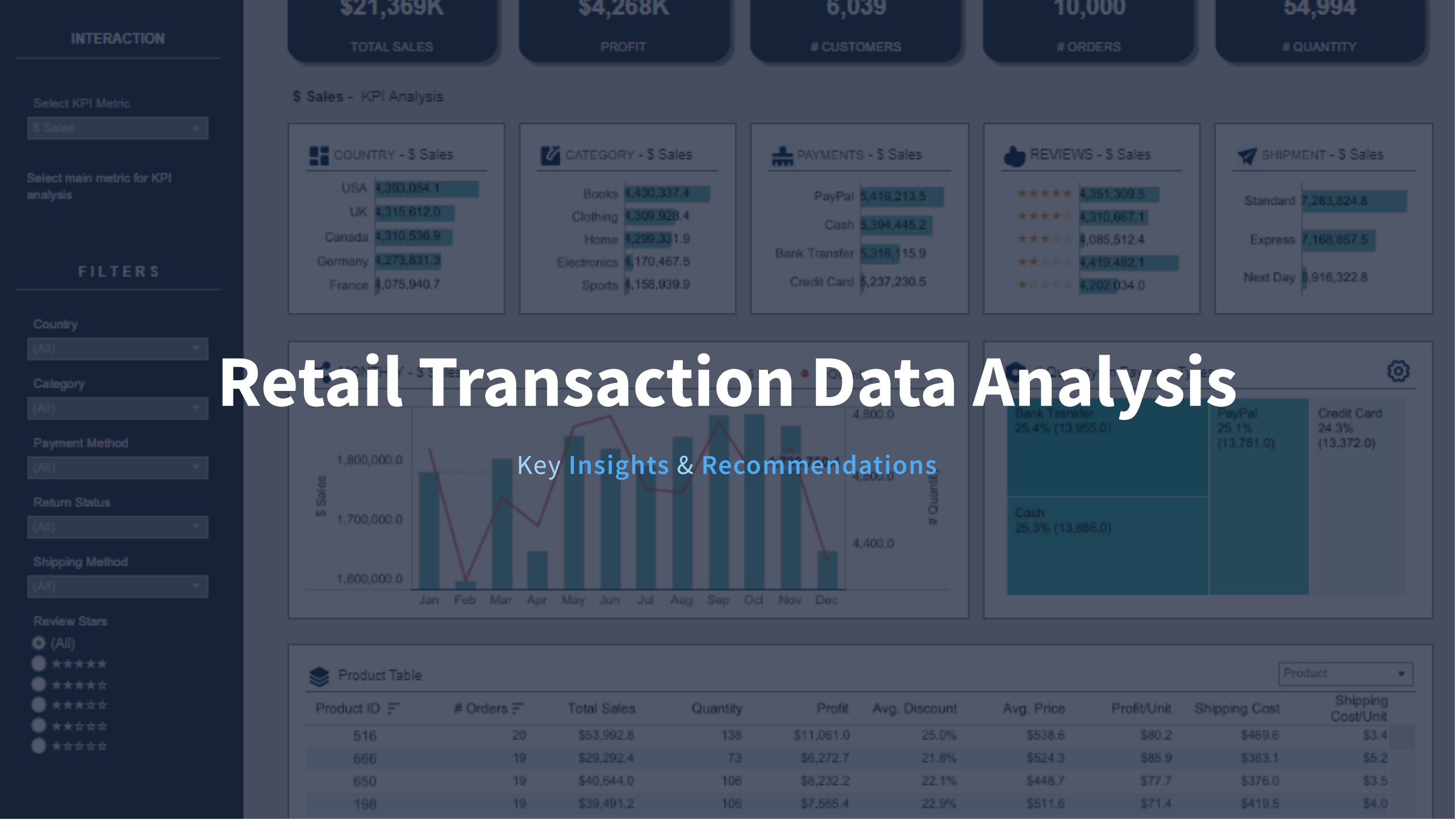


Retail Transaction Data Analysis

Key Insights & Recommendations

Analysis Overview

Data Sources

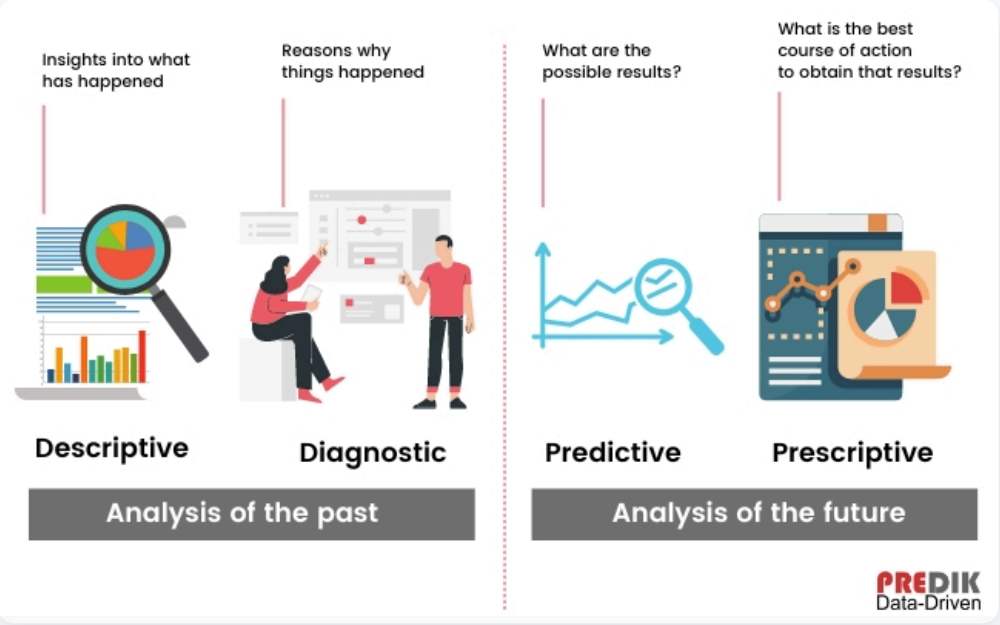
- Retail transaction data
- Customer response data

Analysis Approach

- Data preprocessing & cleaning
- Exploratory data analysis
- Advanced analytics (RFM, Time Series)

Key Objectives

- Understand customer behavior
- Identify sales trends
- Provide actionable insights



Data Preprocessing & Cleaning

Data Integration

- Merged transaction and response datasets
- Joined on **customer_id** field

Data Cleaning

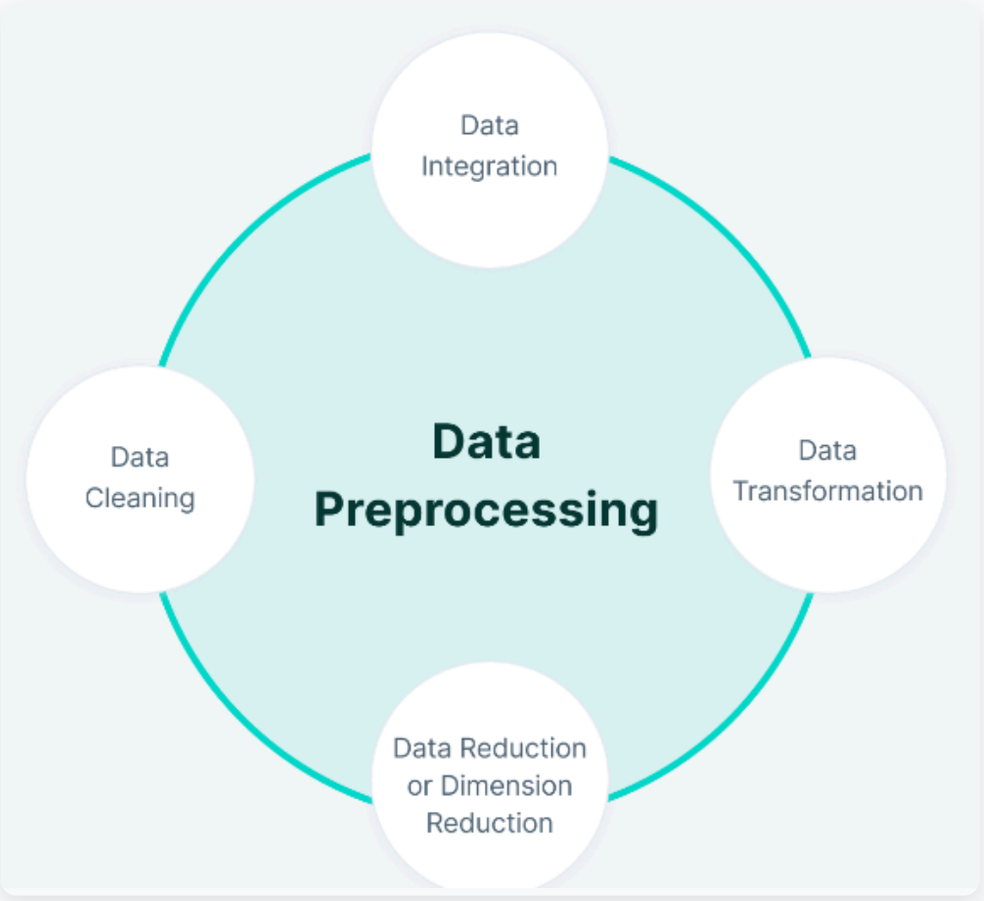
- Handled missing values in response column
- 31 null values filled with **0**

Data Transformation

- Converted trans_date to **datetime**
- Converted response to **int64**

Outlier Detection

- Applied **z-score** method
- No significant outliers detected



Key Findings

Top Months

- **August**, **October**, and **January** have the highest transaction amounts
- August leads with **$726,921** in total sales

Top Customers

- **CS4424** has the highest order count (39)
- Same customer leads with **$2,933** in total sales

Yearly Trends

- **2013** had the highest total transactions
- Total sales of **$2,137,368** in 2013

Data Distribution

- No significant outliers detected
- Transaction amounts and response values are **normally distributed**

BI for Retail isn't a Luxury. It's a Necessity

Monthly Transaction Trends

Analysis Period

January 2011 to **March 2015**

50+ months of transaction data analyzed

Seasonal Patterns

Clear **seasonal variations** in transaction amounts

Consistent patterns across multiple years

Peak Periods

August, **October**, and **January** show highest volumes

Monthly peaks range from **$724,107** to **$726,921**

Trend Analysis

Overall volume shows **slight variations**

No dramatic growth or decline observed

Time Series Graph Examples: Analyzing Time-Based Data

RFM Analysis & Customer Segments

RFM Model

- **Recency**: Most recent purchase date
- **Frequency**: Number of purchases
- **Monetary**: Total transaction value

Segment Definitions

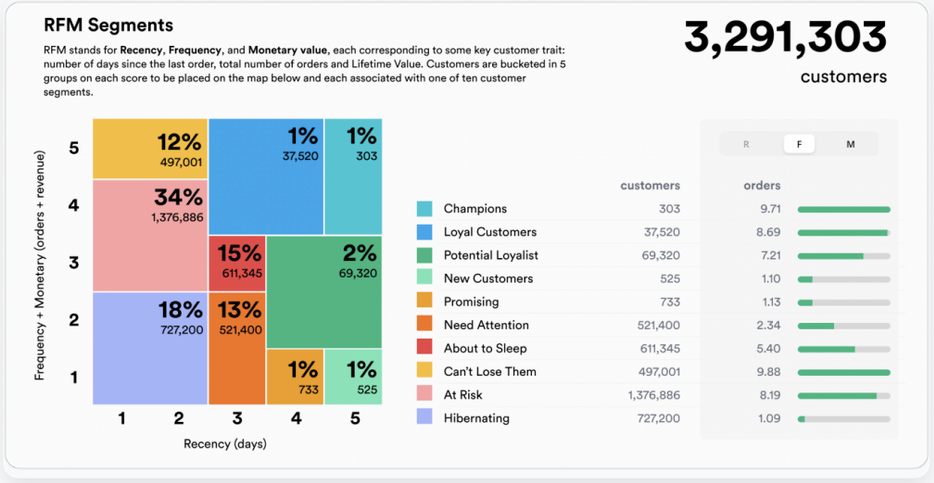
- **PO** : 2015+ recent, 15+ orders, $1000+ sales
- **P1** : 2014 recent, 10-15 orders, $500-1000 sales
- **P2** : All other customers

Segment Distribution

- Three **distinct customer groups** identified
- Clear separation in purchasing behavior

Strategic Value

- Different segments require **different marketing approaches**
- Opportunity to convert P2 to higher segments



Customer Churn Analysis

Churn Rate

- **111,158** churned customers (response=0)
- **13,842** active customers (response=1)

Churn Percentage

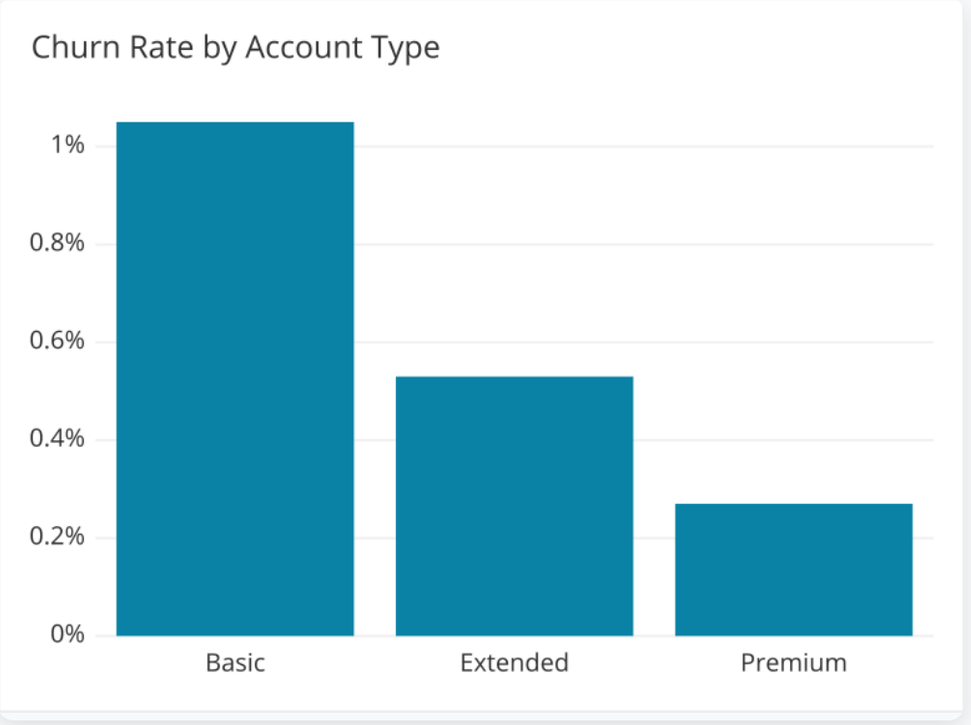
- Approximately **89%** of customers have churned
- Only **11%** of customers remain active

Top Customer Analysis

- Top 5 customers show **consistent purchasing patterns**
- Regular transaction intervals throughout the year

Retention Opportunity

- Significant opportunity to **re-engage** churned customers
- Targeted campaigns could reactivate dormant segments



Strategic Recommendations

Seasonal Marketing

- Focus campaigns on **August** , **October** , and **January**
- Align promotions with peak transaction periods

Customer Retention

- Implement **re-engagement strategies** for 89% churned customers
- Targeted offers based on previous purchase history

VIP Program

- Develop exclusive programs for **high-value customers**
- Prioritize PO segment with premium benefits

Data-Driven Decisions

- Continue **regular analysis** to identify trends
- Track segment performance and adjust strategies