Customer Shopping Behavior Analysis

Analyzing 3,900 purchases to unlock shopping insights

The Data Behind the Insights

3,900

Total Purchases

Transactions analyzed

18

Data Columns
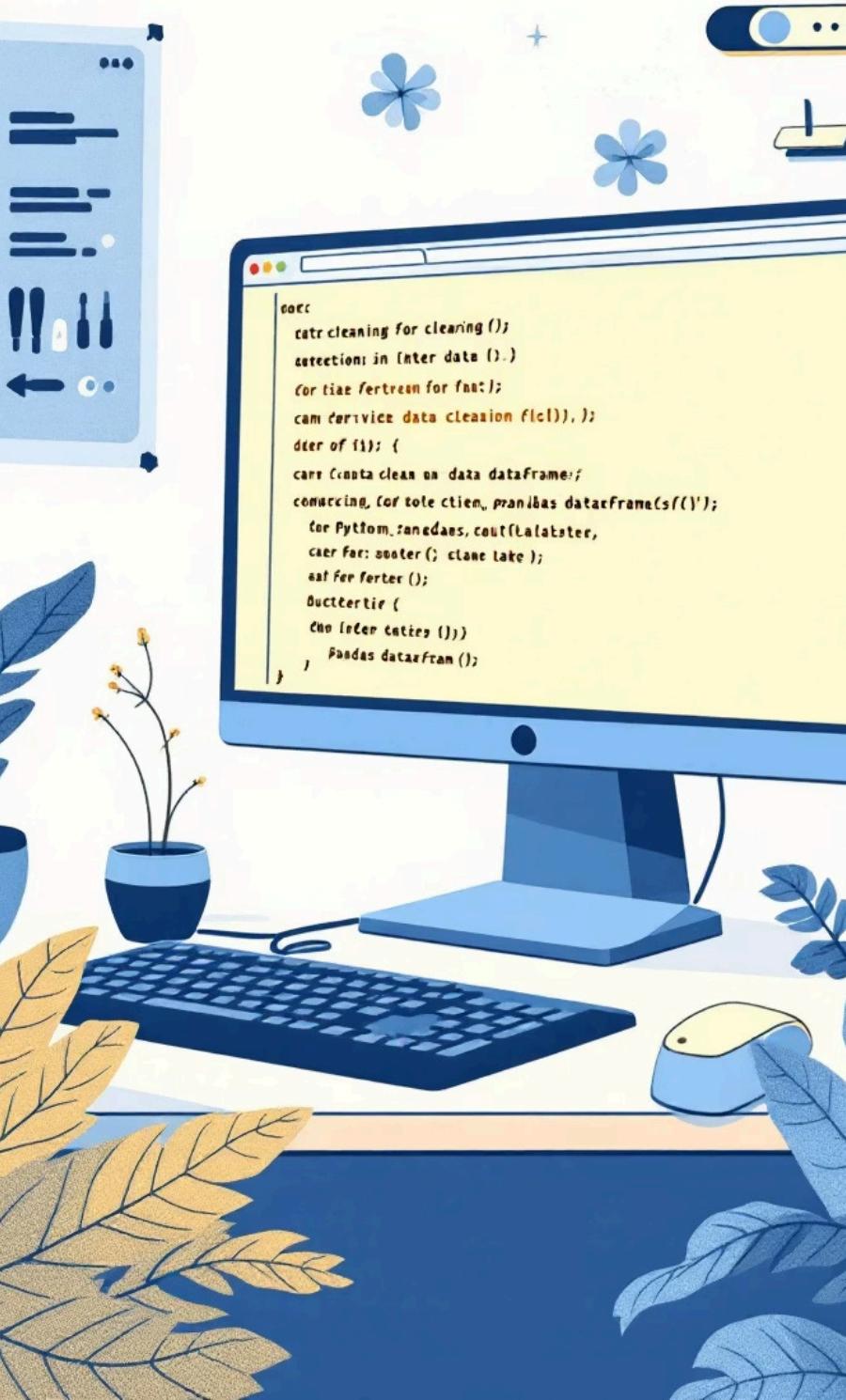
Features tracked

37

Missing Values

In Review Rating column

Key features: customer demographics, purchase details, shopping behavior

Data Preparation & Cleaning

01

Data Loading

Imported dataset using pandas

02

Initial Exploration

Used df.info() and .describe() for structure analysis

03

Missing Data Handling
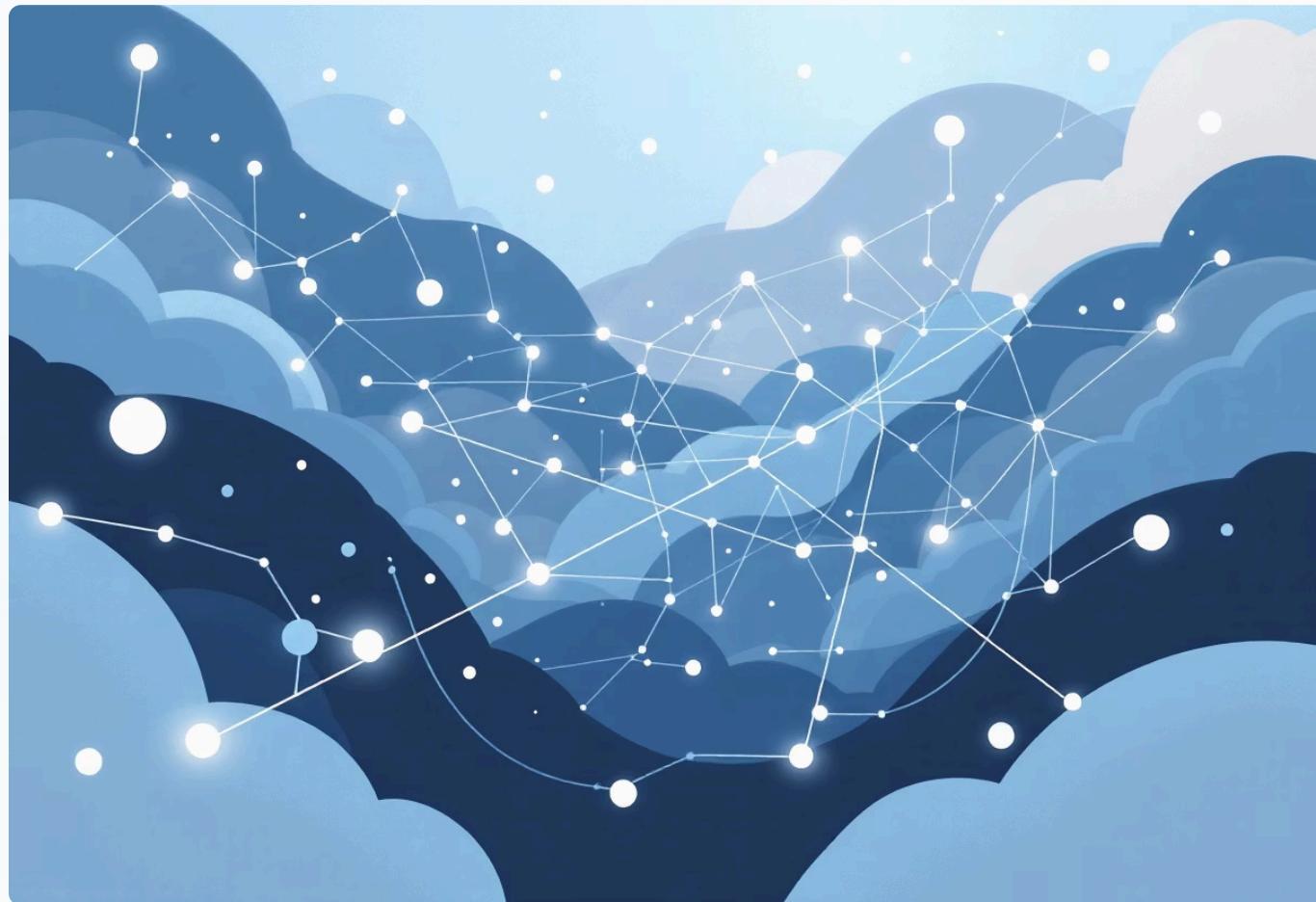
Imputed Review Rating using median by category

04

Column Standardization

Renamed to small_case for readability

Feature Engineering

Age Groups

Created age_group by binning customer ages

Purchase Frequency

Added purchase_frequency_days column
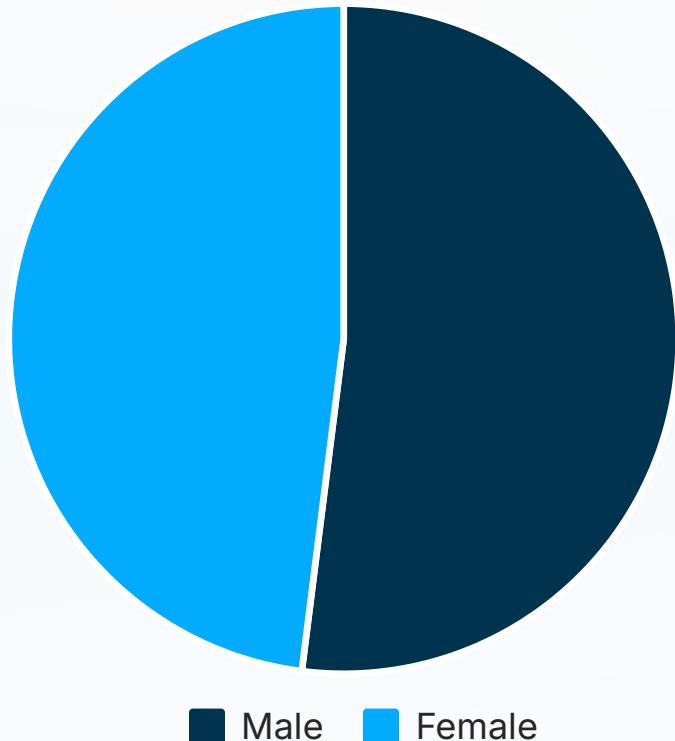
Data Consistency

Dropped redundant promo_code_used field

Database Integration

Connected to MySQL for SQL analysis

Revenue by Gender

Male **Female**

Gender Revenue Comparison

Male customers generate slightly higher total revenue, but the split is relatively balanced across genders.

Both segments represent significant market opportunities for targeted campaigns.

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Top-Rated Products & Shipping Insights

Top 5 Products

Identified highest-rated items by customer reviews

Shipping Comparison

Express shipping users spend more on average than standard

High-Spending Discount Users

Customers using discounts but exceeding average purchase amounts

Subscription Impact

Subscribers vs. Non-Subscribers

Subscribers demonstrate higher average spend and contribute significantly more to total revenue.

- Subscribers: Higher lifetime value
- Non-subscribers: Larger volume, lower per-transaction spend
- Opportunity: Convert non-subscribers to boost revenue

Key Finding

Repeat buyers with 5+ purchases show higher subscription rates

Customer Segmentation

New Customers

First-time buyers exploring products

Returning Customers

2-5 purchases, building habits

Loyal Customers

5+ purchases, highest value segment

Classification based on purchase history reveals distinct behavioral patterns and revenue potential

Interactive Power BI Dashboard

Visual insights across all key metrics: revenue trends, customer segments, product performance, and demographic analysis

Strategic Business Actions

Boost Subscriptions
Promote exclusive benefits for subscribers

Loyalty Programs
Reward repeat buyers to increase retention

Review Discounts
Balance sales boosts with margin control

Product Positioning
Highlight top-rated items in campaigns

Targeted Marketing
Focus on high-revenue age groups

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