

## Customer Segmentation Report

A customer segmentation analysis was performed using clustering techniques, resulting in five distinct customer segments. The analysis achieved a Davies-Bouldin Index of 1.01, indicating reasonably good cluster separation and segment definition.

### Cluster Formation

The analysis identified five distinct customer segments, each with unique characteristics:

- 1. Premium Segment (Cluster 0)**
  - Most dispersed cluster with highest values on Feature 2
  - Shows significant variation in customer behavior
  - Represents potential high-value customers
- 2. Lower-Value Segment (Cluster 1)**
  - Concentrated in the lower-left quadrant
  - Demonstrates consistent behavior patterns
  - Shows limited variation in both features
- 3. Conservative Segment (Cluster 2)**
  - Similar positioning to Cluster 1 but with distinct characteristics
  - Well-defined boundaries in the lower-left region
  - Shows minimal scatter in feature space
- 4. Moderate Segment (Cluster 3)**
  - Centrally positioned in the feature space
  - Shows balanced values across both features
  - Represents the "average" customer profile
- 5. Transition Segment (Cluster 4)**
  - Overlaps partially with Cluster 3
  - Shows distinct patterns despite central positioning
  - Potential for movement between segments

### Clustering Quality Metrics

- 1. Davies-Bouldin Index**
  - Value: **1.01**
  - Interpretation: Indicates good cluster separation
  - Suggests reliable segmentation results
- 2. Feature Distribution Characteristics**
  - Feature 1 Range: -2 to 4 (scaled units)
  - Feature 2 Range: -2 to 3 (scaled units)
  - Greater horizontal spread than vertical distribution

### Key Observations

- 1. Cluster Separation**
  - Clear boundaries between major segments
  - Some overlap in central regions

- Distinct behavioral patterns within each cluster

## **2. Distribution Patterns**

- Central concentration of data points
- Asymmetric distribution across feature space
- Varying cluster densities

## **3. Feature Relationships**

- Evidence of correlation in certain clusters
- Non-uniform distribution across feature space
- Complex interaction between features

## **Recommendations**

### **1. Segment-Specific Strategies**

- Develop targeted approaches for each cluster
- Focus on high-value customers in Cluster 0
- Create growth pathways for lower-value segments

### **2. Monitoring and Evaluation**

- Regular assessment of cluster stability
- Track customer movement between segments
- Monitor changes in cluster characteristics