# Customer Shopping Behavior Analysis

Uncovering insights from transactional data to guide strategic business decisions.

# Project Overview

### 1

## Data Analysis

3,900 purchases analyzed.

### 2

## Key Insights

Spending patterns, customer segments, product preferences.

### 3

## Strategic Goals

Optimize operations, reduce costs, improve forecasting.

# Dataset Summary

## Data Points

- 3,900 Rows
- 18 Columns

## Key Features

- Customer Demographics
- Purchase Details
- Shopping Behavior



## Missing Data

- 37 values in Review Rating

# Exploratory Data Analysis (Python)

**01**

## Data Loading & Exploration

Imported with pandas, checked structure and summary statistics.

**02**

## Missing Data Handling

Imputed Review Rating with median by category.

**03**

## Column Standardization

Renamed to snake_case for readability.

**04**

## Feature Engineering

Created age_group and purchase_frequency_days.

**05**

## Database Integration

Loaded cleaned data to MySQL for SQL analysis.

# Data Analysis (SQL)

Key business questions answered through structured MySQL analysis.

| 1 | **Revenue by Gender** Female: $75,191, Male: $157,890 |
|---|---|
| 2 | **High-Spending Discount Users** 839 customers identified. |
| 3 | **Top 5 Products by Rating** Gloves (3.86), Sandals (3.84), Boots (3.82). |

# SQL Insights: Shipping & Subscriptions

## Shipping Type Comparison
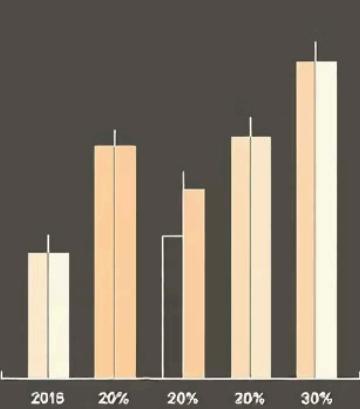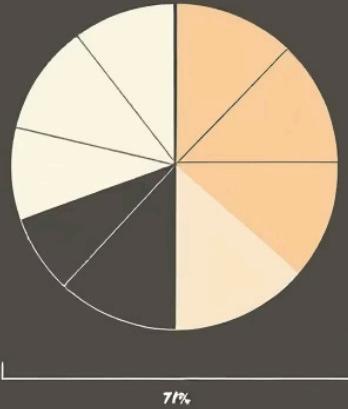
- Standard: $58.46 avg.

- Express: $60.48 avg.

## Subscribers vs. Non-Subscribers
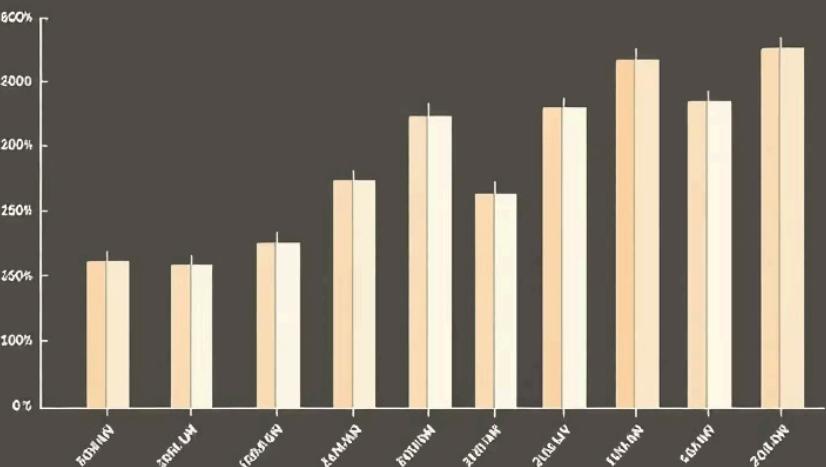
- Subscribers: 1,053 customers, $59.49 avg. spend

- Non-Subscribers: 2,847 customers, $59.87 avg. spend

# SQL Insights: Product & Customer Segmentation

## Discount-Dependent Products

Hat (50%), Sneakers (49.66%), Coat (49.07%).

## Customer Segmentation

Loyal (3116), Returning (701), New (83).

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# SQL Insights: Top Products & Age Groups

## Top 3 Products per Category

- Accessories: Jewelry, Sunglasses, Belt
- Clothing: Blouse, Pants, Shirt
- Footwear: Sandals, Shoes, Sneakers
- Outerwear: Jacket, Coat
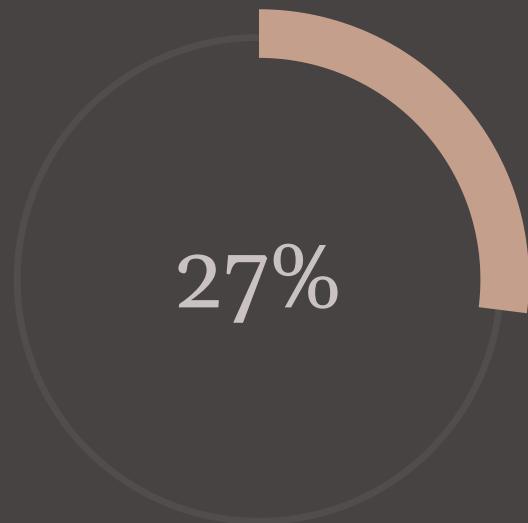


## Revenue by Age Group

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

# Power BI Dashboard
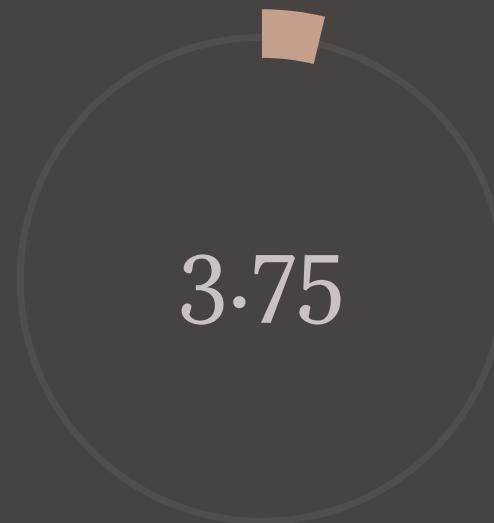
Interactive visualization of customer behavior insights.

| 27% | $59.76 | 3.75 |
|:---:|:---:|:---:|
| Subscribers | Avg. Purchase | Avg. Review |

# Business Recommendations

→ **Boost Subscriptions**

Promote exclusive benefits.

→ **Customer Loyalty Programs**

Reward repeat buyers.

→ **Review Discount Policy**

Balance sales with margin control.

→ **Targeted Marketing**

Focus on high-revenue age groups.