

# Customer Shopping Behavior Analysis

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

# The Foundation: Our Data



Our analysis draws from a comprehensive dataset of 3,900 customer transactions across 18 key features. This rich data includes customer demographics like age, gender, and location, alongside detailed purchase information including product categories, amounts, and seasonal trends.

The dataset captures critical shopping behaviors such as discount usage, subscription status, previous purchase history, and review ratings. With only 37 missing values in the Review Rating column, we have a robust foundation for meaningful insights.

# Exploratory Data Analysis with Python

01

## Data Loading & Exploration

Imported dataset using pandas and examined structure with `df.info()` and summary statistics

02

## Missing Data Handling

Imputed 37 missing Review Rating values using median rating by 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 business analysis

We standardized column names to snake case and verified data consistency, dropping redundant fields like `promo_code_used` to streamline our analysis.

# Key Statistical Insights

\$59.76

Average Purchase

Mean transaction value  
across all customers

3.75

Review Rating

Average customer  
satisfaction score

44

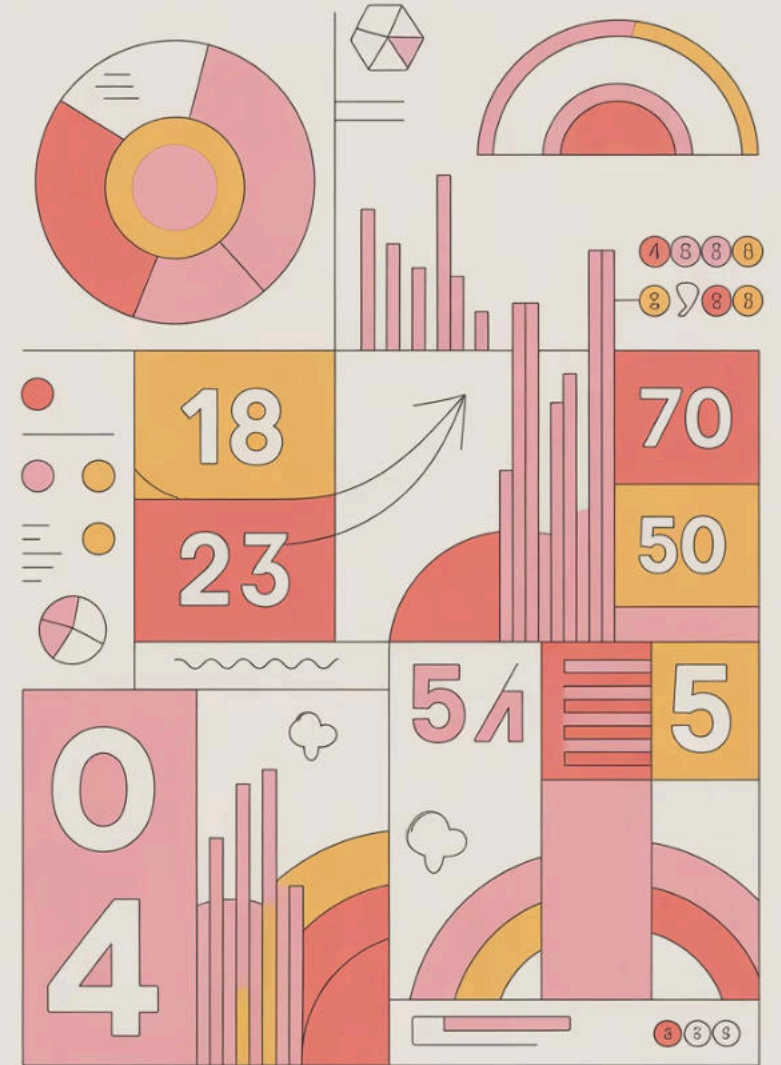
Median Age

Typical customer  
demographic profile

25

Previous Purchases

Average customer  
purchase history



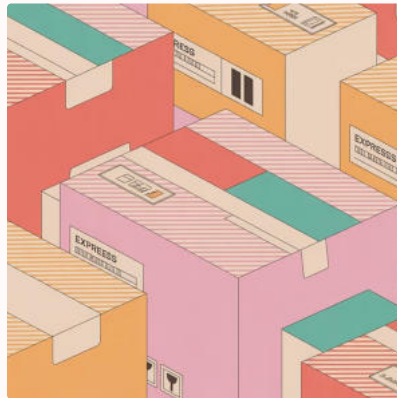
# Business Transaction Insights

We performed structured analysis in PostgreSQL to answer critical business questions, examining revenue patterns, customer behavior, and product performance across multiple dimensions.



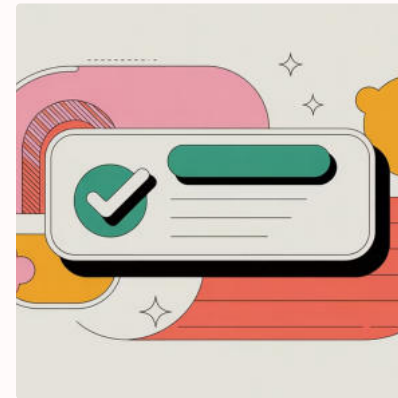
## Revenue by Gender

Male customers generated \$157,890 vs. female customers at \$75,191



## Shipping Analysis

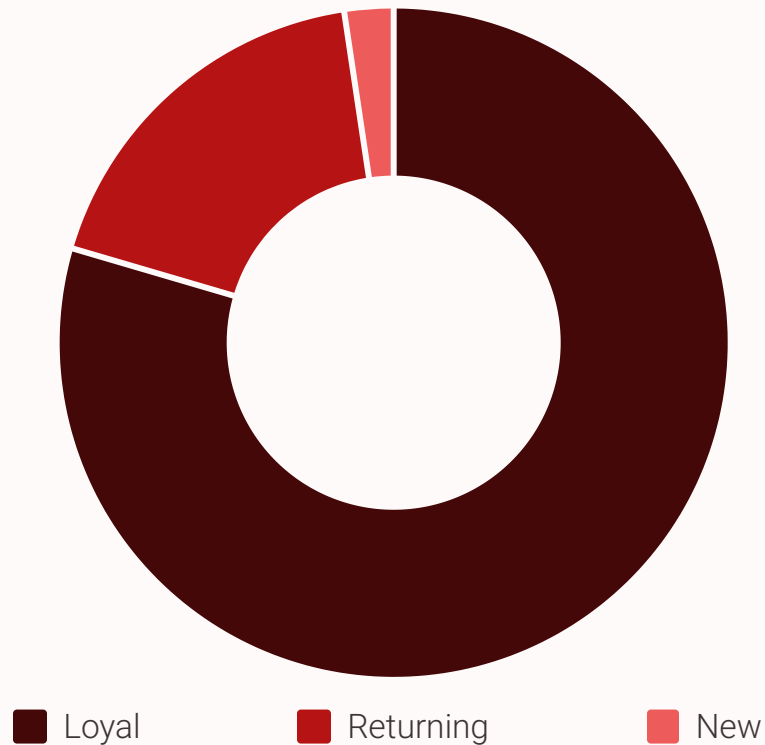
Express shipping averaged \$60.48 vs. Standard at \$58.46 per purchase



## Subscription Impact

1,053 subscribers averaging \$59.49 vs. 2,847 non-subscribers at \$59.87

# Customer Segmentation Breakdown



## Understanding Our Customer Base

Our analysis reveals a strong foundation of loyal customers representing 80% of our base. These customers demonstrate consistent purchase behavior and represent our most valuable segment.

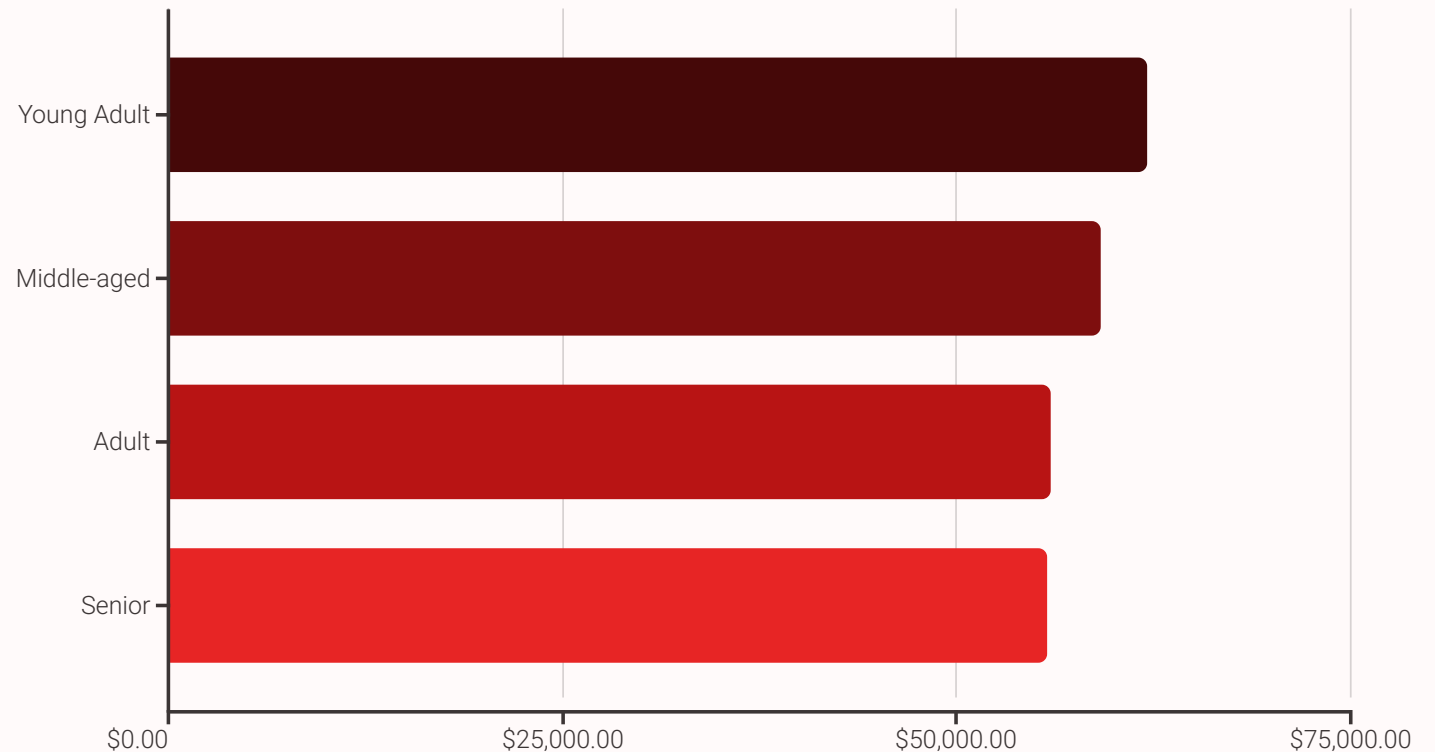
Returning customers make up 18% of our base, showing potential for conversion to loyal status. New customers at 2% represent an opportunity for growth through targeted acquisition strategies.

# Revenue Distribution by Age Group

## Generational Spending Patterns

Young Adults lead revenue generation at \$62,143, followed closely by Middle-aged customers at \$59,197. Adults and Seniors contribute \$55,978 and \$55,763 respectively, showing relatively balanced spending across age groups.

This distribution suggests our product mix appeals broadly across demographics, though Young Adults represent our highest-value segment for targeted marketing efforts.



# Power BI Dashboard Visualization

We built an interactive dashboard in Power BI to present insights visually, enabling stakeholders to explore customer behavior patterns dynamically. The dashboard tracks 3,900 customers with key metrics including average purchase amount, review ratings, and subscription status.

Visual elements include revenue and sales breakdowns by category, age group analysis, and subscription distribution. The dashboard provides filtering capabilities across subscription status, gender, category, and shipping type for granular analysis.





🏆 TOP PERFORMERS

# Product Performance Highlights

## Highest Rated Products

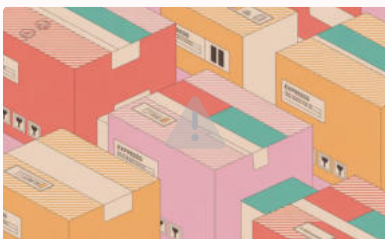
**Gloves** lead with 3.86 rating, followed by **Sandals** (3.84) and **Boots** (3.82)

## Category Leaders

**Clothing** dominates with 1,737 purchases, followed by **Accessories** and **Footwear**

## Discount Patterns

**Hats** show 50% discount rate, with **Sneakers** (49.66%) and **Coats** (49.07%) following



## Clothing Category

Top performers: Blouse, Pants, and Shirt driving category revenue



## Accessories Category

Jewelry, Sunglasses, and Belts leading accessory sales

# Business Recommendations

## Boost Subscription Adoption

With only 27% of customers subscribed, promote exclusive benefits and incentives to increase subscription rates and build recurring revenue streams.

## Strengthen Loyalty Programs

Reward repeat buyers to convert the 18% returning customer segment into loyal customers, leveraging the strong 80% loyal base as a model.

## Optimize Discount Strategy

Review discount policy to balance sales growth with margin control. Focus on strategic discounting for high-performing categories while protecting profitability.

## Enhance Product Positioning

Highlight top-rated products like Gloves and Sandals in marketing campaigns. Leverage category leaders to drive cross-selling opportunities.

## Target High-Value Segments

Focus marketing efforts on Young Adults and express-shipping users who demonstrate higher engagement and spending patterns for maximum ROI.