

# Credit Card Customer Segmentation Report

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## 1. Executive Summary

This report presents the segmentation of credit card customers into distinct groups using clustering techniques. By analyzing key financial behaviors such as balances, purchases, payments, and cash advances, we identified four meaningful clusters. These clusters help us better understand customer profiles, optimize marketing strategies, and tailor financial products.

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## 2. Objective

- Segment credit card customers based on their credit activity and payment behavior.
  - Extract meaningful customer profiles that can inform business strategies.
  - Provide actionable insights to improve customer engagement, risk management, and profitability.
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## 3. Data Overview

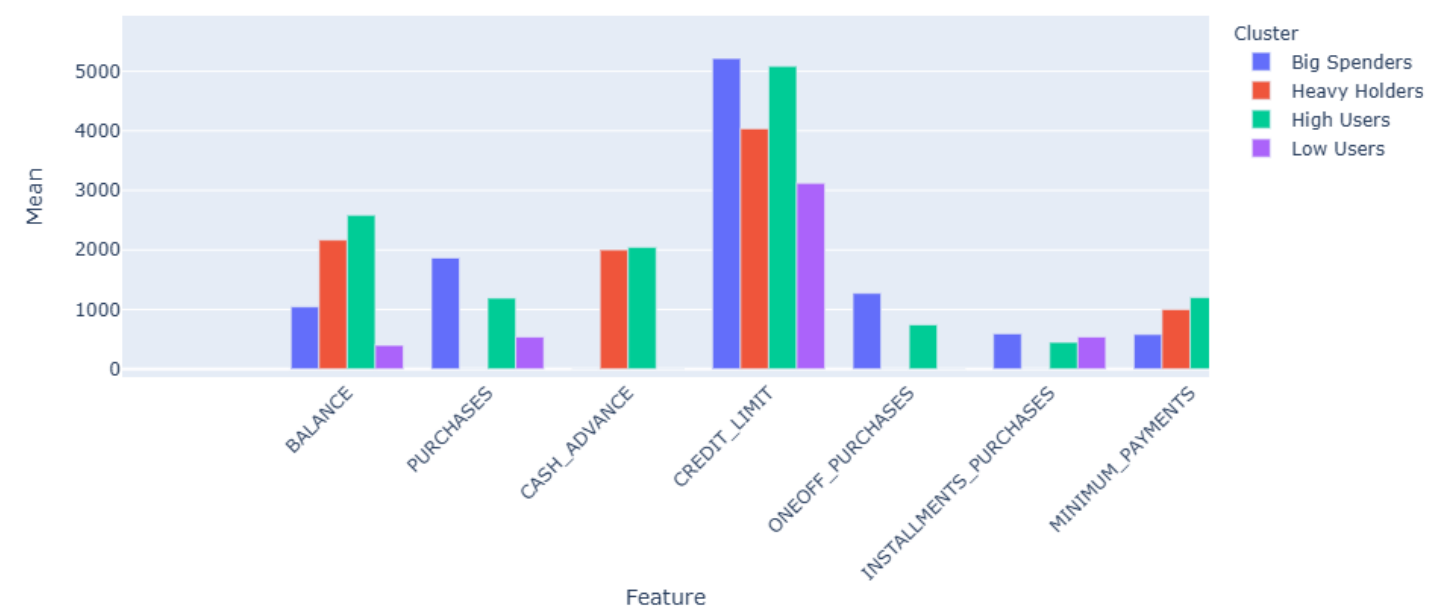
- Dataset contains credit card customer data with features including:
    - **BALANCE**: Outstanding balance amount.
    - **PURCHASES**: Total purchase amount.
    - **CASH\_ADVANCE**: Cash withdrawn using the credit card.
    - **CREDIT\_LIMIT**: Credit limit assigned to the customer.
    - **ONEOFF\_PURCHASES**: Single large purchases.
    - **INSTALLMENTS\_PURCHASES**: Purchases made in installments.
    - **MINIMUM\_PAYMENTS**: Minimum payment amounts.
  - The dataset was preprocessed and clustered using Gaussian Mixture Models (GMM).
  - Clusters were mapped to descriptive names for easier interpretation.
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4. Cluster Profiles

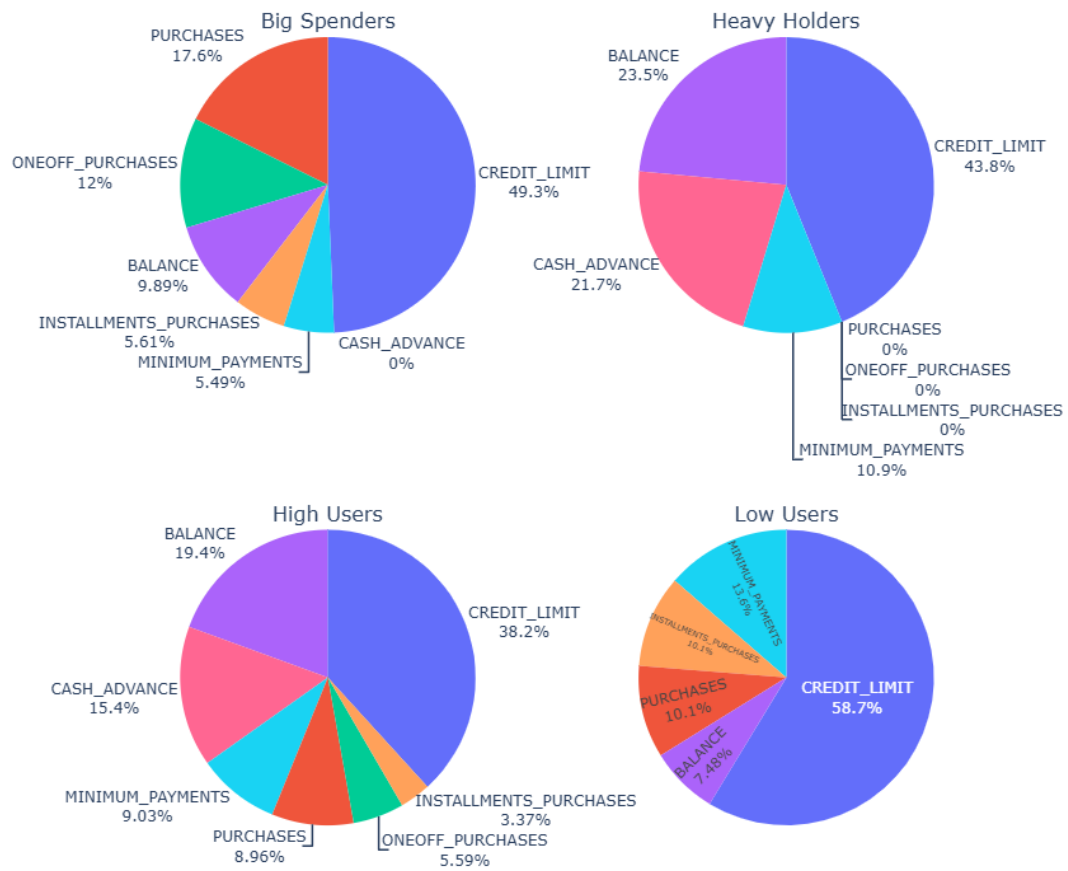
Cluster Name	Description
Low Users	Customers with very low balances, minimal purchases, and low payments. Reflects minimal credit activity.
High Users	Customers with the highest balances and payments. Very active and responsible credit users.
Heavy Holders	Customers holding high balances but making lower payments. Likely reliant on revolving credit.
Big Spenders	Customers making very high purchases, often large one-off payments. Tend to be premium or luxury shoppers.

5. Key Visualizations

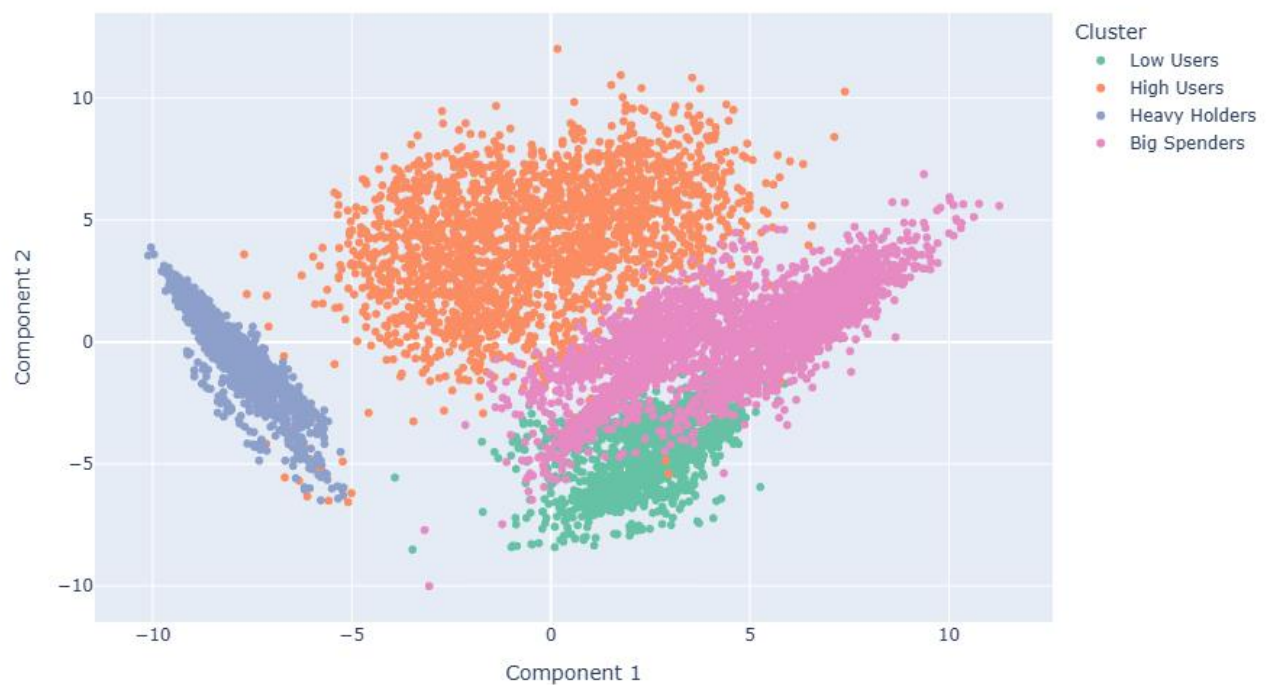
 Average Key Metrics by Cluster



### 👤 Feature Distribution per Cluster



### GMM Clustering with Cluster Names (PCA 2D)



## 5.1 Average Key Metrics by Cluster

- Bar chart comparing average values of BALANCE, PURCHASES, CASH\_ADVANCE, CREDIT\_LIMIT, and payment behaviors across clusters.
- Highlights distinct financial behaviors per cluster.

*Interpretation:*

- High Users have the highest average balances and payments.
- Heavy Holders maintain high balances but pay less.
- Big Spenders show high one-off purchase values.
- Low Users have minimal activity.

## 5.2 Feature Distribution per Cluster (Pie Charts)

- Pie charts for each cluster showing the percentage contribution of key financial metrics.
- Provides a visual breakdown of how each feature contributes to cluster profiles.

*Observation:*

- Different clusters emphasize different aspects of credit usage (e.g., Big Spenders dominated by purchases, Heavy Holders by balance).
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## 6. Business Insights & Recommendations

### For Low Users

- **Insight:** Minimal credit card usage.
- **Recommendation:** Promote engagement programs such as rewards or cashback on purchases to activate these dormant customers.

### For High Users

- **Insight:** Responsible and active customers with high payment capacity.
- **Recommendation:** Offer premium products, loyalty benefits, or tailored credit limits to retain and upsell.

### For Heavy Holders

- **Insight:** Customers likely relying on revolving credit with potential risk.
- **Recommendation:** Implement credit risk monitoring, offer payment plans, or educate customers on reducing outstanding balances.

## For Big Spenders

- **Insight:** High purchase activity, often luxury-oriented.
  - **Recommendation:** Market exclusive offers, partner with premium brands, and offer concierge or VIP services.
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## 7. Conclusion

The clustering exercise successfully identified four distinct customer segments with unique financial behaviors. These insights enable the credit card provider to personalize marketing, improve customer retention, and manage credit risk more effectively.

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## 8. Appendix

- **Clustering methodology:** Gaussian Mixture Model (GMM) used with 4 clusters.
- **Tools:** Python, Plotly for visualization.
- **Data source:** Credit card transaction dataset.