Simulation test for single mean

Research Question 1

Suppose I am interested in learning if Middlebury students who have an 8:15am class get at least 7.5 hours of sleep (on average).

H_0 :

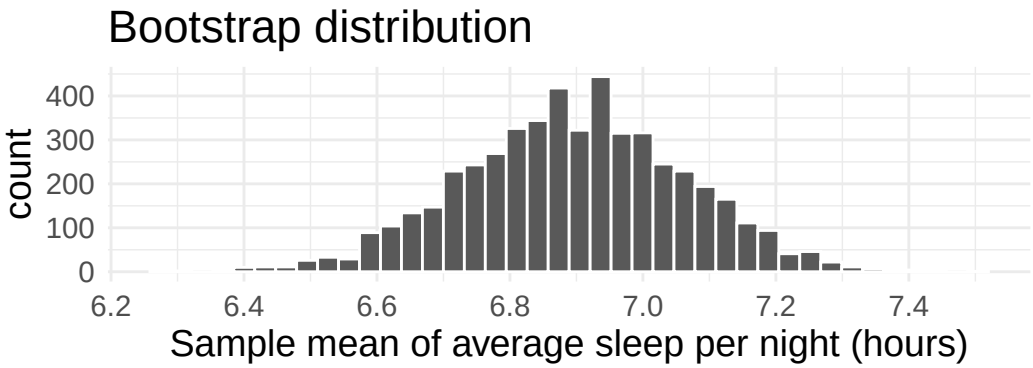
H_A :

Summary information:

α :

Start by obtaining a bootstrap distribution of sample means:

```
B <- 5000
boot_means <- rep(NA, B)
for(b in 1:B){
  x_boot <- sample(sleep, n, replace = T)
  boot_means[b] <- mean(x_boot)
}
```



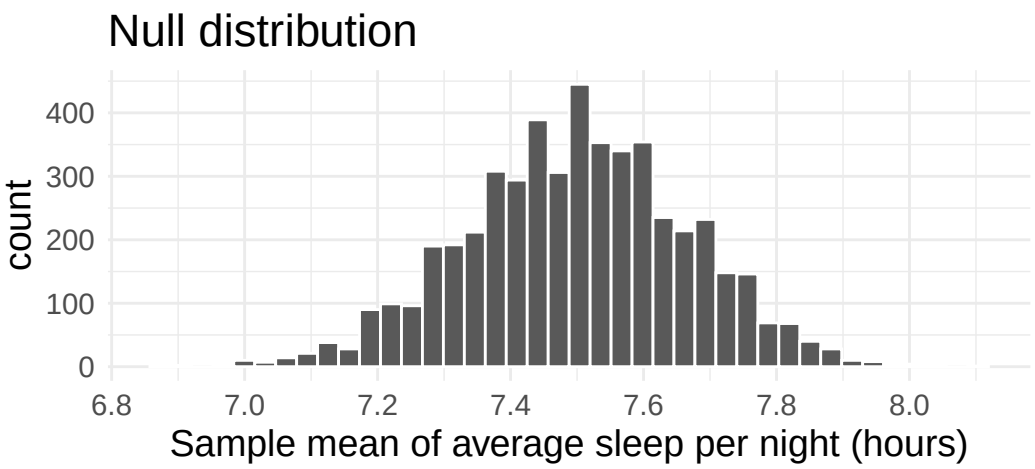
Why isn't this useful for obtaining p-value?

How do we obtain the null distribution?

```r
mu0 <- 7.5

# xbar stores observed sample mean
shift <- xbar - mu0

# boot_means is a vector holding B bootstrapped sample means
null_dist <- boot_means - shift
```



p-value:

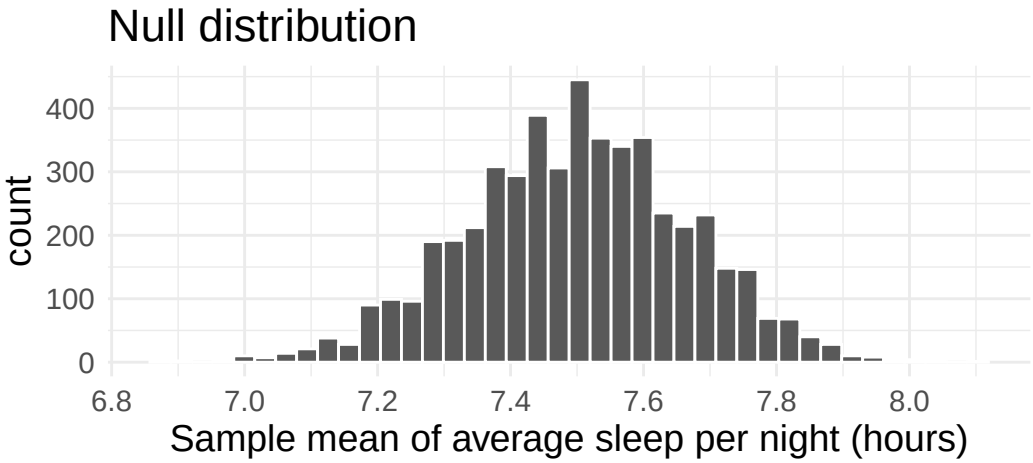
Decision:

Conclusion:

Research Question 2

Instead, I am interested in learning if Middlebury students who have an 8:15am class get 7.5 hours of sleep or not (on average). Then our hypotheses are:

How to find p-value now?



p-value:

Decision:

Conclusion: