



CaliConnect
TELECOM

Customer Churn Analysis Telecommunication Industry

Presented to YYYY

Presented by **Team 2 (Anonymized):**

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Executive Summary

Case Context



Small, relatively new
telecommunication
company in
California

Problem

High rates of churn
in competitive
telecommunication
market

Low switching cost

Dataset

Demographics

Location

Population

Services

Status

Objectives

Identify churn factors

**Increase retention
rate** with remaining
customers



ANALYSIS PROBLEM

What variables are most associated with customer churn?

Variable relationships

Customer behaviour & Preferences

Target market

Can we predict the likelihood that a new customer will churn?

Expected revenue

Mitigate churn factors





DATA & METHODOLOGY

5 Datasets in Total

- 7043 customers
- Located in California

Important Information

Basic Demographics

Age	Gender	Location
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Services Used

Internet	Cable	Streaming
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Churn Status

Churned	Reason if Churned
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Telco_customer_churn_demographics.xlsx



Telco_customer_churn_location.xlsx



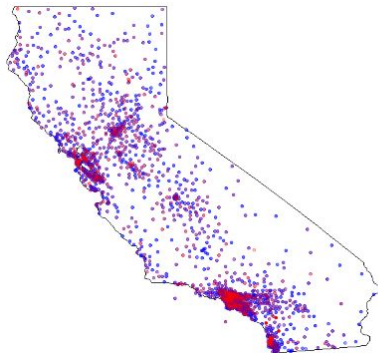
Telco_customer_churn_population.xlsx



Telco_customer_churn_services.xlsx

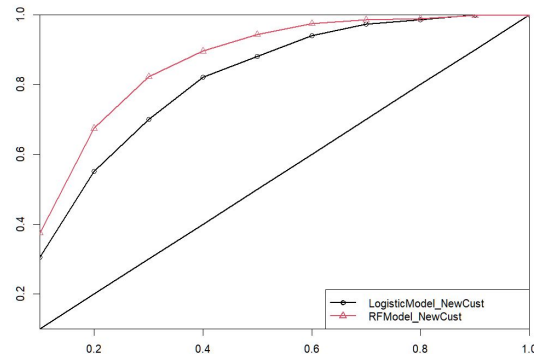


Telco_customer_churn_status.xlsx



Exploratory Analysis

- 1 Basic summaries
- 2 Segment and find trends
- 3 Analyse findings



Predictive Analysis

- 1 Find key predictors
- 2 Examine significant variables
- 3 Create model
- 4 Test model



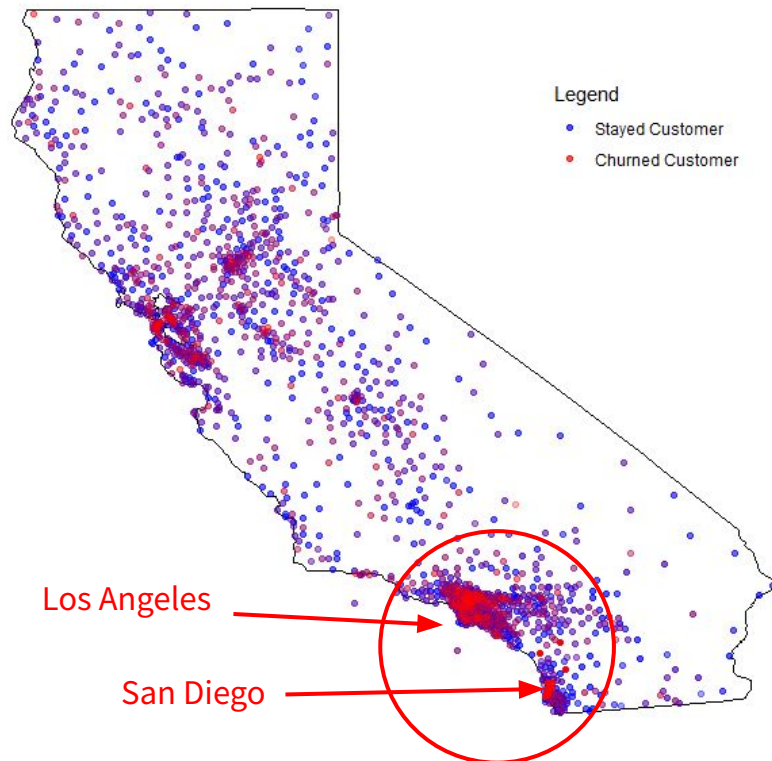
KEY FINDINGS

Exploratory Analysis

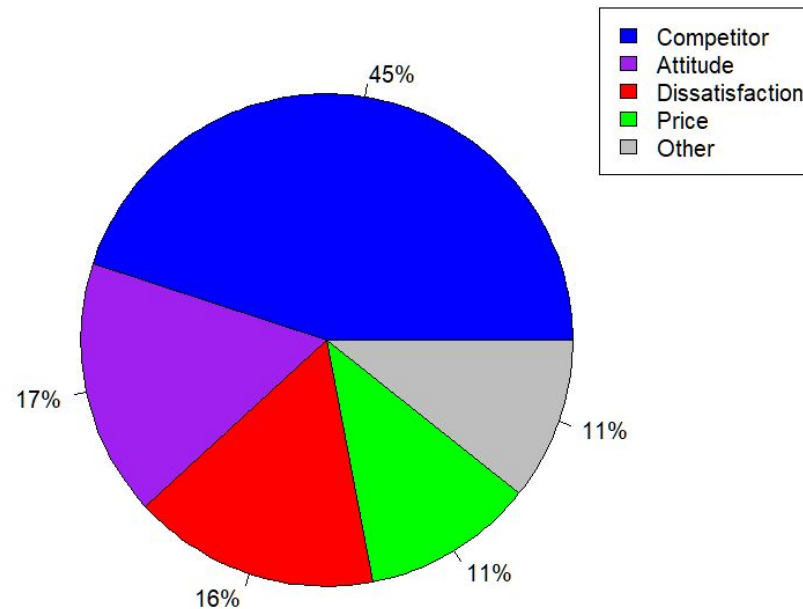
Customer Status	Count	Percentage
Churned	1869	26.5%
Joined	454	6.5%
Stayed	4720	67%

- ➔ Churn rate of **26.5%**
- ➔ Seniors had the highest churn rate (42%)
- ➔ Customers with dependents had the lowest churn rate (6.5%)

Map of Both Customers who Stayed and Churned



Customer Churn Reasons



Factors Associated with Churn

- 1 Satisfaction Score
- 2 Contract
- 3 Internet Type
- 4 New Customer (12 months or less)



Excellent Indicator of Churn Likelihood



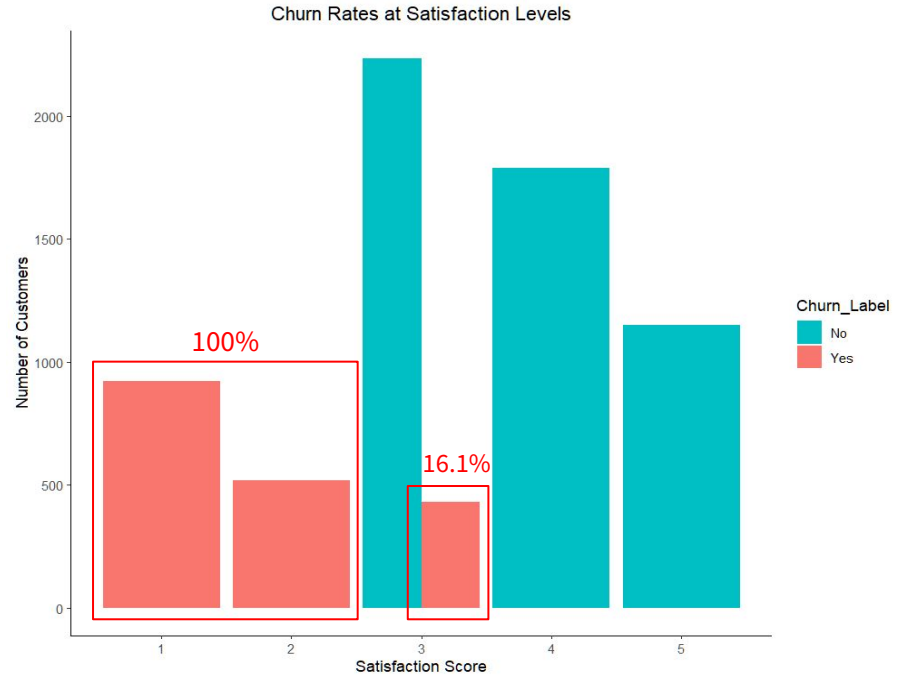
Low Satisfaction (1-2) → 100% churn

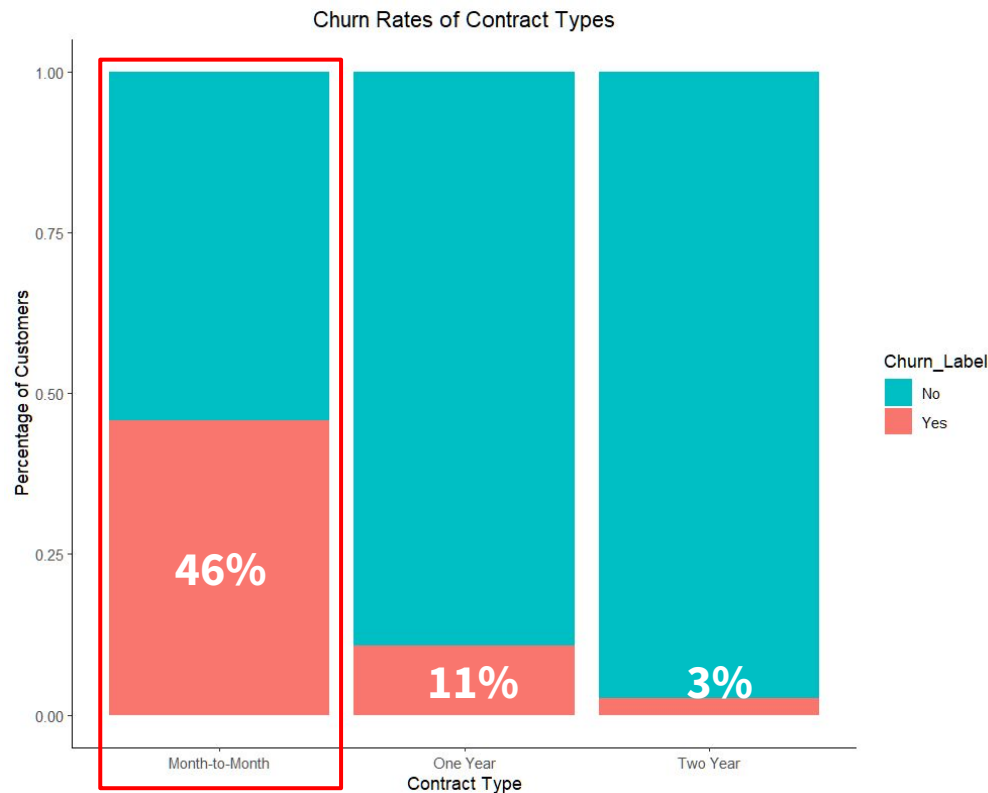


Medium Satisfaction (3) → 16.1% churn



High Satisfaction (4-5) → 0% churn

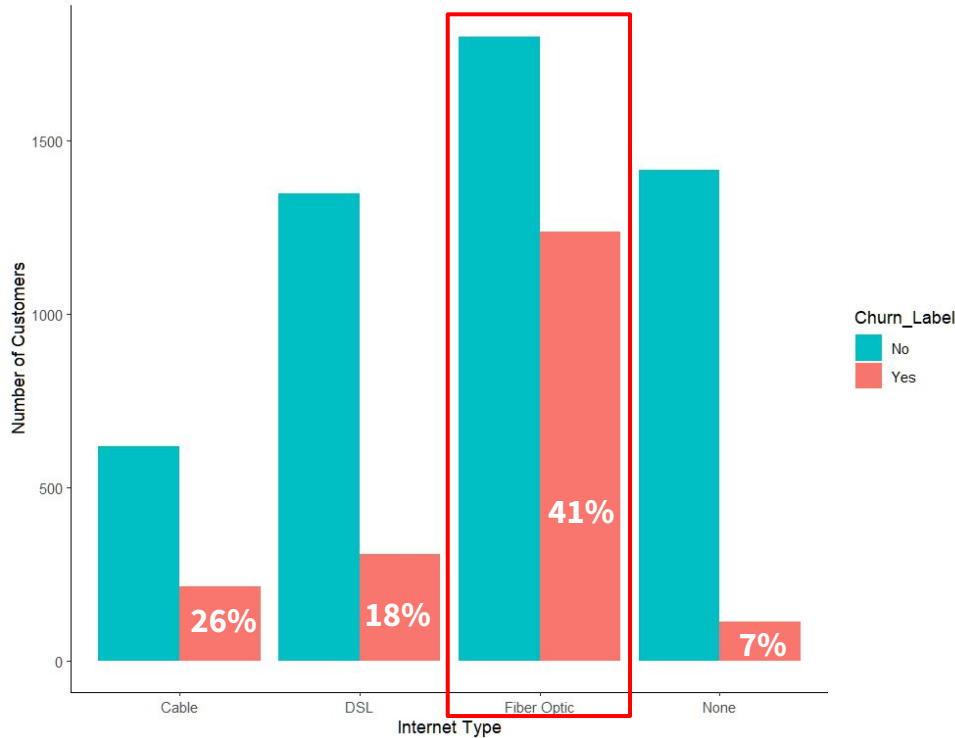




Customers with
Month-to-Month Contracts are
much **more likely to churn**

Churn Rate of **46%**

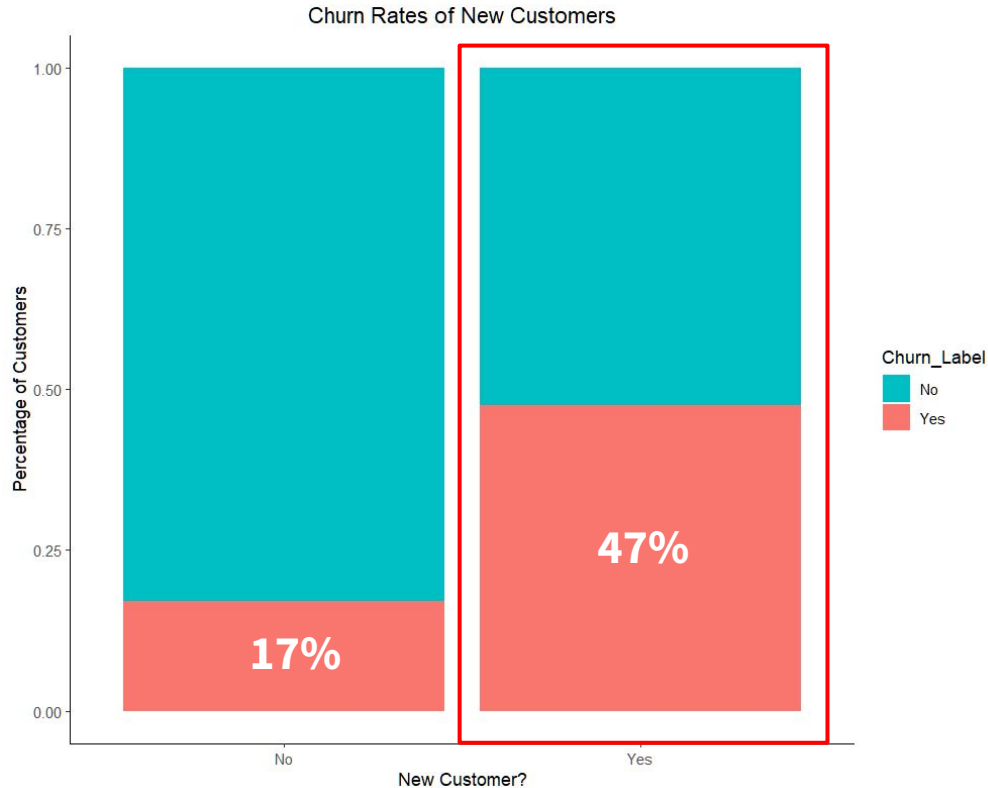
Churn Rates of Internet Types



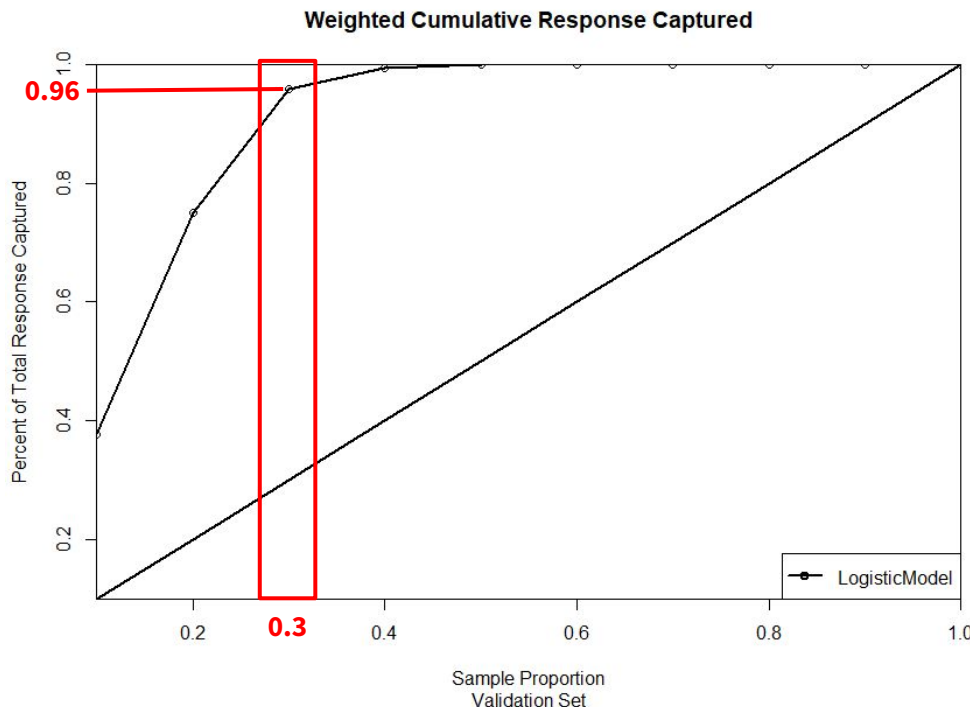
Customers with **Fiber Optic Internet** have higher rates of churn and dissatisfaction

Churn Rate of **41%**

Average **Satisfaction Score** of **2.94**



- ➔ New customers churn at a **higher rate**
- ➔ Churn Rate of **47%**

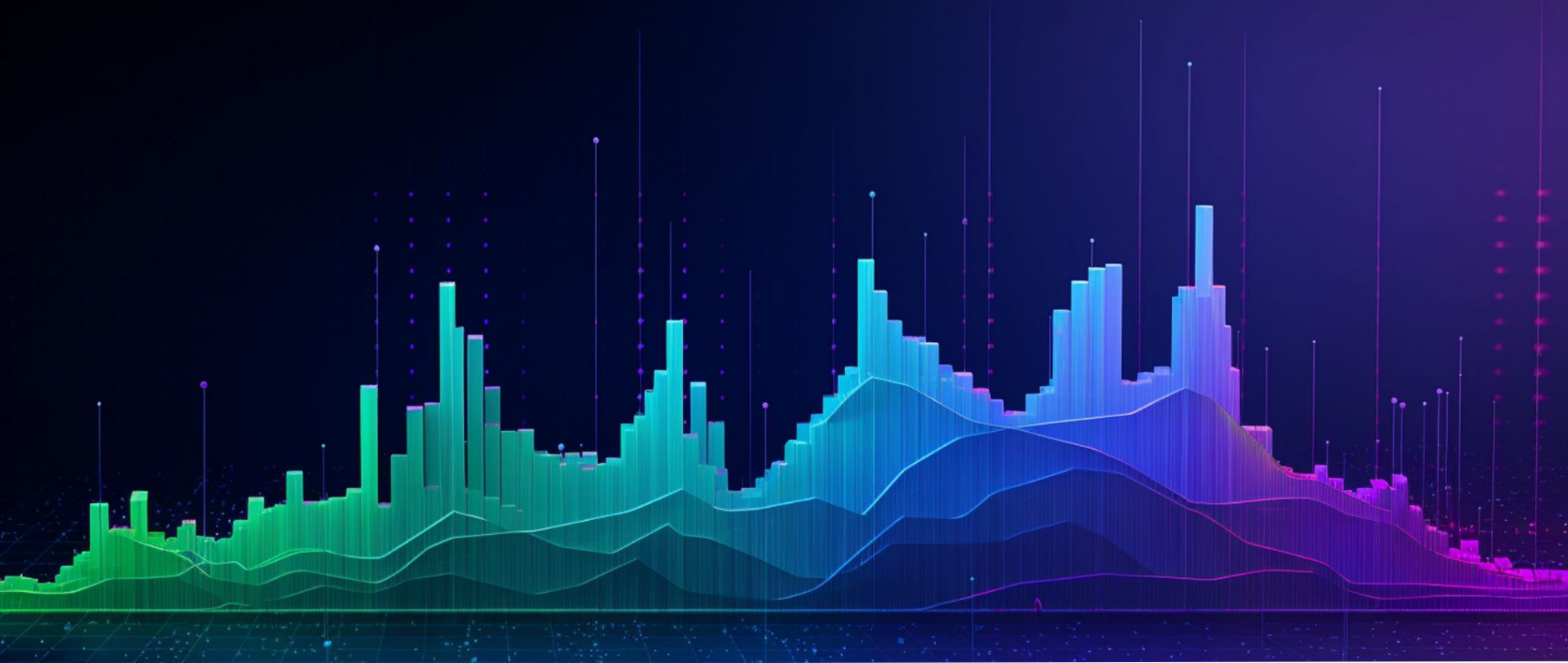


➔ **9 variables** and **Accuracy of 95%**

➔ **Strategically Targeting** only **30%** of customers using the model can capture around **96%** of all the customers going to churn

➔ Excluding Satisfaction Score, **Accuracy of 83%**

➔ New Customers without satisfaction, **Accuracy of 78%**



BUSINESS APPLICATION

Why Is This Information Valuable



Informed Decision-Making



Predicting Future Cash Flow and Revenue



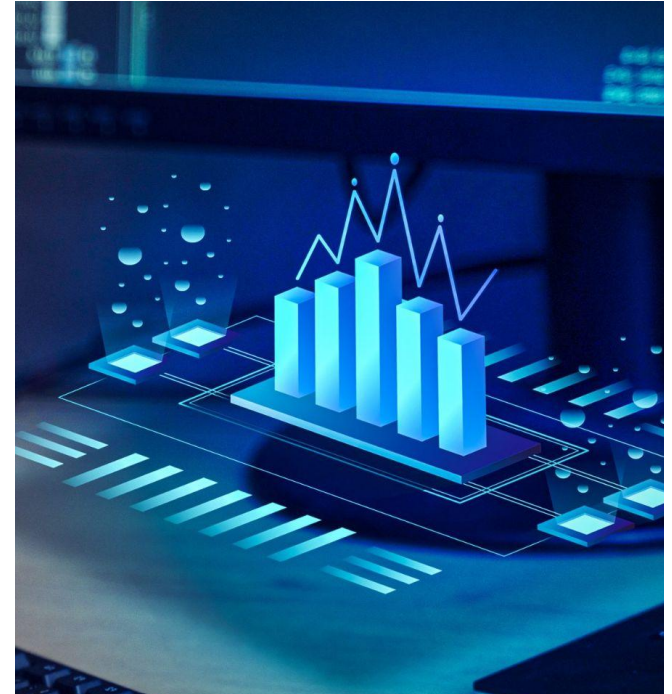
Personalized Retention Strategies



Product/Service development

Without this information

- Generic strategies
- Unclear priorities



Actionable Insights

Identified Pain Points

Fiber Optic Internet customers have higher churn rate and dissatisfaction

Month-to-Month customers are much more likely to churn

Customers switching to Competitors

Actionable Insights

Invest in improving Fiber Optic Internet service quality

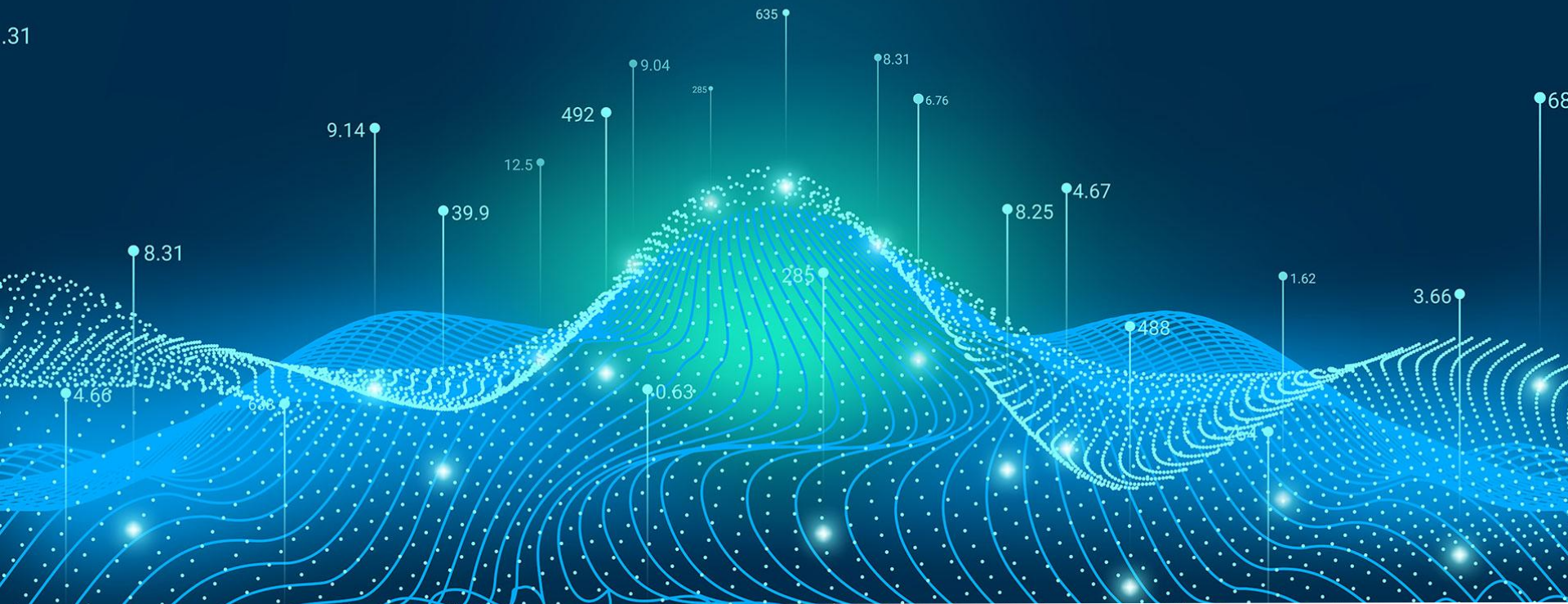
- Incentivize customers with attractive, longer contracts
- Complimentary Online security are associated with less churn
- Discounts, loyalty programs

- Better overall customer service, competitive pricing
- Use our predictive model to identify customers most likely to churn

Executive Summary

Methodology	Diagnostic Analytics		Predictive Analytics
Pain Points	Fiber Optic Internet customers have higher churn rate	Month-to-Month customers are more likely to churn	Customers switching to competitors
Actionable Insights	Improve Fiber Optic Internet service quality	Incentivize customers with attractive, longer contracts	Leverage predictive model to identify churn customers
Recommendation	Partnership with Corning Inc. - credible Fibre Optic Internet manufacturers in US	Customer Loyalty Program with discounted package	Customized marketing campaign in high churn rate areas

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Q&A SESSION

Deane, M. (2024, June 1). *Top 6 Reasons New Businesses Fail*. Investopedia.

<https://www.investopedia.com/financial-edge/1010/top-6-reasons-new-businesses-fail.aspx#:~:text=About%2045%25%20of%20new%20businesses,without%20a%20reliable%20revenue%20stream.>

Farhan, T. (2023, April 14). *The importance of customer loyalty for Business Stability*. Global Gurus.

<https://globalgurus.org/the-importance-of-customer-loyalty-for-business-stability/>

Freedman, M. (2024, April 1). *Why is customer loyalty important?*. business.com.

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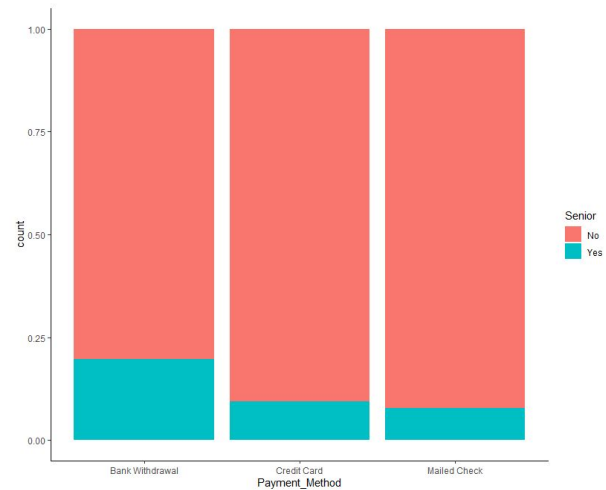
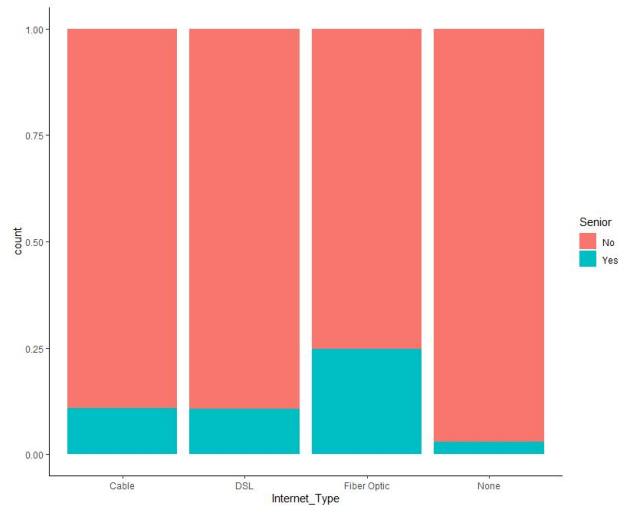
Lightspeed (2024, March, 1). *19 Reasons Why Small Businesses Fail (and How to Avoid them)*. Light speed.

<https://www.lightspeedhq.com/blog/why-small-businesses-fail/#:~:text=The%20number%20one%20reason%20small,financial%20instability%20and%20ultimately%2C%20failure.>















APPENDICES

Senior	Total Customers	Customers Churn	Churn Rate
No	5901	1393	23.6%
Yes	1142	476	41.7%



Fibre Optic Internet Manufacturers

Biggest companies in the Fiber-Optic Cable Manufacturing industry in the US

Company	Market Share (%) 2024	Revenue (\$m) 2024	Profit (\$m) 2024	Profit Margin (%) 2024
<u>Corning Inc.</u>		615.4 	78.8 	12.8 
<u>Ofs Fitel, Llc</u>		404.2 	14.7 	3.6 
<u>Afl Telecommunications Llc</u>		283.3 	24.8 	8.8 

Dependents

Dependents	Total Customers	Customers Churn	Churn Rate
No	5416	1763	32.6%
Yes	1627	106	6.5%

City	Number of Customers	Number of Customers Churned	Churn Rate
Los Angeles	293	78	27%
San Diego	285	185	65%
San Jose	112	29	26%
Sacramento	108	26	24%
San Francisco	104	31	30%



79% of customers who churned in San Diego said it was due to a competitor making a better offer

Cities with Most Churn

City	Churn Rate
San Diego	65%
Fallbrook	61%
Temecula	58%
Novato	50%
Lakewood	47%
Santa Rosa	46%
North Hollywood	45%
Fremont	44%

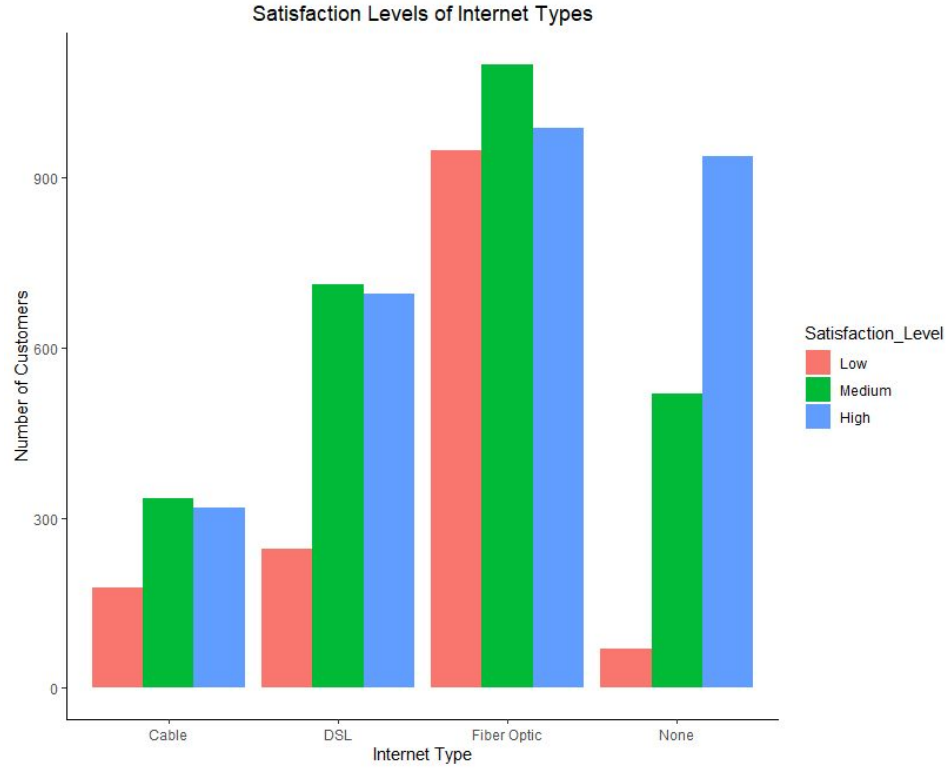
Top 10 predictors of churn

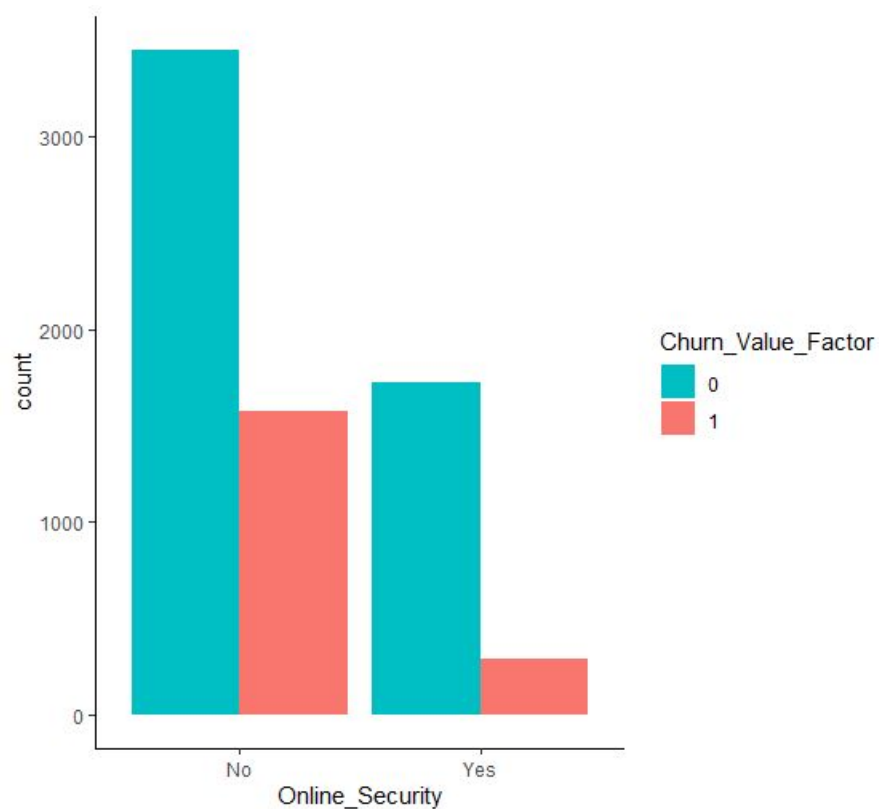
Predictor	Average Misclassification Rate
Satisfaction Score/Level	0.114
Contract	0.249
Tenure in Months/New Customer	0.333
Number of Referrals	0.341
Internet Type	0.348
Total Long Distance Charges	0.375
Monthly Charge	0.382
Total Revenue	0.385
Payment Method	0.387
Dependents/Number of Dependents	0.392

Top 10 predictors of satisfaction

Predictor	Average MSPE
Contract	1.64
Internet Type	1.78
Internet Service	1.83
Tenure in Months	1.84
Number of Referrals	1.86
New_Customer	1.89
Unlimited Data	1.92
Offer	1.93
Dependents	1.93
Paperless Billing	1.96

Satisfaction and Internet Type

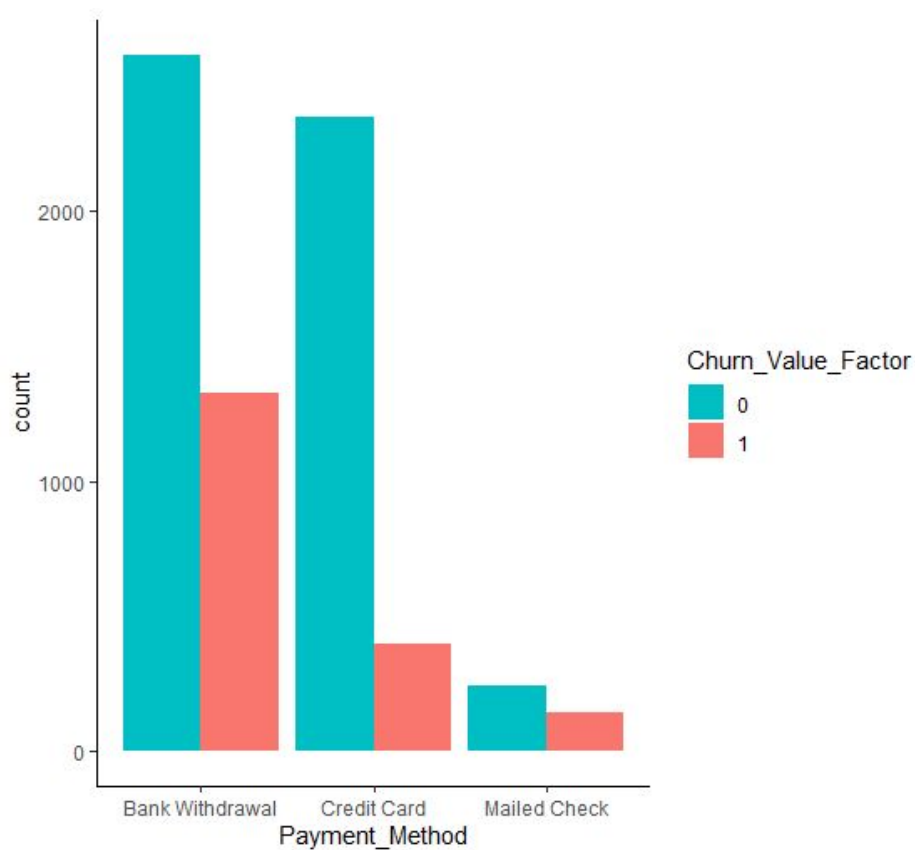




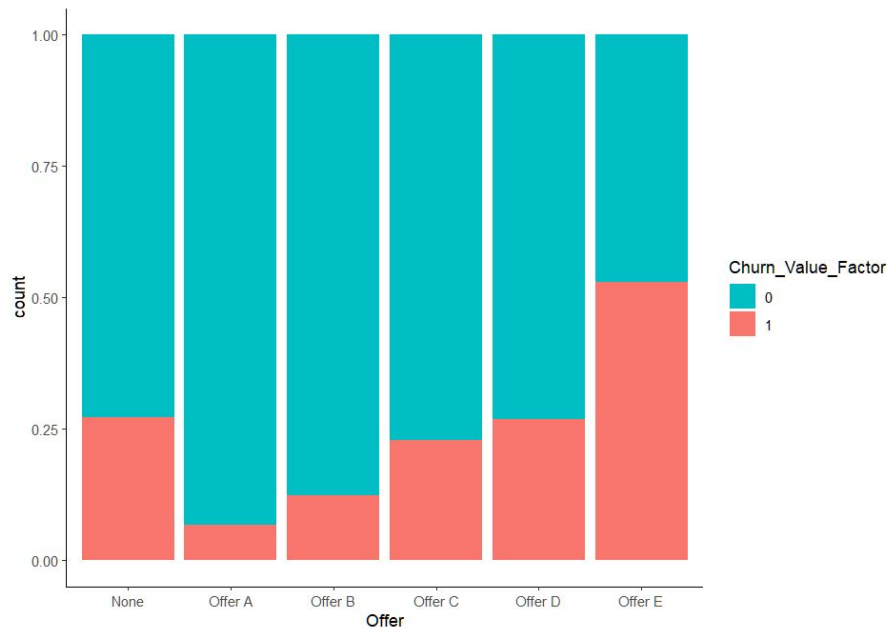
Online Security	Churn Rate
No	31%
Yes	15%

➔ Online Security is unique because it relates to churn but not to Satisfaction in the same way

Payment Method



Customers who pay by credit card churn at a lower rate



Offer E has an extremely high churn rate at 50%



Offer A and B are the best

Original Input Model Variables

1. Satisfaction Score
2. Online Security
3. Contract
4. Dependents
5. Number of Referrals
6. Referred a Friend
7. Monthly Charge
8. New Customer
9. Zip Code Population

=> Predicting Churn Label

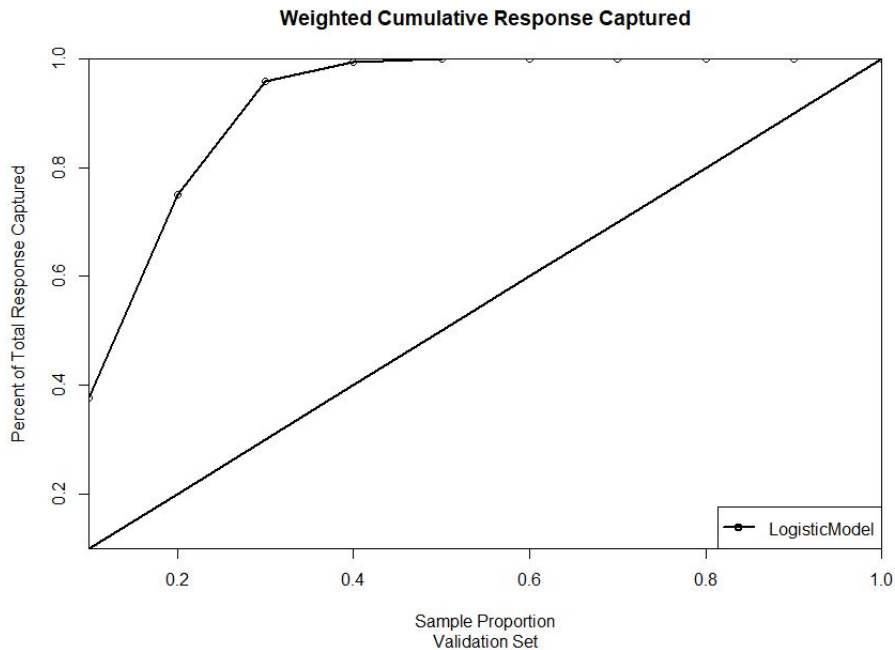
No Satisfaction Model

1. Contract
 2. Internet Type
 3. Number of Referrals
 4. Referred a Friend
 5. Dependents
 6. New Customer
 7. Payment Method
 8. Age
 9. Streaming TV
 10. Paperless Billing
 11. Tenure in Months
 12. City Population
 13. Large City
 14. Streaming Music
 15. Premium Tech Support
 16. Online Security
- Predicting Churn Label

New Customers & No Satisfaction Model

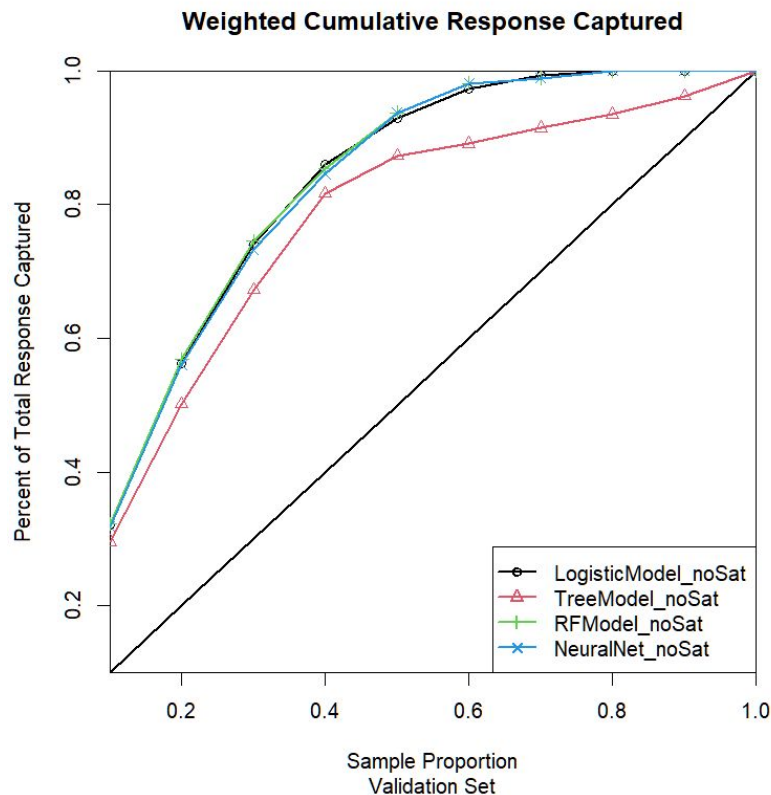
1. Internet Type
 2. Contract
 3. Number of Referrals
 4. Referred a Friend
 5. Tenure in Months
 6. Payment Method
 7. Dependents
 8. Age
 9. Streaming Music
 10. City Population
 11. Large City
 12. Paperless Billing
- Predicting Churn Label

Original Model Lift Chart



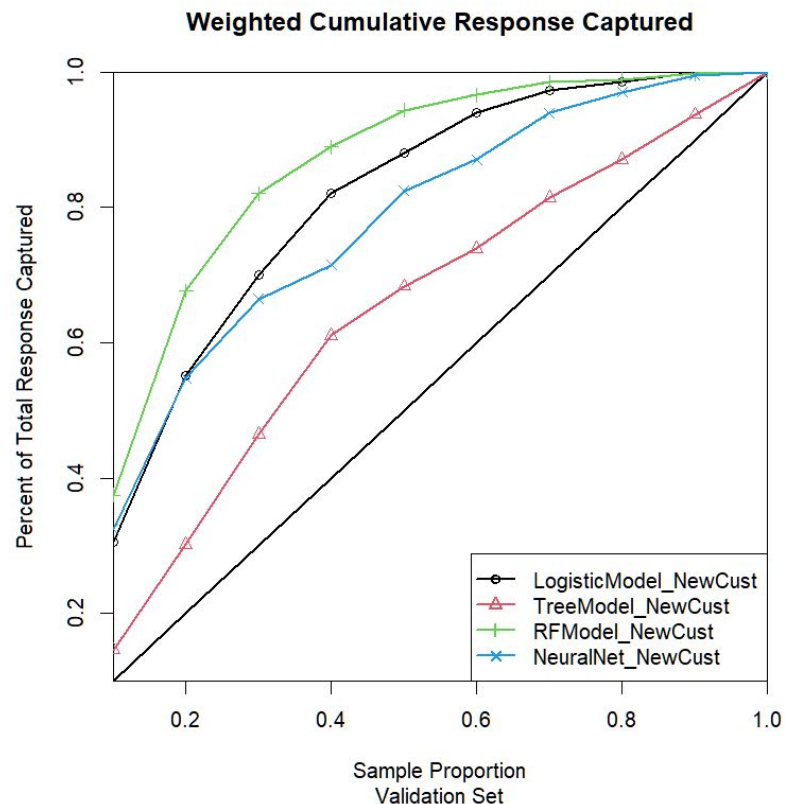
Percentage Targeted	Proportion of Churners Captured
10%	0.3770833
20%	0.7500000
30%	0.9583333
40%	0.9937500
50%	1.0000000

Lift Chart for Model excluding Satisfaction



Percentage Targeted	Proportion of Churners Captured
10%	0.3208333
20%	0.5625000
30%	0.7416667
40%	0.8604167
50%	0.9291667

Lift Chart for the New Customer Model



Percentage Targeted	Proportion of Churners Captured
10%	0.3062500
20%	0.5520833
30%	0.7000000
40%	0.8208333
50%	0.8812500