

PRESENTATION

# TELECOM CUSTOMER CHURN ANALYSIS

PREDICT CHURN AND DERIVE ACTIONABLE STRATEGIES TO RETAIN  
USERS IN A HIGHLY COMPETITIVE TELECOM ENVIRONMENT.

BY: GAYATRI SUKHE

# INTRODUCTION

IN THE TELECOM WORLD, KEEPING CUSTOMERS IS JUST AS IMPORTANT AS GAINING NEW ONES.

THIS PROJECT FOCUSES ON FIGURING OUT WHY CUSTOMERS ARE LEAVING (CHURNING) AND USING THAT INSIGHT TO HELP COMPANIES RETAIN THEM BETTER.

IT'S ALL ABOUT TURNING DATA INTO SMART DECISIONS.

# GOAL AND TOOLS

WHAT IS THE INDUSTRY'S HISTORY  
AND WHAT ARE ITS USUAL TRENDS?  
DO YOU SEE NEW PATTERNS  
DEVELOPING? GIVE A PREDICTION  
OR OUTLOOK ABOUT WHERE THE  
INDUSTRY IS HEADED.

## WHAT I WANTED TO DO:

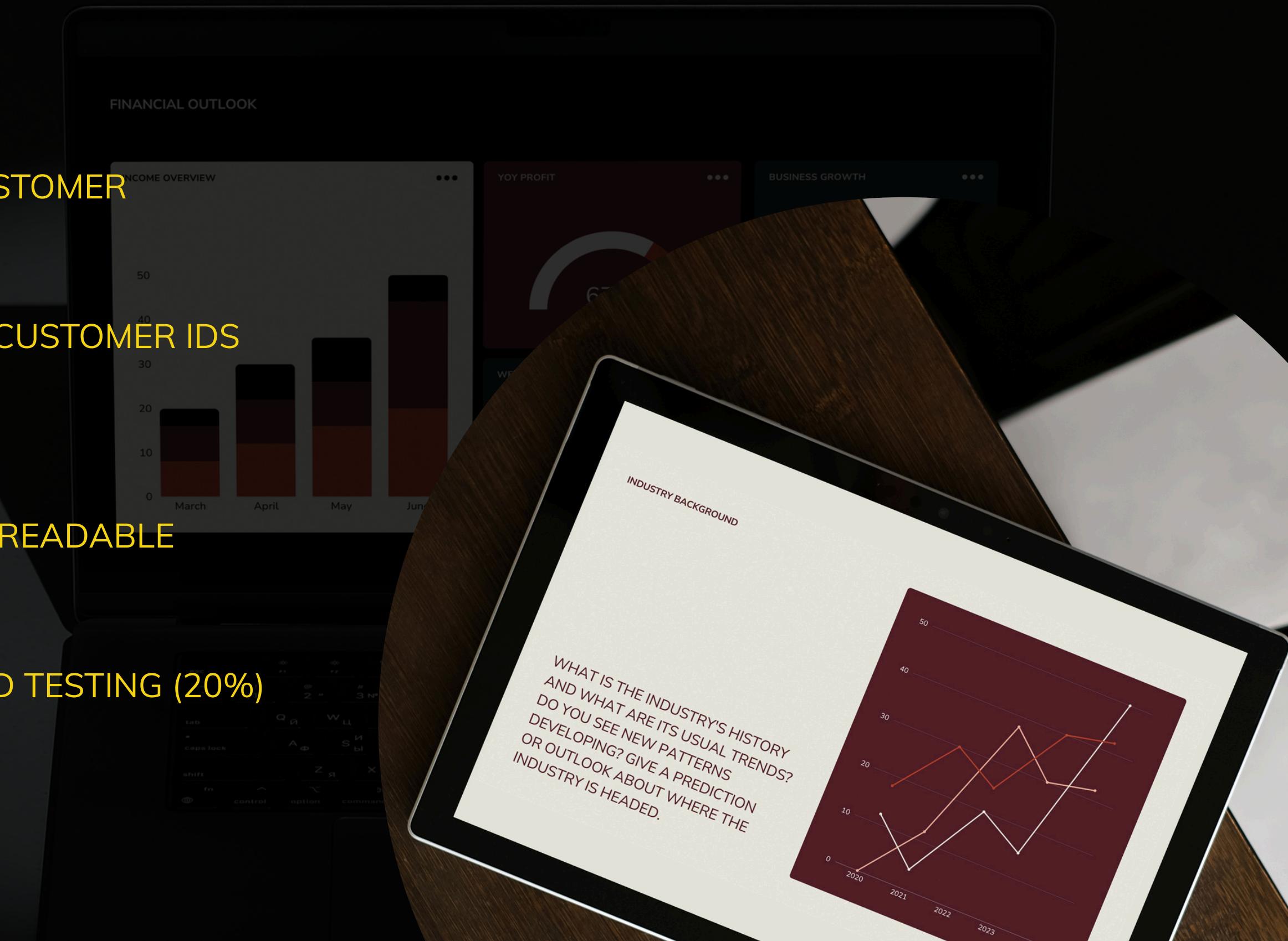
- PREDICT WHICH CUSTOMERS MIGHT LEAVE SOON
- UNDERSTAND THE TOP REASONS BEHIND CHURN
- SUGGEST WAYS COMPANIES CAN REDUCE CHURN

## TOOLS I USED:

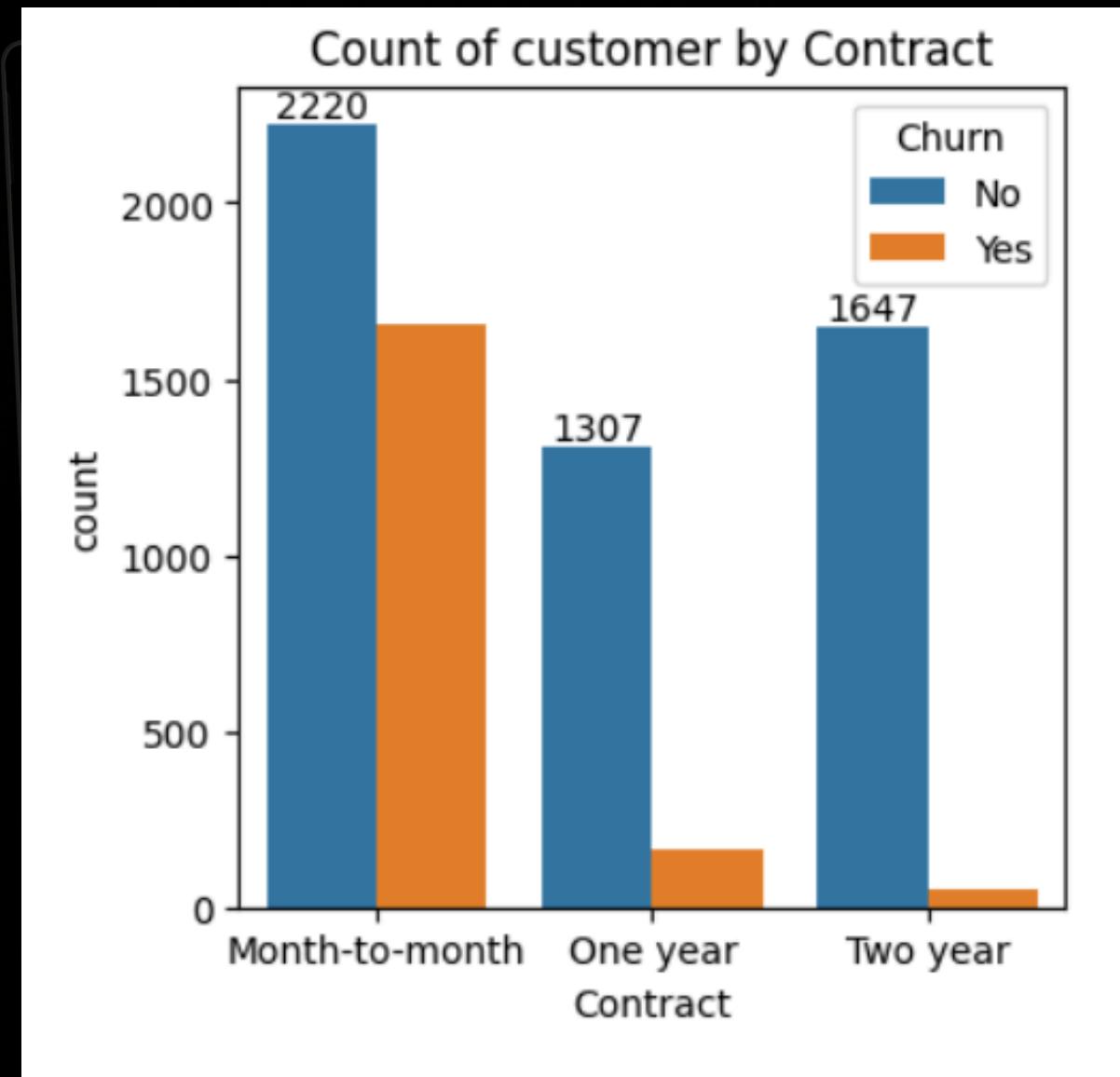
- PYTHON (WITH LIBRARIES LIKE PANDAS, SEABORN, SCIKIT-LEARN)
- SQL-STYLE QUERIES TO SUMMARIZE KEY PATTERNS
- ELI5 FOR EXPLAINING THE MACHINE LEARNING MODEL

# PREPARING THE DATA

- CLEANED THE DATASET (ABOUT 7,044 CUSTOMER RECORDS)
- REMOVED UNNECESSARY COLUMNS LIKE CUSTOMER IDS
- FIXED MISSING VALUES
- CONVERTED CATEGORIES INTO MACHINE-READABLE NUMBERS
- SPLIT THE DATA INTO TRAINING (80%) AND TESTING (20%)

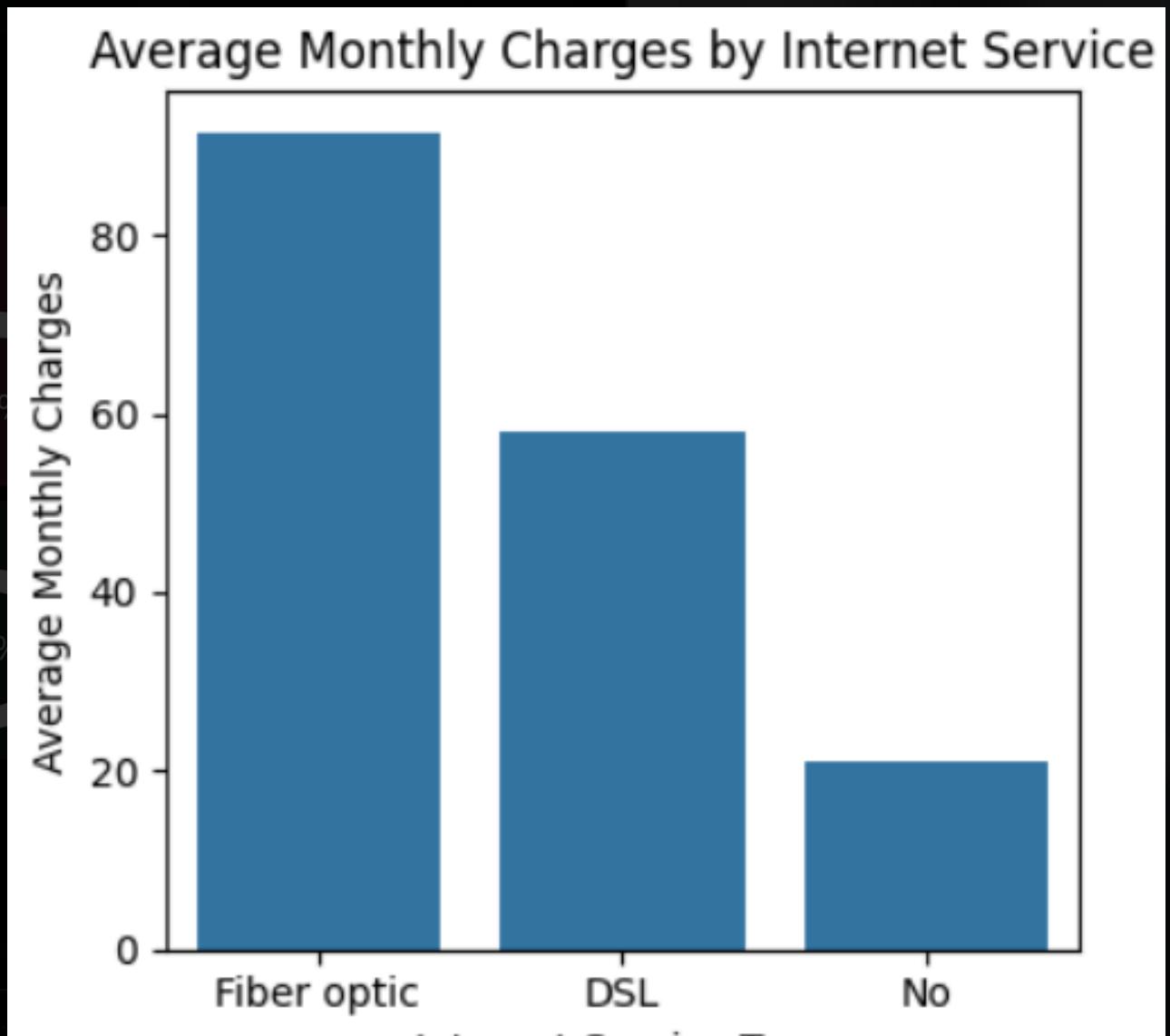
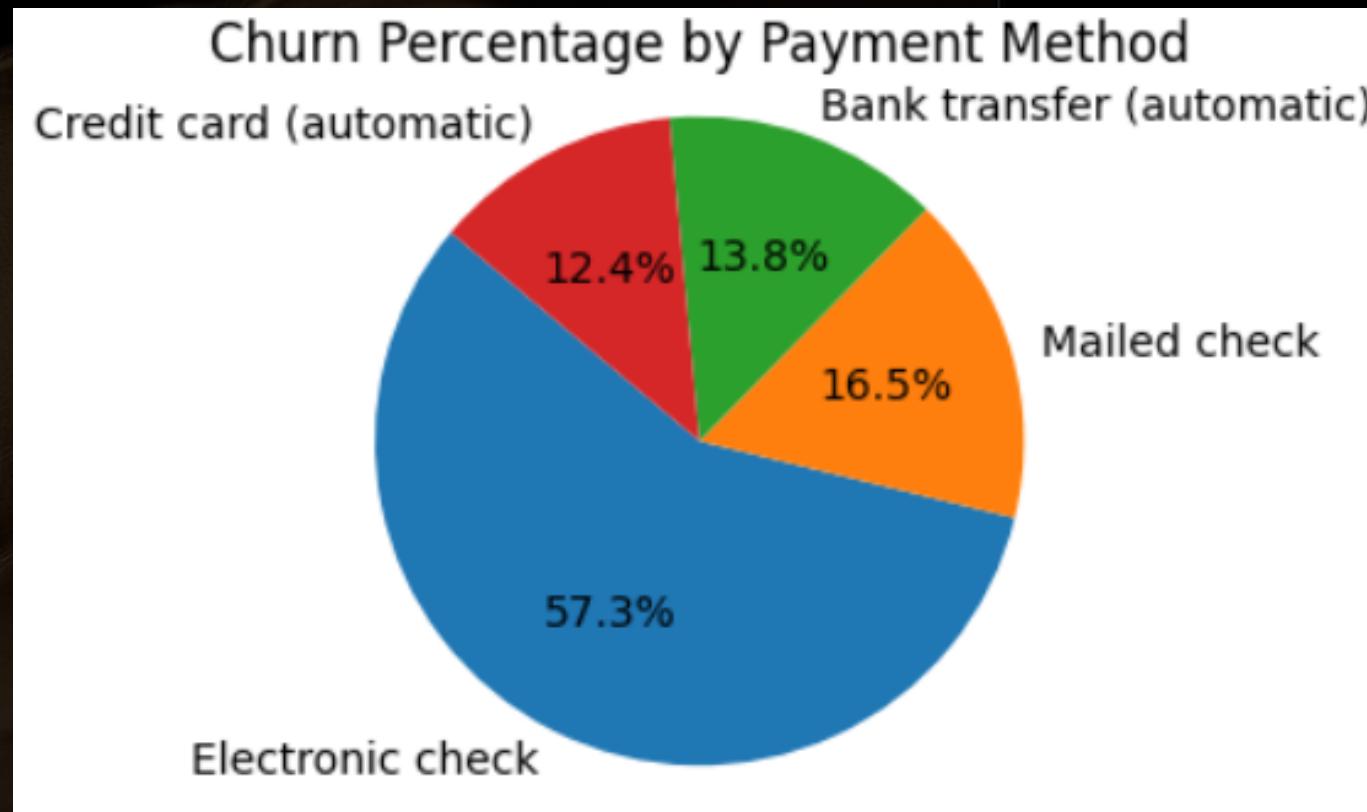


# WHAT THE DATA SHOWS US



SHOWS CHURN IS HIGHEST IN MONTH-TO-MONTH CONTRACTS

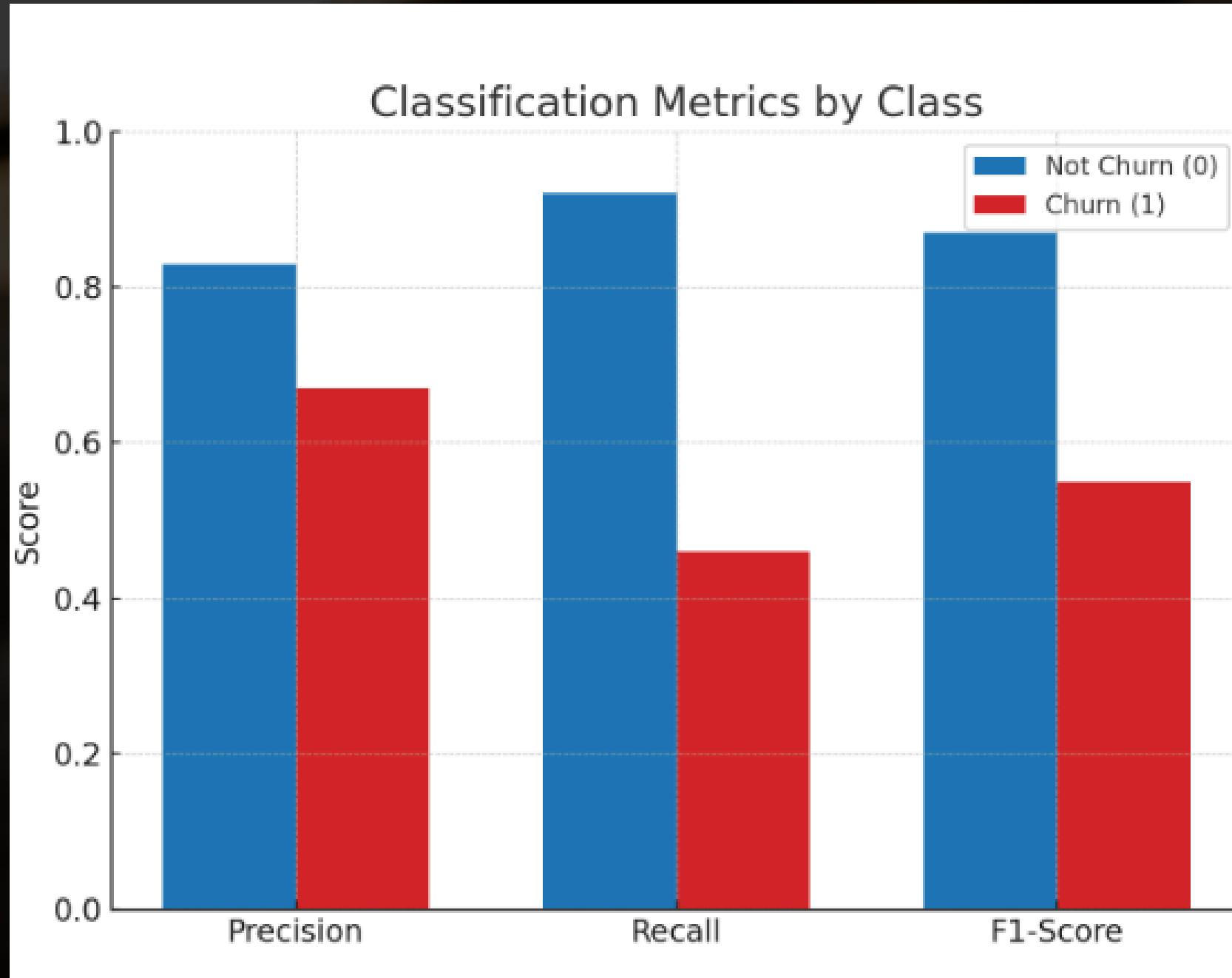
# SQL INSIGHTS



ELECTRONIC CHECK USERS HAVE THE HIGHEST CHURN (45%).

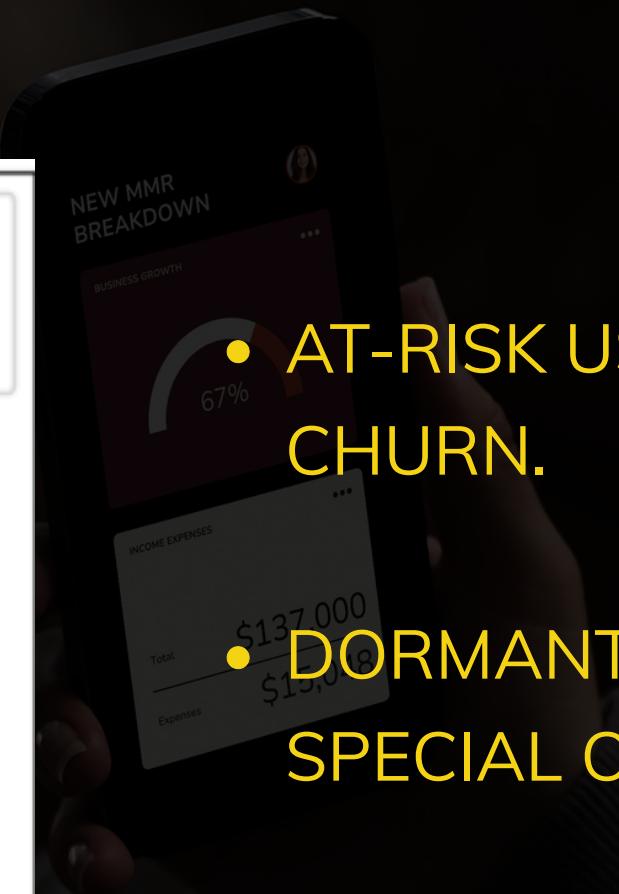
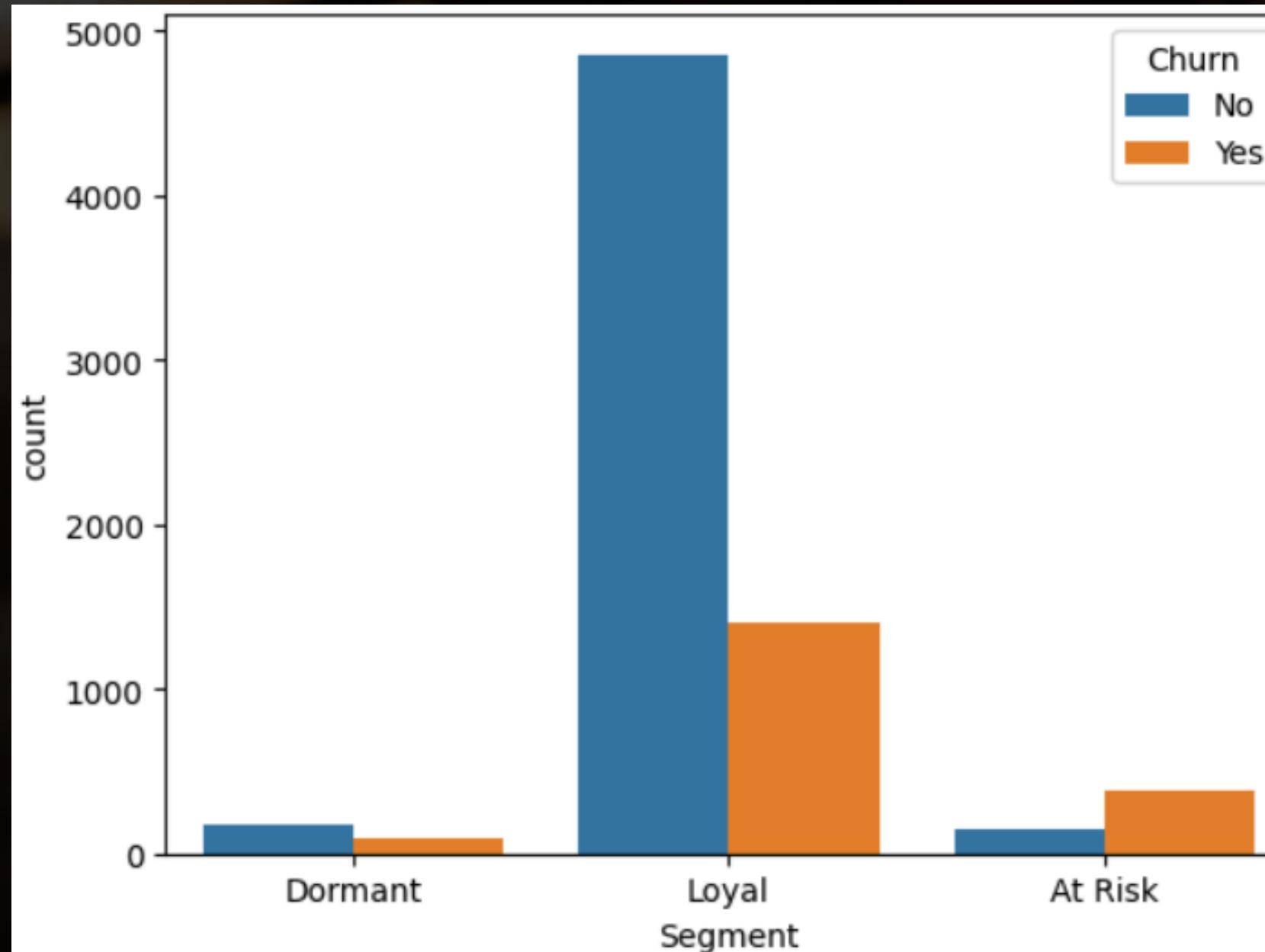
FIBER OPTIC USERS PAY MORE AND CHURN MORE.

# MODEL PERFORMANCE



- THE MODEL ACHIEVED AN OVERALL ACCURACY OF ~80%, MEANING IT CORRECTLY PREDICTED CHURN IN 4 OUT OF 5 CASES.
- IT PERFORMS BETTER AT PREDICTING NON-CHURNED CUSTOMERS (PRECISION: 83%, RECALL: 92%).
- HOWEVER, FOR CHURNED CUSTOMERS, PERFORMANCE IS WEAKER (RECALL: 46%) — INDICATING SOME CHURN CASES ARE MISSED.
- THERE'S ROOM FOR IMPROVEMENT IN CAPTURING TRUE CHURNS (USE BALANCING TECHNIQUES OR ADVANCED MODELS).

# CUSTOMER SEGMENTATION



- AT-RISK USERS NEED QUICK ACTION TO PREVENT CHURN.
- DORMANT USERS CAN BE BROUGHT BACK WITH SPECIAL OFFERS OR MESSAGES.
- LOYAL USERS SHOULD BE REWARDED TO KEEP THEIR TRUST STRONG.

# MODEL EXPLAINABILITY USING ELI5

Feature	Weight	Interpretation
tenure	0.43	Longer tenure reduces churn risk
MonthlyCharges	0.28	Higher charges slightly increase churn
Contract_TwoYear	-0.47	Two-year contracts reduce churn
InternetService_Fiber	0.41	Fiber optic users are more likely to churn
TechSupport_Yes	-0.36	Having tech support reduces churn

ELI5 HELPS US UNDERSTAND WHICH FEATURES MOST INFLUENCE CUSTOMER CHURN DECISIONS. FEATURES WITH A “POSITIVE WEIGHT INCREASE CHURN PROBABILITY”, WHILE THOSE WITH “A NEGATIVE WEIGHT HELP IN RETAINING CUSTOMERS”.

# FINAL RECOMMENDATIONS

- FOCUS ON RETAINING MONTH-TO-MONTH AND NEW USERS (0–12 MONTHS) WITH ONBOARDING OFFERS AND LOYALTY PLANS.
- ENCOURAGE USERS TO SHIFT FROM ELECTRONIC CHECK TO AUTO-PAYMENT METHODS FOR BETTER ENGAGEMENT.
- MONITOR USERS WITH FIBER OPTIC + HIGH CHARGES AND OFFER SUPPORT OR BUNDLED DISCOUNTS.

GROUND

THE INDUSTRY'S HISTORY

# THANK YOU

