Customer Shopping Behavior Analysis

Uncovering insights from 3,900 purchases to guide strategic business decisions through data-driven analysis of spending patterns, customer segments, and product preferences.

Dataset Overview

3,900

Total Purchases

Transactions analyzed across multiple product categories

18

Data Columns

Comprehensive features covering demographics and behavior

50

Locations

Geographic diversity across customer base

25

Product Types

Wide variety of items purchased

Key Data Features

Customer Demographics

- Age, Gender, Location
- Subscription Status
- Purchase History

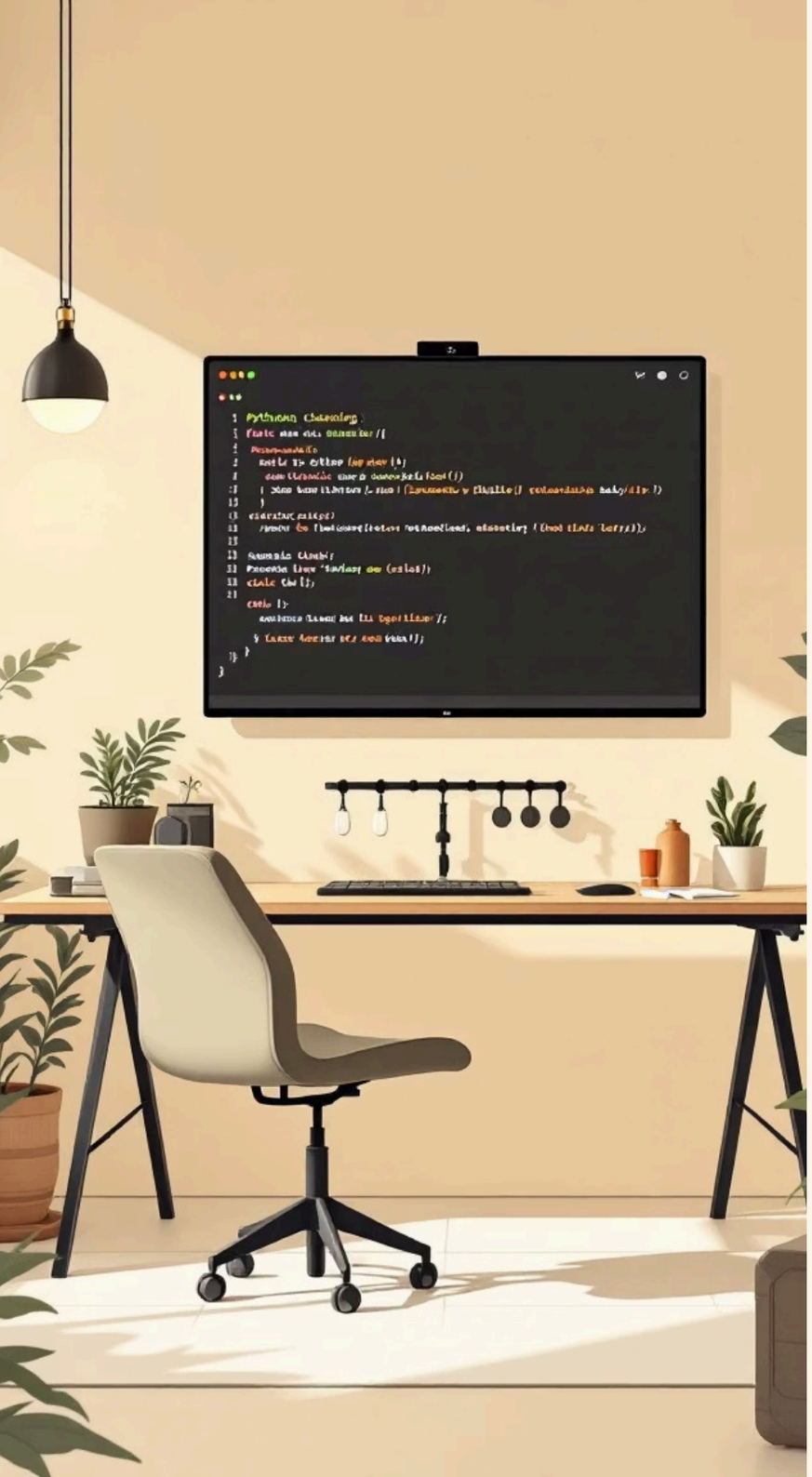
Purchase Details

- Item, Category, Amount
- Season, Size, Color
- Review Ratings

Shopping Behavior

- Discount Applied
- Promo Code Usage
- Previous Purchases
- Purchase Frequency
- Shipping Type

Only 37 missing values in Review Rating column



Python Data Preparation

01

Data Loading & Exploration

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

02

Missing Data Handling

Imputed Review Rating nulls using median rating per product category

03

Feature Engineering

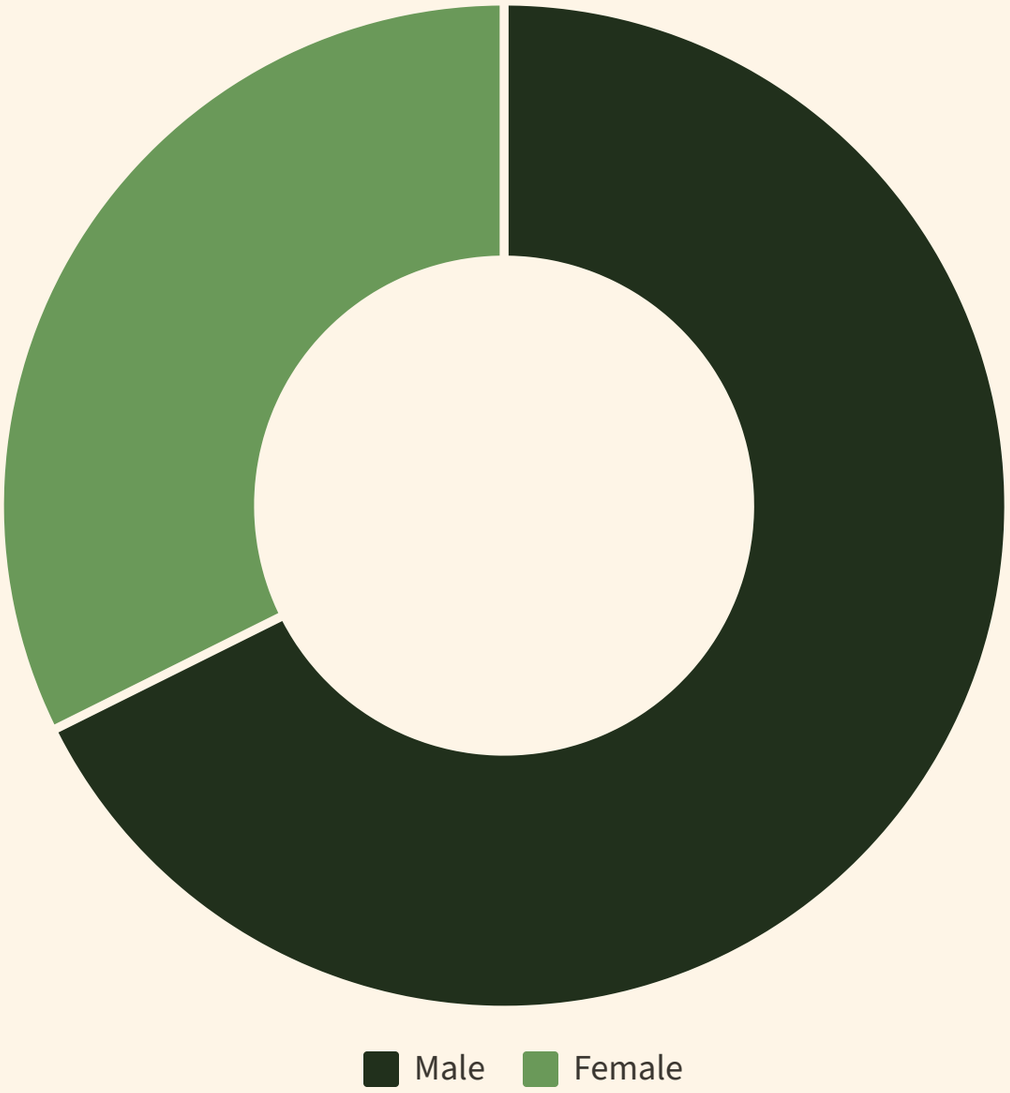
Created age_group bins and purchase_frequency_days columns for deeper analysis

04

Database Integration

Connected to PostgreSQL and loaded cleaned data for SQL analysis

Revenue by Gender



Male customers generated significantly higher total revenue at $157,890 compared to female customers at $75,191, representing 68% of total revenue.

Customer Segmentation Insights

Loyal Customers

3,116 customers

Largest segment with consistent purchase history

Returning Customers

701 customers

Growing segment showing repeat behavior

New Customers

83 customers

Smallest segment with growth potential

Customer classification based on purchase history reveals strong loyalty base, with 80% falling into the Loyal segment.

Top Performing Products

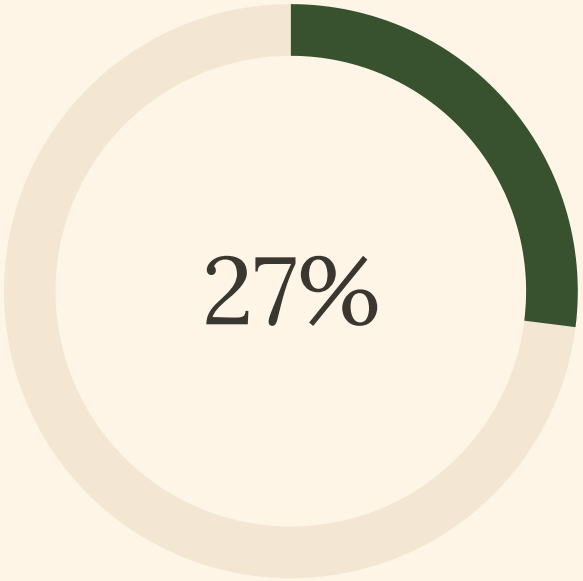
Highest Rated Items

1. Gloves (3.86 rating)
2. Sandals (3.84 rating)
3. Boots (3.82 rating)
4. Hat (3.80 rating)
5. Skirt (3.78 rating)

Most Discount-Dependent

1. Hat (50% discount rate)
2. Sneakers (49.66%)
3. Coat (49.07%)
4. Sweater (48.17%)
5. Pants (47.37%)

Subscription & Shipping Analysis



Subscription Rate

1,053 of 3,900 customers are subscribers

Subscriber Avg Spend

Slightly lower than non-subscribers

Express Shipping

Higher average purchase vs standard ($58.46)

Despite similar spending patterns, non-subscribers generate higher total revenue ($170,436) due to larger customer base. Express shipping users show 3.5% higher average purchase amounts.

Interactive Power BI Dashboard

Visual Analytics

Interactive charts showing revenue trends, customer segments, and product performance

Dynamic Filtering

Drill-down capabilities by age group, location, category, and time period

KPI Tracking

Real-time monitoring of key business metrics and performance indicators

Strategic Recommendations

Boost Subscriptions

Promote exclusive benefits to increase the 27% subscription rate and build recurring revenue

Customer Loyalty Programs

Reward repeat buyers to move Returning customers into Loyal segment

Review Discount Policy

Balance sales boosts with margin control, especially for high-discount products

Product Positioning

Highlight top-rated items like Gloves and Sandals in marketing campaigns

Targeted Marketing

Focus on high-revenue age groups and express-shipping users for maximum ROI