# Multivariate Analysis

Ana Rasinhas Daniela Gonçalves Pedro Fernandes

Ricardo Branco Samuel Medalha

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## Abstract

## Introduction

## Methodology

```
Kaiser-Meyer-Olkin factor adequacy
Call: KMO(r = scaled_data)
Overall MSA =  0.86
MSA for each item =
trstprl trstlgl trstplt trstprt  trstep  trstun imbgeco imueclt imwbcnt
imsmetn
   0.92    0.93    0.82    0.83    0.86    0.85    0.93    0.90    0.89
0.90
imdfetn impcntr eqwrkbg eqpolbg eqmgmbg eqpaybg
   0.83    0.87    0.91    0.79    0.77    0.89
```

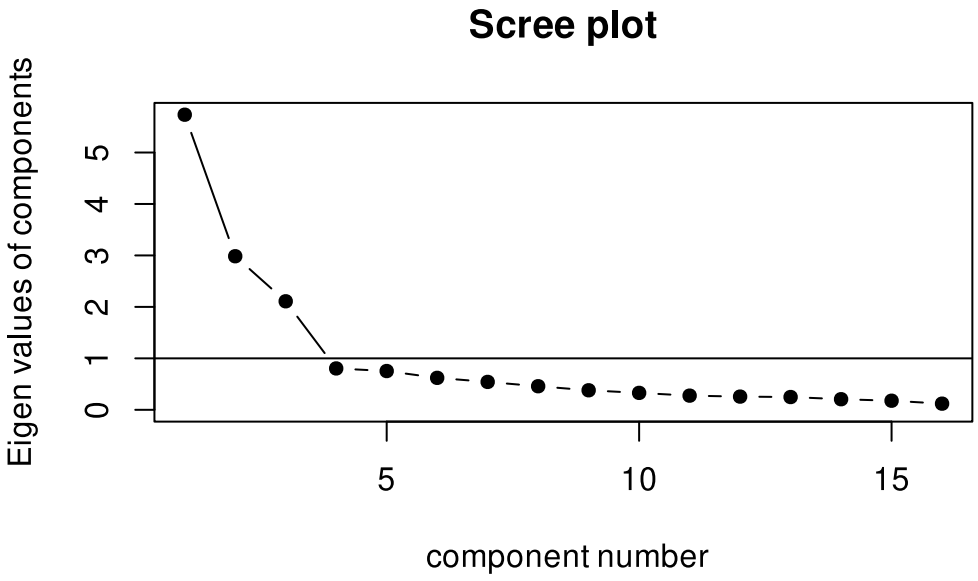
After executing the Kaiser-Meyer-Olkin test, the MSA (measure of sampling accuracy, which varies between 0 and 1) is calculated as 0.86. This is classified as “meritorious”, so we have an indication that factor analysis is suitable for this data set.

We’ll start by performing factor analysis with a high number of values:

```
                       RC2   RC3   RC4   RC5   RC9   RC6  RC10   RC7  RC12
SS loadings          2.667 1.908 1.859 1.090 1.046 1.003 0.977 0.964 0.932
Proportion Var       0.167 0.119 0.116 0.068 0.065 0.063 0.061 0.060 0.058
Cumulative Var       0.167 0.286 0.402 0.470 0.536 0.598 0.659 0.720 0.778
Proportion Explained 0.167 0.119 0.116 0.068 0.065 0.063 0.061 0.060 0.058
Cumulative Proportion 0.167 0.286 0.402 0.470 0.536 0.598 0.659 0.720 0.778
                       RC8   RC1  RC13  RC11  RC15  RC14  RC16
SS loadings          0.913 0.910 0.710 0.461 0.231 0.210 0.120
Proportion Var       0.057 0.057 0.044 0.029 0.014 0.013 0.008
```

```
Cumulative Var        0.835 0.892 0.936 0.965 0.979 0.992 1.000
Proportion Explained  0.057 0.057 0.044 0.029 0.014 0.013 0.008
Cumulative Proportion 0.835 0.892 0.936 0.965 0.979 0.992 1.000
```

```
                       MR4   MR1   MR2   MR3   MR5   MR6   MR7   MR8   MR9
SS loadings           2.152 2.122 1.806 1.632 1.511 1.315 0.948 0.085 0.063
Proportion Var        0.135 0.133 0.113 0.102 0.094 0.082 0.059 0.005 0.004
Cumulative Var        0.135 0.267 0.380 0.482 0.576 0.659 0.718 0.723 0.727
Proportion Explained  0.182 0.180 0.153 0.138 0.128 0.111 0.080 0.007 0.005
Cumulative Proportion 0.182 0.362 0.515 0.653 0.781 0.893 0.973 0.980 0.985
                      MR11  MR10  MR12  MR15  MR13  MR14  MR16
SS loadings           0.061 0.047 0.025 0.018 0.013 0.009 0.000
Proportion Var        0.004 0.003 0.002 0.001 0.001 0.001 0.000
Cumulative Var        0.731 0.734 0.735 0.737 0.737 0.738 0.738
Proportion Explained  0.005 0.004 0.002 0.002 0.001 0.001 0.000
Cumulative Proportion 0.990 0.994 0.997 0.998 0.999 1.000 1.000
```




```

Loadings:
        RC2    RC1    RC3
trstprl  0.846
trstlgl  0.742
trstplt  0.885
trstprt  0.878
trstep   0.773
```

```
trstun   0.725
imbgeco         0.770
imueclt         0.770
imwbcnt         0.775
imsmetn         0.766
imdfetn         0.862
impcntr         0.830
eqwrkbg                0.703
eqpolbg                0.853
eqmgmbg                0.872
eqpaybg                0.789

                 RC2   RC1   RC3
SS loadings    4.129 3.980 2.719
Proportion Var 0.258 0.249 0.170
Cumulative Var 0.258 0.507 0.677
```

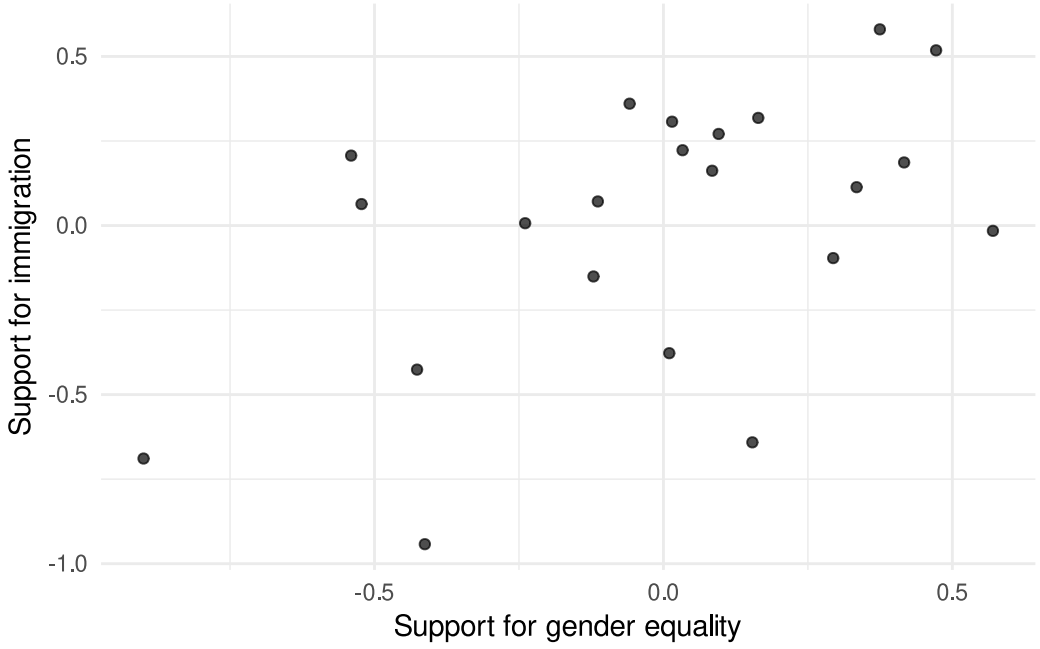
```
Loadings:
        RC2    RC1    RC3
trstprl  0.846
trstlgl  0.742
trstplt  0.885
trstprt  0.878
trstep   0.773
trstun   0.725
imbgeco         0.772
imueclt         0.772
imwbcnt         0.777
imsmetn         0.768
imdfetn         0.865
impcntr         0.832
eqwrkbg                0.702
eqpolbg                0.850
eqmgmbg                0.869
eqpaybg                0.786

                 RC2   RC1   RC3
SS loadings    4.130 4.017 2.681
Proportion Var 0.258 0.251 0.168
Cumulative Var 0.258 0.509 0.677
```

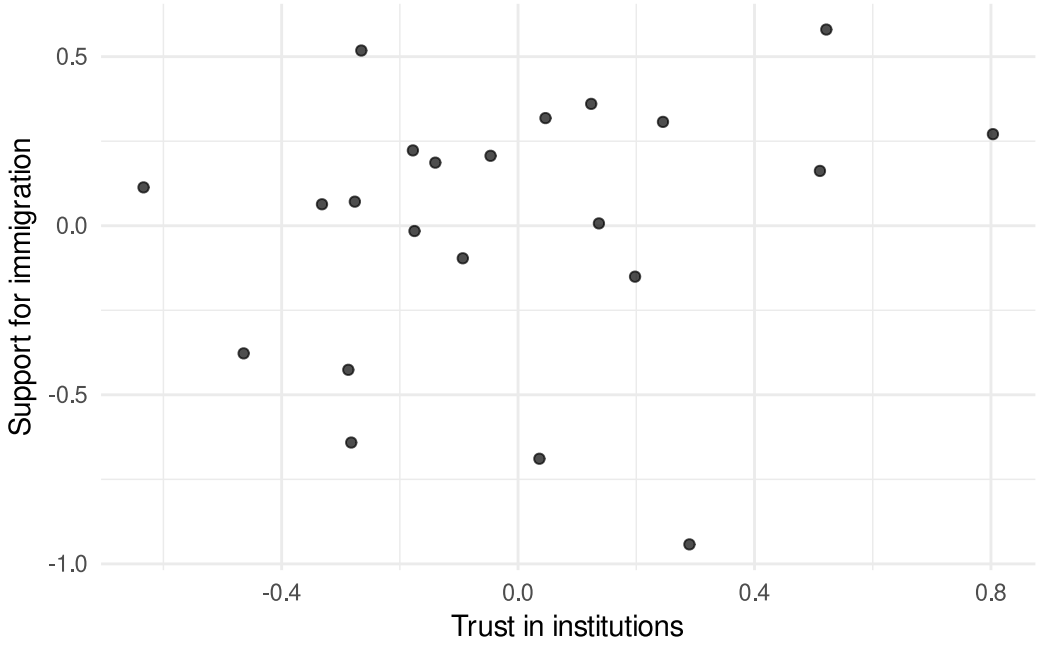
```
Loadings:
        MR2   MR1   MR3
trstprl 0.819
```

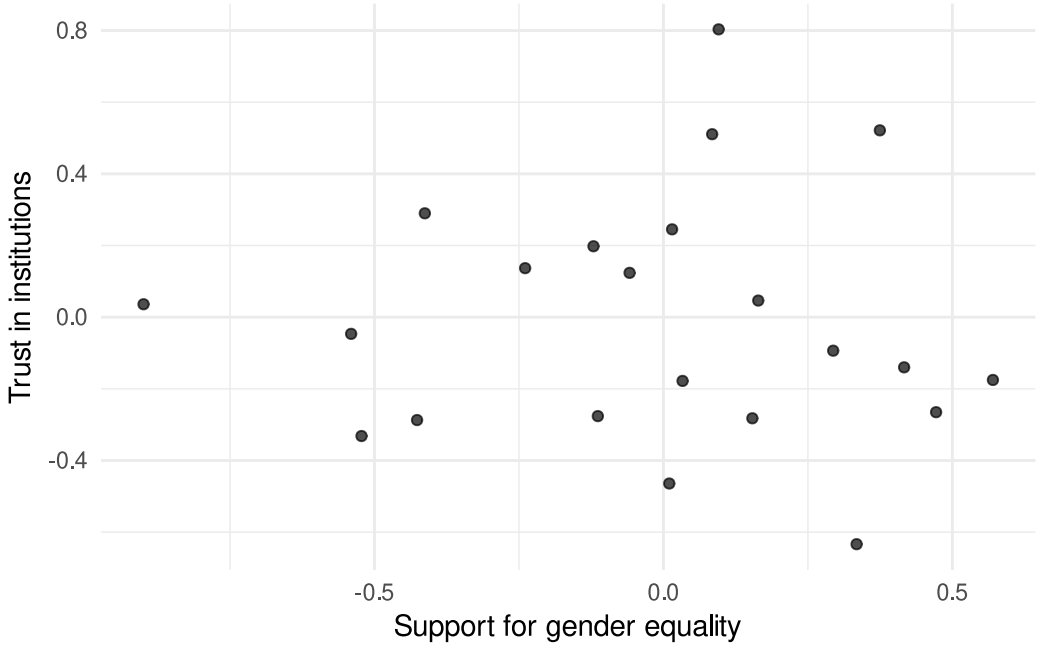
```
trstlgl 0.670
trstplt 0.879
trstprt 0.867
trstep  0.717
trstun  0.656
imbgeco       0.720
imueclt       0.724
imwbcnt       0.727
imsmetn       0.694
imdfetn       0.843
impcntr       0.794
eqwrkbg
eqpolbg             0.833
eqmgmbg             0.873
eqpaybg             0.685

                 MR2   MR1   MR3
SS loadings    3.780 3.580 2.364
Proportion Var 0.236 0.224 0.148
Cumulative Var 0.236 0.460 0.608
```

```
Loadings:
        MR2   MR1   MR3
trstprl 0.819
trstlgl 0.670
trstplt 0.879
trstprt 0.867
trstep  0.717
trstun  0.655
imbgeco       0.723
imueclt       0.728
imwbcnt       0.729
imsmetn       0.697
imdfetn       0.848
impcntr       0.799
eqwrkbg
eqpolbg             0.828
eqmgmbg             0.868
eqpaybg             0.680

                 MR2   MR1   MR3
SS loadings    3.777 3.646 2.300
Proportion Var 0.236 0.228 0.144
Cumulative Var 0.236 0.464 0.608
```

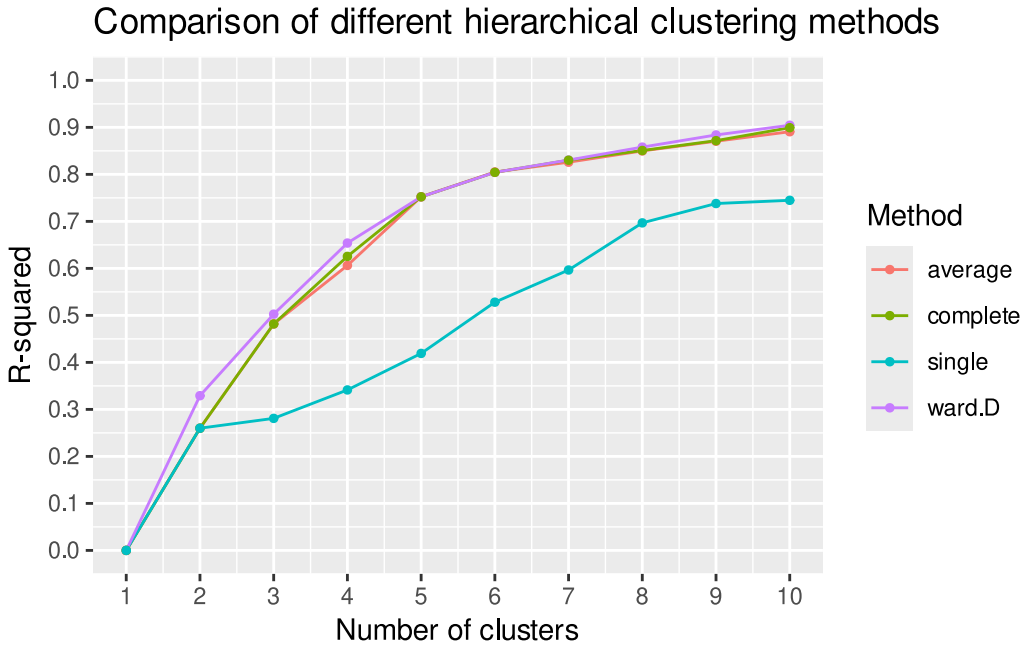
Explicar porque standardizamos a média das observaçoes para cada país .

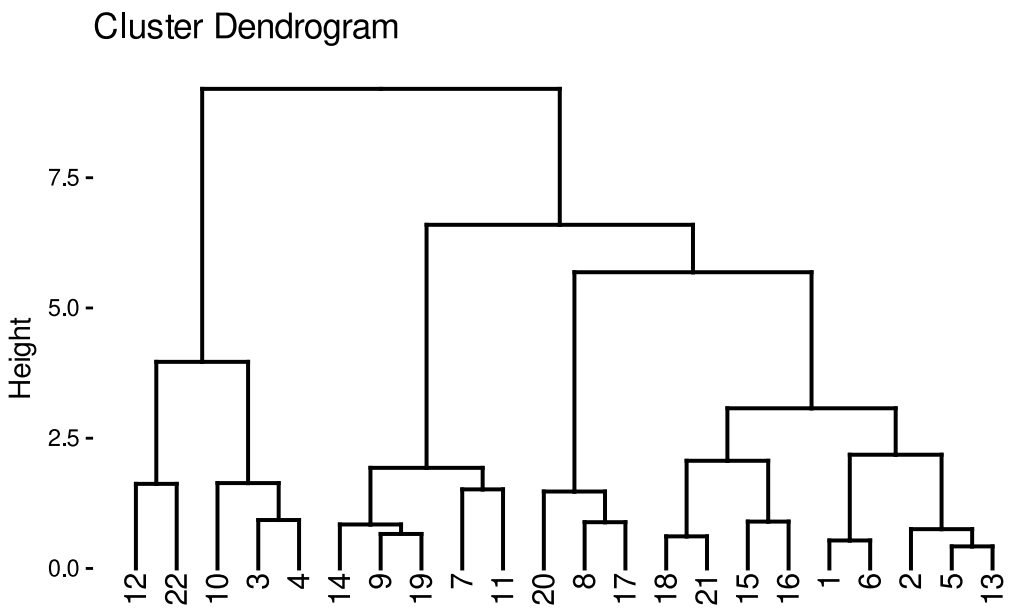

0.5
0.0
-0.5
-1.0
Support for immigration
-0.5
0.0
0.5
Support for gender equality


0.5
0.0
-0.5
-1.0
Support for immigration
-0.4
0.0
0.4
0.8
Trust in institutions




```
Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
ℹ Please use `linewidth` instead.
```




Cluster Dendrogram
Height
7.5
5.0
2.5
0.0
12
22
10
3
4
14
9
19
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11
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8
17
18
21
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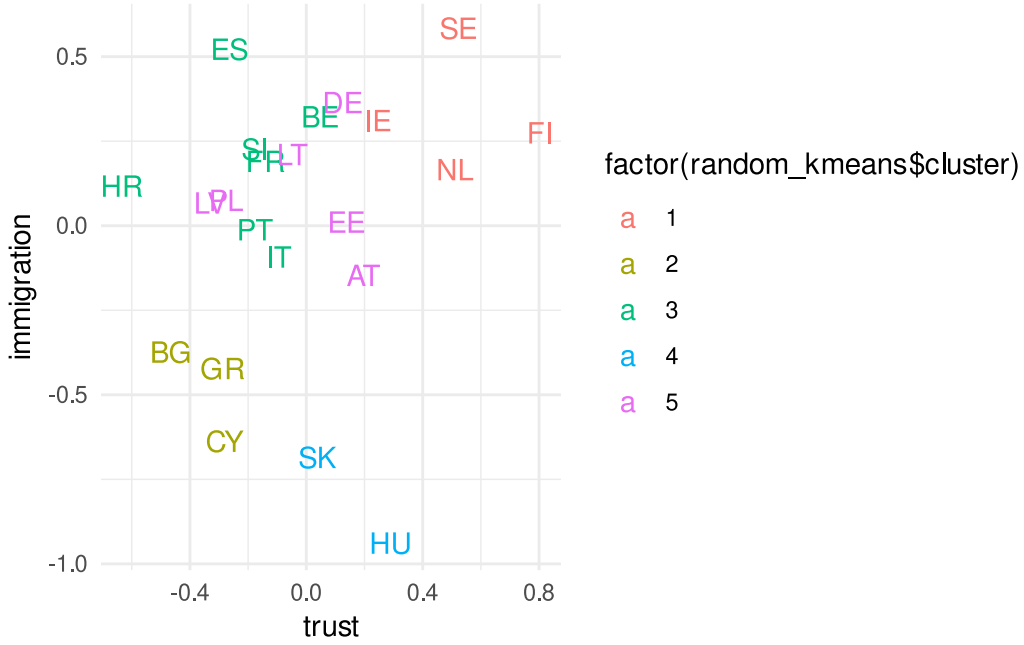
1
6
2
5
13


immigration
trust
0.5
0.0
-0.5
-1.0
-0.4
0.0
0.4
0.8
ES
SE
DE
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IE
FI
NL
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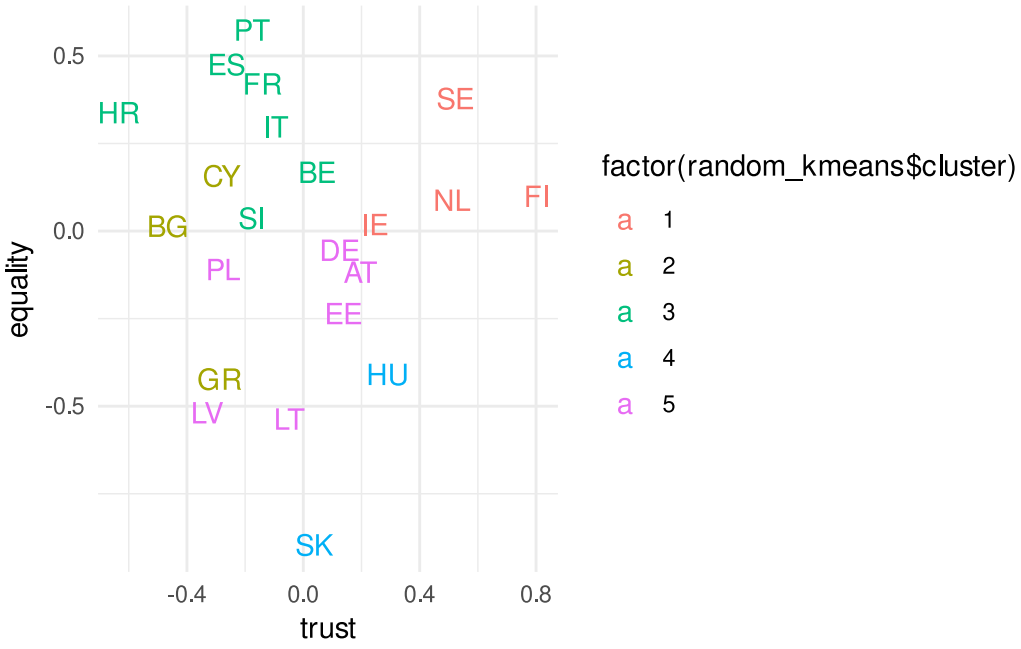
GR
CY
SK
HU
factor(random_kmeans$cluster)
a 1
a 2
a 3
a 4
a 5


PT
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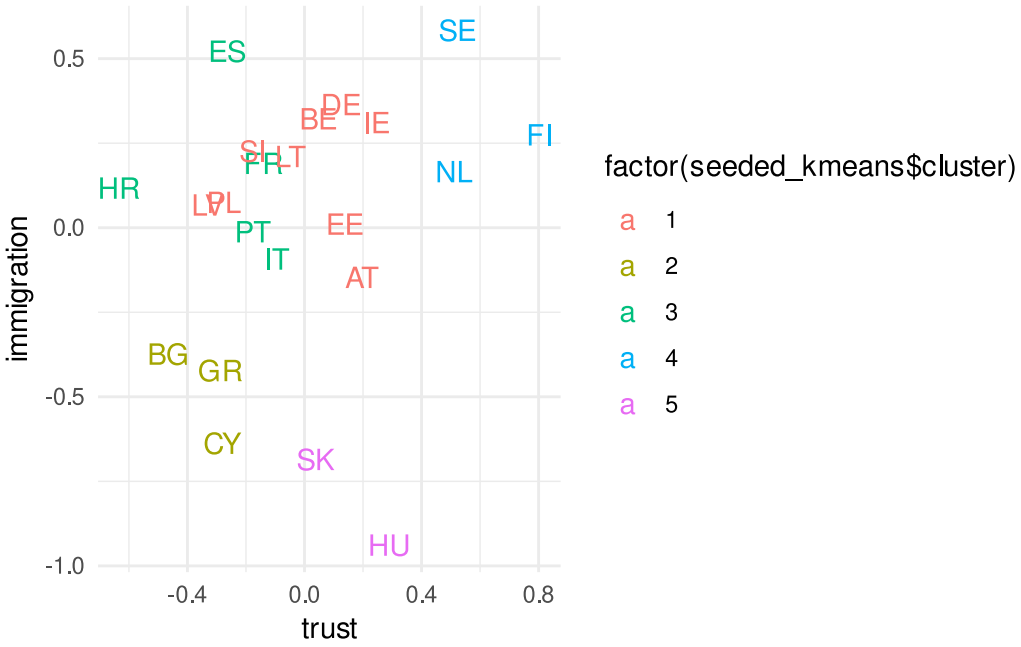
LV
LT
SK
0.5
0.0
-0.5
-0.4
0.0
0.4
0.8
equality
trust
factor(random_kmeans$cluster)
a 1
a 2
a 3
a 4
a 5


SE
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LV
PL
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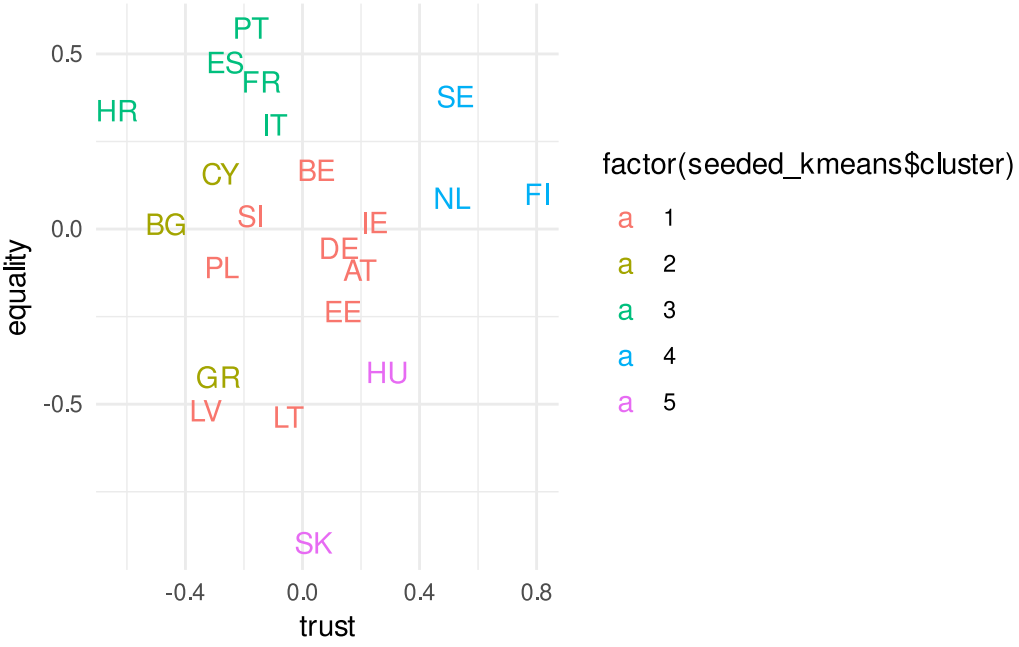
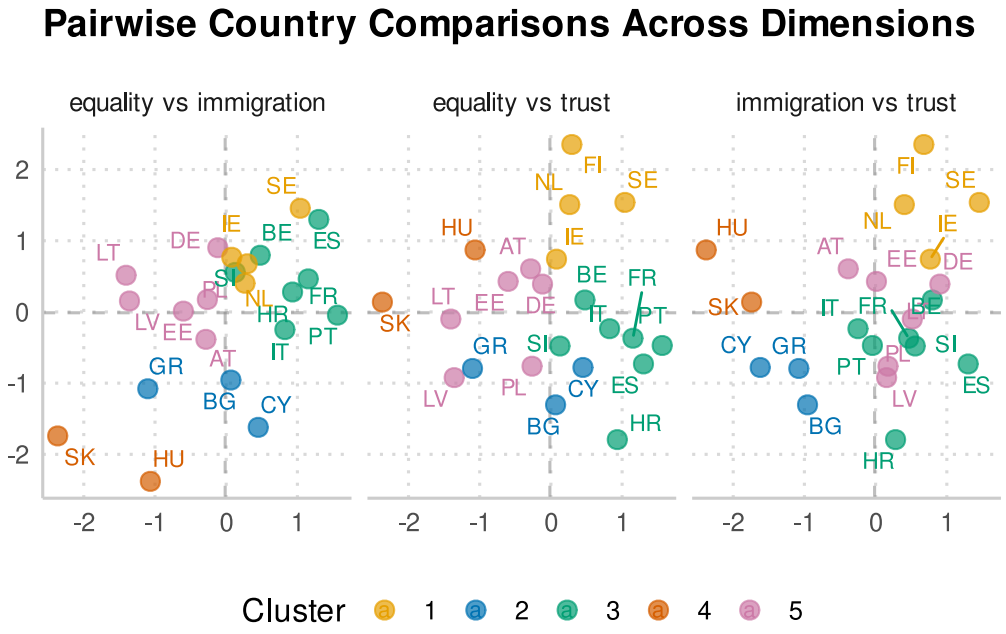
EE
IT
AT
BG
GR
CY
SK
HU
0.5
0.0
-0.5
-1.0
-0.4
0.0
0.4
0.8
immigration
trust
factor(seeded_kmeans$cluster)
a 1
a 2
a 3
a 4
a 5

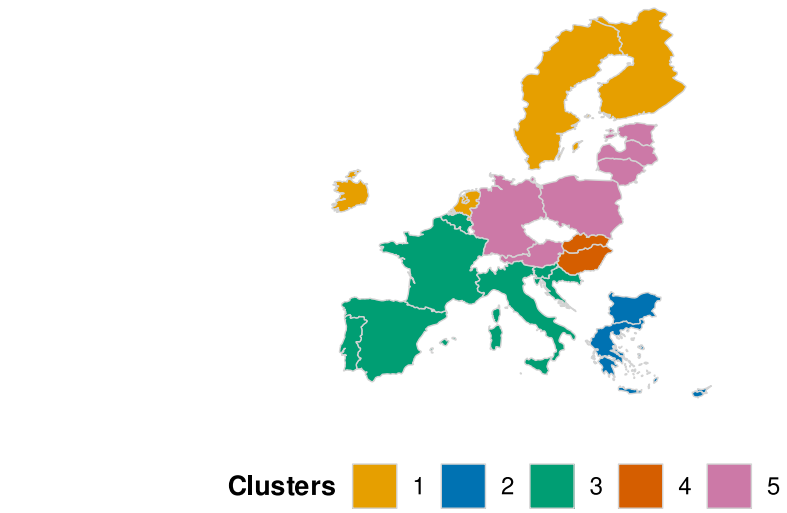



```
Deterministic total WSS: 15.60823
```

```
Random total WSS: 15.51587
```

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




Ver várias métricas?

## Results

## Discussion

## Conclusions

## References