Credit Card Fraud Detection

Barbara Vargas and Mauricio Bock

July 29, 2022

Agenda

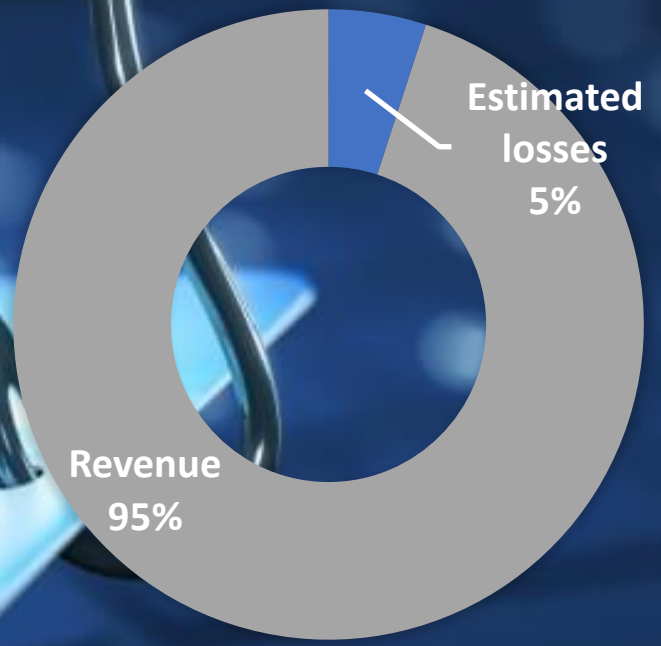
- Background
- About the Dataset
- Insights
- Outcome & Results

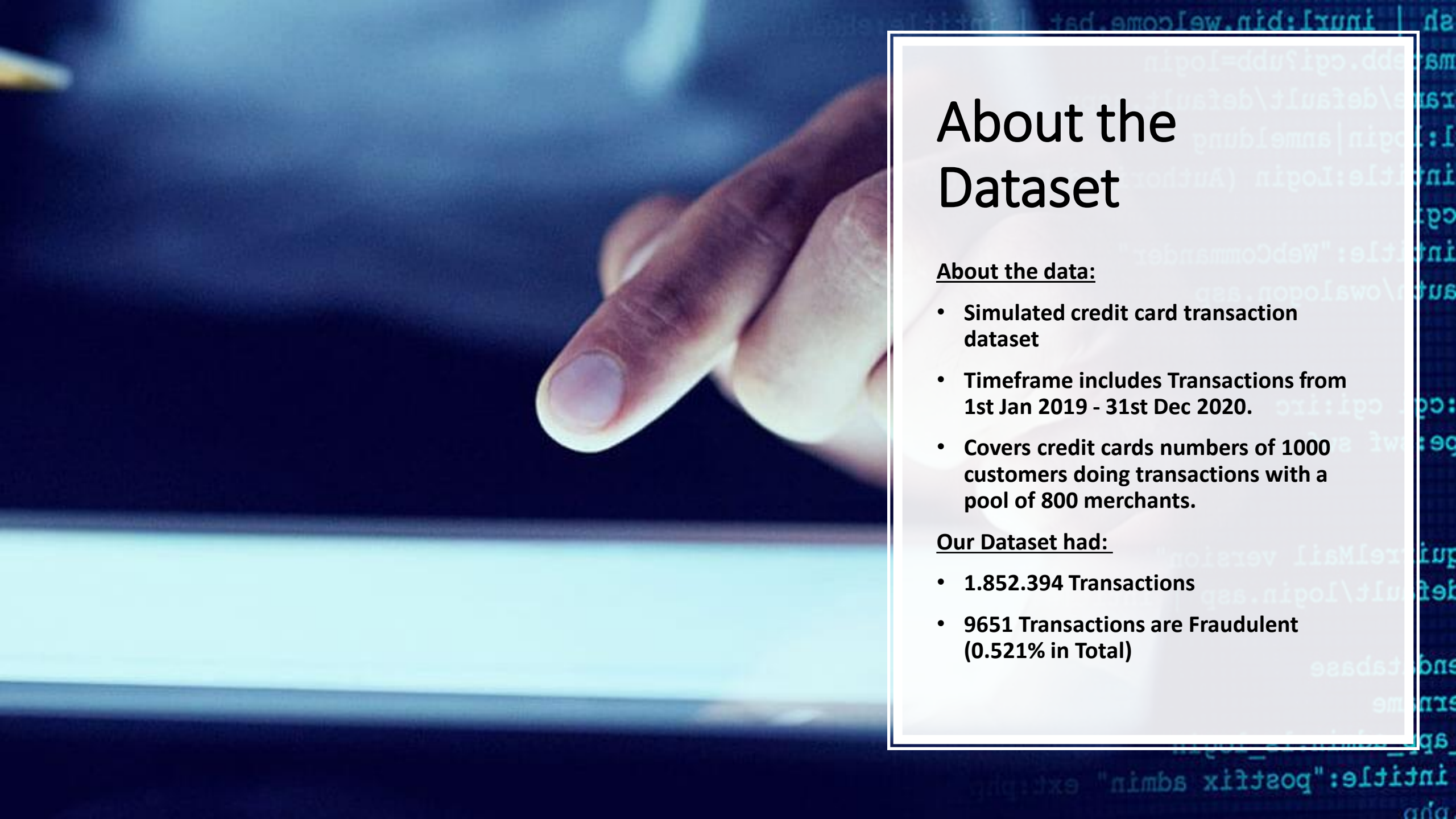
Background

Patterns of fraudulent transactions

- Difference from regular buying time
- Large number of Txs in short period of time
- Purchases made from different locations
- Suddenly costly items are purchased

Loss of revenue from companies due to fraud





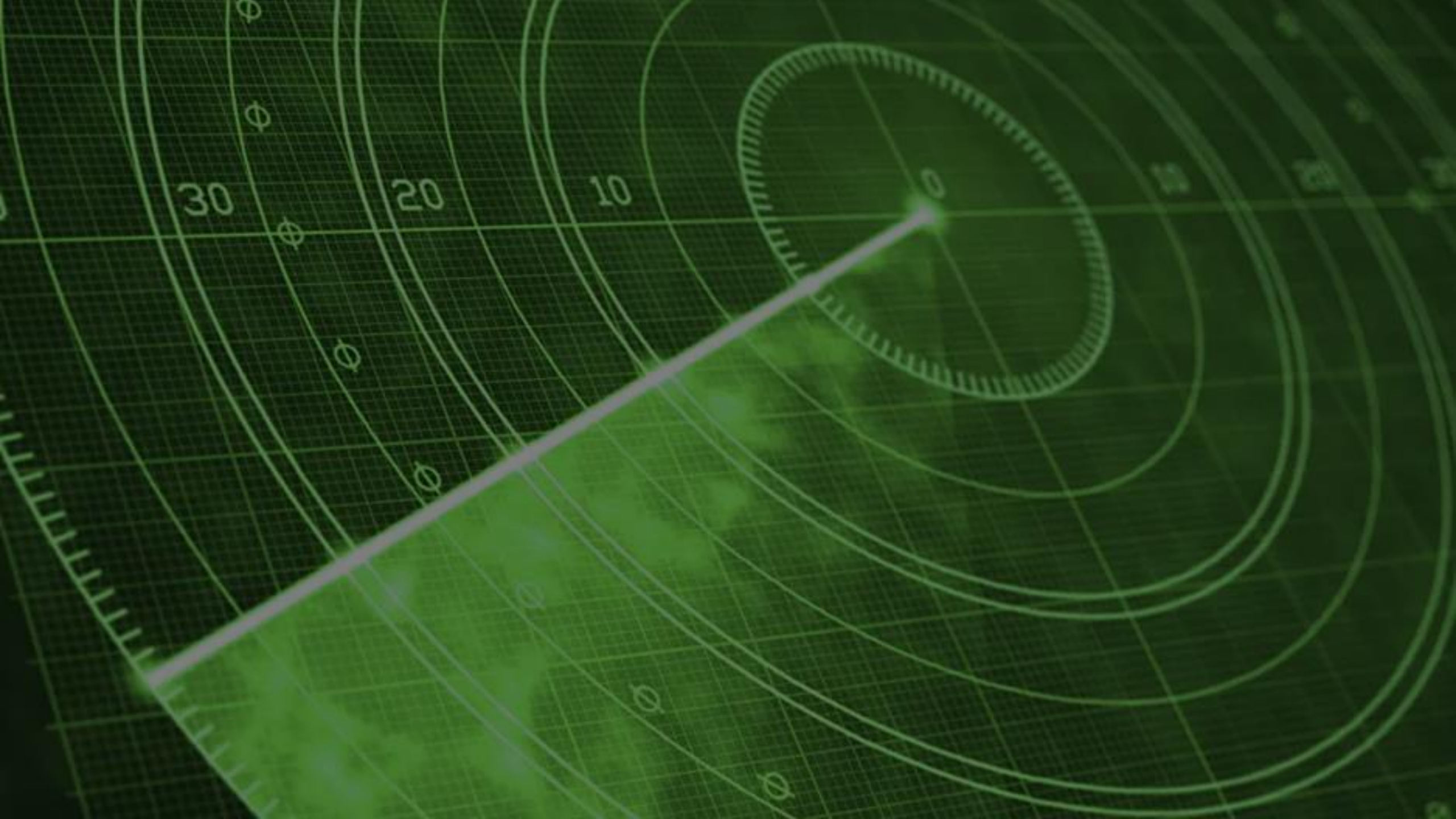
About the Dataset

About the data:

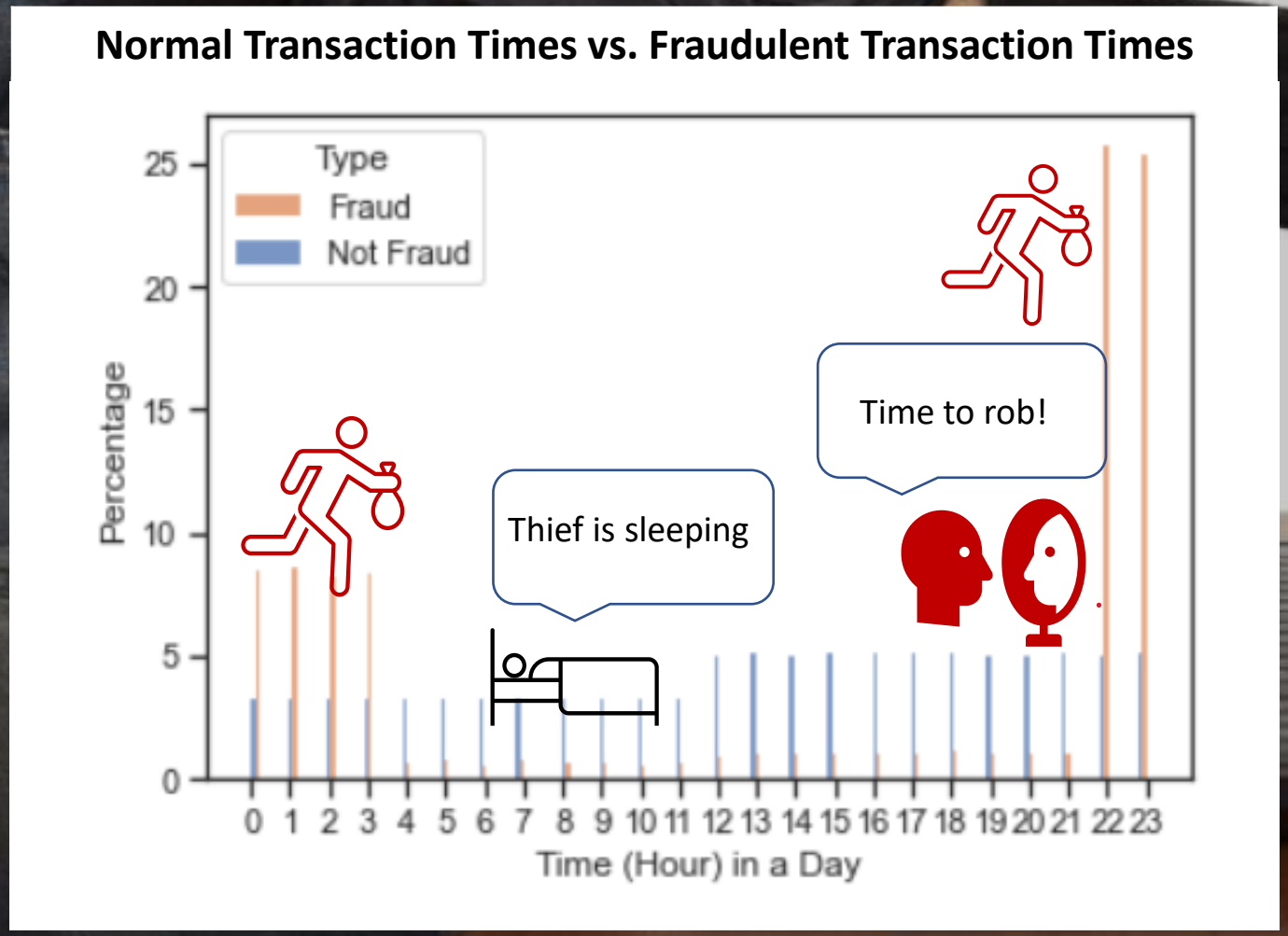
- **Simulated credit card transaction dataset**
- **Timeframe includes Transactions from 1st Jan 2019 - 31st Dec 2020.**
- **Covers credit cards numbers of 1000 customers doing transactions with a pool of 800 merchants.**

Our Dataset had:

- **1.852.394 Transactions**
- **9651 Transactions are Fraudulent (0.521% in Total)**


30
20
10

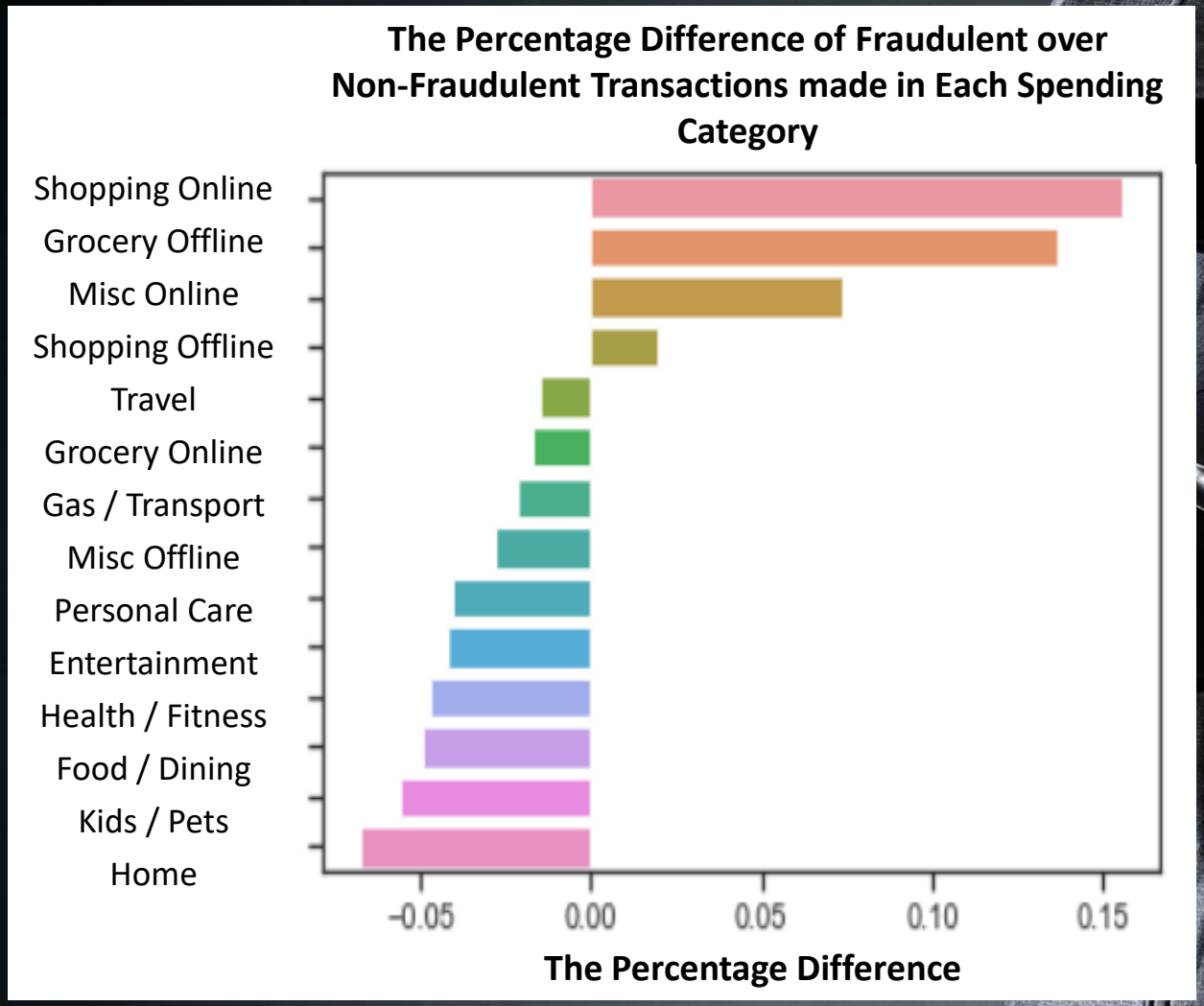
Do fraudulent transactions occur more often during certain time frame ?



Fraudulent transactions are happening mainly at night, when the victims are sleeping or are less likely to notice the fraud.

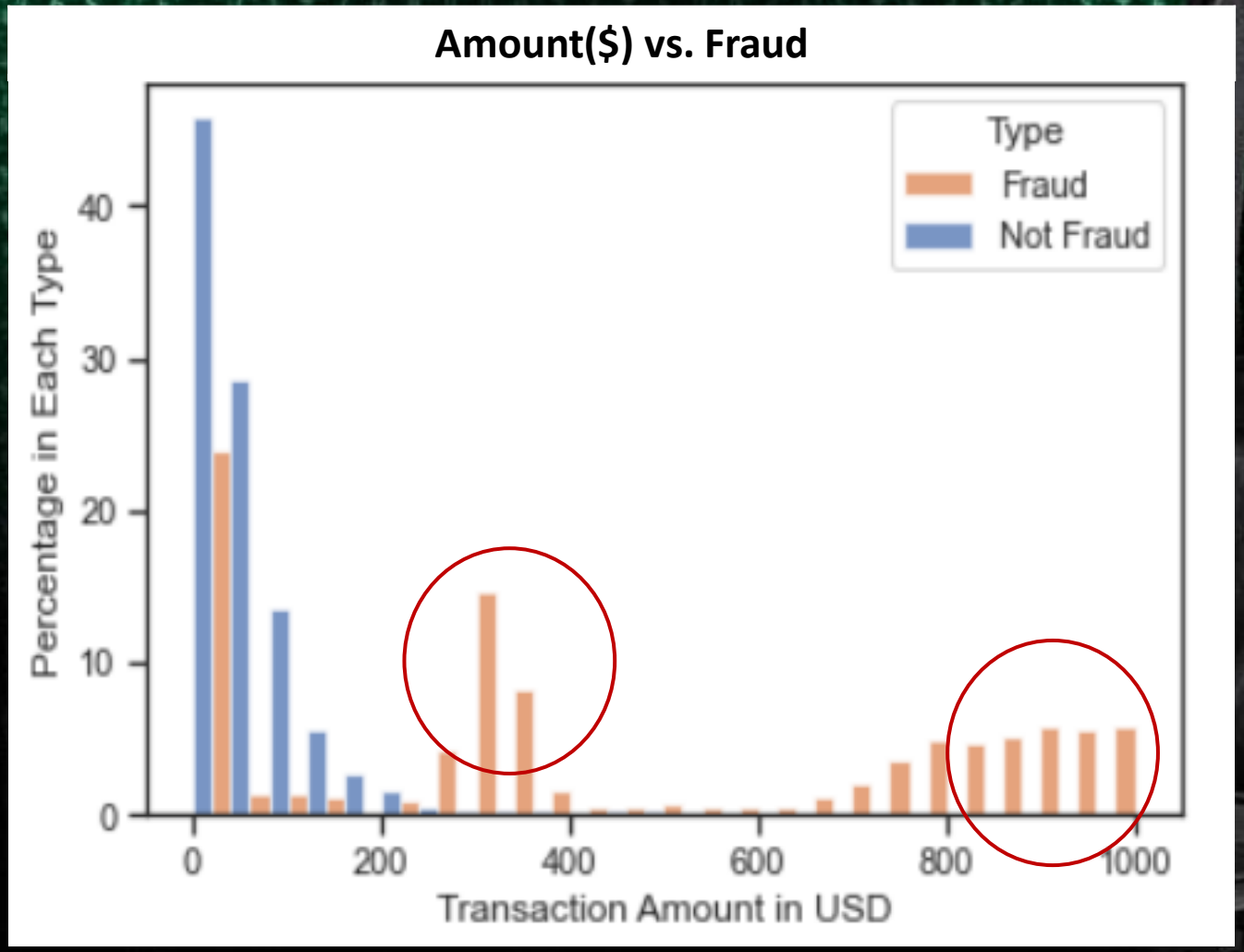
Observation:

Change of buying pattern



Fraudulent over Non-Fraudulent transaction in Online Shopping and Offline Grocery Shopping categories increased over 10% to 15% in comparison to other category spendings.

How much money is used in fraud transactions?

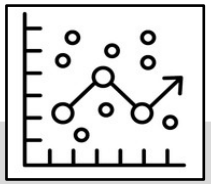


While normal transactions tend to be around 200 Dollars or less, we see fraudulent transactions peak around 300 Dollars and then at the 800-1000 Dollars range.

MACHINE LEARNING

Choose A Model!

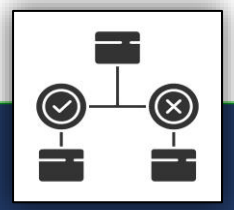
Good RECALL EQUALS **good DETECTION**



Logistic Regression

Recall

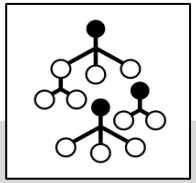
Train	Test
76%	75%



Decision Trees

Recall

Train	Test
89%	85%

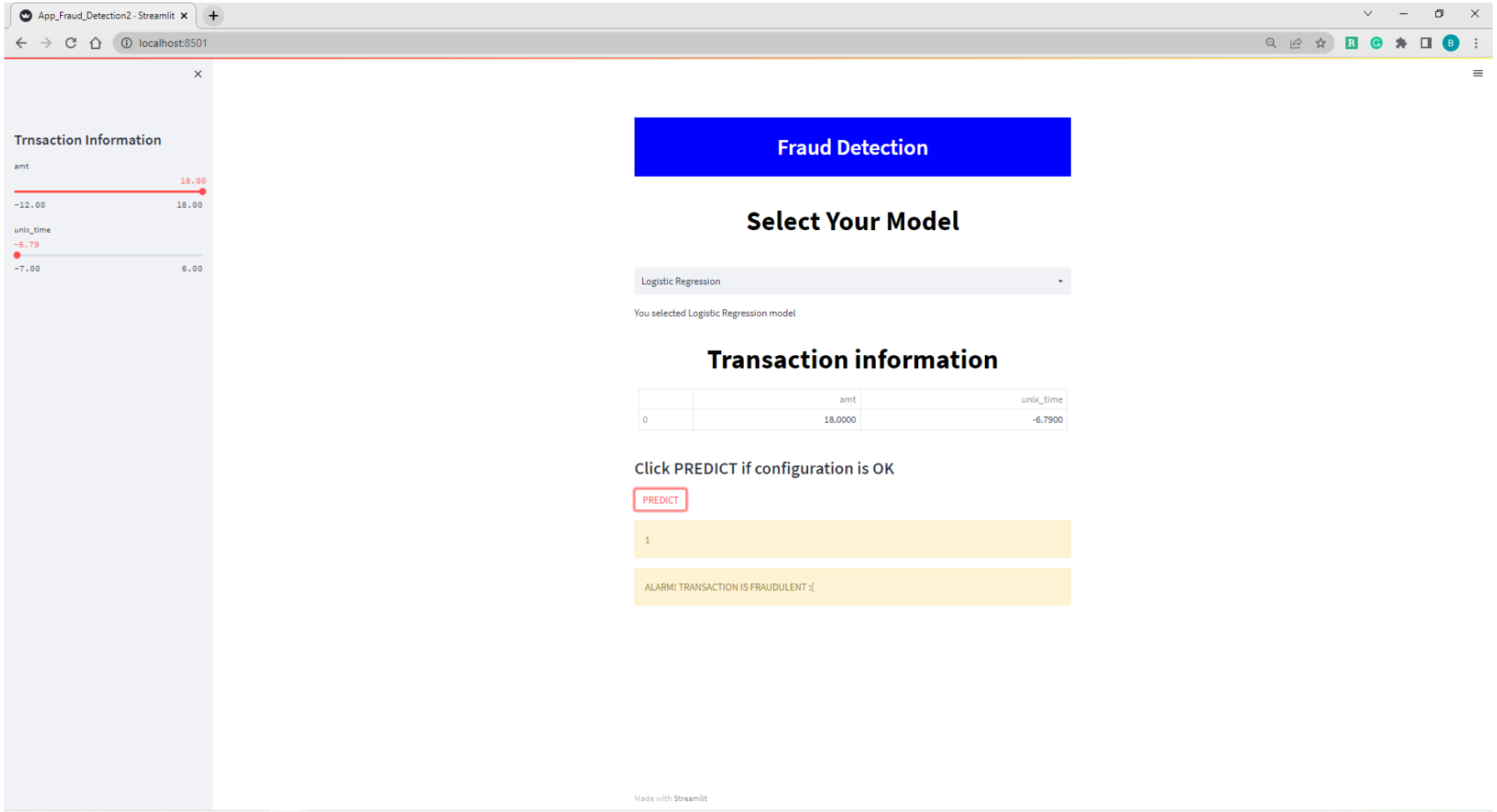


Random Forest

Recall

Train	Test
85%	83%

Prototype Demostration



What did we learn?