



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

3,900

Total Purchases

Transactions analyzed across
all categories

18

Data Columns

Features covering
demographics and behavior

50

Locations

Geographic diversity in
customer base

25

Product Types

Items across multiple
categories

Customer Data

Age, gender, location, and subscription status tracked for segmentation analysis.

Purchase Details

Item, category, amount, season, size, color, and shipping preferences captured.

Data Preparation & Cleaning

01

Data Loading & Exploration

Imported dataset using pandas, analyzed structure with `df.info()` and summary statistics.

02

Missing Data Handling

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

03

Feature Engineering

Created `age_group` bins and `purchase_frequency_days` columns for deeper analysis.

04

Database Integration

Connected to PostgreSQL and loaded cleaned data for SQL business analysis.



Revenue Insights by Gender



Male Customers Drive Revenue

Male customers generate \$157,890 in total revenue, more than double the \$75,191 from female customers. This significant gap suggests opportunities for targeted marketing strategies.

Top-Rated Products



Gloves

3.86 average rating



Sandals

3.84 average rating



Boots

3.82 average rating



Hat

3.80 average rating



Skirt

3.78 average rating

These top-rated products represent excellent opportunities for featured promotions and marketing campaigns to drive sales.

Shipping & Subscription Analysis

Shipping Type Comparison

Express: \$60.48 average purchase

Standard: \$58.46 average purchase

Express shipping customers spend slightly more per transaction, indicating higher-value customer segment.

Subscription Impact

Subscribers: 1,053 customers, \$59.49 avg spend

Non-subscribers: 2,847 customers, \$59.87 avg spend

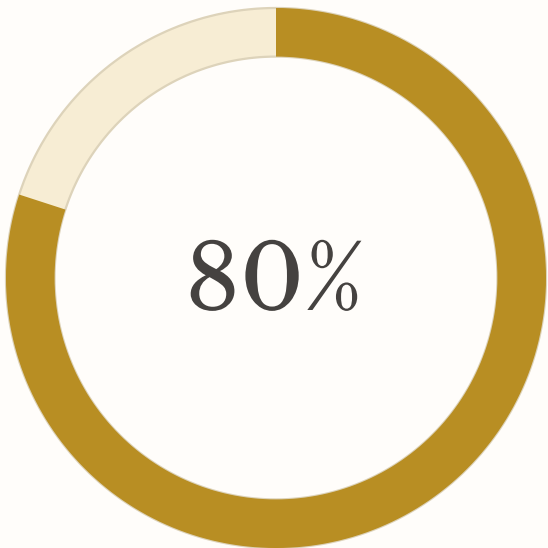
Similar spending patterns suggest subscription benefits need enhancement to drive value.



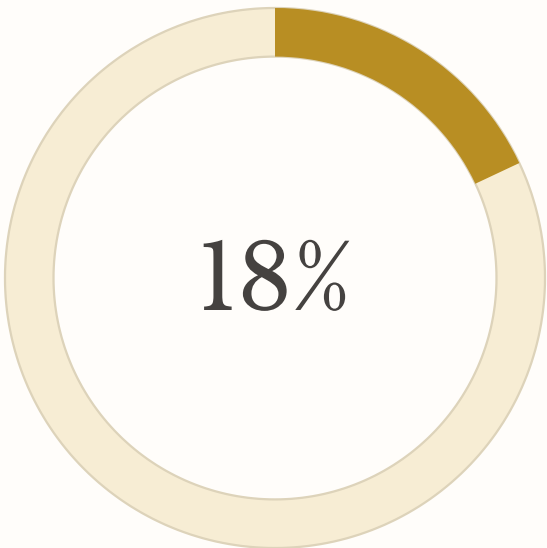
Customer Segmentation



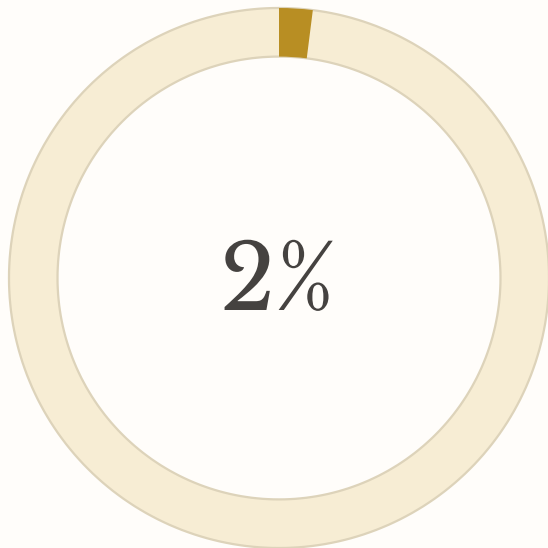
The majority of customers (80%) fall into the Loyal segment, demonstrating strong customer retention. Focus on converting New and Returning customers into Loyal buyers through targeted engagement.



Loyal Customers

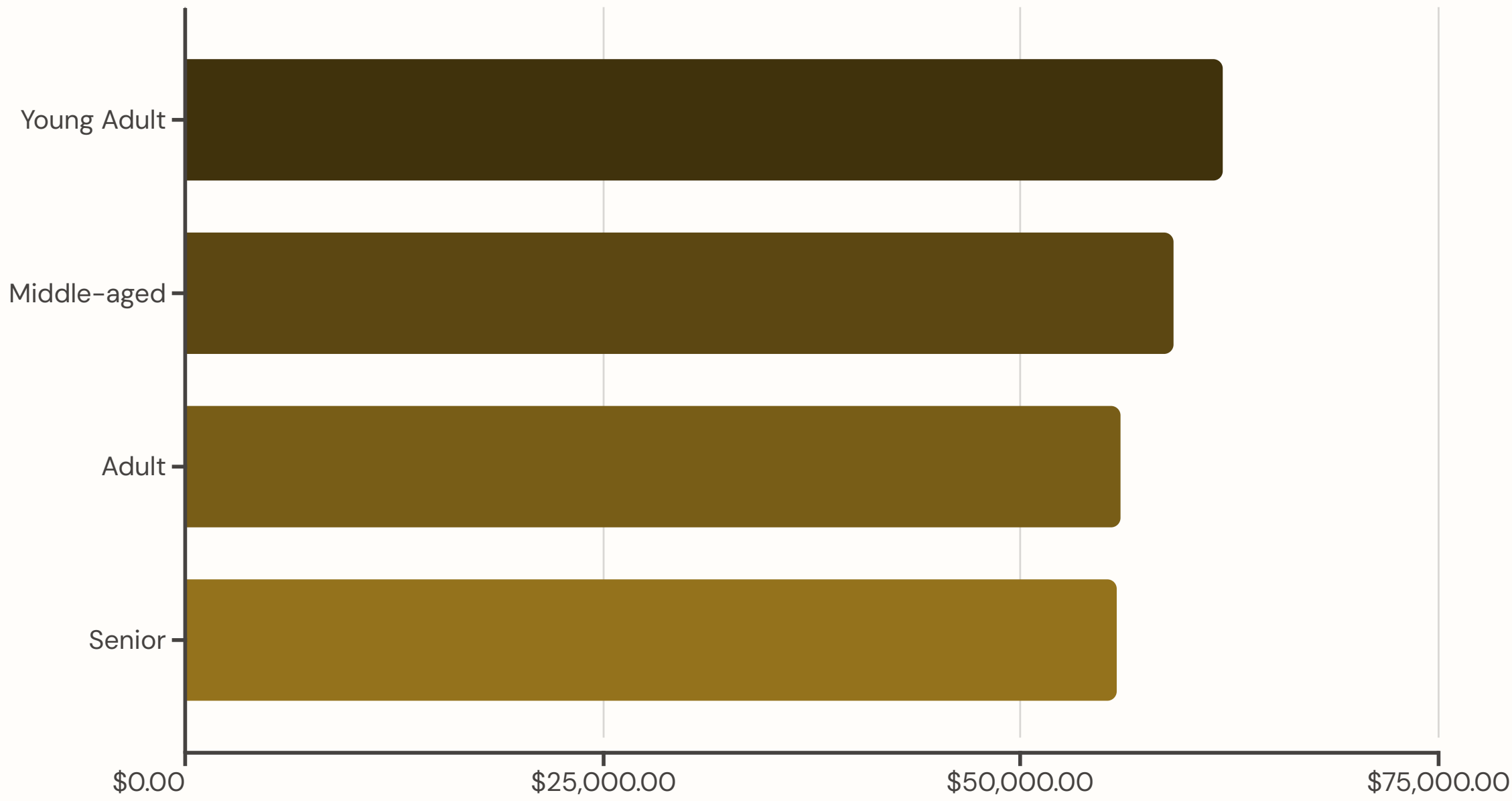


Returning



New

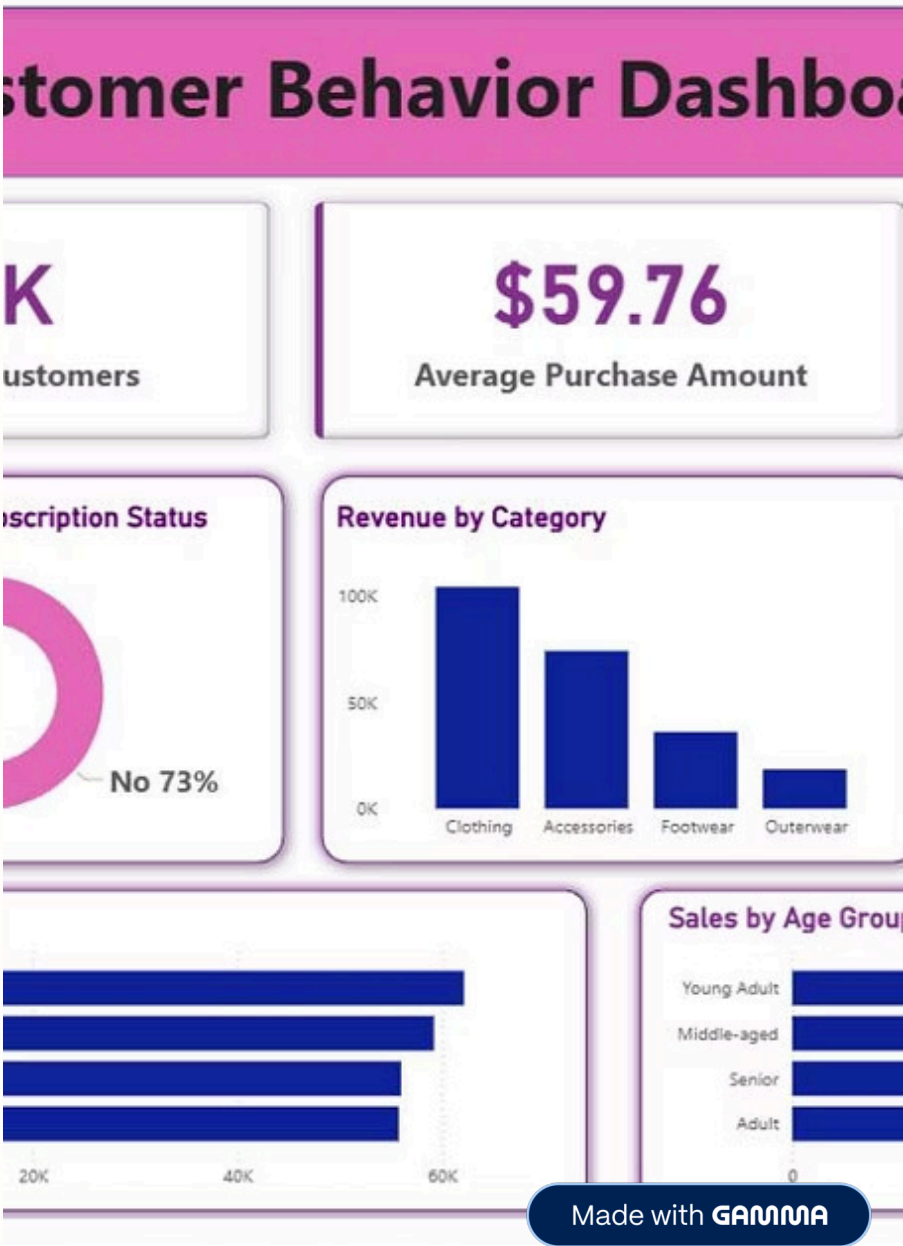
Revenue by Age Group



Young Adults lead revenue generation at \$62,143, followed closely by Middle-aged customers. Revenue is relatively balanced across age groups, suggesting broad market appeal.

Power BI Dashboard

Interactive dashboard visualizes key metrics including customer segments, product performance, revenue trends, and behavioral patterns for real-time business intelligence.



Strategic Recommendations

1

Boost Subscriptions

Promote exclusive benefits and perks to increase subscriber value proposition and conversion rates.

2

Customer Loyalty Programs

Reward repeat buyers with incentives to accelerate movement into the Loyal segment.

3

Review Discount Policy

Balance promotional sales boosts with margin control to optimize profitability.

4

Product Positioning

Highlight top-rated and best-selling products in marketing campaigns to drive conversions.

5

Targeted Marketing

Focus efforts on high-revenue age groups and express-shipping users for maximum ROI.