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# Banking Financial Analysis

**Credit, Fraud & Customer Insights**

Instant Software Solutions  
Training



# Overview

- Built on a synthetic but realistic banking dataset
- Combines transactions, cards, merchants, fraud labels, and user demographics
- Purpose: Fraud detection and customer behavior analysis
- Time span: 2010s decade





# Dataset Components

- **Transactions Data:** amounts, timestamps, merchant info
- **Card Information:** limits, types, activation dates
- **Merchant Codes:** classify transaction types
- **Fraud Labels:** legitimate vs fraudulent transactions
- **User Data:** demographics, account details
- Enables linking across multiple tables for rich analysis

# Problem Statement

Banks face huge transaction volumes → risk of fraud, errors, and customer churn

## We need a central Dashboard to track:

- Customer Activity & Behaviors Analysis
- Financial Performance and Trends
- Operational Efficiency
- Risk Indicators



# Project Pipeline



## Data Integration (SQL Server)

All raw datasets were imported into SQL Server to ensure secure storage, structured tables, and easy maintenance of relationships.



## Data Preparation & Cleansing (Python)

Used Python to clean, transform, and enrich the data: handling missing values, merging tables, and creating derived fields for deeper analysis.



## Analytics & Insights Generation

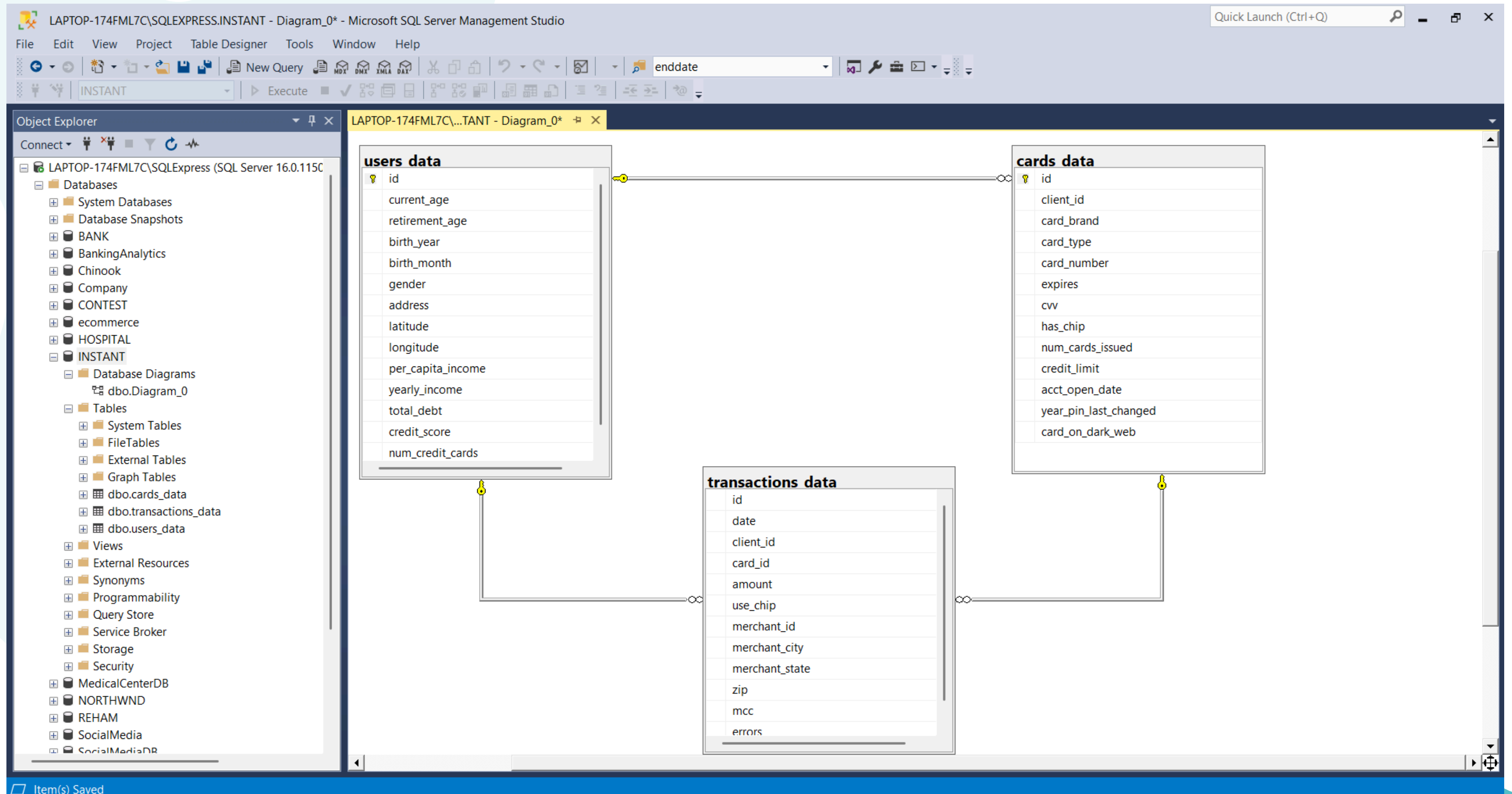
Performed exploratory analysis, segmentation, and calculations (fraud loss %, credit utilization %, active/inactive customers) to extract actionable insights.



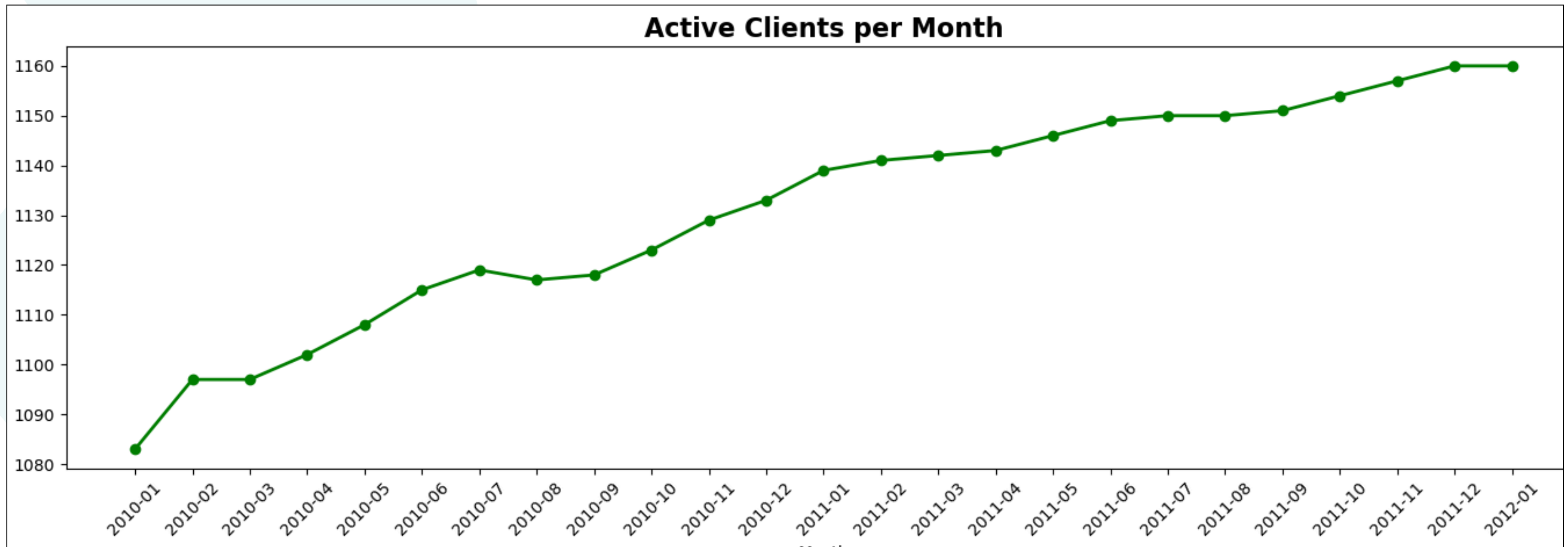
## Visualization & Reporting (Power BI Dashboard)

Developed an interactive Power BI dashboard to visualize key metrics, track trends, and enable decision-makers to explore data in real time.



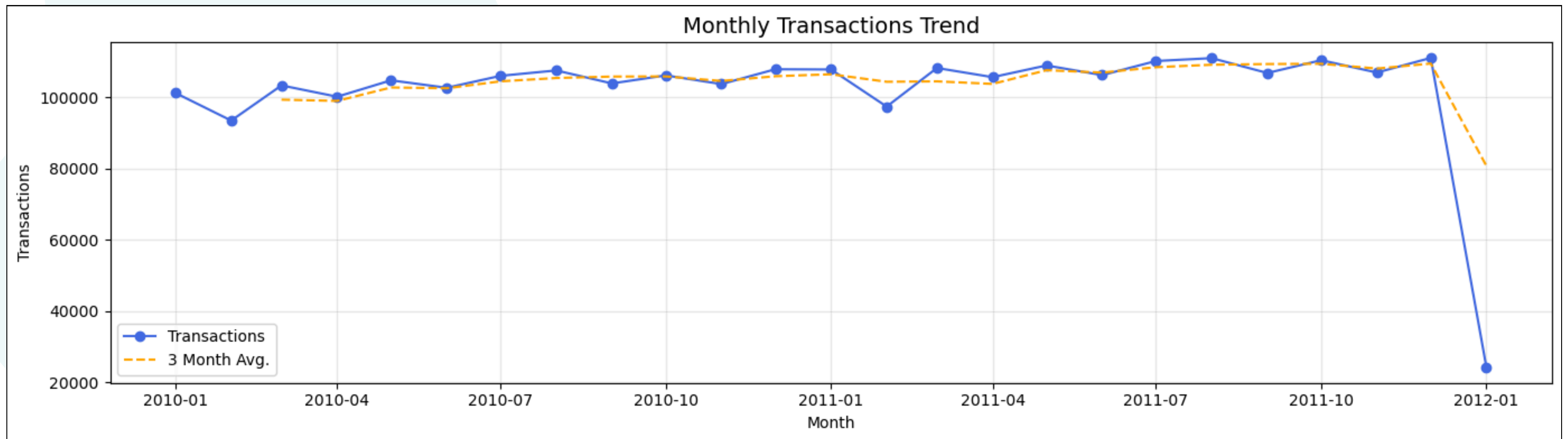


**Active customer count has shown a consistent upward trend, indicating growing engagement and retention**



## Transactions stayed above 100K per month, highlighting strong customer activity

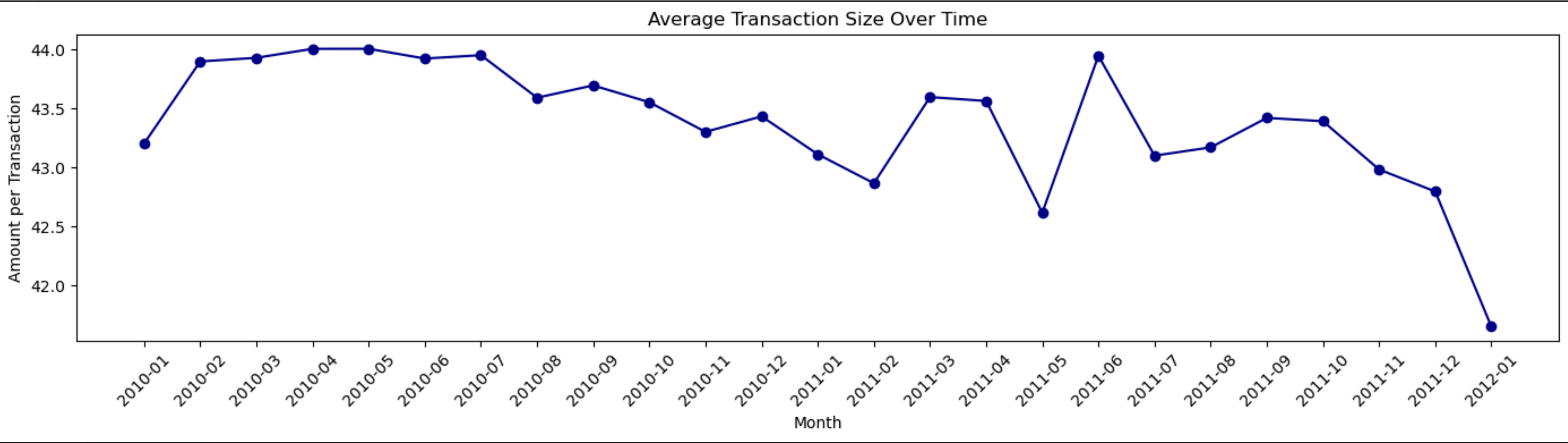
(Stable transaction activity with minor seasonal fluctuations)





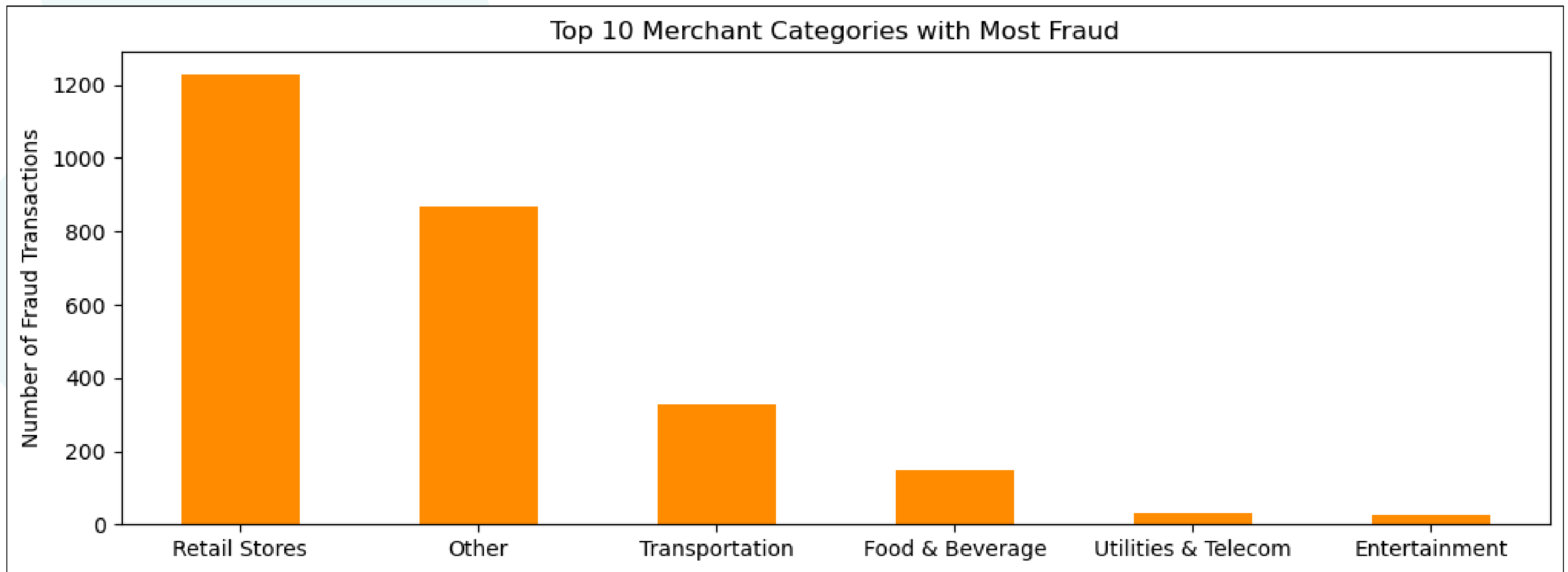
**But Monthly average amount per transaction with fluctuations indicating seasonal or behavioral changes**

(Recent drop likely reflects incomplete or missing data at the period's end)



## Highlighting high-risk merchant categories to improve fraud prevention strategies

(Retail Stores account for the majority of fraud transactions — over 46% of total cases)



Financial Analysis | Overview

Gender  
All

City  
All

Retirement Status  
All

Active Customers  
1K

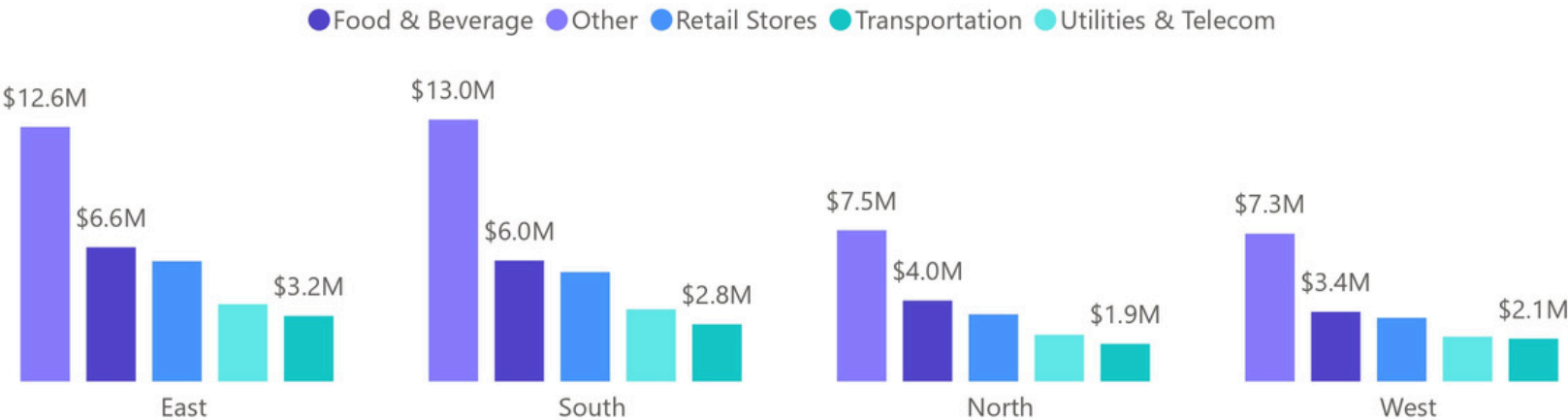
Avg. Credit Score  
710

Average DTI  
1.38

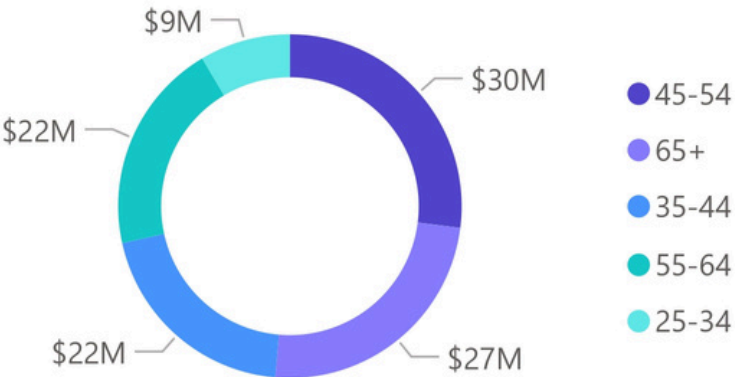
Fraud Detected  
3K

Debt Value  
\$127M

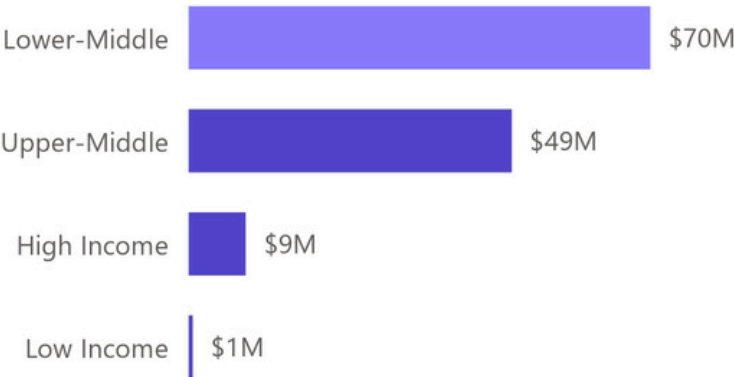
Transactions Value by MCC



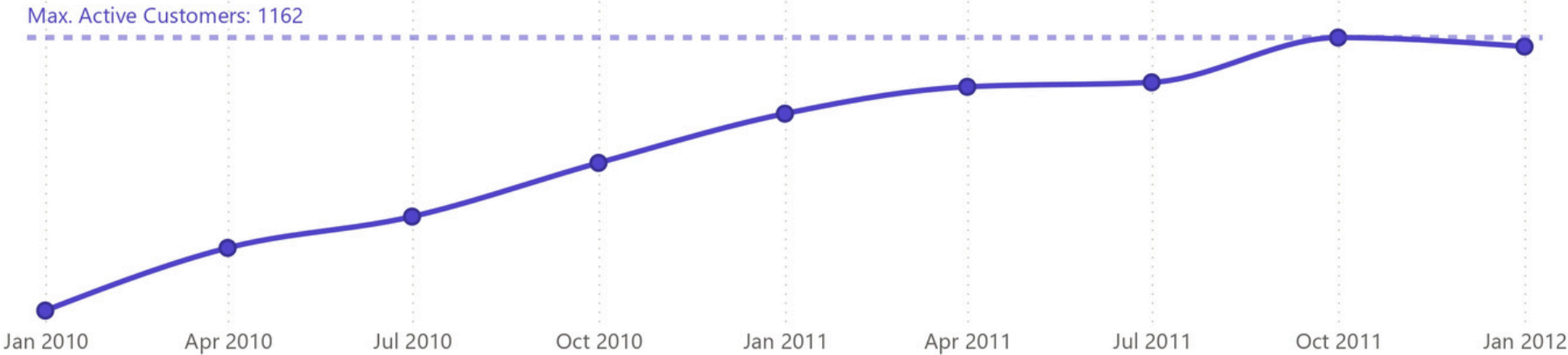
Transactions by Age Group



Debt by Income



Customer Activity Trends



## Financial Analysis | Cards & Transactions

Gender

All

City

All

Age Group

All

Cards

6K

Avg. Years PIN Change

12

Avg. Credit Limit

\$14.3K

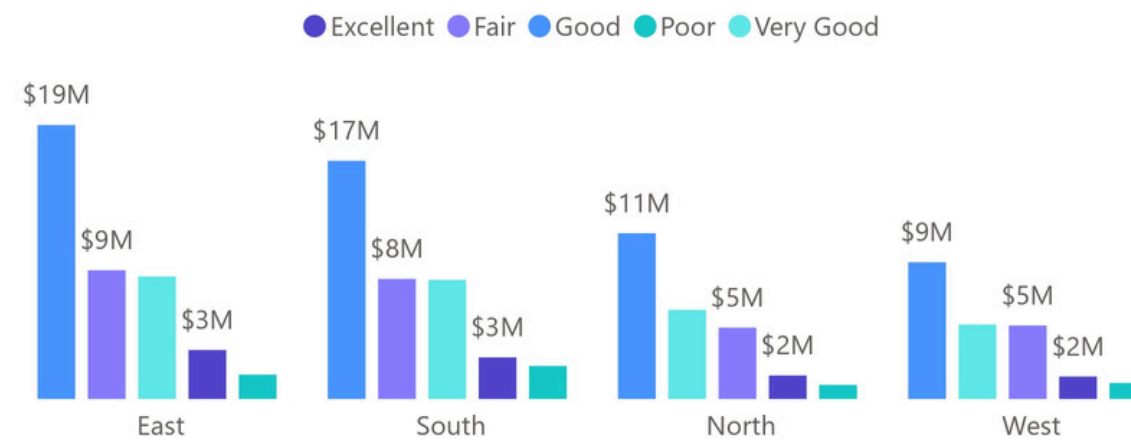
Transactions Value

\$111M

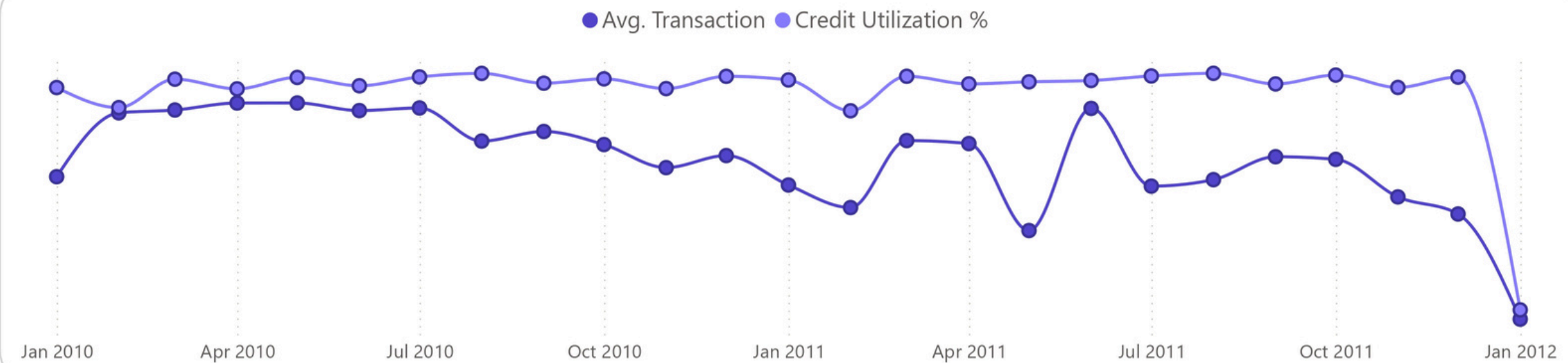
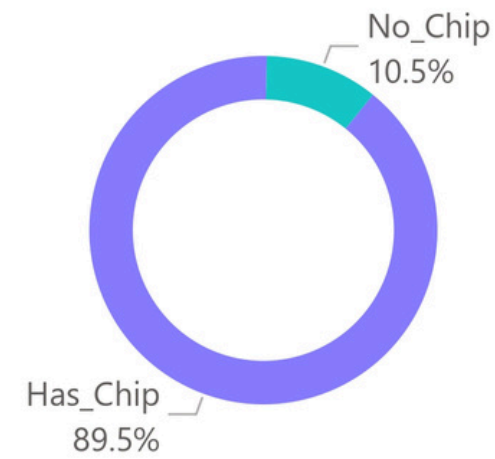
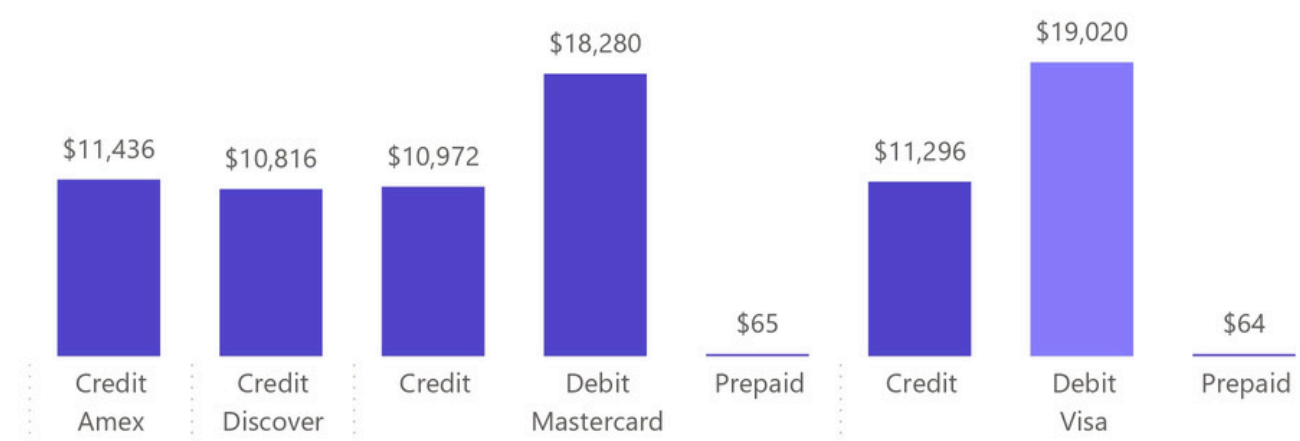
Transactions Volume

2.6M

### Regional Debt by Credit Score Segment



### Avg. Credit Limit by Card (Brand-Type)



## Financial Analysis | Fraud & Risk

Gender

All

City

All

Age Group

All

Inactive Customers

41.7%

Error Types

21

Errors

40K

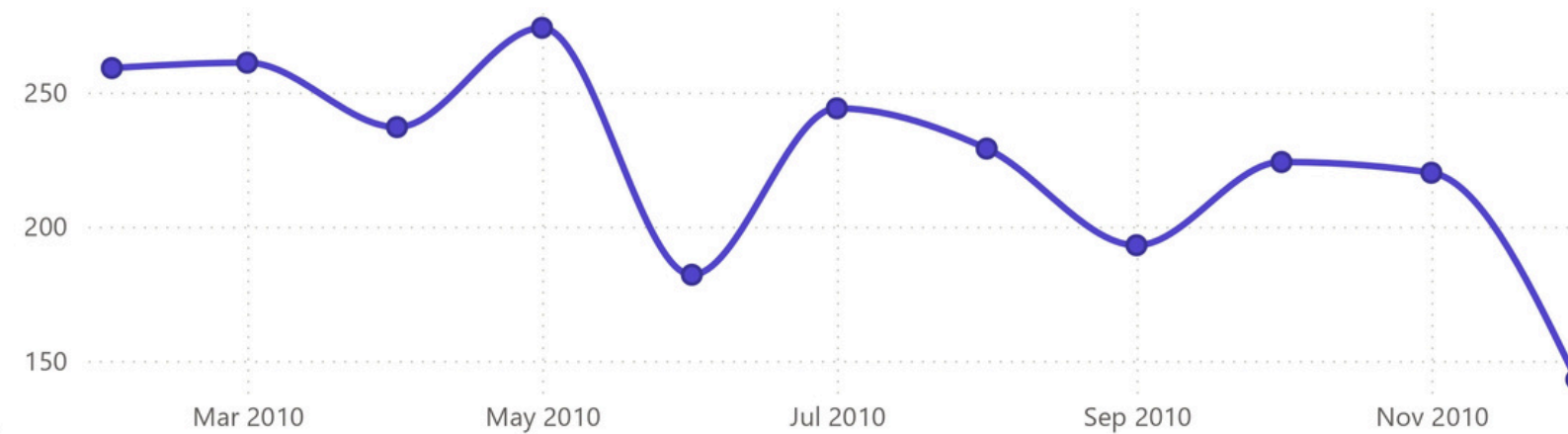
Fraud

3K

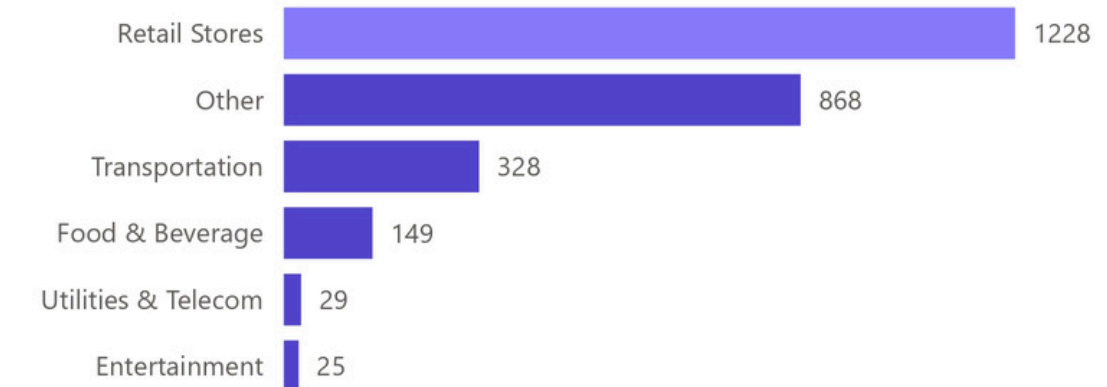
Fraud Loss Amount

\$314K

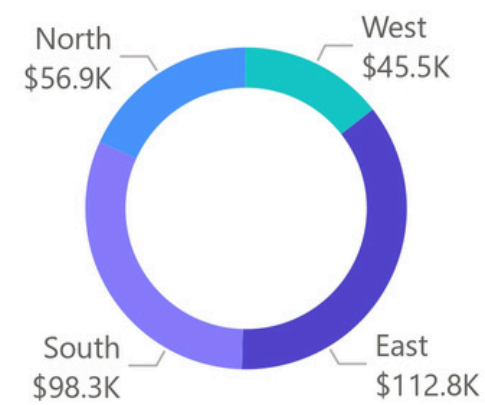
Fraud Timeline



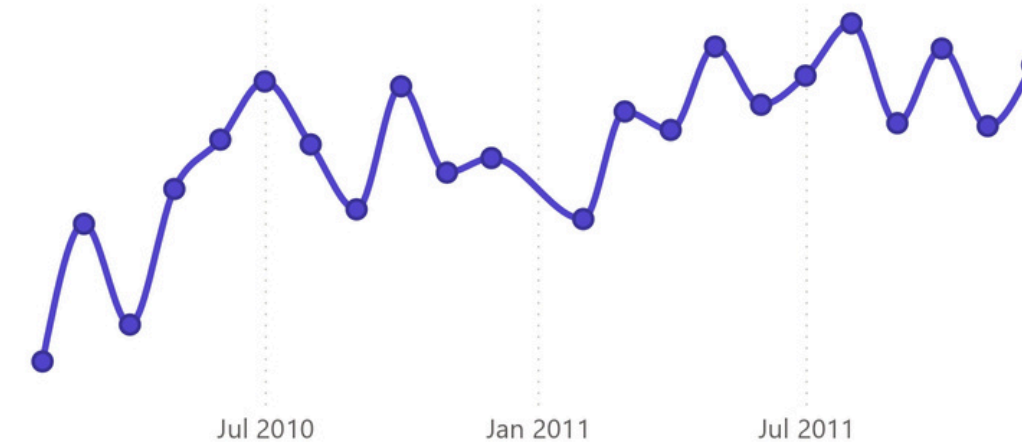
Fraud by MCC



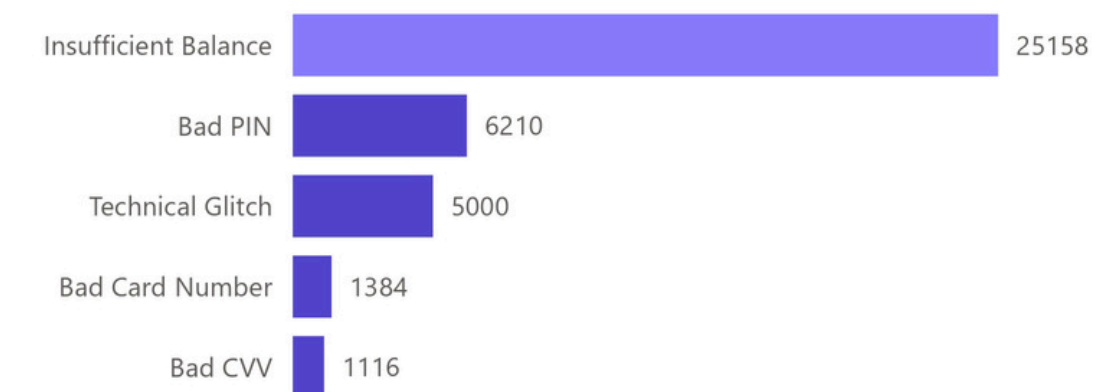
Fraud by Region



Error Timeline



Top 5 Errors





# Conclusion



## **1. Growing and Valuable Customer Base**

Most customers are active and spending more over time. The most valuable age groups are 45–54 and 65+, who together drive the largest share of transaction value.

## **2. Solid Credit Health but High Debt Concentration**

Customers generally have good credit scores, but debt is heavily concentrated in middle-income segments, indicating both opportunity and risk.

## **3. Card Portfolio with Strong Limits & High Chip Adoption**

Most cards are chip-enabled, which improves security. Credit limits are healthy, giving room for higher spending but also requiring risk monitoring.



# Conclusion

## **4. Fraud Under Control but Needs Targeted Focus**

Fraud losses are low overall and trending down, but retail stores and the East region remain key hotspots that require tighter monitoring.

## **5. Operational Errors Increasing**

Errors remain low compared to total transactions but are steadily rising, signaling the need for process improvement and better controls.

## **6. Regional & Segment Insights**

East and South regions lead in both transaction value and debt. Middle-income customers represent the largest opportunity for growth but also the highest risk exposure.

# Strategic Takeaways

- **Grow Active Customers:**

Target inactive customers with reactivation campaigns and loyalty offers.

- **Focus Fraud Controls:**

Strengthen monitoring for retail stores and East region merchants.

- **Improve Operations:**

Streamline processes to reverse the rising error trend.

- **Optimize Credit & Debt:**

Adjust policies for middle-income groups to manage risk and drive profitability.

- **Segmented Offers:**

Personalize products based on age, income, and region to maximize engagement.



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# Thank You

