

Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.





Project Overview

Goal

Uncover insights into spending patterns, customer segments, product preferences, and subscription behavior.

Data Source

Transactional data from 3,900 purchases across various product categories.


Impact

Guide strategic business decisions for optimization and growth.

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, Shipping)



The illustration shows a data table interface with a grid of 18 columns and 3900 rows. The columns are labeled with Chinese characters: 性别 (Gender), 年龄 (Age), 地区 (Location), 职业 (Occupation), 收入 (Income), 消费习惯 (Spending Habits), 购买频率 (Purchase Frequency), 上次购买时间 (Last Purchase Time), 上次购买金额 (Last Purchase Amount), 上次购买物品 (Last Purchase Item), 上次购买数量 (Last Purchase Quantity), 上次购买评价 (Last Purchase Review), 上次购买评分 (Last Purchase Rating), 上次购买日期 (Last Purchase Date), 上次购买地点 (Last Purchase Location), 上次购买方式 (Last Purchase Method), 上次购买渠道 (Last Purchase Channel), and 上次购买平台 (Last Purchase Platform). The table is set against a background with a purple-to-orange gradient. A single row is highlighted in a bright orange color.

Dataset Snapshot

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

Exploratory Data Analysis (Python)

01

Data Loading & Exploration

Imported dataset with `pandas`, checked structure and summary statistics.

02

Missing Data Handling

Imputed missing 'Review Rating' using median per product 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 using SQL: Key Findings

Revenue by Gender

Male: \$157,890

Female: \$75,191

Top 5 Products by Rating

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

Shipping Type Comparison

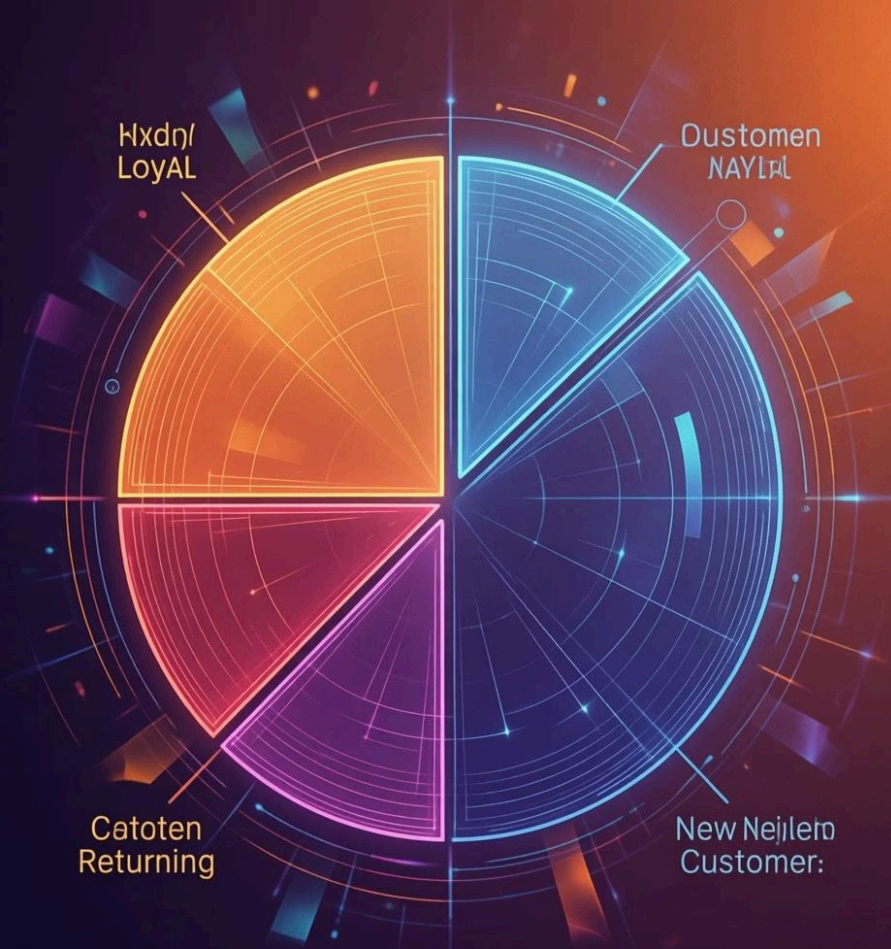
Standard: \$58.46 avg.

Express: \$60.48 avg.

Discount-Dependent Products

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

SQL Insights: Customer Segmentation



Loyal

3,116 Customers



Returning

701 Customers



New

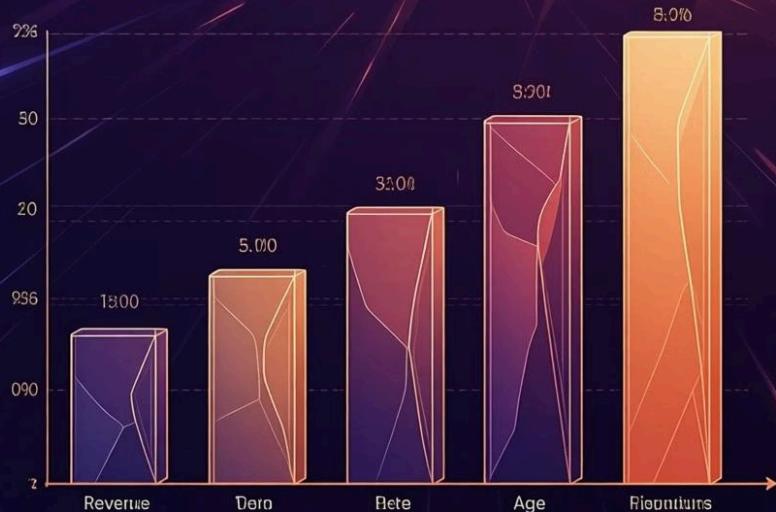
83 Customers

Subscribers vs. Non-Subscribers

- Subscribers (1,053): \$59.49 avg. spend, \$62,645 total revenue
- Non-Subscribers (2,847): \$59.87 avg. spend, \$170,436 total revenue

Repeat Buyers & Subscriptions

- 958 repeat buyers are subscribers.
- 2,518 repeat buyers are not subscribers.



Top Products by Category & Age Group Revenue

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 insights for actionable business strategies.

3.9K

Customers

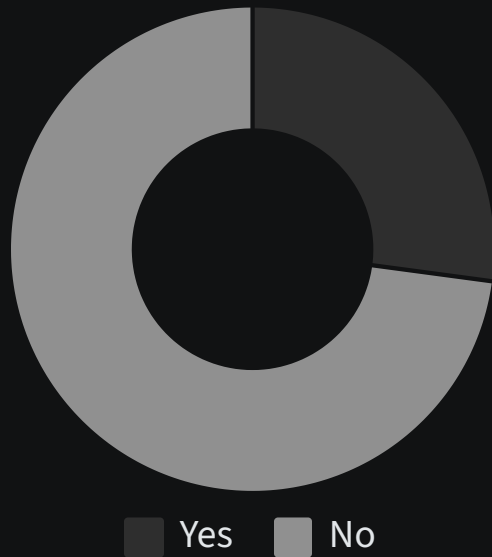
\$59.76

Avg. Purchase

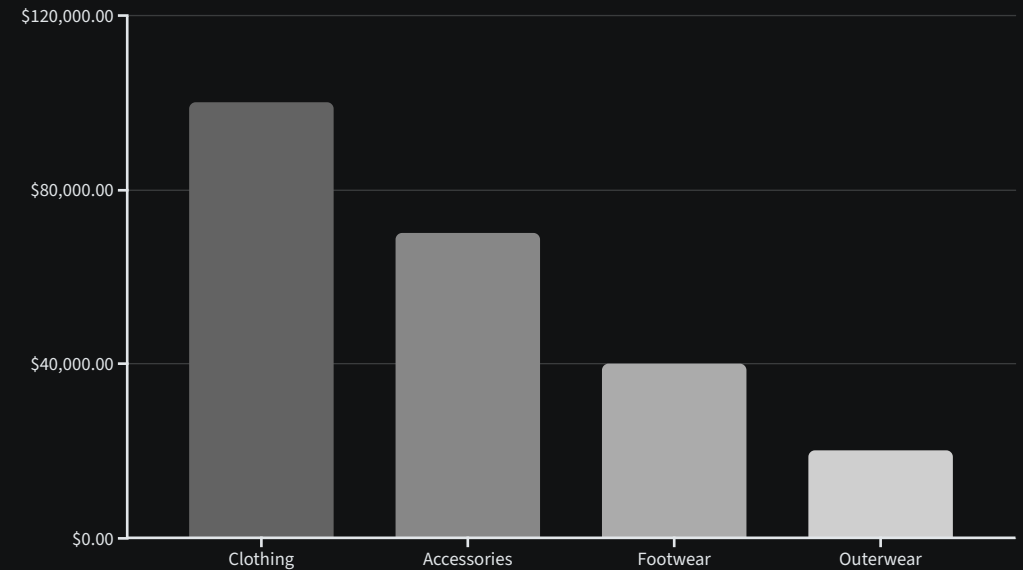
3.75

Avg. Review

Dashboard Highlights



27% of customers are subscribers.



Clothing generates the highest revenue.

Business Recommendations



Boost Subscriptions

Given that only 27% of customers are subscribers, there's significant potential to increase recurring revenue. Promote exclusive benefits such as members-only discounts, early access to new collections, or free expedited shipping. Clearly communicate the value proposition of a subscription through targeted email campaigns and prominent website banners to convert more one-time buyers into loyal subscribers, enhancing customer lifetime value.



Enhance Customer Loyalty

Implement a comprehensive loyalty program to reward repeat buyers and foster stronger brand affinity. This could include a tiered points system where customers earn rewards for every purchase, personalized offers based on past buying behavior, or exclusive invitations to VIP events. Building a strong base of loyal customers not only reduces acquisition costs but also encourages word-of-mouth referrals and consistent sales.



Optimize Discount Policy

Rigorously review the current discount policy to ensure it effectively balances sales generation with healthy profit margins. Analyze the impact of past promotions on both revenue and profitability. Consider strategic discounting for off-season inventory or to drive traffic during slow periods, but avoid frequent, deep discounts that could devalue your products and erode margins. Focus on value-added promotions over simple price reductions.



Strategic Product Positioning

Leverage the success of high-performing categories like 'Clothing', which currently generates the highest revenue. Strategically position these top-rated items more prominently across all sales channels, including website homepages, email newsletters, and in-store displays. Highlight customer reviews and testimonials for these products to build trust and encourage purchases, while also using them to cross-sell complementary items.



Refine Targeted Marketing

Analyze customer data to identify high-revenue segments and tailor marketing efforts specifically to these groups. Develop personalized campaigns based on demographic data, purchase history, and browsing behavior. For instance, customers who frequently purchase from the 'Clothing' category could receive exclusive previews of new apparel lines. This precision targeting will maximize marketing ROI and deepen engagement with your most valuable customers.