```
options pageno=1 nodate; run;

ods rtf file='C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\LobaOreg tree.rtf';
ods graphics on;

proc import out=work.LAQI
      datafile= "C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\LAQI.csv"
      dbms=csv replace;
   getnames=yes;
   datarow=2;
run;
proc import out = work.pilotI
      datafile = "C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\pilotI.csv"
      dbms=csv replace;
   getnames=yes;
   datarow=2;
run;

title1 'FITTING A CLASSIFICATION TREE TO LICHEN AIR QUALITY DATA';
title2 'Selection of Tree Size.  Random Seed set to 123';
title3 ;
proc hpsplit data=LAQI cvmethod=random(10) seed=123 cvmodelfit plots=all;
     class LobaOreg ReserveStatus;
     model LobaOreg (event='1') =
           TransAspect Elevation Slope ACONIF PctConifCov DegreeDays
           EvapoTransAve EvapoTransDiff MoistIndexAve MoistIndexDiff PrecipAve PrecipDiff
           RelHumidAve RelHumidDiff TempAve TempDiff VapPressAve VapPressDiff PotGlobRadAve
           PotGlobRadDiff ReserveStatus;
     grow gini;
     prune costcomplexity;
run;

title1 'FITTING A CLASSIFICATION TREE TO LICHEN AIR QUALITY DATA';
title2 'Tree with 4 Terminal nodes.  Random Seed set to 123';
title3 ;
proc hpsplit data=LAQI cvmethod=random(10) seed=123 cvmodelfit plots=all;
     class LobaOreg ReserveStatus;
     model LobaOreg (event='1') =
           TransAspect Elevation Slope ACONIF PctConifCov DegreeDays
           EvapoTransAve EvapoTransDiff MoistIndexAve MoistIndexDiff PrecipAve PrecipDiff
           RelHumidAve RelHumidDiff TempAve TempDiff VapPressAve VapPressDiff PotGlobRadAve
           PotGlobRadDiff ReserveStatus;
     grow gini;
     prune costcomplexity (leaves=4);
     code file='C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\Fournodes.sas';
     rules file='C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\FournodesRules.txt';
run;
data lichenpred4(keep=Actual Predicted);
   set pilotI end=eof;
   %include "C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\Fournodes.sas";
   Actual    = LobaOreg;
   Predicted = (P_LobaOreg1 >= 0.5);
run;
title3 "Confusion Matrix Based on Cutoff Value of 0.5";
proc freq data=lichenpred4;
   tables Actual*Predicted / nocol;
run;

title1 'FITTING A CLASSIFICATION TREE TO LICHEN AIR QUALITY DATA';
title2 'Tree with 5 Terminal nodes.  Random Seed set to 123';
title3 ;
proc hpsplit data=LAQI cvmethod=random(10) seed=123 cvmodelfit plots=all;
     class LobaOreg ReserveStatus;
     model LobaOreg (event='1') =
```

```
            TransAspect Elevation Slope ACONIF PctConifCov DegreeDays
            EvapoTransAve EvapoTransDiff MoistIndexAve MoistIndexDiff PrecipAve PrecipDiff
            RelHumidAve RelHumidDiff TempAve TempDiff VapPressAve VapPressDiff PotGlobRadAve
            PotGlobRadDiff ReserveStatus;
      grow gini;
      prune costcomplexity (leaves=5);
      code file='C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\Fivenodes.sas';
      rules file='C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\FivenodeRules.txt';
run;
data lichenpred5(keep=Actual Predicted);
   set pilotI end=eof;
   %include "C:\Users\Richard\Documents\Classes\Stat 5810\2017 Spring STAT 5810\Fivenodes.sas";
   Actual    = LobaOreg;
   Predicted = (P_LobaOreg1 >= 0.5);
run;
title3 "Confusion Matrix Based on Cutoff Value of 0.5";
proc freq data=lichenpred5;
   tables Actual*Predicted / nocol;
run;

ods graphics off;
ods rtf close;

quit;
```