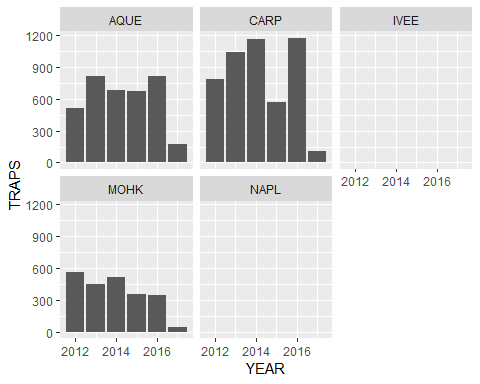
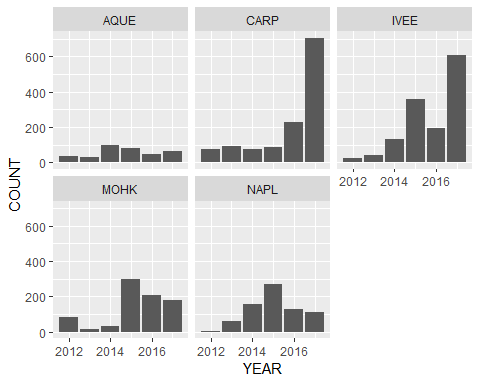
Assignment4\_Lobsters

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#6 run significance tests for lobster size  
lobster\_levene <- leveneTest(SIZE~SITE, data=lobster\_case\_format)  
lobster\_levene

## Levene's Test for Homogeneity of Variance (center = median)  
## Df F value Pr(>F)   
## group 4 8.3893 1.065e-06 \*\*\*  
## 1663   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

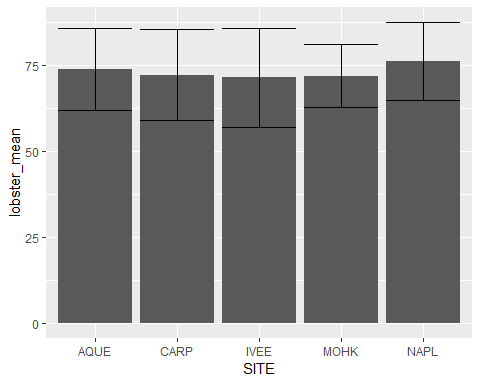
#Variences are not equal check to see if another need to do another test beside anova  
  
lobster\_aov <- aov(SIZE~SITE, data=lobster\_case\_format)  
summary(lobster\_aov)

## Df Sum Sq Mean Sq F value Pr(>F)   
## SITE 4 2355 588.6 3.424 0.0085 \*\*  
## Residuals 1663 285871 171.9   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

lobster\_tukeys <- TukeyHSD(lobster\_aov)  
lobster\_tukeys

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
##   
## Fit: aov(formula = SIZE ~ SITE, data = lobster\_case\_format)  
##   
## $SITE  
## diff lwr upr p adj  
## CARP-AQUE -1.6657352 -6.24294710 2.911477 0.8582355  
## IVEE-AQUE -2.4433772 -7.05292315 2.166169 0.5968998  
## MOHK-AQUE -1.8955224 -7.02720717 3.236162 0.8514711  
## NAPL-AQUE 2.3366205 -3.19311600 7.866357 0.7775633  
## IVEE-CARP -0.7776420 -2.76097123 1.205687 0.8216104  
## MOHK-CARP -0.2297872 -3.23309697 2.773523 0.9995765  
## NAPL-CARP 4.0023556 0.36042398 7.644287 0.0228728  
## MOHK-IVEE 0.5478548 -2.50450730 3.600217 0.9882889  
## NAPL-IVEE 4.7799976 1.09751057 8.462485 0.0037001  
## NAPL-MOHK 4.2321429 -0.08607271 8.550358 0.0579286

## % latex table generated in R 3.5.1 by xtable 1.8-3 package  
## % Thu Nov 15 13:30:52 2018  
## \begin{table}[ht]  
## \centering  
## \begin{tabular}{lrrrrr}  
## \hline  
## & Df & Sum Sq & Mean Sq & F value & Pr($>$F) \\   
## \hline  
## SITE & 4 & 2354.51 & 588.63 & 3.42 & 0.0085 \\   
## Residuals & 1663 & 285871.12 & 171.90 & & \\   
## \hline  
## \end{tabular}  
## \end{table}



# 8 Running test to see if there is a difference between site in 2012 and 2017  
lobster\_MPA\_2012\_17 <- lobster\_size\_edits %>%  
 filter(YEAR=="2012" |YEAR=="2017", SITE=="NAPL"| SITE=="IVEE") %>%  
 as.data.frame() %>%  
 expand.dft(freq="COUNT")  
  
lobster\_nonMPA\_2012\_17 <- lobster\_size\_edits %>%  
 filter(YEAR=="2012" |YEAR=="2017", SITE=="AQUE"| SITE=="MOHK" |SITE=="CARP") %>%  
 as.data.frame() %>%  
 expand.dft(freq="COUNT")