MULTIVARIATE STATISTICS IN R

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Chapter 1 Introduction

1.Whenever we have a dataset of just one two or three variables it is easy for us to analyze the data and test the hypothesis. Plotting the data onto 2 or 3 dimensions is also practical.

2.What happens if the variables are more than 3? Well as human mind can only see things in 3D we will not be able to use all the dimensions/variables while plotting our subjects/rows and if all the variables are equally important for the analysis we can’t afford to lose any.

3.The techniques of multivariate analysis will help us analyze and test our hypothesis when we have more than 3 variables.

4.Basically any multivariate analysis technique will take all the variables/dimensions in your dataset and give you one or two variables/dimensions. These two variables will have all the important information provided by all the variables of the dataset.

5.For testing Multivaraite analyses/hypotheses there are tests like bootstrap, permutation and Jacknife.

6.In this cookbook I have used different multivariate analysis techniques to analyze SmartphoneUsage.RData which was taken from openICPSR, a public access repository supported by the Inter-university Consortium for Political and Social Research (ICPSR), under a Creative Commons Attribution 4.0 International (CC BY 4.0) License.

7.SmartphoneUsage dataset has 2 parts one part has smartphones usage variables and the other has variables related to GDP and demographics. The subjects/rows are countries for both parts.

8.For CA we have used the Dataset AlcoholEU from the package data4PCCAR (https://nam02.safelinks.protection.outlook.com/?url=https%3A%2F%2Fgithub.com%2FHerveAbdi%2Fdata4PCCAR&data=02%7C01%7Cjjg180000%40utdallas.edu%7C1f814da5346b43e7d0ea08d7d1af7104%7C8d281d1d9c4d4bf7b16e032d15de9f6c%7C0%7C0%7C637208423786887112&sdata=5mRu0txZM1NqnPnhHOi5j24nl8mcLPdMFIFr7cqcByQ%3D&reserved=0) data set alcoholInEurope

9.For Distatis we have used the dataset from R Raman, M Kriegsman, H Abdi, B Tillmann, & J Dowling (in press, 2020). Bach, Mozart, and Beethoven: Sorting piano excerpts based on perceived similarity using DiSTATIS New Ideas in Psychology, 57.