



Customer Shopping Behavior Analysis

This project analyzes customer shopping behavior using transactional data from 3,900 purchases across various product categories. Our goal is to uncover insights into spending patterns, customer segments, product preferences, and subscription behavior to guide strategic business decisions.

Project Overview

Data-Driven Insights

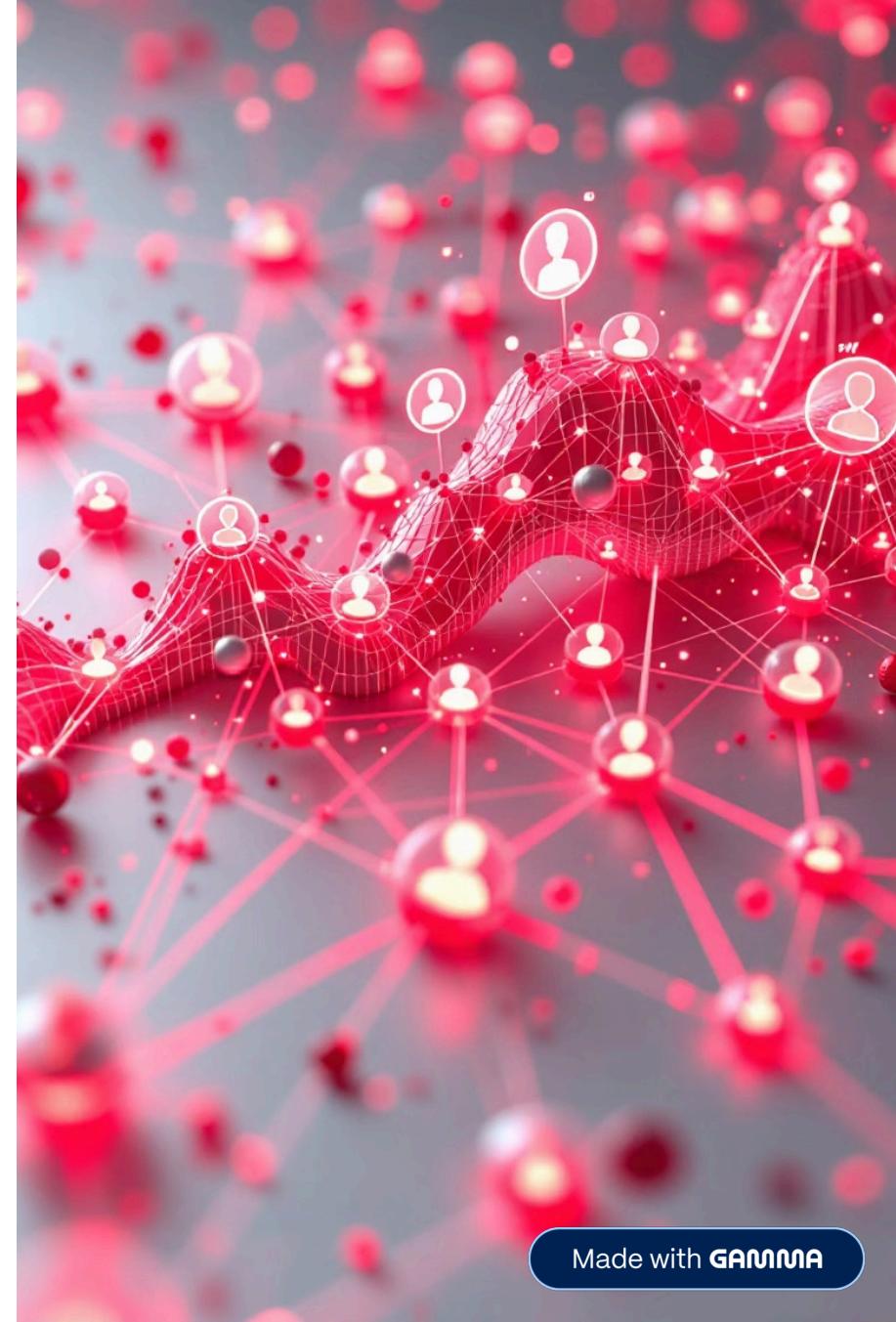
Analyzing 3,900 purchases to understand customer spending patterns and preferences.

Strategic Decisions

Guiding business strategies through insights into customer segments and subscription behavior.

Comprehensive Analysis

Covering demographics, purchase details, and shopping behavior for a holistic view.



Dataset Summary

Our dataset comprises 3,900 rows and 18 columns, offering a rich source of information on customer behavior. Key features include:

- **Customer Demographics:** Age, Gender, Location, Subscription Status.
- **Purchase Details:** Item Purchased, Category, Purchase Amount, Season, Size, Color.
- **Shopping Behavior:** Discount Applied, Promo Code Used, Previous Purchases, Frequency of Purchases, Review Rating, Shipping Type.

Only 37 values were missing in the Review Rating column, which were handled during data preparation.



Exploratory Data Analysis in Python

Our data preparation and cleaning process in Python ensured data quality and readiness for analysis.

01

Data Loading & Exploration

Imported dataset using `pandas` and used `df.info()` and `.describe()` for initial insights.

02

Missing Data Handling

Imputed missing values in 'Review Rating' using the median rating per product category.

03

Column Standardization

Renamed columns to 'snake_case' for improved readability and consistency.

04

Feature Engineering

Created 'age_group' by binning ages and 'purchase_frequency_days' from purchase data.

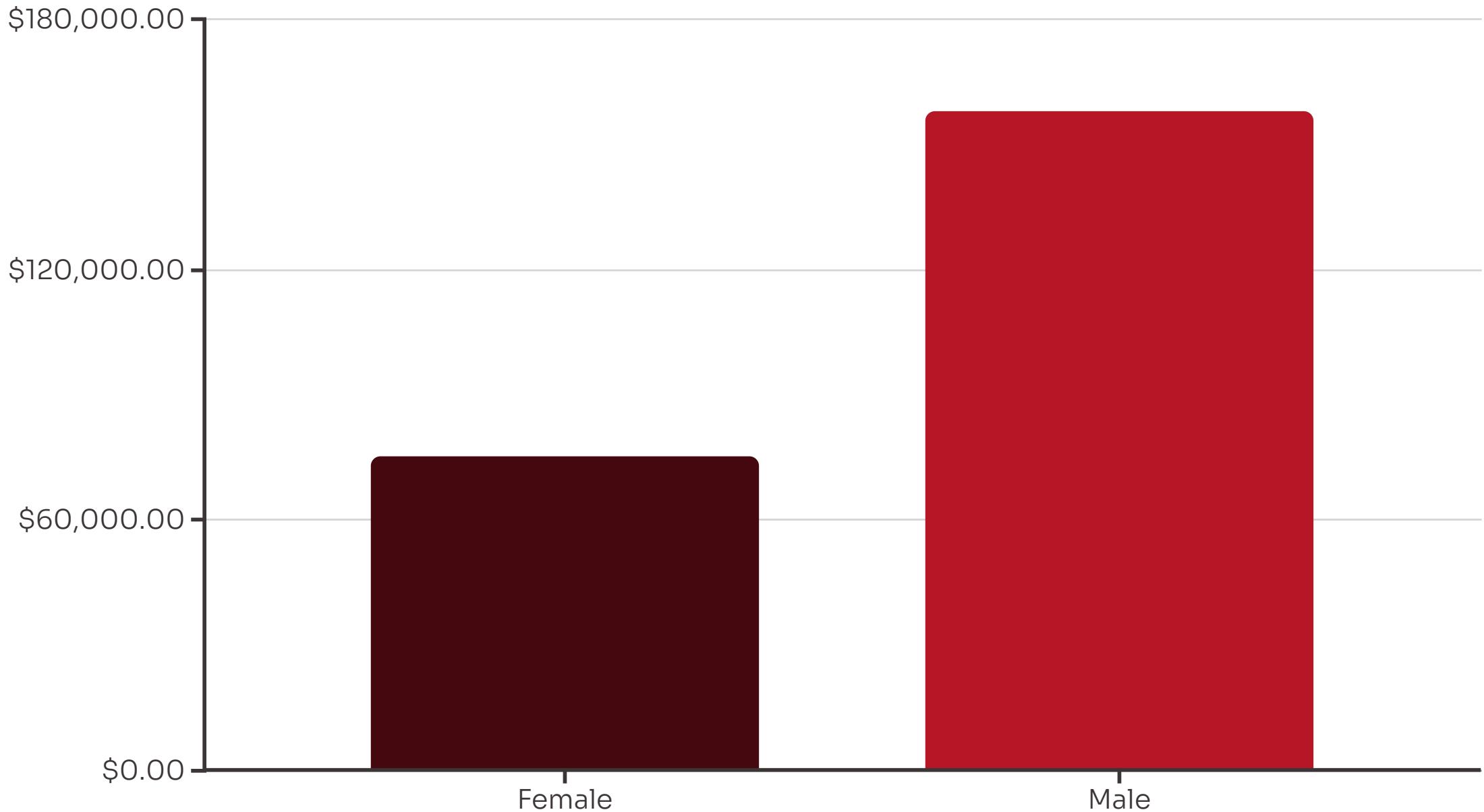
05

Database Integration

Loaded the cleaned DataFrame into PostgreSQL for subsequent SQL analysis.

Revenue by Gender

Analyzing total revenue generated by male versus female customers reveals distinct spending patterns.

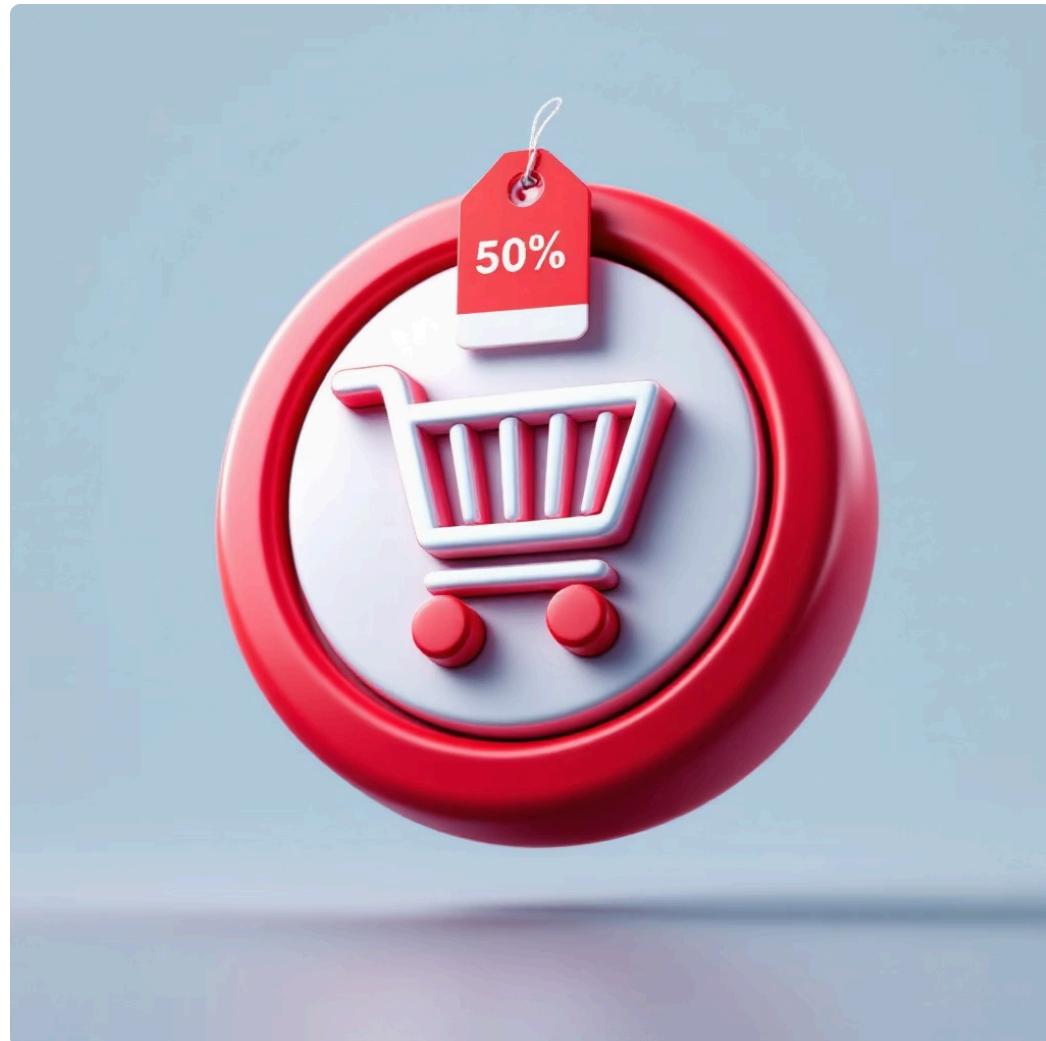


Male customers generated significantly higher revenue compared to female customers, indicating a potential area for targeted marketing strategies towards female demographics.

High-Spending Discount Users & Top Products

High-Spending Discount Users

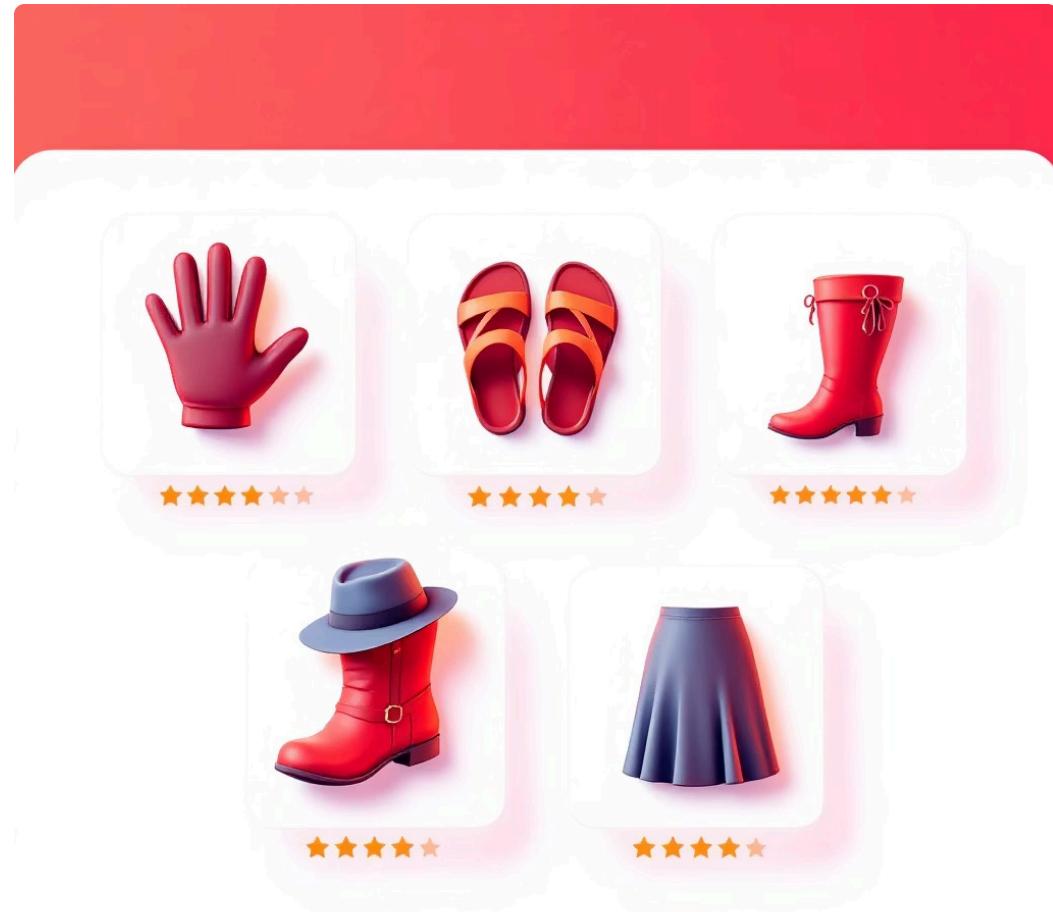
We identified 839 customers who utilized discounts but still spent above the average purchase amount. These customers represent a valuable segment that responds to promotions while maintaining high spending.



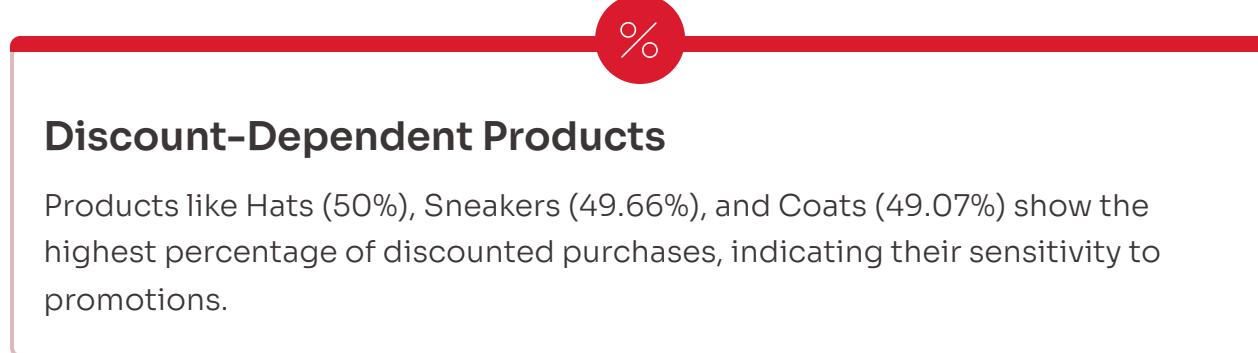
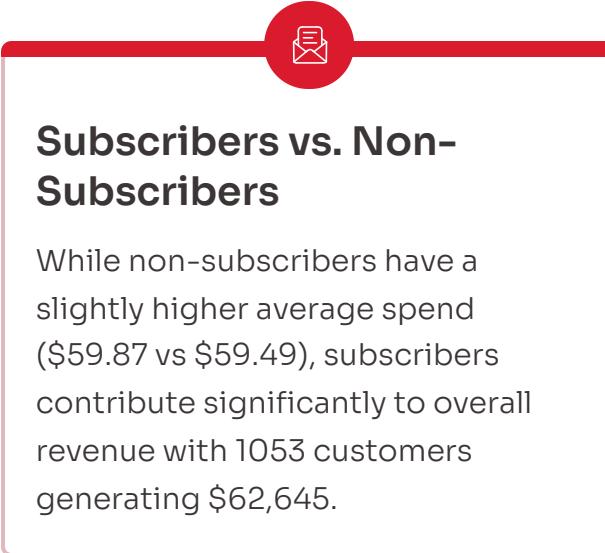
Top 5 Products by Rating

Products with the highest average review ratings are key indicators of customer satisfaction and product quality.

Gloves	3.86
Sandals	3.84
Boots	3.82
Hat	3.80
Skirt	3.78



Shipping & Subscription Insights



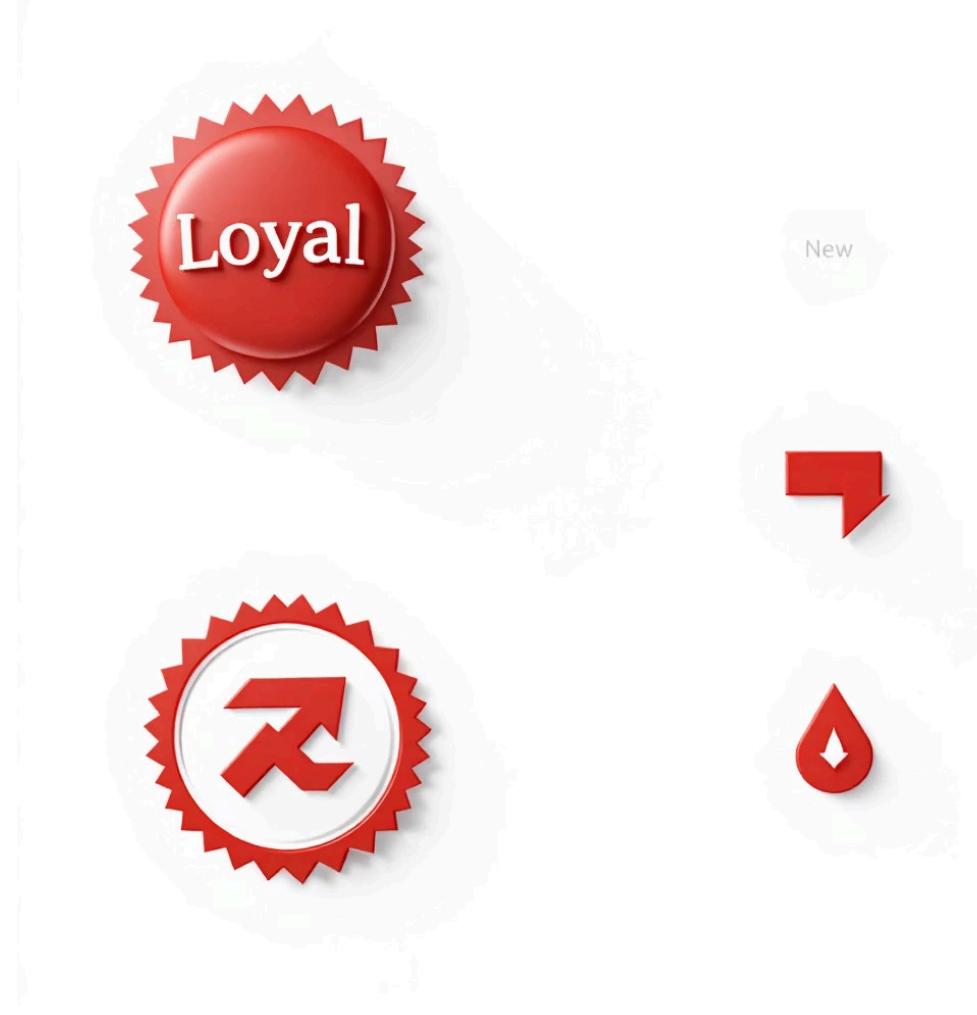
Customer Segmentation & Product Categories

Customer Segmentation

We classified customers into three segments based on their purchase history:

- **Loyal:** 3116 customers
- **Returning:** 701 customers
- **New:** 83 customers

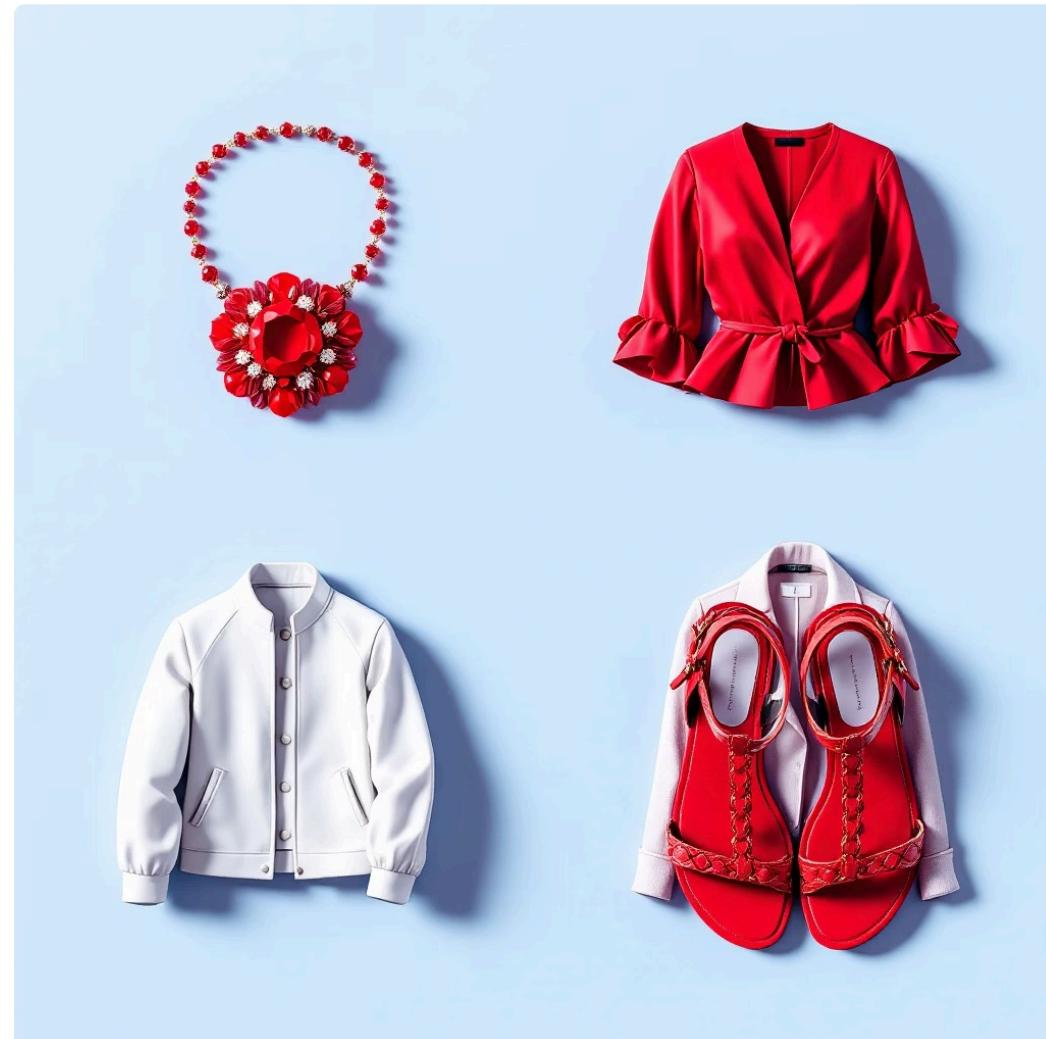
This segmentation helps in tailoring marketing efforts and loyalty programs.



Top Products per Category

Identifying the most purchased items within each category provides insights into product popularity and inventory management.

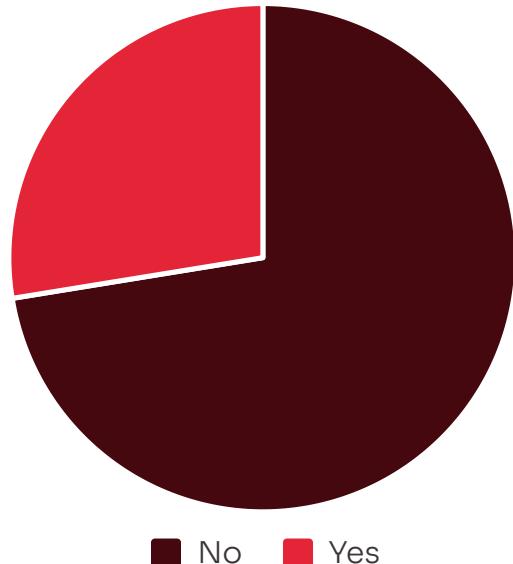
Accessories	Jewelry	171
Clothing	Blouse	171
Footwear	Sandals	160
Outerwear	Jacket	163



Repeat Buyers & Revenue by Age Group

Repeat Buyers & Subscriptions

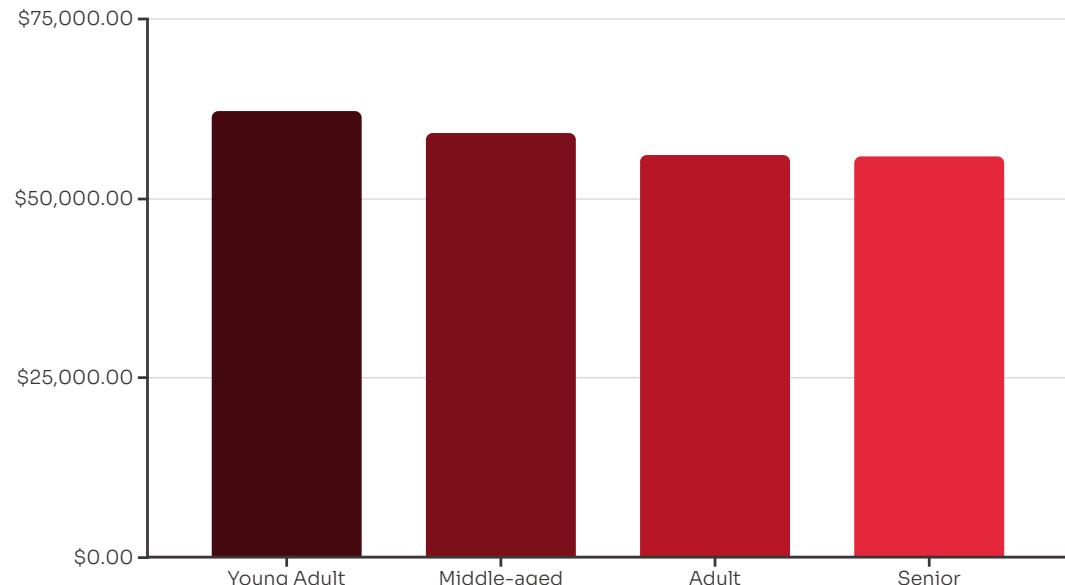
Customers with more than 5 purchases are analyzed for their subscription likelihood.



A significant portion of repeat buyers are not subscribed, indicating an opportunity to convert them into subscribers.

Revenue by Age Group

Understanding revenue contribution across different age groups helps in targeted marketing.



Young adults contribute the highest revenue, followed closely by middle-aged customers.

Business Recommendations

Boost Subscriptions

Promote exclusive benefits to convert more repeat buyers into subscribers.

Customer Loyalty Programs

Implement reward systems to foster loyalty and move customers into the "Loyal" segment.

Review Discount Policy

Optimize discount strategies to balance sales boosts with healthy profit margins.

Product Positioning

Highlight top-rated and best-selling products in marketing campaigns to drive sales.

Targeted Marketing

Focus marketing efforts on high-revenue age groups and express-shipping users for maximum impact.

Customer Behavior Dashboard

Subscription status

No	Yes
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Gender

Female	Male
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Category

Accessories
Clothing
Footwear
Outerwear

Shipping type

<input type="radio"/> 2-Day Shipping
<input type="radio"/> Express
<input type="radio"/> Free Shipping
<input type="radio"/> Next Day Air
<input type="radio"/> Standard
<input type="radio"/> Store Pickup

