R-Codes

2022-07-16

```
library(readr)
library(data.table)
library(dplyr)
library(flexclust)
```

Import the data sets and adjustments

```
Gesichterbewertung_1_ <- read.csv("Gesichterbewertung (1).csv", sep = ";")
gesicht <- Gesichterbewertung_1_
ges <- gesicht
ges$X2D <- as.numeric(gsub(",", ".", gsub("\\.", "", ges$X2D)))
ges$X4D <- as.numeric(gsub(",", ".", gsub("\\.", "", ges$X4D)))
ges$ratio <- as.numeric(gsub(",", ".", gsub("\\.", "", ges$ratio)))
ges$ratio <- as.numeric(ges$ratio)
colnames(ges) <- c("ID", "verhuetung", "fruchtbar", "Ges.ID", "2D", "4D", "ratio", "bewertung")
ges.final <- na.omit(ges)
```

create groups for ratio

```
int <- 1.0278 - 0.8861
intlength <- int/3
low <- 0.8861 + intlength
medium <- low + intlength
high <- medium + intlength

ges.final$ratio_group <- ges.final$ratio

ges.final$ratio_group[ges.final$ratio_group < low] <- "low"
ges.final$ratio_group[ as.numeric(ges.final$ratio_group) < medium &
                         low < as.numeric(ges.final$ratio_group)  ] <- "medium"
ges.final$ratio_group[as.numeric(ges.final$ratio_group) > medium] <- "high"
```

LM, ANOVA and interaction plots

```
lm_int <- lm(bewertung ~ ratio * fruchtbar, data = ges.final)
summary(lm_int)
interaction.plot(x.factor = ges.final$ratio,
                 trace.factor = ges.final$fruchtbar,
                 response = ges.final$bewertung,
                 fun = mean,
                 xlab = "Ratio",
                 lty = 4,
                 col = c("red", "blue"),
```

```
                lwd = 2.5,
                ylab = "Mean of Rating",
                trace.label = "Fertile")


aov_group <- aov(bewertung ~ ratio_group * fruchtbar, data =ges.final)
summary(aov_group)

interaction.plot(x.factor = ges.final$ratio_group,
                trace.factor = ges.final$fruchtbar,
                response = ges.final$bewertung,
                fun = mean,
                xlab = "Ratio",
                lty = 4,
                col = c("red", "blue"),
                lwd = 2.5,
                ylab = "Mean of Rating",
                trace.label = "Fertile")
```

Evaluation questionnaire data set

```
Auswertung_Fragebogen_2_ <- read.csv("Auswertung Fragebogen (2).csv", sep = ";")
frage <- Auswertung_Fragebogen_2_

frage_part <- frage[, c(1, 12:16, 137:234)]

colnames(frage_part) <- gsub(".1", "", colnames(frage_part))

setnames(frage_part, old = c("vertrauenswÃ.rdig", "begeisterungsfÃ.hig", "grÃ.ne.Augen",
                             "glÃ.cklich",
                             "guter.ZuhÃ.rer", "verstÃ.ndnisvoll", "verlÃ.sslich",
                             "verrÃ.ckt", "hÃ.flich",
                             "mitreiÃŸend", "fleiÃŸig", "zÃ.rtlich" , "selbststÃ.ndig",
                             "mÃ.nnlich" ,
                             "rÃ.cksichtsvoll" ,
                             "kompromissfÃ.hig", "unterstÃ.tzend", "muskulÃ.s" , "nicht.eifersÃ.chtig",
                             "natÃ.rlich" , "groÃŸ", "ï..ID"),
         new = c("vertrauenswuerdig", "begeisterungsfaehig", "gruene.Augen", "gluecklich",
                 "guter.Zuhoerer", "verstaendnisvoll", "verlaesslich",
                 "verrueckt", "hoeflich", "mitreissend", "fleissig", "zaertlich",
                 "selbststaendig", "maennlich", "ruecksichtsvoll", "kompromissfaehig",
                 "unterstuetzend", "muskuloes", "nicht.eifersuechtig",
                 "natuerlich", "gross","ID" ))

ges_temp <- ges[, c("ID", "fruchtbar")]

ges_uniq <- unique(ges_temp)
frage_part[frage_part$ID == "M23",]$ID <- "MS3"


match(ges_uniq$ID, frage_part$ID) #Order is correct

frage.final <- data.frame(frage_part, ges_uniq$fruchtbar)
```

```
colnames(frage.final)[colnames(frage.final)=="ges_uniq.fruchtbar"] <- "fruchtbar"
frage.final.neu <- frage.final[,c( -25,-21, -30, -33, -64, -75, -76, -80, -81, -82, -83, -84, -97)]
```

Translations and eliminations

```
rownames(frage.final.neu) <- frage.final.neu[,1]
frage.final.neu <- frage.final.neu[,-1]
frage.final.neu <- frage.final.neu[,-1:-4]
frage.final.neu
frage.final.neu[,85] <- as.numeric(frage.final.neu[,85])
frage.final.neu[1,85] <- 0
frage.final.neu <- frage.final.neu[,-1]

fragsums <- sort(colSums(frage.final.neu), decreasing = TRUE)
namen <- names(fragsums)[1:27] #Eliminate variables with low entries




namen_neu <- c("intelligent", "humorvoll", "ehrlich", "gross", "sportlich", "attraktiv", "fruchtbar")
frage_data <- frage.final.neu[, namen]

colnames(frage_data) <- c("humorous", "athletic",
                          "large", "fertile", "intelligent",
                          "honest", "enterprising",
                          "friendly", "open",
                          "attractive", "responsive",
                          "fond of animals", "faithful",
                          "fond of travel", "self-assured",
                          "family oriented", "adventurous",
                          "trustworthy", "enthusiastic",
                          "pleasant", "spontaneous",
                          "kind", "cheerful", "musical",
                         "determined",  "reliable", "independent") #27 Variables at the beginning

frage_data1 <- frage.final.neu[, namen_neu] # 7 Variables at the end
colnames(frage_data1) <- c("intelligent", "humorous", "honest", "large", "athletic",
                           "attractive", "fertile")
```

K-means Clustering

```
set.seed(123)
res <- kcca(frage_data,k=2)
barplot(res)#the one with 27 Variables
set.seed(123)
res1 <- kcca(frage_data1 ,k=2) # With 7 Variables
barplot(res1)
```