Scenario: A bank in Portugal currently calls all prospects in their database for marketing activities. As a direct result of these sales calls some prospects decide to do business with the bank. Each call costs $5 and the bank is losing money. You have been hired to make the bank’s marketing efforts more efficient and therefore more profitable. The prospect list has been merged with other relevant customer information that the bank collects.

Process: First, we turned the revenue column into a binary column. We set this new column, posorneg, equal to one if money was made, and equal to zero if money was lost. We then built a logistic model using all of the reasonable predictors (identifier columns were ignored). This logistic model only predicts binary Y variables, so it returned the odds of making money off a call (this is binary, since money can only be gained or lost if a call is made). The model learned on the training set, and then we applied that model to the testing set to see if it was accurate. Upon running the code below on data2.xlsx, a new tab is created in the excel workbook which states whether a given person should be called or not (1=call, 0=do not call). Profit was maximized if the odds of making a sale were greater than .22, so that was set as the cutoff point. This took us from a loss to a profit of about $11,000.

**proc import out = work.train datafile = "E:\Marketing Analytics\FeldmanFinal\data2" dbms = xlsx replace;**

**sheet = 'Training';**

**run;**

**proc import out = work.validate datafile = "E:\Marketing Analytics\FeldmanFinal\data2" dbms = xlsx replace;**

**sheet = 'Validation';**

**run;**

**proc import out = work.validate2 datafile = "E:\Marketing Analytics\FeldmanFinal\data2" dbms = xlsx replace;**

**sheet = 'Validation2';**

**run;**

**proc logistic data = work.Train descending;**

**class job marital education default housing loan contact mon beencalled poutcome;**

**model posorneg = age job marital education default housing loan**

**contact mon beencalled days days\*beencalled poutcome**

**emp\_var\_rate cons\_price\_idx**

**cons\_conf\_idx euribor3m nr\_employed**

**poutcome\*contact contact\*days**

**/ selection = stepwise;**

**output out= work.predictions p = prob;**

**store work.model;**

**run; quit;**

**proc plm source = work.model;**

**score data=work.validate out=work.validate / ilink;**

**run;**

**proc means data=work.validate2 (WHERE=(Predicted>.22)) sum;**

**var profit;**

**run;**

**data validatethree;**

**set validate;**

**if Predicted >.22 then call = 1;**

**else call = 0;**

**keep id call;**

**run;**