Credit Card Fraud Detection

Report – Feb 2025

# 1. Summary

This report presents a comprehensive analysis of credit card transaction data to assess fraud risk. A total of over 1,050,000 transactions were reviewed, with a fraud rate of 0.57%. Although the percentage is low, the financial impact and pattern of occurrences justify a targeted response.

# 2. Key Insights

- Fraud rate is low at 0.57%, yet the number of fraudulent transactions (~6,017) is significant in scale.  
- January and February showed the highest number of frauds, indicating seasonal or campaign-linked spikes.  
- Certain transaction categories are repeatedly involved in fraudulent activity.  
- Users aged 26–40 are slightly more prone to fraud, suggesting this group might need targeted awareness.  
- Some users are linked to multiple fraud cases, indicating potential misuse or account compromise.

# 3. Fraud Risk Metrics

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| Metric | Value |
| Total Transactions | 1,050,000+ |
| Fraudulent Transactions | 6,017 |
| Fraud Rate | 0.57% |
| Avg Transaction Value | $70 |
| Estimated Fraud Amount | ~$420,000 (approx.) |

# 4. Risk Breakdown

Majority of frauds fall into the Low Risk category based on available patterns.  
However, Medium and High-Risk transactions, though fewer, account for a higher financial impact.  
Continuous tracking of these risk buckets is essential for early detection.

# 5. Monthly Trend Summary

Highest fraud counts observed in January and February.  
Remaining months showed relatively stable or declining patterns.  
Monitoring during the beginning of the year is crucial.

# 6. Category-Wise Fraud Summary

A small set of transaction categories contributed disproportionately to fraud.  
These high-risk categories should be reviewed with stricter rules or filters.  
Non-essential services and miscellaneous expenses were common fraud targets.

# 7. Demographic Risk Profile

Age group 26–40 had the highest involvement in fraud cases.  
No significant trend observed based on gender.  
No strong locational pattern, but urban centers saw slightly higher activity.

# 8. Action Plan

1. Enhance monitoring during peak fraud months (Jan–Feb)  
2. Deploy additional fraud filters for high-risk categories  
3. Flag and review users associated with multiple fraud transactions  
4. Launch targeted awareness campaigns for users aged 26–40  
5. Conduct regular audits even with low fraud rates

# 9. Conclusion

Although the fraud rate is below 1%, the absolute number of fraud cases and financial risk is non-trivial. Through targeted action and consistent monitoring, future risks can be reduced and customer trust can be maintained.