STAT 217: Chi-Squared Permutation Test 10-12 and 10-14

1. Two random samples of cars were taken (one sample of 30 Hondas, and one sample of 70 Toyotas), and then the safety rating of the vehicle was recorded in stars (one star, two star, or three star).

```
safetytable<-tally(~brand+stars,margins=F)
chisq.test(safetytable)


##
##  Pearson's Chi-squared test
##
## data:  safetytable
## X-squared = 15.204, df = 2, p-value = 0.0004994
```

```
Xobs <- chisq.test(safetytable)$statistic
Xobs


## X-squared
##  15.20408


B <- 1000

Xstar <- matrix(NA, nrow=B)

for(b in 1:B){
  Xstar[b] <- chisq.test(tally(~shuffle(stars)+brand))$statistic
}
```


Histogram of Xstar   Histogram of Xstar