WHAT WAS THE OBJECTIVE OF THIS PROJECT?

Swiss Re is a leading wholesale provider of reinsurance, insurance and other insurance-based forms of risk transfer. E&S Property LOB is a high flow business that requires quick responses. In the current scenario, underwriters have more submissions to look at than the time available. The objective of the project is to speed up the decision-making process for the Underwriters, so that they can look into more number of potential deals in a given time frame thereby, increasing the hit ratio without adding extra resources.

* From 2012 to 2015, the number of submissions has increased by approx. 3 times whereas the Submission to Bound Ratio has decreased from 6.1% to 5.5%.
* Underwriters need an efficient methodology which can help them triage the deals so as to improve the submission to bound ratio

Objectives:

* Research and understand the factors behind the deal being bounded in general and also based on the data provided
* Incorporate the research into building a model to score a deal at submission to triage deals for the underwriters
* Publish list of insights and recommendations from the model results to help the client increase the hit ratio.

WHAT DATASETS WERE INVOLVED?

* Two data files was provided by Swiss Re for this project. The first file had 142 variables containing 22,867 deals submitted until 2014 while the second file had 75 variables with 37,196 deals submitted until 2016. These variables can be broadly categorized as insured attributes, broker attributes, deal attributes, and identifiers.
* Insured attributes include details of insured property like insured id, insured state, insured city, insured region, the insured line of business, economic activity.
* Broker attributes are details like broker id, broker state, broker city, broker region and broker segment relating to brokers who made the submission.
* Deal attributes provide more details about the deal submitted like the creation date of the deal, the inception and expiration date of the deal, granular details about the status of the deal, the underwriter who reviewed the deal and various other monetary variables like sum insured 100, the commission rate, the sum insured by covered etc.

WHAT METHODS DID YOU APPLY?

Following methods/techniques were used:

1. Data Cleaning and manipulation

2. Feature engineering

3. Dummy variables

4. Exploratory data analysis

5. Classification algorithms

a. Logistic Regression

b. Decision Trees

c. Random Forest

d. Gradient Boosting Machines

6. Cross validation

7. Evaluation metrics like confusion matrix

WHAT TOOLS DID YOU USE TO WORK WITH THE DATA?

• SQL

• R

• Python

• Excel

• Tableau

WHAT WERE THE RESULTS?

Some of the key results were:

* Gradient boosting was the best performing model, on implementation would increase the overall hit ratio to 10.14%, with the same allocated resources
* Lesser the number of days between creation and inception of a deal, more probable it is to get bound
* The recency of success of the broker plays an important role in determining the probability of his/her deal getting bound
* Deals from Insureds who have had high success rate in the past (2009-2013) are more likely to bind