Exam\_1\_Analysis.R

hirsc

Wed Oct 24 20:56:31 2018

library(tidyverse)

## -- Attaching packages ------------------------------ tidyverse 1.2.1 --

## v ggplot2 3.0.0 v purrr 0.2.5  
## v tibble 1.4.2 v dplyr 0.7.6  
## v tidyr 0.8.1 v stringr 1.3.1  
## v readr 1.1.1 v forcats 0.3.0

## -- Conflicts --------------------------------- tidyverse\_conflicts() --  
## x dplyr::filter() masks stats::filter()  
## x dplyr::lag() masks stats::lag()

library(agricolae)  
library(gplots)

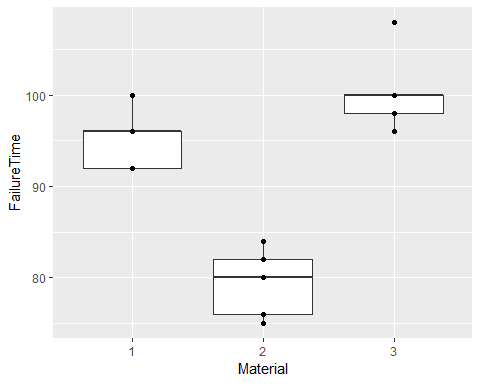
##   
## Attaching package: 'gplots'

## The following object is masked from 'package:stats':  
##   
## lowess

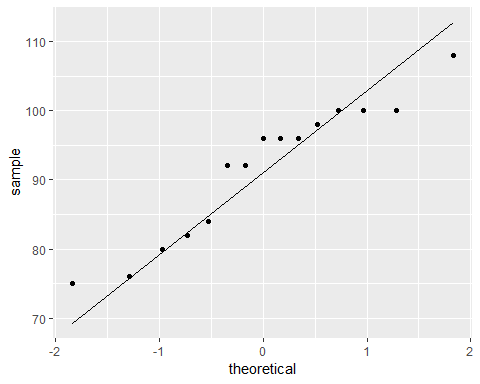
#16  
bat <- read\_csv("BatteryLife.csv")

## Parsed with column specification:  
## cols(  
## Material = col\_integer(),  
## FailureTime = col\_integer()  
## )

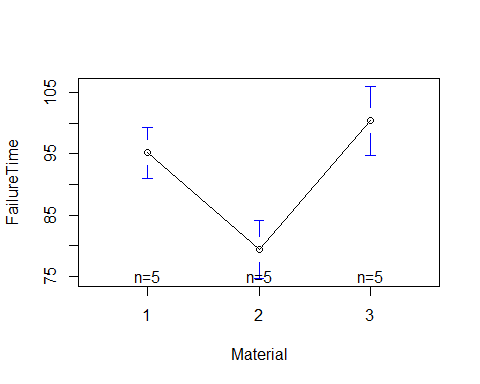
bat$Material <- as.factor(bat$Material)  
bat\_aov <- aov(FailureTime~Material, data = bat)  
  
bat %>%   
 ggplot(aes(x = Material, y = FailureTime))+  
 geom\_boxplot()+  
 geom\_point()



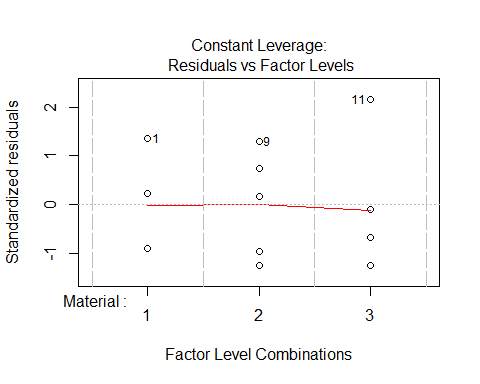
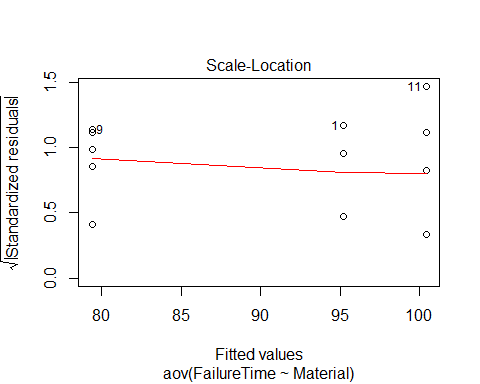
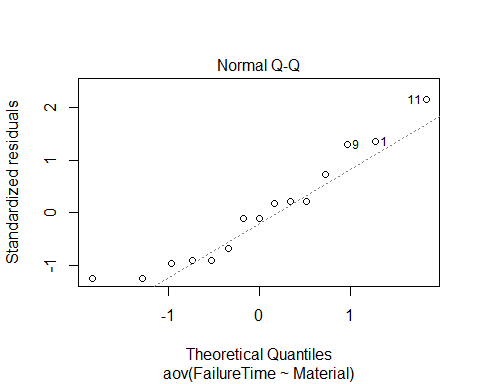
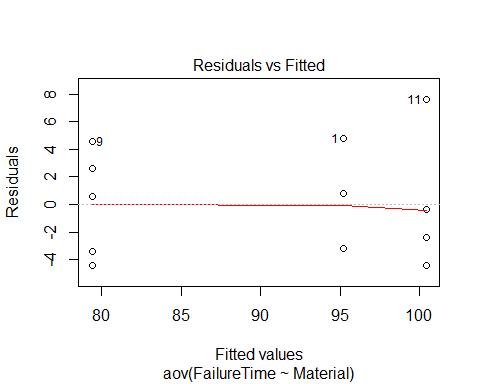
bat %>%   
 ggplot(aes(sample = FailureTime))+  
 geom\_qq()+  
 geom\_qq\_line()



plotmeans(FailureTime ~ Material, data = bat)



plot(bat\_aov)



anova(bat\_aov)

## Analysis of Variance Table  
##   
## Response: FailureTime  
## Df Sum Sq Mean Sq F value Pr(>F)   
## Material 2 1196.1 598.07 38.338 6.141e-06 \*\*\*  
## Residuals 12 187.2 15.60   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

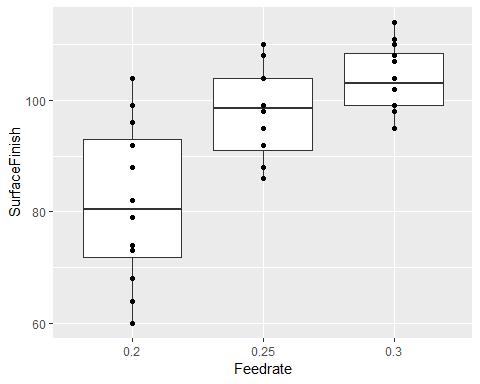
summary(bat\_aov)

## Df Sum Sq Mean Sq F value Pr(>F)   
## Material 2 1196.1 598.1 38.34 6.14e-06 \*\*\*  
## Residuals 12 187.2 15.6   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

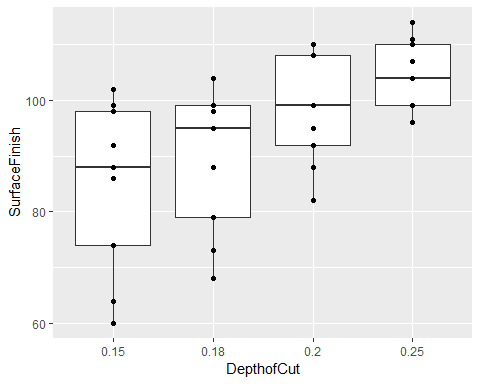
#17  
  
fin <- read\_csv("SurfaceFinish.csv")

## Parsed with column specification:  
## cols(  
## Feedrate = col\_double(),  
## DepthofCut = col\_double(),  
## SurfaceFinish = col\_integer()  
## )

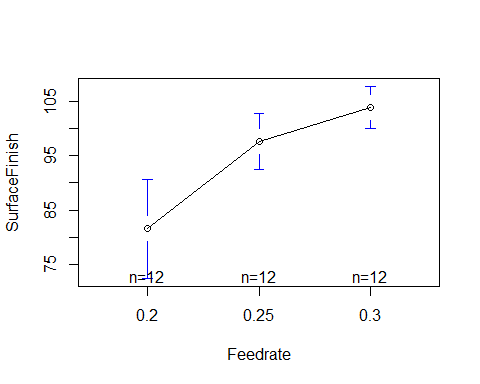
fin$Feedrate <- as.factor(fin$Feedrate)  
fin$DepthofCut <- as.factor(fin$DepthofCut)  
fin\_aov <- aov(SurfaceFinish~DepthofCut\*Feedrate, data = fin)  
  
fin %>%   
 ggplot(aes(x = Feedrate, y = SurfaceFinish))+  
 geom\_boxplot()+  
 geom\_point()



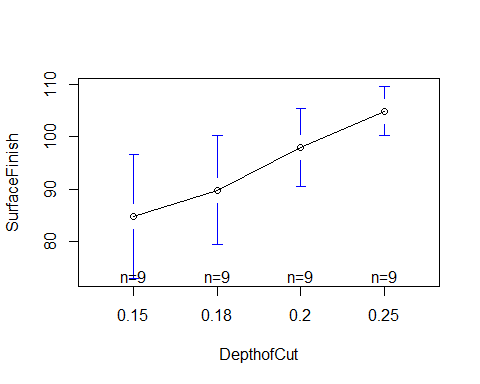
fin %>%   
 ggplot(aes(x = DepthofCut, y = SurfaceFinish))+  
 geom\_boxplot()+  
 geom\_point()



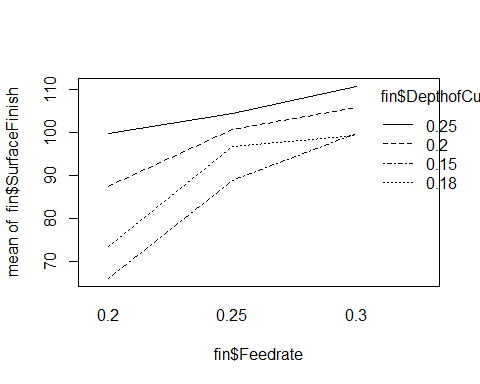
plotmeans(SurfaceFinish~Feedrate, data = fin)



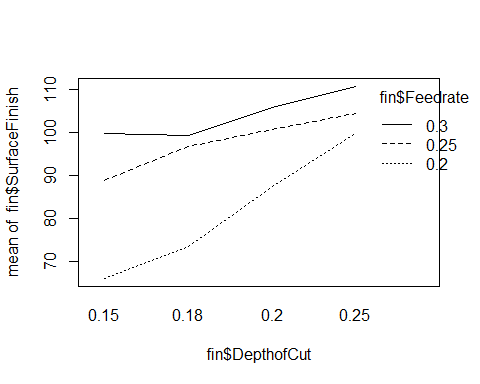
plotmeans(SurfaceFinish~DepthofCut, data = fin)



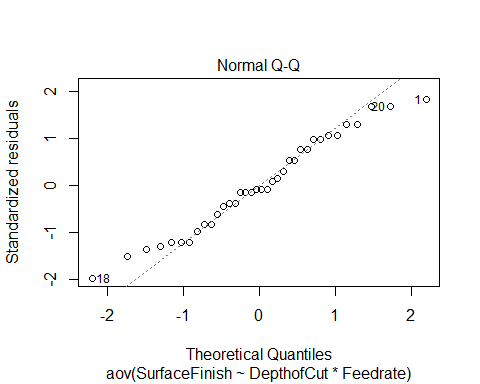
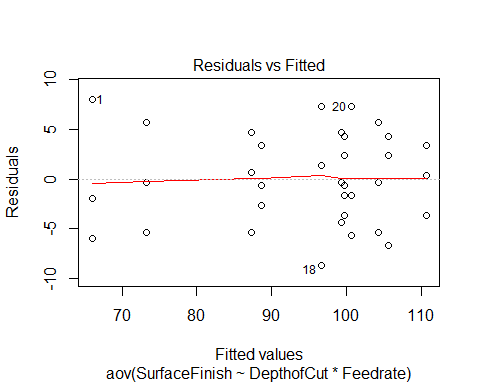
interaction.plot(fin$Feedrate, fin$DepthofCut, fin$SurfaceFinish)



interaction.plot(fin$DepthofCut,fin$Feedrate, fin$SurfaceFinish)



plot(fin\_aov, which = 1:2)



anova(fin\_aov)

## Analysis of Variance Table  
##   
## Response: SurfaceFinish  
## Df Sum Sq Mean Sq F value Pr(>F)   
## DepthofCut 3 2125.11 708.37 24.6628 1.652e-07 \*\*\*  
## Feedrate 2 3160.50 1580.25 55.0184 1.086e-09 \*\*\*  
## DepthofCut:Feedrate 6 557.06 92.84 3.2324 0.01797 \*   
## Residuals 24 689.33 28.72   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1