

Customer Shopping Behavior Analysis

Uncovering insights from 3,900 purchases to guide strategic business decisions.

by Nandini Muddana



Project Overview & Data Scope

Project Goal

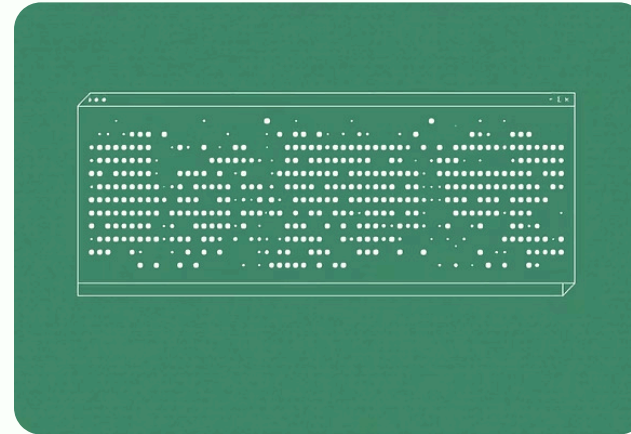
Analyze customer spending, segmentation, product preferences, and subscription behavior.

Dataset Size

3,900 rows and 18 columns of transactional data.

Key Features

Demographics, Purchase Details (Category, Amount, Size), and Shopping Behavior (Discount, Rating, Frequency).



Data Preparation in Python

Initial steps focused on cleaning, standardization, and feature engineering.

01

Data Loading & Exploration

Imported data, checked structure (.info()) and summary statistics (.describe()).

03

Standardization & Engineering

Renamed columns to snake_case. Created `age_group` and `purchase_frequency_days`.

02

Missing Data Handling

Imputed 37 missing Review Ratings using the median rating per product category.

04

Consistency & Integration

Dropped redundant `promo_code_used`. Loaded cleaned data into PostgreSQL for SQL analysis.

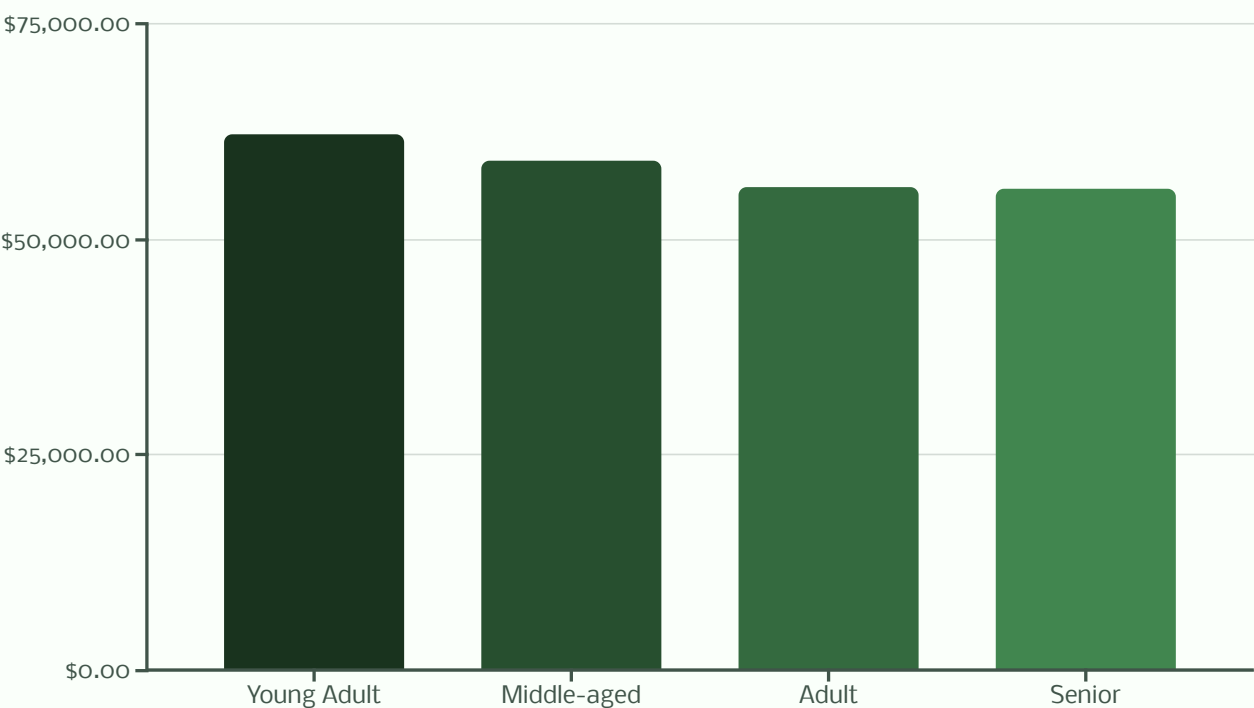
Revenue by Gender and Age Group

Gender Revenue Split

Male customers generated significantly higher total revenue.

Gender	Revenue
Female	\$75,191
Male	\$157,890

Revenue by Age Group



Subscription Impact & Spending

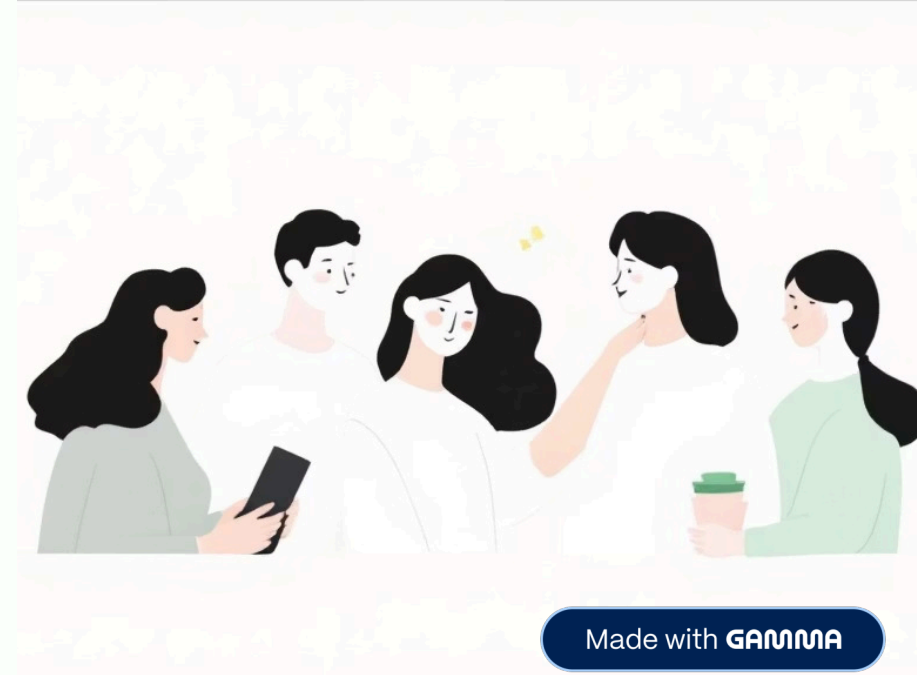
Subscribers have a slightly lower average spend, but repeat buyers show high subscription rates.

Subscribers vs. Non-Subscribers

Non-subscribers have a slightly higher average spend (\$59.87) than subscribers (\$59.49).

Repeat Buyer Loyalty

Customers with >5 purchases are highly likely to subscribe (958 Yes vs. 2518 No).



Top Products and Ratings

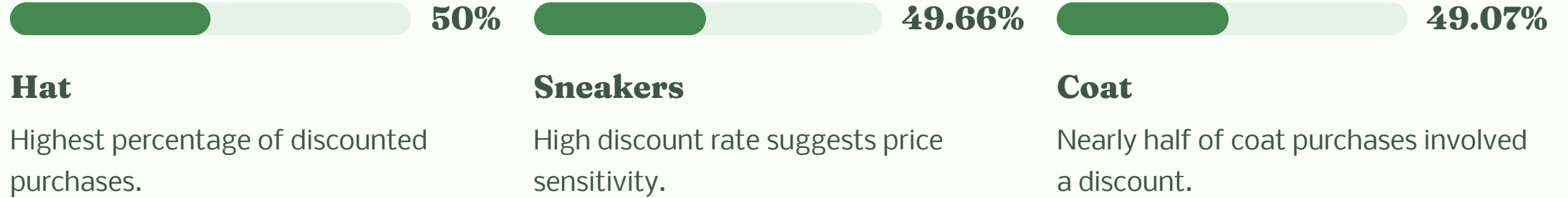
Highest Rated Products

Focus on promoting these top-rated items in marketing campaigns.

1. Gloves (3.86)
2. Sandals (3.84)
3. Boots (3.82)
4. Hat (3.80)
5. Skirt (3.78)



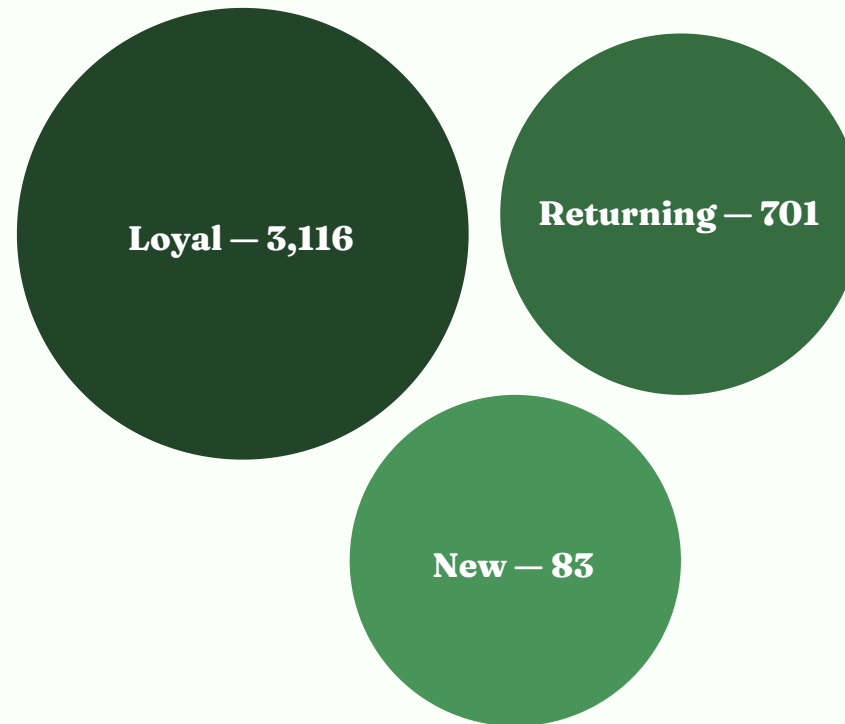
Discount Dependency and Shipping



❏ **Shipping Spend:** Express shipping users have a higher average purchase amount (\$60.48) than Standard users (\$58.46).

Customer Segmentation

Classification based on purchase history reveals a strong base of loyal customers.



“

Loyal Segment

3,116 customers form the core of the customer base.

”

“

Returning Segment

701 customers who have made multiple purchases.

”

“

New Segment

83 customers, representing growth opportunity.

”

Strategic Business Recommendations



Product Positioning

Highlight top-rated and best-selling products in all campaigns.



Customer Loyalty

Reward repeat buyers to transition them into the "Loyal" segment.



Review Discount Policy

Balance sales boosts from discounts with margin control.



Targeted Marketing

Focus efforts on high-revenue age groups and express-shipping users.



Boost Subscriptions

Promote exclusive benefits to increase subscriber base.