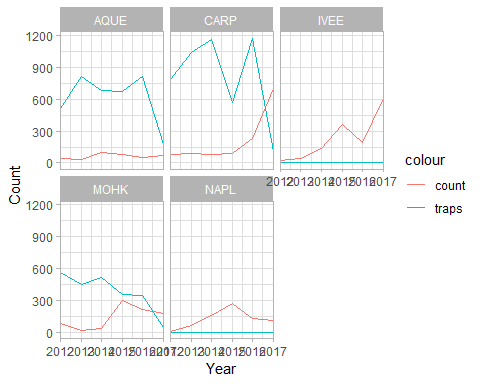
ESM206-assignment4

Claire Madden, Bridget Gibbons, Andrew Paterson

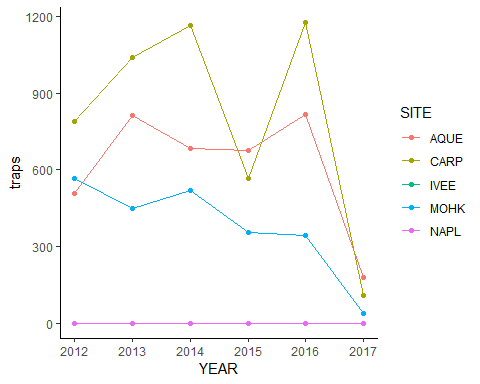
11/12/2018

# Part 1 (Claire)

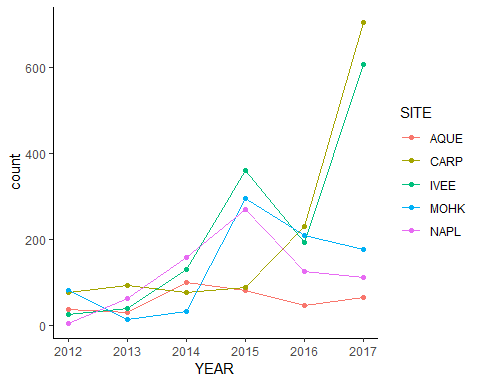
## Joining, by = c("SITE", "YEAR")



traps\_scatter <- ggplot(abundance\_traps, aes(x = YEAR, y = traps))+  
 geom\_point(aes(color = SITE))+  
 geom\_line(aes(color = SITE))+  
 theme\_classic()  
traps\_scatter



count\_scatter <- ggplot(abundance\_traps, aes(x = YEAR, y = count))+  
 geom\_point(aes(color = SITE))+  
 geom\_line(aes(color = SITE))+  
 theme\_classic()  
  
count\_scatter



# Part 2 (Andrew)

**Figure 1: Mean Lobster Carapace Length at Five LTER Sites in the Santa Barbara Channel**

## # A tibble: 5 x 3  
## Site `Mean Size` `Sample Size`  
## <chr> <dbl> <int>  
## 1 Arroyo Quemado 73.9 67  
## 2 Carpinteria 72.2 705  
## 3 Isla Vista 71.4 606  
## 4 Mohawk Reef 72 178  
## 5 Naples Reef 76.2 112

Site

Mean Carapace Size (mm)

Sample Size

Arroyo Quemado

73.90

67

Carpinteria

72.23

705

Isla Vista

71.45

606

Mohawk Reef

72.00

178

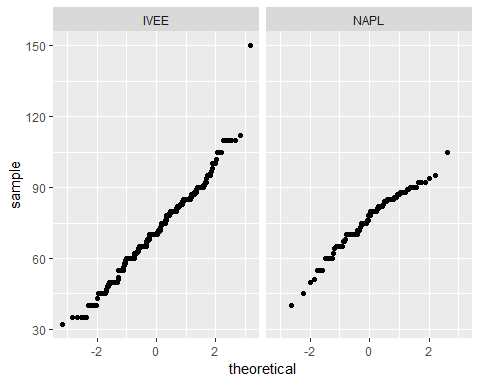
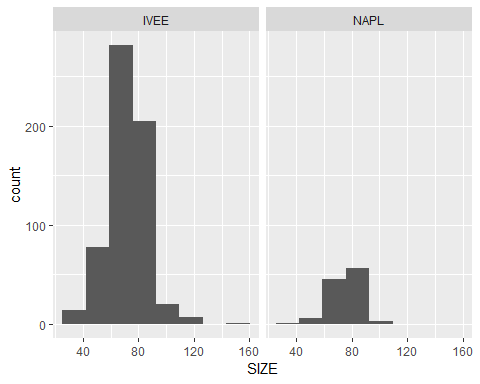
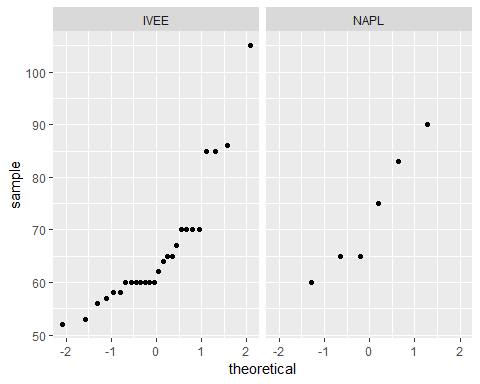
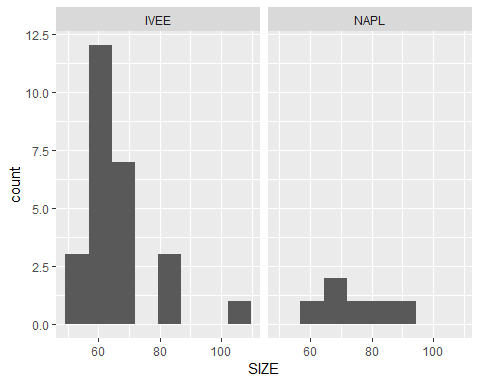
Naples Reef

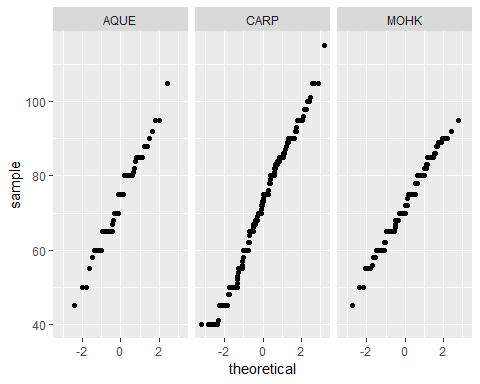
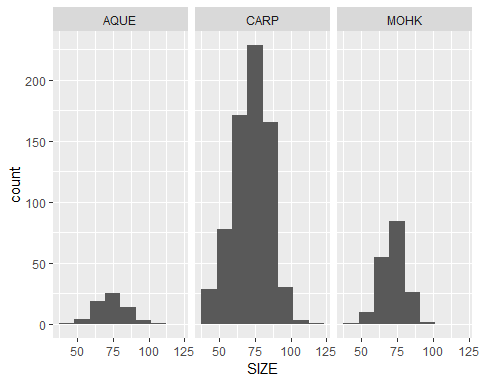
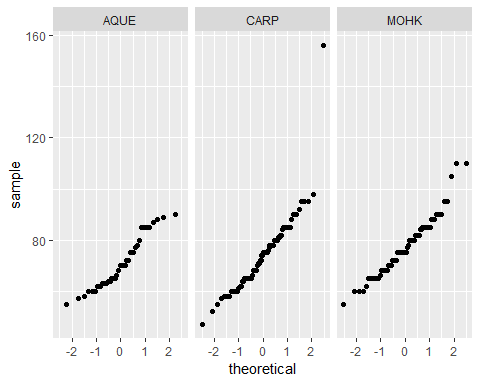
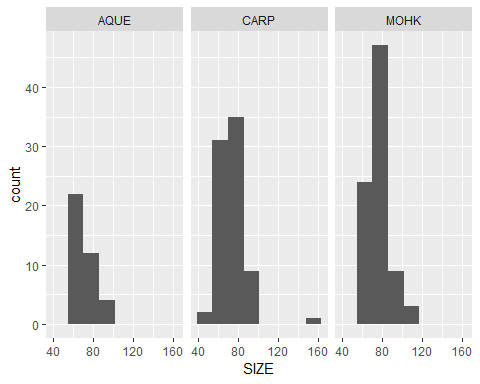
76.23

112

# Part 3 (Bridget)

# The following chunks are comparing 2012 and 2017 for each site individually





##   
## F test to compare two variances  
##   
## data: aq\_2012 and aq\_2017  
## F = 0.72863, num df = 37, denom df = 66, p-value = 0.2986  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.419142 1.327868  
## sample estimates:  
## ratio of variances   
## 0.7286314

##   
## Two Sample t-test  
##   
## data: aq\_2012 and aq\_2017  
## t = -1.2622, df = 103, p-value = 0.2097  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -7.445357 1.654312  
## sample estimates:  
## mean of x mean of y   
## 71.00000 73.89552

##   
## Cohen's d  
##   
## d estimate: -0.2563169 (small)  
## 95 percent confidence interval:  
## inf sup   
## -0.6606014 0.1479675

##   
## Wilcoxon rank sum test with continuity correction  
##   
## data: aq\_2012 and aq\_2017  
## W = 1063.5, p-value = 0.1618  
## alternative hypothesis: true location shift is not equal to 0

##   
## F test to compare two variances  
##   
## data: carp\_2012 and carp\_2017  
## F = 1.2244, num df = 77, denom df = 704, p-value = 0.2043  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.896208 1.750406  
## sample estimates:  
## ratio of variances   
## 1.224405

##   
## Two Sample t-test  
##   
## data: carp\_2012 and carp\_2017  
## t = 1.3361, df = 781, p-value = 0.1819  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -0.998958 5.257332  
## sample estimates:  
## mean of x mean of y   
## 74.35897 72.22979

##   
## Cohen's d  
##   
## d estimate: 0.1594364 (negligible)  
## 95 percent confidence interval:  
## inf sup   
## -0.07493682 0.39380971

##   
## F test to compare two variances  
##   
## data: mohk\_2012 and mohk\_2017  
## F = 1.3015, num df = 82, denom df = 177, p-value = 0.1509  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.9085131 1.9131403  
## sample estimates:  
## ratio of variances   
## 1.301535

##   
## Two Sample t-test  
##   
## data: mohk\_2012 and mohk\_2017  
## t = 4.0689, df = 259, p-value = 6.276e-05  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## 2.710776 7.795248  
## sample estimates:  
## mean of x mean of y   
## 77.25301 72.00000

##   
## Cohen's d  
##   
## d estimate: 0.5408116 (medium)  
## 95 percent confidence interval:  
## inf sup   
## 0.2749635 0.8066597

##   
## F test to compare two variances  
##   
## data: iv\_2012 and iv\_2017  
## F = 0.71311, num df = 25, denom df = 605, p-value = 0.307  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.4322948 1.3698611  
## sample estimates:  
## ratio of variances   
## 0.713111

##   
## Two Sample t-test  
##   
## data: iv\_2012 and iv\_2017  
## t = -1.885, df = 630, p-value = 0.0599  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -10.9750916 0.2246473  
## sample estimates:  
## mean of x mean of y   
## 66.07692 71.45215

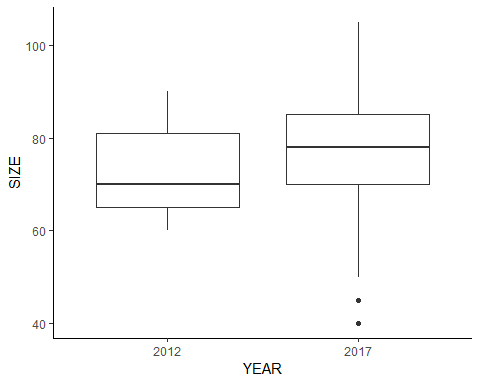
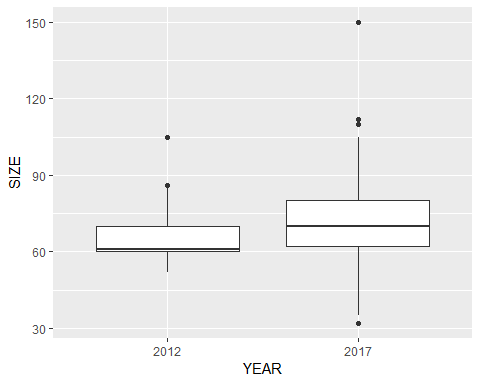
##   
## Cohen's d  
##   
## d estimate: -0.3775177 (small)  
## 95 percent confidence interval:  
## inf sup   
## -0.77136540 0.01633002

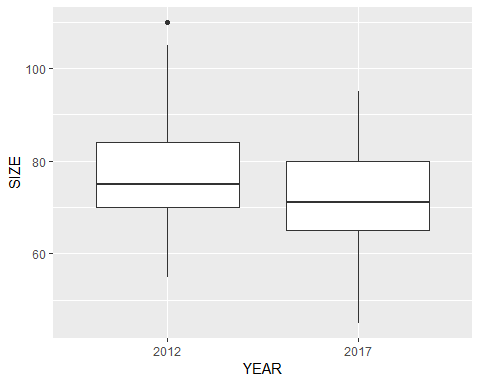
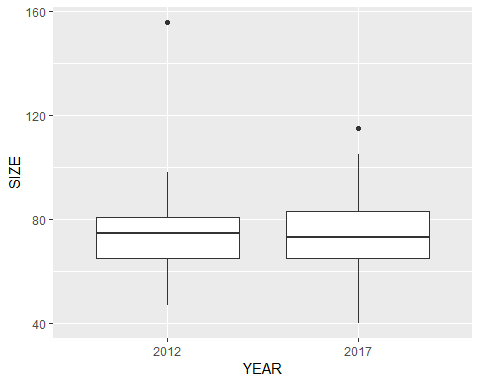
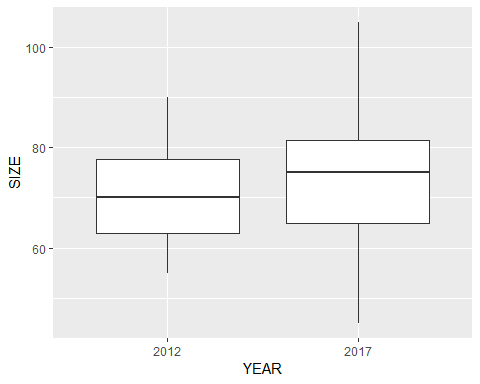
##   
## Wilcoxon rank sum test with continuity correction  
##   
## data: iv\_2012 and iv\_2017  
## W = 5482, p-value = 0.008488  
## alternative hypothesis: true location shift is not equal to 0

##   
## F test to compare two variances  
##   
## data: napl\_2012 and napl\_2017  
## F = 1.064, num df = 5, denom df = 111, p-value = 0.7685  
## alternative hypothesis: true ratio of variances is not equal to 1  
## 95 percent confidence interval:  
## 0.3966019 6.4626426  
## sample estimates:  
## ratio of variances   
## 1.064048

##   
## Two Sample t-test  
##   
## data: napl\_2012 and napl\_2017  
## t = -0.67636, df = 116, p-value = 0.5002  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -12.697051 6.232765  
## sample estimates:  
## mean of x mean of y   
## 73.00000 76.23214

##   
## Cohen's d  
##   
## d estimate: -0.2834216 (small)  
## 95 percent confidence interval:  
## inf sup   
## -1.1141889 0.5473456





# Part 4

## Warning: Setting row names on a tibble is deprecated.

## illegal legal  
## AQUE 0.7611940 0.2388060  
## CARP 0.7758865 0.2241135  
## IVEE 0.8052805 0.1947195  
## MOHK 0.8764045 0.1235955  
## NAPL 0.6875000 0.3125000

##   
## Pearson's Chi-squared test  
##   
## data: legal\_sizes  
## X-squared = 17.178, df = 4, p-value = 0.001785