Customer Shopping Behavior Analysis

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

Project Overview & Dataset

Project Goal

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

Dataset Snapshot

- 3,900 rows (purchases)
- 18 columns (features)
- 37 missing values in Review Rating

Key Dataset 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 Preparation in Python

Data Loading & Exploration

Imported with pandas, checked structure and summary statistics.

Missing Data Handling

Imputed missing Review Ratings using median per product category.

Feature Engineering

Created age groups and purchase frequency columns.

Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.

SQL Analysis: Key Findings

Revenue by Gender

Male customers generated significantly more revenue ($157,890) than female customers ($75,191).

Top 5 Products by Rating

Gloves, Sandals, Boots, Hat, and Skirt received the highest average review ratings.

Shipping Type Comparison

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

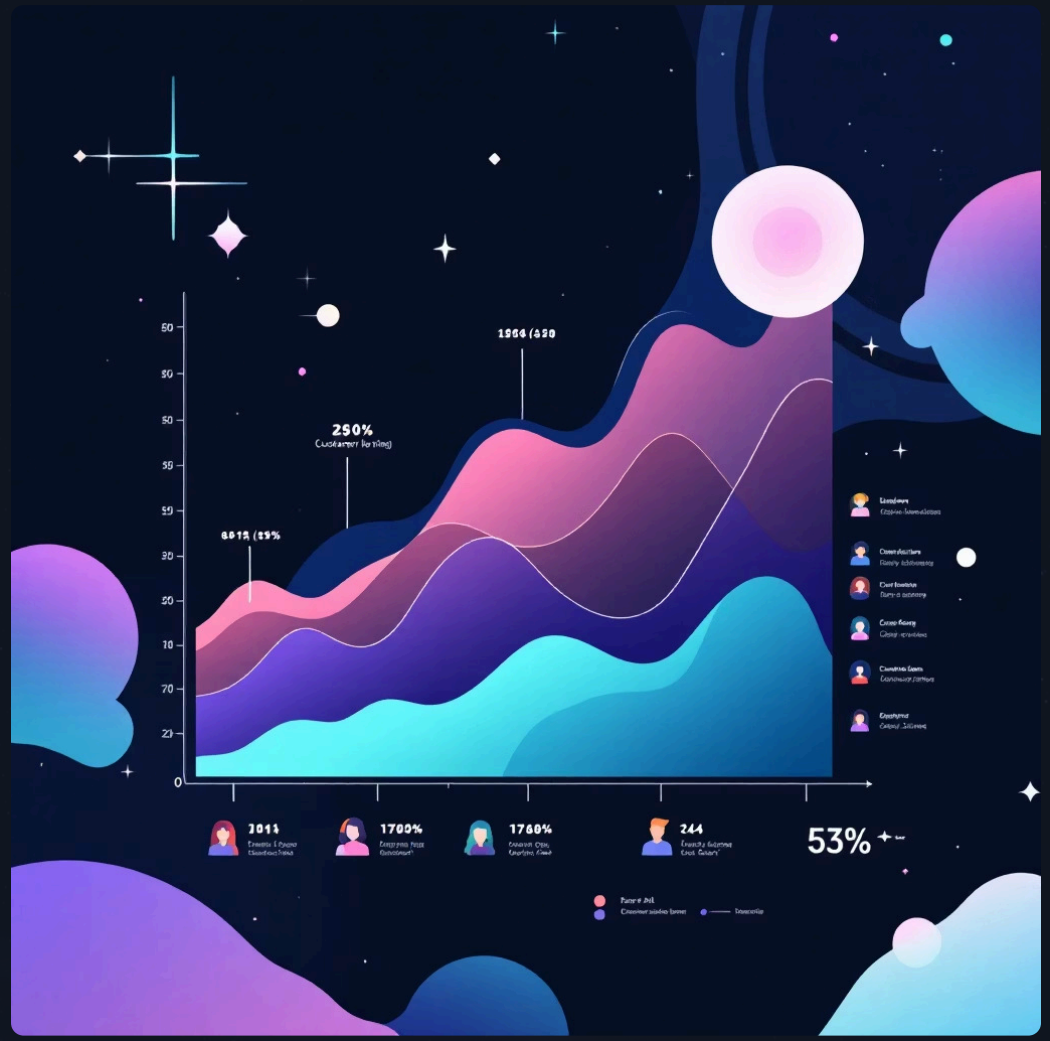
SQL Analysis: Customer & Product Insights

Discount-Dependent Products

Hat, Sneakers, Coat, Sweater, and Pants had the highest percentage of discounted purchases.

Customer Segmentation

Loyal customers (3116) form the largest segment, followed by Returning (701) and New (83).



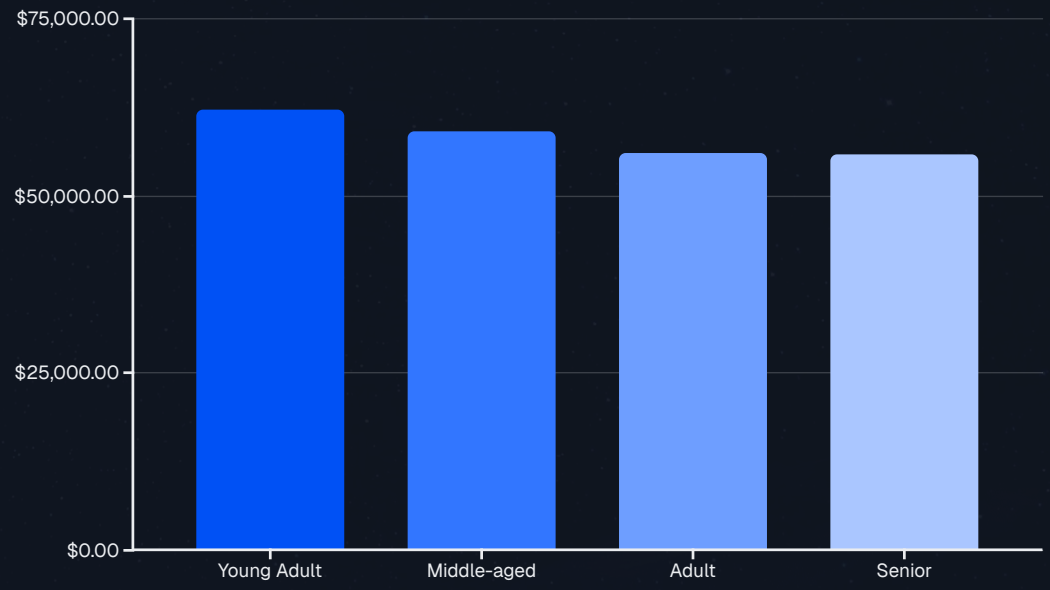
Subscription & Age Group Insights

Repeat Buyers & Subscriptions

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

Subscribers vs. Non-Subscribers

Non-subscribers have higher total revenue ($170,436) but similar average spend to subscribers.



Young Adults contribute the most to total revenue.

Top Products by Category

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

Jewelry, Blouse, Sandals, and Jacket are the top-selling items in their respective categories.

Interactive Power BI Dashboard

Visualizing insights for dynamic exploration and decision-making.

Strategic Business Recommendations

1

Boost Subscriptions

Promote exclusive benefits to increase subscriber base.

2

Customer Loyalty Programs

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

3

Review Discount Policy

Optimize discount strategies to balance sales growth with profit margins.

4

Targeted Marketing

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