rm(list = ls())

library(anacor)

library(readxl)

library(xtable)

dt <- read\_excel("madeupblock.xlsx")

dt <- as.data.frame(dt)

rownames(dt) <- dt[, 1]

dt <- dt[, -1]

dim(dt)

if (sum(apply(dt, 1, sum) == 0) != 0) {

dt <- dt[-c(which(apply(dt, 1, sum) == 0)), ]

} else {

dt <- dt

}

if (sum(apply(dt, 2, sum) == 0) != 0) {

dt <- dt[, -c(which(apply(dt, 2, sum) == 0))]

} else {

dt <- dt

}

dt <- as.matrix(dt)

X <- dt

dim(X)

dim(X)[1] \* dim(X)[2]

sum(X)

sum(X == 0)

X.P <- X / sum(X)

X.r <- apply(X.P, 1, sum)

X.c <- apply(X.P, 2, sum)

X.Dr <- diag(X.r)

X.Dc <- diag(X.c)

X.Drmh <- diag(1 / sqrt(X.r))

X.Dcmh <- diag(1 / sqrt(X.c))

X.P <- as.matrix(X.P)

X.S <- X.Drmh %\*% (X.P - X.r %o% X.c) %\*% X.Dcmh

X.svd <- svd(X.S)

round((X.svd$d), 3)

round((X.svd$d^2), 3)

round(100 \* (X.svd$d^2) / sum(X.svd$d^2), 1)

colproj <- X.Dcmh %\*% X.svd$v

rownames(colproj) <- colnames(X)

rowproj <- X.Drmh %\*% X.svd$u

rownames(rowproj) <- rownames(X)

round(rowproj, 2)

round(colproj, 2)

X[order(rowproj[, 1]), order(colproj[, 1])]

print(xtable(rowproj, digits = rep(2, (ncol(X) + 1))), include.rownames = T, include.colnames = T)

print(xtable(colproj, digits = rep(2, (ncol(X) + 1))), include.rownames = T, include.colnames = T)

print(xtable(X[order(rowproj[, 1]), order(colproj[, 1])], digits = rep(0, (ncol(X) + 1))), include.rownames = T, include.colnames = T)