

Providing Solutions to Help Business Grow

Strengthen ASB **fraud detection** and prevention capabilities to **reduce financial losses**, and uphold the bank's reputation.

Introduction

- The company is facing a growing challenge with fraudulent transactions.
- Our current detection system is struggling to adapt to evolving fraud patterns, leading to financial losses, and erosion of customer trust.

Data

500,000 May - July 2024
FROM ASB'S TRANSACTION RECORDS (SYNTHETICALLY GENERATED)

13 Variables
IDs, Date, Amount, Location, Type, Balance, Joint Flag, Agent

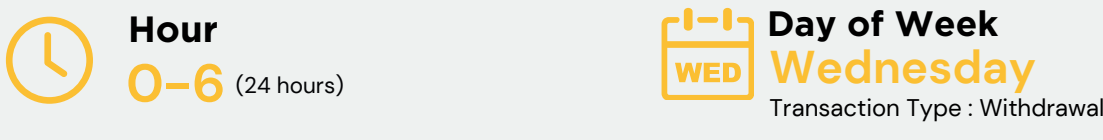
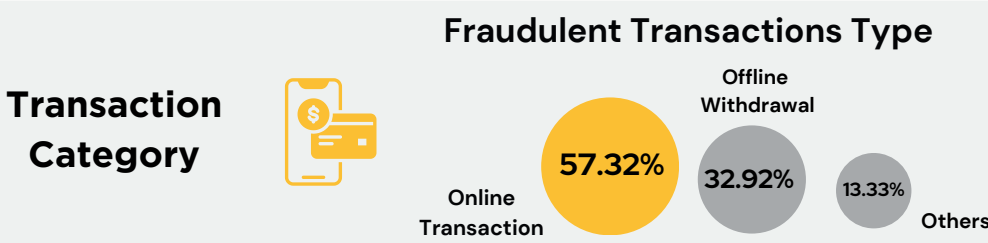
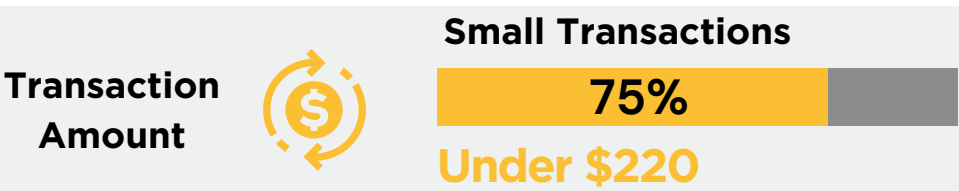
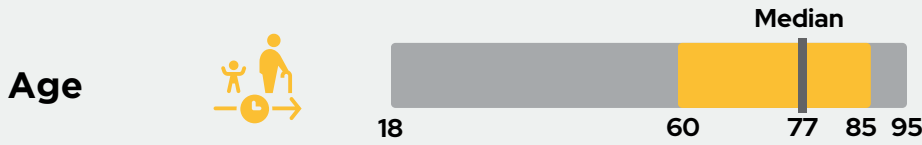
2.2% Fraud

4.7M Loses

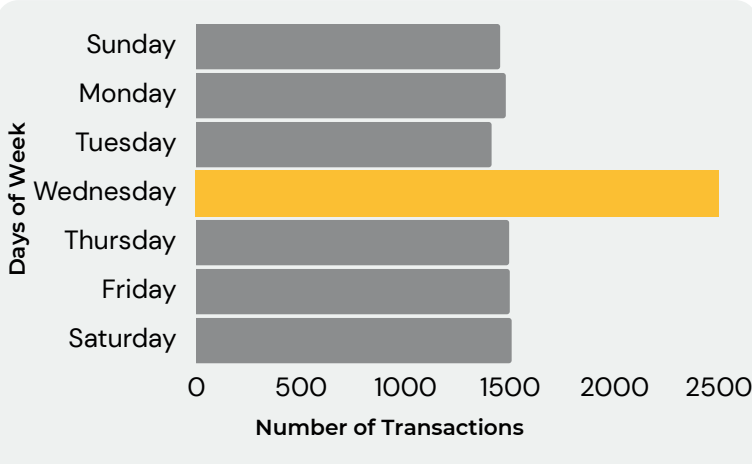
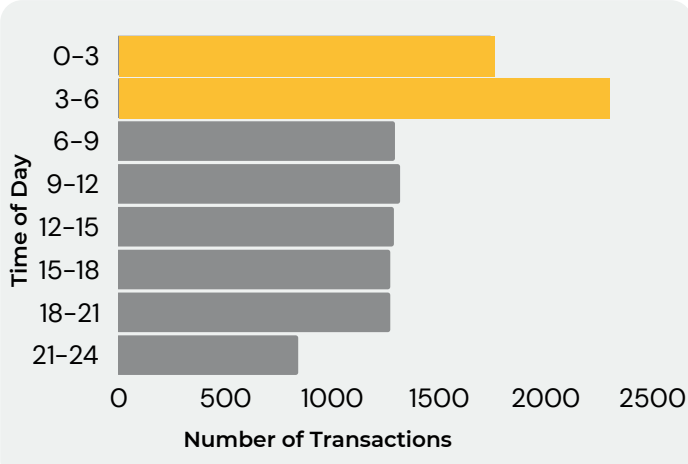
WHAT WE SAW

- Fraudulent transactions typically involve smaller amounts. This suggests fraudsters aim to blend in with legitimate activity, exploiting patterns to avoid detection.
- Fraudulent activity is concentrated during specific days and hours, particularly between 0 - 6AM. This timing suggests fraudsters exploit periods of low customer activity and limited bank oversight

Patterns of Fraudulent Transaction

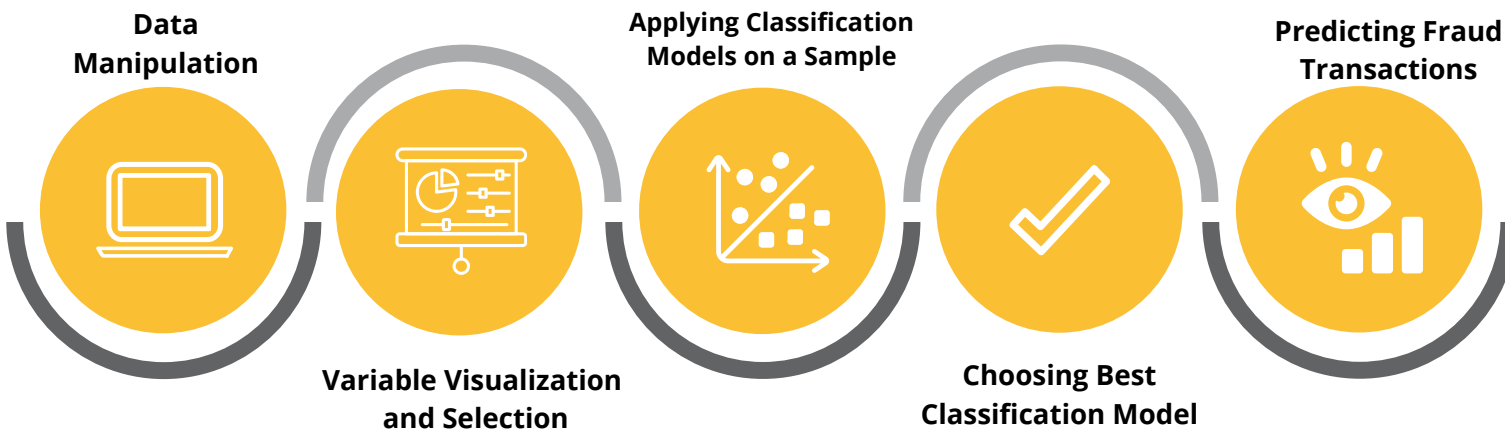


Transaction Distribution by Time and Day of Week



63% Fraudulent Transactions at 0 - 6 hrs are on account of customer aged 70+

WHAT WE DID



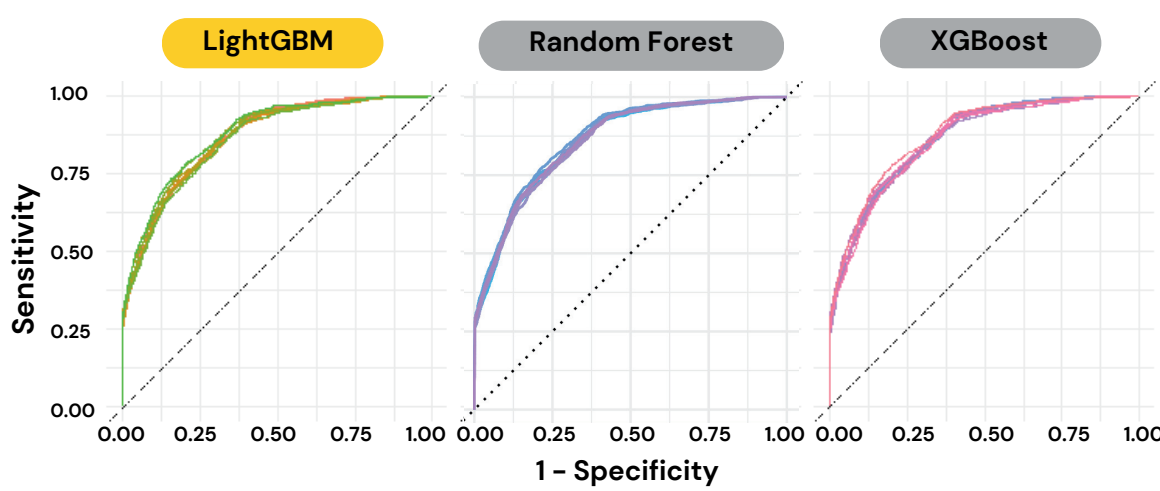
Assumptions

- Independent Observations
- Threshold Value 0.5
- Scalability & Stationarity

Data Preparation

- Bivariate Analysis
- Data Transformation for Transaction Date
- Data Split - 75% Train Data & 25% Test Data

Model Comparisons - Top 3



LightGBM Performance on Test Data

Models	Accuracy	Sensitivity	PPV
LightGBM	0.785	0.758	0.076
XGBoost	0.774	0.761	0.073
Random Forest	0.817	0.709	0.083

LightGBM Performance on Test Data

LightGBM

0.784 Accuracy
0.759 Sensitivity
0.075 PPV
0.871 AUC

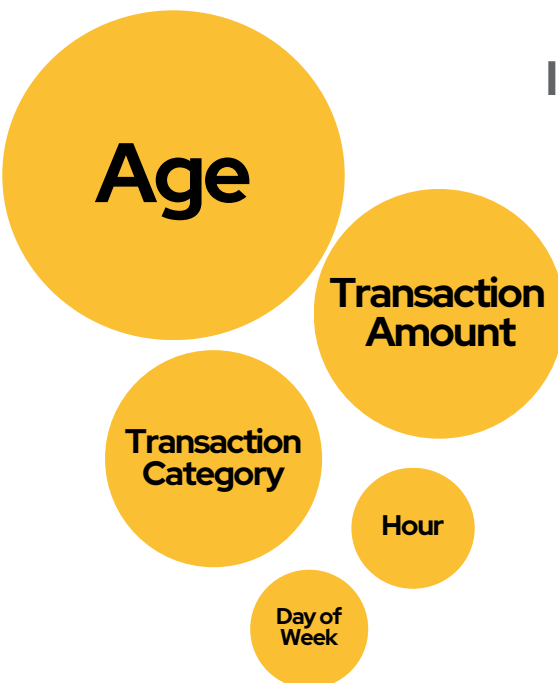
CONFUSION MATRIX

True Positive 2137 1.7%	False Positive 26274 20.4%
False Negative 680 0.5%	True Negative 95909 77.3%

*Target class : Fraud Transactions

WHAT CAN WE DO

Key Variables



Key Finding

Flag accounts for further investigation rather than immediate blocking transactions, as Positive Predictive Value (PPV) is low.

- Perform status (alive/not alive) to update bank records for all customers above the age of 77.
- Provide flexible option to set up OTP and limited banking services for 65 and above customers during hours of maximum fraudulent transactions.
- Localised geo-fencing based on transaction history through merchant location for elderly customers.
- Send regular fraud pattern updates to customers so they are always aware. Send summary statement especially on Wednesday for customers to flag any fraud transactions.