STAT 3119: Example 16.9

Week3: 9/10/2019 @GWU

Randomization Test: Example 16.9

```
# combinations
(No_permu = choose(9, 3)* choose(6,3))
```

```
## [1] 1680
```

```
# Response
Yij= c(1.1,  .5,   -2.1, 4.2 , 3.7,  0.8, 3.2,  2.8,  6.3)
Treatment= as.factor(c(rep(1,3),rep(2,3), rep(3,3)))
fit= aov(Yij~Treatment)
Fstar = summary(fit)[[1]]$`F value`[1]

Fstar
```

```
## [1] 4.386577
```

Randomization Test: Get al the permutations and calculate a F-stat:

```
Index1<- combn(1:9, 3)
Fstat<- numeric(1680)
k<- 0

for (i in 1:84)
{
  IndexList6 <- (1:9)[-Index1[,i]]
  Index2=  combn(IndexList6, 3)

  for (j in 1:20 )
  {
     Index3 <- (1:9)[-c(Index1[,i], Index2[,j])]
     k<- k+1
     NewY <- Yij[c(Index1[,i], Index2[,j],Index3 )]
     Nfit= aov(NewY~Treatment)
     Fstat[k]<- summary(Nfit)[[1]]$`F value`[1]

  }
}

sum( Fstat >= Fstar)/1680
```

```
## [1] 0.075
```