

Red Wines - upper

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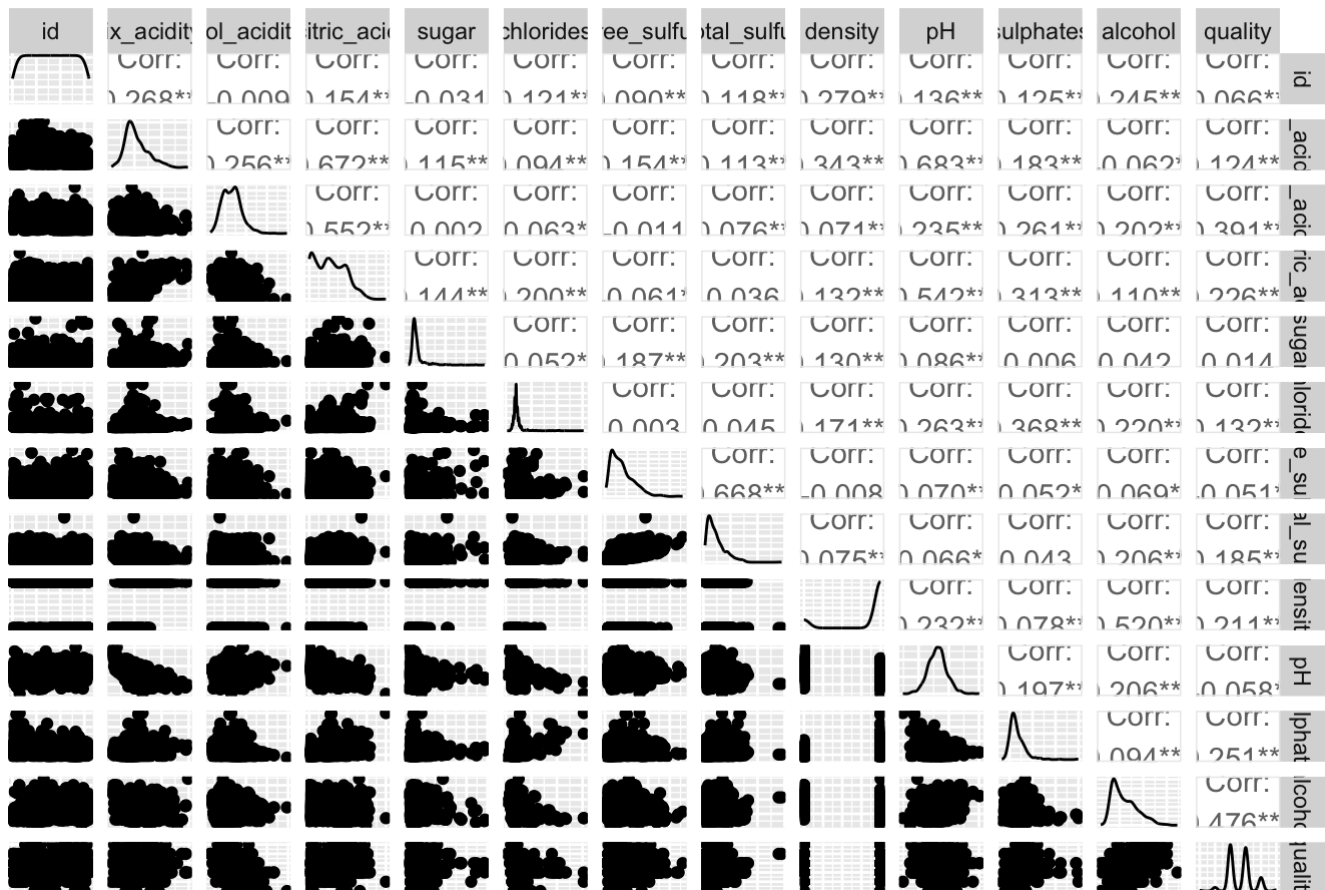
Scatterplot Matrix

```
library("GGally")
ggpairs(red, axisLabels = "none",
        title = "Scatterplot Matrix of Red Wines")
```

```
# corr codes
```

Scatterplot Matrix

Scatterplot Matrix of Red Wines



Create Binary Dependent Variable

```
red$highquality = factor((red$quality >= 6))  
red$highquality <- as.integer(as.logical(red$highquality))
```

Random Forest

```
library("randomForest")
```

```
## randomForest 4.7-1.1
```

```
## Type rfNews() to see new features/changes/bug fixes.
```

```
##  
## Attaching package: 'randomForest'
```

```
## The following object is masked from 'package:ggplot2':  
##  
##     margin
```

```
library("caret")
```

```
## Loading required package: lattice
```

```
library("e1071")  
library("rpart")
```

```
rf <- randomForest(highquality ~ . - quality, data = red, mtry = 4, importance = TRUE, n  
tree = 50, na.action = na.omit)
```

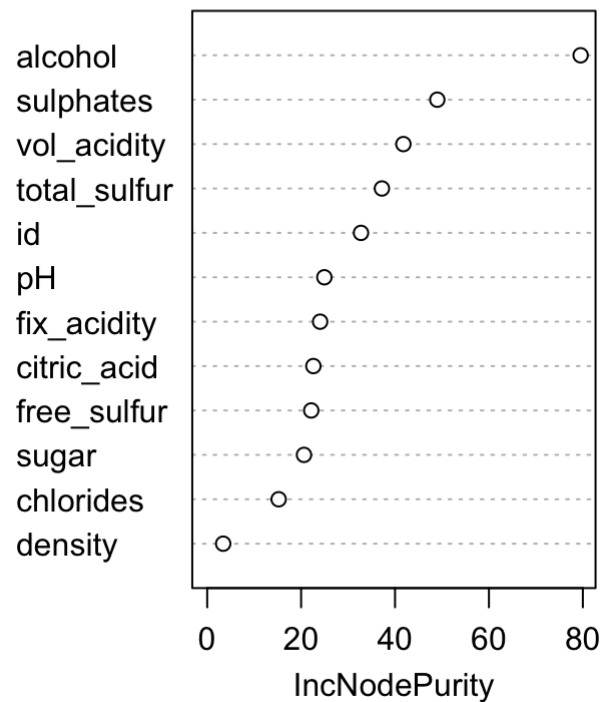
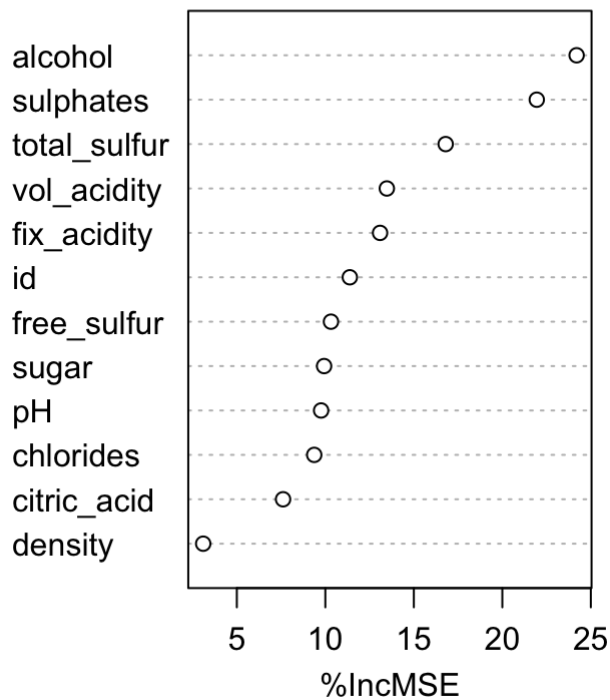
```
## Warning in randomForest.default(m, y, ...): The response has five or fewer  
## unique values. Are you sure you want to do regression?
```

```
print(rf)
```

```
##  
## Call:  
## randomForest(formula = highquality ~ . - quality, data = red,      mtry = 4, importa  
nce = TRUE, ntree = 50, na.action = na.omit)  
##           Type of random forest: regression  
##           Number of trees: 50  
## No. of variables tried at each split: 4  
##  
##           Mean of squared residuals: 0.134849  
##           % Var explained: 45.8
```

```
varImpPlot(rf)
```

rf



Cart

```
library("randomForest")
library("caret")
library("e1071")
library("rpart")
library("rpart.plot")

cartmodel = rpart(highquality ~ . - quality, data = red)
print(cartmodel)
```

```
## n= 1599
##
## node), split, n, deviance, yval
##      * denotes terminal node
##
## 1) root 1599 397.823600 0.5347092
##    2) alcohol< 10.25 842 189.174600 0.3408551
##      4) sulphates< 0.575 353 54.900850 0.1926346 *
##      5) sulphates>=0.575 489 120.920200 0.4478528
##        10) total_sulfur>=50.5 204 41.509800 0.2843137 *
##        11) total_sulfur< 50.5 285 70.049120 0.5649123
##          22) fix_acidity< 10.75 239 59.748950 0.5020921 *
##          23) fix_acidity>=10.75 46 4.456522 0.8913043 *
##    3) alcohol>=10.25 757 141.812400 0.7503303
##      6) alcohol< 11.45 477 107.299800 0.6582809
##        12) sulphates< 0.585 134 32.753730 0.4253731 *
##        13) sulphates>=0.585 343 64.437320 0.7492711
##          26) total_sulfur>=85.5 21 3.238095 0.1904762 *
##          27) total_sulfur< 85.5 322 54.214290 0.7857143 *
##      7) alcohol>=11.45 280 23.585710 0.9071429 *
```

```
prp(cartmodel)
```

