

# 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 various product categories

**18**

## Data Features

Columns capturing demographics, purchases, and behavior

**37**

## Missing Values

Only in Review Rating column, handled via imputation

Key features include customer demographics (age, gender, location), purchase details (item, category, amount, season), and shopping behavior (discounts, previous purchases, review ratings, shipping type).

# Data Preparation in Python

01

## Data Loading & Exploration

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

02

## Missing Data Handling

Imputed Review Rating nulls using median rating per product category

03

## Feature Engineering

Created `age_group` bins and `purchase_frequency_days` from transaction data

04

## Database Integration

Connected to PostgreSQL and loaded cleaned DataFrame for SQL analysis

# Revenue Analysis by Gender



## Key Finding

Compared total revenue generated by male versus female customers to identify gender-based spending patterns and opportunities for targeted marketing campaigns.

This analysis helps optimize product positioning and promotional strategies for different customer segments.



# Customer Spending Insights

## High-Spending Discount Users

Identified customers who used discounts but still spent above average purchase amount –valuable segment for retention.

## Top-Rated Products

Found the 5 products with highest average review ratings to guide inventory and marketing focus.

## Shipping Preferences

Compared average purchase amounts between Standard and Express shipping to understand premium service adoption.

# Subscription Impact

## Subscribers vs. Non-Subscribers

Subscribers show higher average spend and contribute significantly more to total revenue.

- Higher lifetime value
- More consistent purchase patterns
- Greater brand loyalty

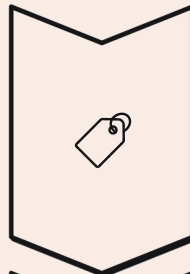


Customers with more than 5 purchases are significantly more likely to subscribe, indicating strong correlation between repeat buying and subscription adoption.



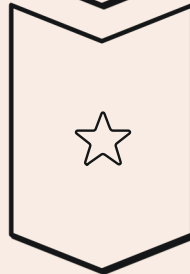


# Product & Discount Analysis



## Discount-Dependent Products

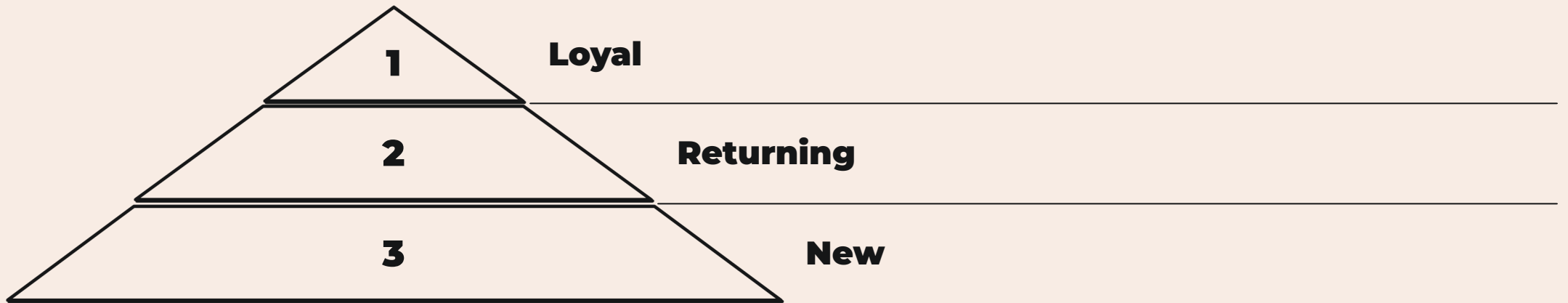
Identified 5 products with highest percentage of discounted purchases—critical for pricing strategy.



## Top Products per Category

Listed the 3 most purchased items within each category to optimize inventory and merchandising.

# Customer Segmentation



Classified customers into three segments based on purchase history. Loyal customers (frequent repeat buyers) represent the most valuable segment, followed by Returning customers showing engagement, and New customers entering the funnel.



# Revenue by Age Group



## Demographic Insights

Calculated total revenue contribution across age groups to identify highest-value demographics.

This analysis enables age-targeted marketing campaigns and product development aligned with generational preferences and spending power.

# Strategic Recommendations

## Boost Subscriptions

Promote exclusive benefits for subscribers to increase recurring revenue and customer lifetime value.

## Customer Loyalty Programs

Reward repeat buyers to move them into the "Loyal" segment and strengthen retention.

## Review Discount Policy

Balance sales boosts with margin control—optimize discount strategy for profitability.

## Product Positioning

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

## Targeted Marketing

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