Bootstrap

Leihua Ye

9/29/2020

cor(mydata$X.Drafted,mydata$FPTS)

## [1] 0.8921367

# Bootstrap the correlation between drafted and fantasy points

# step 1: define a function that calculates the metric of interest

function\_1 <- function(data, i){  
 d2 <- data[i,] # for every row in the dataset  
 return(cor(d2$X.Drafted, d2$FPTS))# calculate the correlationship between X.Drafted and FPTS  
}

# step 2: fill in the dataset name, function, and the number oof bootstrap samples to be drawn

set.seed(1)  
bootstrap\_correlation <- boot(mydata,function\_1,R=10000)  
bootstrap\_correlation

##   
## ORDINARY NONPARAMETRIC BOOTSTRAP  
##   
##   
## Call:  
## boot(data = mydata, statistic = function\_1, R = 10000)  
##   
##   
## Bootstrap Statistics :  
## original bias std. error  
## t1\* 0.8921367 0.003428173 0.04318599

summary(bootstrap\_correlation)

## Length Class Mode   
## t0 1 -none- numeric   
## t 10000 -none- numeric   
## R 1 -none- numeric   
## data 4 data.frame list   
## seed 626 -none- numeric   
## statistic 1 -none- function   
## sim 1 -none- character  
## call 4 -none- call   
## stype 1 -none- character  
## strata 27 -none- numeric   
## weights 27 -none- numeric

t0: the observed values of k statistics applied to the original data t: An R\*K matrix where each row is a bootstrap relicate of the k statistics

range(bootstrap\_correlation$t)

## [1] 0.6839681 0.9929641

mean(bootstrap\_correlation$t)

## [1] 0.8955649

sd(bootstrap\_correlation$t)

## [1] 0.04318599

class(bootstrap\_correlation)

## [1] "boot"

boot.ci(boot.out=bootstrap\_correlation,type=c('norm','basic','perc','bca'))

## BOOTSTRAP CONFIDENCE INTERVAL CALCULATIONS  
## Based on 10000 bootstrap replicates  
##   
## CALL :   
## boot.ci(boot.out = bootstrap\_correlation, type = c("norm", "basic",   
## "perc", "bca"))  
##   
## Intervals :   
## Level Normal Basic   
## 95% ( 0.8041, 0.9734 ) ( 0.8185, 0.9854 )   
##   
## Level Percentile BCa   
## 95% ( 0.7989, 0.9658 ) ( 0.7712, 0.9553 )   
## Calculations and Intervals on Original Scale

Four 95% confidence intervals are presented: normal, basic, percentile, and bias-corrected and accelerated. A fifth type, the studentized intervals, requires variances from each bootstrap sample.