



# Retail Customer Behavior Analysis

Leveraging shopping data to identify trends, improve customer engagement, and optimize marketing strategies through comprehensive data analysis.

# The Challenge



## Changing Patterns

Shifts in purchasing behavior across demographics, product categories, and sales channels.



## Key Questions

Which factors drive consumer decisions and repeat purchases?



## Business Goals

Improve sales, customer satisfaction, and long-term loyalty.



# Project Approach

01

## Data Preparation

Clean and transform raw dataset using Python

02

## SQL Analysis

Structure data and extract insights on customer segments

03

## Visualization

Build interactive Power BI dashboard

04

## Insights & Recommendations

Deliver actionable business strategies



# Dataset Overview

**3,900**

Total Purchases

Transactions analyzed

**18**

Data Points

Feature columns

## Key Features Analyzed

- Customer demographics (Age, Gender, Location)
- Purchase details (Category, Amount, Season)
- Shopping behavior (Discounts, Reviews, Frequency)
- Subscription status and loyalty metrics

# Data Preparation with Python

1

## Data Loading & Exploration

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

2

## Missing Data Handling

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

3

## Feature Engineering

Created age groups using qcut() and purchase frequency columns from raw data.

4

## Database Integration

Connected to PostgreSQL and loaded cleaned data for SQL analysis.

# Top-Rated Products

Jewelry

Average rating: 3.75

Handbag

Average rating: 3.75

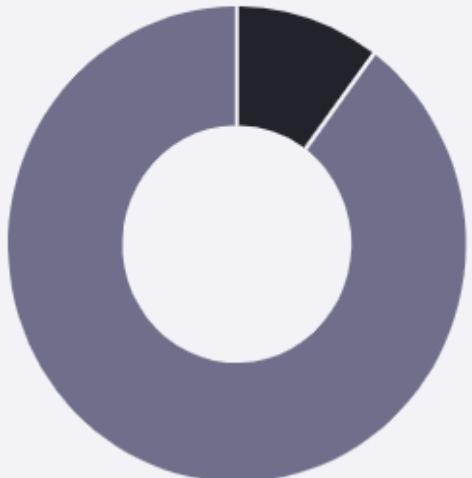
Dress

Average rating: 3.74

Shoes

Average rating: 3.74

# Customer Segmentation Insights



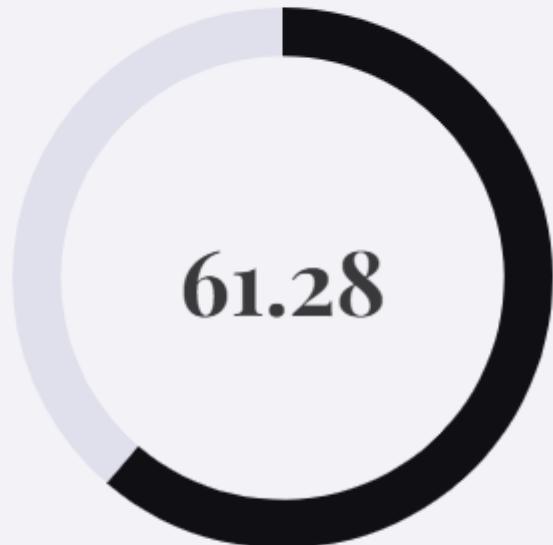
■ New ■ Returning

## Segment Breakdown

90% of customers are returning buyers, showing strong retention. Focus on converting returning customers into loyal subscribers.

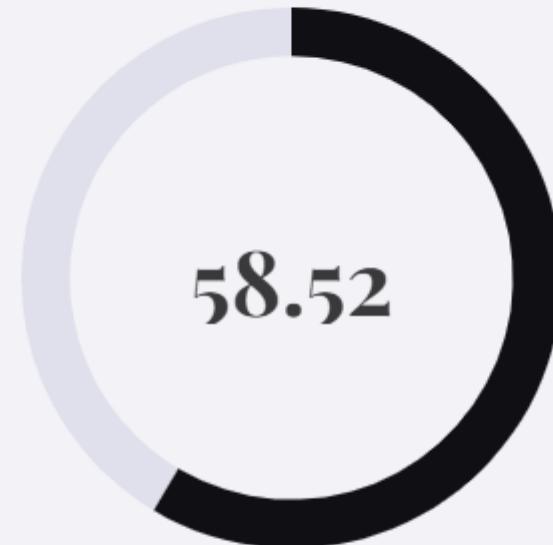
**Key Finding:** Repeat buyers with 5+ purchases show high subscription likelihood.

# Subscription Impact



**Average Spend**

Subscribers spend \$61.28 on average



**Non-Subscribers**

Non-subscribers spend \$58.52 on average

Subscribed customers generate higher average purchase amounts and total revenue. Express shipping users also show elevated spending patterns compared to standard shipping.



# Strategic Recommendations

## Boost Subscriptions

Promote exclusive benefits to convert repeat buyers into subscribers.

## Loyalty Programs

Reward returning customers to move them into the loyal segment.

## Product Positioning

Highlight top-rated products like jewelry and handbags in campaigns.

## Targeted Marketing

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