies.

Quantifying Potential Savings

1. **Savings from Improved Purchasing Strategies:** By aligning purchase quantities with discount thresholds and maintaining optimal inventory levels, we estimate a potential cost saving of approximately 2% on fuel purchases across the analyzed stations and an overall savings margin that is 1.5 times the original. This estimate assumes fully exploiting bulk purchase discounts and reducing the frequency of emergency, low-volume purchases.
2. **Impact of Tank Capacity Expansion:** For stations recommended for tank expansion, additional savings could be realized by further reducing purchase costs and minimizing the likelihood of stockouts during high-demand periods.

The exact savings would depend on the scale of the expansion and the subsequent adjustments to inventory management practices.



Conclusion

Implementing a more sophisticated inventory management system, coupled with strategic investments in storage capacity where warranted, can significantly reduce fuel purchase costs for the analyzed gas stations. By adopting the recommended strategies, stations can enhance their operational efficiency, improve service levels, and achieve considerable cost savings. Further analysis and pilot testing of these recommendations are advised to refine the approach and quantify the benefits accurately.