

Customer Shopping Behavior Analysis

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



Project Scope and Data Overview

Project Goal

Analyze 3,900 purchases to uncover spending patterns, customer segments, product preferences, and subscription behavior.

Key Data Features

Includes demographics, purchase details (Category, Amount, Size), and shopping behavior (Discount, Frequency, Review Rating).

Data Volume

3,900 rows and 18 columns of transactional data. Only 37 missing values in the Review Rating column.

3900

COO



Exploratory Data Analysis (EDA) in Python

Data Preparation Steps

01

Loading & Exploration

Imported dataset using pandas and checked structure/summary statistics.

03

Standardization

Renamed columns to `snake_case` for better readability and documentation.

05

Integration

Loaded the cleaned DataFrame into PostgreSQL for structured SQL analysis.

02

Data Cleaning

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

04

Feature Engineering

Created `age_group` and `purchase_frequency_days` columns.



SQL Analysis: Revenue and Spending

Structured analysis in PostgreSQL revealed significant differences in spending patterns.

Revenue by Gender

Male customers generated significantly higher total revenue.

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

High-Spending Discount Users

Identified 839 customers who used a discount but still spent above the average purchase amount (\$59.76).



Product Performance and Preferences



Top Rated: Gloves

Gloves received the highest average product rating at 3.86.



High Rating: Sandals

Sandals followed closely with an average rating of 3.84.



Discount-Dependent: Coat

Coats were among the top 5 products with the highest percentage of discounted purchases (49.07%).

Subscription and Shipping Insights

Subscribers vs. Non-Subscribers

Non-subscribers account for 2,847 customers and generate the majority of total revenue (\$170,436).

However, repeat buyers (customers with >5 purchases) are more likely to subscribe (958 Yes vs. 2,518 No).



Avg. Spend (Subscribers)

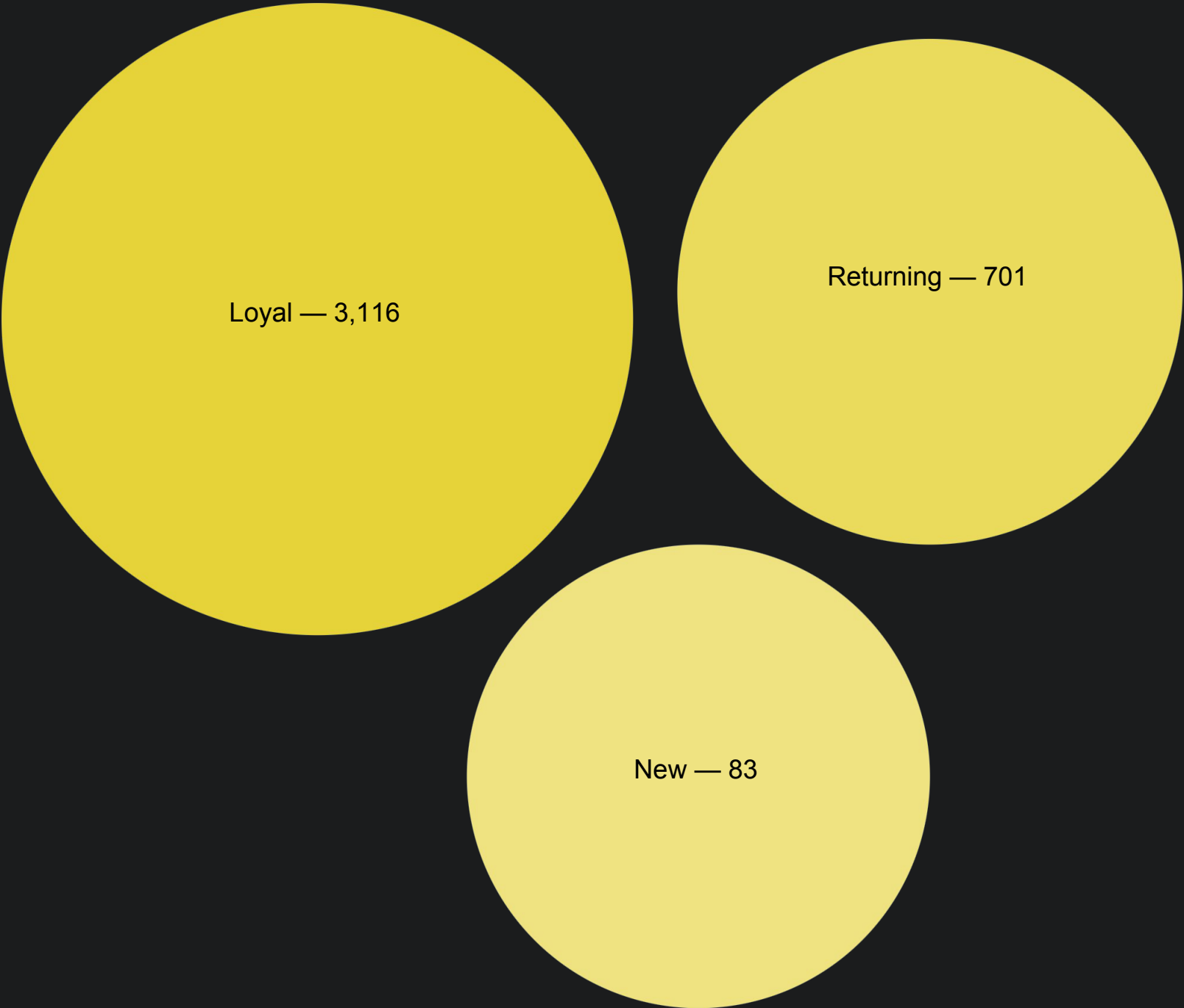


Avg. Spend (Non-Subscribers)

Standard Shipping	Express Shipping
Average Purchase: \$58.46	Average Purchase: \$60.48

Customer Segmentation

Customers were classified into three segments based on their purchase history.



Top Products by Category

Identifying the most frequently purchased items within the four main product categories.

1

Accessories

- Jewelry (171 orders)
- Sunglasses (161 orders)

2

Clothing

- Blouse (171 orders)
- Pants (171 orders)

3

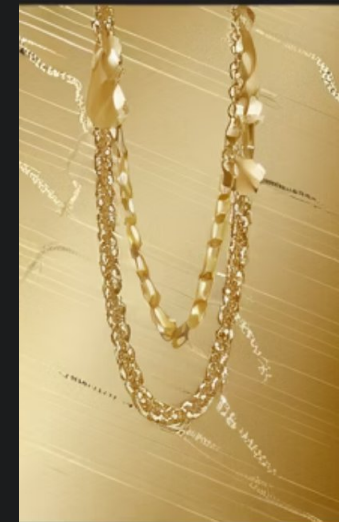
Footwear

- Sandals (160 orders)
- Shoes (150 orders)

4

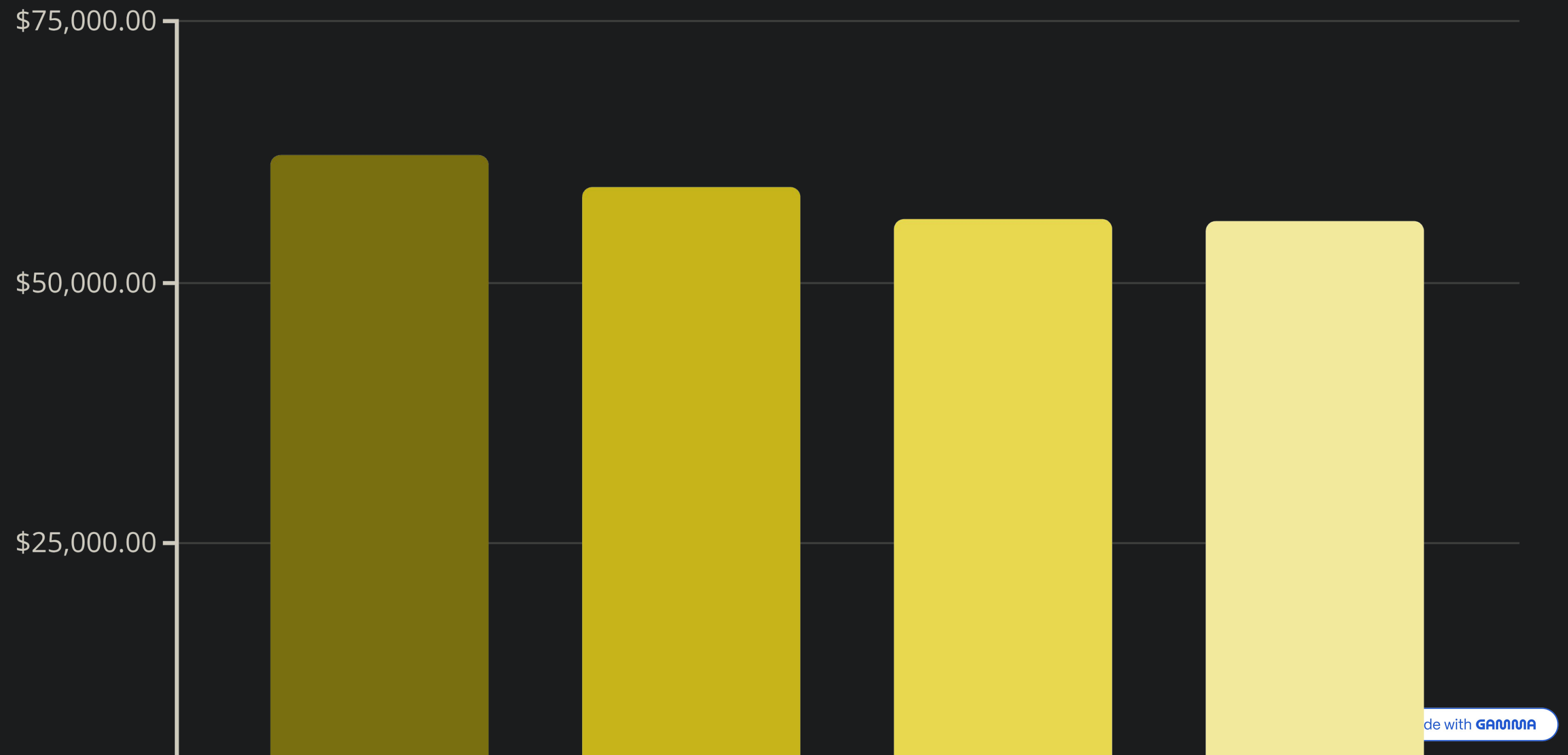
Outerwear

- Jacket (163 orders)
- Coat (161 orders)



Revenue Contribution by Age Group

Young Adults contribute the highest total revenue, followed closely by Middle-aged customers.





Strategic Business Recommendations

→ Boost Subscriptions

Promote exclusive benefits to convert more repeat buyers into subscribers.

→ Customer Loyalty Programs

Implement rewards to move Returning customers into the dominant Loyal segment.

→ Review Discount Policy

Carefully balance sales boosts with margin control, especially for discount-dependent products like Hats and Sneakers.

→ Targeted Marketing

Focus campaigns on high-revenue age groups and leverage the slightly higher average spend of Express Shipping users.