



# **Customer shopping Behavior Analysis**

Uncovering insights from transactional data to guide strategic business decisions.



# Project Overview & Dataset Summary

## Project Goal

Analyze 3,900 purchases to optimize operations.

## Dataset Size

3,900 rows, 18 columns of transactional data.

## Key Features

Demographics, purchase details, shopping behavior.

## Missing Data

37 values in 'Review Rating' column.

# Exploratory Data Analysis in Python

01

## Data Loading & Exploration

Imported dataset, checked structure and summary statistics.

02

## Missing Data Handling

Imputed 'Review Rating' using median by category.

03

## Column Standardization

Renamed columns to snake\_case for readability.

04

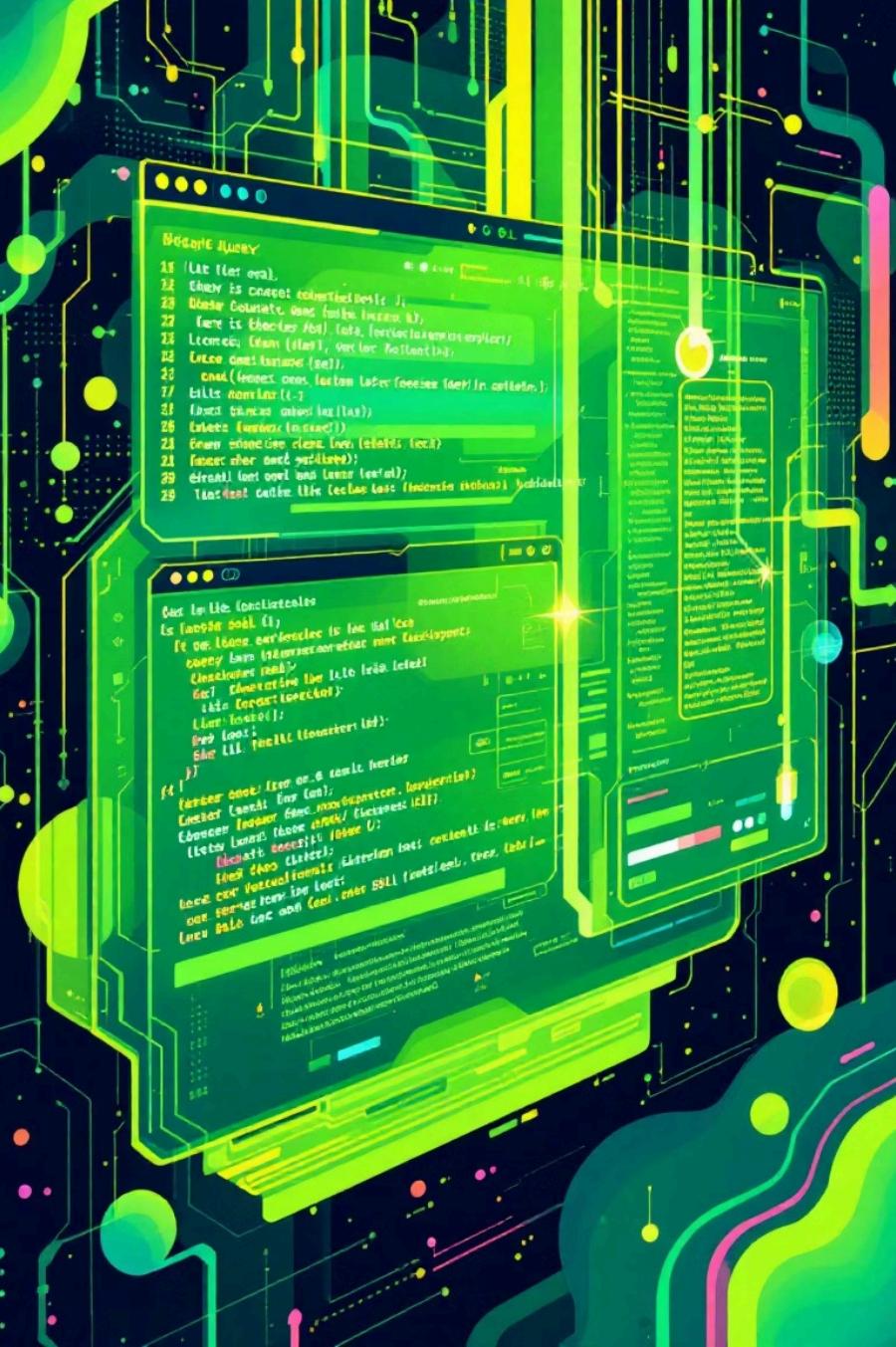
## Feature Engineering

Created 'age\_group' and 'purchase\_frequency\_days'.

05

## Database Integration

Loaded cleaned data into PostgreSQL for SQL analysis.



# SQL Analysis: Key Business Insights



## Revenue by Gender

Male customers generated higher revenue (\$157,890 vs \$75,191).



## High-Spending Discount Users

Identified 839 customers who used discounts but spent above average.



## Top 5 Products by Rating

Gloves (3.86), Sandals (3.84), Boots (3.82), Hat (3.80), Skirt (3.78).



## Shipping Type Comparison

Express shipping users had higher average spend (\$60.48 vs \$58.46).

# SQL Analysis: Subscription & Discount Trends

1

## Subscribers vs. Non- Subscribers

Non-subscribers have higher total revenue (\$170,436) but similar average spend.

2

## Discount- Dependent Products

Hat (50%), Sneakers (49.66%), Coat (49.07%), Sweater (48.17%), Pants (47.37%) had highest discount rates.

3

## Repeat Buyers & Subscriptions

Customers with >5 purchases: 958 subscribers vs. 2518 non-subscribers.



# SQL Analysis: Customer Segmentation & Age Groups

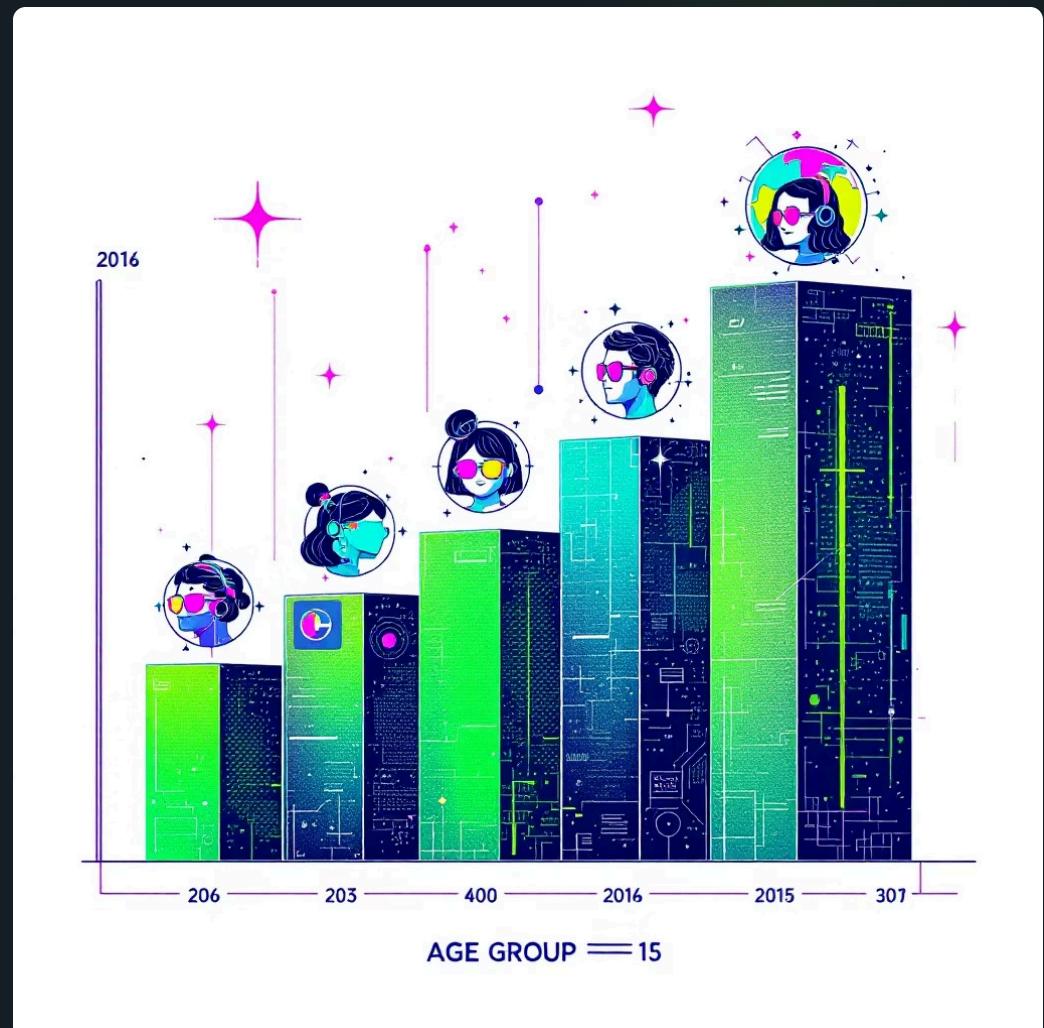
## Customer Segmentation

- Loyal: 3116 customers
- Returning: 701 customers
- New: 83 customers



## Revenue by Age Group

- Young Adult: \$62,143
- Middle-aged: \$59,197
- Adult: \$55,978
- Senior: \$55,763



# Top Products per Category

1	Accessories	Jewelry	171
1	Clothing	Blouse	171
1	Footwear	Sandals	160
1	Outerwear	Jacket	163

# Business Recommendations

## Boost Subscriptions

Promote exclusive benefits to increase subscriber base.

## Customer Loyalty Programs

Reward repeat buyers to foster loyalty and move them to "Loyal" segment.

## Review Discount Policy

Optimize discount strategies to balance sales and profit margins.

## Product Positioning

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

## Targeted Marketing

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