l9ch5.R

mh

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rm(list=ls())  
st\_er=function(data,index)  
{  
 len=length(index)  
 miu=mean(data[index])  
 a=mean((data[index]-miu)^2)  
 se=(a/len)^0.5  
}  
library(MASS)  
library(boot)  
attach(Boston)  
#a  
miu=mean(medv)  
miu

## [1] 22.53281

#b  
se=st\_er(medv,1:length(medv))  
se

## [1] 0.4084569

Rss=sum((medv-miu)^2)  
#c  
alpha.fn=function(data,index){  
 X=data$medv[index]  
 }  
alpha.fn(Boston,length(medv))  
set.seed(1)  
alpha.fn(Boston,sample(length(medv),length(medv),replace=T))  
boot(medv,st\_er,R=1000)

##   
## ORDINARY NONPARAMETRIC BOOTSTRAP  
##   
##   
## Call:  
## boot(data = medv, statistic = st\_er, R = 1000)  
##   
##   
## Bootstrap Statistics :  
## original bias std. error  
## t1\* 0.4084569 -6.27049e-05 0.01654656

#d  
se\_medv=st\_er(medv,1:length(medv))  
miu=mean(medv)  
con\_int\_medv=c(miu-2\*se\_medv,miu+2\*se\_medv)  
s1=(min(con\_int\_medv)<medv)&(max(con\_int\_medv)>medv)  
nData=Boston[s1,]  
#e  
mu=median(medv)  
#f  
len=length(medv)  
aprim={}  
set.seed(1)  
for (i in 1:100)  
{  
ind=sample(len,len,replace=T)  
train=Boston[ind,]  
nmedv=train$medv  
miu=median(nmedv)  
a=mean((nmedv-miu)^2)  
se=(a/len)^0.5  
aprim[i]=se  
}  
ahat=mean(se)  
set=sqrt(sum((aprim-ahat)^2)/(length(aprim)-1))