

Customer Shopping Behavior Analysis

Analyzing 3,900 purchases to uncover insights into spending patterns, customer segments, and product preferences that drive strategic business decisions.





 DATASET OVERVIEW

Understanding Our Data Foundation

3,900

Total Purchases

Comprehensive transaction
records analyzed

18

Data Columns

Rich feature set covering
demographics and behavior

\$59.76

Avg Purchase

Mean transaction value
across all categories

3.75

Avg Rating

Customer satisfaction
score out of 5.0

Python Analysis & Data Cleaning

01

Data Loading & Exploration

Imported dataset using pandas and performed initial structure analysis with `df.info()` and summary statistics.

03

Feature Engineering

Created `age_group` bins and `purchase_frequency_days` columns. Standardized column names to snake case.

02

Missing Data Handling

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

04

Database Integration

Connected to PostgreSQL and loaded cleaned DataFrame for advanced SQL business analysis.

Key Business Findings

Revenue by Gender

Male customers generated **\$157,890** in revenue compared to **\$75,191** from female customers—more than double the contribution.



Top Products by Rating

1. Gloves (3.86)
2. Sandals (3.84)
3. Boots (3.82)
4. Hat (3.80)
5. Skirt (3.78)

These highly-rated products present opportunities for featured marketing campaigns.



Shipping & Discount Insights



Express vs Standard

Express shipping customers spend **\$60.48** on average versus **\$58.46** for Standard—indicating premium service preference.



Smart Discount Users

839 customers used discounts but still spent above average, showing strategic shopping behavior.



Discount-Dependent Products

Hats lead at **50%** discount rate, followed by Sneakers (49.66%) and Coats (49.07%).

Understanding Customer Loyalty

Loyal Customers
3,116 customers (79.9%) with
consistent purchase history



Returning

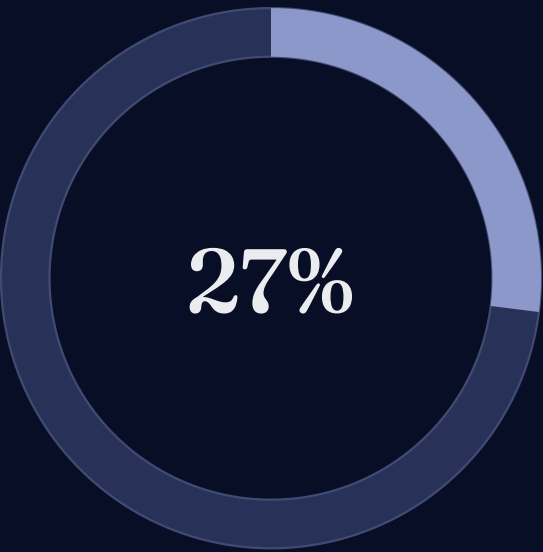
701 customers (18.0%) showing
repeat behavior

New

83 customers (2.1%) just beginning
their journey

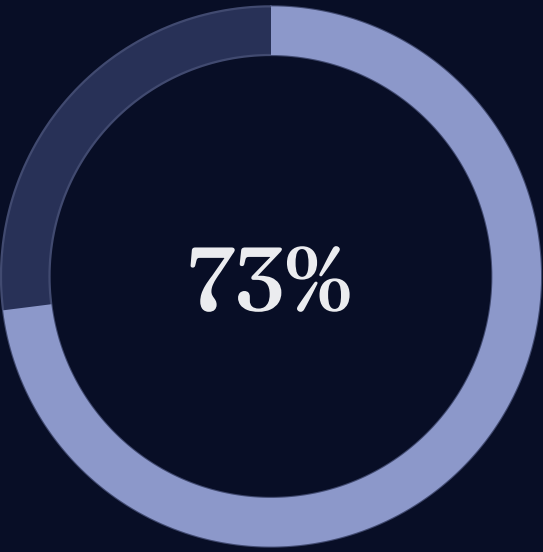
Among repeat buyers with 5+ purchases, **958 are subscribers** while **2,518 are not**—revealing significant subscription growth opportunity.

Subscription Status Analysis



Subscribers

1,053 customers



Non-Subscribers

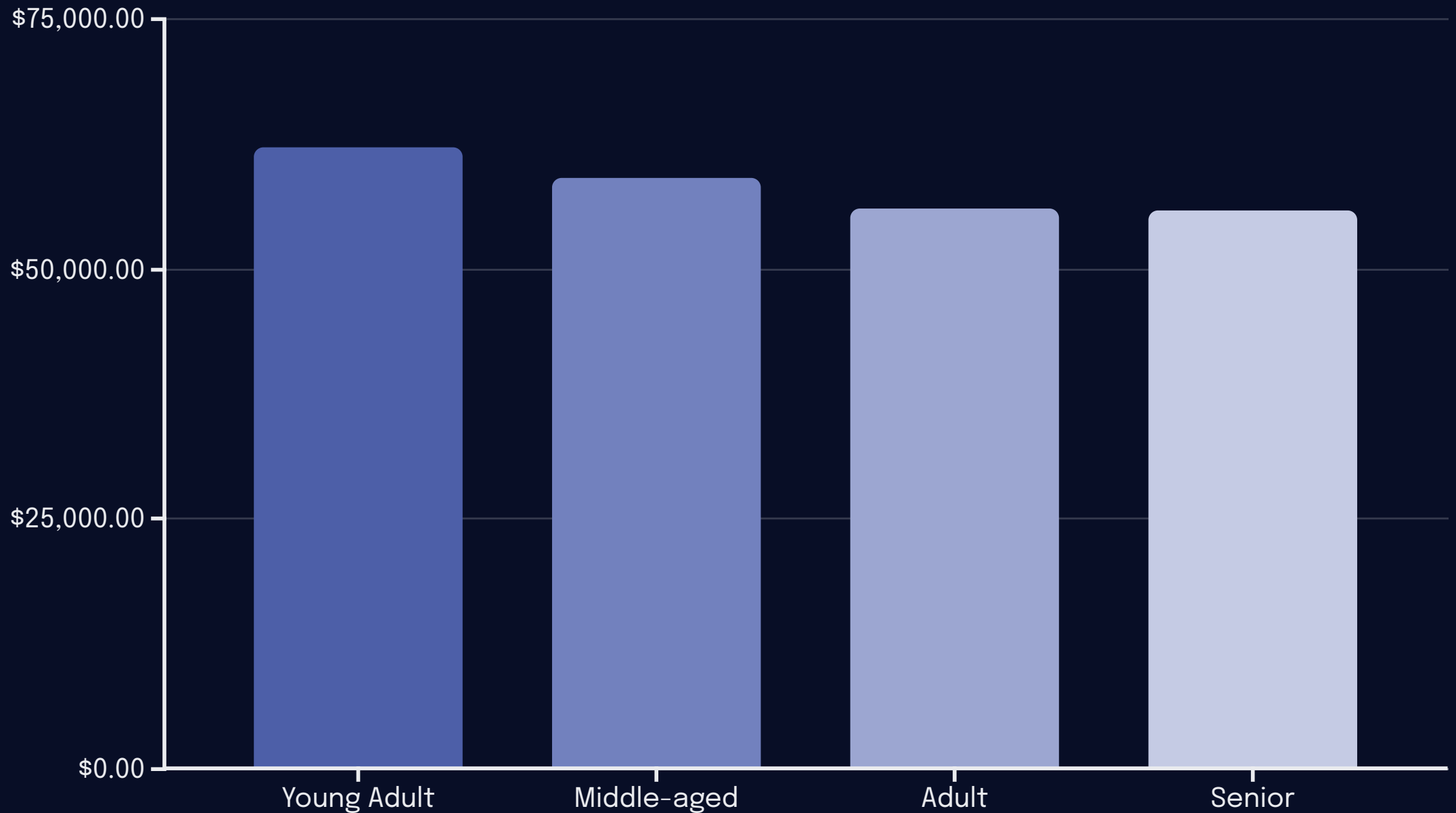
2,847 customers

Revenue Comparison

Subscribers average **\$59.49** per purchase (**\$62,645** total revenue) while non-subscribers average **\$59.87** (**\$170,436** total).

Despite similar spending patterns, the massive non-subscriber base represents untapped subscription potential.

Revenue by Age Group



Young Adults lead revenue generation at **\$62,143**, followed closely by Middle-aged customers at **\$59,197**. Revenue distribution is relatively balanced across all age groups.

Interactive Dashboard Insights

Category Performance

Clothing dominates both revenue and sales volume, followed by Accessories, Footwear, and Outerwear.

Dynamic Filtering

Dashboard enables real-time analysis by subscription status, gender, category, and shipping type for actionable insights.

Visual Storytelling

Interactive charts reveal patterns in customer behavior, purchase preferences, and demographic trends at a glance.

Driving Business Growth



Boost Subscriptions

Promote exclusive benefits to convert the 73% non-subscriber base. Target repeat buyers with 5+ purchases.



Loyalty Programs

Reward repeat buyers to accelerate movement from Returning to Loyal segments, increasing lifetime value.



Optimize Discounts

Review discount policy for high-dependency products like Hats and Sneakers to balance sales with margins.



Targeted Marketing

Focus campaigns on Young Adults, top-rated products (Gloves, Sandals, Boots), and express-shipping customers.

