

Supplementary

R code for a hypothetical example with k=8 clusters and the size of cluster n=6

```
library(plyr)

Fhatcut = 0.1

# k=8 cluster:    n=6 cluster size

f1 <- aarray(c(
  150 , 165 , 165 , 150 , 150 , 150 ,
  96 , 136 , 122 , 122 , 136 , 122 ,
  150 , NA , NA , NA , NA , NA ,
  150 , 84 , 122 , 96 , 165 , NA ,
  122 , 165 , 150 , 96 , 84 , NA ,
  96 , 72 , 21 , NA , NA , NA ,
  10 , 12 , 40 , 96 , 43 , NA ,
  39 , 22 , 22 , 97 , NA , NA
), dim=c(6, 8))

f <- t(f1)

niss = dim(f)[2]
k = dim(f)[1]

numclusters = k
clusterize = niss
ni <- rep(niss, times=k)

fobs <- aarray(, dim=c(sum(ni), 5))
N <- dim(fobs)[1]

j=1
for(i in 1:k)
{
  yij <- f[i,]
  idv <- c(1:niss)
  if(i < 1.5){fobs[(j-1)*N+c(1:ni[i]),2] <- as.numeric(yij)
  fobs[(j-1)*N+c(1:ni[i]),1] <- i
  fobs[(j-1)*N+c(1:ni[i]),3] <- idv
  fobs[(j-1)*N+c(1:ni[i]),4] <- i
  fobs[(j-1)*N+c(1:ni[i]),5] <- i
} else {
  fobs[(j-1)*N+c((sum(ni[1:(i-1)])+1):c(sum(ni[1:i])), 2) <- as.numeric(yij)
  fobs[(j-1)*N+c((sum(ni[1:(i-1)])+1):c(sum(ni[1:i])), 1) <- i
  fobs[(j-1)*N+c((sum(ni[1:(i-1)])+1):c(sum(ni[1:i])), 3) <- idv
  fobs[(j-1)*N+c((sum(ni[1:(i-1)])+1):c(sum(ni[1:i])), 4) <- i
  fobs[(j-1)*N+c((sum(ni[1:(i-1)])+1):c(sum(ni[1:i])), 5) <- i
}
}
```

```

# remove NA missing visits f
<-fobs [which ( fobs [, 2] < 199) , ]

f <- data . frame ( f )
colnames ( f ) <- c ( " x " , " y " , " visit " , " ID " , " group " )

N <- dim ( f ) [ 1 ]
outa <- count ( f , " ID " )
ni <- a s . numeric ( outa [ , 2 ] )

### ANOVA estimator

ymeanA <- ddply ( f , ~ x , summarise , mean = mean ( y ) )
ymean <- ymeanA $ mean
ymeanAll <- mean ( f $ y )
SSA = sum ( ni * ( ymean - ymeanAll ) ^ 2 )
MSA = SSA / ( k - 1 )
SST = sum ( ( f $ y - ymeanAll ) ^ 2 )
SSE = SST - SSA
MSE = SSE / ( N - k )
n0 = N / k - sum ( ( ni - N / k ) ^ 2 ) / ( ( k - 1 ) * N )
ANOVA = ( MSA - MSE ) / ( MSA + ( n0 - 1 ) * MSE )

### bias corrected estimate ###

nha <- k / sum ( 1 / ni )
SSAnew <- ( sum ( ymean ^ 2 ) - 1 / k * ( sum ( ymean ) ) ^ 2 ) / ( k - 1 )
AERatio <- nha * SSAnew * ( k - 1 ) / ( ( N - k ) * MSE )      Fhat
<- ( ( N - k - 2 ) * ( AERatio ) - ( k - 1 ) ) / ( ( k - 1 ) * nha ) ICCest
<- ( Fhat ) / ( 1 + Fhat )

varFhat1 <- ( N - k - 2 ) / ( nha ^ 2 * ( k - 1 ) )
varFhat2 <- ( k + 1 ) / ( N - k - 4 ) - ( k - 1 ) / ( N - k - 2 )
varFhat <- varFhat1 * varFhat2 * ( nha * Fhat + 1 ) ^ 2

if ( 1 / 2 * ( 1 / Fhat ^ 2 - 1 / ( Fhat + 1 ) ^ 2 ) * varFhat > 200 )
{ ICCestBC = 10000000 } else {
ICCestBC <- ICCest * exp ( 1 / 2 * ( 1 / Fhat ^ 2 - 1 / ( Fhat + 1 ) ^ 2 ) * varFhat ) }

ICCestBCa <- 1 - ( 1 - ICCest ) * exp ( - 1 / 2 * ( 1 / ( Fhat + 1 ) ^ 2 ) * varFhat )

if ( Fhat < Fhatcut ) { ICCestBC <- ICCestBCa }
TH = ICCest
THLBC = ICCestBC

print ( c ( ANOVA , THL , THBC ) )

```