



# Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.

# Project Overview & Data

## Project Goal

Analyze 3,900 purchases to optimize operations.

## Key Features

Demographics, purchase details, shopping behavior.

## Missing Data

37 values in Review Rating column.



# Exploratory Data Analysis (Python)

01

## Data Loading & Exploration

Pandas for import, df.info(), .describe() for summary.

02

## Missing Data Handling

Imputed Review Rating with median by category.

03

## Column Standardization

Renamed columns to snake\_case for readability.

04

## Feature Engineering

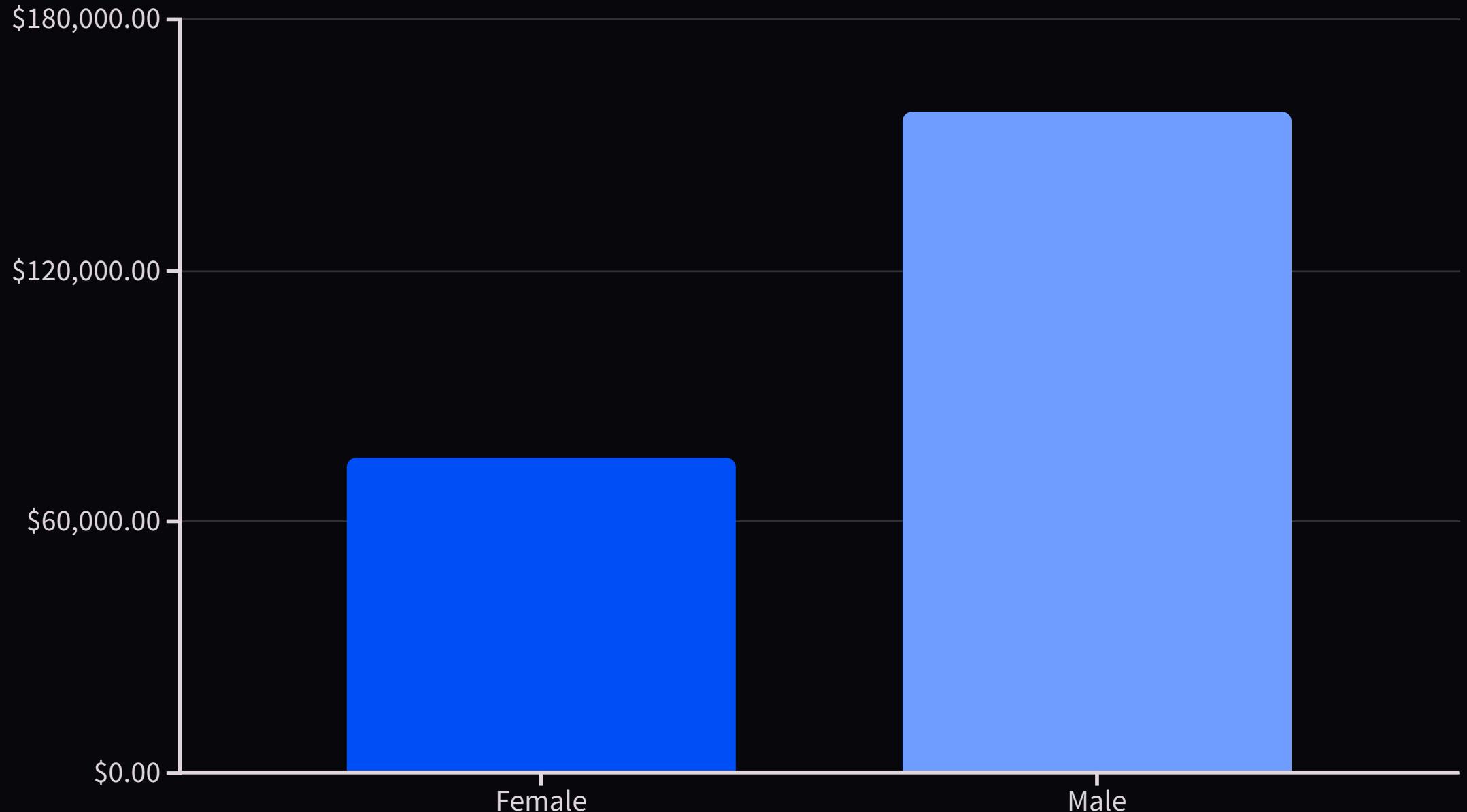
Created age\_group and purchase\_frequency\_days.

05

## Database Integration

Loaded cleaned data to PostgreSQL for SQL analysis.

# Revenue by Gender



Male customers generate significantly higher revenue.

# Top Products & Shipping



Gloves

Rating: 3.86



Sandals

Rating: 3.84



Boots

Rating: 3.82



Hat

Rating: 3.80



Skirt

Rating: 3.78

## Top 5 Products by Rating

Gloves	3.86
Sandals	3.84
Boots	3.82
Hat	3.80
Skirt	3.78

## Shipping Type Comparison

Standard	58.46
Express	60.48

Express shipping users have slightly higher average spend.

# Subscription & Discount Insights

## Subscriber Overview

**1053**

**\$59.49**

### Subscribers

Users with an active subscription

### Avg. Spend

Average spend per subscriber

**\$62,6...**

### Total Revenue

From subscriber purchases

## Non-Subscriber Overview

**2847**

**\$59.87**

### Non-Subscribers

Users without an active subscription

### Avg. Spend

Average spend per non-subscriber

**\$170,...**

### Total Revenue

From non-subscriber purchases

While non-subscribers are more numerous and contribute more total revenue, average spend per user is very similar between the two groups.

## Discount-Dependent Products (Avg. Discount %)



Hat

Frequently discounted

Sneakers

Often part of promotions

Coat

Seasonal discounts

Sweater

Popular discount item

Pants

Regularly discounted

Hats and Sneakers show the highest average discount percentages, indicating they are frequently used in promotional strategies.

# HELP CUSTOMER SEGMENTS



# Customer Segmentation



Loyal

3116 Customers



New

83 Customers



Returning

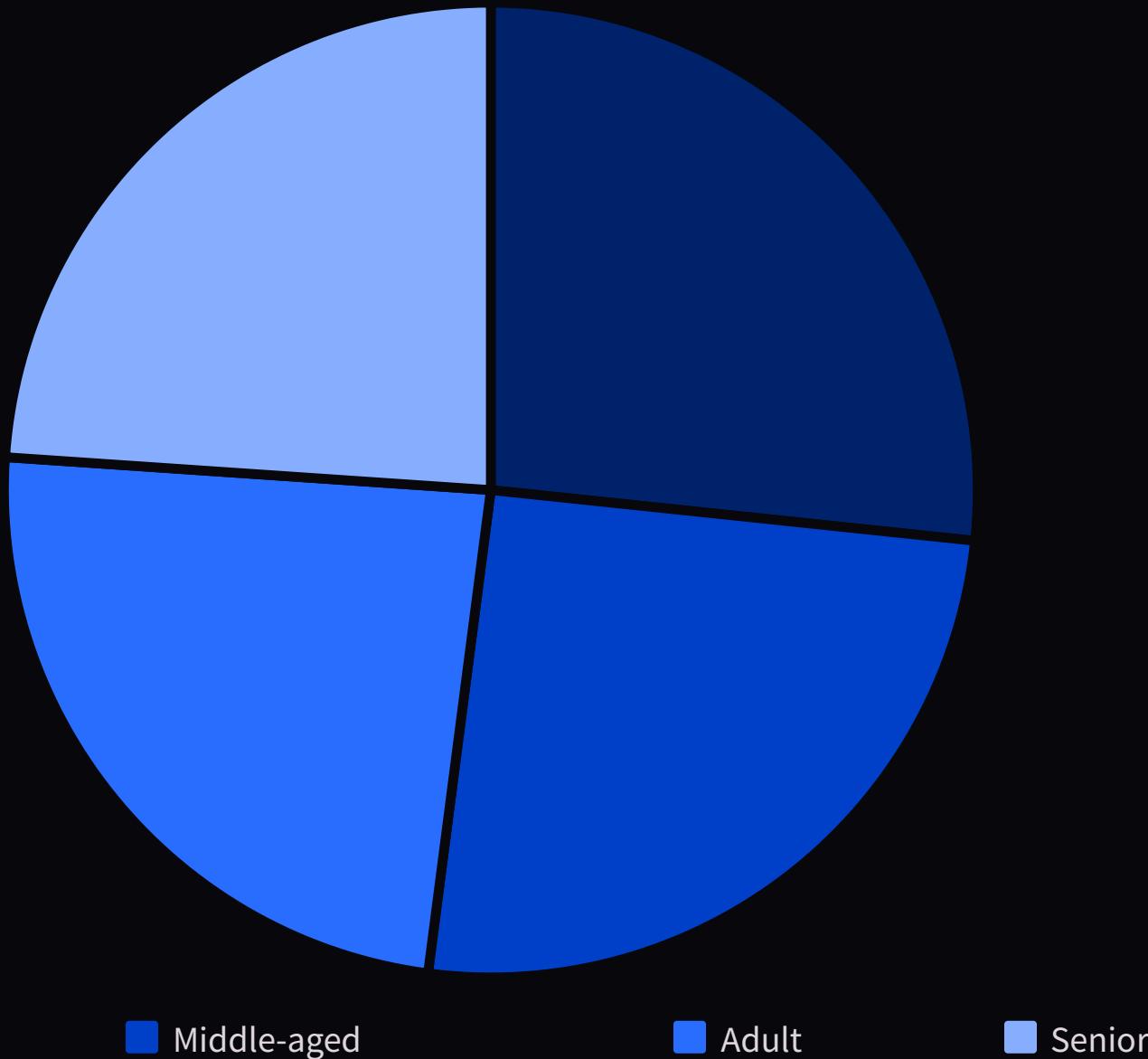
701 Customers

Majority of customers are loyal, but new and returning segments need growth strategies.

# Top Products Per Category

1	Accessories	Jewelry	171
2	Accessories	Sunglasses	161
3	Accessories	Belt	161
1	Clothing	Blouse	171
2	Clothing	Pants	171
3	Clothing	Shirt	169
1	Footwear	Sandals	160
2	Footwear	Shoes	150
3	Footwear	Sneakers	145
1	Outerwear	Jacket	163
2	Outerwear	Coat	161

# Revenue by Age Group



Young Adults contribute the highest revenue.

# Business Recommendations

## → Boost Subscriptions

Promote exclusive benefits for subscribers.

## → Customer Loyalty Programs

Reward repeat buyers to foster loyalty.

## → Review Discount Policy

Balance sales boosts with margin control.

## → Product Positioning

Highlight top-rated and best-selling products.

## → Targeted Marketing

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