TP_PCA.R

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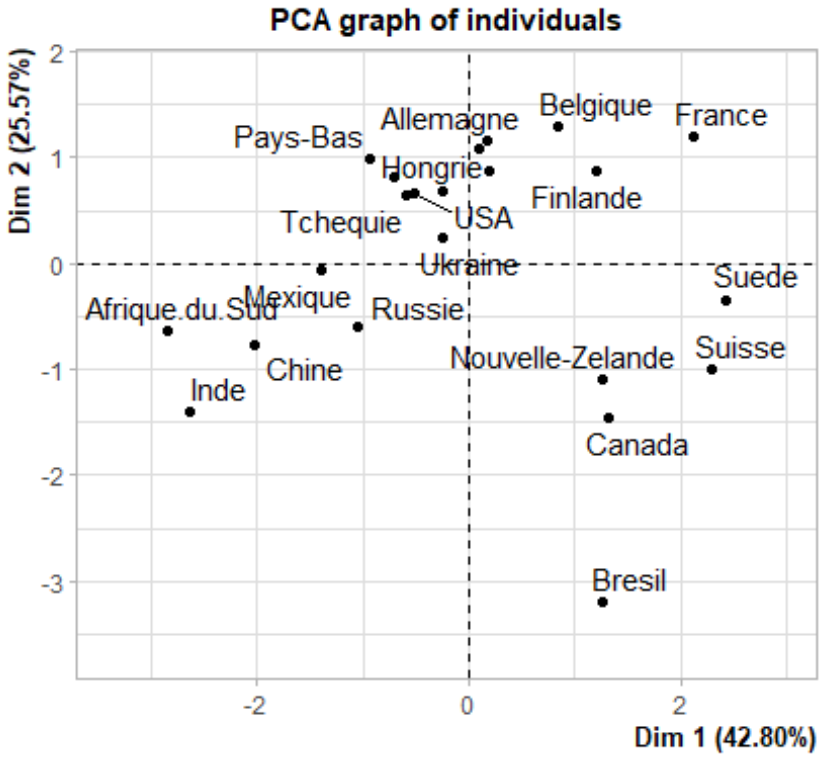
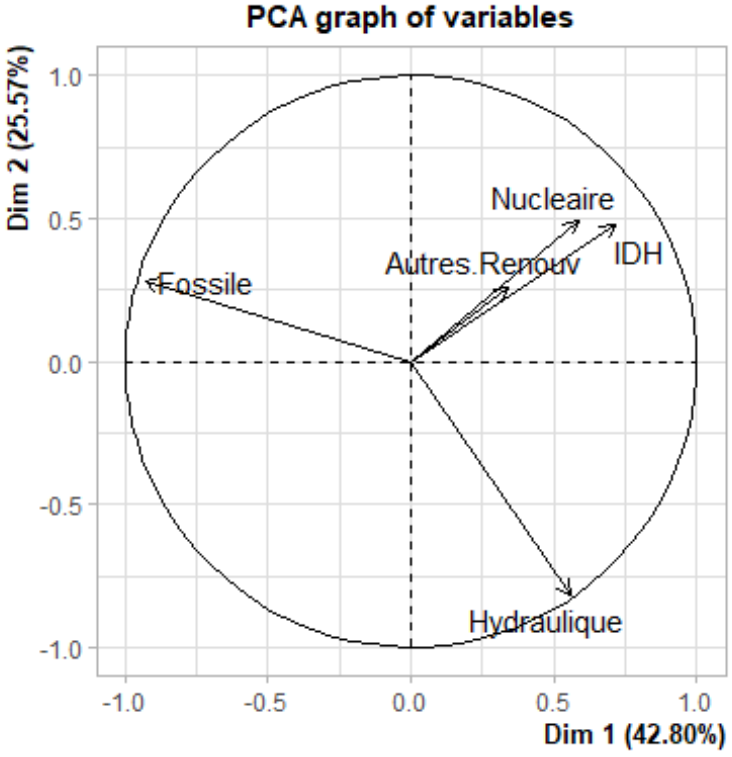
```
##TP:PCA
library(ggplot2)
##1-
library(FactoMineR)
library(factoextra)

## Welcome! Want to learn more? See two factoextra-related books at
https://goo.gl/ve3WBa

COUNTRY_ELECTRICITY <-
read.csv("C:/Users/taina/Downloads/COUNTRY_ELECTRICITY.txt", row.names=1,
sep="")
View(COUNTRY_ELECTRICITY)

My_PCA = PCA(COUNTRY_ELECTRICITY)

## Warning: ggrepel: 3 unlabeled data points (too many overlaps). Consider
## increasing max.overlaps
```





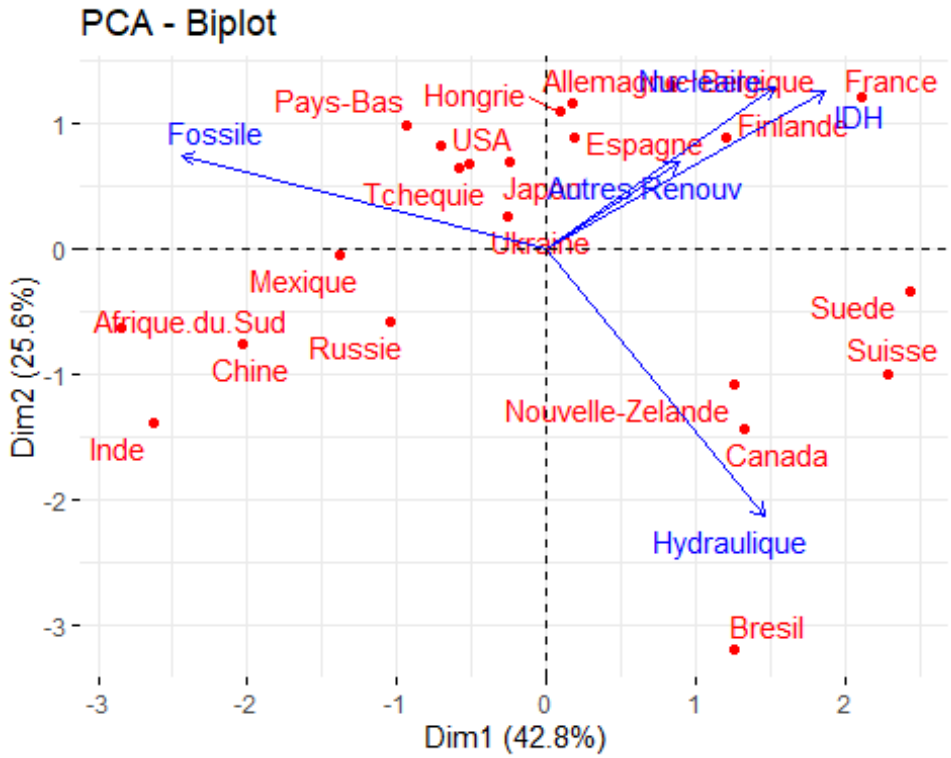

```
summary(My_PCA)

##
## Call:
```

```
## PCA(X = COUNTRY_ELECTRICITY)
##
##
## Eigenvalues
##                        Dim.1   Dim.2   Dim.3   Dim.4   Dim.5
## Variance               2.140   1.278   1.217   0.364   0.000
## % of var.             42.799  25.568  24.342   7.289   0.002
## Cumulative % of var.  42.799  68.367  92.709  99.998 100.000
##
## Individuals (the 10 first)
##                   Dist    Dim.1    ctr   cos2    Dim.2    ctr   cos2
Dim.3
## Canada         |  2.209 |  1.324  3.725  0.359 | -1.448  7.458  0.430 |
0.008
## USA            |  1.229 | -0.513  0.559  0.174 |  0.663  1.561  0.291 | -
0.025
## Mexique        |  1.518 | -1.387  4.085  0.834 | -0.059  0.012  0.001 |
0.546
## Bresil         |  3.461 |  1.256  3.348  0.132 | -3.200 36.416  0.855 |
0.361
## Allemagne      |  1.896 |  0.172  0.063  0.008 |  1.157  4.760  0.372 |
1.417
## Belgique       |  1.959 |  0.844  1.514  0.186 |  1.298  5.992  0.439 | -
1.199
## Espagne        |  1.693 |  0.189  0.076  0.012 |  0.873  2.711  0.266 |
1.423
## Finlande       |  2.346 |  1.204  3.081  0.264 |  0.878  2.740  0.140 |
1.579
## France         |  3.296 |  2.112  9.477  0.411 |  1.195  5.078  0.131 | -
2.200
## Pays-Bas       |  2.052 | -0.939  1.873  0.209 |  0.984  3.442  0.230 |
1.404
##                    ctr   cos2
## Canada          0.000  0.000 |
## USA             0.002  0.000 |
## Mexique         1.114  0.129 |
## Bresil          0.486  0.011 |
## Allemagne       7.502  0.559 |
## Belgique        5.369  0.375 |
## Espagne         7.563  0.707 |
## Finlande        9.316  0.453 |
## France         18.071  0.445 |
## Pays-Bas        7.367  0.468 |
##
## Variables
##                    Dim.1    ctr   cos2    Dim.2    ctr   cos2    Dim.3
ctr
## Hydraulique    |  0.558 14.557  0.312 | -0.816 52.125  0.666 |  0.131
1.413
## Nucleaire      |  0.585 16.006  0.343 |  0.490 18.788  0.240 | -0.613
```

```
30.909
## Fossile        | -0.929 40.290  0.862 |  0.279  6.077  0.078 |  0.209
3.575
## Autres.Renouv |  0.339  5.373  0.115 |  0.262  5.360  0.069 |  0.840
57.986
## IDH            |  0.713 23.774  0.509 |  0.475 17.651  0.226 |  0.273
6.116
##                   cos2
## Hydraulique     0.017 |
## Nucleaire       0.376 |
## Fossile         0.044 |
## Autres.Renouv   0.706 |
## IDH             0.074 |
```

```
fviz_pca_biplot(My_PCA, repel = TRUE, col.var = "blue", col.ind = "red" )
```

```
## Warning: ggrepel: 1 unlabeled data points (too many overlaps). Consider
## increasing max.overlaps
```




```
#In this graph Ukraine can't be very significiant but for exemple we can say
that Bresil Use lot of Hydraulique energy.
#We can say that Canada has aproximatly the same characteristics with
Hydraulique variables than Bresil.
```