Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.

Project Overview

Data Source
3,900 purchases across various product categories.

Goal
Uncover spending patterns, segments, preferences, and subscription behavior.

Outcome
Guide strategic business decisions with actionable insights.

Dataset Summary

Key Features

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

Data Snapshot

- Rows: 3,900
- Columns: 18
- Missing Data: 37 values in Review Rating

Exploratory Data Analysis (Python)

01

Data Loading & Exploration

Imported dataset, checked structure and summary statistics.

02

Missing Data Handling

Imputed missing 'Review Rating' values by product category median.

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 by Gender

Male: $157,890, Female: $75,191

High-Spending Discount Users

Identified customers using discounts with above-average spend.

Top 5 Products by Rating

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

SQL Insights: Shipping & Subscriptions

Shipping Type Comparison

Standard: $58.46 avg. purchase, Express: $60.48 avg. purchase.

Subscribers vs. Non-Subscribers

Subscribers: 1053 customers, $59.49 avg. spend. Non-Subscribers: 2847 customers, $59.87 avg. spend.
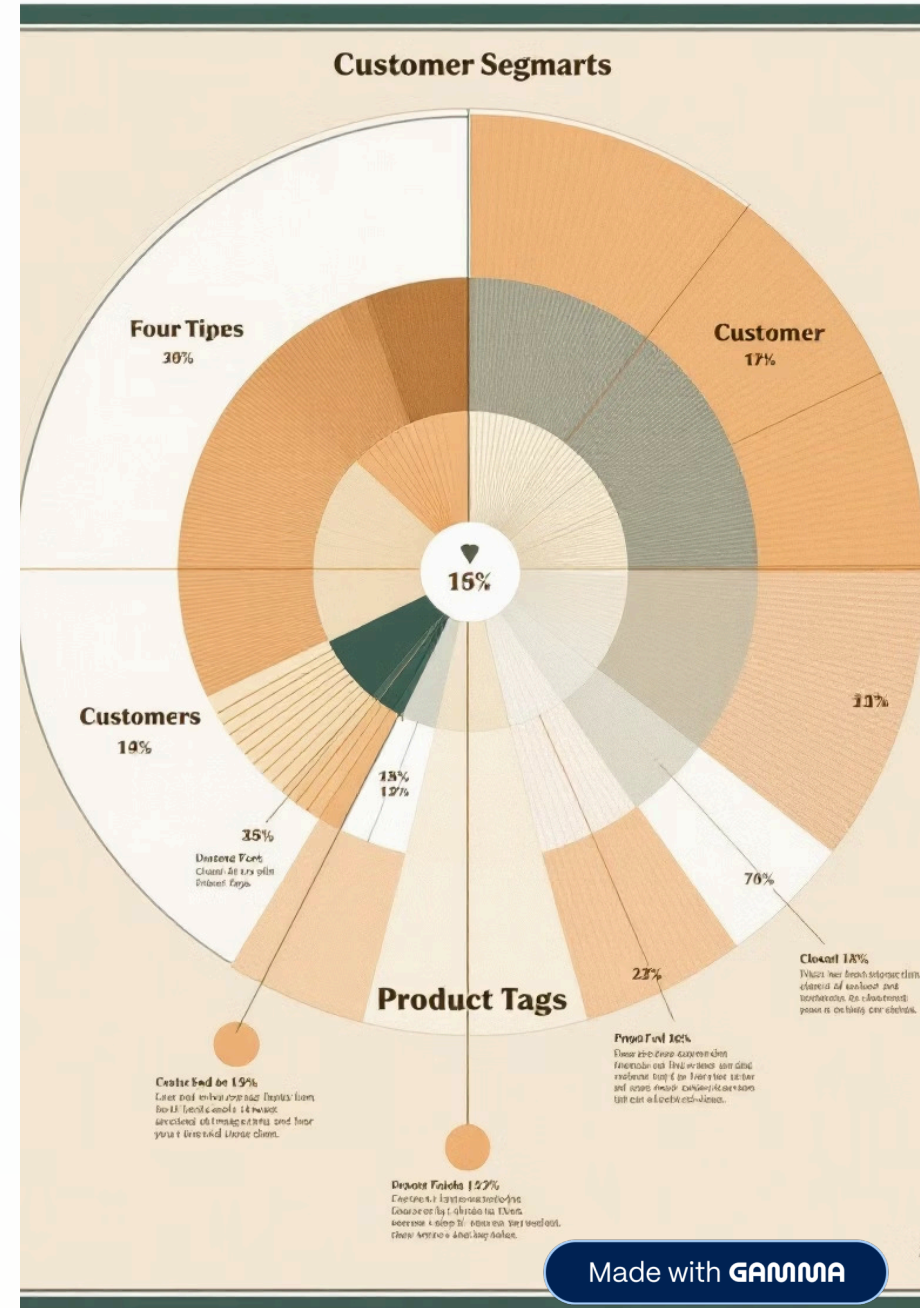
SQL Insights: Product & Customer Segmentation

Discount-Dependent Products

Hat (50%), Sneakers (49.66%), Coat (49.07%), Sweater (48.17%), Pants (47.37%).

Customer Segmentation

Loyal (3116), Returning (701), New (83).
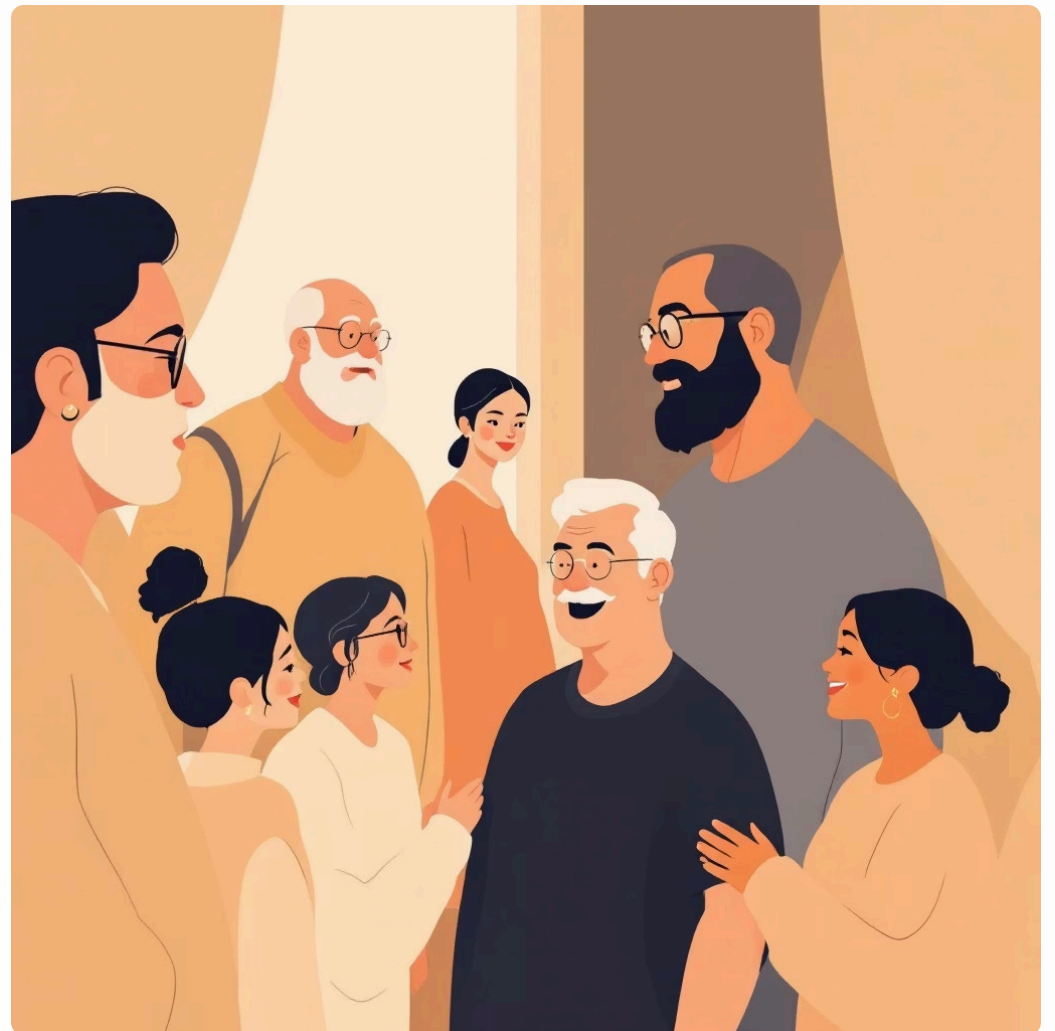
SQL Insights: Top Products & Age Groups

Top 3 Products per Category

- Accessories: Jewelry, Sunglasses, Belt
- Clothing: Blouse, Pants, Shirt
- Footwear: Sandals, Shoes, Sneakers
- Outerwear: Jacket, Coat

Revenue by Age Group

- Young Adult: $62,143
- Middle-aged: $59,197
- Adult: $55,978
- Senior: $55,763

Interactive Dashboard in Power BI

Visualizing key insights for dynamic decision-making.

Customer Behavior Dashboard

K
Customers

$59.76
Average Purchase Amount

Subscription Status

No 73%

Revenue by Category

100K
50K
0K
Clothing | Accessories | Footwear | Outerwear

Sales by Age Group

Young Adult
Middle-aged
Senior
Adult

20K | 40K | 60K

Business Recommendations

→ **Boost Subscriptions**

Promote exclusive benefits for subscribers.

→ **Customer Loyalty Programs**

Reward repeat buyers to foster loyalty.

→ **Review Discount Policy**

Balance sales with margin control.

→ **Product Positioning**

Highlight top-rated and best-selling products.

→ **Targeted Marketing**

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