

Group 7

SCCU

CAPSTONE PROJECT

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Our analysis handles these problems

Swire Coca-Cola United States (SCCU) **aims to enhance logistics efficiency** by transitioning low-volume customers to an Alternate Route to Market (ARTM).

Currently, customers selling below an annual threshold of 400 gallons are assigned to ARTM instead of the DDR(direct delivery route). However, SCCU seeks to determine the **optimal volume threshold** that maximizes operational efficiency and revenue.

Our analysis will meet to these missions

- Identifying which customers should be included in **ARTM** versus **DDR**.
- Determining the optimal volume threshold to improve logistical efficiency.



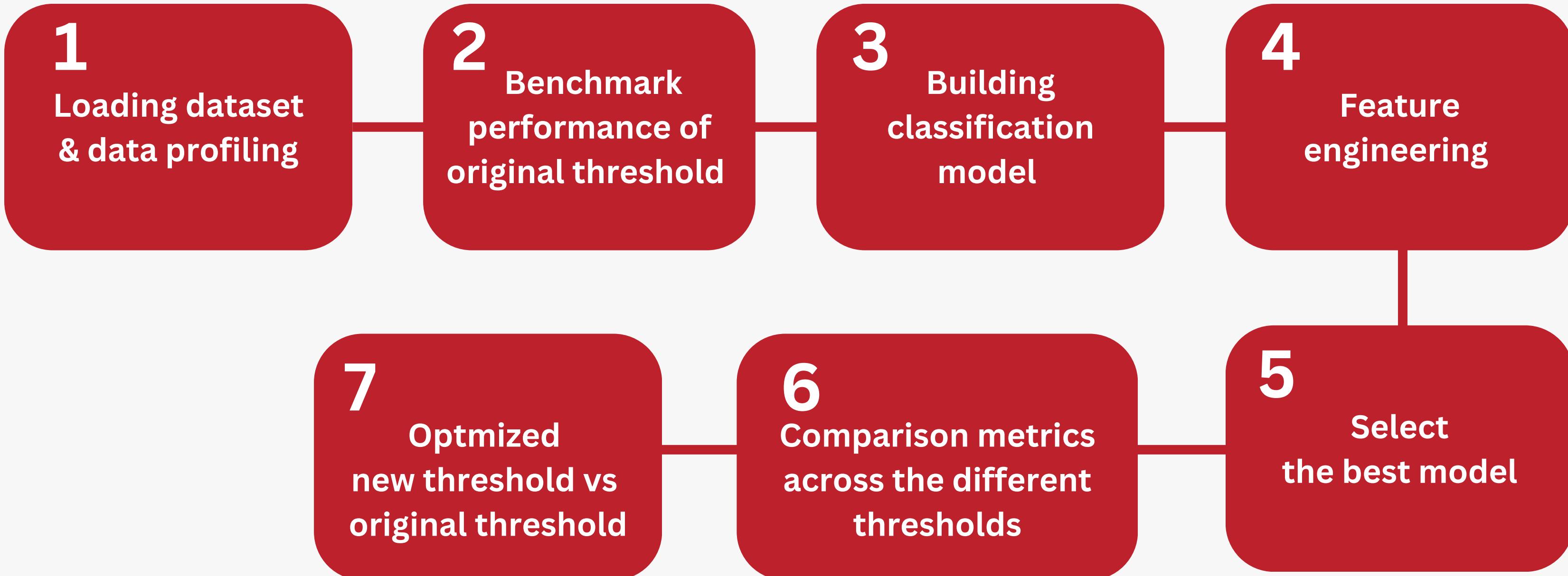
The outlined problem for clear and actionable answers

1. What **factors** differentiate customers above the volume threshold from those below it?
2. How can SCCU **leverage historical sales data** and **customer characteristics** to predict ARTM customers with growth potential?
3. How can these insights be **incorporated into routing strategies** to drive long-term growth while maintaining efficiency?
4. What **strategies can accelerate volume and share growth** among high-potential, growth-ready customers?



ANALYTICAL PIPELINE

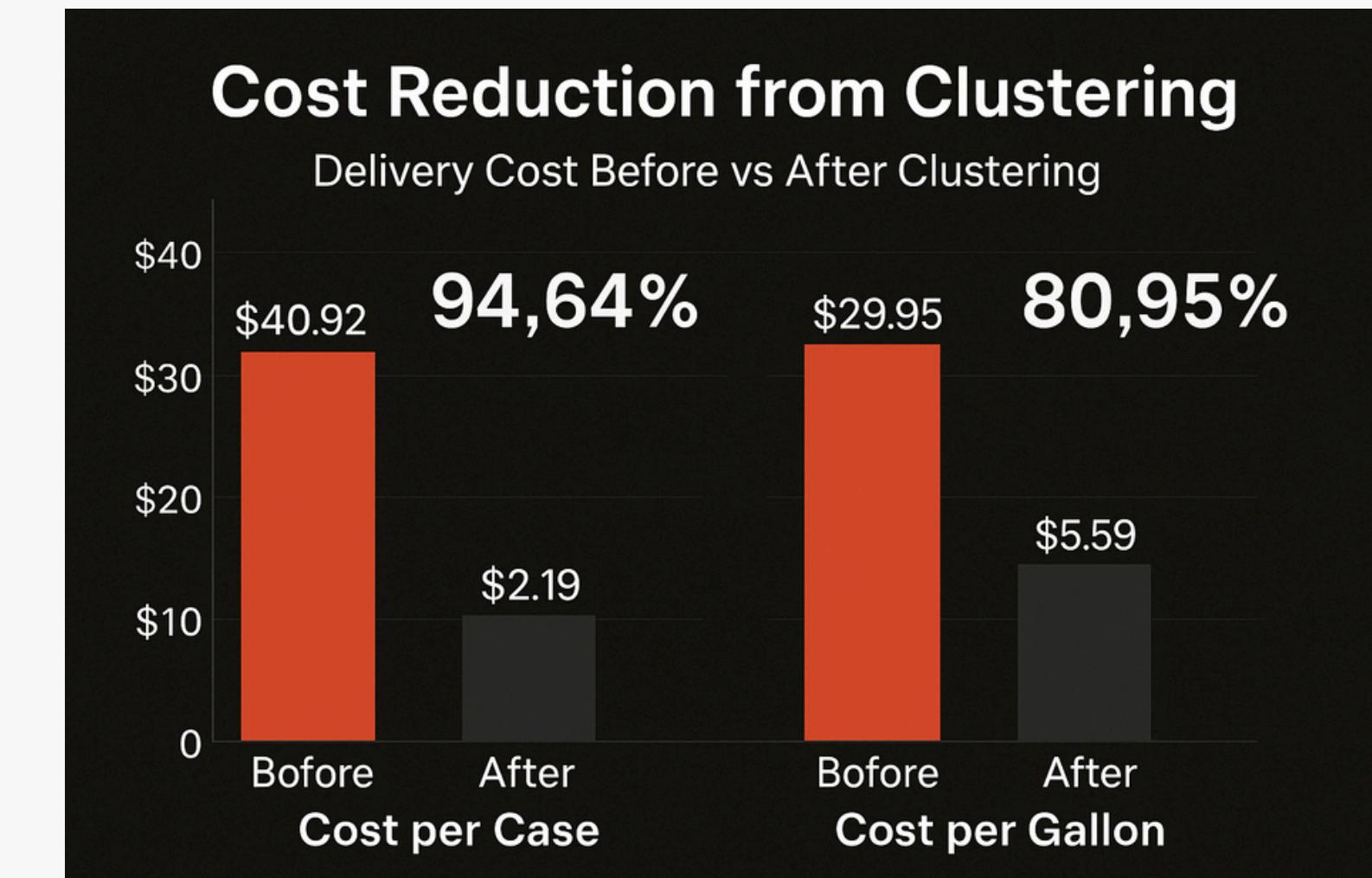
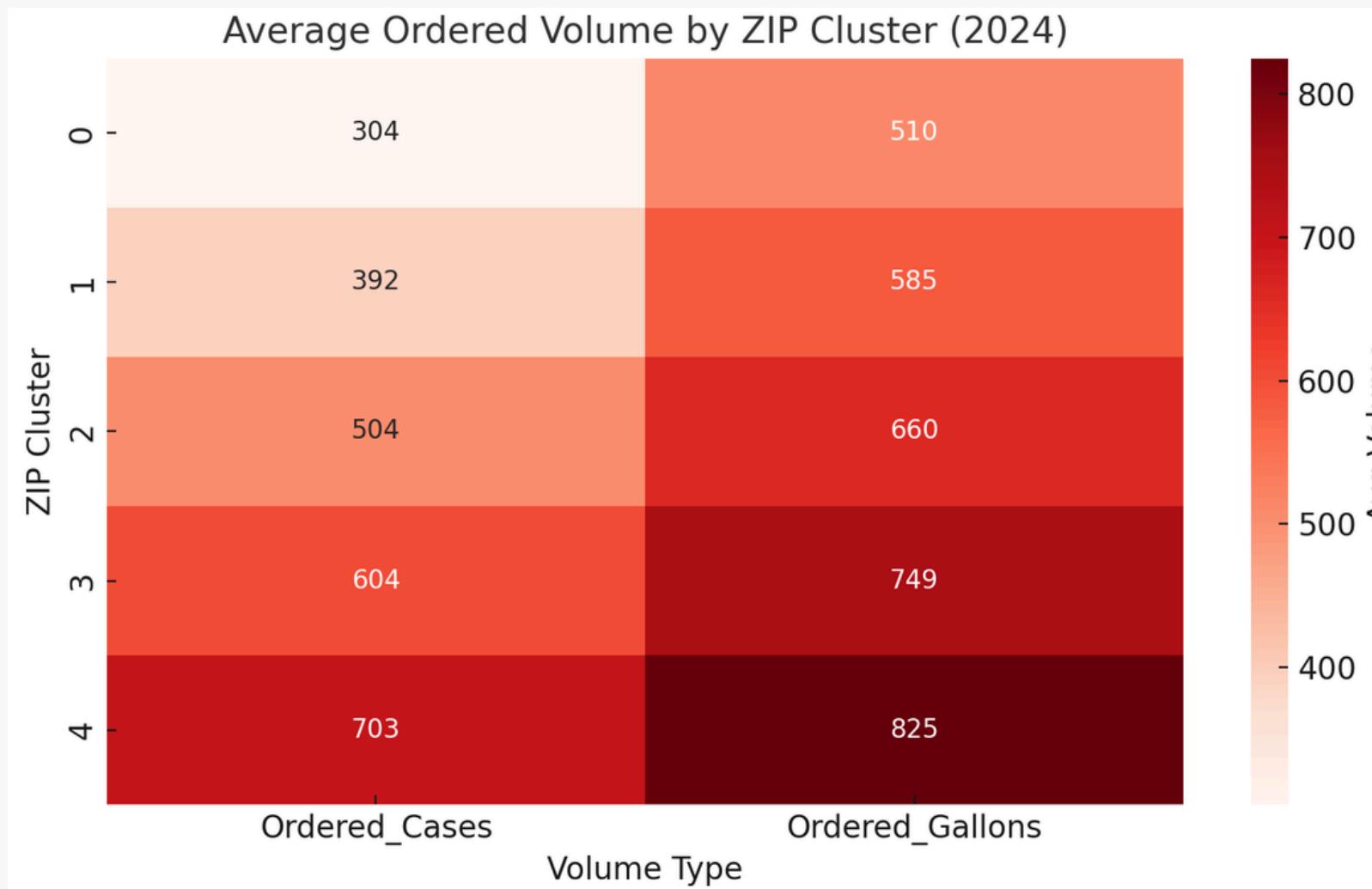
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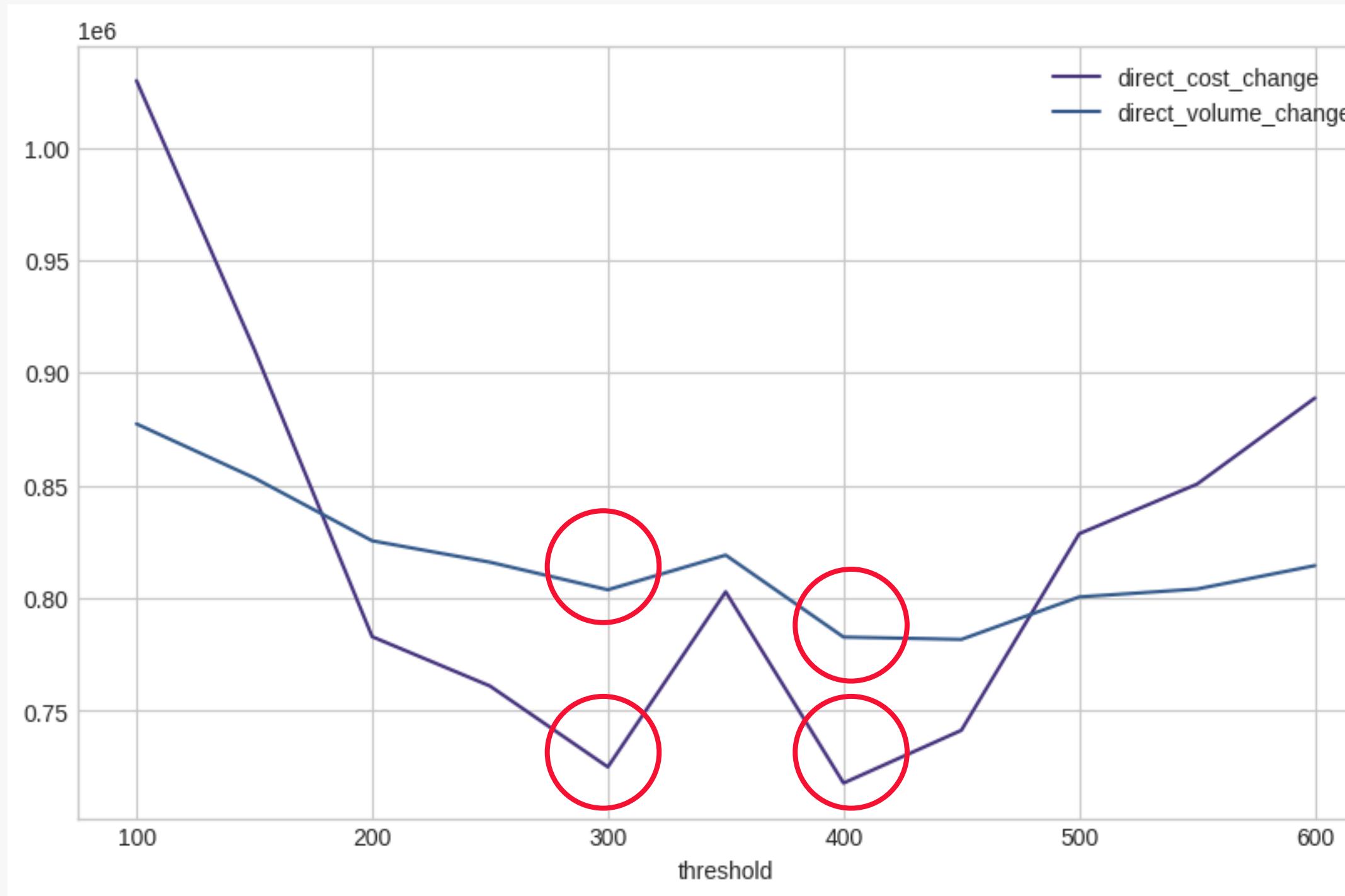
ANALYTICAL OBJECTIVE

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1. Increase Revenues
2. Decrease the Delivery Cost
3. Increase the number of Growth Customers



300 threshold vs 400 threshold



- Direct Cost change (2023-2024)
- Direct Volume change (2023-2024)



Here are the methods that we've explored with to find the answers

- **Classification Models**

Decision Tree, Xgboost, Random Forest, Logistic Regression

- **Analytical Decision Models**

Threshold Optimization Analysis , Clustering Analysis, Sensitivity Analysis

Things to consider in Modeling

Black Box Model vs White Box Model

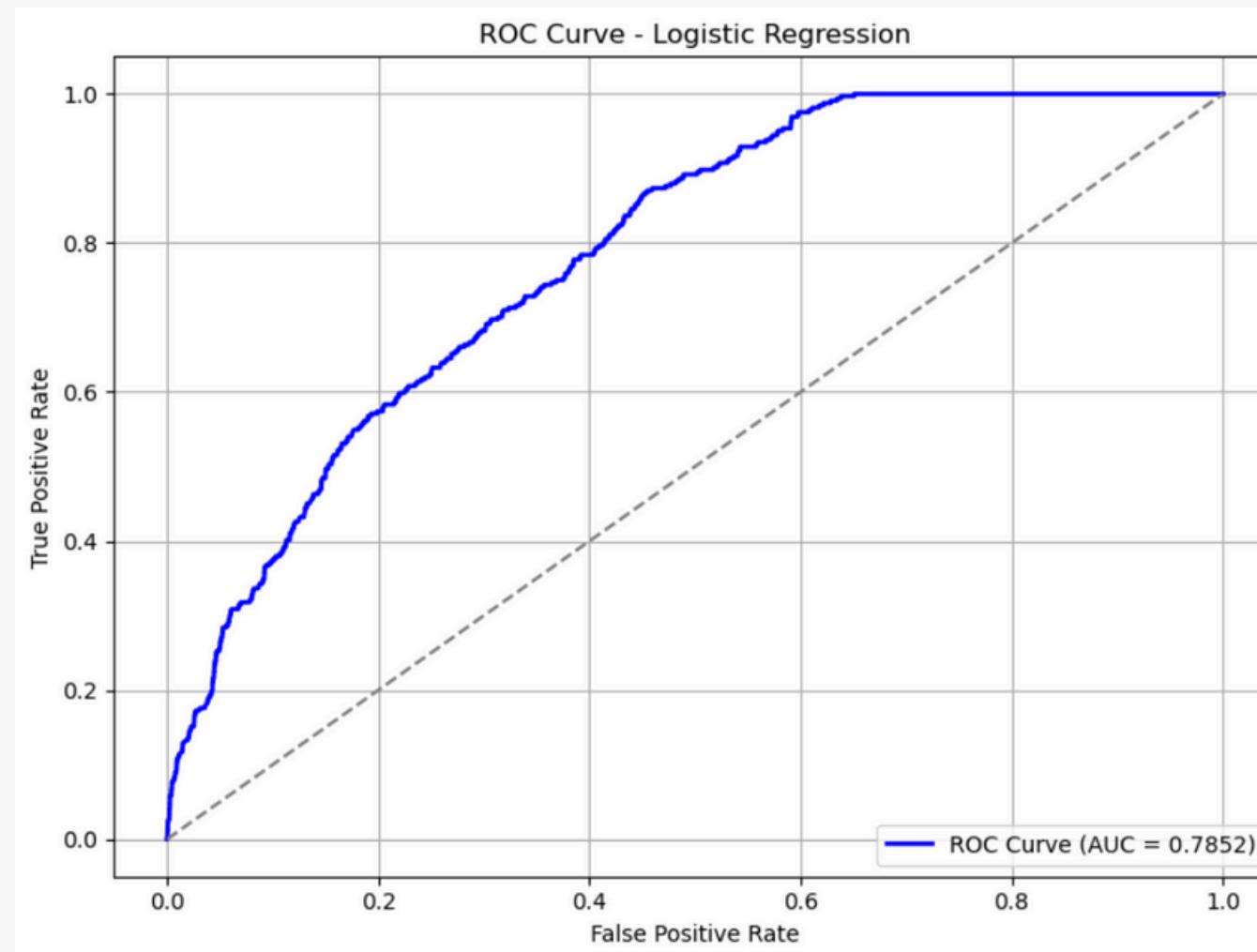
Feature Importances

Due to Imbalanced Dataset, we weighed

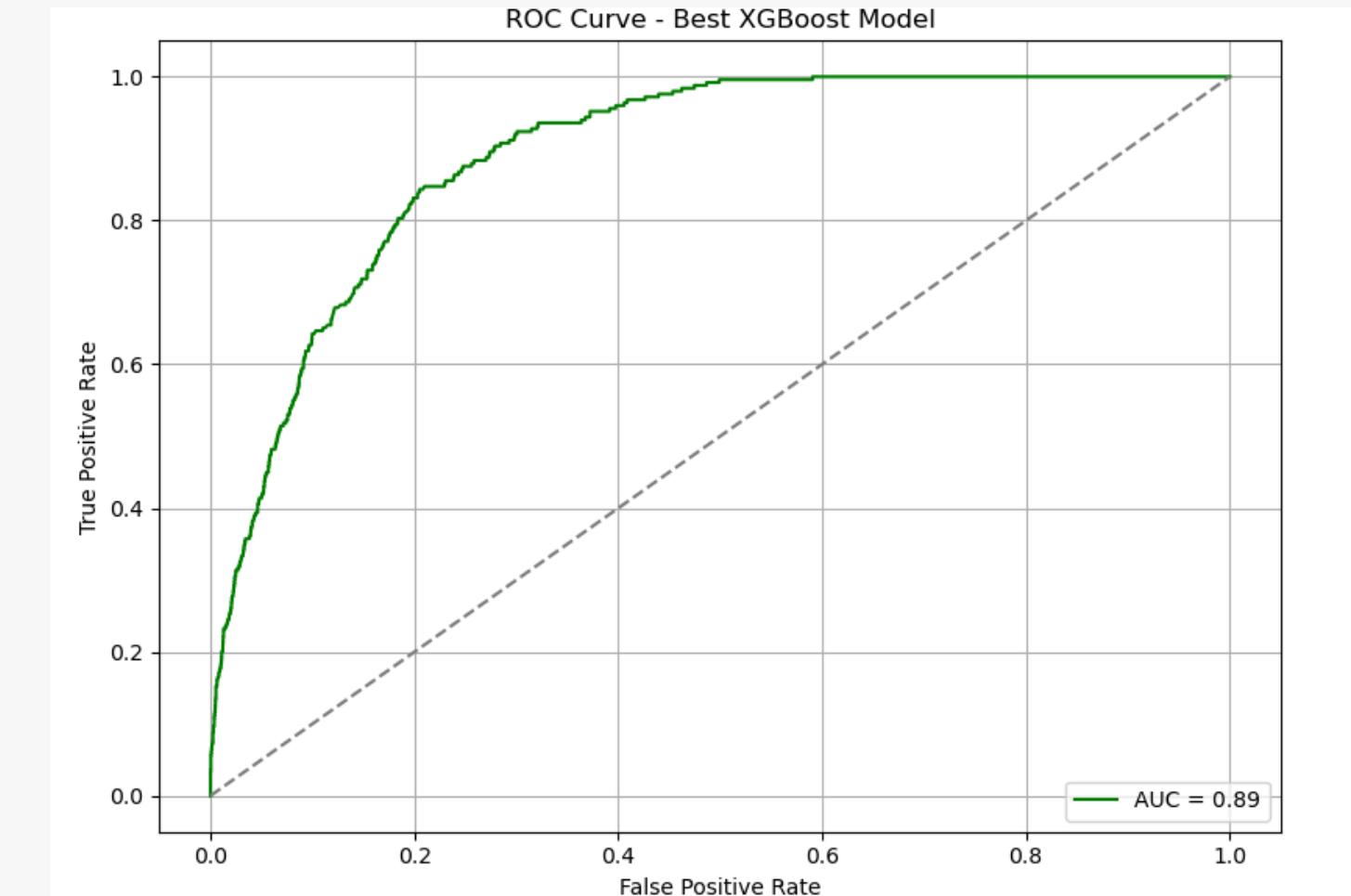
- ROC-AUC score > Accuracy
- Recall > Precision



Logistic Regression with Grid Search ROC-AUC Score: 0.79



XGBoost with Grid Search ROC-AUC Score: 0.89



Target Variable:

Customers growing from below to above the threshold



Above Threshold
Below Threshold



Above Threshold
Below Threshold



Based on the analytical results, these are the insights.

- Customers can be **segmented** into different groups to describe the **probability** of exceeding the threshold.

Small 70.97%
Count: 21,778

Medium 20.35%
Count: 6,246

High 6.11%
Count: 1,874

Very High 2.57%
Count: 789

25% - Small, 55% - Medium, 75% - High, 95% - Very High



GROWTH-READY CHARACTERISTICS

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Non-growth customers

1. Average Annual Volume

563 G

2. Average Delivery Cost

\$1126

3. Average Delivery Cost by Case

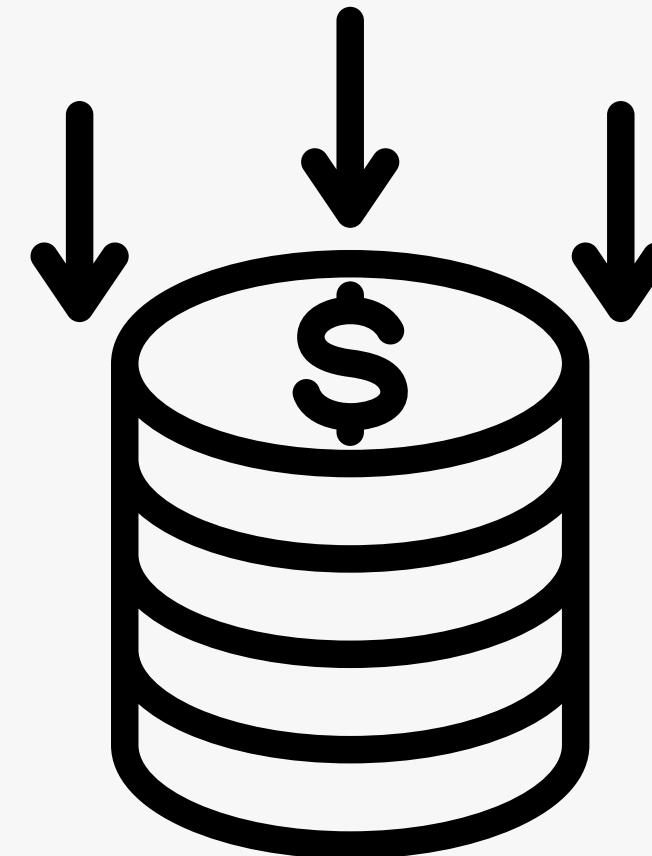
\$843

Growth customers

173 G

\$755

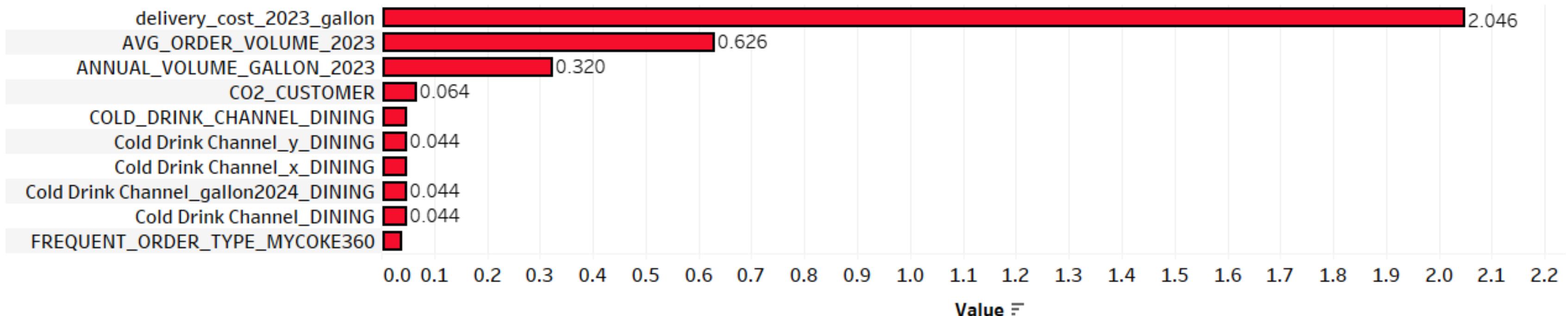
\$540



GROWTH-READY + LOW COST CHARACTERISTICS

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Growth-ready customers with the lowest delivery costs tend to bulk-buy fountain drinks with fewer, but larger orders through the Dining Cold Drink channel, often purchasing CO2 drinks, and using MyCoke360 cost-efficient digital ordering.



1. **Implement a 300 threshold:** \$5 profit per unit increases net annual revenue by \$26,476.83 compared to the 400 threshold.

How can SCCU increase the number of growth-ready customers at low cost?

1. Aim “mid-volume” customers in the 300-449 annual gallon range.
2. Boost Local Market Partnership ordering through sales reps, EDI, and MY_COKE360.
3. Focus on high average volume zip code locations.
 - Concentrate on regions with high customer density: states (MA, KS, KY, MD).



APPENDIX

2023-2024 Customer Group

2023

Annual Vol: 18,937,111.54 units
Total Delivery Cost: \$34,298,477.62

2023 - 2024

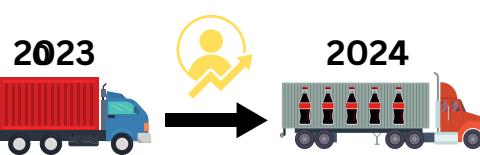
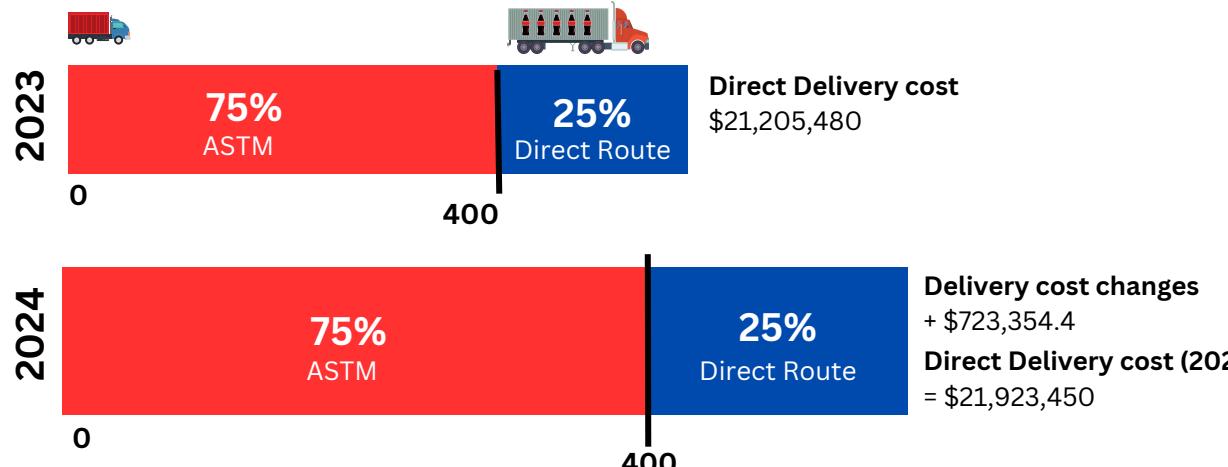
+ 985,941.71 units increases
+ \$1,686,657.15 increases

2024

Annual Vol: 19,928,814.14 units
Total Delivery cost: \$36,012,190.37

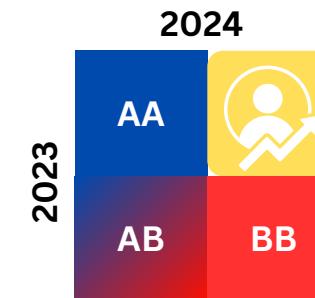
400 Threshold applied

When the original (400) annual threshold were used ..
Delivery Group Proportion in 2023–2024



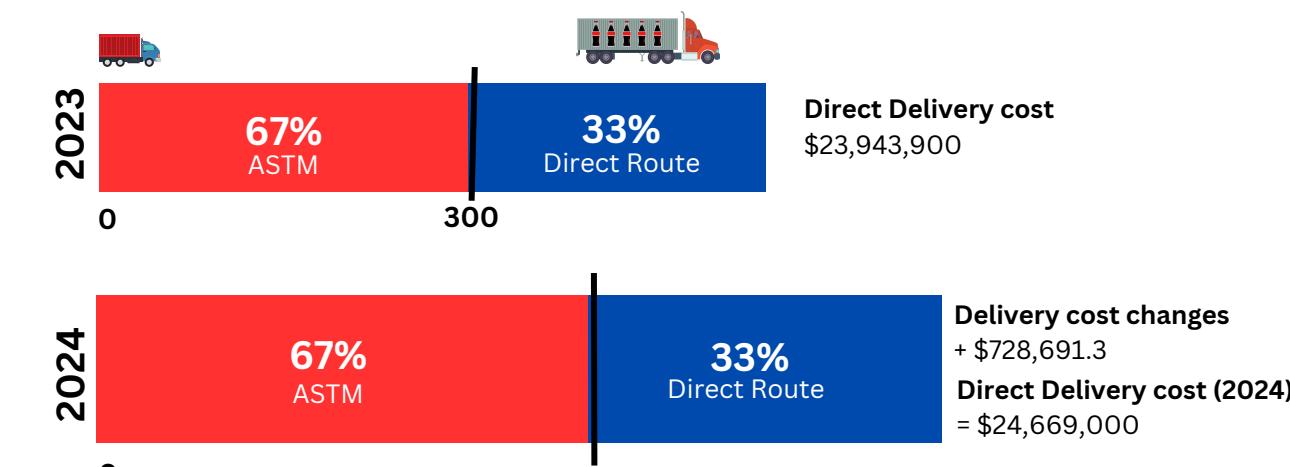
Target Customers are ..
Number: 1268 (4.12% of total)

Volume Change: 1,294,199.46 units
Delivery Cost Change: \$2,075,884.36



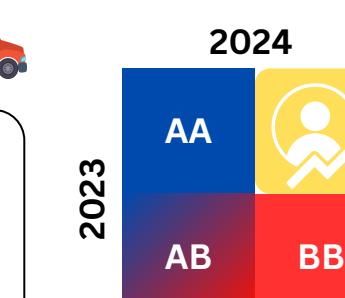
300 Threshold applied

When the new (300) annual threshold were used ..
Delivery Group Proportion in 2023–2024



Target Customer are ..
Number: 1620 (5.27% of total)

Volume Change: 1,371,834.82 units
Delivery Cost Change: \$2,400,822.11



RAPID GROWTH OF ANNUAL UNITS AND DELIVERY COST

2023

2023

Annual Vol:
18,937,111.54 units

Total Delivery Cost:
\$34,298,477.62



- + 985,941.71 units
- + \$1,686,657.15

2024

2024

Annual Vol:
19,928,814.14 units

Total Delivery cost:
\$36,012,190.37

FEATURE IMPORTANCE ANALYSIS

Top predictors after iterating through several models

- **Top 3 Predictors of Feature Importance**

- Home Hardware Channel Subtrade
- Fast Casual Dining Trade Channel
- Ordering through Sales Reps

- **Volume Importance**

- **55 gallons more per customer** in Home Hardware
- **88 gallons more per customer** in Fast Casual Dining
- **53.5 gallons more per customers** who order through Sales Reps



Based on the analytical results, these are the insights.

- Customers can be **segmented** into different groups.

Remains Below: 59.54%
Count: 18,272

Moves Down: 6.08%
Count: 1,865

Remain Above: 26.31%
Count: 8,075

Moves Up: 8.06%
Count: 2,475

- Based on 300 Gallon Threshold

2.40% increase in customers who transition from above to below threshold with new threshold.

Remains Below: 66.35%
Count: 20,362

Moves Down: 4.93%
Count: 1,513

Remain Above: 20.84%
Count: 6,395

Moves Up: 7.88%
Count: 2,417

- Based on 400 Gallon Threshold



Based on the analytical results, these are the insights.

- Customers can be **segmented** into different groups.

Remains Below: 62.37%
Count: 19,181

Moves Down: 4.75%
Count: 1,460

Remain Above: 27.62%
Count: 8,494

Moves Up: 5.27%
Count: 1,620

- Based on 300 Gallon Threshold

2.40% increase in customers who transition from above to below threshold with new threshold.

Top Predictors of Exceeding Threshold

BULK TRADE 44.12
SUPERSTORE 33.33
GENERAL 17.61



ANALYSIS METRICS

- **Delivery Cost Trends:**

2023 Mean Delivery Cost: \$1111.15

2024 Mean Delivery Cost: \$1167.85

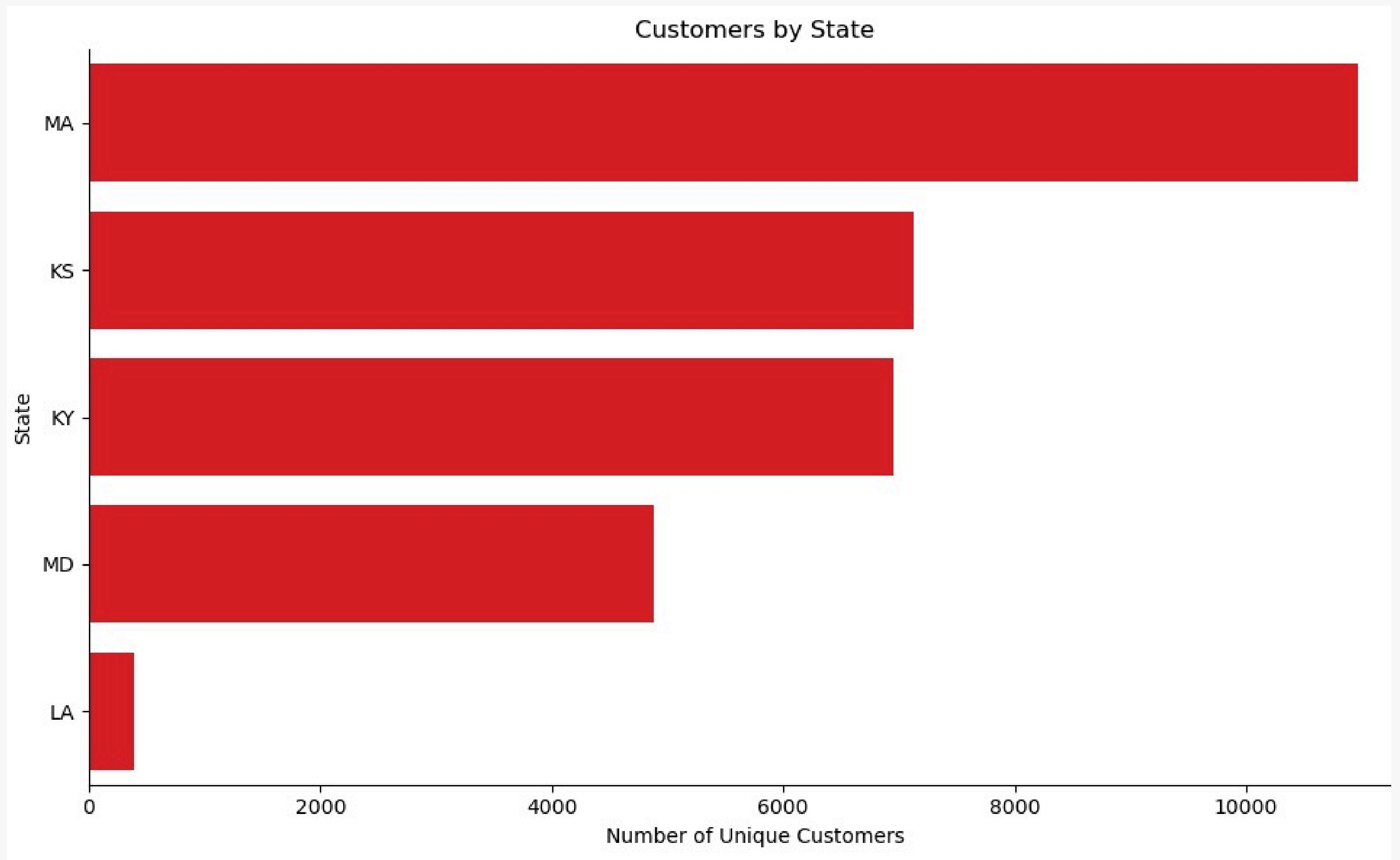
Costs **increased by an average of about \$56** over the two years.

- **Local Market Partners: 90%**

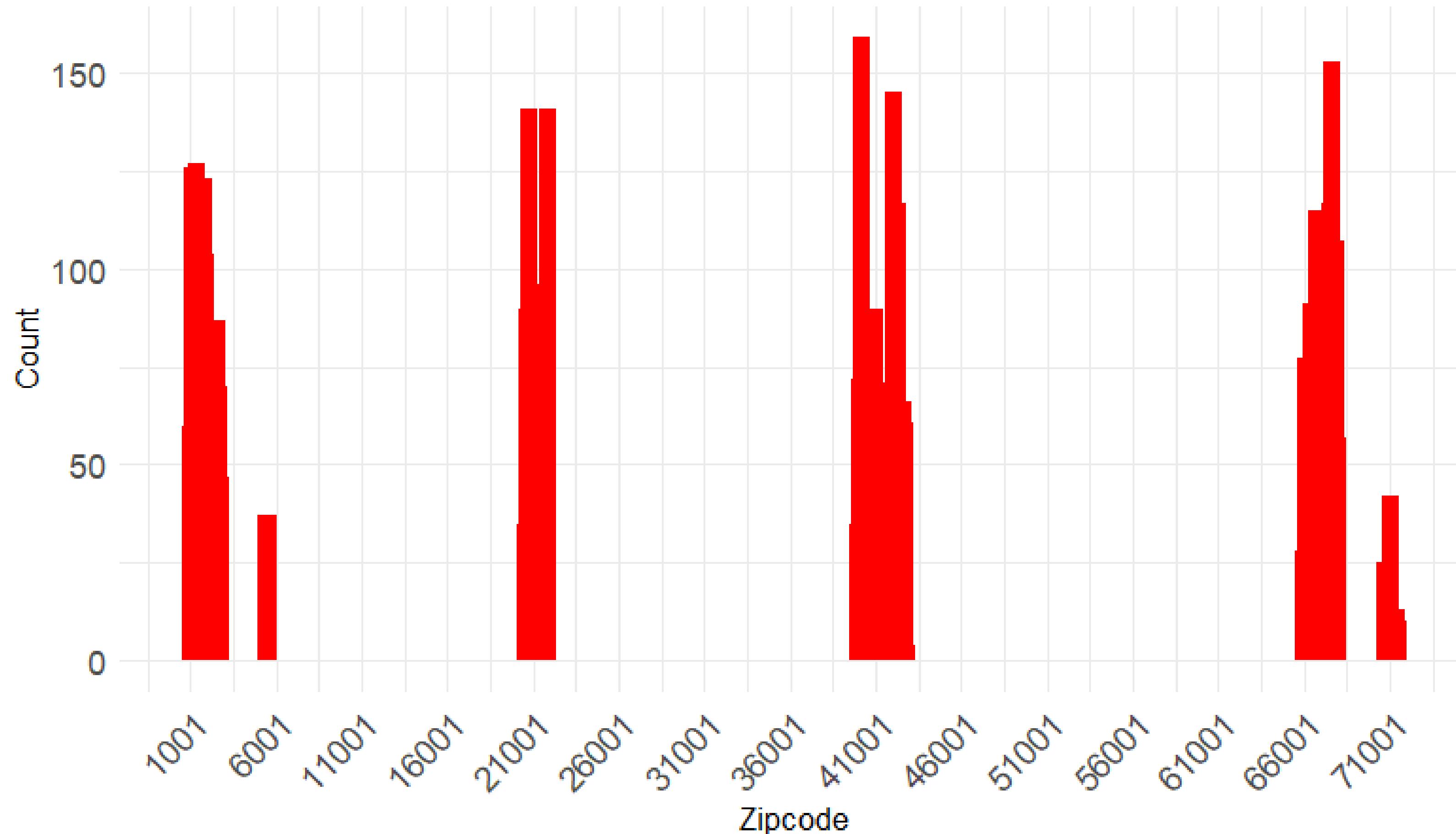
- **Current Growth-ready customers: 4.12%**

- **Growth-ready customers
with 300 Threshold: 5.27%**

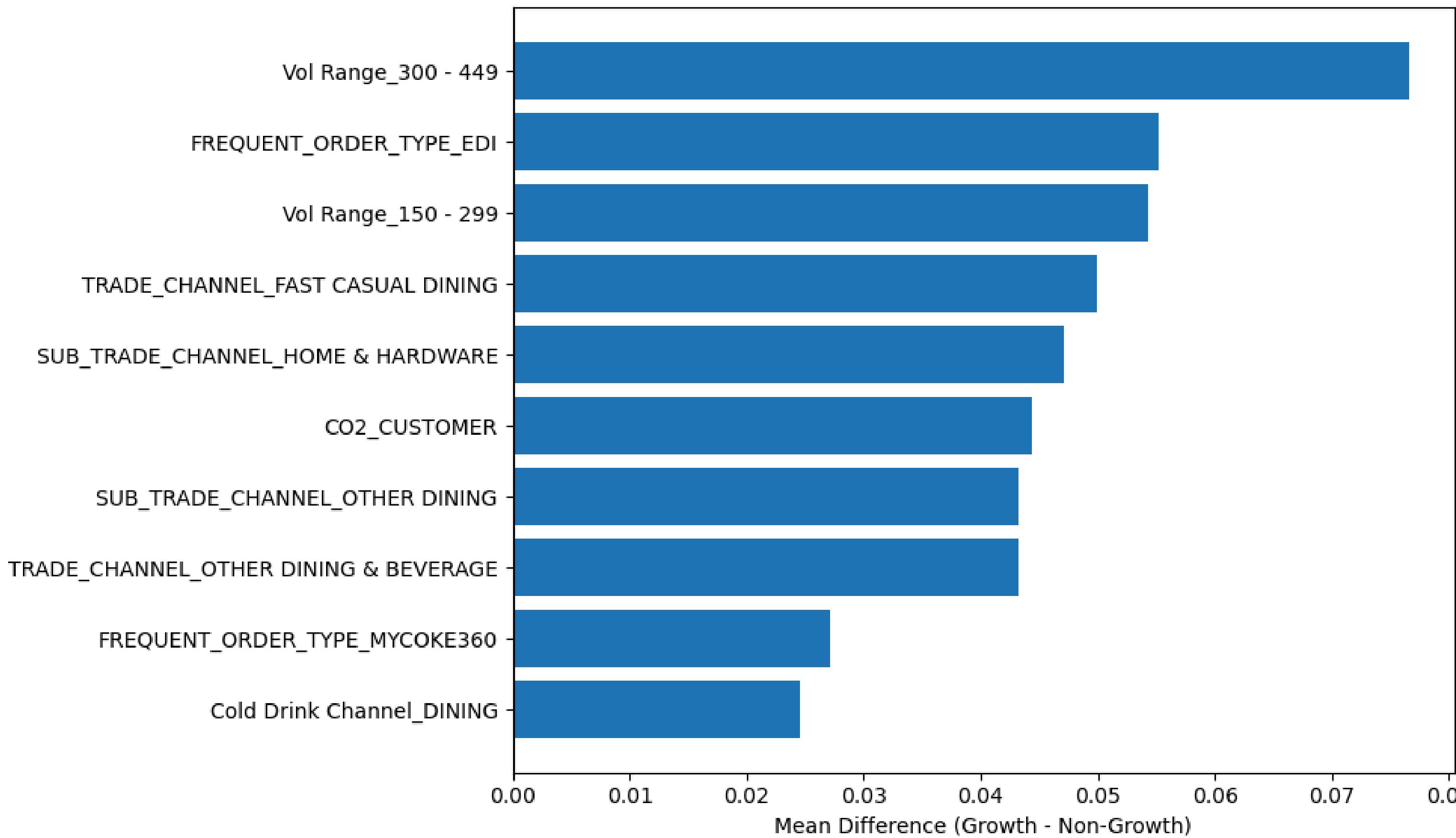




Customer Distribution by Region



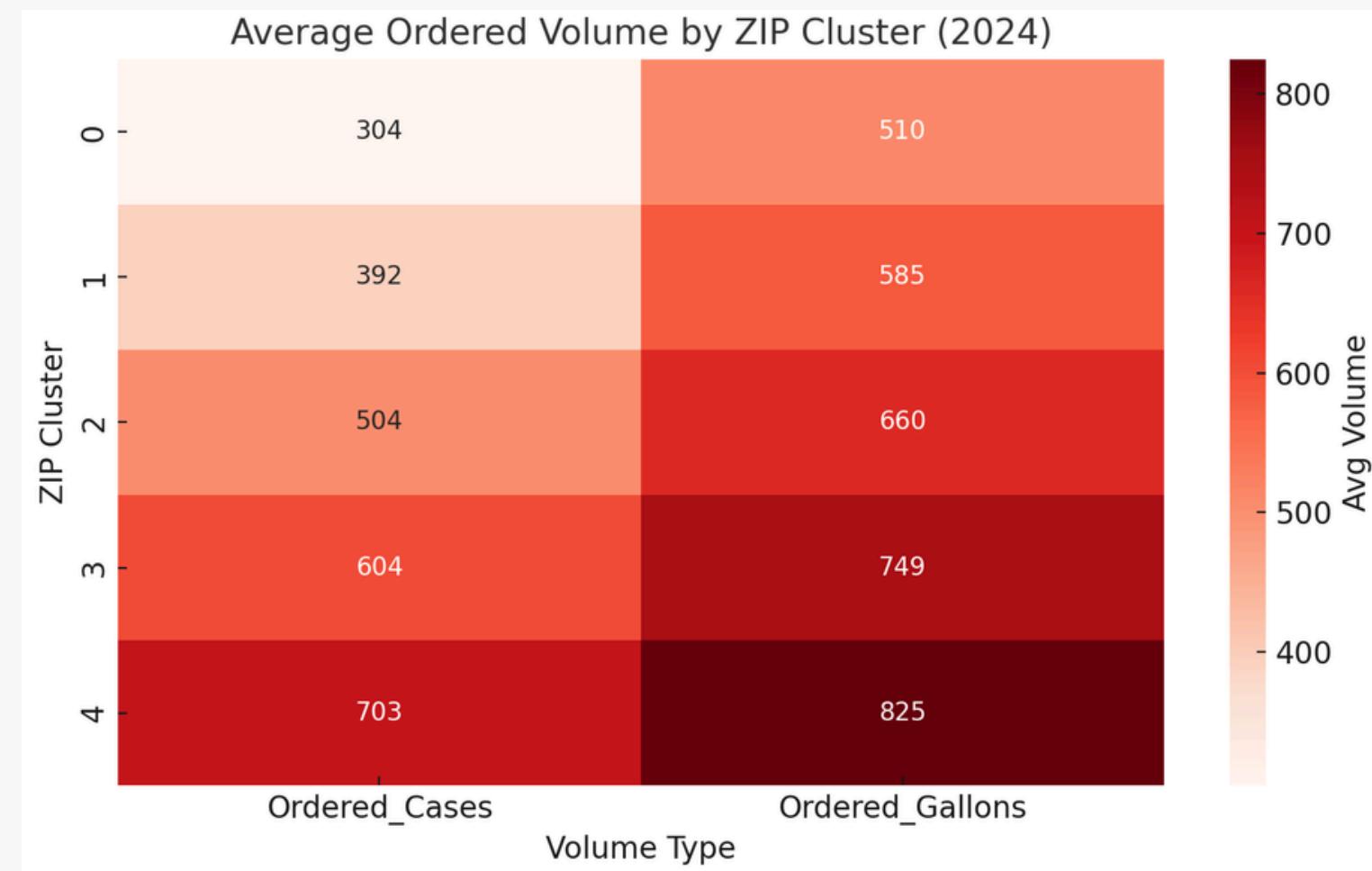
Top Characteristics of Growth-Ready Customers (Compared to Others)



The Zip Code Lens

Each number represents an average ordered volume, average gallons ordered in a particular zip cluster

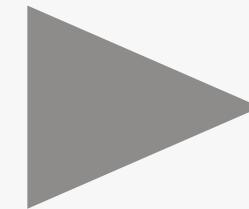
Key Insight : Cluster 4 demonstrates the highest average volume across key metrics, positioning it as a critical focal point for logistics planning and delivery optimization.



Strategic Decision: Prioritizing this zone can drive significant operational efficiencies, reduce costs, and maximize resource utilization, making it a cornerstone for strategic growth initiatives.

How will clustering transform delivery costs at scale ?

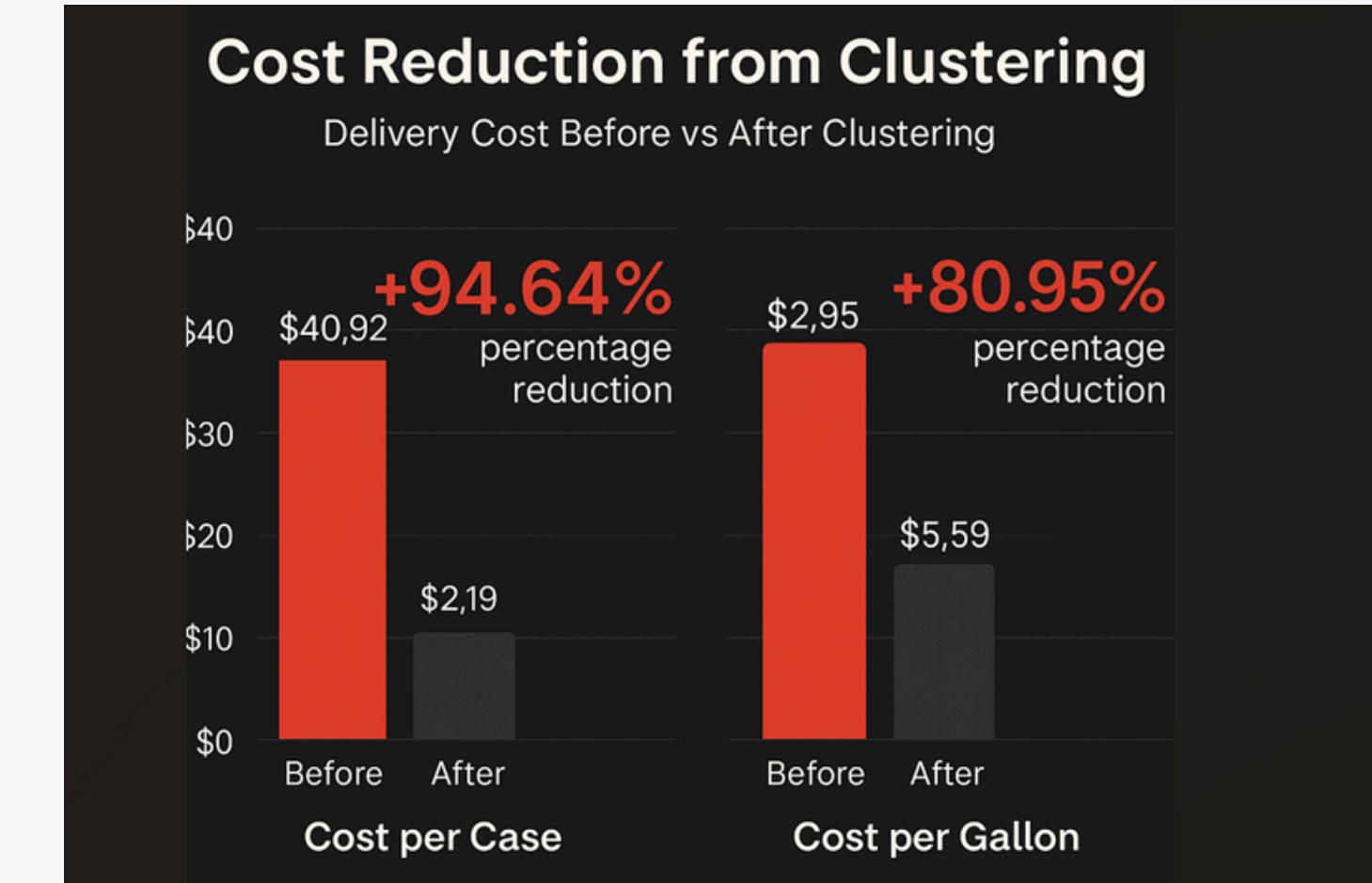
Average cost before clustering
Cases : \$40.92
Gallons: \$29.35



Average cost after clustering
Case : \$2.19
Gallons: \$5.59

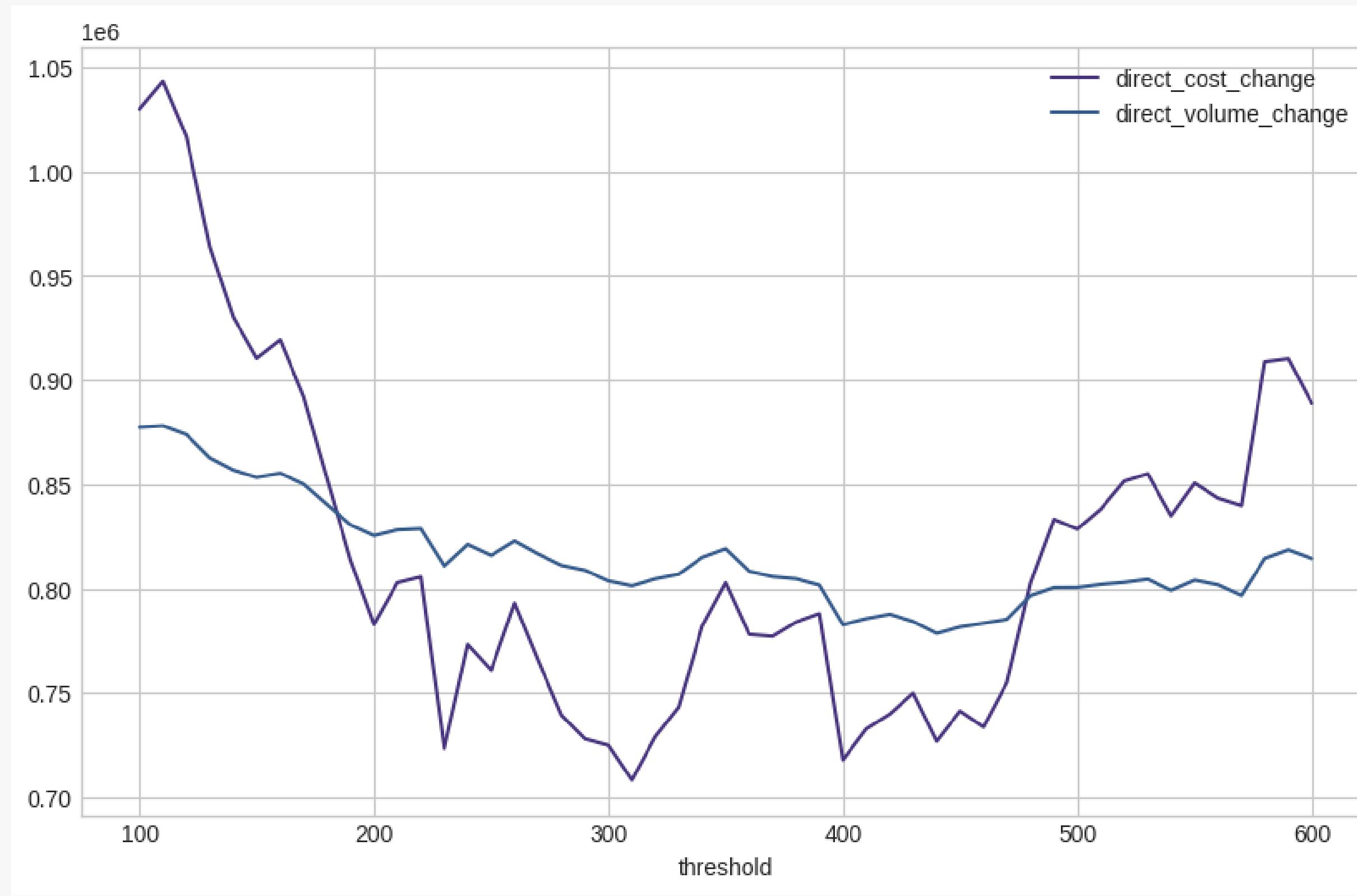
Key Highlight

- Estimated Savings Per Case from Routing Clusters: \$38.73
- Savings per Gallon: \$15.36



THRESHOLD TESTING

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Penalized Logistic Regression Model Coefficients

COEFFICIENTS	LOG-ODDS
COLD_DRINK_CHANNEL_BULK TRADE	2.826957
SUB_TRADE_CHANNEL_FSR - MISC	2.713768
FREQUENT_ORDER_TYPE_SALES REP	2.676062
SUB_TRADE_CHANNEL_HOME & HARDWARE	2.578240
TRADE_CHANNEL_COMPREHENSIVE DINING	2.518758
TRADE_CHANNEL_OTHER DINING & BEVERAGE	2.479785
SUB_TRADE_CHANNEL_OTHER GENERAL RETAIL	2.419802
73 SUB_TRADE_CHANNEL_OTHER DINING	2.418792