

DECISION TREES

OPTIONAL CASE

**THIS IS TO BE ATTEMPTED ONLY AFTER
COMPLETION OF THE CASE ON PREDICTING
EMPLOYEE ATTRITION**

CUSTOMER CHURN PREDICTION

BACKGROUND

Business Problem

What is Churn?

Churn (loss of customers to competition) is a problem for telecom companies because it is more expensive to acquire a new customer than to keep your existing one from leaving.

Why study customer churn?

Churn is one of the largest problems facing most businesses. According to Harvard Business Review, it costs between 5 times and 25 times as much to find a new customer than to retain an existing one. In other words, your existing customers are worth their weight in gold!

Preventing customer churn is an important business function. It's also one that has too often been approached with scattershot, back-of-the-envelope methods. By building a model to predict customer churn with machine learning algorithms, ideally we can nip the problem of unsatisfied customers in the bud — and keep the revenue flowing.



The Business Pain

Most telecom companies suffer from voluntary churn. Churn rate has strong impact on the lifetime value of the customer because it affects the length of service and the future revenue of the company. For example if a company has 25% churn rate then the average customer lifetime is 4 years; similarly a company with a churn rate of 50%, has an average customer lifetime of 2 years. It is estimated that 75 percent of the 17 to 20 million subscribers signing up with a new wireless carrier every year are coming from another wireless provider, which means they are churners. Telecom companies spend hundreds of dollars to acquire a new customer and when that customer leaves, the company not only loses the future revenue from that customer but also the resources spend to acquire that customer. Churn erodes profitability.

Steps that have been adopted by telecom companies so far:

Telecom companies have used two approaches to address churn

(a) Untargeted approach

(b) Targeted approach

The untargeted approach relies on superior product and mass advertising to increase brand loyalty and thus retain customers.

The targeted approach relies on identifying customers who are likely to churn, and provide suitable intervention to encourage them to stay.

What Data we have now

The data set includes information about:

- Customers who left within the last month – the column is called Churn
- Services that each customer has signed up for – phone, multiple lines, internet, online security, online backup, device protection, tech support, and streaming TV and movies
- Customer account information – how long they've been a customer, contract, payment method, paperless billing, monthly charges, and total charges
- Demographic info about customers – gender, age range, and if they have partners and dependents

Following is the data dictionary

customerID : Customer ID

Gender : Whether the customer is a male or a female

SeniorCitizen : Whether the customer is a senior citizen or not (1, 0)

Partner: Whether the customer has a partner or not (Yes, No)

Dependents: Whether the customer has dependents or not (Yes, No)

Tenure: Number of months the customer has stayed with the company

PhoneService : Whether the customer has a phone service or not (Yes, No)

MultipleLines: Whether the customer has multiple lines or not (Yes, No, No phone service)

InternetServiceCustomer's : internet service provider (DSL, Fiber optic, No)

OnlineSecurity: Whether the customer has online security or not (Yes, No, No internet service)

OnlineBackup: Whether the customer has online backup or not (Yes, No, No internet service)

DeviceProtection : Whether the customer has device protection or not (Yes, No, No internet service)

TechSupport :Whether the customer has tech support or not (Yes, No, No internet service)

StreamingTV :Whether the customer has streaming TV or not (Yes, No, No internet service)

StreamingMovies: Whether the customer has streaming movies or not (Yes, No, No internet service)

Contract The contract term of the customer (Month-to-month, One year, Two year)

PaperlessBilling: Whether the customer has paperless billing or not (Yes, No)

PaymentMethod: The customer's payment method (Electronic check, Mailed check, Bank transfer (automatic), Credit card (automatic))

MonthlyCharges: The amount charged to the customer monthly

TotalCharges: The total amount charged to the customer

Churn: Whether the customer churned or not (Yes or No)

