Code

Prediction of Students at Risk on 5th Semester

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2018-06-27

Open Libraries.

Hide

```
library("mlbench")
library("caret")
library("randomForest")
library("lattice")
library("ggplot2")
library("rpart")
library("e1071")
library("caret", lib.loc="/Library/Frameworks/R.framework/Versions/3.4/Resources/library")
```

Random Forest model using less variables for semester 6

Hide

```
colnames(dfDataSet4YGImpute) <- c("FourYG", "One.CSCI101","One.MATH111","Two.CSCI261","Two.MATH112","Two.MATH201","Three.CSCI262","Three.MATH213","Four.CSCI341","Four.CSCI358","Four.MATH225","Five.CSCI306","Five.CSCI403","Five.MATH332","Six.CSCI406","Seven.CSCI370","Eight.CSCI400","Eight.CSCI442")
LessVariablesSet.Sem5 <- dfDataSet4YGImpute
```

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```
LessVariablesSet.Sem5
```

	Fou… <fctr>	One.CSCI101 <dbl>	One.MATH… <dbl>	Two.CSCI261 <dbl>	Two.MATH… <dbl>	Two.MATH… <dbl>	Three.CSCI26 <dbl
1	Yes	4.000000	3.000000	4.000000	2.000000	3.000000	3.00000
2	No	3.625546	3.000000	4.000000	2.000000	3.000000	3.60393

5	Yes	3.776819	3.000000	4.000000	3.000000	3.000000	3.66579
6	Yes	4.000000	3.000000	3.000000	3.000000	2.000000	3.00000
7	Yes	4.000000	4.000000	4.000000	4.000000	4.000000	4.00000
8	Yes	4.000000	3.000000	3.000000	4.000000	3.790084	4.00000
10	Yes	3.328175	3.000000	3.000000	2.000000	1.000000	2.98414
11	Yes	4.000000	3.000000	4.000000	3.000000	3.000000	4.00000
12	Yes	4.000000	2.000000	3.000000	3.000000	2.000000	4.00000
13	Yes	3.000000	4.000000	4.000000	3.000000	2.000000	3.00000

1-10 of 396 rows | 1-8 of 18 columns Previous **1** 2 3 4 5 6 … 40 Next

Create data partitions and remove variables to leave only classes before 6th semester.

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```
# Creates Data Partitions and removes variables
inTrainingLess.Sem5 <- createDataPartition(LessVariablesSet.Sem5$FourYG, p = 0.80, li
st = FALSE)
LessVariablesSet.Sem5 <- LessVariablesSet[-(2:3)]
LessVariablesSet.Sem5 <- LessVariablesSet[-(3)]
LessVariablesSet.Sem5 <- LessVariablesSet[-(5)]
LessVariablesSet.Sem5 <- LessVariablesSet[-(7)]
LessVariablesSet.Sem5 <- LessVariablesSet[-(11)]
LessVariablesSet.Sem5 <- LessVariablesSet[-(10:12)]
str(LessVariablesSet.Sem5)
```

```
'data.frame':   396 obs. of  9 variables:
 $ FourYG       : Factor w/ 2 levels "No","Yes": 2 1 2 2 2 2 2 2 2 2 ...
 $ Two.CSCI261  : num  4 4 4 3 4 3 3 4 3 4 ...
 $ Two.MATH201  : num  3 3 3 2 4 ...
 $ Three.CSCI262: num  3 3.6 3.67 3 4 ...
 $ Four.CSCI341 : num  2 3.1 3.66 3 4 ...
 $ Four.CSCI358 : num  4 3.1 3.72 2 4 ...
 $ Five.CSCI306 : num  3 3.62 3.74 4 4 ...
 $ Five.CSCI403 : num  4 3.9 4 4 4 ...
 $ Five.MATH332 : num  3 2.56 2.78 3 4 ...
```

Hide

```
# Creates Training data Set
trainingLess.Sem5 <- LessVariablesSet.Sem5[inTrainingLess.Sem5, ]
# Creates Testing data Set
testingLess.Sem5 <- LessVariablesSet.Sem5[-inTrainingLess.Sem5, ]
# Data Set with less varialbes
head(LessVariablesSet.Sem5)
```

	Fou... <fctr>	Two.CSCI261 <dbl>	Two.MATH... <dbl>	Three.CSCI262 <dbl>	Four.CSCI341 <dbl>	Four.CSCI358 <dbl>	Five.CSCI3 <dl
1	Yes	4	3.000000	3.000000	2.000000	4.000000	3.0000
2	No	4	3.000000	3.603932	3.100057	3.099580	3.6212
5	Yes	4	3.000000	3.665798	3.664659	3.720739	3.7434
6	Yes	3	2.000000	3.000000	3.000000	2.000000	4.0000
7	Yes	4	4.000000	4.000000	4.000000	4.000000	4.0000
8	Yes	3	3.790084	4.000000	3.517370	3.942883	4.0000

6 rows | 1-8 of 9 columns

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```
trainingLess.Sem5
```

	Fou... <fctr>	Two.CSCI261 <dbl>	Two.MATH... <dbl>	Three.CSCI262 <dbl>	Four.CSCI341 <dbl>	Four.CSCI358 <dbl>	Five.CS
5	Yes	4.000000	3.000000	3.665798	3.664659	3.720739	3.74
6	Yes	3.000000	2.000000	3.000000	3.000000	2.000000	4.00
7	Yes	4.000000	4.000000	4.000000	4.000000	4.000000	4.00
8	Yes	3.000000	3.790084	4.000000	3.517370	3.942883	4.00
10	Yes	3.000000	1.000000	2.984141	3.000000	2.166370	3.05
11	Yes	4.000000	3.000000	4.000000	4.000000	4.000000	4.00
12	Yes	3.000000	2.000000	4.000000	3.000000	4.000000	4.00
13	Yes	4.000000	2.000000	3.000000	3.000000	3.000000	4.00
14	No	3.000000	2.000000	2.000000	2.000000	4.000000	3.00
16	Yes	4.000000	3.000000	4.000000	4.000000	4.000000	4.00

1-10 of 318 rows | 1-8 of 9 columns Previous **1** 2 3 4 5 6 … 32 Next

Hide

```
testingLess.Sem5
```

	Fou…	Two.CSCI261	Two.MATH…	Three.CSCI262	Four.CSCI341	Four.CSCI358	Five.CS(
	<fctr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	
1	Yes	4.000000	3.000000	3.000000	2.000000	4.000000	3.00
2	No	4.000000	3.000000	3.603932	3.100057	3.099580	3.62
20	Yes	4.000000	3.014598	3.000000	3.000000	4.000000	4.00
25	No	4.000000	2.000000	4.000000	2.000000	2.000000	2.00
29	Yes	3.000000	3.000000	3.000000	4.000000	2.000000	1.00
57	No	4.000000	3.000000	4.000000	3.000000	3.000000	3.00
59	No	4.000000	2.000000	2.000000	1.000000	1.000000	3.30
61	No	0.500000	2.245680	2.873061	1.888522	2.412753	2.94
62	Yes	4.000000	2.000000	4.000000	3.000000	4.000000	3.00
63	Yes	4.000000	2.700000	3.000000	3.000000	3.000000	3.30

1-10 of 78 rows | 1-8 of 9 columns Previous **1** 2 3 4 5 6 … 8 Next

Regresion Partition with method “class” for less variables for 5th semester courses.

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```
FourYG.rp.Less.Sem5 = rpart(FourYG ~ ., data=trainingLess.Sem5, method = "class")
FourYG.rp.Less.Sem5
```

```
n= 318

node), split, n, loss, yval, (yprob)
      * denotes terminal node

 1) root 318 90 Yes (0.2830189 0.7169811)
   2) Five.CSCI306< 2.15 16  2 No (0.8750000 0.1250000) *
   3) Five.CSCI306>=2.15 302 76 Yes (0.2516556 0.7483444)
     6) Three.CSCI262< 2.779332 31 14 No (0.5483871 0.4516129)
      12) Two.MATH201< 2.85 23  7 No (0.6956522 0.3043478) *
      13) Two.MATH201>=2.85 8  1 Yes (0.1250000 0.8750000) *
     7) Three.CSCI262>=2.779332 271 59 Yes (0.2177122 0.7822878)
      14) Five.CSCI403< 3.460277 36 15 Yes (0.4166667 0.5833333)
        28) Five.CSCI306< 3.716578 29 14 No (0.5172414 0.4827586)
          56) Five.MATH332< 2.111122 15  4 No (0.7333333 0.2666667) *
          57) Five.MATH332>=2.111122 14  4 Yes (0.2857143 0.7142857) *
        29) Five.CSCI306>=3.716578 7  0 Yes (0.0000000 1.0000000) *
      15) Five.CSCI403>=3.460277 235 44 Yes (0.1872340 0.8127660) *
```

Hide

```
printcp(FourYG.rp.Less.Sem5)
```

```
Classification tree:
rpart(formula = FourYG ~ ., data = trainingLess.Sem5, method = "class")

Variables actually used in tree construction:
[1] Five.CSCI306  Five.CSCI403  Five.MATH332  Three.CSCI262 Two.MATH201

Root node error: 90/318 = 0.28302

n= 318

        CP nsplit rel error  xerror     xstd
1 0.133333      0   1.00000 1.00000 0.089255
2 0.050000      1   0.86667 1.00000 0.089255
3 0.025926      3   0.76667 0.96667 0.088330
4 0.010000      6   0.68889 0.94444 0.087686
```

Summary for regression partition.

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```
summary(FourYG.rp.Less.Sem5)
```

```
Call:
rpart(formula = FourYG ~ ., data = trainingLess.Sem5, method = "class")
  n= 318

          CP nsplit rel error    xerror       xstd
1 0.13333333      0 1.0000000 1.0000000 0.08925501
2 0.05000000      1 0.8666667 1.0000000 0.08925501
3 0.02592593      3 0.7666667 0.9666667 0.08833027
4 0.01000000      6 0.6888889 0.9444444 0.08768622

Variable importance
 Five.CSCI306 Three.CSCI262  Five.CSCI403  Five.MATH332   Two.MATH201  Four.CSCI341
Four.CSCI358   Two.CSCI261
           40            15            11            11            10             6
4             3

Node number 1: 318 observations,    complexity param=0.1333333
  predicted class=Yes  expected loss=0.2830189  P(node) =1
    class counts:    90   228
   probabilities: 0.283 0.717
  left son=2 (16 obs) right son=3 (302 obs)
  Primary splits:
      Five.CSCI306  < 2.15     to the left,  improve=11.808260, (0 missing)
      Five.CSCI403  < 3.448139 to the left,  improve= 8.370112, (0 missing)
      Two.MATH201   < 2.460774 to the left,  improve= 8.351350, (0 missing)
      Four.CSCI358  < 2.716514 to the left,  improve= 7.191370, (0 missing)
      Three.CSCI262 < 2.779332 to the left,  improve= 7.093058, (0 missing)

Node number 2: 16 observations
  predicted class=No   expected loss=0.125  P(node) =0.05031447
    class counts:    14     2
   probabilities: 0.875 0.125

Node number 3: 302 observations,    complexity param=0.05
  predicted class=Yes  expected loss=0.2516556  P(node) =0.9496855
    class counts:    76   226
   probabilities: 0.252 0.748
  left son=6 (31 obs) right son=7 (271 obs)
  Primary splits:
      Three.CSCI262 < 2.779332 to the left,  improve=6.083543, (0 missing)
      Two.MATH201   < 2.460774 to the left,  improve=5.965326, (0 missing)
      Four.CSCI358  < 1.85     to the left,  improve=5.275627, (0 missing)
      Five.CSCI306  < 3.704042 to the left,  improve=4.828336, (0 missing)
      Five.CSCI403  < 3.448139 to the left,  improve=3.963796, (0 missing)
  Surrogate splits:
      Four.CSCI358 < 0.85     to the left,  agree=0.904, adj=0.065, (0 split)
      Four.CSCI341 < 0.6      to the left,  agree=0.901, adj=0.032, (0 split)
```

```
Node number 6: 31 observations,    complexity param=0.05
  predicted class=No   expected loss=0.4516129  P(node) =0.09748428
    class counts:    17    14
   probabilities: 0.548 0.452
  left son=12 (23 obs) right son=13 (8 obs)
  Primary splits:
      Two.MATH201  < 2.85     to the left,  improve=3.865708, (0 missing)
      Four.CSCI358 < 2.15     to the left,  improve=2.183899, (0 missing)
      Five.CSCI403 < 3.805304 to the right, improve=1.869124, (0 missing)
      Five.CSCI306 < 3.008861 to the left,  improve=0.813172, (0 missing)
      Four.CSCI341 < 2.682523 to the right, improve=0.455679, (0 missing)
  Surrogate splits:
      Four.CSCI341 < 3.5      to the left,  agree=0.806, adj=0.25, (0 split)
      Five.MATH332 < 1.5      to the right, agree=0.806, adj=0.25, (0 split)

Node number 7: 271 observations,    complexity param=0.02592593
  predicted class=Yes  expected loss=0.2177122  P(node) =0.8522013
    class counts:    59   212
   probabilities: 0.218 0.782
  left son=14 (36 obs) right son=15 (235 obs)
  Primary splits:
      Five.CSCI403 < 3.460277 to the left,  improve=3.286559, (0 missing)
      Five.MATH332 < 1.5      to the left,  improve=3.163609, (0 missing)
      Five.CSCI306 < 3.704042 to the left,  improve=2.469819, (0 missing)
      Two.MATH201  < 2.371775 to the left,  improve=2.052260, (0 missing)
      Four.CSCI358 < 3.386122 to the left,  improve=1.951435, (0 missing)
  Surrogate splits:
      Two.MATH201 < 0.85     to the left,  agree=0.875, adj=0.056, (0 split)

Node number 12: 23 observations
  predicted class=No   expected loss=0.3043478  P(node) =0.07232704
    class counts:    16     7
   probabilities: 0.696 0.304

Node number 13: 8 observations
  predicted class=Yes  expected loss=0.125  P(node) =0.02515723
    class counts:     1     7
   probabilities: 0.125 0.875

Node number 14: 36 observations,    complexity param=0.02592593
  predicted class=Yes  expected loss=0.4166667  P(node) =0.1132075
    class counts:    15    21
   probabilities: 0.417 0.583
  left son=28 (29 obs) right son=29 (7 obs)
  Primary splits:
      Five.CSCI306 < 3.716578 to the left,  improve=3.017241, (0 missing)
```

```
      Five.MATH332 < 2.111122 to the left,  improve=2.722222, (0 missing)
      Two.CSCI261  < 3.935162 to the left,  improve=2.344156, (0 missing)
      Four.CSCI341 < 2.468953 to the left,  improve=1.529091, (0 missing)
      Two.MATH201  < 2.732976 to the left,  improve=1.406355, (0 missing)
  Surrogate splits:
      Five.CSCI403 < 3.333953 to the left,  agree=0.833, adj=0.143, (0 split)
      Five.MATH332 < 3.201832 to the left,  agree=0.833, adj=0.143, (0 split)

Node number 15: 235 observations
  predicted class=Yes  expected loss=0.187234  P(node) =0.7389937
    class counts:    44   191
   probabilities: 0.187 0.813

Node number 28: 29 observations,    complexity param=0.02592593
  predicted class=No   expected loss=0.4827586  P(node) =0.09119497
    class counts:    15    14
   probabilities: 0.517 0.483
  left son=56 (15 obs) right son=57 (14 obs)
  Primary splits:
      Five.MATH332 < 2.111122 to the left,  improve=2.9018060, (0 missing)
      Two.CSCI261  < 3.935162 to the left,  improve=2.2180530, (0 missing)
      Four.CSCI341 < 2.468953 to the left,  improve=1.7716480, (0 missing)
      Two.MATH201  < 2.802334 to the left,  improve=0.8827586, (0 missing)
      Four.CSCI358 < 3.02763  to the left,  improve=0.8362940, (0 missing)
  Surrogate splits:
      Two.CSCI261  < 3.455126 to the left,  agree=0.724, adj=0.429, (0 split)
      Four.CSCI341 < 2.468953 to the left,  agree=0.724, adj=0.429, (0 split)
      Four.CSCI358 < 2.286852 to the left,  agree=0.690, adj=0.357, (0 split)
      Five.CSCI306 < 3.336597 to the left,  agree=0.655, adj=0.286, (0 split)
      Five.CSCI403 < 3.215924 to the right, agree=0.621, adj=0.214, (0 split)

Node number 29: 7 observations
  predicted class=Yes  expected loss=0  P(node) =0.02201258
    class counts:     0     7
   probabilities: 0.000 1.000

Node number 56: 15 observations
  predicted class=No   expected loss=0.2666667  P(node) =0.04716981
    class counts:    11     4
   probabilities: 0.733 0.267

Node number 57: 14 observations
  predicted class=Yes  expected loss=0.2857143  P(node) =0.04402516
    class counts:     4    10
   probabilities: 0.286 0.714
```

Prediction for regretion partition for less courses before Semester 5.

Hide

```
predictionsLess.Sem5 = predict(FourYG.rp.Less.Sem5, testingLess.Sem5, type="class")
table(testingLess.Sem5$FourYG, predictionsLess.Sem5)
```

```
     predictionsLess.Sem5
      No Yes
  No  11  11
  Yes  5  51
```

Confusion Matrix

Hide

```
library(caret)
confusionMatrix(table(predictionsLess.Sem5, testingLess.Sem5$FourYG))
```

```
Confusion Matrix and Statistics


predictionsLess.Sem5 No Yes
                 No  11   5
                 Yes 11  51

               Accuracy : 0.7949
                 95% CI : (0.6884, 0.878)
    No Information Rate : 0.7179
    P-Value [Acc > NIR] : 0.08014

                  Kappa : 0.4478
 Mcnemar's Test P-Value : 0.21130

            Sensitivity : 0.5000
            Specificity : 0.9107
         Pos Pred Value : 0.6875
         Neg Pred Value : 0.8226
             Prevalence : 0.2821
         Detection Rate : 0.1410
   Detection Prevalence : 0.2051
      Balanced Accuracy : 0.7054

       'Positive' Class : No
```

Hide

```
min(FourYG.rp.Less.Sem5$cptable[,"xerror"])
```

```
[1] 0.9444444
```

Hide

```
which.min(FourYG.rp.Less.Sem5$cptable[,"xerror"])
```

```
4
4
```

Get the cost complecity parameter of the record

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```
FourYG.cp.Less.Sem5 = FourYG.rp.Less.Sem5$cptable[2,"CP"]
FourYG.cp.Less.Sem5
```

```
[1] 0.05
```

Prune tree.

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```
prune.tree.Less.Sem5 = prune(FourYG.rp.Less.Sem5, cp = FourYG.cp.Less.Sem5)
predictionsLessPrune.Sem5 = predict(prune.tree.Less.Sem5, testingLess.Sem5, type="cla
ss")
table(testingLess.Sem5$FourYG, predictionsLessPrune.Sem5)
```

```
     predictionsLessPrune.Sem5
      No Yes
  No   1  21
  Yes  2  54
```

Confusion Matrix

Hide

```
confusionMatrix(table(predictionsLessPrune.Sem5, testingLess.Sem5$FourYG))
```

```
Confusion Matrix and Statistics


predictionsLessPrune.Sem5 No Yes
                       No   1   2
                       Yes 21  54

               Accuracy : 0.7051
                 95% CI : (0.5911, 0.803)
    No Information Rate : 0.7179
    P-Value [Acc > NIR] : 0.6527659

                  Kappa : 0.0132
 Mcnemar's Test P-Value : 0.0001746

            Sensitivity : 0.04545
            Specificity : 0.96429
         Pos Pred Value : 0.33333
         Neg Pred Value : 0.72000
             Prevalence : 0.28205
         Detection Rate : 0.01282
   Detection Prevalence : 0.03846
      Balanced Accuracy : 0.50487

       'Positive' Class : No
```

Top 10 variables

Hide

```
str(LessVariablesSet.Sem5)
```

```
'data.frame':   396 obs. of  9 variables:
 $ FourYG       : Factor w/ 2 levels "No","Yes": 2 1 2 2 2 2 2 2 2 2 ...
 $ Two.CSCI261  : num  4 4 4 3 4 3 3 4 3 4 ...
 $ Two.MATH201  : num  3 3 3 2 4 ...
 $ Three.CSCI262: num  3 3.6 3.67 3 4 ...
 $ Four.CSCI341 : num  2 3.1 3.66 3 4 ...
 $ Four.CSCI358 : num  4 3.1 3.72 2 4 ...
 $ Five.CSCI306 : num  3 3.62 3.74 4 4 ...
 $ Five.CSCI403 : num  4 3.9 4 4 4 ...
 $ Five.MATH332 : num  3 2.56 2.78 3 4 ...
```

Random Forest method with less variables on 5th semester.

Training

Hide

```
FourYG.rf.Less.Sem5 <- randomForest(FourYG ~Two.CSCI261+Two.MATH201+Four.CSCI341+Four
.CSCI358+Five.CSCI306+Five.CSCI403+Five.MATH332 , data = trainingLess.Sem5)
FourYG.rf.Less.Sem5
```

```
Call:
 randomForest(formula = FourYG ~ Two.CSCI261 + Two.MATH201 + Four.CSCI341 +      Four
.CSCI358 + Five.CSCI306 + Five.CSCI403 + Five.MATH332,      data = trainingLess.Sem5)
               Type of random forest: classification
                     Number of trees: 500
No. of variables tried at each split: 2

        OOB estimate of  error rate: 30.82%
Confusion matrix:
    No Yes class.error
No  23  67   0.7444444
Yes 31 197   0.1359649
```

Prediction

Hide

```
FourYG.rf.prediction.Less.Sem5 <- predict(FourYG.rf.Less.Sem5, testingLess.Sem5)
table(FourYG.rf.prediction.Less.Sem5, testingLess.Sem5$FourYG)
```

```
FourYG.rf.prediction.Less.Sem5 No Yes
                            No  11   8
                            Yes 11  48
```

Importance of variables.

Hide

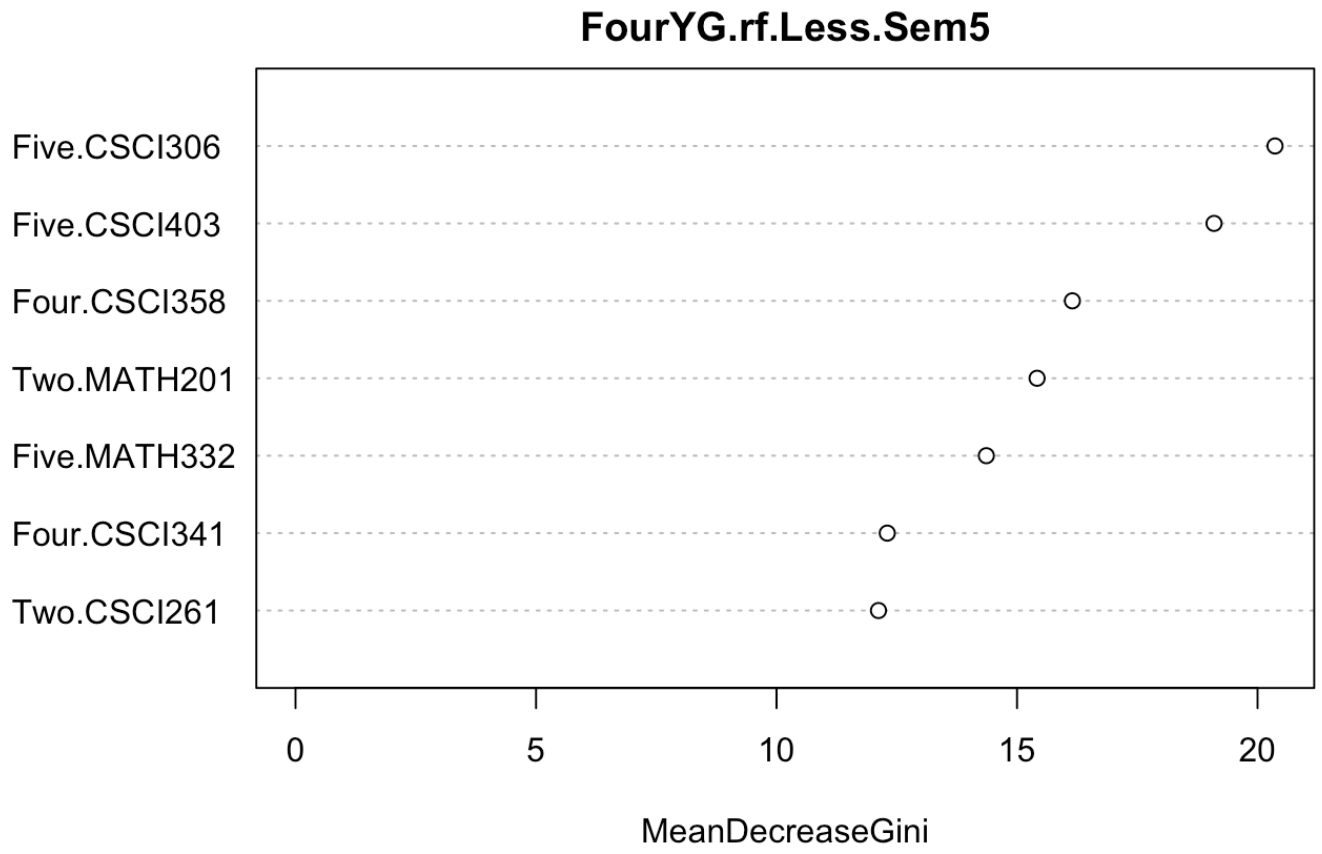
```
importance(FourYG.rf.Less.Sem5)
```

```
             MeanDecreaseGini
Two.CSCI261          12.11959
Two.MATH201          15.41650
Four.CSCI341         12.30205
Four.CSCI358         16.15024
Five.CSCI306         20.36310
Five.CSCI403         19.09542
Five.MATH332         14.36175
```

Plot of importance of Variabels.

Hide

```
varImpPlot(FourYG.rf.Less.Sem5)
```



Confusion Matrix

Hide

```
confusionMatrix(table(FourYG.rf.prediction.Less.Sem5, testingLess.Sem5$FourYG))
```

```
Confusion Matrix and Statistics


FourYG.rf.prediction.Less.Sem5 No Yes
                            No  11   8
                            Yes 11  48

               Accuracy : 0.7564
                 95% CI : (0.646, 0.8465)
    No Information Rate : 0.7179
    P-Value [Acc > NIR] : 0.2685

                  Kappa : 0.3726
 Mcnemar's Test P-Value : 0.6464

            Sensitivity : 0.5000
            Specificity : 0.8571
         Pos Pred Value : 0.5789
         Neg Pred Value : 0.8136
             Prevalence : 0.2821
         Detection Rate : 0.1410
   Detection Prevalence : 0.2436
      Balanced Accuracy : 0.6786

       'Positive' Class : No
```

Logistic Regression method for variable importance

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```
# Template code
# Step 1: Build Logit Model on Training Dataset
FourYG.lr.Less.Sem5 <- glm(FourYG ~Two.CSCI261+Two.MATH201+Four.CSCI341+Four.CSCI358+
Five.CSCI306+Five.CSCI403+Five.MATH332, family= "binomial", data = trainingLess.Sem5)
FourYG.lr.Less.Sem5
```

```
Call:  glm(formula = FourYG ~ Two.CSCI261 + Two.MATH201 + Four.CSCI341 +
    Four.CSCI358 + Five.CSCI306 + Five.CSCI403 + Five.MATH332,
    family = "binomial", data = trainingLess.Sem5)

Coefficients:
 (Intercept)   Two.CSCI261   Two.MATH201  Four.CSCI341  Four.CSCI358  Five.CSCI306  F
ive.CSCI403  Five.MATH332
   -5.268031      0.338626      0.096701     -0.223781      0.380202      0.774678
0.433775      0.006658

Degrees of Freedom: 317 Total (i.e. Null);  310 Residual
Null Deviance:      378.9
Residual Deviance: 333  AIC: 349
```

Hide

```
# Step 2: Predict Y on Test Dataset
predicted.lr.Less.Sem5 <- predict(FourYG.lr.Less.Sem5, testingLess.Sem5, type="respon
se")
```

Variable Importance

Hide

```
gbmImp.Less.Sem5 <- varImp(FourYG.rf.Less.Sem5, scale = FALSE)
gbmImp.Less.Sem5
```

	Overall <dbl>
Two.CSCI261	12.11959
Two.MATH201	15.41650
Four.CSCI341	12.30205
Four.CSCI358	16.15024
Five.CSCI306	20.36310
Five.CSCI403	19.09542
Five.MATH332	14.36175

7 rows