Customer Shopping Behavior Analysis

Analyzing 3,900 purchases to uncover spending patterns, customer segments, and strategic opportunities

The Foundation

3,900

Total Purchases

Transactions analyzed across all categories

18

Data Columns

Features tracking demographics and behavior

50

Locations

Geographic coverage across regions

25

Products

Unique items purchased by customers

Data Preparation & Cleaning

01

Data Loading

Imported dataset using pandas, explored 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 analysis

Revenue by Gender
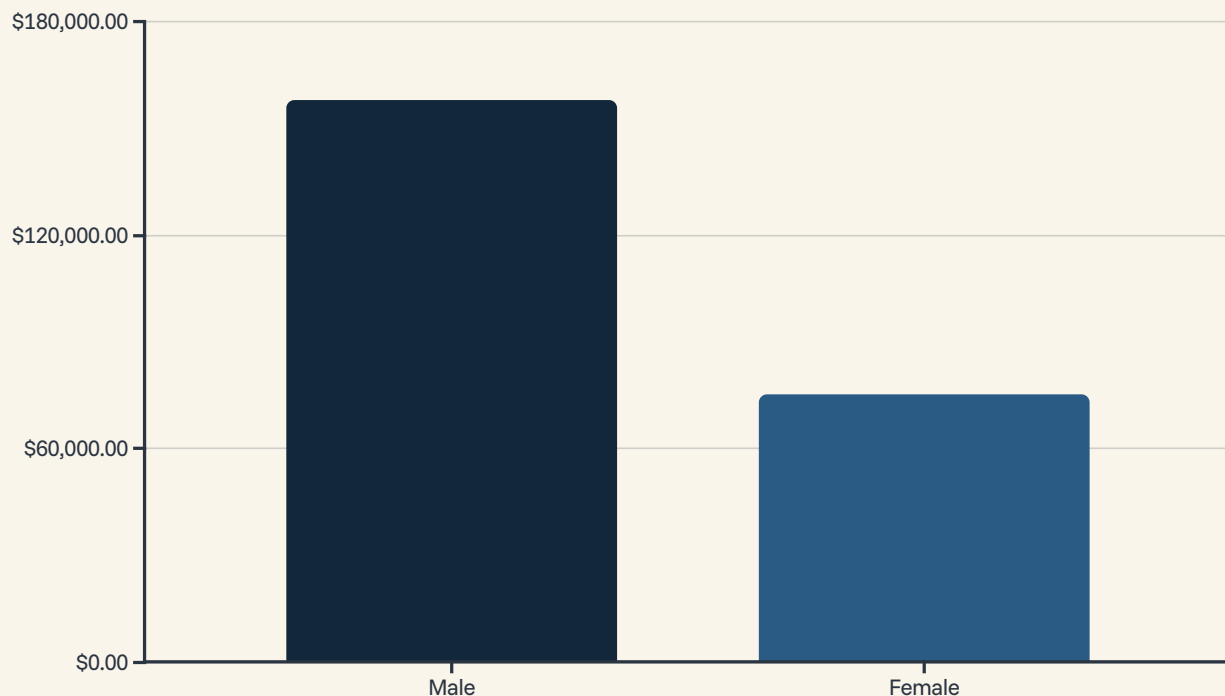
Key Finding

Male customers generate 2.1x more revenue than female customers

Total revenue: $233,081

Top Products & Shipping Insights

Highest Rated

- Gloves: 3.86★
- Sandals: 3.84★
- Boots: 3.82★
- Hat: 3.80★
- Skirt: 3.78★

Shipping Comparison

Express: $60.48 avg

Standard: $58.46 avg
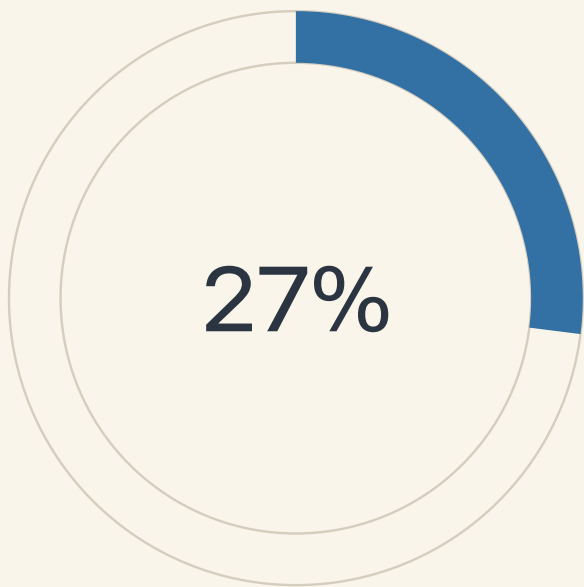
Express users spend 3.5% more per purchase

Discount Leaders

- Hat: 50% discount rate
- Sneakers: 49.66%
- Coat: 49.07%
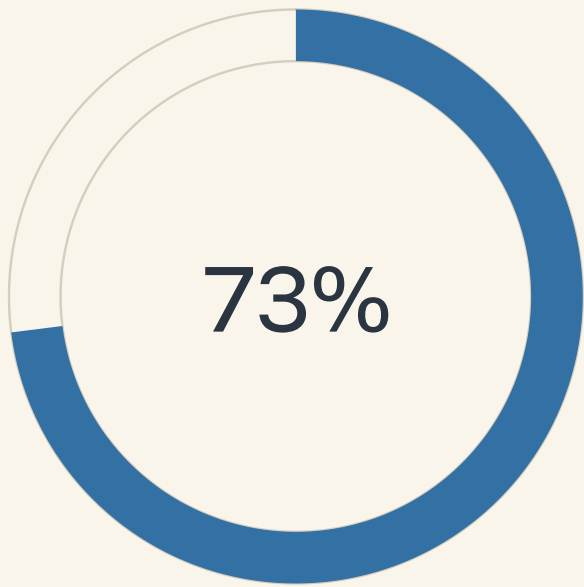- Sweater: 48.17%
- Pants: 47.37%

Loyalty Distribution

Returning

701 customers

18.0% of customer base

Loyal

3,116 customers

79.9% of customer base

New

83 customers

2.1% of customer base

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Subscription Analysis

27%

Subscribers

1,053 customers with subscriptions

73%

Non-Subscribers

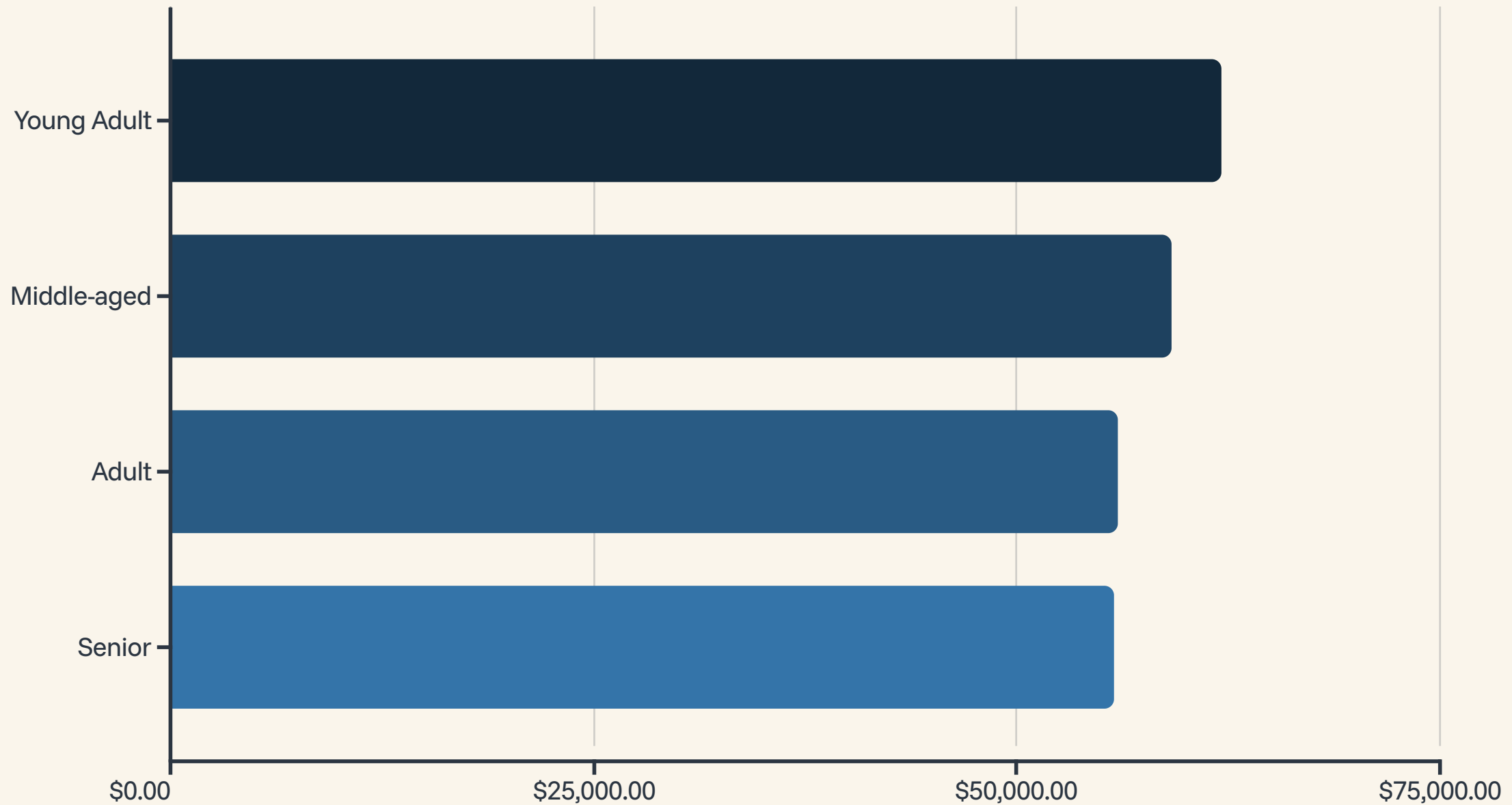2,847 customers without subscriptions

Revenue Comparison

Subscribers: $62,645 total ($59.49 avg)

Non-Subscribers: $170,436 total ($59.87 avg)

**958 repeat buyers** (>5 purchases) have subscriptions vs. 2,518 without

Revenue by Age Group

Young adults lead revenue generation, followed closely by middle-aged customers. Revenue distribution is relatively balanced across age groups.

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Power BI Dashboard

Interactive visualization presenting key insights across customer segments, product performance, and revenue trends
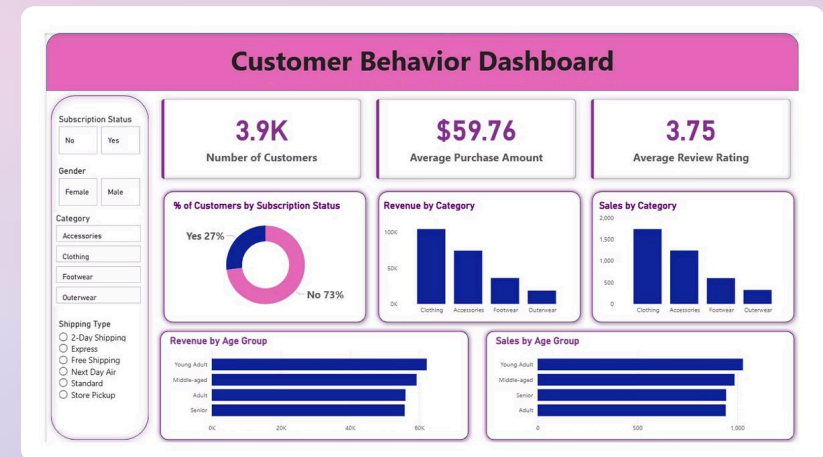
Action Plan

Boost Subscriptions

Promote exclusive benefits and rewards to convert non-subscribers

Customer Loyalty Programs

Reward repeat buyers to accelerate movement into "Loyal" segment

Review Discount Policy

Balance sales boosts with margin control for sustainable growth

Product Positioning

Highlight top-rated and best-selling products in marketing campaigns

Targeted Marketing

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

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