Customer Shopping Behavior Analysis

Uncovering insights from 3,900 purchases to guide strategic business decisions through data-driven analysis of spending patterns, customer segments, and product preferences.

Understanding Our Data Foundation

Dataset Composition

Analysis of 3,900 customer transactions across 18 key features including demographics, purchase details, and shopping behavior patterns.

- Customer demographics: Age, Gender, Location, Subscription Status

- Purchase details: Item, Category, Amount, Season, Size, Color

- Shopping behavior: Discounts, Promo Codes, Previous Purchases, Review Ratings

Made with GAMMA

Data Preparation & Cleaning

01

Data Loading & Exploration

Imported dataset using pandas, examined structure with df.info() and summary statistics with .describe()

02

Missing Data Handling

Identified 37 missing values in Review Rating column, imputed using median rating per product category
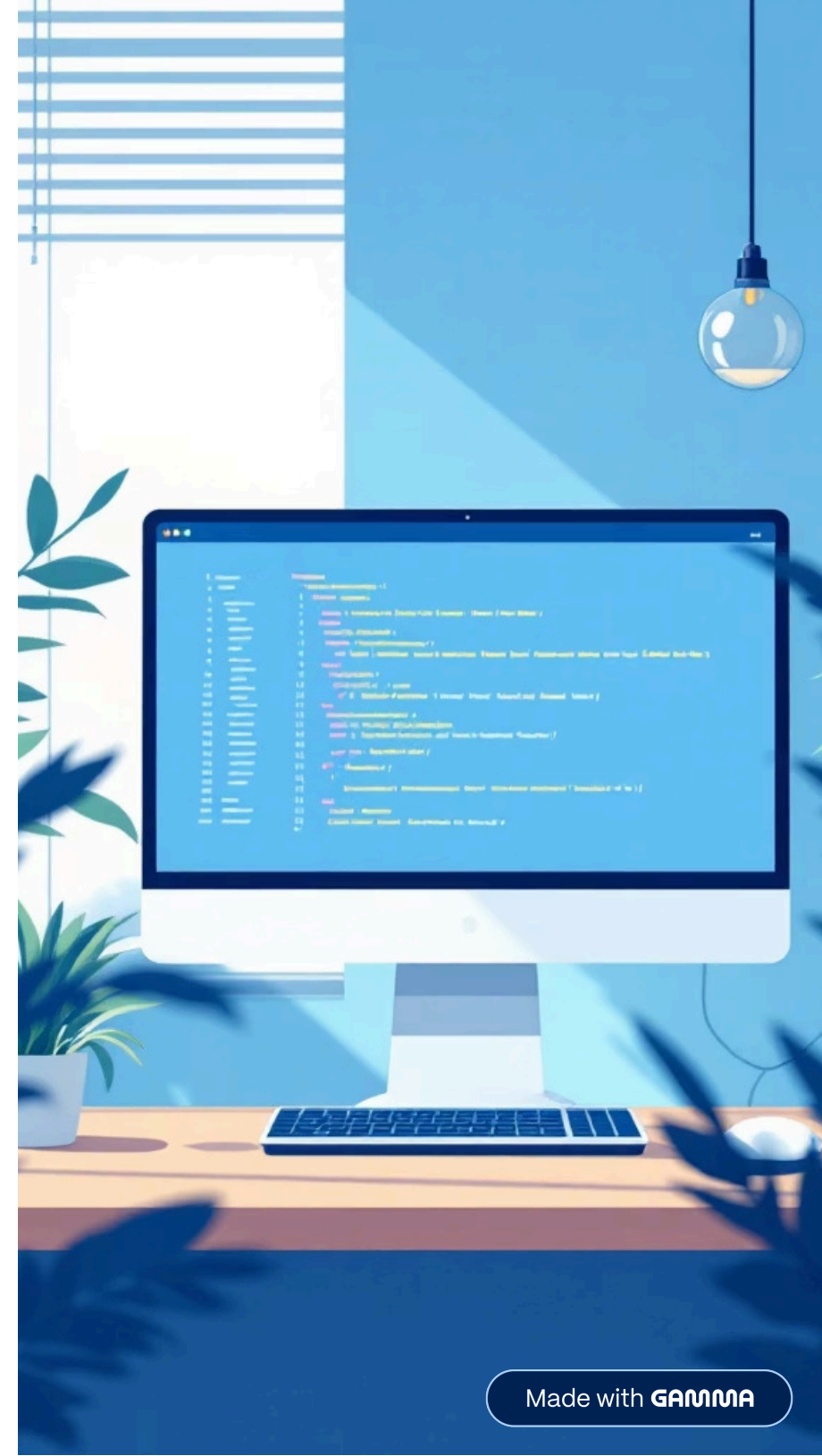
03

Feature Engineering

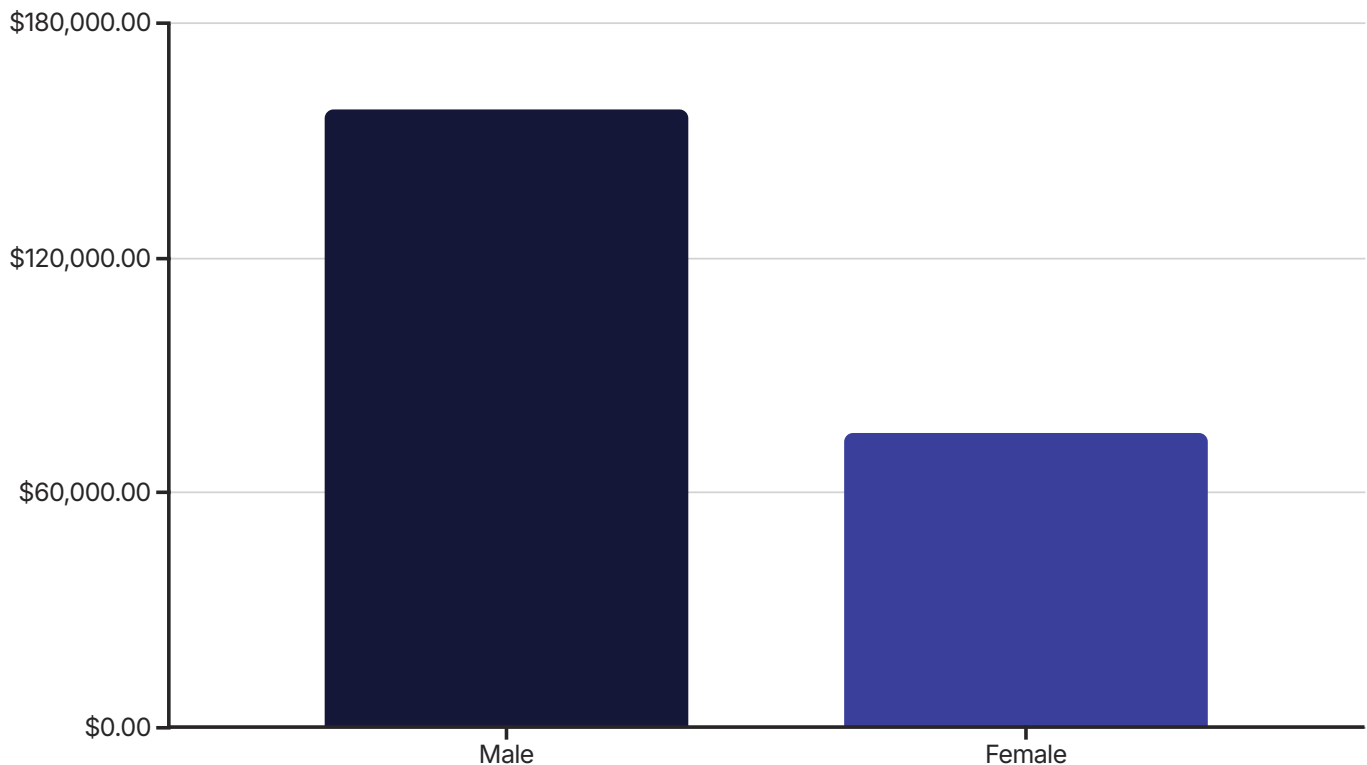Created age_group column by binning ages, generated purchase_frequency_days from purchase data

04

Database Integration

Connected to PostgreSQL and loaded cleaned DataFrame for SQL analysis

Revenue Insights by Demographics

$180,000.00
$120,000.00
$60,000.00
$0.00

Male   Female

Gender Revenue Comparison

Male customers generate significantly higher total revenue at $157,890 compared to female customers at $75,191, representing a 2:1 revenue ratio.

This insight suggests opportunities for targeted marketing campaigns to balance customer engagement across demographics.

Discount Strategy Analysis

High-Spending Discount Users

Identified customers using discounts while spending above average purchase amount, revealing price-conscious yet high-value segments.

Discount-Dependent Products

Hat leads at 50% discount rate, followed by Sneakers (49.66%), Coat (49.07%), Sweater (48.17%), and Pants (47.37%).
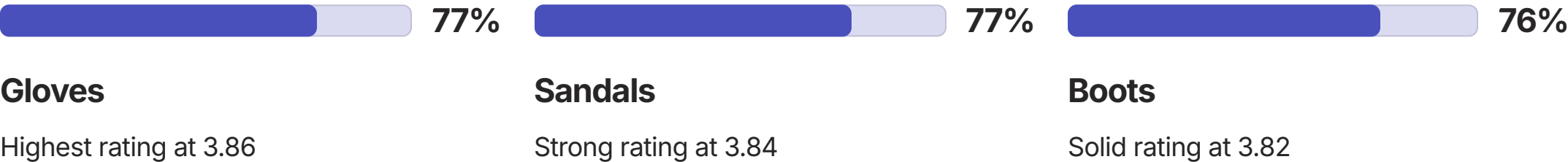
Strategic Implications

Balance promotional strategies to boost sales while protecting profit margins on discount-heavy product categories.

Product Performance & Customer Satisfaction

Top-Rated Products

Customer satisfaction metrics reveal quality leaders:

77%

77%

76%

Gloves

Highest rating at 3.86

Sandals

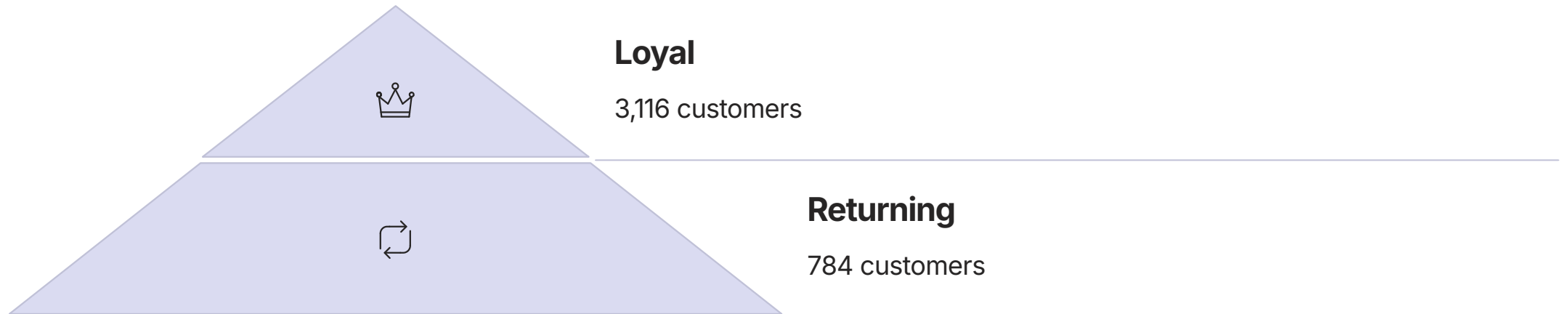Strong rating at 3.84

Boots

Solid rating at 3.82

Shipping Preferences

Express shipping customers spend slightly more on average ($60.48) compared to Standard shipping users ($58.46).

Premium shipping correlates with higher purchase values, suggesting opportunities for upselling.

Customer Segmentation Insights

Loyal

3,116 customers

Returning

784 customers

Customer classification based on purchase history reveals a strong loyal base. Subscribers show 958 repeat buyers versus 2,518 non-subscribers, indicating subscription programs effectively drive retention.

Revenue Patterns Across Seasons
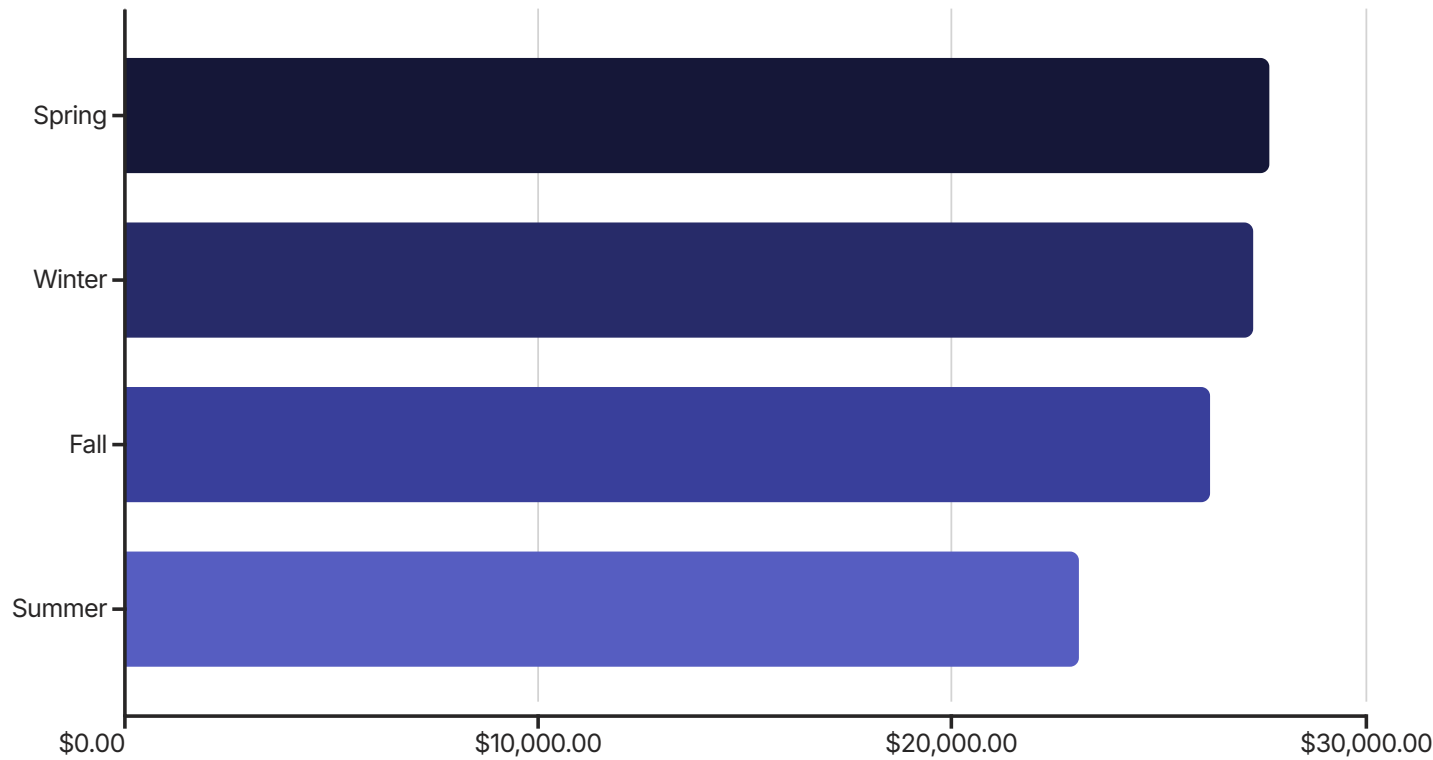
Clothing Dominates Revenue

Clothing category leads across all seasons, with Spring generating peak revenue at $27,692. Accessories follow as second-highest earner.

Seasonal trends reveal consistent demand with slight Spring preference, informing inventory and marketing timing strategies.

Customer Behavior Dashboard

3.9K
Total Customers

$59.76
Avg Purchase

$233K
Total Revenue

3.75
Avg Rating

Power BI dashboard reveals 27% subscription rate, with Young Adults leading revenue at $62K. Accessories category dominates with 1,737 sales generating $104K revenue.

Strategic Business Recommendations

Boost Subscriptions

Promote exclusive benefits to convert the 73% non-subscriber base into loyal subscribers.

Loyalty Programs

Reward repeat buyers to accelerate movement into the 3,116-strong Loyal segment.
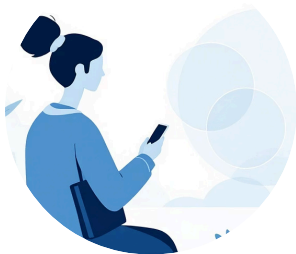
Review Discount Policy

Balance promotional sales boosts with margin control on high-discount products.

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.