```r
###Conjoint分析###
#直交デザインからカード枚数を減らしたデザインの場合，部分効用値や重視度の計算は，
#水準の出現回数にウエイトを掛けて計算する必要がある．
library(conjoint)
data(tea) #data in conjoint
tprof #Matrix of profiles (4 attributes and 13 profiles)
tlevn #levels:price(L,M,H)variety(black,green,red)
      #kind(bag,granulated,leaf)aroma(yes,no)
head(tprefm , 10) #Matrix of preferences (100 respondents and 13 profiles)
#tpref #Vector of preferences (length 1300)
tsimp #Matrix of simulation profiles.

Conjoint(tprefm , tprof , tlevn ,y.type="score") #y.type="rank"
##部分効用値##
#util <- caUtilities(tprefm , tprof , tlevn)        #Intercept&Partial utility
#round(util,2)
##サンプル別効用値##
partial <- caPartUtilities(tprefm , tprof , tlevn) #Partial utility by individual
head(partial , 5)
p <- partial
#write.csv(p , "data/partial.csv")
##総合効用値##
t.utility <- caTotalUtilities(tprefm , tprof)       #total Utility by individual
head(t.utility , 5)
boxplot(t.utility,main = "サンプル別Card別総合効用値_分布",
        xlab = "Card No",cex.main = 2.0 , cex.lab=1.6,
        notch = T,
        col = c(rep("white",15),rep("red",1),
        rep("white",4)))
#write.csv(t.utility , "data/t.utility.csv")
t.u <- apply(t.utility,2,mean)
barplot(t.u,main = "Card別総合効用値の平均",xlab = "Card No",
        cex.main = 2.0 , cex.lab=1.6)
abline(h=0)
##重要度##
imp <- caImportance(tprefm , tprof) #重要度
round(imp,1)
par(mai=c(1.2, 1.2, 1, 1))
barplot(imp,ylim = c(0,40),
        names.arg=c("Price" , "variety" , "kind" ,"aroma"),
        main = "重要度",xlab="属性",ylab="%",
        cex.main=2.0,cex.lab=1.6)
abline(h=0)
text(x=0.7,y=27, labels = "24.8",cex=1.5)
text(x=1.9,y=34, labels = "32.2",cex=1.5)
text(x=3.1,y=29, labels = "27.1",cex=1.5)
text(x=4.3,y=18, labels = "15.9",cex=1.5)

###Simulation### Simulation data:tsimp
head(tsimp)
ShowAllSimulations(sym = tsimp, y = tpref, x = tprof)

##Segmentation## 個人別部分効用値をkmeansクラスター分析
segment.3 <- caSegmentation(tpref , tprof, 3) #Number of CL
summary(segment.3)
names(segment.3)
library(fpc)
```

```r
plotcluster(segment.3$util , segment.3$sclu)
segment.3$segm$size
table(segment.3$sclu)
segment.3$segm$centers
s3 <- segment.3$sclu
s3 <- data.frame(s3)
#write.csv(s3, "data/segment.3.csv")

##Conjoint関数のサンプルデータ
#data(czekolada)
#data(herbata)
#data(ice)       #Sample artificial data in rank mode.
#data(journey)
#data(lody)      #Sample artificial data in rank mode.
#data(plyty)
#data(tea)
#data(wycieczka)
```