

Churn Analysis

Master CESMA

Luglio 2024

CESMA

Master in Customer Experience, Statistics,
Machine learning & Artificial intelligence

 **TIM**

Obiettivi

Creazione di modelli predittivi per individuare i clienti che potrebbero abbandonare

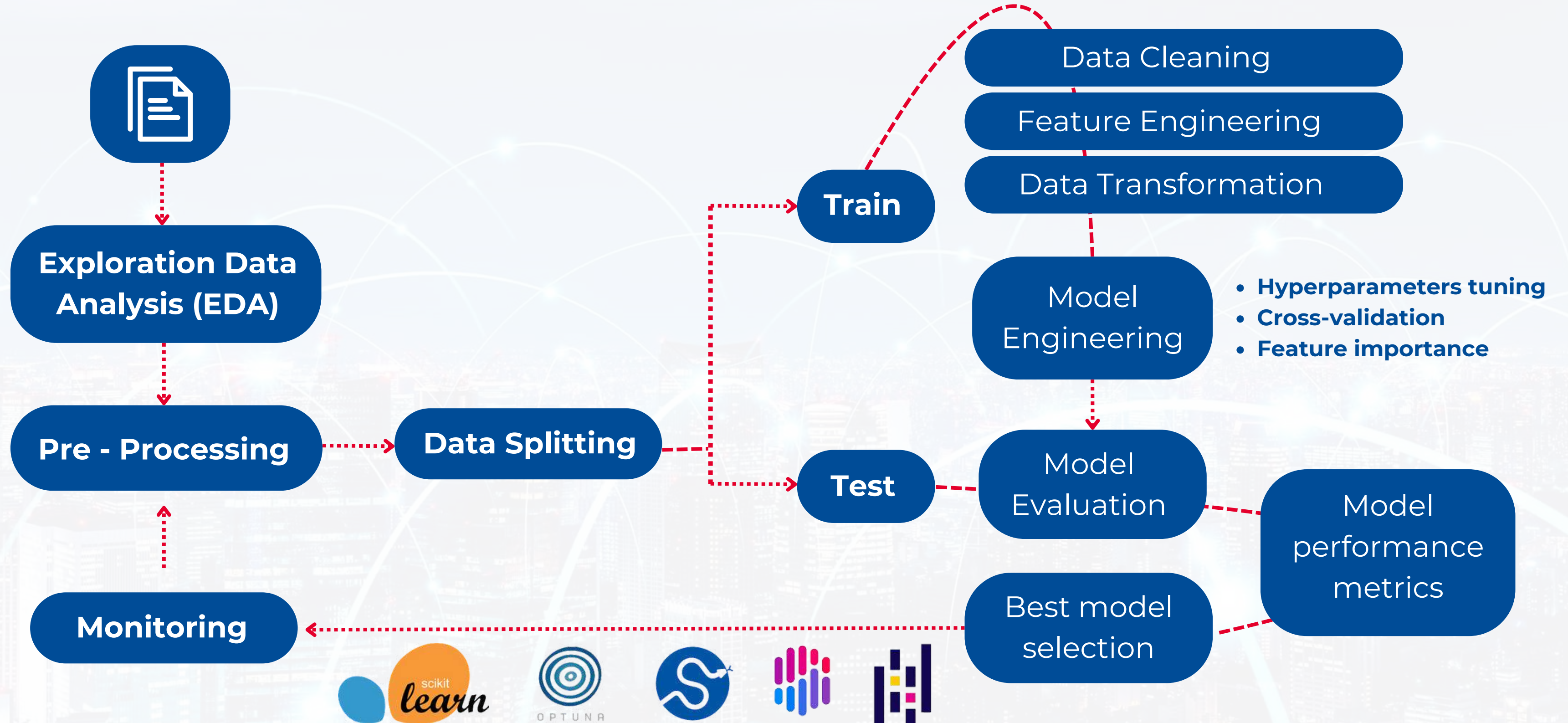
Identificare i fattori chiave che contribuiscono all'abbandono dei clienti

Tecniche di esplorazione e di pre-processamento dei dati

Esplorazione delle tecniche di Machine Learning



Machine Learning Pipeline



Train and test split



Training Set

 158.828 OSSERVAZIONI (80%)

 58 FEATURE

 39% CHURN



Test Set

 39.708 OSSERVAZIONI (20%)

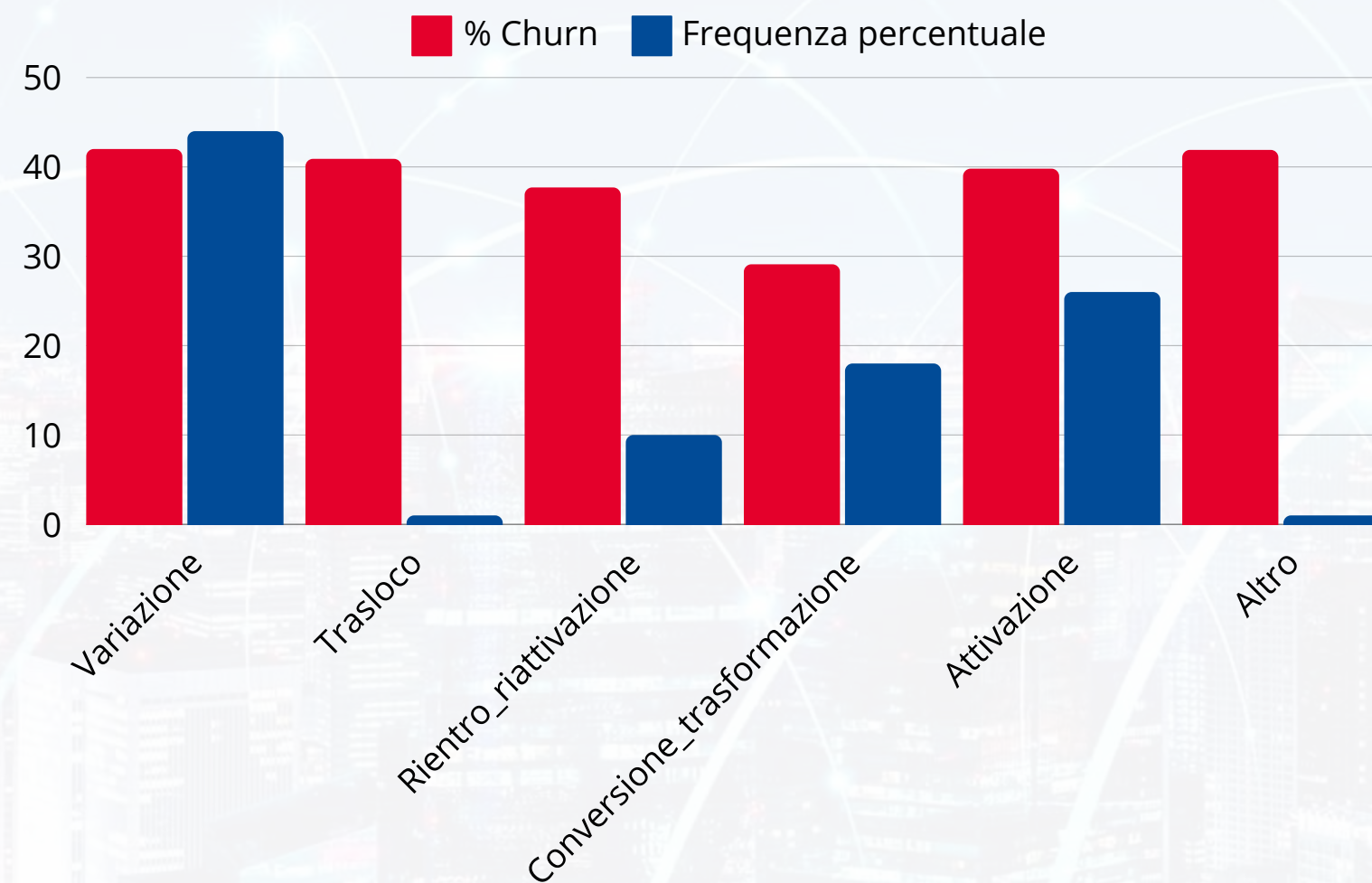
 58 FEATURE

 39% CHURN

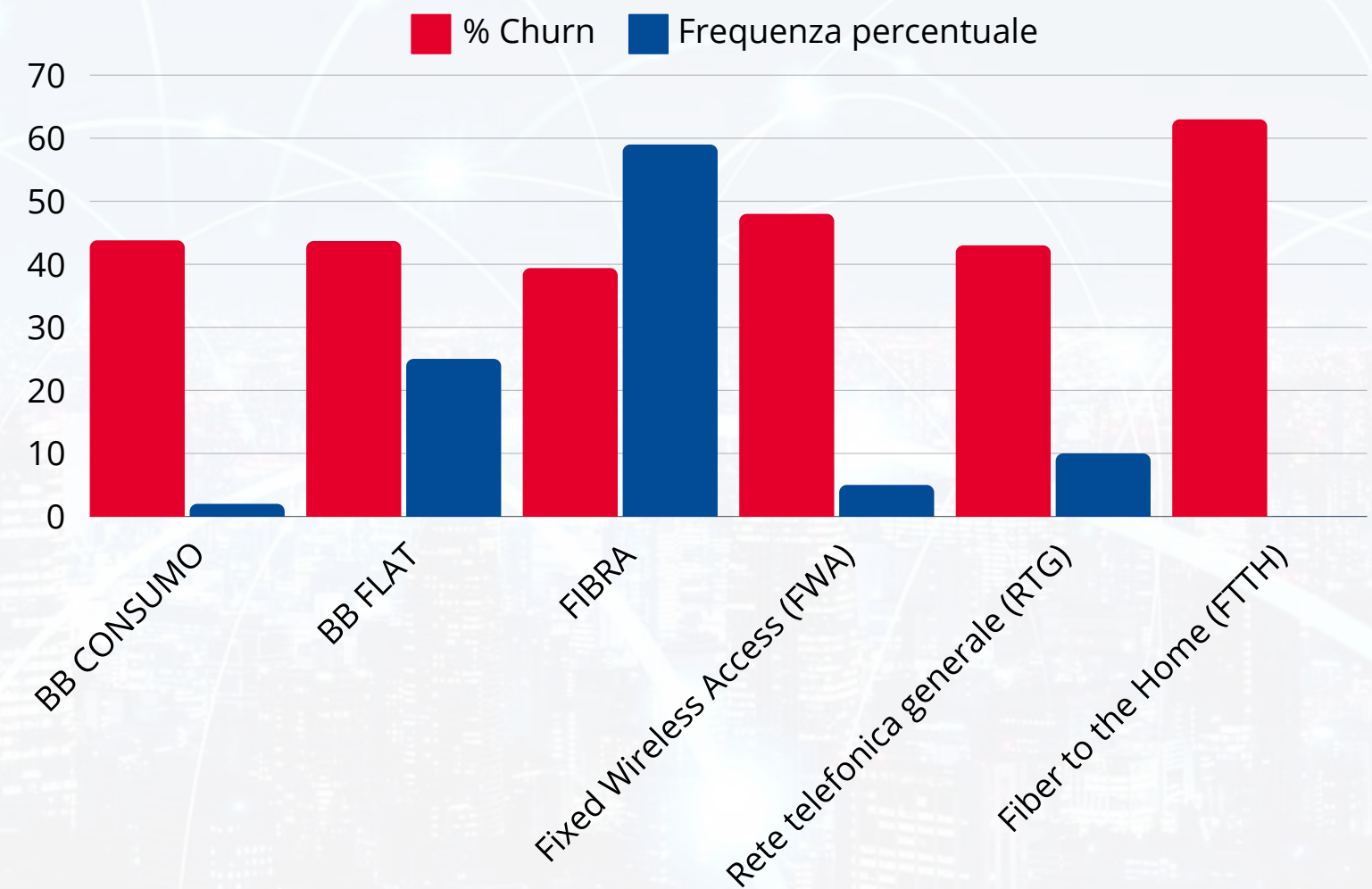
Exploration Data Analysis



Causale attivazione



Tipologia contratto



Imputazione dei Missing



Gestione delle dummy

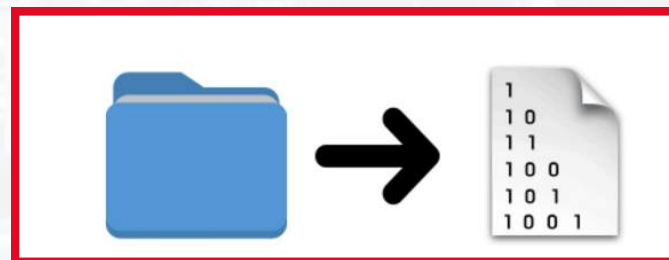
One Hot Encoding



Causale attivazione



Tipologia contratto



Mean Target Encoding



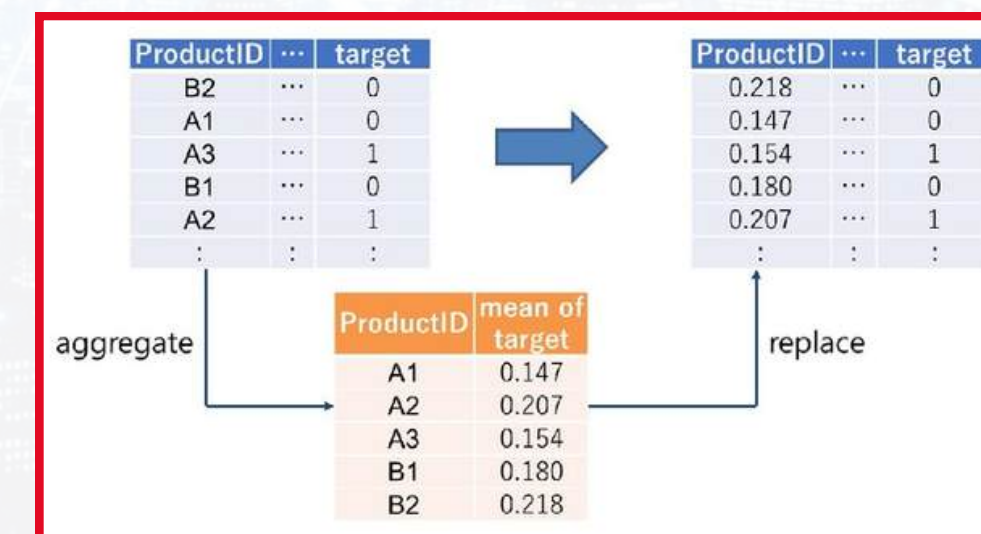
Regione impianto



Mese attivazione



Sesso



Feature Engineering

Variabili
categoriche

Dummy sconto

Dummy offerta extra

Dummy Downlink

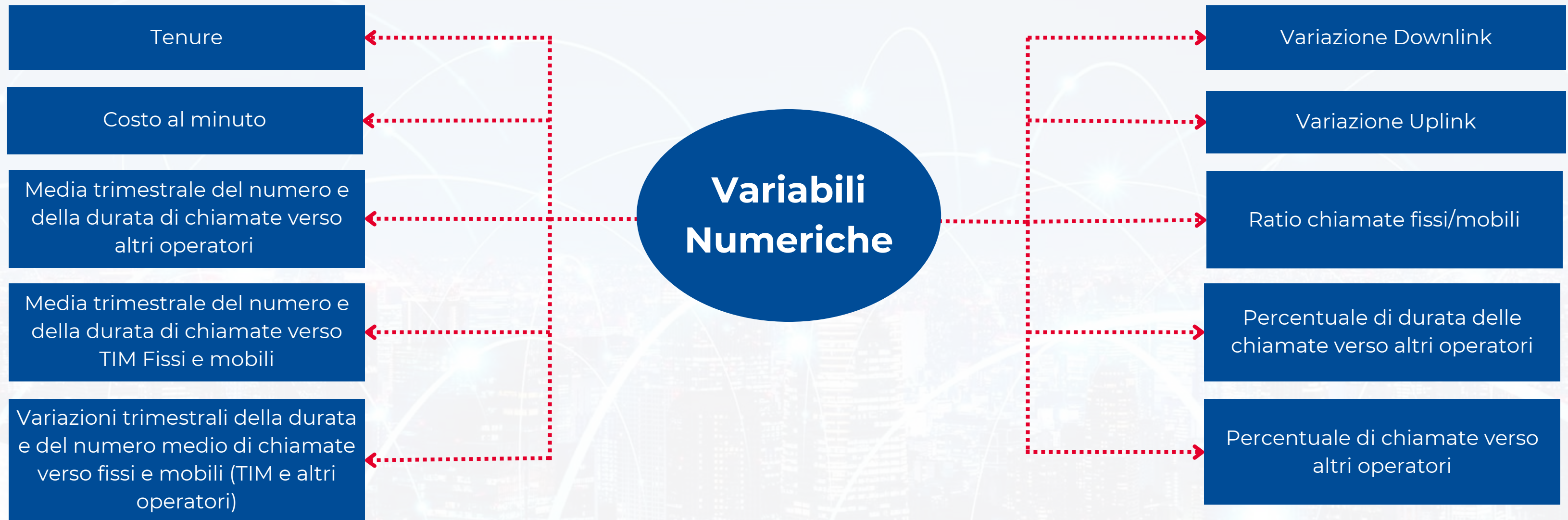
Dummy Uplink

Uplink sopra_sotto

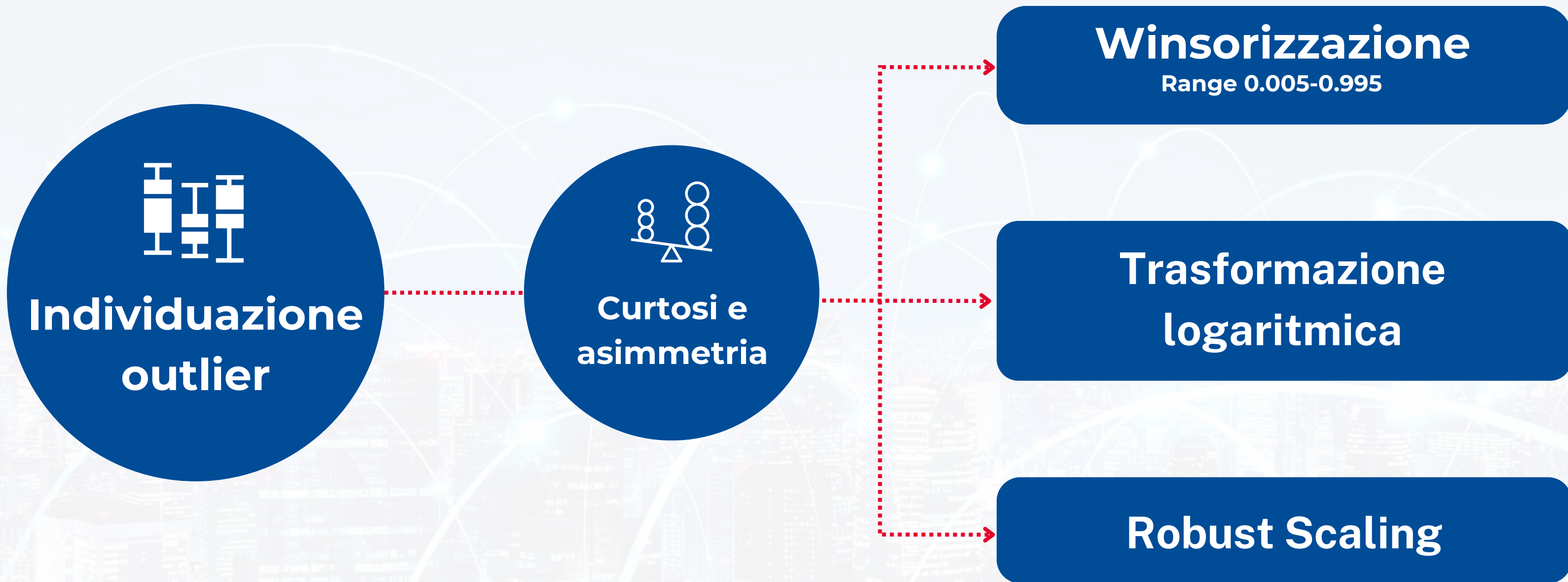
Downlink sopra_sotto



Feature Engineering



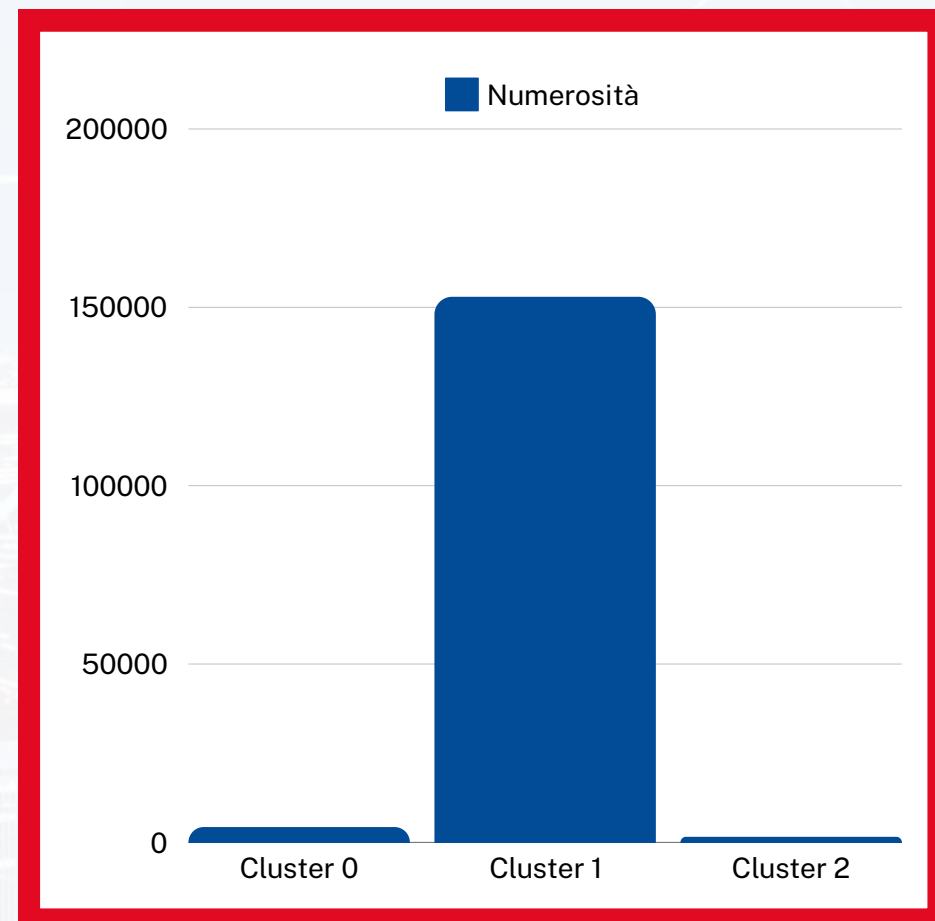
Data Transformation



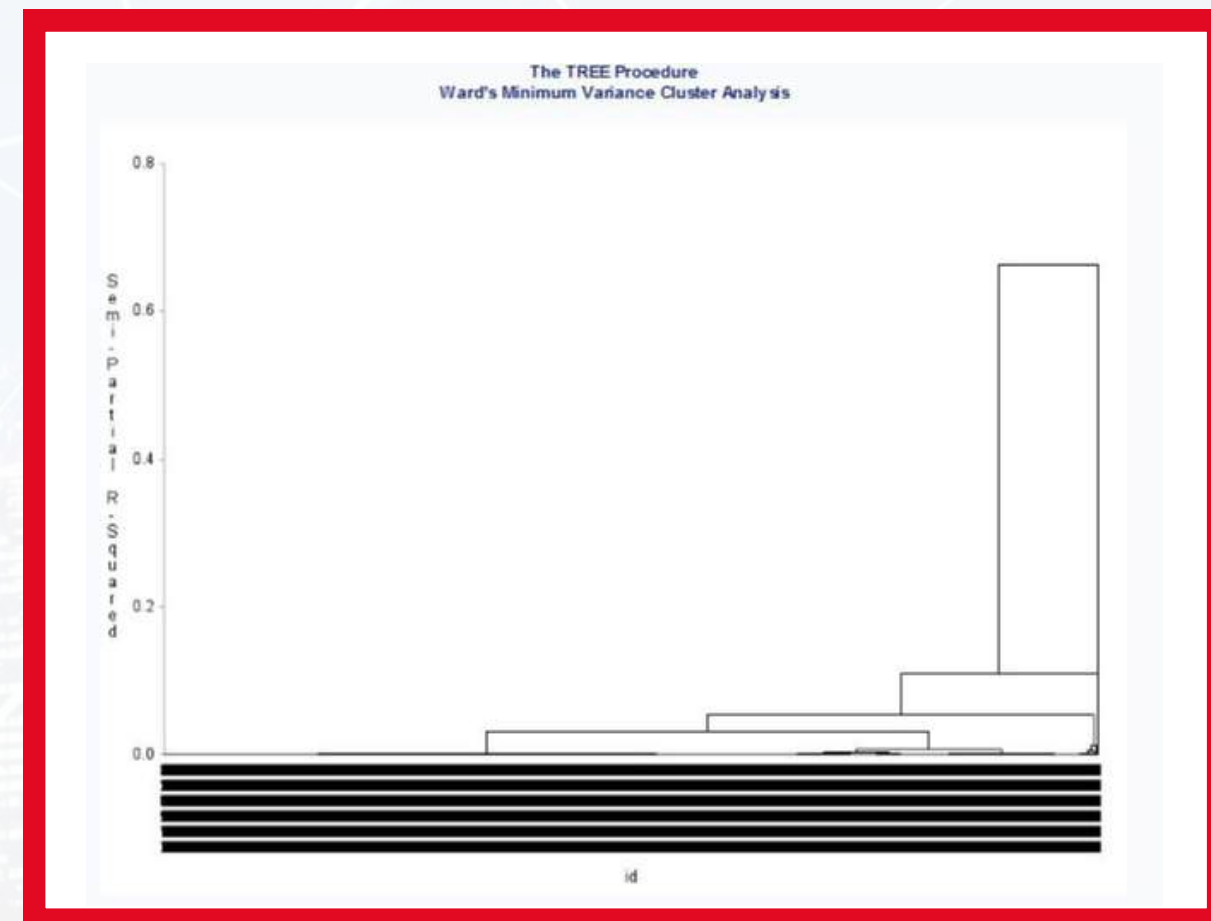
Cluster Analysis

Metodi
utilizzati

K-Means

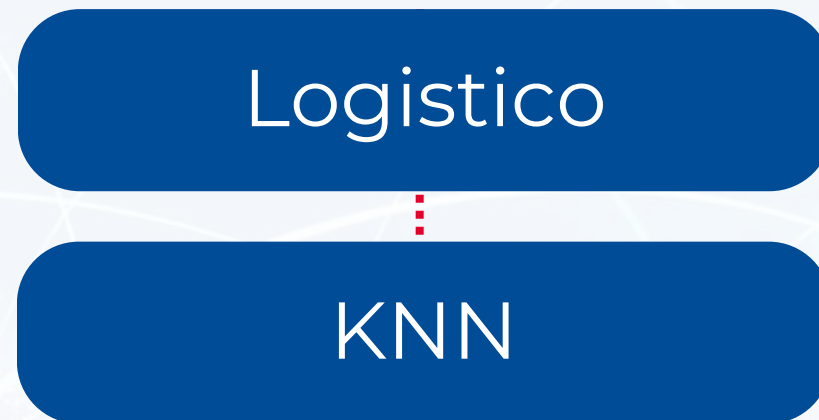


Ward

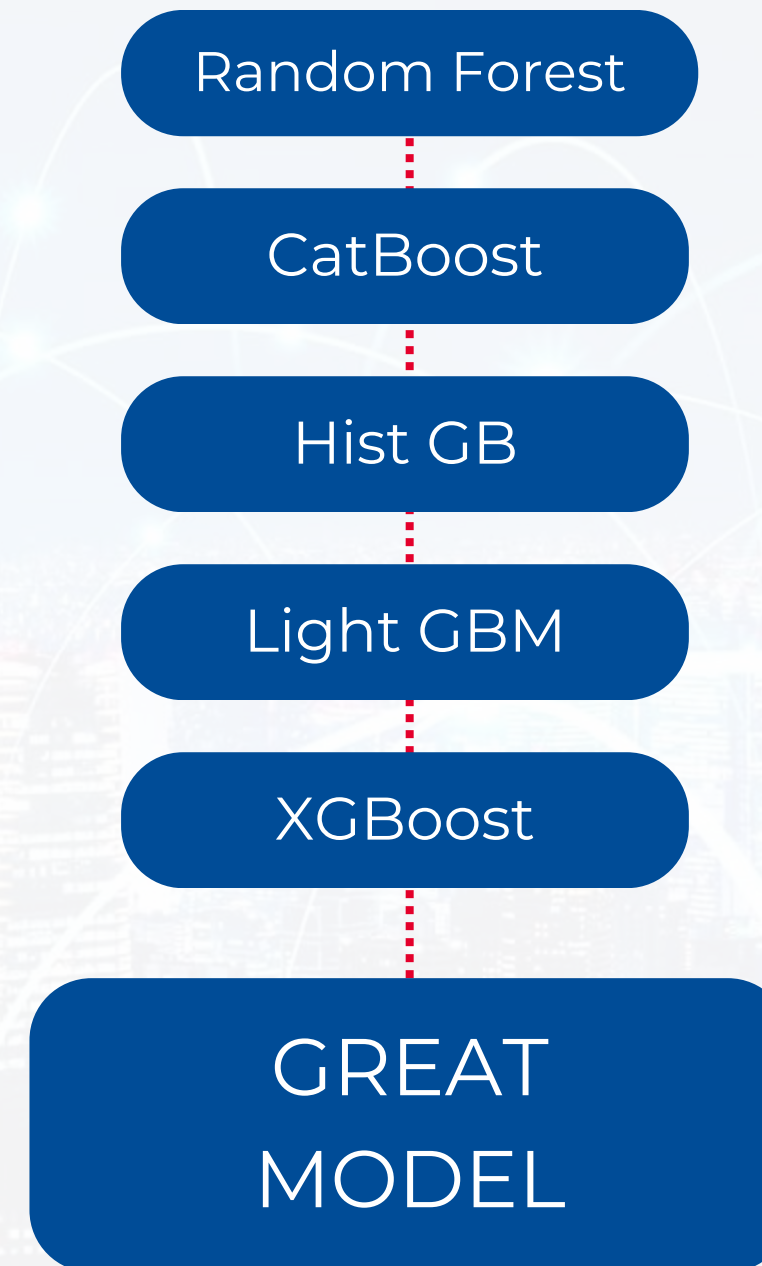


Modelling (1)

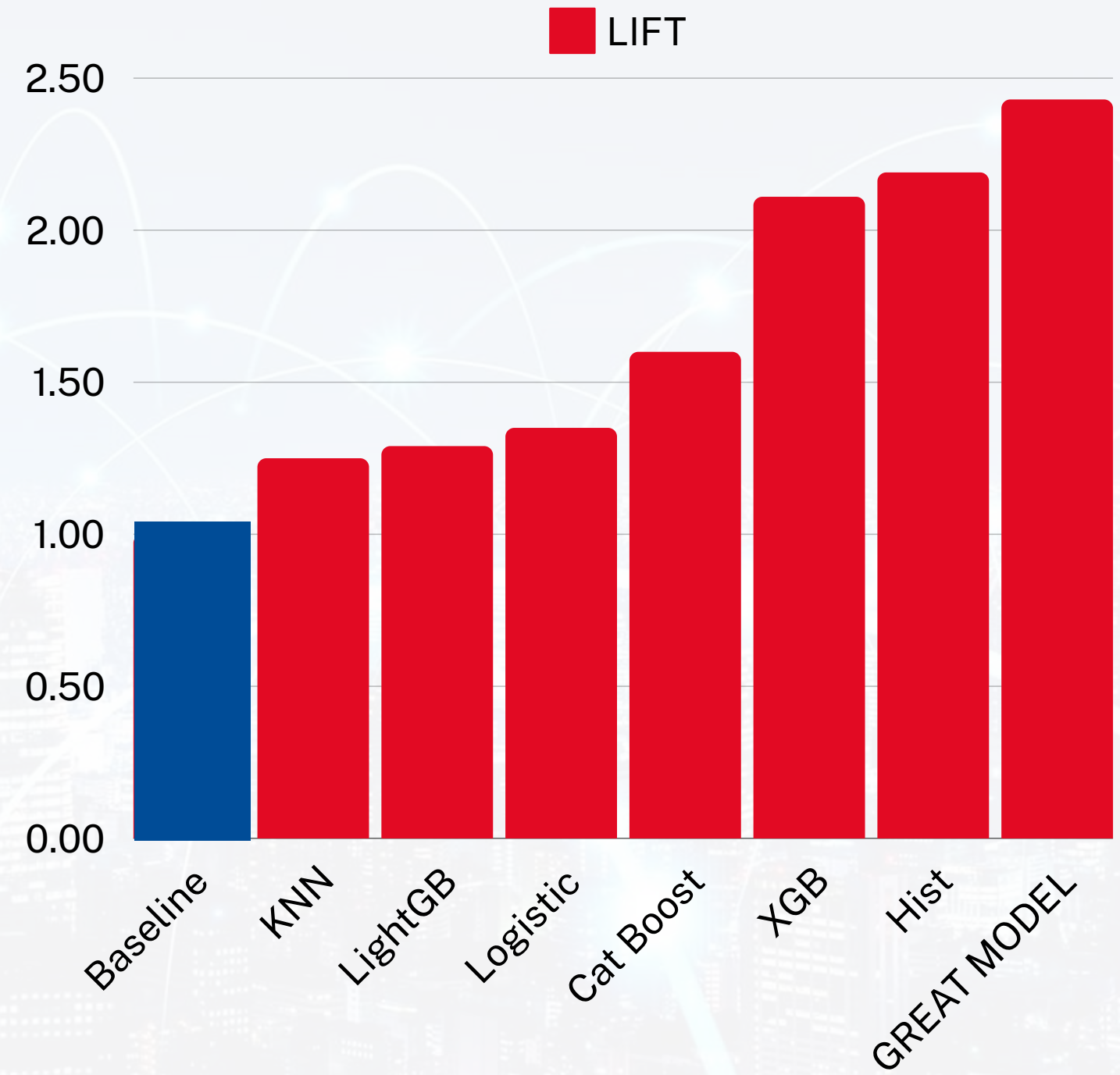
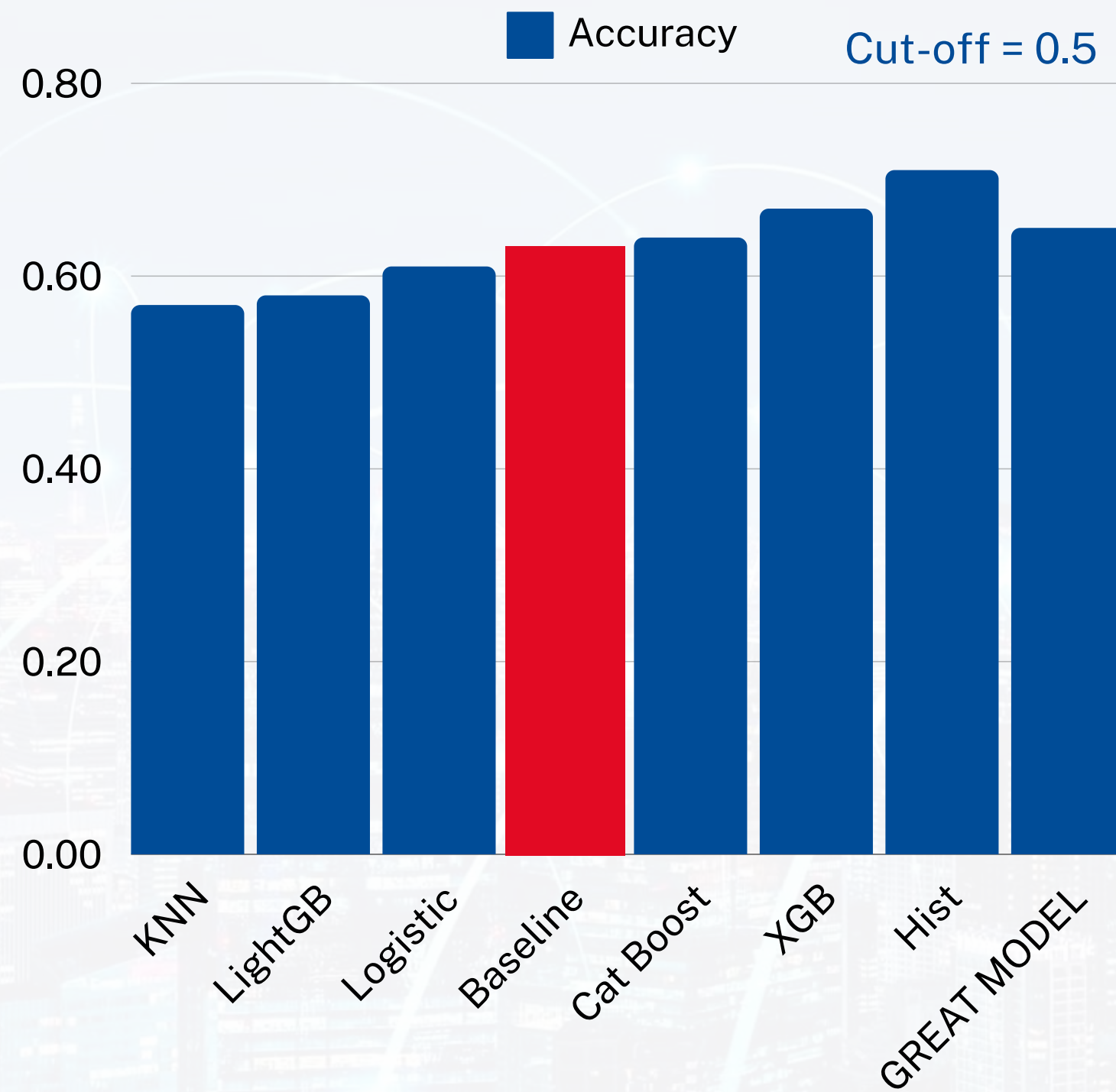
BASE MODELS



ENSAMBLE MODELS



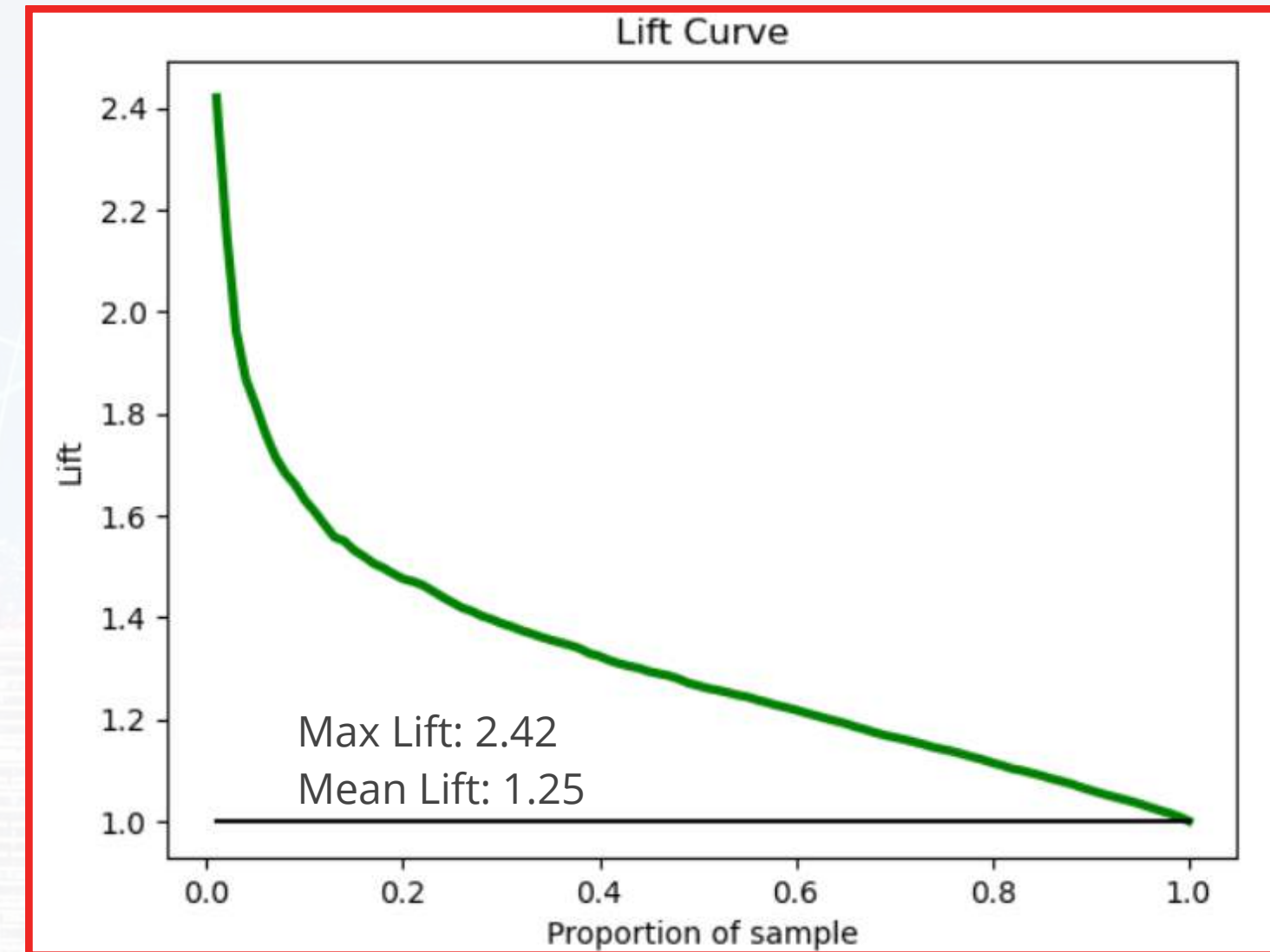
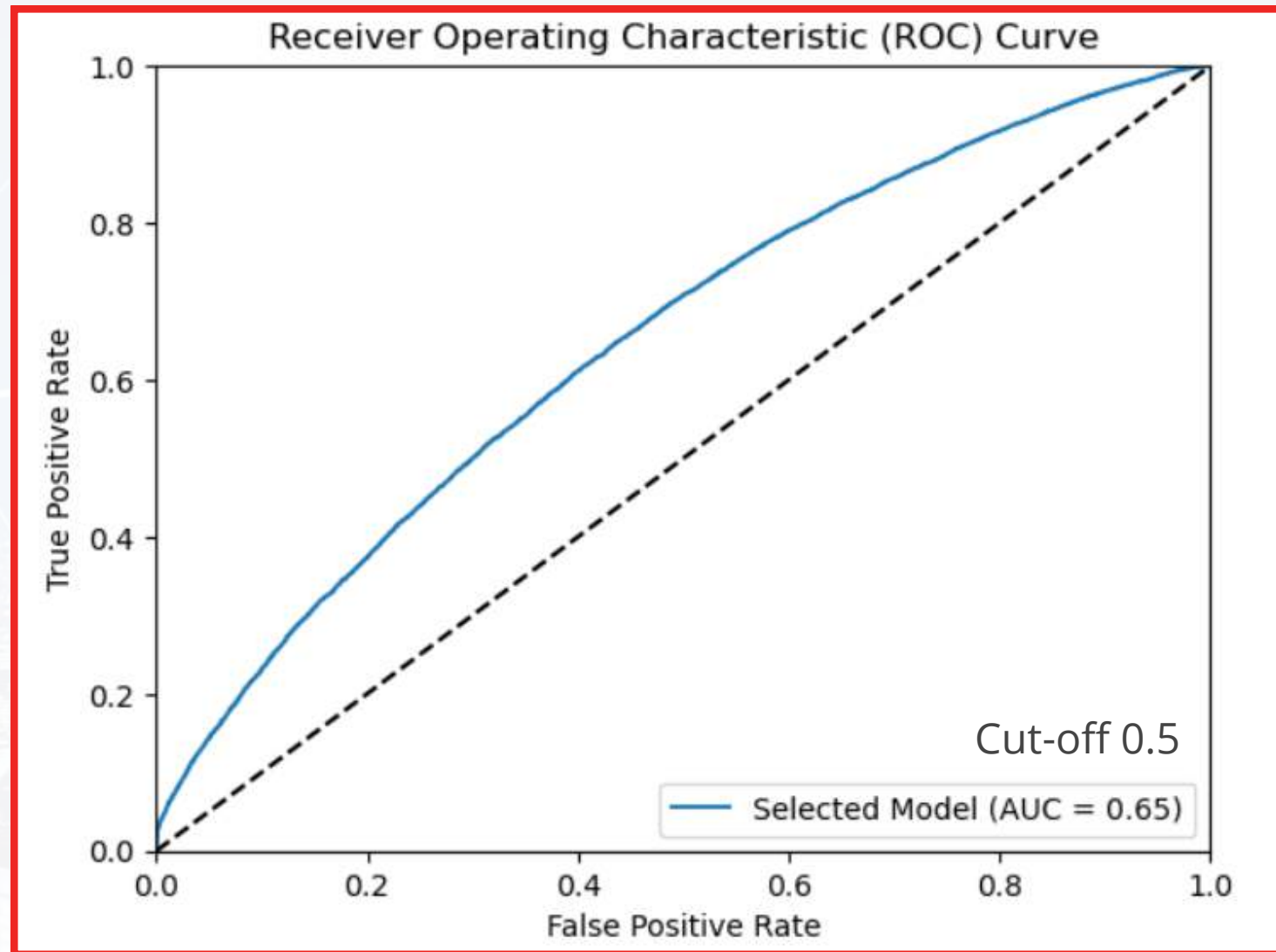
Modelling (2)



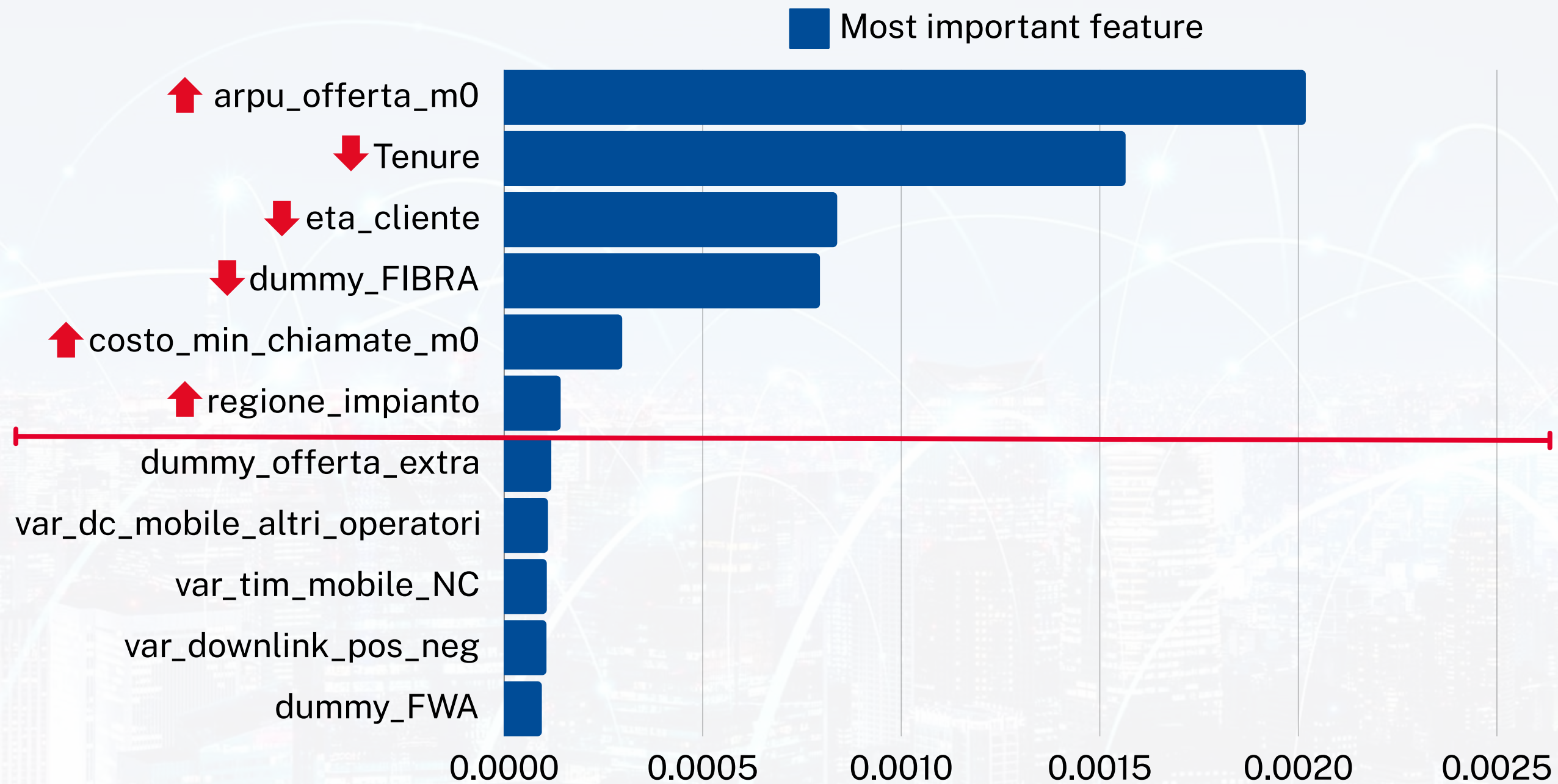
Modelling



Metriche pre selection



Feature Selection



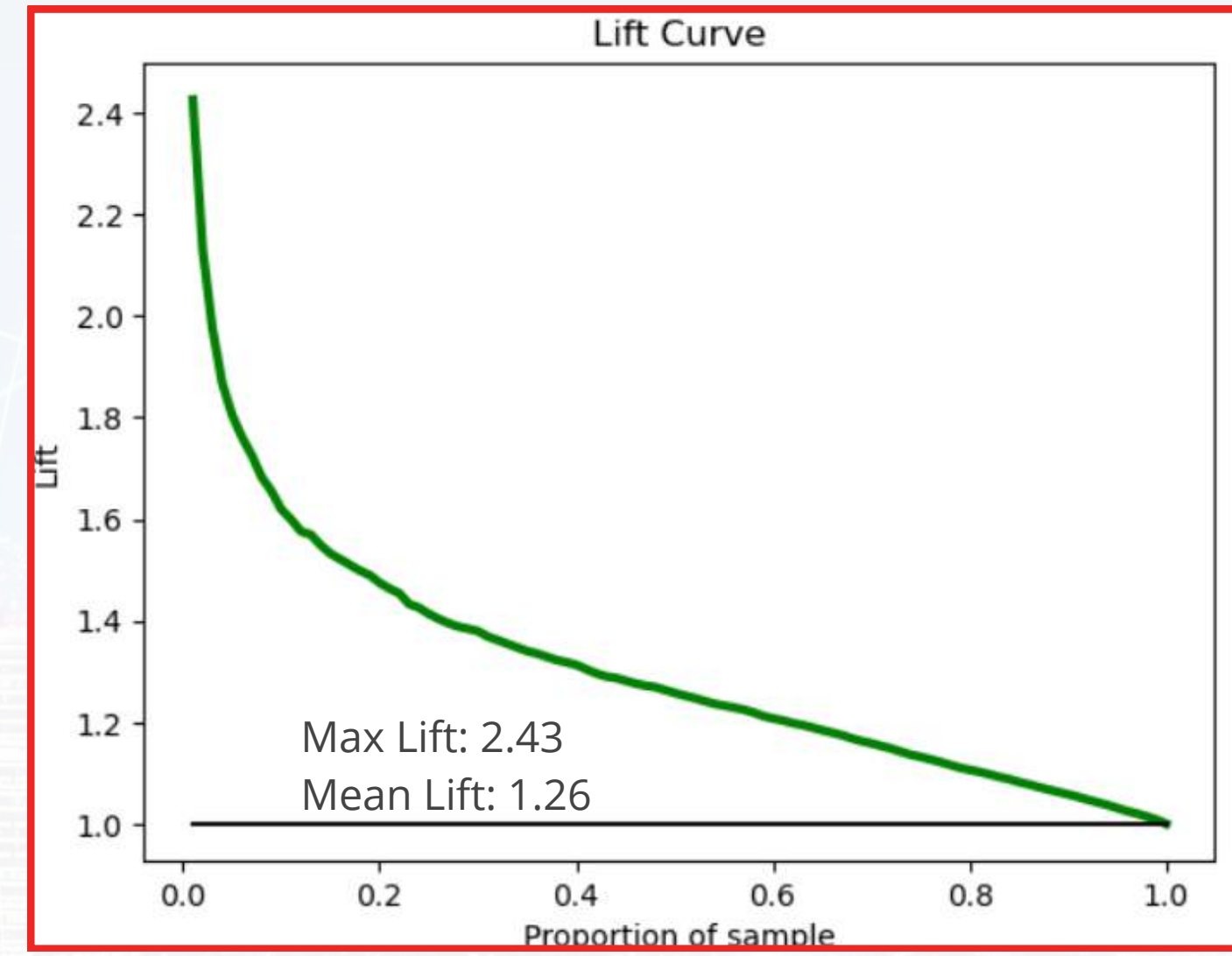
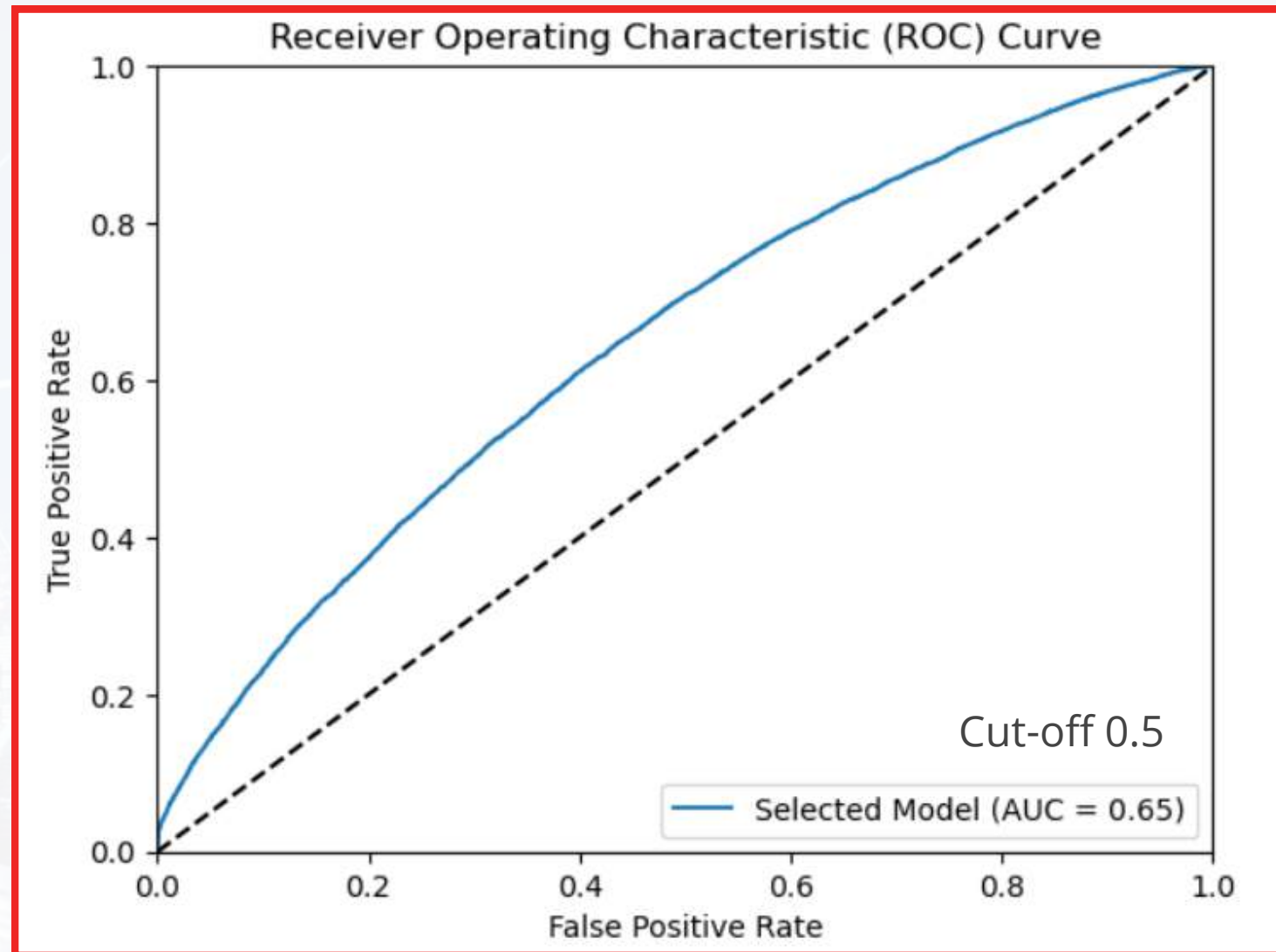
- Seleziono le caratteristiche che hanno un'importanza superiore alla media

- Alleno il modello solo con le feature selezionate

- **Legenda:**

- ↑ Aumenta la probabilità di Churn
- ↓ Diminuisce la probabilità di Churn

Metriche



Il Team



Stefano Caputo



LEADER

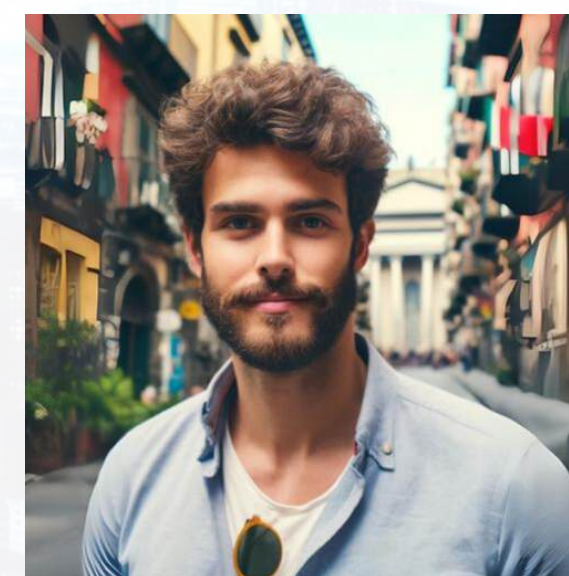
Samuele Picariello



Marta Satulli



Emiliano D'Introno



Riccardo De Rosa

Thank you!

Feel free to reach out to us if you have any questions.



DO NOT SCAN ME