



# PREDICTING CUSTOMER CHURN IN THE TELECOM INDUSTRY

*Brainstorming session*

# PROBLEM



Problem: Customer attrition becoming a major issue for telecoms affecting profits & growth



Objective: To identify churn factors and predict at-risk customers



Focusing on the following attributes



Demographics



Service usage



Satisfaction  
levels



Contract types





## OUR IDEA

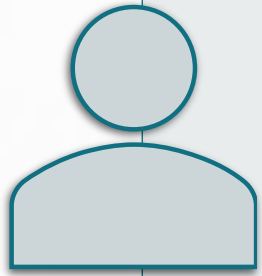
- *Uncover underlying patterns that help reduce customer churn for telecom providers*
- *Predict churn using machine learning algorithms*



# Dataset Overview

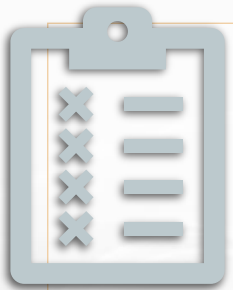


# DATASET OVERVIEW



## Predictor Variable – “Churn”

- Customers who left within the last month is called Churn
- We attempt to **classify** “Churn” as **Yes / No**



## Unique values

- **7043**



## Features

- **20**

# DATASET | FEATURES

## Services Opted

Phone Service

Multiple Lines

Internet Service

Online Security

Online Backup

Device Protection

Streaming TV

Streaming Movies

## Account Information

Customer ID

Tenure (Yrs)

Contract

Monthly Charges

Total Charges

Payment Method

Paperless Billing

## Demographic Info

Gender

Age Range

Senior Citizen?

Have Partner?

Have Dependants

# DATASET | CATEGORICAL VARIABLES

## Services Opted

Phone Service

Multiple Lines

Internet Service

Online Security

Online Backup

Device Protection

Streaming TV

Streaming Movies

## Account Information

Contract

Payment Method

Paperless Billing

## Demographic Info

Senior Citizen?

Have Partner?

Have Dependents



# DATASET | FEATURE SELECTION

## Services Opted

Phone Service

Multiple Lines

Internet Service

Online Security

Online Backup

Device Protection

Streaming TV

Streaming Movies

## Account Information

Contract

Payment Method

Paperless Billing

## Demographic Info

Senior Citizen?

Have Partner?

Have Dependents



# DATASET | FEATURE SELECTION

Services  
Opted

Phone  
Service

## PhoneService

Boolean

High correlation

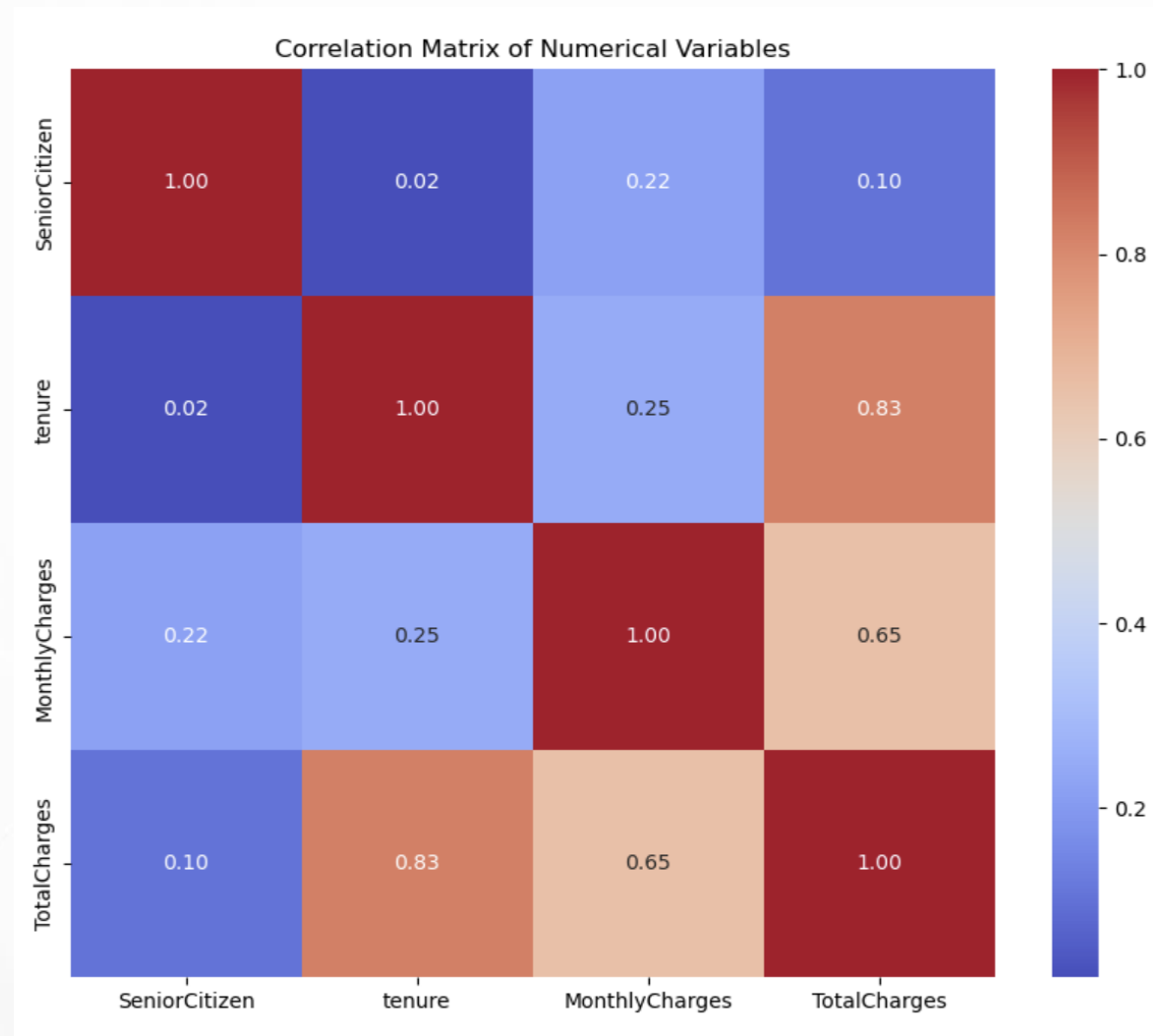
Imbalance

<b>Distinct</b>	2
<b>Distinct (%)</b>	< 0.1%
<b>Missing</b>	0
<b>Missing (%)</b>	0.0%
<b>Memory size</b>	7.0 KiB

True 6361

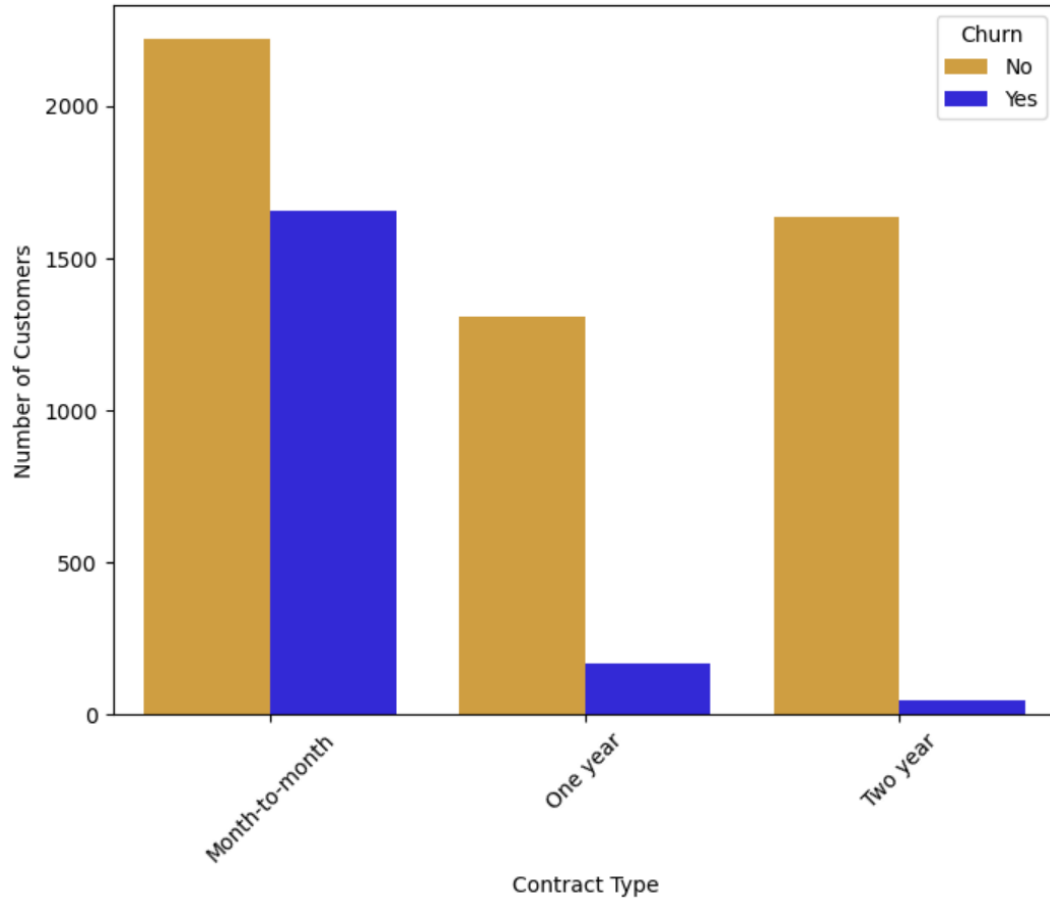
False 682

# VISUALIZATION EVALUATION | CHURN HEATMAPS

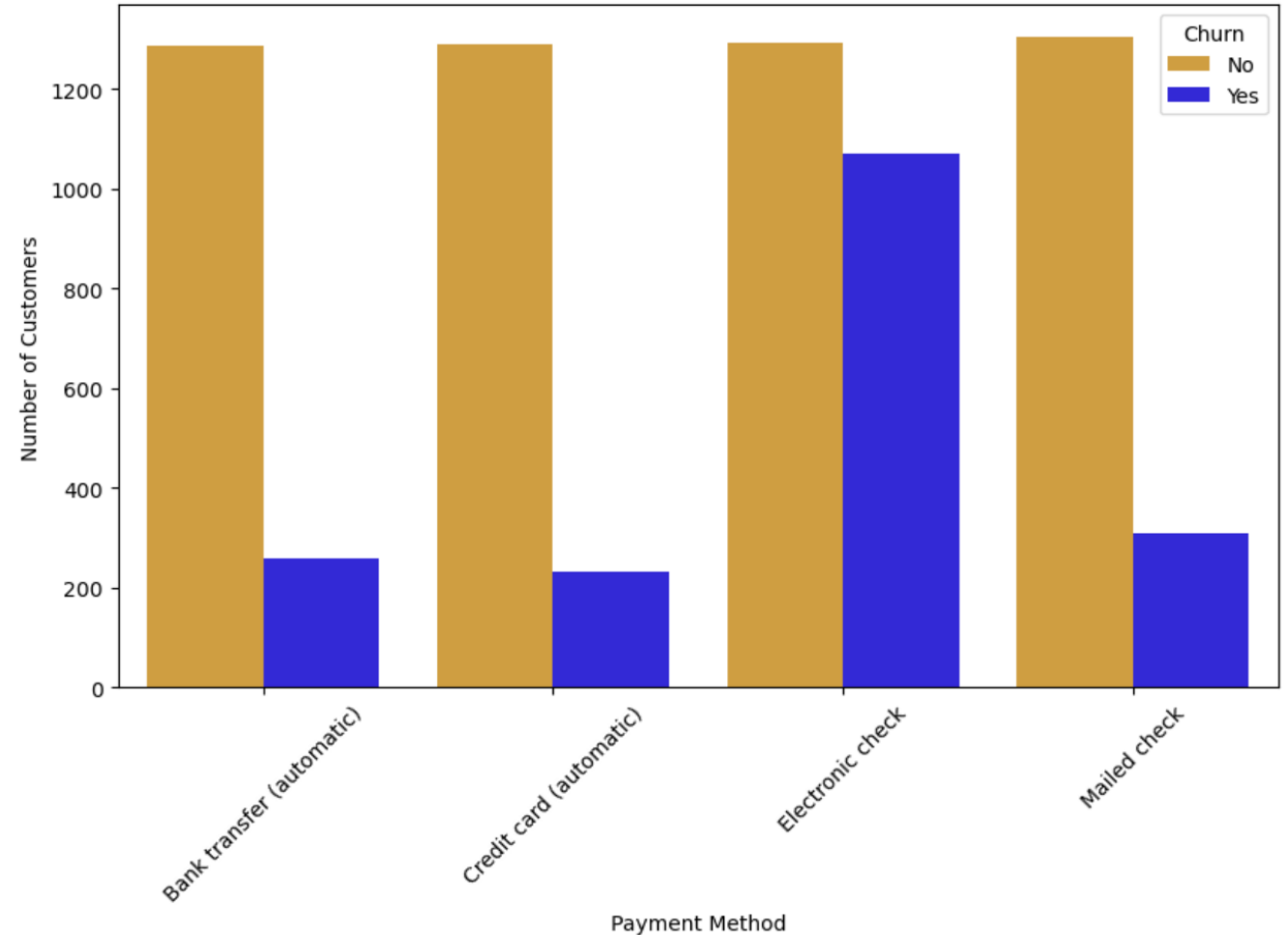


# VISUALIZATION EVALUATION | CHURN vs CONTRACT TYPE | PAYMENT METHOD

Customer Churn by Contract Type



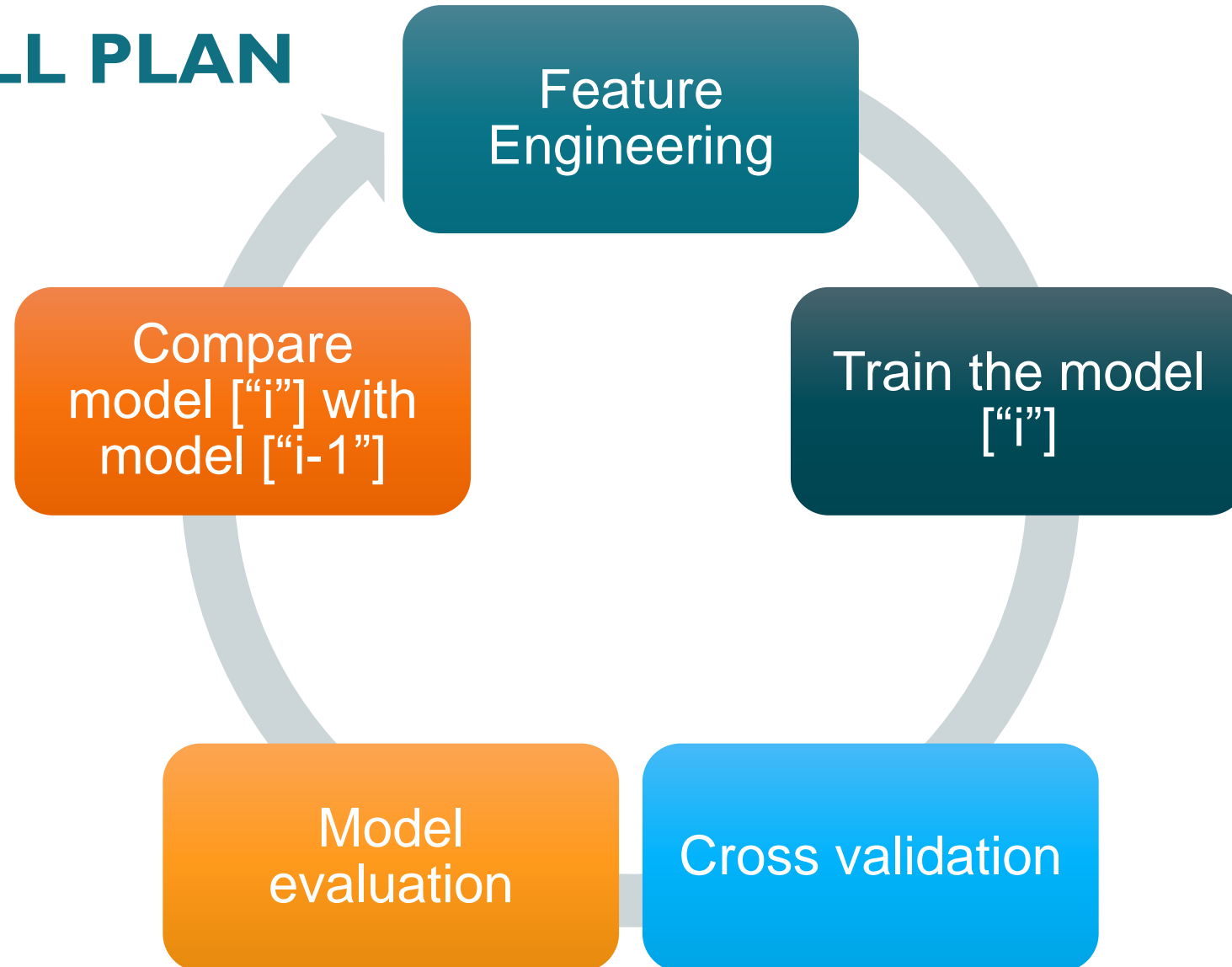
Customer Churn by Payment Method



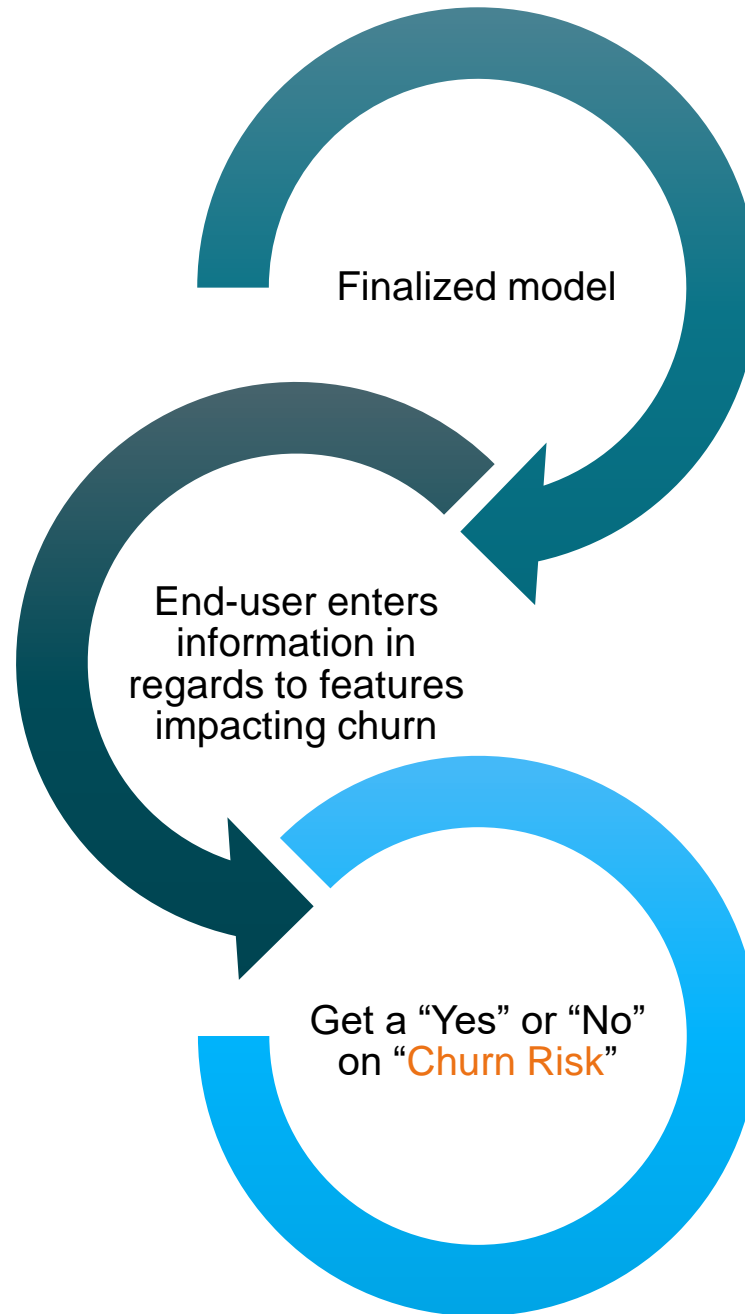
The background is a detailed architectural drawing, likely a site plan or floor plan, rendered in a light, faded style. It features various geometric shapes, lines, and text labels such as 'F-9 BLOK', 'HOL', 'KAZIOLK OASIS', and 'KAZIOLK OASIS'. The drawing is oriented diagonally across the frame.

# Plan for Analysis and Visualization

# OVERALL PLAN



# OVERALL PLAN



## Exploratory Data Analysis

- Encoding categorical variables

## Feature Engineering

- Adding interaction terms
  - Contract type + customer satisfaction
  - Geographic location + churn reason

## Churn Risk Segmentation

- Develop a risk score based on
  - Demographics
  - Satisfaction
  - Contract type



# Potential Machine Learning Models

---



## Logistic Regression

Acts as base model for classification

# Potential Machine Learning Models

---



**SVM**

**To capture non-linear relationships**

**Act as benchmark for complex decision boundaries**

# Potential Machine Learning Models

---



**Decision Trees with Random Forest**

**Provide predictions while handling feature interactions**



# Potential Machine Learning Models

---



**Decision Trees with Random Forest**

**Provide predictions while handling feature interactions**

# Potential Machine Learning Models

---



## Decision Trees with CatBoost

Handling categorical variables on tabular data

Reduce overfit with minimal parameter tuning

The background of the slide is a faded, light-colored architectural drawing or blueprint. It features various lines, circles, and text, including the words "F-9 BLOCK" and "F-10 BLOCK" in a stylized font. The drawing appears to be a site plan or a technical drawing of a building complex.

# Thank you!