

Multivariate Analysis

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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:

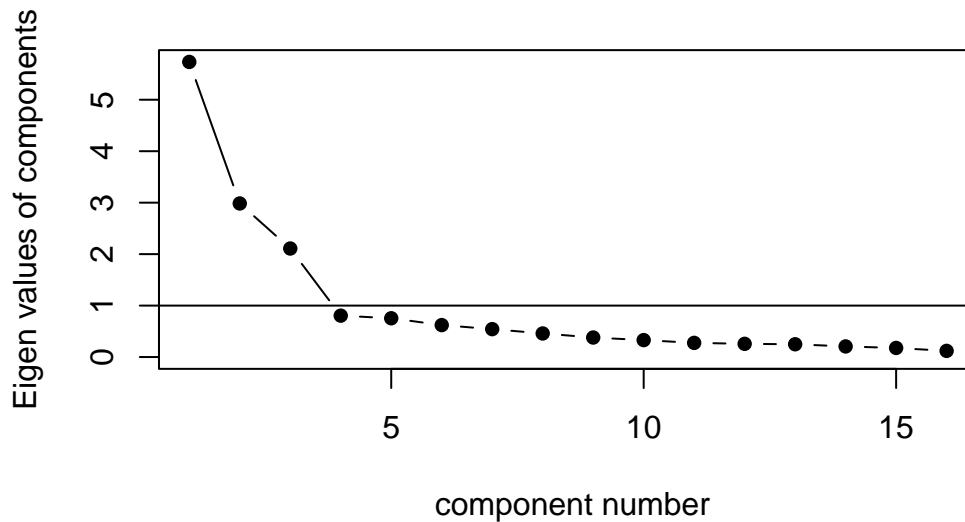
	RC2	RC3	RC4	RC5	RC9	RC6	RC10	RC7	RC12
SS loadings	2.667	1.908	1.859	1.090	1.046	1.003	0.977	0.964	0.932
Proportion Var	0.167	0.119	0.116	0.068	0.065	0.063	0.061	0.060	0.058
Cumulative Var	0.167	0.286	0.402	0.470	0.536	0.598	0.659	0.720	0.778
Proportion Explained	0.167	0.119	0.116	0.068	0.065	0.063	0.061	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

Scree plot



```
pcf_varimax <- principal(scaled_data, nfactors = 3, rotate = "varimax", scores = TRUE)
pcf_quartimax <- principal(scaled_data, nfactors = 3, rotate = "quartimax")
paf_varimax <- fa(scaled_data, nfactors = 3, rotate = "varimax")
paf_quartimax <- fa(scaled_data, nfactors = 3, rotate = "quartimax")
print(pcf_varimax$loadings, cutoff = 0.6, digits = 3)
```

Loadings:

	RC2	RC1	RC3
trstprl	0.846		
trstlgl	0.742		
trstplt	0.885		
trstprr	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

```
print(pcf_quartimax$loadings, cutoff = 0.6, digits = 3)
```

Loadings:

	RC2	RC1	RC3
trstprl	0.846		
trstlgl	0.742		
trstplt	0.885		
trstprr	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

```
print(paf_varimax$loadings, cutoff = 0.6, digits = 3)
```

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

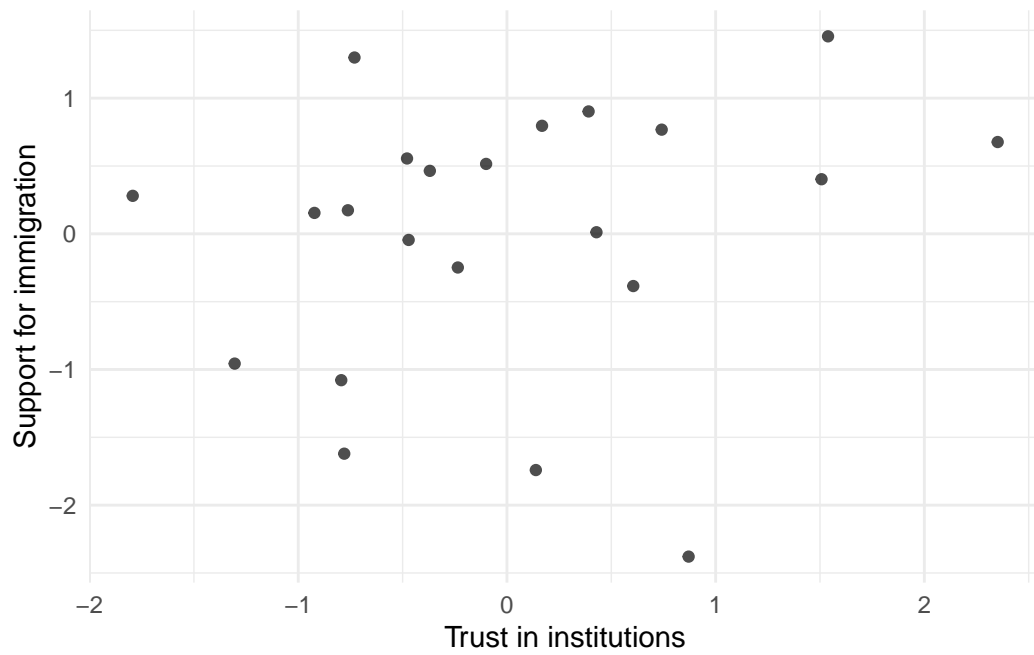
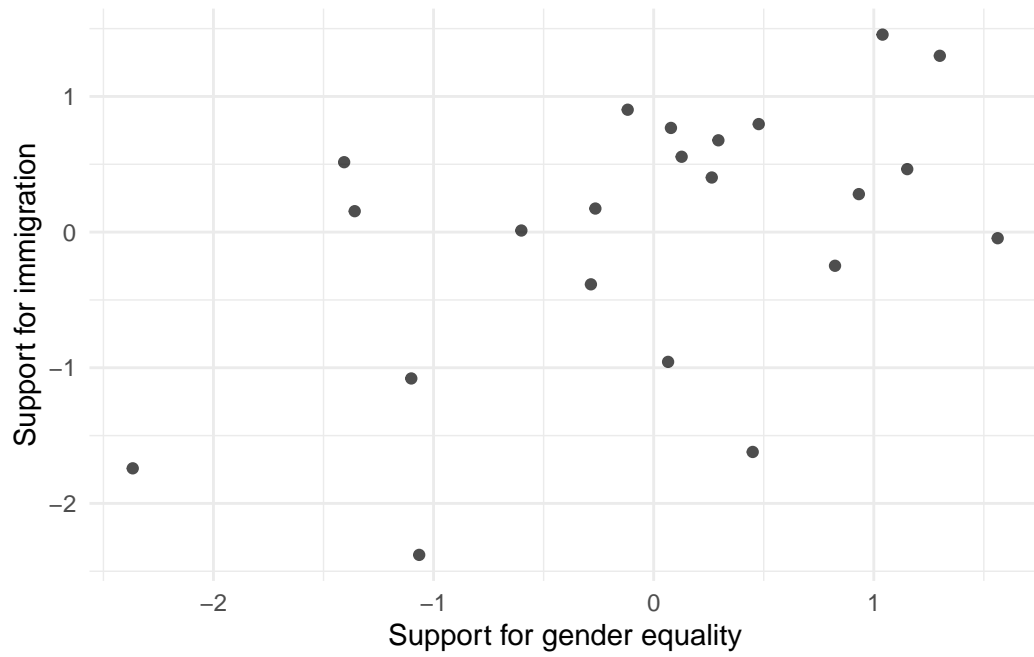
```
print(paf_quartimax$loadings, cutoff = 0.6, digits = 3)
```

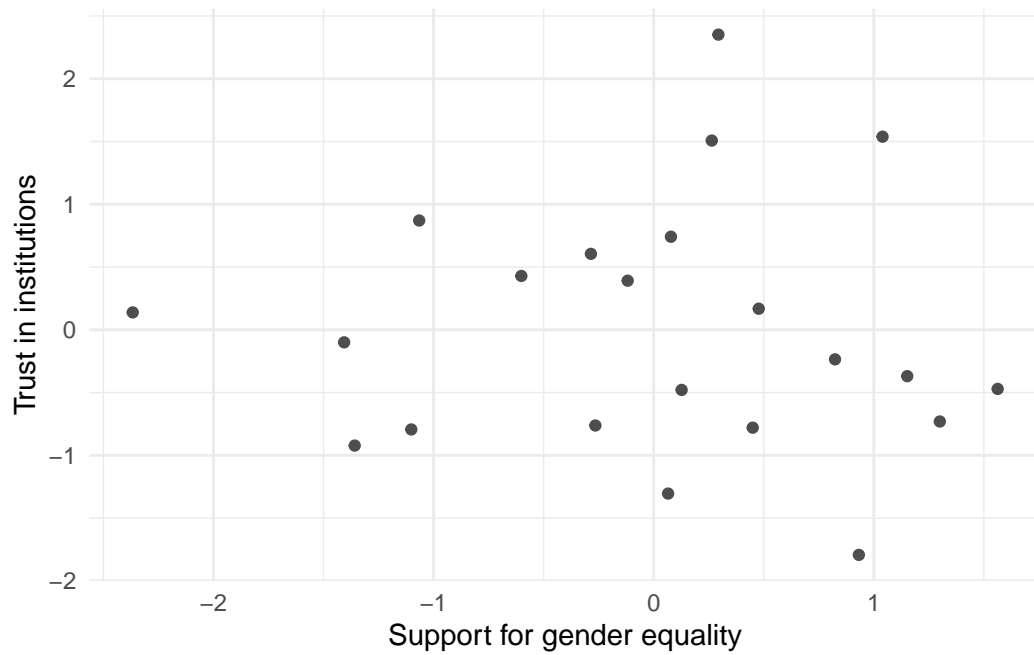
Loadings:

	MR2	MR1	MR3
trstprl	0.819		
trstlgl	0.670		
trstplt	0.879		
trstprr	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

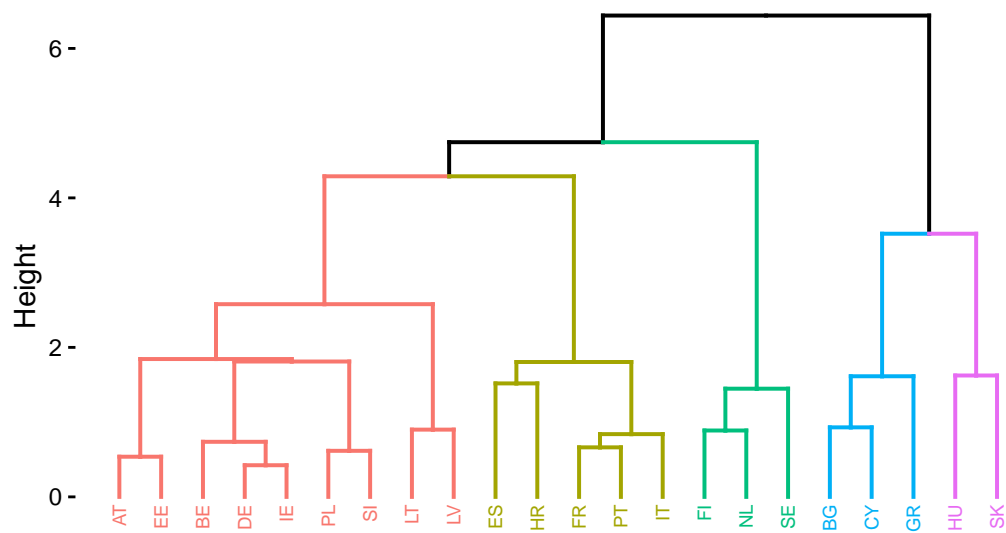
	MR2	MR1	MR3
SS loadings	3.777	3.646	2.300
Proportion Var	0.236	0.228	0.144
Cumulative Var	0.236	0.464	0.608

Explicar porque standardizamos a média das observações para cada país .





Cluster Dendrogram



Ver várias métricas?

Results

Discussion

Conclusions

References