Multivariate Analysis Homework

Indra Budiman, Ni Luh Laksmi Devi, Rahmat Zikri, Vilda Tri Lestari Simbolon, Wisnu Damar Budimulia

29 April 2018

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## Soal Nomor 1A

A function implementing one sample, two sample (independent and paired) **multivariate** tests.

1. One Sample

* δ Known

– *Data berbentuk matrix nxp*

– *H0 berbentuk matrix px1*

– *Sigma berbentuk matrix pxp*

one\_known <- function(data, h0, sigma){  
 rata2 <- NULL  
 for (i in 1:(ncol(data))){  
 rata2 <- rbind(rata2, rerata(data[,i]))  
 }  
 zsqr <- nrow(data)%\*%t(rata2-h0)%\*%solve(sigma)%\*%(rata2-h0)   
 return(zsqr)  
}

* δ Unknown

– *Data berbentuk matrix nxp*

– *H0 berbentuk matrix px1*

– *δ berbentuk matrix pxp*

one\_unknown <- function(data, h0){  
 rata2 <- NULL  
 covbanyak <- NULL  
 for (i in 1:(ncol(data))){  
 rata2 <- rbind(rata2, rerata(data[,i]))  
 }  
 covbanyak<-covar(data)  
 tsqr <- nrow(data)%\*%t(rata2-h0)%\*%solve(covbanyak)%\*%(rata2-h0)   
 return(tsqr)  
}

1. Two Sample

* Dependen

Dataset formal dan informal

## DATA FORMAL

## x1 x2  
## [1,] 137 15  
## [2,] 164 25  
## [3,] 224 27  
## [4,] 208 33  
## [5,] 178 24  
## [6,] 128 20  
## [7,] 154 18  
## [8,] 158 16  
## [9,] 102 21  
## [10,] 214 25  
## [11,] 209 24  
## [12,] 151 16  
## [13,] 123 13  
## [14,] 161 22  
## [15,] 175 23

## DATA INFORMAL

## y1 y2  
## [1,] 148 20  
## [2,] 159 24  
## [3,] 144 19  
## [4,] 103 18  
## [5,] 121 17  
## [6,] 89 11  
## [7,] 119 17  
## [8,] 123 13  
## [9,] 76 16  
## [10,] 217 29  
## [11,] 148 22  
## [12,] 151 21  
## [13,] 83 7  
## [14,] 135 20  
## [15,] 178 15

Uji T-Hotelling

Fungsi berikut menghasilkan nilai uji statistik T^2 dari input 2 data multivariate berpasangan

tsq\_dep <- function(a,b){  
 d<-matrix(c(a[,1]-b[,1],a[,2]-b[,2]),ncol=2)  
 dbar<-matrix(c(rerata(d[,1]), rerata(d[,2])))  
 sd <- covar(d)  
 n<-15  
 t<-n%\*%t(dbar)%\*%solve(sd)%\*%dbar   
 return(t)  
}  
  
tsq\_dep(informal,formal)

## [,1]  
## [1,] 15.19123

## Including Plots

You can also embed plots, for example:



Note that the echo = FALSE parameter was added to the code chunk to prevent printing of the R code that generated the plot.