STAT 217: Permutation Test for a Slope Coefficient - Cereal Example (in class 10/26)

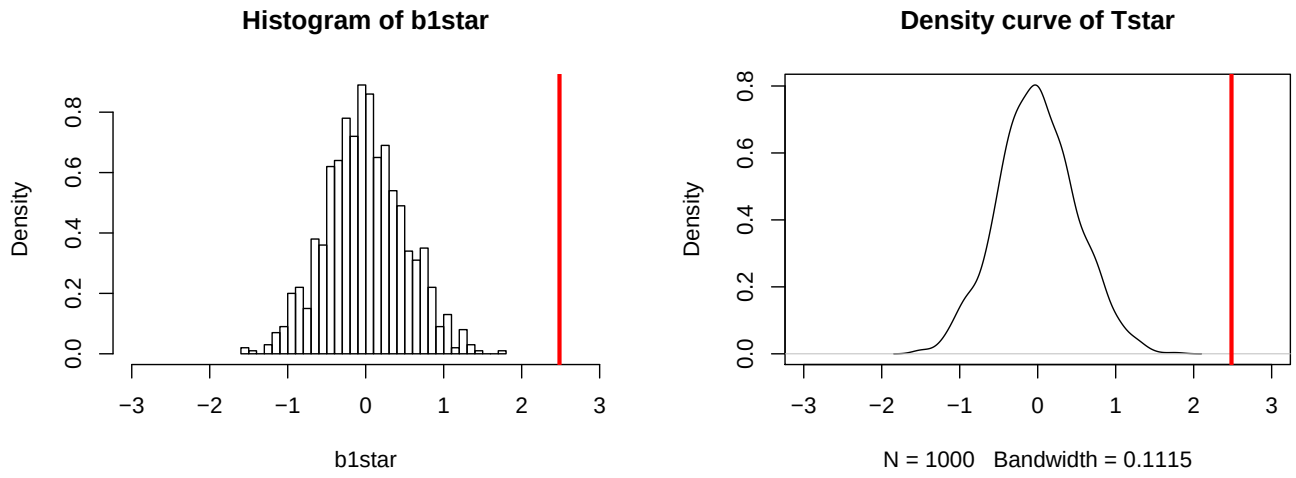
```
b1obs <- lm(calories~sugar,data=cereal)$coef[2]
b1obs

## sugar
##  2.49

B<- 1000
b1star<-matrix(NA, nrow=B)
for (b in (1:B)){
b1star[b]<-lm(calories~shuffle(sugar), data=cereal)$coef[2]
}
```

```
par(mfrow=c(1,2))
hist(b1star, xlim=c(-3,3), nclass=25, freq=FALSE)
abline(v=b1obs,col="red",lwd=3)

plot(density(b1star),main="Density curve of Tstar",xlim=c(-3,3))
abline(v=b1obs,col="red",lwd=3)
```




```
#find p-value from permutation distribution
pdata(abs(b1obs),abs(b1star),lower.tail=F)

## sugar
##     0
```

```
#compare sd of permutation dist to standard error
sd(b1star)

## [1] 0.504
```