



Customer Clustering Analysis Report

Clustering Results Summary

Number of Clusters

- Total clusters identified: 4
- Clear separation between clusters with minimal overlap
- Clusters appear to be well-balanced in terms of size

Cluster Characteristics

1. Cluster 0 (Purple): Concentrated group at center-right of plot
2. Cluster 1 (Green): Distinct group in lower-left quadrant
3. Cluster 2 (Blue): Tight cluster in right region
4. Cluster 3 (Yellow): Well-defined group in upper region

Clustering Quality Metrics

1. Davies-Bouldin Index: 0. 0.6772235868563604
 - Lower value indicates better clustering (range typically 0-1)
 - suggests good cluster separation
2. Additional Metrics:

- Silhouette Score: 0.5636674608484907

Validation Notes

- High silhouette score indicates strong cluster cohesion and separation
- Low Davies-Bouldin index confirms minimal overlap between clusters

Technical Details

- Dimensionality Reduction: PCA (2 components)
- Algorithm: K-means clustering
- Pre-processing: MinMaxScaler for feature normalization
- Optimal clusters determined using elbow method and silhouette analysis