Assignment4_AbhishekPandit

Abhishek Pandit

10 November 2019

R Markdown

How do CFA and EFA differ?

Fit three exploratory factor analysis models initialized at 2, 3, and 4 factors. Present the loadings from these solutions and discuss in substantive terms. How does each fit? What sense does this give you of the underlying dimensionality of the space? And so on

Rotate the 3-factor solution using any oblique method you would like and present a visual of the unrotated and rotated versions side-by-side. How do these differ and why does this matter (or not)?

```
summary(cars)
```

```
##      speed           dist       
##  Min.   : 4.0   Min.   :  2.00  
##  1st Qu.:12.0   1st Qu.: 26.00  
##  Median :15.0   Median : 36.00  
##  Mean   :15.4   Mean   : 42.98  
##  3rd Qu.:19.0   3rd Qu.: 56.00  
##  Max.   :25.0   Max.   :120.00
```

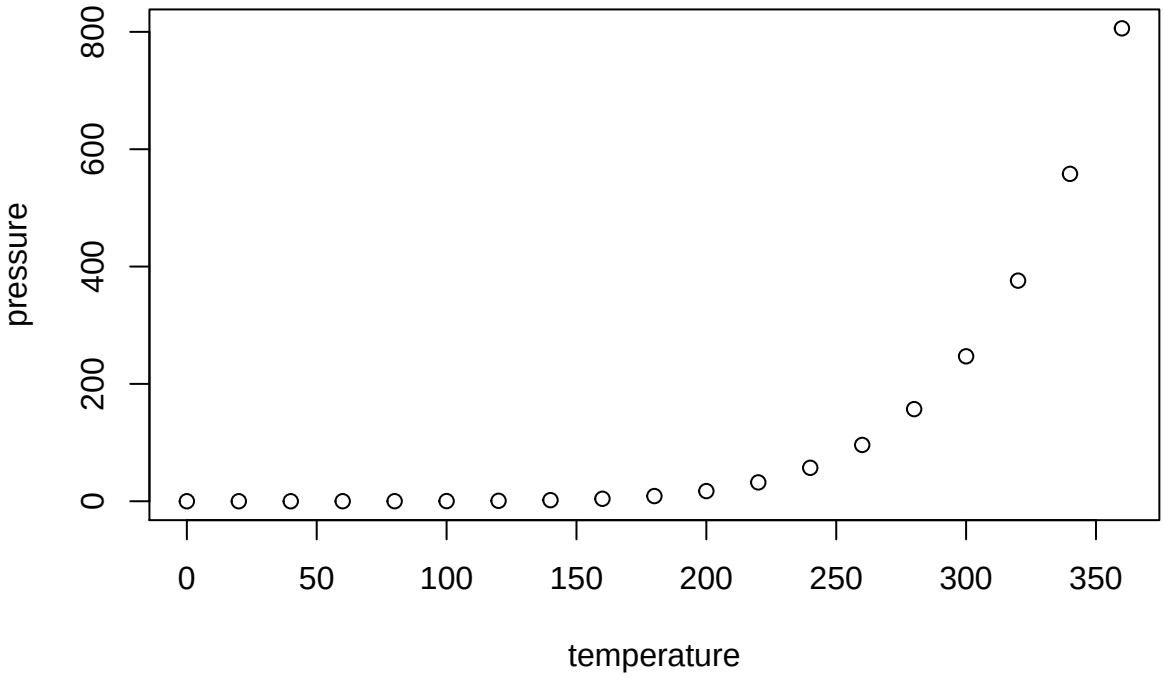
Including Plots

Principal Components Analysis

```
What is the statistical difference between PCA and FA? Describe the basic construction of each approach
```

Differences between Factor Analysis and PCA: 1. The factors in factor analysis are conceptualized as "real world" entities such as depression, anxiety, and disturbed thought. This is in contrast to principal components analysis (PCA), where the components are simply geometrical abstractions that may not map easily onto real world phenomena. 2. the latent Factor, is causing the responses on the four measured Y variables.There is no such causal relation expected between a Principal Component and its constituent variables

```
Fit a PCA model. Present the proportion of explained variance across the first 10 components. What do tl
Present a biplot of the PCA fit from the previous question. Describe what you see (e.g., which countries
```



Bonus Question (5 points):

```
Fit a sparse PCA model and a probabilistic PCA model. Compare these results substantively. What does ea
```