

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

Scale

3,900 transactions across 18 data columns

Demographics

Age, gender, location, and subscription status

Purchase Data

Item details, category, amount, season, size, color

Behavior Metrics

Discounts, promo codes, purchase frequency, ratings, shipping

Data Preparation Process

01

Data Loading & Exploration

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

03

Feature Engineering

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

02

Missing Data Handling

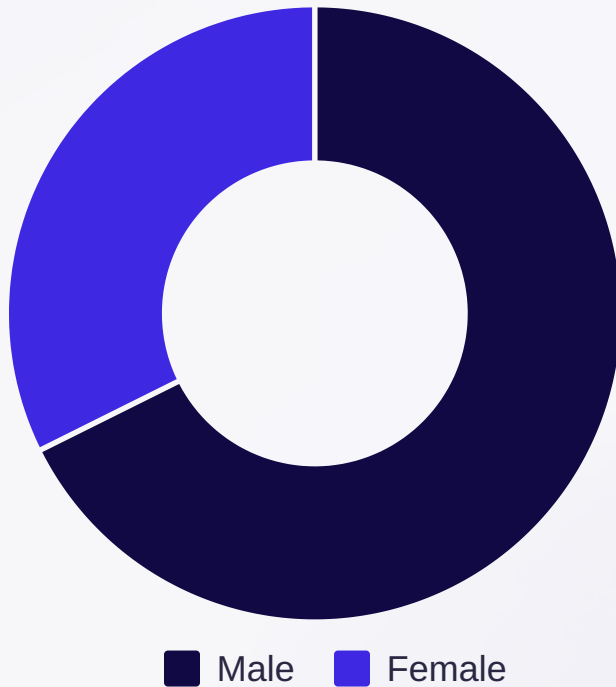
Imputed 37 missing Review Rating values using median rating per product category

04

Database Integration

Connected to PostgreSQL and loaded cleaned data for SQL analysis

Revenue by Gender



Key Finding

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

This suggests opportunities for targeted marketing campaigns to balance gender engagement.

Customer Segmentation Insights

3,116

Loyal Customers

The majority segment with consistent purchase history

701

Returning Buyers

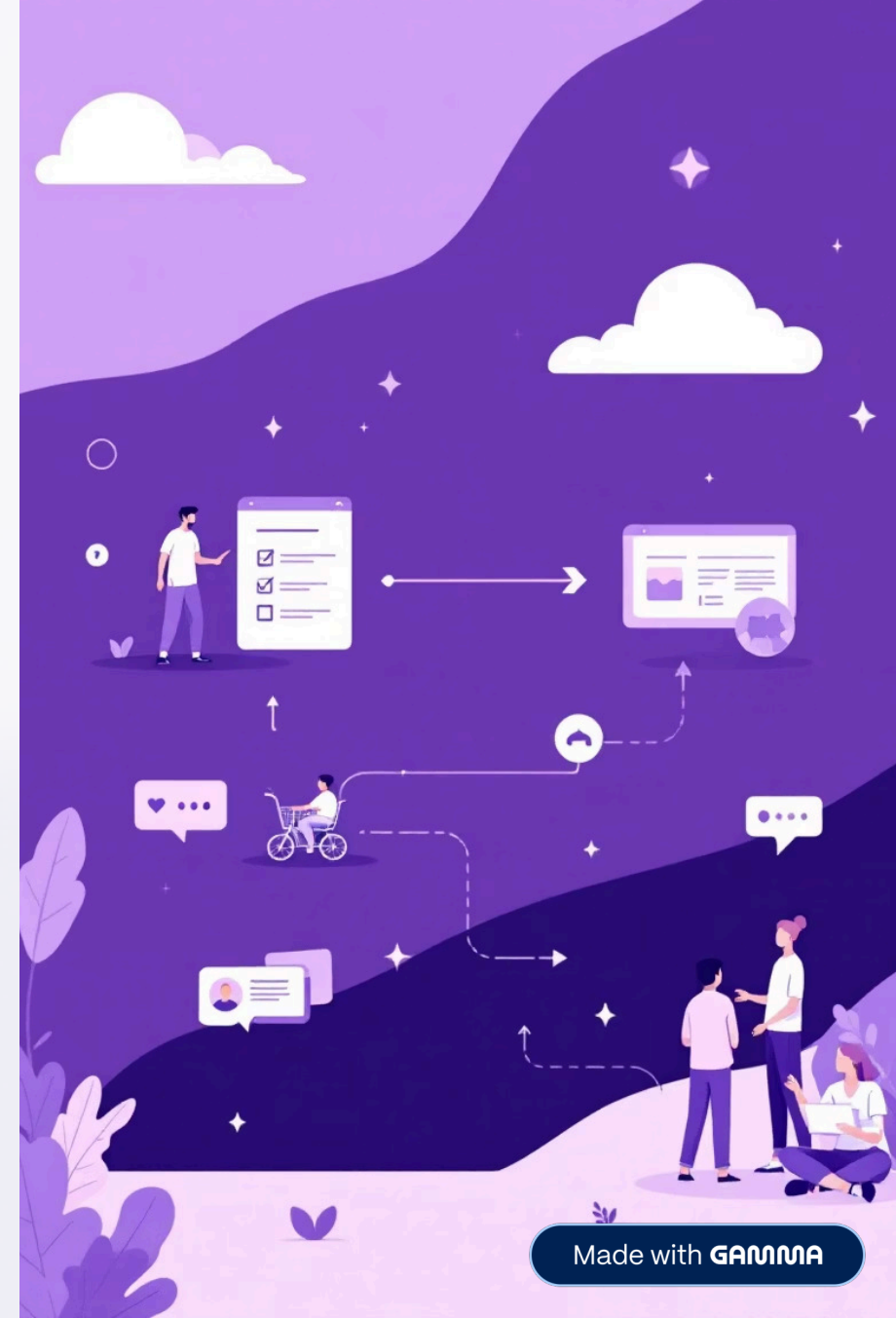
Customers making repeat purchases

83

New Customers

First-time purchasers with growth potential

839 high-spending customers used discounts but still spent above average—indicating discount effectiveness doesn't compromise revenue quality.



Top-Rated Products

1

Gloves

Average rating: **3.86**

2

Sandals

Average rating: **3.84**

3

Boots

Average rating: **3.82**

4

Hat

Average rating: **3.80**

5

Skirt

Average rating: 3.78

Subscription vs. Non-Subscription Performance

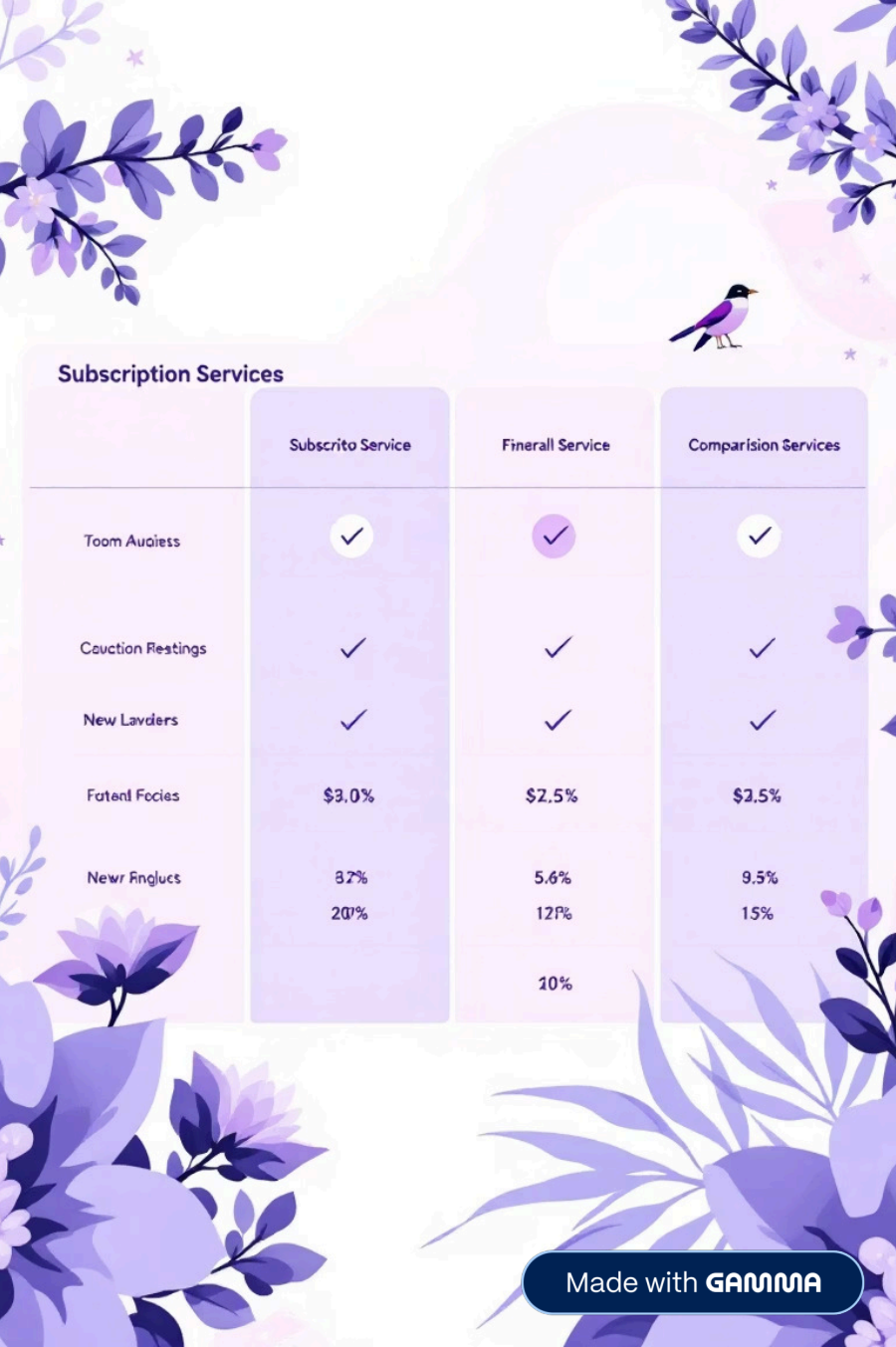
Subscribers

- 1,053 customers
- Average spend: **\$59.49**
- Total revenue: **\$62,645**

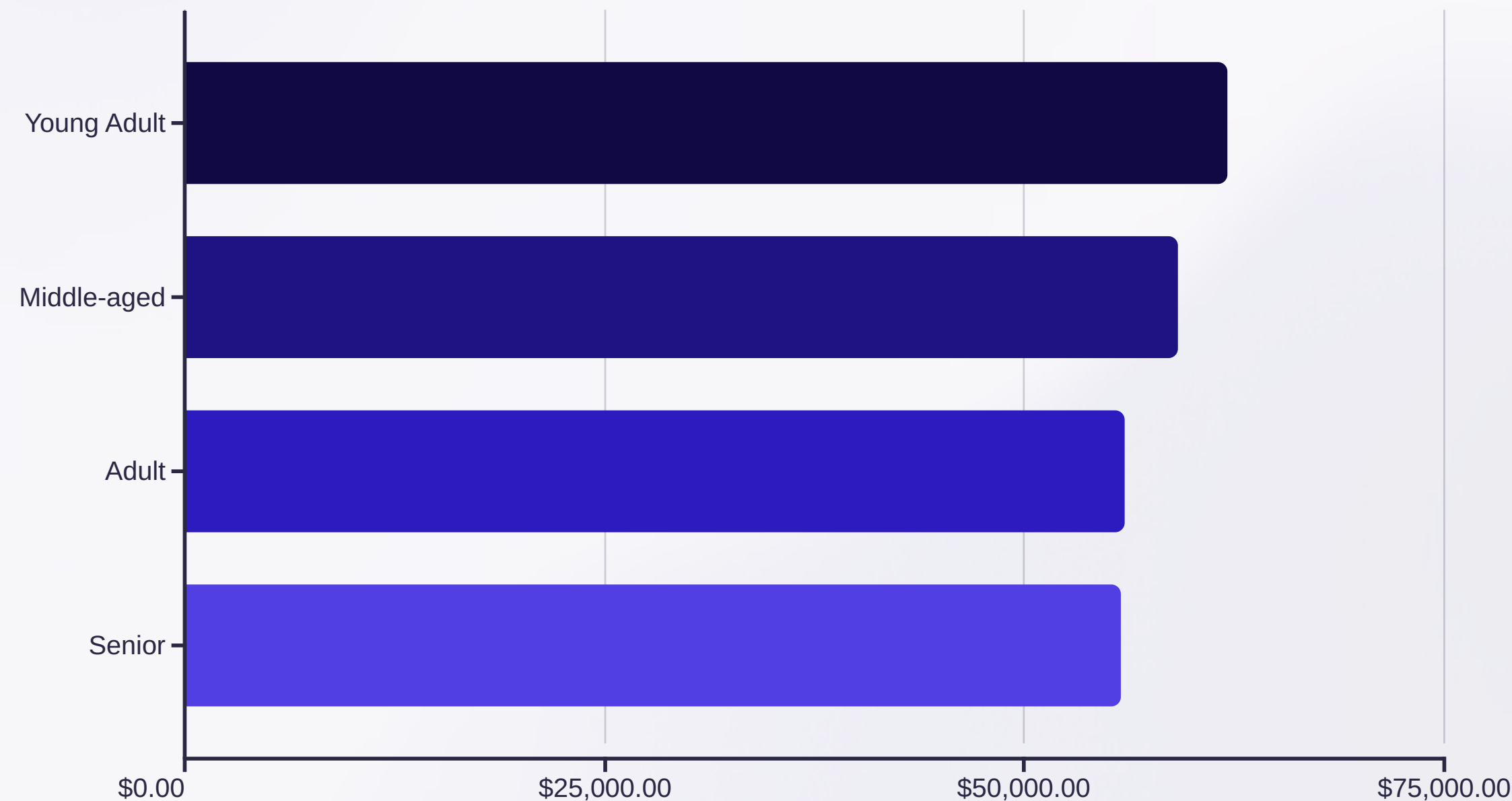
Non-Subscribers

- 2,847 customers
- Average spend: **\$59.87**
- Total revenue: **\$170,436**

Despite similar average spending, non-subscribers generate significantly more total revenue due to volume. However, 958 repeat buyers (>5 purchases) have subscriptions, showing subscription value for loyalty.



Revenue Distribution by Age Group



Young adults lead revenue generation at **\$62,143**, with relatively balanced contributions across all age groups. Express shipping users average **\$60.48** vs. **\$58.46** for standard shipping.

Interactive Power BI Dashboard

Comprehensive visualization bringing together all key metrics: revenue trends, customer segments, product performance, and behavioral patterns in an interactive format for real-time business intelligence.



Strategic Recommendations



Boost Subscriptions

Promote exclusive benefits to convert high-value repeat buyers into subscribers



Loyalty Programs

Reward repeat buyers to accelerate movement into the loyal customer segment



Optimize Discounts

Balance promotional sales boosts with margin control—discounts work without sacrificing quality



Product Positioning

Highlight top-rated items like gloves and sandals in marketing campaigns



Targeted Marketing

Focus efforts on young adults and express-shipping users for maximum ROI