



DREXEL UNIVERSITY

LeBow

College of Business

Customer Churn Analysis

STAT-642-674 Group 2

Aida Karimu, Jingxin Yao, Sunita Barik, and Zihan Huang

Agenda



Understanding the
Business Problem



Research
Questions



Dataset Overview



Data Analysis and
Prediction



Summary

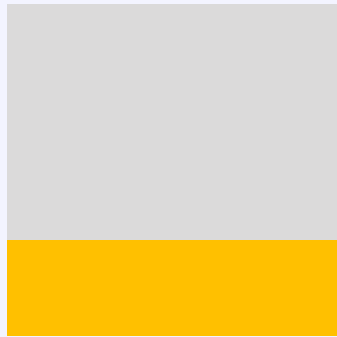


Recommendation



Understanding the Business Problems

Churn



27%

Company lost
customers

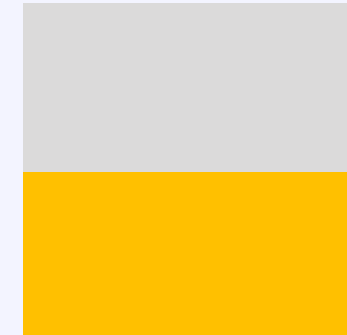
Contracts



88.6%

Most churn contracts
are Month-to-Month

Tenure



49.4%

Average
customer tenure is low

Reduce customer churn and enhance the customer Retention



Research Questions

01

Why one third of customers are cancelling their contracts and what are the important customer features?

02

Is contract type feature associated to churn rate ?

03

Why the average tenure of customers is low?

Dataset Overview

- 7043 rows represent the customers, and 21 columns are the customer attributes.
- Target variable Churn indicates whether a customer left service within last month.
- 0.15 % of data is missing. (11 rows)
- Contains customer demographic and account information

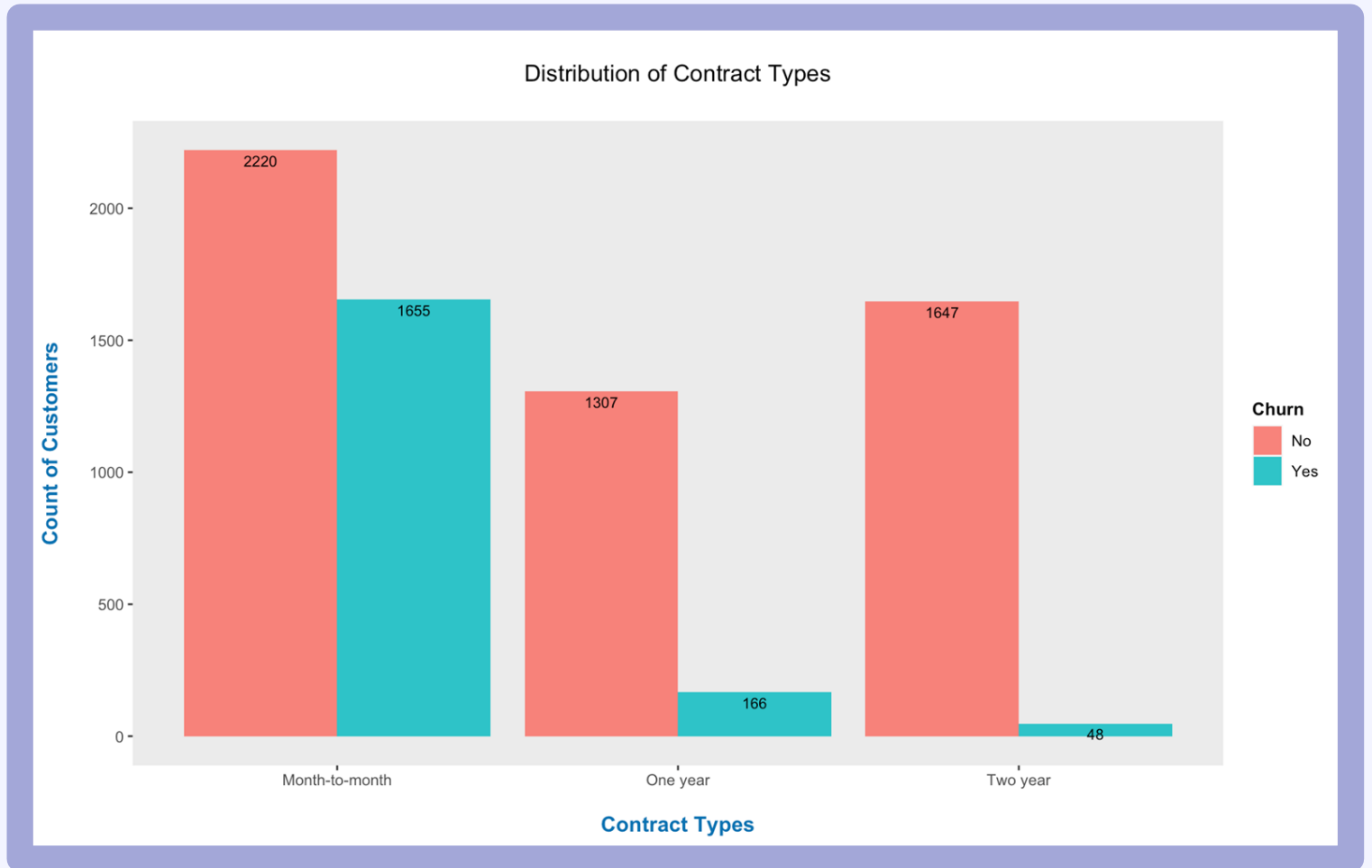
Data Types: 15 nominal variables, 1 ordinal variable, 3 numerical variables.

- Numerical: Tenure, MonthlyCharges, and TotalCharges.
- Nominal: Gender, SeniorCitizen, PaymentMethod, InternetService, etc.
- Ordinal: Contract

DATA ANALYSIS AND PREDICTION

Churn Rate by Contract Types

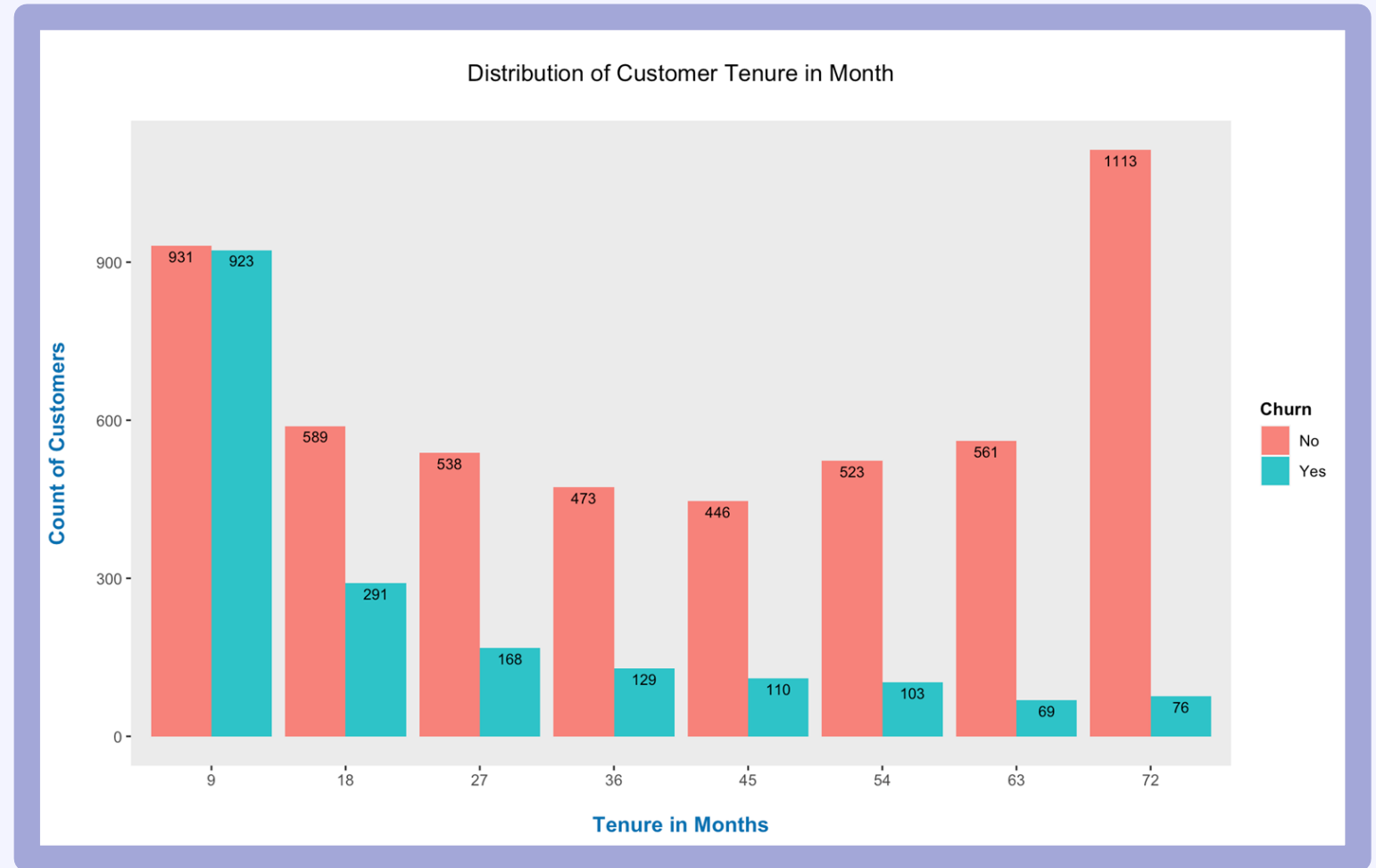
Maximum Churn can be seen among the group of people who have month-to-month contract type.



Churn Rate by Customer Tenure in Months

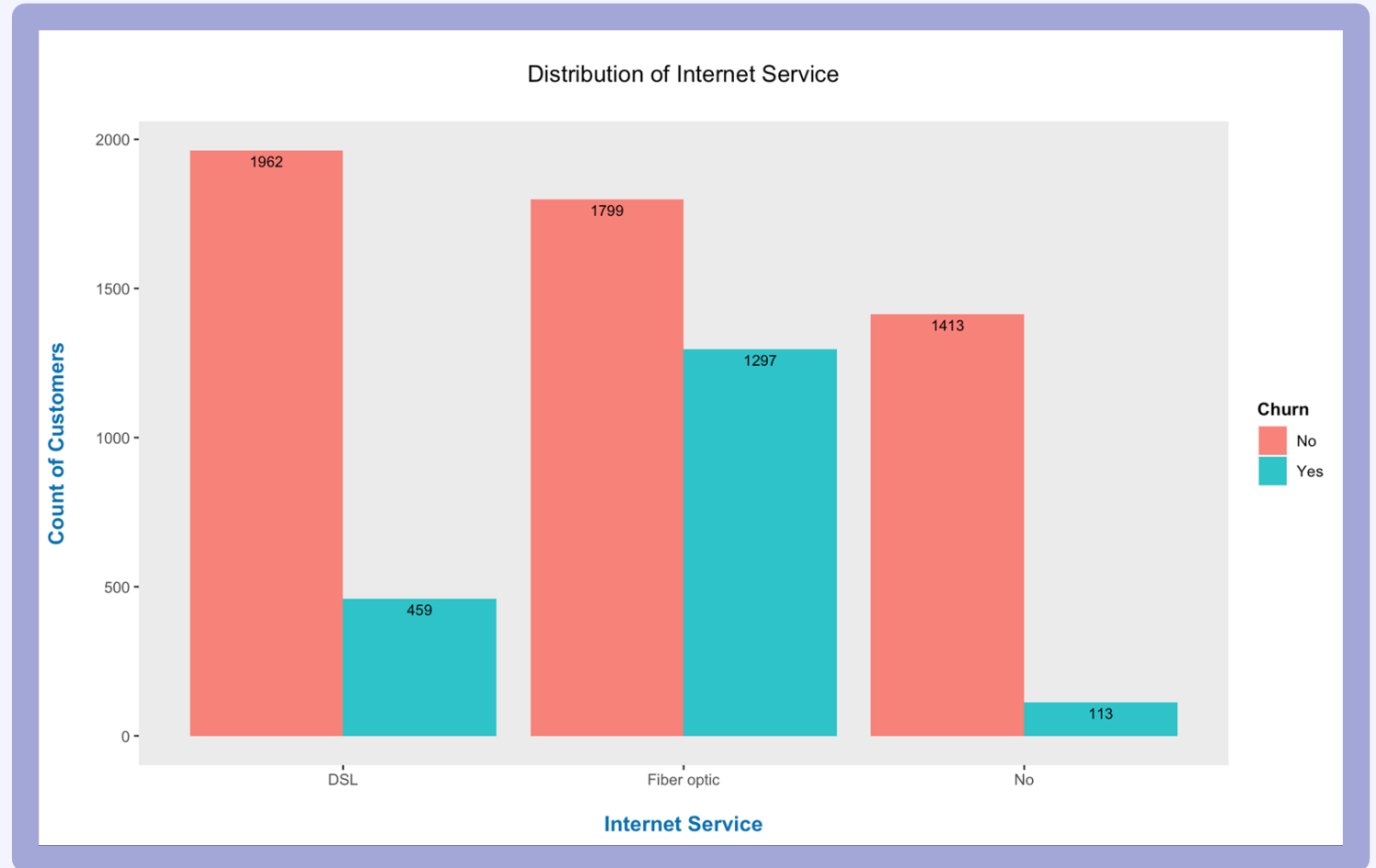
Most of the customer churn occur after an average period of 9 months.

With increasing tenure, the churn rate is decreases.



Churn Rate by Internet Services

Churn is more significant for Fiber optic users than the DSL internet services.



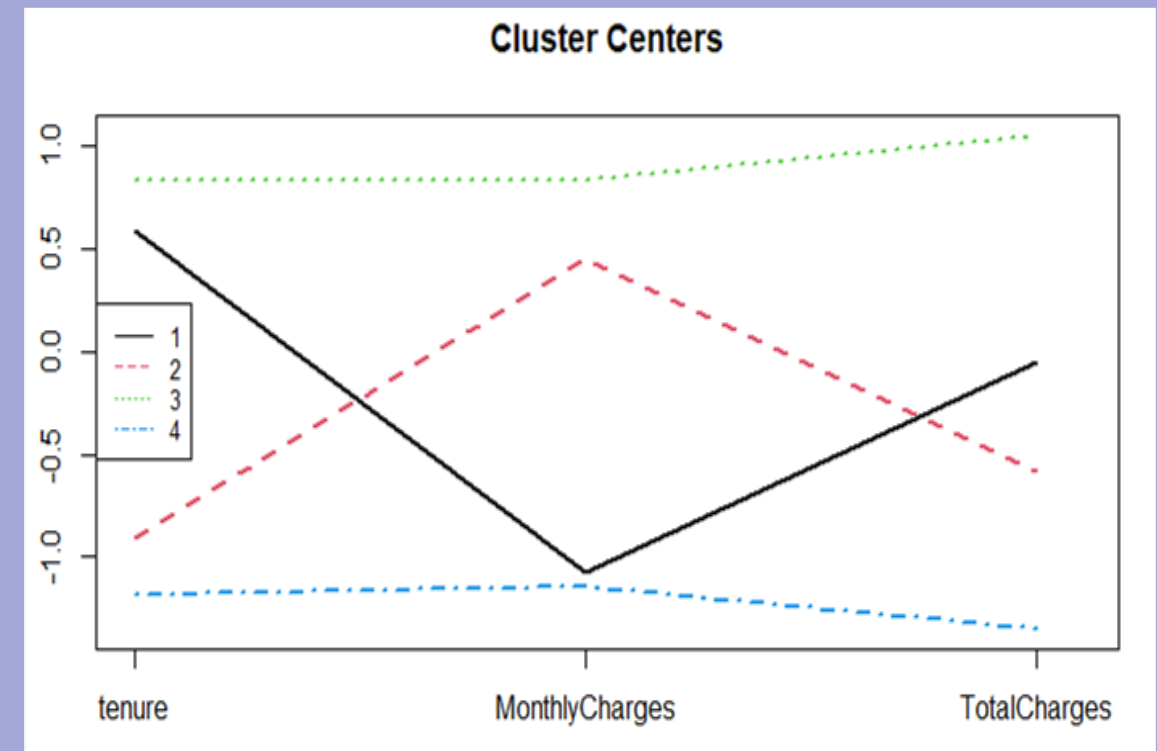
Unsupervised Method: k-Means Clustering

Cluster 1: high tenure and total charges, but low monthly charges.

Cluster 2: low tenure and total charges, but high monthly charges.

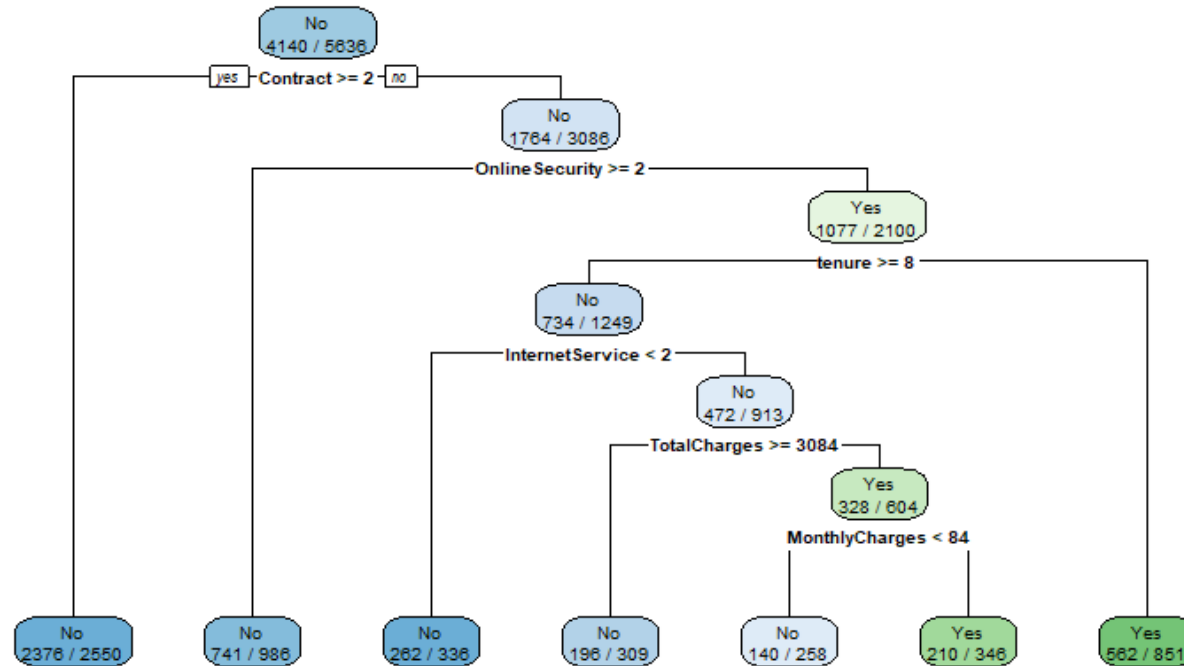
Cluster 3: highest tenure, monthly charges and total charges.

Cluster 4: lowest tenure, monthly charges and total charges.



Cluster1	Cluster2	Cluster3	Cluster4
1459	1732	2610	1242

Supervised Method – Decision Trees



The basic decision tree returns only 6 variable and shows a simple model.

The model is heavily influenced by imbalanced data (shows less customer churn).



Supervised Method – Decision Trees

Model Tuning & Imbalanced Data Handling

Give class weighting to churn/not churn: 1.8837/0.6807.

Important Business Indicators

	Contract	tenure	TotalCharges	OnlineSecurity
Weightage	645.20	369.05	255.59	224.69
	TechSupport	MonthlyCharges	PaymentMethod	InternetService
Weightage	165.64	84.13	72.30	66.33

DATA ANALYSIS SUMMARY

Summary

- Majority of customers are unhappy about the quality of Internet service and products.
- 42.7 % of the customers with Month-to-month contract type are be cancelling their contracts due to high monthly charges.
- The average tenure of the customers is low as 9 months due to absence of small plans.

BUSINESS RECOMMENDATION



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Recommendations

Anti-churn Model

Track the customers' susceptibility to churn

Improve Service Quality

Upgrade Service & Products

Product Diversification

Introduce 3, 6 or 9 monthly plan

Marketing Campaigns

Acquire yearly plan customers using referral

Build Customer Loyalty

Discounted Monthly price and unique services



Thank you!

Do you have any questions?



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