

06.19.25

CANVA CORPORATION



# Credit Card Fraud Detection **Modeling**



# Agenda

- 01** Introduction
- 02** Data
- 03** Modeling
- 04** Recommendations and Conclusions
- 05** Next Steps

# 01

# Introduction



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# Credit Card Fraud



Financial services company wants to expand its business portfolio by entering the credit card business. However, the company executives recognize fraud is a paramount issue

## Modeling.....

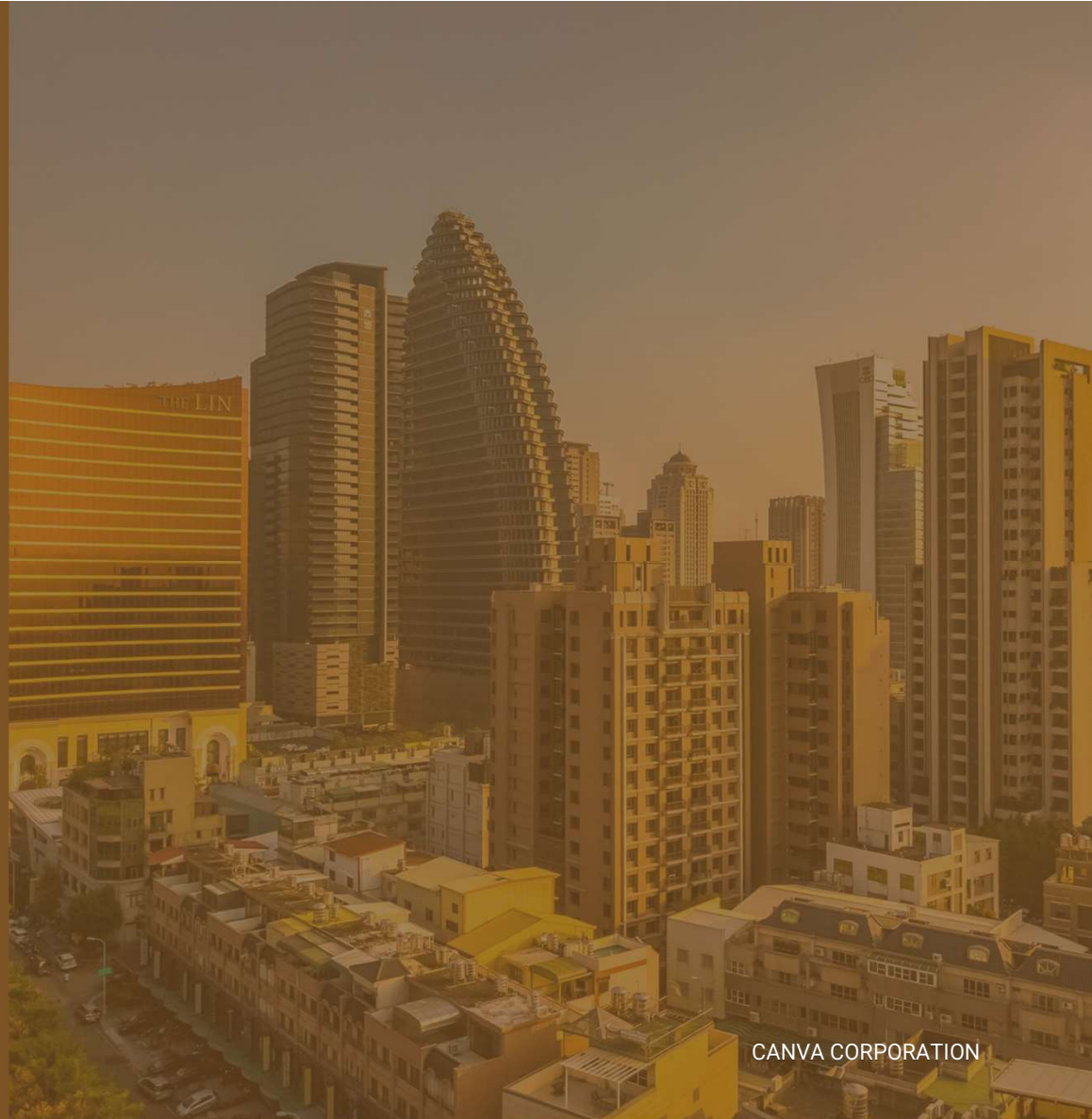
Completed the following:

- Created a model prototype to detect credit card fraud
- Identify characteristics that signal whether or not credit card fraud will take place



# 02

# Data



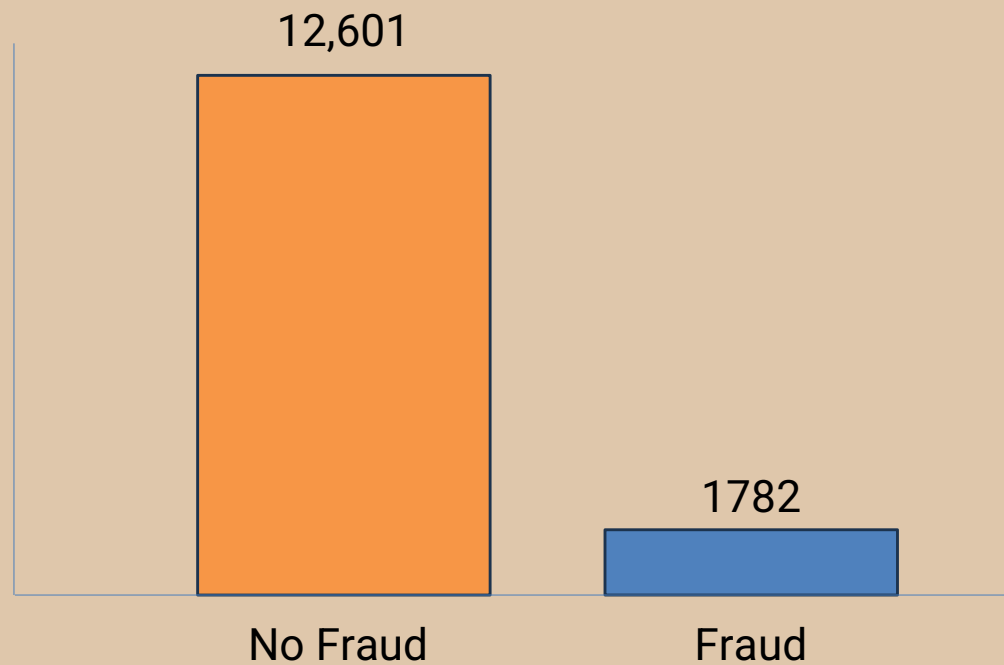
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# Data Description

- csv file
  - Initially 14,446, or rows of data
  - Total of 15 Columns
- Columns contain, but not limited, to the following:
  - Date and Time of Credit Card Transaction
  - Merchant (associated with the Credit Card Transaction)
  - Category (i.e. – Groceries, Entertainment)
  - City of Credit Card Holder
  - State of Credit Card Holder
  - Whether or not the Credit Card Transaction is Fraudulent

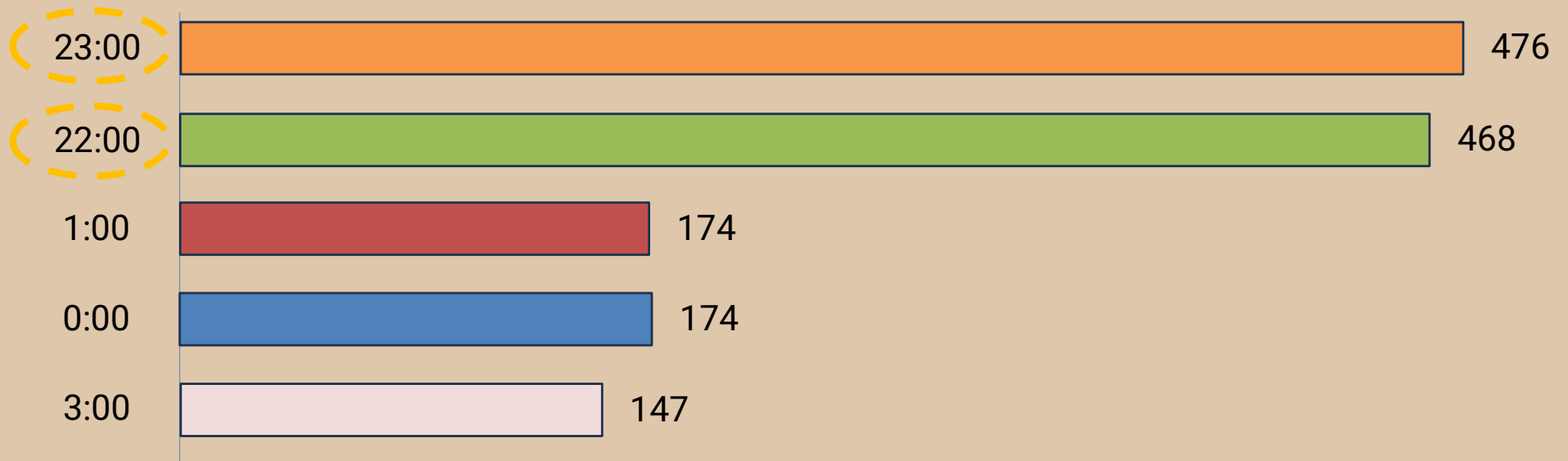
# Data Description

- Class Imbalance



# Data Description

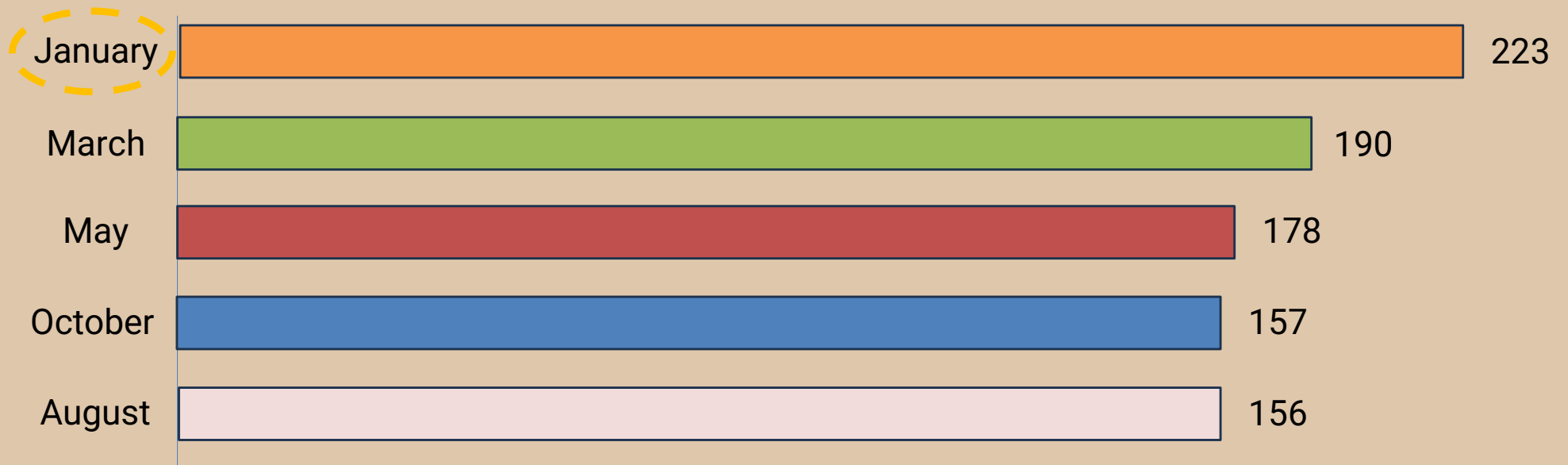
- Breakdown of Fraud Cases by Hour (Top 5)





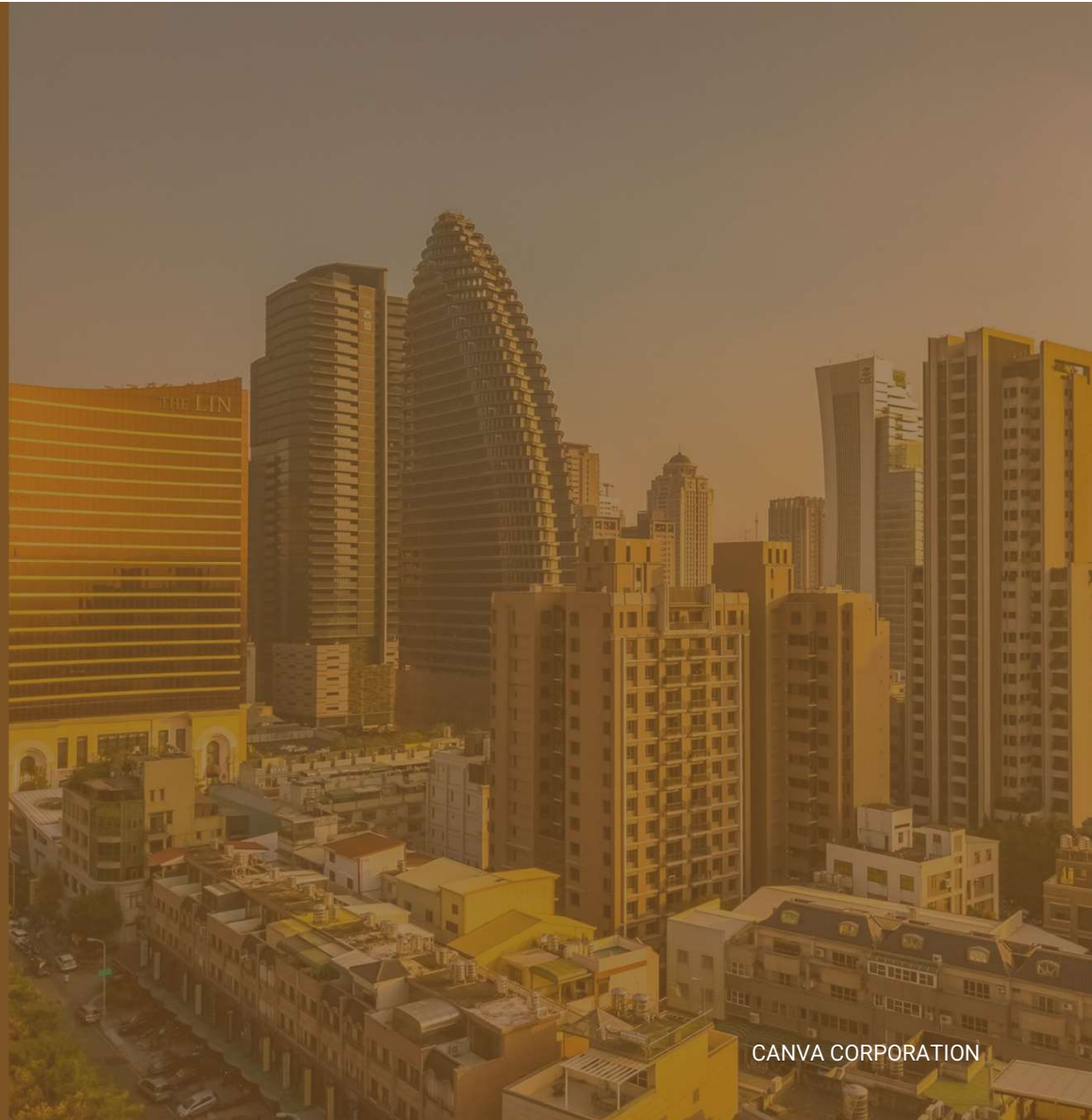
# Data Description

- Breakdown of Fraud Cases by Month (Top 5)



# 03

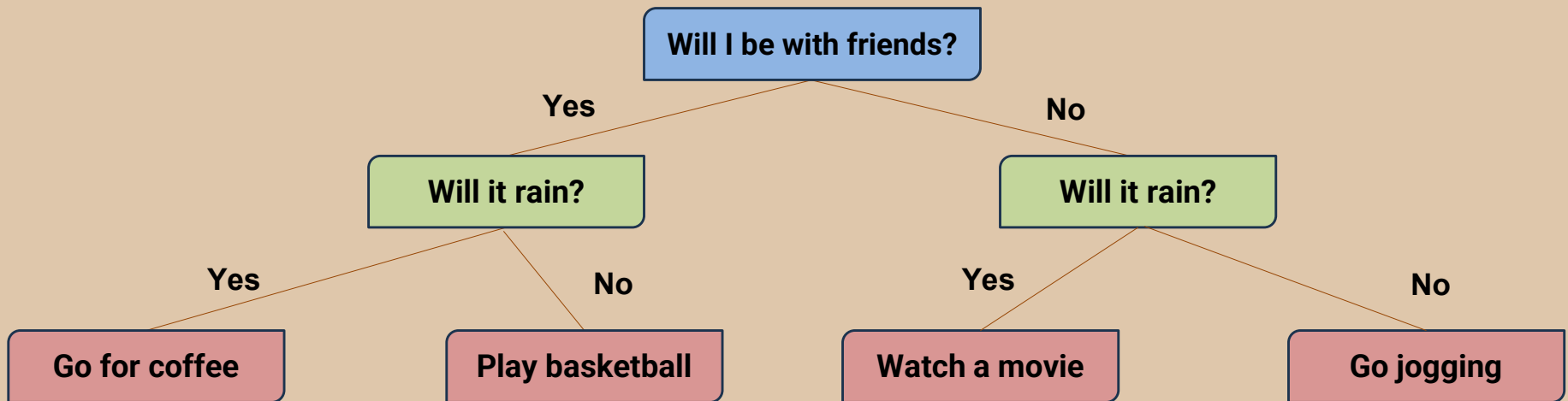
## Modeling



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# Decision Tree

- What is a Decision Tree?
  - .....tree-like graph with nodes representing the place where we pick an attribute and ask a question.....\*

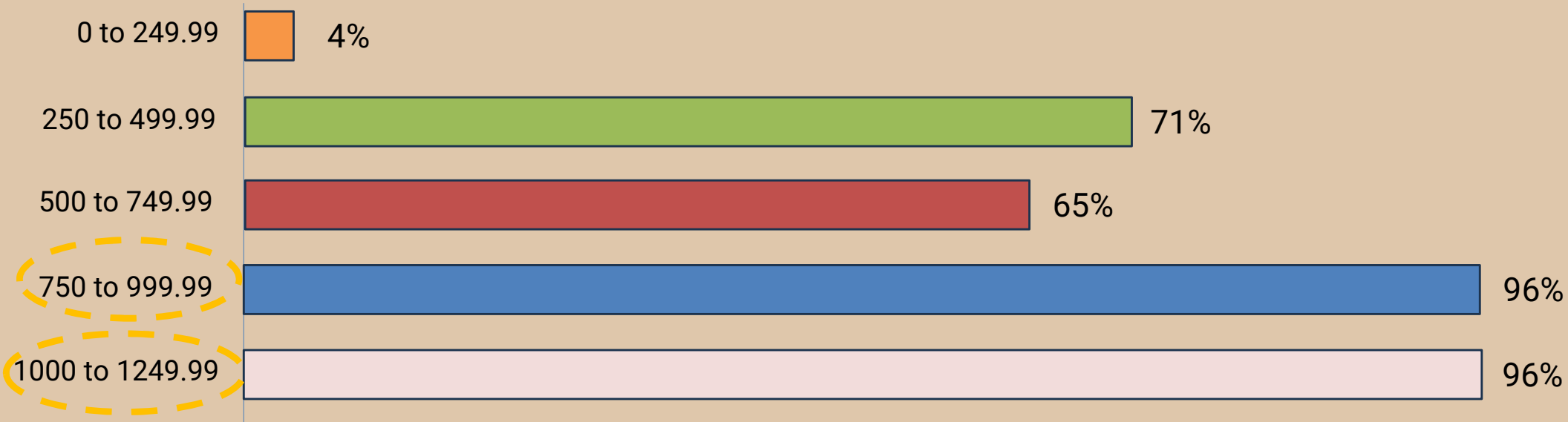


# Confusion Matrix

<i>Reality</i>	No Fraud	True Negative 2816	False Positive 955
	Fraud	False Negative 31	True Positive 513
		No Fraud	Fraud
		<i>Predicted</i>	

# Features

- Most Important Model Feature.....Credit Card Transaction Amount
  - Segmented Credit Card Transaction Amounts by \$250



# 04

## Recommendations and Conclusions



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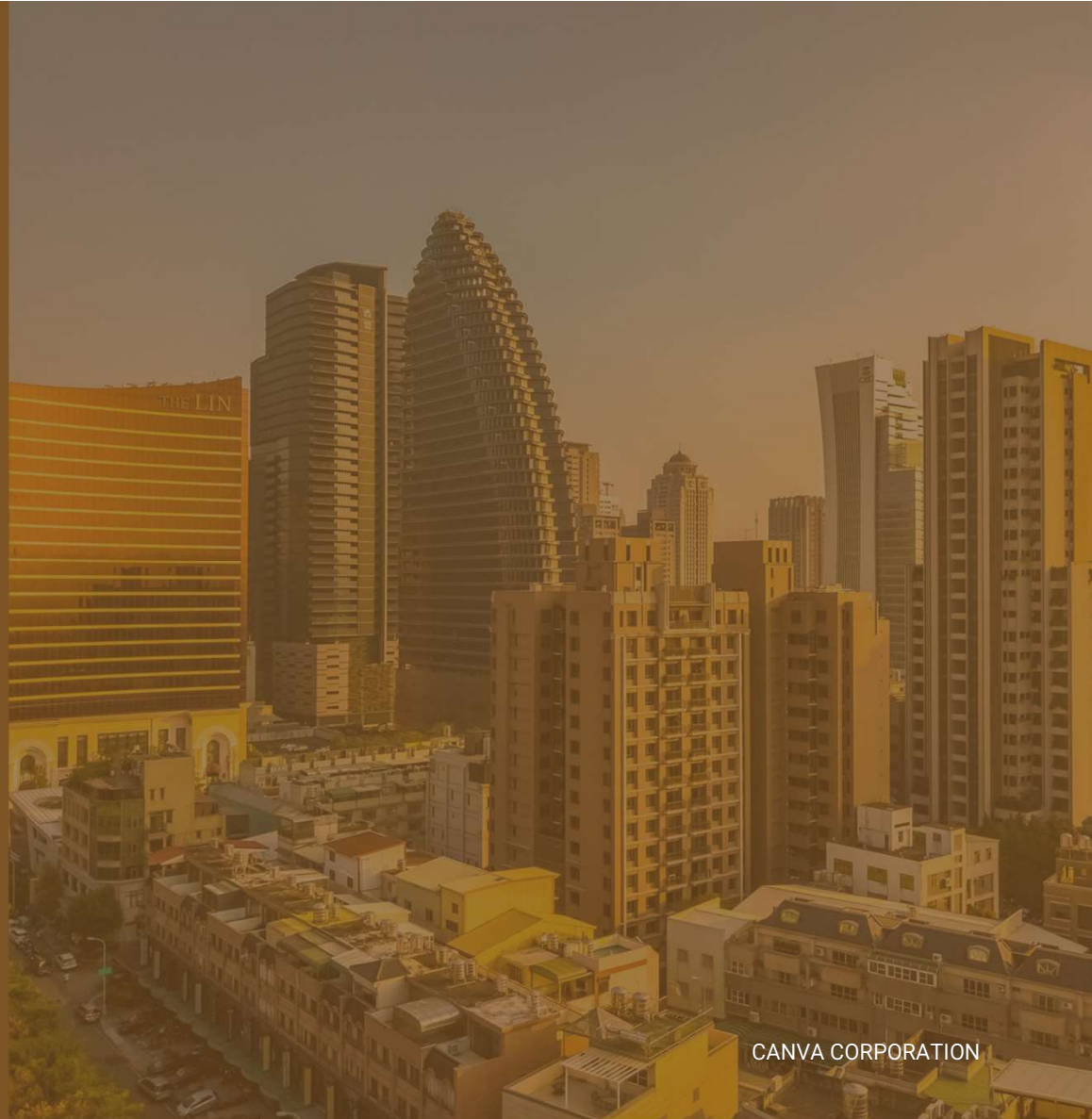


# Recommendations and Conclusions

- Decision Tree Model
  - $\approx 94\%$  Recall

# 05

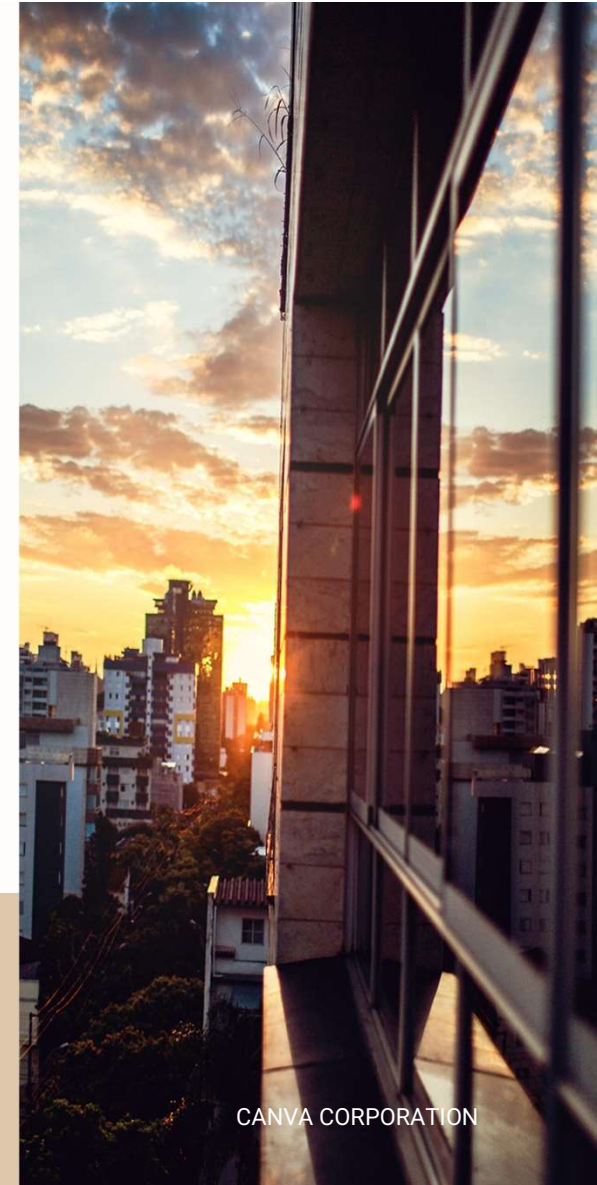
## Next Steps



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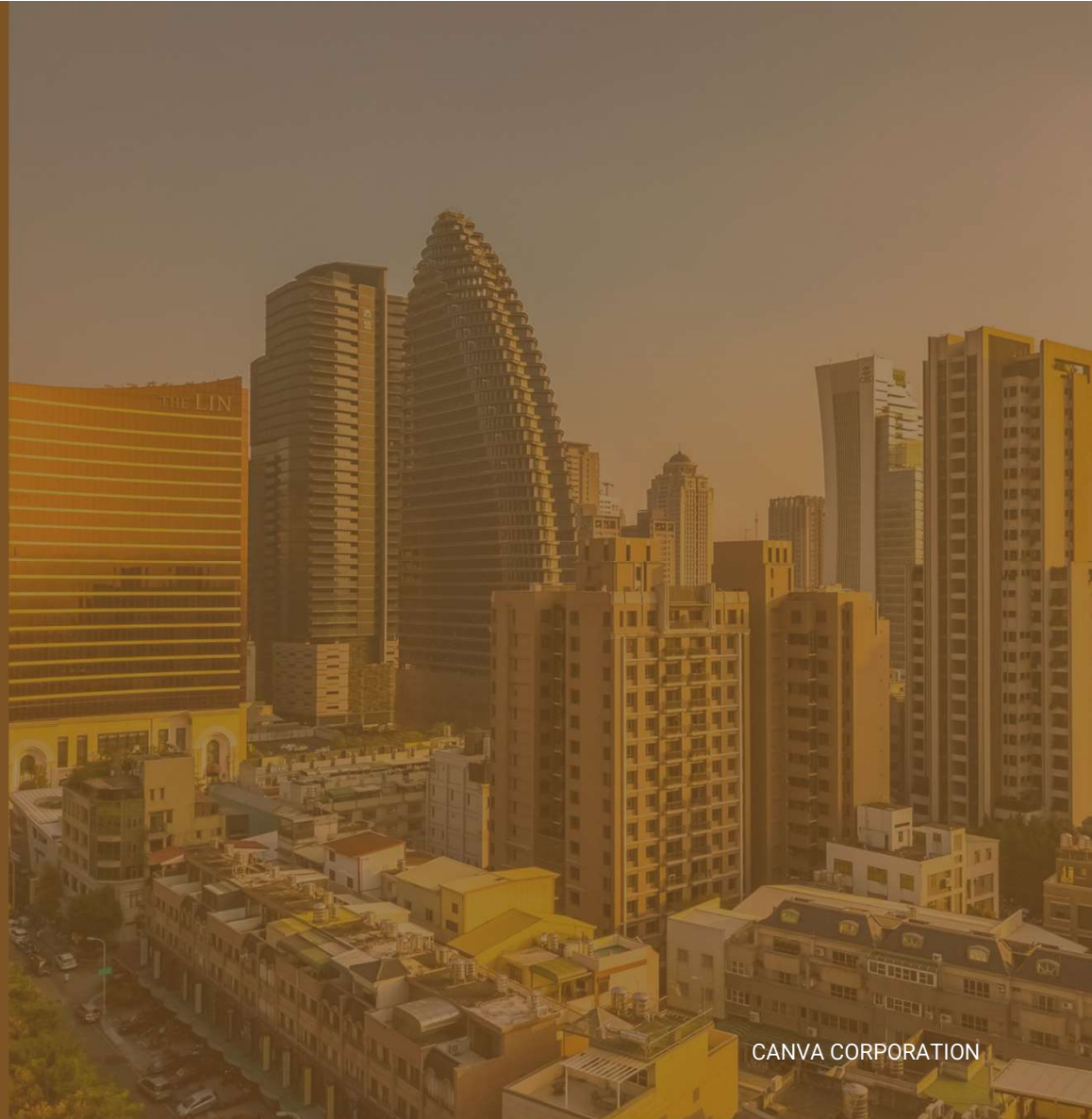
# Next Steps

- 1 – Additional Data
- 2 – Operations Management
- 3 – Security Protocols



# 06

## Appendix



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# Appendix

- Dey, Diganta. (2024). "Predictive Analytics with Decision Trees: A Beginner's Guide."
- Habib, Jaber. (2024). "Understanding Decision Tree Classifier: A Comprehensive Guide."
- Penumudy, T. (2021). "Decision Tree for Dummies."

# Model Recall

- $\approx 94\%$
- How is Recall Calculated?

$$= \frac{\text{Number of Positives Predicted by the Model}}{\text{Number of Actual Positives}}$$

$$= \frac{513}{544}$$