

# Customer Shopping Behavior Analysis

This project analyzes 3,900 customer purchases to uncover spending patterns, product preferences, and subscription behavior. Our goal is to guide strategic business decisions with data-driven insights.





# Project Overview

## Objective

Analyze customer shopping behavior from transactional data to inform strategic business decisions.

## Data Source

Transactional data from 3,900 purchases across diverse product categories.

## Key Insights

Focus on spending patterns, customer segments, product preferences, and subscription impact.

# Dataset Summary

Our dataset comprises 3,900 rows and 18 columns, capturing a comprehensive view of customer interactions.

- **Rows:** 3,900
- **Columns:** 18
- **Missing Data:** 37 values in 'Review Rating'



## Key Features

Demographics, purchase details, shopping behavior, and subscription status.

## Purchase Details

Item, category, amount, season, size, and color of purchased items.

## Behavioral Data

Discounts, promo codes, previous purchases, frequency, and shipping type.

# Exploratory Data Analysis (EDA) in Python

01

## Data Loading & Initial Exploration

Imported data with `pandas`; used `df.info()` and `.describe()` for structural and statistical overview.

02

## Missing Data Handling

Imputed missing 'Review Rating' values using the median rating per product category.

03

## Column Standardization

Renamed columns to `snake_case` for improved readability and consistency.

04

## Feature Engineering

Created 'age\_group' and 'purchase\_frequency\_days' for deeper analysis.

05

## Data Consistency & Integration

Dropped redundant 'promo\_code\_used' and loaded cleaned data into PostgreSQL for SQL analysis.

# Data Analysis using SQL: Key Business Insights

## Revenue by Gender

Female	75191
Male	157890

Male customers generated significantly higher revenue.

## Shipping Type Comparison

Standard	58.46
Express	60.48

Express shipping users have slightly higher average purchases.

# Product Performance & Customer Segmentation

## Top 5 Products by Rating

Gloves	3.86
Sandals	3.84
Boots	3.82
Hat	3.80
Skirt	3.78

Gloves, Sandals, and Boots lead in average customer satisfaction.

## Customer Segmentation

Loyal	3116
New	83
Returning	701

A large loyal customer base, with opportunities to nurture new and returning buyers.



# Subscription & Discount Dynamics

1

## Subscribers vs. Non-Subscribers

Subscribers: 1053 customers, avg spend \$59.49, total revenue \$62,645. Non-subscribers: 2847 customers, avg spend \$59.87, total revenue \$170,436.

2

## Discount-Dependent Products

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

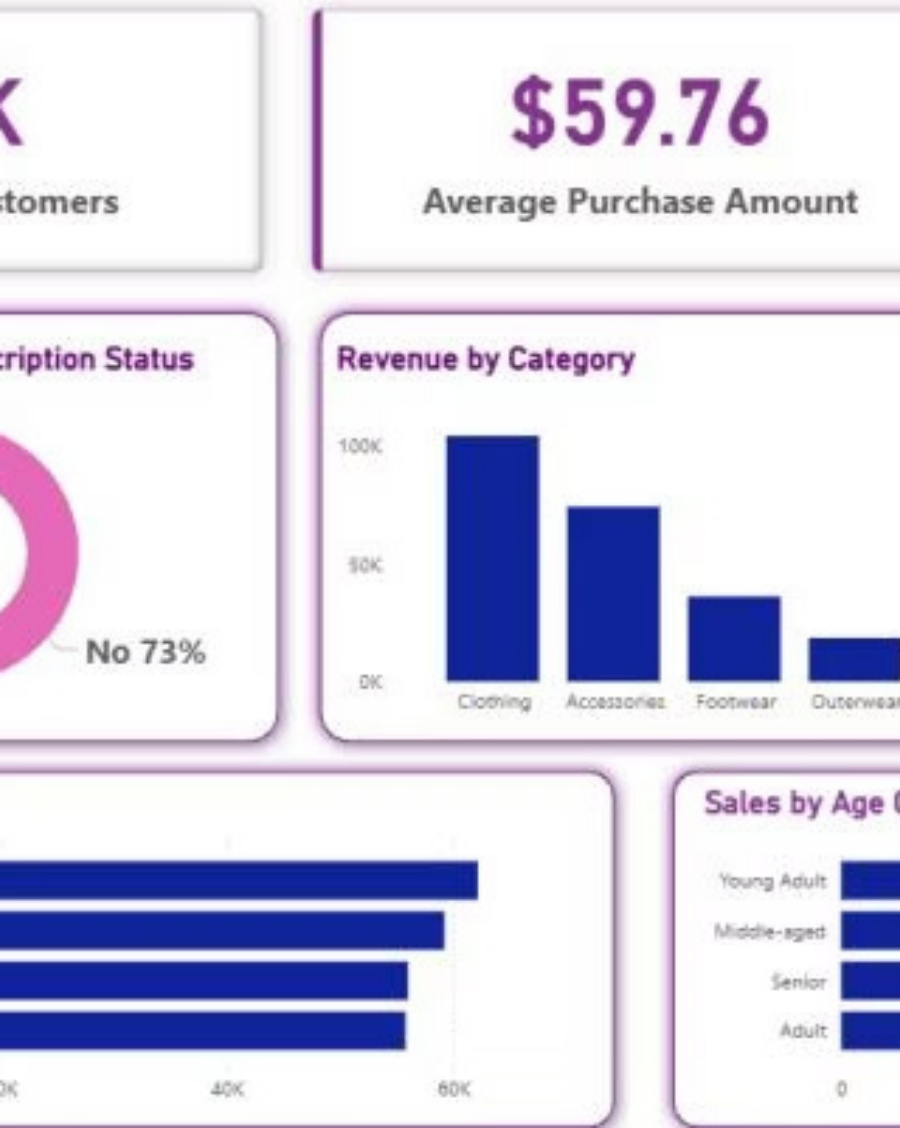
3

## Repeat Buyers & Subscriptions

Out of repeat buyers (>5 purchases), 958 are subscribers, 2518 are not. Opportunity to convert more repeat buyers.



# Customer Behavior Dashboard



## Interactive Power BI Dashboard

Our Power BI dashboard provides an interactive visual summary of key metrics and insights.

3.9K

Customers

\$59.76

Avg. Purchase

3.75

Avg. Rating



# Strategic Business Recommendations

## → Boost Subscriptions

Promote exclusive benefits to increase subscriber base and retention.

## → Customer Loyalty Programs

Implement rewards for repeat buyers to foster loyalty and move them into the "Loyal" segment.

## → Review Discount Policy

Optimize discount strategies to balance sales growth with profit margins.

## → Product Positioning

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

## → Targeted Marketing

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