Our results: Which customers will accept offers?

Below is the summary of our GLM predictive model.

What are the most influential variables that allow us to predict this response?

How well can we make predictions using this model?

A simple way to judge classification performance is the confusion matrix which breaks down the misclassification rate. Look at the confusion matrix in the validation sets result. The row is the true value of y, the column is the predicted value of y.

```
>summary(glm_model)
Model Details:
==============

H2OBinomialModel: glm
Model Key:  GLM_model_R_1457656970445_5
GLM Model: summary
    family  link             regularization number_of_predictors_total
number_of_active_predictors number_of_iterations training_frame
1 binomial logit Lasso (lambda = 1.127E-4
)                        63                          57                 101         RTM
P_5

H2OBinomialMetrics: glm
** Reported on training data. **

MSE:  0.07757775
R^2:  0.221004
LogLoss:  0.2747483
AUC:  0.7940001
Gini:  0.5880003
Null Deviance:  21611.94
Residual Deviance:  16915.7
AIC:  17031.7

Confusion Matrix for F1-optimal threshold:
          no  yes    Error         Rate
no     24816 2515 0.092020  =2515/27331
yes     1510 1943 0.437301   =1510/3453
Totals 26326 4458 0.130750  =4025/30784

Maximum Metrics: Maximum metrics at their respective thresholds
                     metric threshold    value idx
1                    max f1  0.206071 0.491215 211
2                    max f2  0.149859 0.545716 243
3              max f0point5  0.413064 0.506541 118
4              max accuracy  0.521580 0.902157  85
5             max precision  0.873649 1.000000   0
6          max absolute_MCC  0.206071 0.422074 211
7 max min_per_class_accuracy  0.076867 0.722270 306

H2OBinomialMetrics: glm
```



```
** Reported on validation data. **

MSE:  0.08130666
R^2:  0.1955733
LogLoss:  0.2845088
AUC:  0.7889895
Gini:  0.577979
Null Deviance:  7386.88
Residual Deviance:  5920.06
AIC:  6036.06

Confusion Matrix for F1-optimal threshold:
          no  yes    Error         Rate
no      8400  817 0.088641    =817/9217
yes      549  638 0.462511    =549/1187
Totals  8949 1455 0.131296  =1366/10404

Maximum Metrics: Maximum metrics at their respective thresholds
                      metric threshold    value idx
1                     max f1  0.222369 0.482967 202
2                     max f2  0.125944 0.535609 255
3               max f0point5  0.413343 0.479589 114
4               max accuracy  0.492893 0.897347  89
5              max precision  0.871053 1.000000   0
6           max absolute_MCC  0.222369 0.411435 202
7 max min_per_class_accuracy  0.077271 0.715249 302

Scoring History:
             timestamp   duration iteration log_likelihood objective
1 2016-03-11 11:13:48  0.000 sec         0    10805.97080   0.35103
2 2016-03-11 11:13:49  0.205 sec         1     9114.07135   0.29647
3 2016-03-11 11:13:49  0.220 sec         2     8877.79091   0.28889
4 2016-03-11 11:13:49  0.237 sec         3     8714.62684   0.28365
5 2016-03-11 11:13:49  0.256 sec         4     8622.26183   0.28070

---
              timestamp   duration iteration log_likelihood objective
16 2016-03-11 11:13:51  2.312 sec        64     8476.07325   0.27626
17 2016-03-11 11:13:51  2.562 sec        72     8470.66450   0.27610
18 2016-03-11 11:13:51  2.826 sec        80     8466.43715   0.27598
19 2016-03-11 11:13:51  3.044 sec        88     8463.21520   0.27589
20 2016-03-11 11:13:52  3.279 sec        96     8459.99344   0.27580
21 2016-03-11 11:13:52  3.560 sec       101     8457.85074   0.27546

Variable Importances: (Extract with `h2o.varimp`)
=================================================

Standardized Coefficient Magnitudes: standardized coefficient magnitudes
           names coefficients sign
1      month.may     0.628617  NEG
2      month.mar     0.615790  POS
3   emp.var.rate     0.579233  NEG
4    nr.employed     0.364999  NEG
5 cons.price.idx     0.319248  POS

---
              names coefficients sign
57        month.aug     0.000084  POS
58 job.entrepreneur     0.000000  POS
59   job.management     0.000000  POS
60        month.apr     0.000000  POS
61        month.oct     0.000000  POS
62  marital.married     0.000000  POS
```

