



Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.



Project Overview

Goal

Analyze 3,900 purchases to understand spending patterns, segments, and preferences.

Data Source

Transactional data across various product categories.

Outcome

Actionable insights for business strategy.

Dataset Summary

Key Features

- Customer demographics (Age, Gender, Location, Subscription Status)
- Purchase details (Item, Category, Amount, Season, Size, Color)
- Shopping behavior (Discount, Promo Code, Previous Purchases, Frequency, Review Rating, Shipping Type)

Data Volume

- 3,900 Rows
- 18 Columns
- 37 missing values in Review Rating



Exploratory Data Analysis (Python)

01

Data Loading & Exploration

Imported dataset with pandas; checked structure and summary statistics.

02

Data Cleaning

Imputed missing 'Review Rating' values using median per category.

03

Column Standardization

Renamed columns to snake_case for readability.

04

Feature Engineering

Created 'age_group' and 'purchase_frequency_days'.

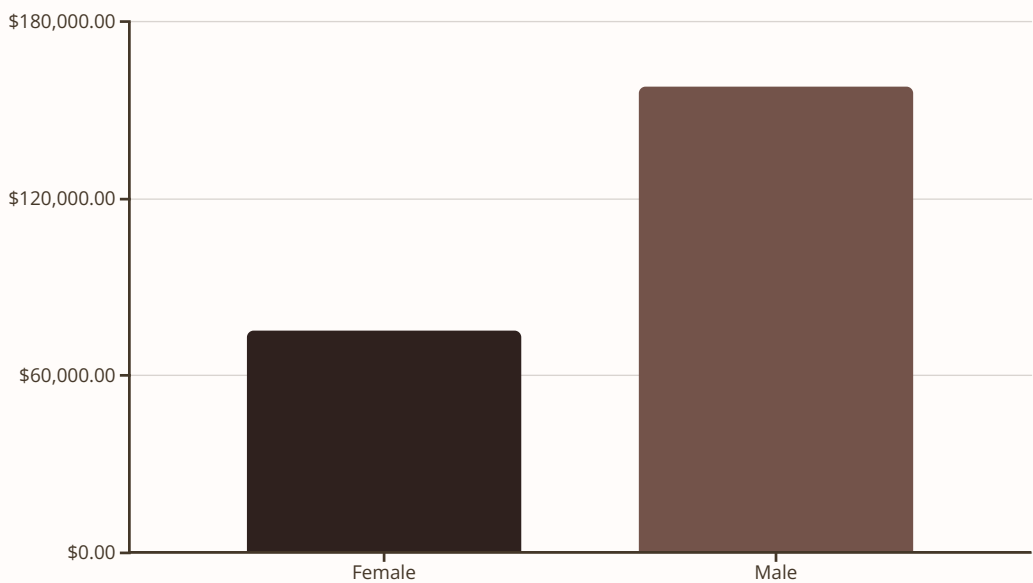
05

Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.

Data Analysis (SQL) - Revenue & Discounts

Revenue by Gender



High-Spending Discount Users

Identified 839 customers who used discounts but spent above average.



Discount-Dependent Products

Top 5 products with highest percentage of discounted purchases:

- Hat (50%)
- Sneakers (49.66%)
- Coat (49.07%)

Customer



Product Performance & Shipping

1

Top 5 Products by Rating

Gloves (3.86), Sandals (3.84), Boots (3.82), Hat (3.80), Skirt (3.78).

2

Shipping Type Comparison

Express shipping users have slightly higher average purchase amounts (\$60.48) than Standard (\$58.46).

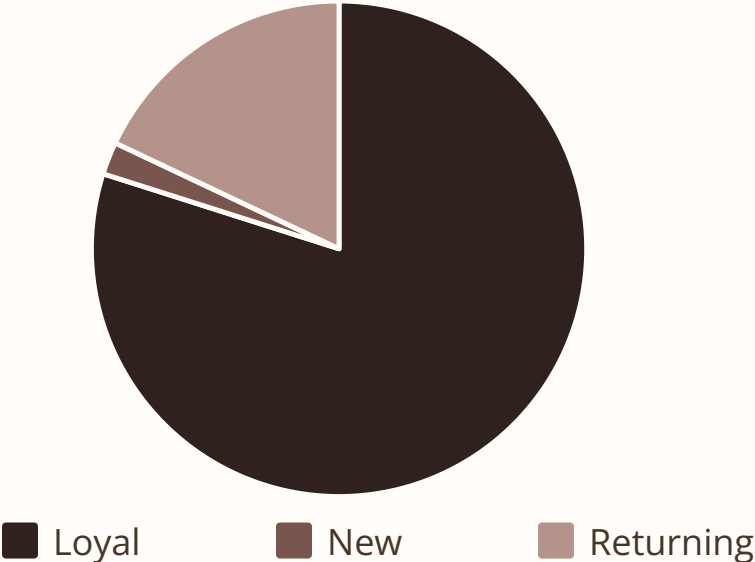
Subscription & Segmentation Insights

Subscribers vs. Non-Subscribers

Yes	1053	\$59.49	\$62,645
No	2847	\$59.87	\$170,436

Non-subscribers contribute more total revenue due to higher volume.

Customer Segmentation



Majority of customers are loyal (3116).



Jewelry, Sunglasses, Belt are top sellers.



Blouse, Pants, Shirt are most purchased.



Sandals, Shoes, Sneakers lead the category.



Jacket and Coat are top choices.

Age & Loyalty Trends

Repeat Buyers & Subscriptions

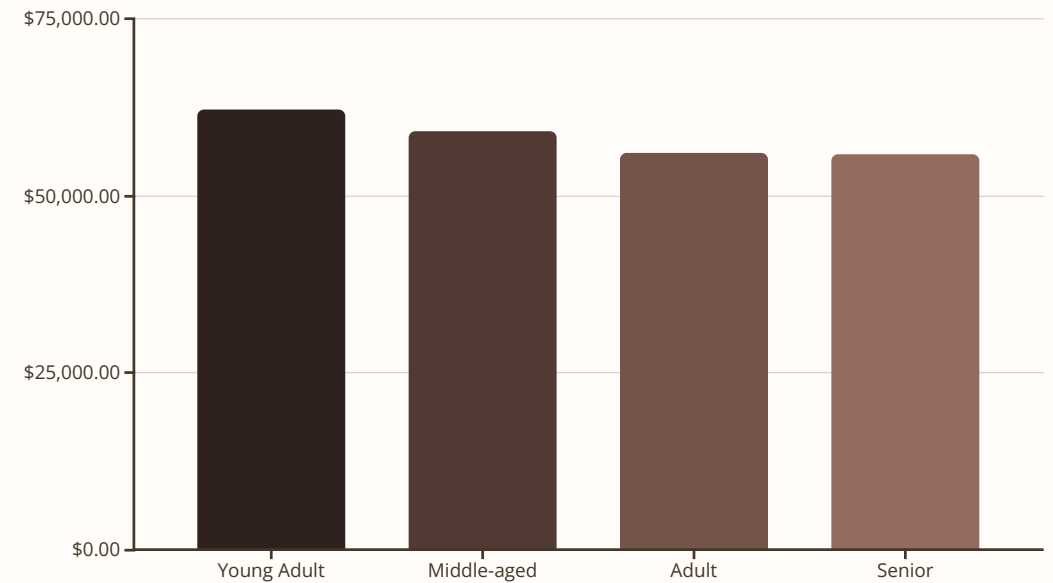
Customers with >5 purchases:

- No Subscription: 2518
- Yes Subscription: 958

Repeat buyers are less likely to subscribe.



Revenue by Age Group



Young Adults contribute the highest revenue.

Business Recommendations

→ **Boost Subscriptions**

Promote exclusive benefits to increase subscriber base.

→ **Customer Loyalty Programs**

Reward repeat buyers to foster loyalty and move them to "Loyal" segment.

→ **Review Discount Policy**

Strategically manage discounts to balance sales and profit margins.

→ **Product Positioning**

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

→ **Targeted Marketing**

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