From Orders to Opportunities: Strategic Insights for Miami-Dade County Suppliers

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Agenda

-Introducing the objective
-The methodology of attaining the objective
-Analysis and results
-Case Study
-Recommendations
-Conclusion
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INTRODUCTION

Objective

Identifying opportunities for Miami-Dade County to utilize its significant purchasing power to negotiate more favorable agreements with its suppliers.

Purchasing Power

In 2024, Miami-Dade County allocated more than $4 Billion in expenses. Given such significant purchasing power, there must be opportunities to strategically leverage this financial capacity.

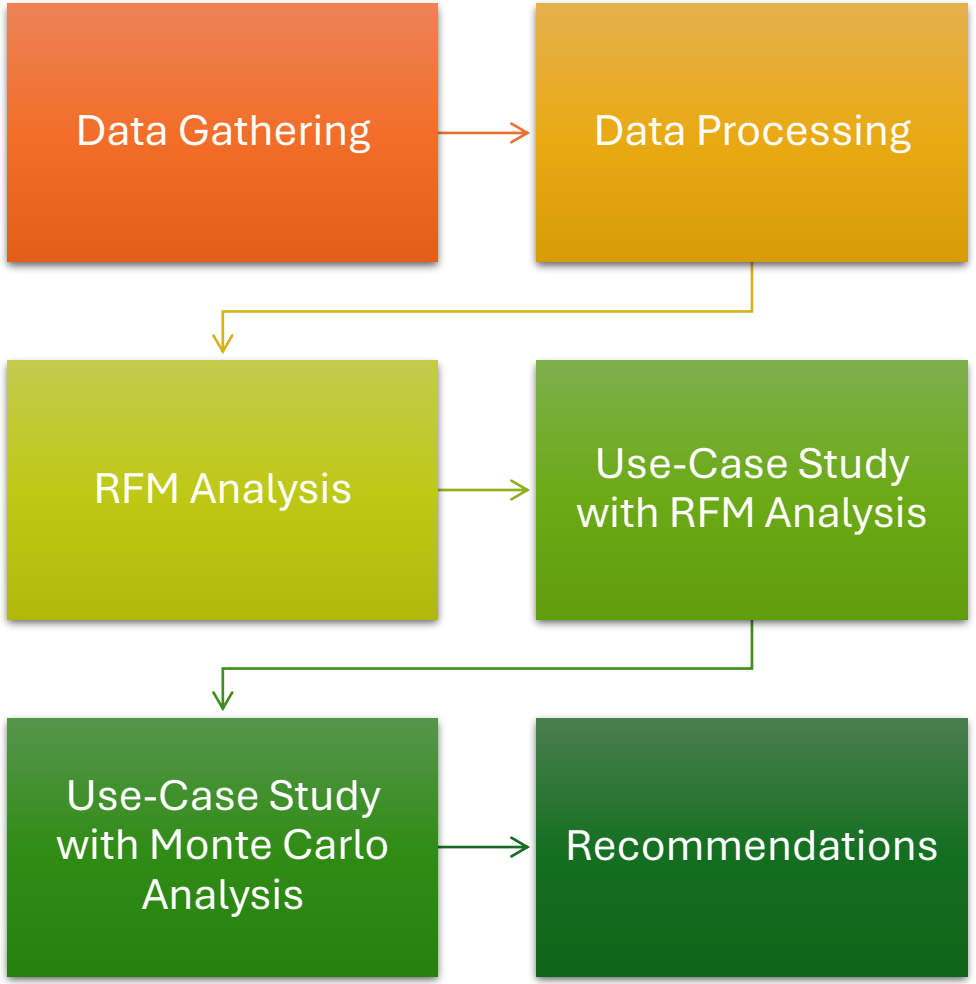
2024 Purchase Order Summary

- 43,058 total transactions
- 31,069 unique items
- 1,383 various suppliers
- Total expenditure of $4,288,751,653.82


METHODOLOGY

How do we identify these potential opportunities?

We utilized the 2024 Purchase Order dataset from Miami-Dade County. After cleaning and processing the data, we conducted an RFM Analysis, which provided insights that facilitated a deeper exploration through a use-case study. Subsequently, we concluded our evaluation with a Monte Carlo Analysis. This process enabled us to formulate recommendations based on our discoveries.



What is an RFM Analysis?

An RFM Analysis evaluates transactions based on three dimensions: Recency (how recently a transaction occurred), Frequency (how often transactions take place), and Monetary Value (the total monetary amount of transactions). It helps segment data to identify patterns and prioritize strategies.

What is a Monte Carlo Analysis?

A Mote Carlo Analysis is a simulation technique employed to assess the likelihood of various outcomes in processes characterized by uncertainty. By conducting multiple random simulations, it evaluates how different inputs affect the results, offering a spectrum of potential outcomes that assist in risk evaluation and informed decision-making.

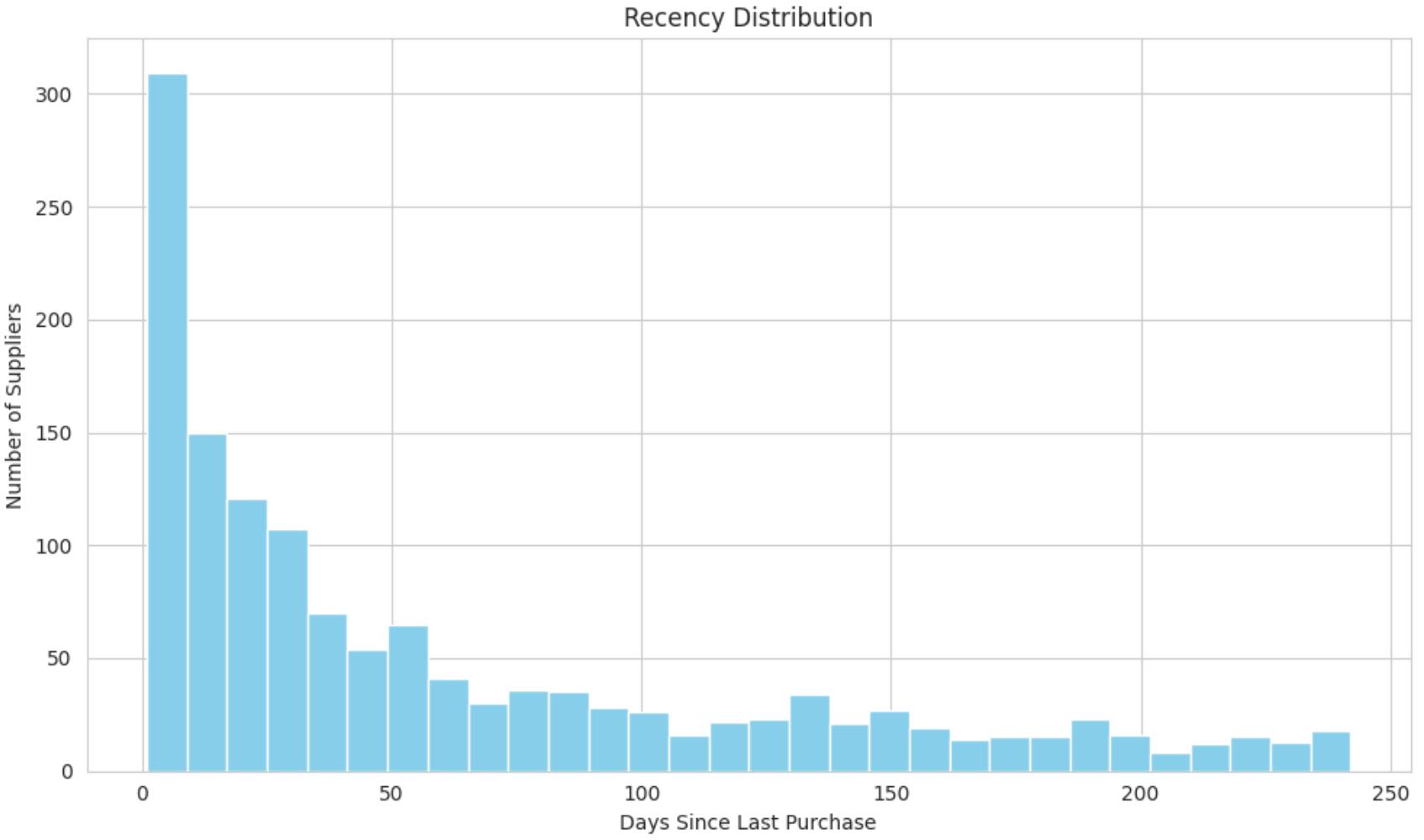
In what ways will these methods be utilized to achieve our goal?

We employed RFM analysis to assess the recency, frequency, and monetary value of purchases made by Miami-Dade County. This analysis allowed us to identify the suppliers with whom Miami-Dade County engages most frequently and to understand the nature of these relationships based on expenditure amounts, frequency of transactions, and recency. The Monte Carlo Analysis provides an estimation of Miami-Dade County’s projected value to suppliers by forecasting its spending in 2025.

ANALYSIS

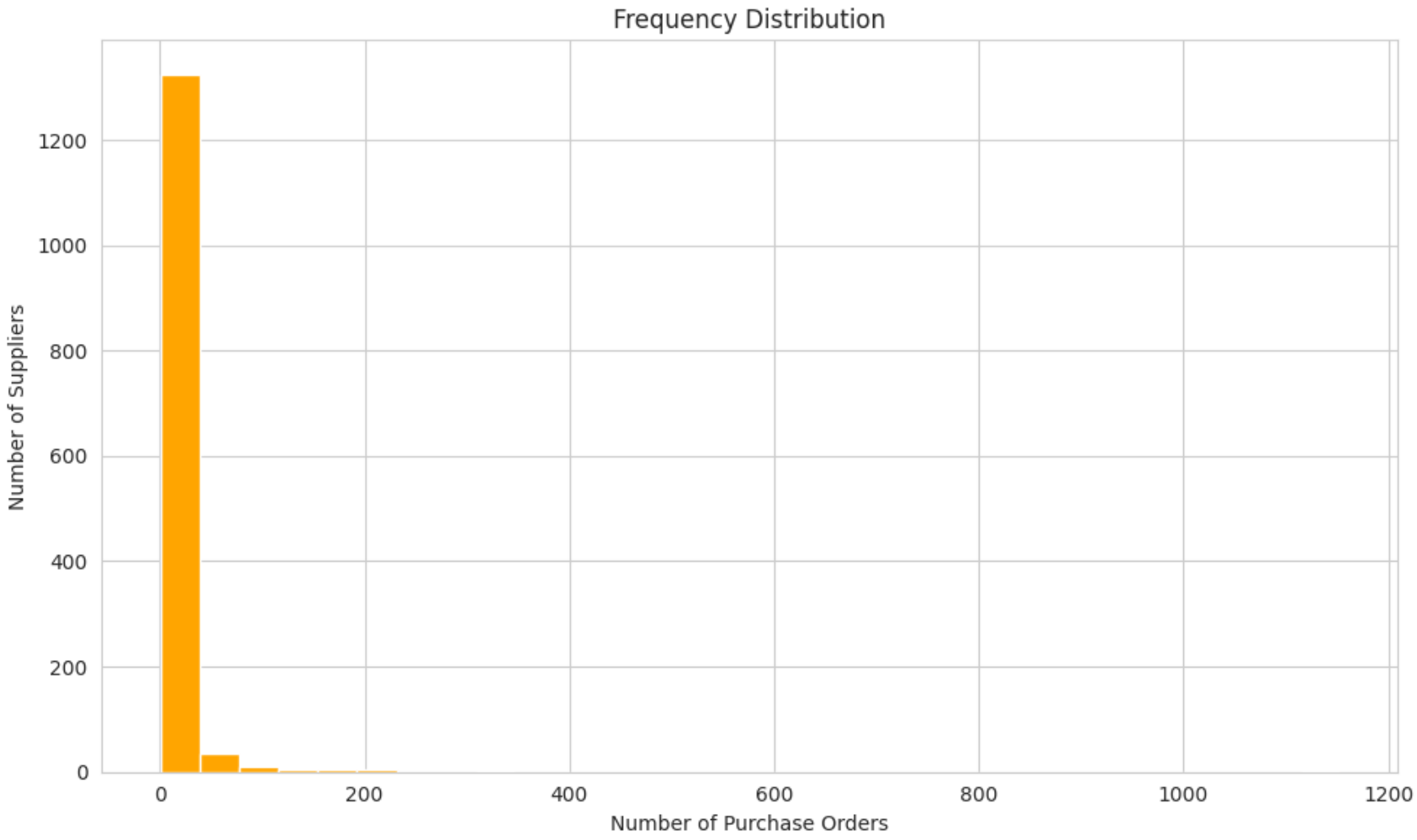
Recency

The Recency Distribution Chart indicates a downward trend, showing that the majority of purchases have a low recency value. This suggests that Miami-Dade County has acquired a significant quantity of items in the recent past. The low recency value implies that we may possess some negotiating power regarding recency when engaging with suppliers.



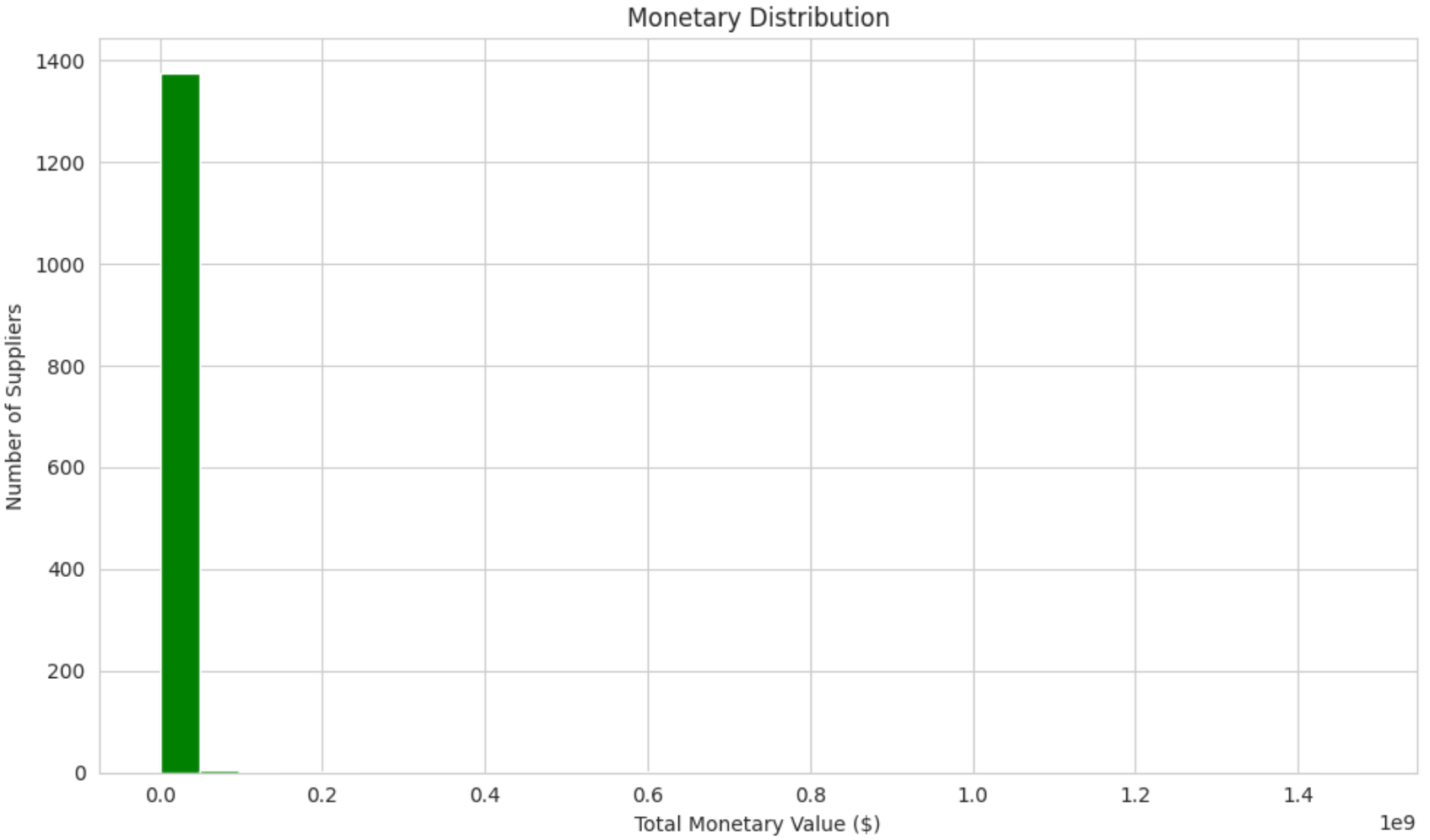
Frequency

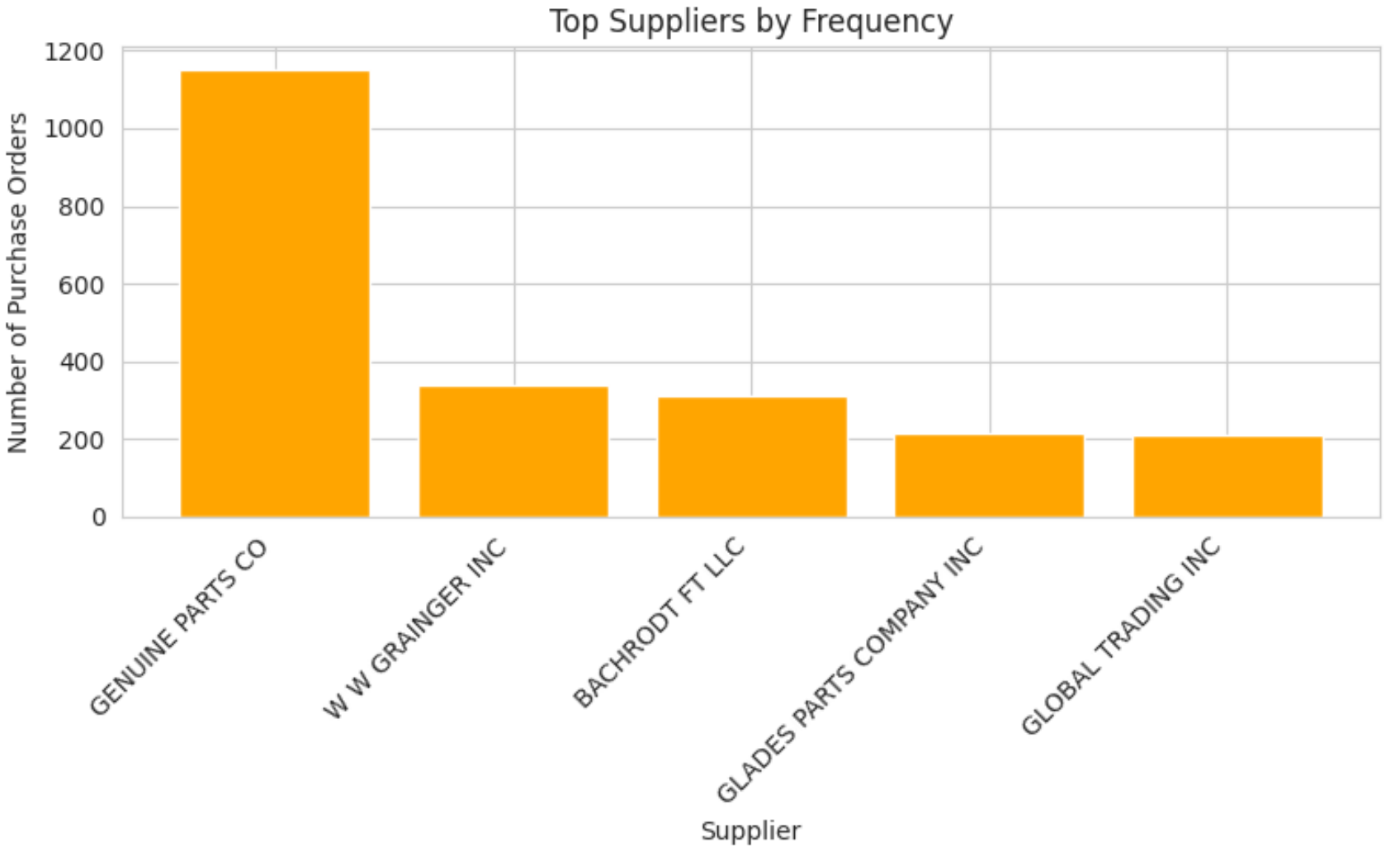
Based on the Frequency Distribution Chart, a significant volume of purchases is directed towards the same suppliers. This indicates potential leverage in frequency when engaging in negotiations with suppliers.



Monetary

According to the Monetary Distribution Chart, it seems that most suppliers are being compensated at roughly equal levels. This suggests a potential avenue to enhance cost efficiency during negotiations with these suppliers.





Supplier Evaluation

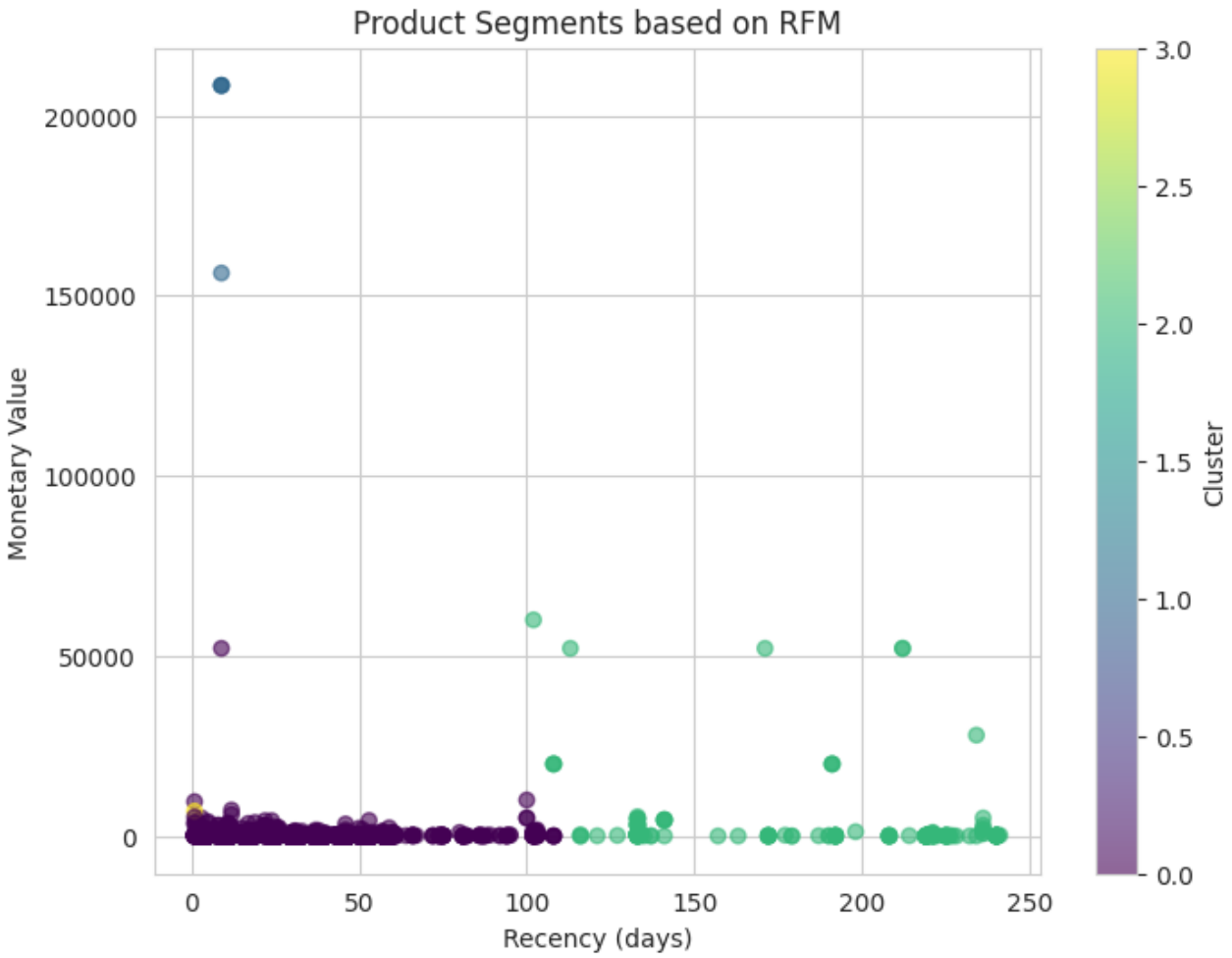
Following our RFM Analysis, we identified the primary suppliers from whom Miami-Dade County made the most frequent purchases, those with the highest monetary value, and the suppliers with the most recent transactions. To illustrate how this data can be beneficial for business negotiations, we chose to evaluate Genuine Parts Co., the supplier with the highest purchase frequency, as a case study.

CASE STUDY

Genuine Parts Co

We refined the data to display only those items associated with the supplier Genuine Parts Co. Following this filtration, it was revealed that Miami-Dade County expended $876,747.18, acquiring 2,276 distinct items from Genuine Parts Co in 2024.

Segmentation



We employed a clustering algorithm to categorize products from Genuine Parts Co into one of four distinct groups:

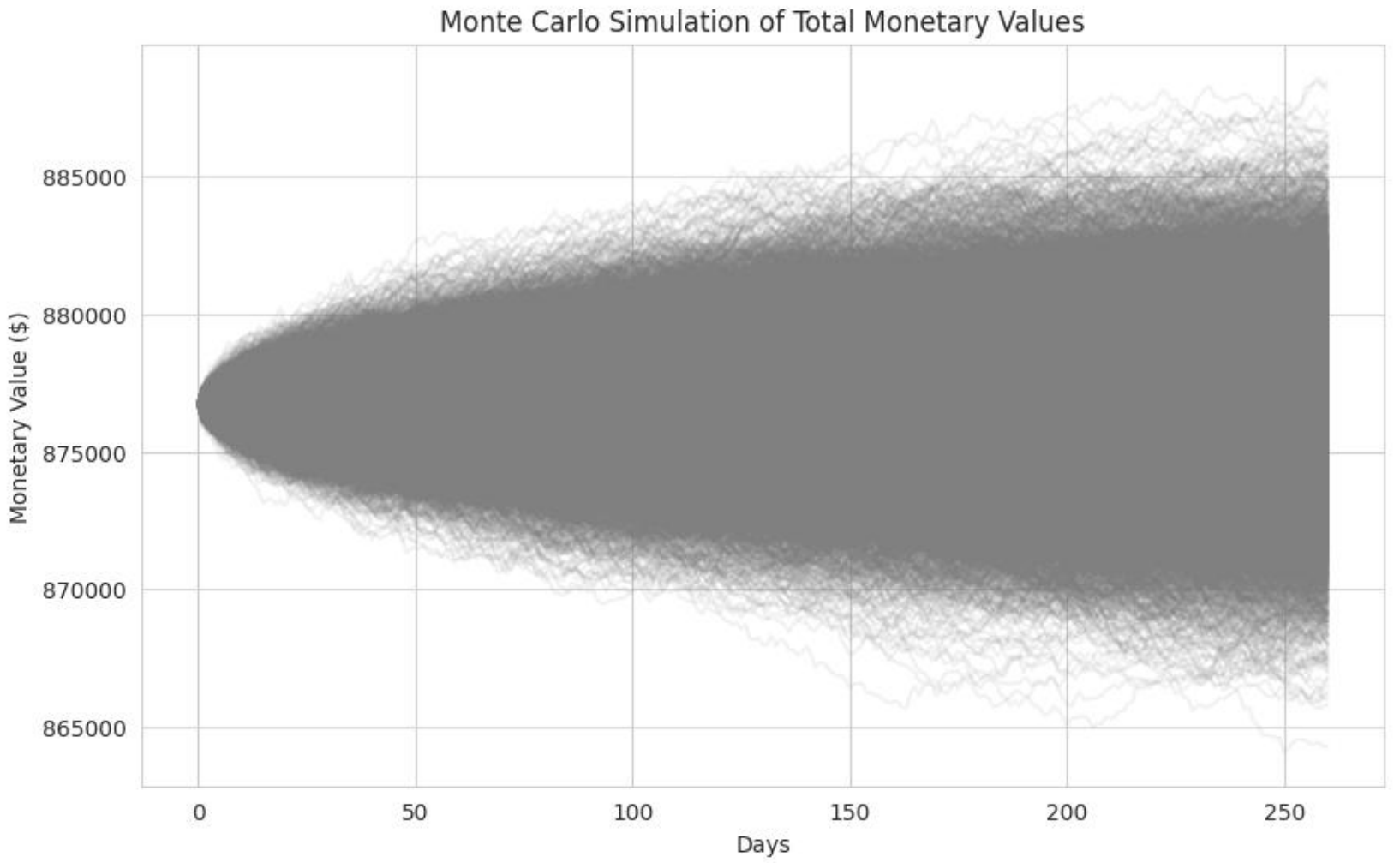
- **Cluster 0 (Purple):** This group contains a total of 2,132 items, characterized by a low monetary value per item overall, yet these items are frequently and recently purchased.
- **Cluster 1 (Blue):** This group includes 4 items, representing unusually large purchases that are not made very often.
- **Cluster 2 (Green):** This category has 148 items, which are infrequently purchased and have the second lowest monetary value among the four clusters.
- **Cluster 3 (Yellow):** This group consists of a single core item, which has been purchased 66 times and was acquired recently.

Segmentation Conclusion

Clusters 0 and 3 demonstrate the highest potential, with Cluster 0 exhibiting a total monetary value of $572,734.08 and Cluster 3 showing a total of $6,911.73. The items within these clusters are not only frequently purchased but have also been acquired recently, making them ideal candidates for negotiation discussions with the supplier. Although insights from a field expert would enhance further evaluation, we will include these two clusters in our recommendations for negotiation strategies moving forward.

Monte Carlo Analysis

This Monte Carlo Analysis aims to forecast next year's expenditures to inform suppliers about the potential financial commitments of Miami-Dade County should they maintain their business relationship. It also highlights the potential losses suppliers might face if Miami-Dade County decides to shift their business elsewhere. In 2024, Miami-Dade County allocated $876,747.18 to Genuine Parts Co. Using this figure as the starting point, we conducted 10,000 simulations over a business year (260 days). The resulting expected value was $875,258.86, with a 95% confidence interval indicating that any variation from this expected value would likely fall between $872,690.69 and $877,003.65.



RECOMMENDATIONS

Overall Discounted Rates

- Miami-Dade County is eligible to seek an overall discount on the anticipated expenditure of $875,258.86 with Genuine Parts Co in 2025.
- Miami-Dade County has the option to request that discounts be structured in tiers. For example, a 10% discount will be applied upon exceeding the $100k mark, followed by a 5% discount once the $300k threshold is reached, and so on.

Segmented Discounted Rates

- Cluster 0 holds a total monetary value of $572,734.08. Given its substantial value, it may be feasible to apply an overall discount to all items within this cluster.
- Cluster 3 has a monetary value of $6,911.73, attributed to a single core item that was acquired 66 times in 2024. This item could be a candidate for a discount, considering its frequent purchases.

Bargaining within Segmentation

Negotiate for items within Cluster 0 that exhibit a strong combination of frequency and recency. For example, if an item's frequency is 12 or greater (indicating it has been bought 12 times in the past year) and has a recency threshold of 30 days or fewer (signifying that it has been at least 30 days since the last purchase), we can infer that these items are likely being bought on a monthly basis. With this data, Miami-Dade County can advocate for monthly discounts on these products. In this instance, we identified four items that fulfilled these criteria: air filters ($9,552.18), oil filters ($3,770.41), fuel filters ($5,271.88), and 7565 ($7,231.12), totaling $25,825.59 in potential eligible discounts.


CONCLUSION

In summary, this comprehensive analysis can be applied to any supplier within the dataset and serves as a valuable negotiating tool for securing improved pricing. Achieving better pricing could lead to Miami-Dade County saving potentially hundreds of thousands of dollars, or even more based on negotiations, which can then be redirected towards other county initiatives. Furthermore, this data may provide leverage in discussions with rival suppliers to obtain more favorable pricing if current suppliers are unwilling to negotiate.

APPENDIX

Further Analysis

- Access to completed datasets from prior years can enhance granularity, enabling more precise RFM and Monte Carlo predictions.
- Competitor price sheets would also be beneficial during negotiations.
- Any contracts or agreements currently in use with suppliers.
- Incorporating categorical data could further bolster the negotiation strategy.
- Collaborating with specialists in each supplier domain or developing a detailed guide on supplier business relations for various sectors would also prove advantageous.

Dataset Link: https://gis-mdc.opendata.arcgis.com/datasets/673f9be756ce4d2a95039bf16d3a3f7d_0/explore