

Case Study II

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Problem

Combining Motives

- ▶ 300 volunteers are involved in a questionnaire about their motives for volunteering.
- ▶ Six motives for volunteering are studied, one score for each of six motives.
- ▶ The six motives are conceptually distinct, but the scores are correlated.
- ▶ Can a single score to be used as an overall indicator of motivation for volunteering?

Questions

- ▶ The scaling of the six score: are they in the same range?
- ▶ How did they define these six motives?
- ▶ What's the purpose of the study?
- ▶ Why did she want to combine them to one single score?
- ▶ How did people work for the survey?

Principal Component Analysis

- ▶ To produce a lower dimensional description of the rows and columns of a multivariate data matrix.
- ▶ The principle idea of reducing the dimension of data matrix X is achieved through linear combinations.
- ▶ To look for linear combinations which create the largest spread among the values of X .

Factor Analysis

- ▶ To model the relevant information (represented in a multivariate variable X) as coming from a limited number of latent factors.
- ▶ These unobserved factors are much more interesting to the social scientist than the observed quantitative measures X themselves.
- ▶ Assume that there is a model (it will be called the "Factor Model") stating that most of the covariances between the p elements of X can be explained by a limited number of latent factors.

Pros and Cons

- ▶ They have a nice geometric justification since they are the best fit in subspaces generated by the columns of the (transformed) data matrix X .
- ▶ It's focusing on the variables (six motives) but not individuals.
- ▶ Generally speaking, one single overall motivation score might be not enough for these methods.

Maximum/Minimum/Median/Average...

- ▶ Intent to simply understand the motivation of volunteers.
- ▶ Give volunteer coordinators an understanding of which volunteers might have better retention, or how to place volunteers, or how to focus their outreach efforts for getting new volunteers.

Pros and Cons

- ▶ Easy to explain/understand.
- ▶ Easy to compute.
- ▶ More focusing on individuals.
- ▶ No statistical support.
- ▶ May lose some information.

Thank you!