Lorenz Curve and Gini Coefficient with Piketty Data

coop711

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과제에 저장되어 있는 `piketty_gini.rda` 파일을 불러들여 각 객체들을 살펴보고, 아래 코드를 참고하여 lorenz curve와 함께 지니계수들을 계산하시오. 의미 이해는 필수!

- 작업 파일 불러들이기.

```
load("piketty_gini.rda")
```

- lorenz curve 그리는 함수 살펴보기. 각 코드의 내용을 이해할 것.

```
lorenz
```

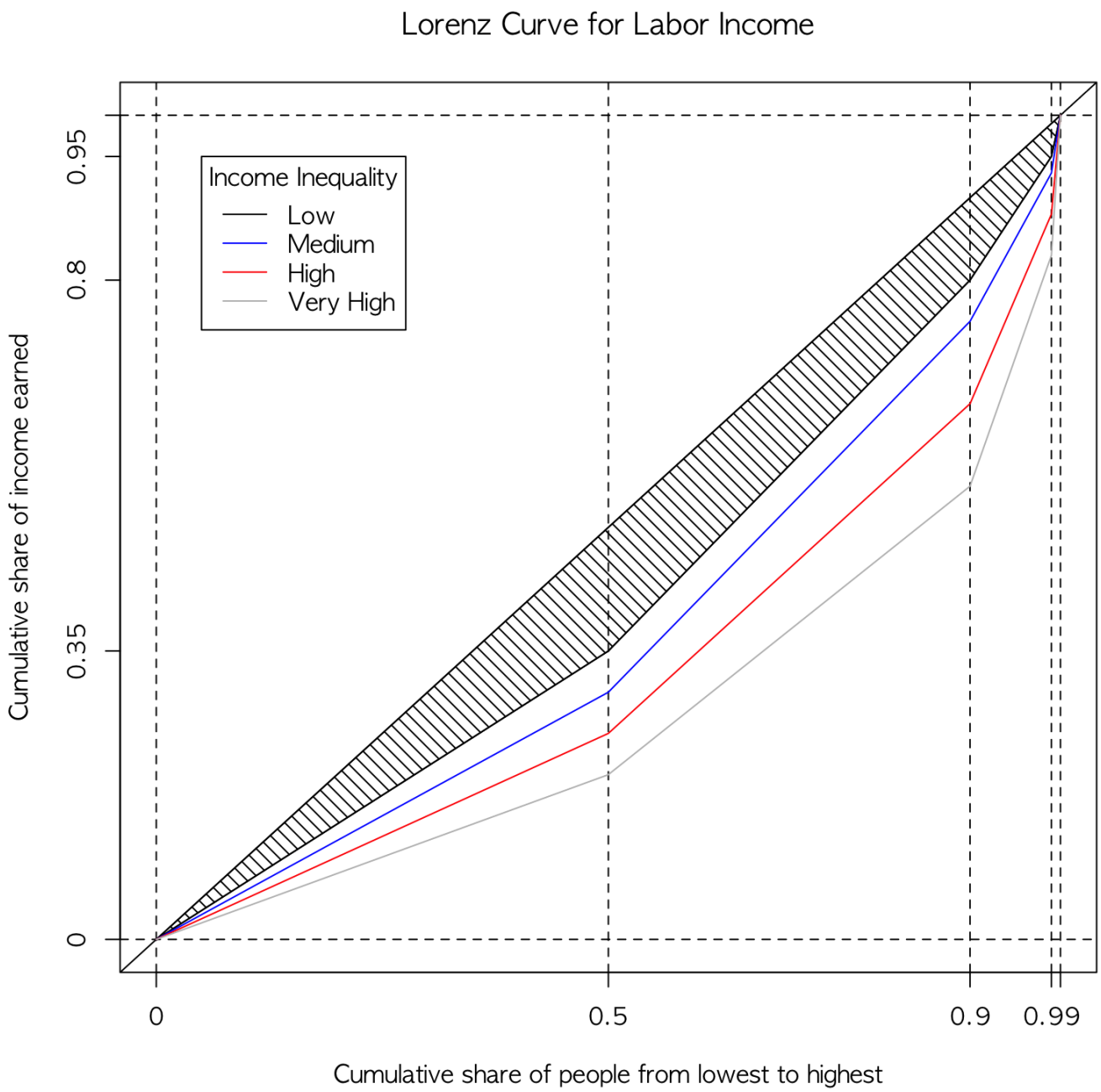
```
## function (x,y)
## {
##  plot(x,y,type="l",xlab="",ylab="",xaxt="n",yaxt="n")
##  abline(v=x,h=c(0,1),lty=2)
##  abline(a=0,b=1,lty=1)
##  polygon(x=c(x,rev(x)),y=c(x,rev(y)),density=15,angle=135)
##  axis(side=1,at=x,labels=paste(x))
##  axis(side=2,at=y,labels=paste(y))
## }
```

- gini 계수 계산하는 함수 살펴보기. 각 코드의 내용을 이해할 것.

```
gini
```

```
## function(x,y)
##  {
##  n<-length(x)
##  indx<-1:(n-1)
##  s<-sum((y[indx]+y[indx+1])*(x[indx+1]-x[indx]))
##  s<-1-s
##  return(s)
##  }
```

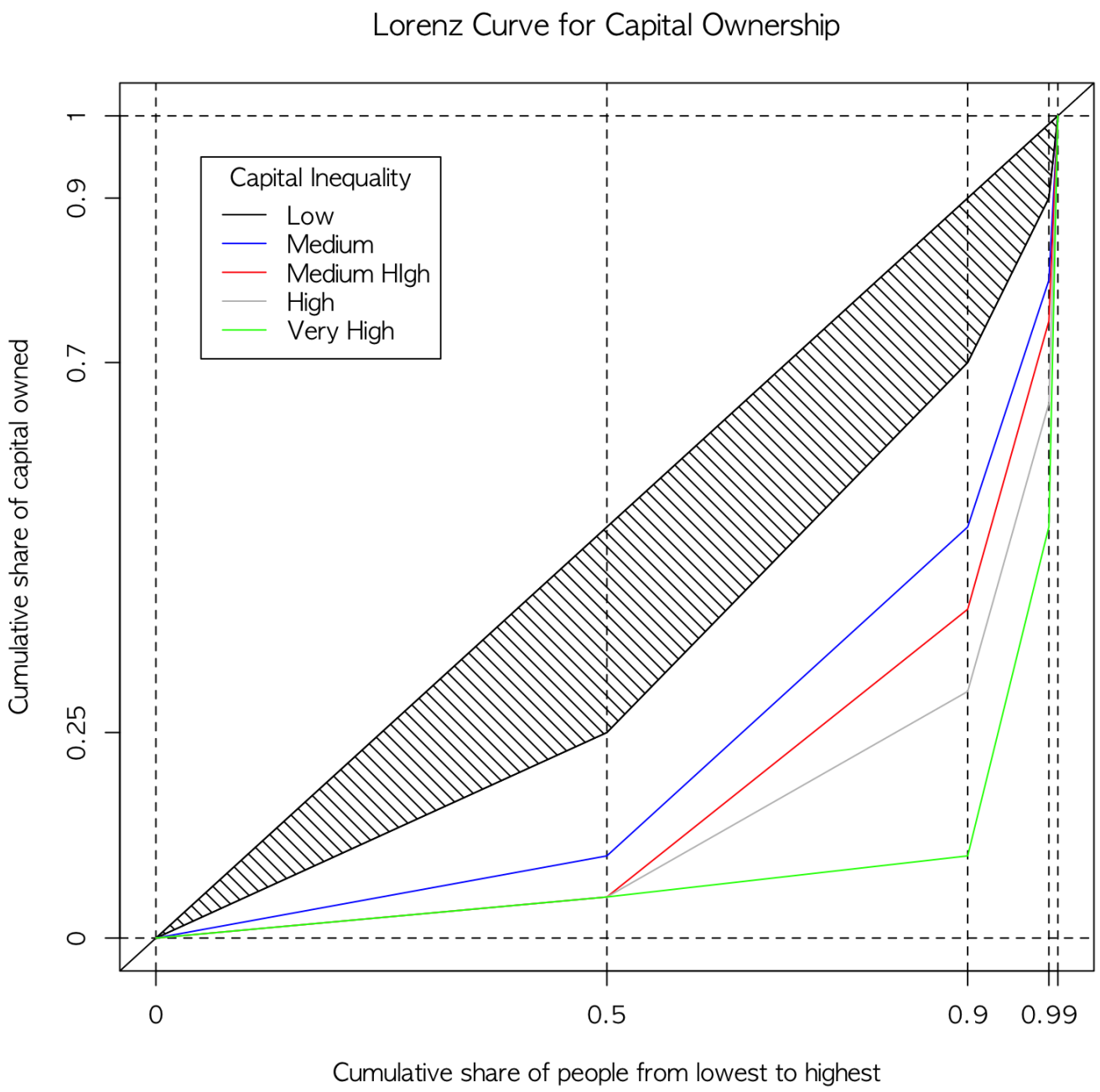
```
x<-piketty.labor
lorenz(x[,1],cumsum(x[,2]))
lines(x[,1],cumsum(x[,3]),col="blue")
lines(x[,1],cumsum(x[,4]),col="red")
lines(x[,1],cumsum(x[,5]),col="grey")
title(main="Lorenz Curve for Labor Income",xlab="Cumulative share of people fro
m lowest to highest",ylab="Cumulative share of income earned")
legend(x=0.05,y=0.95,legend=c("Low","Medium","High","Very High"),lty=1,col=c("b
lack","blue","red","grey"),title="Income Inequality")
```




```
apply(apply(piketty.labor[,2:5],2,cumsum),2,gini,x=piketty.labor[,1])
```

```
##       Low    Medium      High Very.High
##    0.1880    0.2595    0.3585    0.4575
```

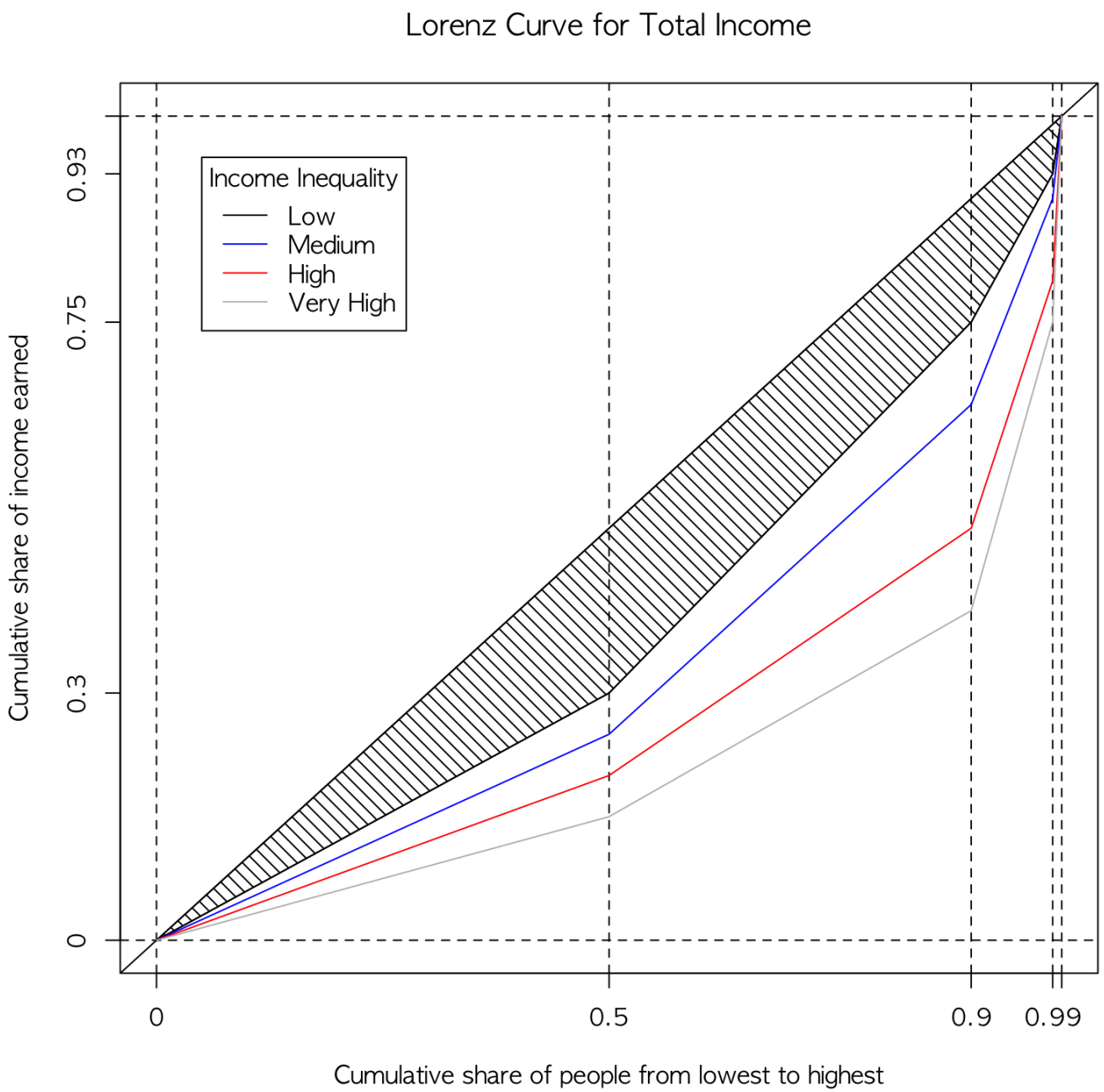
```
x<-piketty.co
lorenz(x[,1],cumsum(x[,2]))
lines(x[,1],cumsum(x[,3]),col="blue")
lines(x[,1],cumsum(x[,4]),col="red")
lines(x[,1],cumsum(x[,5]),col="grey")
lines(x[,1],cumsum(x[,6]),col="green")
title(main="Lorenz Curve for Capital Ownership",xlab="Cumulative share of peopl
e from lowest to highest",ylab="Cumulative share of capital owned")
legend(x=0.05,y=0.95,legend=c("Low","Medium","Medium HIgh","High","Very Hig
h"),lty=1,col=c("black","blue","red","grey","green"),title="Capital Inequalit
y")
```




```
apply(apply(piketty.co[,2:6],2,cumsum),2,gini,x=piketty.co[,1])
```

```
##        Low     Medium  Med.High       High Very.High
##      0.332      0.575      0.674      0.733      0.846
```

```
x<-piketty.total
lorenz(x[,1],cumsum(x[,2]))
lines(x[,1],cumsum(x[,3]),col="blue")
lines(x[,1],cumsum(x[,4]),col="red")
lines(x[,1],cumsum(x[,5]),col="grey")
title(main="Lorenz Curve for Total Income",xlab="Cumulative share of people fro
m lowest to highest",ylab="Cumulative share of income earned")
legend(x=0.05,y=0.95,legend=c("Low","Medium","High","Very High"),lty=1,col=c("b
lack","blue","red","grey"),title="Income Inequality")
```




```
apply(apply(piketty.total[,2:5],2,cumsum),2,gini,x=piketty.total[,1])
```

```
##        Low     Medium       High Very.High
##     0.2595     0.3565     0.4850     0.5840
```