# Churn Prediction
# Use Case with Coding

# **Churn Prediction**: The ability to predict whether or not a customer is going to leave (churn) in the near future

**Customer churn** refers to when a customer (player, subscriber, user, etc.) ceases his or her relationship with a company. Online businesses typically treat a customer as **churned** once a particular amount of time has elapsed since the customer's last interaction with the site or service.

# Does Churn prediction apply to the O&G Business?

New Customer acquisition costs between 5 to 15 times more than customer retention

# How does knowing the likelihood to churn help?

Intervention
Customer Service
Discounts
Customized Offers

"One of the easiest ways to keep the existing customers is to predict potential churn early and respond fast. Identify the signs of potential churn, understand customer wants and needs and automate campaigns designed to revive and renew loyalty for a solid CRM strategy that minimizes acquisition costs."

# Calculating "Churn Rate"

- Number of customers who "abandoned" in a given time period (quarter, month) divided by the total customer base

- We can also use the 'estimated revenue lost'

# What data do we need for Churn Prediction?

Usage/interaction

Level of engagement with company or product

Time spent

Cost incurred

Is the customer using all the features?

# Use Case: Data Provided

**Contract Terms**

| Account.Length | VMail.Message | Day.Mins | Eve.Mins | Night.Mins | Intl.Mins | CustServ.Calls | Churn | Intl.Plan | VMail.Plan | Area.Code | Phone |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 128 | 25 | 265.1 | 197.4 | 244.7 | 10 | 1 | 0 | 0 | 1 | 415 | 382-4657 |
| 107 | 26 | 161.6 | 195.5 | 254.4 | 13.7 | 1 | 0 | 0 | 1 | 415 | 371-7191 |
| 137 | 0 | 243.4 | 121.2 | 162.6 | 12.2 | 0 | 0 | 0 | 0 | 415 | 358-1921 |
| 84 | 0 | 299.4 | 61.9 | 196.9 | 6.6 | 2 | 0 | 1 | 0 | 408 | 375-9999 |
| 75 | 0 | 166.7 | 148.3 | 186.9 | 10.1 | 3 | 0 | 1 | 0 | 415 | 330-6626 |
| 118 | 0 | 223.4 | 220.6 | 203.9 | 6.3 | 0 | 0 | 1 | 0 | 510 | 391-8027 |
| 121 | 24 | 218.2 | 348.5 | 212.6 | 7.5 | 3 | 0 | 0 | 1 | 510 | 355-9993 |
| 147 | 0 | 157 | 103.1 | 211.8 | 7.1 | 0 | 0 | 1 | 0 | 415 | 329-9001 |
| 117 | 0 | 184.5 | 351.6 | 215.8 | 8.7 | 1 | 0 | 0 | 0 | 408 | 335-4719 |

**Usage Logs (Operational)**

| Area.Code | Phone | Day.Calls | Day.Charge | Eve.Calls | Eve.Charge | Night.Calls | Night.Charge | Intl.Calls | Intl.Charge | State |
|---|---|---|---|---|---|---|---|---|---|---|
| 415 | 382-4657 | 110 | 45.07 | 99 | 16.78 | 91 | 11.01 | 3 | 2.7 | KS |
| 415 | 371-7191 | 123 | 27.47 | 103 | 16.62 | 103 | 11.45 | 3 | 3.7 | OH |
| 415 | 358-1921 | 114 | 41.38 | 110 | 10.3 | 104 | 7.32 | 5 | 3.29 | NJ |
| 408 | 375-9999 | 71 | 50.9 | 88 | 5.26 | 89 | 8.86 | 7 | 1.78 | OH |
| 415 | 330-6626 | 113 | 28.34 | 122 | 12.61 | 121 | 8.41 | 3 | 2.73 | OK |
| 510 | 391-8027 | 98 | 37.98 | 101 | 18.75 | 118 | 9.18 | 6 | 1.7 | AL |
| 510 | 355-9993 | 88 | 37.09 | 108 | 29.62 | 118 | 9.57 | 7 | 2.03 | MA |
| 415 | 329-9001 | 79 | 26.69 | 94 | 8.76 | 96 | 9.53 | 6 | 1.92 | MO |
| 408 | 335-4719 | 97 | 31.37 | 80 | 29.89 | 90 | 9.71 | 4 | 2.35 | LA |
| 415 | 330-8173 | 84 | 43.96 | 111 | 18.87 | 97 | 14.69 | 5 | 3.02 | WV |
| 415 | 329-6603 | 137 | 21.95 | 83 | 19.42 | 111 | 9.4 | 6 | 3.43 | IN |

# Techniques to Predict Churn Rate

- [Clustering](): Classifies the customers according to different levels of churn risk.

- Random Forest Classifier