

Code CCA

#0: Import Code

```
install.packages("CCP") library(CCP) install.packages("xtable") library(xtable) install.packages("tidyverse") library(tidyverse) install.packages("stargazer") library(stargazer) install.packages("CCA") library(CCA) install.packages("rmarkdown") library(rmarkdown) install.packages("tinytex") library(tinytex)

setwd("~/Documents/Uni Köln/Module /Multivariate Analysis /CCA/Abgabe") data.long <- read.csv("students' mental well-being.csv", na = "NA", dec = ".", header = TRUE) data <- subset(data.long, select = c("Gender", "Year_of_Study", "Social_Support", "Financial_Status", "Work_Life_Balance", "Mental_Health", "Healthy_Life_Expectancy", "Freedom_to_Make_Life_Choices", "Sports_Engagement", "Average_Sleep_Hours", "Anxiety", "Isolation", "Happiness_Level"))
```

#1: Exploring

```
anyNA(data) dim(data) str(data) summary(data)
```

#2: Problem

```
unique(dataGender)barplot(sort(table(dataGender), decreasing = TRUE))
```

```
unique(dataYear_of_study)summary(dataYear_of_Study) barplot(sort(table(data$Year_of_Study), decreasing = TRUE))
```

```
inf <- subset(data, select = c(3,4,5,8,9,10,11,12)) summary(inf) stargazer(inf, type = "latex", title = "summary identification variables", summary.stat = c("min", "max", "sd", "mean"), digits = 2)
```

```
ment <- subset(data, select = c(6,7,13)) summary(ment) stargazer(ment, type = "latex", title = "summary identification variables", summary.stat = c("min", "max", "sd", "mean"), digits = 2)
```

#5: Empirical Analysis

#5.1: Descriptive & CCA

#Standardizing the Variables

```
infs <- scale(inf) ments <- scale(ment)
```

#Correlation Matrix

```
correl <- matcor(infs,ments) img.matcor(correl, type = 2)
```

#Canonical corelations

```
CCA <- cc(infs, ments) CCAcorstargazer(CCAcor)
```

#Canonical variates

```
CCAxccoefstargazer(CCAxccoef)
```

```
CCAycoefstargazer(CCAycoef)
```

#5.2: Testing for significance

#Performing Wilk's, Hotelling's and Pillai's Test Statistic

```
rho <- CCA$cor res <- p.asym(rho, 1239, 8, 3, tstat= "Wilks") p.asym(rho, 1238, 8, 3, tstat= "Hotelling") p.asym(rho, 1238, 8, 3, tstat= "Pillai")
```

```
xtable(as.data.frame(res))  
#Testing individually with Roy's Test Statistic  
p.asym(rho, 1238, 8, 3, tstat= "Roy")
```