HDDA Tutorial: FactorModel

Department of Econometrics and Business Statistics, Monash University

Tutorial 8

We will investigate the Boston housing data also covered in the lecture.

Factor analysis

Carry out factor analysis using a **four** factor model. At first use no rotation.

1. What is the loading of the third factor on the variable PTRATIO
2. What are the unique variance of the variable MEDV and CRIM?
3. Carry out the analysis after standardising the data first. Does your answer to question 2 change?
4. Why are the answers to 3 and 4 the same/ different?
5. In light of all these answers, interpret the uniqueness of MEDV and CRIM and compare these.

Interpreting the factors

1. For each factor identify the loadings that are close to zero and those that are large.
2. Carry out the same analysis after doing a varimax rotation.
3. Carry out the same analysis after doing a varimax rotation.

Factor Scores

1. Estimate the factor scores using Bartlett's method when there is no rotation.
2. Estimate the correlation matrix of the factors.
3. Repeat the previous 2 questions using the promax rotation
4. Are these answers what you expect? Why or why not?

PCA v Factor Analysis

How does factor analysis (FA) differ from PCA?