

Sample Size Calculations

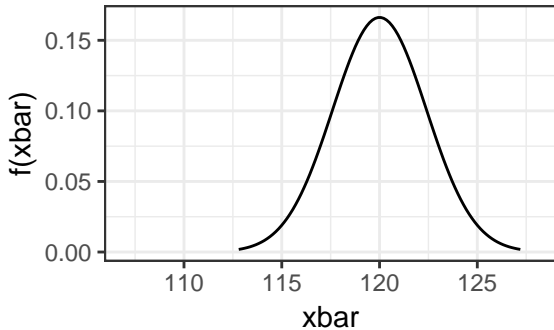
David Gerard

2018-12-07

Learning Objectives

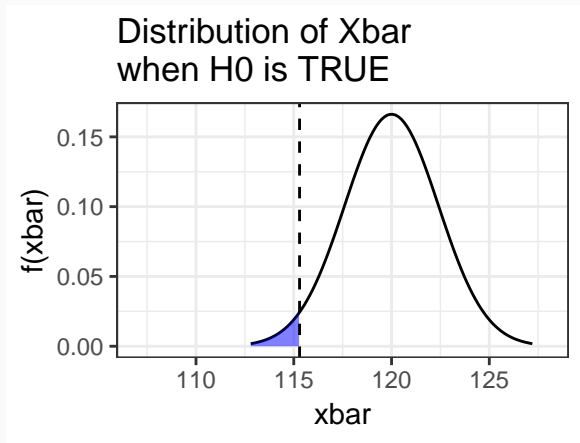
- Intuitively Explain Power

Distribution of Xbar
when H_0 is TRUE

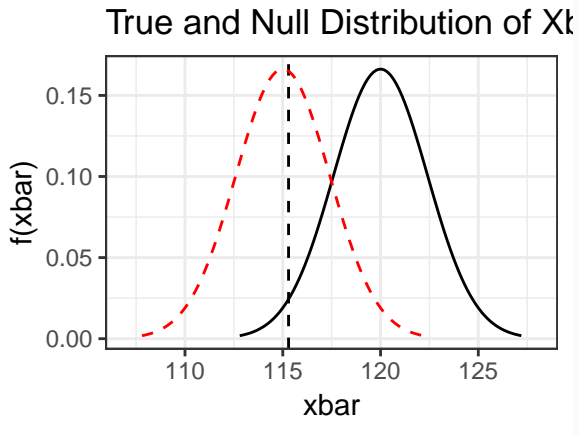


Under H_0

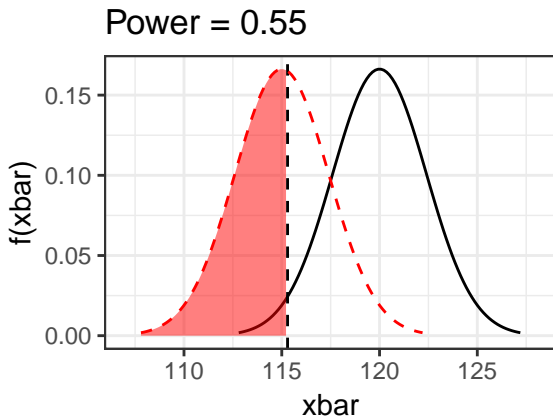
- Critical Value



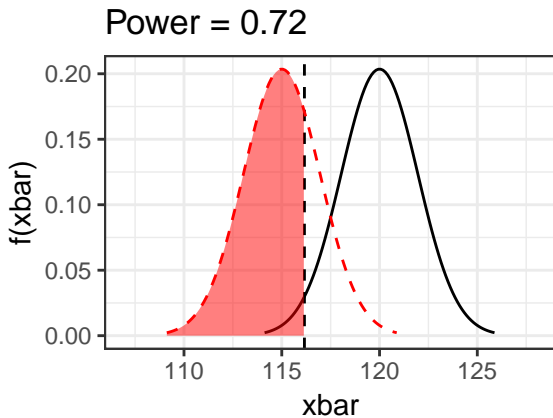
Along with true distribution of \bar{X} .



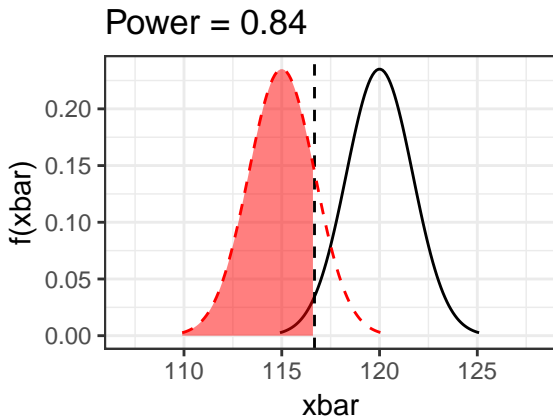
The Power of the Test



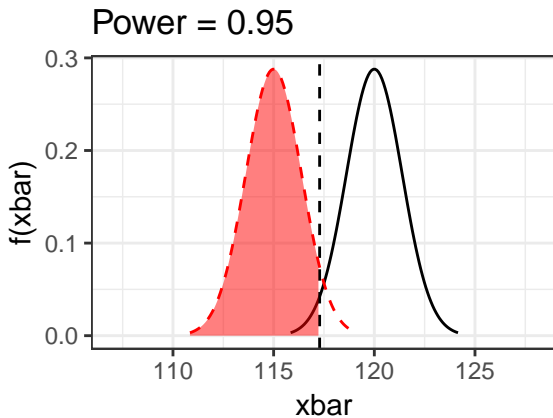
Increase $n = 150$



Increase $n = 200$



Increase $n = 300$



- `delta` = difference from the posited mean. Say 5 when the null mean is 120 and the alternative mean is 115.
- `sd` = 30 (might have gotten this from a previous study)
- `sig.level` = 0.05, rarely change this
- `power` = 0.8, typical power value

```
power.t.test(delta = 5, sd = 30, sig.level = 0.05,  
             power = 0.8, type = "one.sample")
```

```
##  
##      One-sample t test power calculation  
##  
##              n = 284.5  
##              delta = 5  
##              sd = 30  
##              sig.level = 0.05  
##              power = 0.8  
##      alternative = two.sided
```