STA 3180 Statistical Modelling: Factor Analysis

STA 3180 Statistical Modelling: Factor Analysis Lecture Notes

Factor Analysis is a statistical technique used to identify the underlying structure of a set of variables. It is used to reduce the number of variables in a dataset by identifying common underlying factors or dimensions that explain the variance among the variables. Factor analysis is a type of exploratory data analysis (EDA) and is often used in social sciences, psychology, and marketing research.

Key Concepts:

• Factor analysis is a statistical technique used to identify the underlying structure of a set of variables.

• It is used to reduce the number of variables in a dataset by identifying common underlying factors or dimensions that explain the variance among the variables.

• Factor analysis is a type of exploratory data analysis (EDA) and is often used in social sciences, psychology, and marketing research.

Definitions:

• Factor: A factor is a latent variable that explains the variance among the observed variables.

• Factor Loadings: Factor loadings are the correlations between the observed variables and the factors.

• Explained Variance: Explained variance is the amount of variance explained by the factors.

```
Start of Code
# Load the necessary packages
library(psych)
library(factoextra)
# Perform factor analysis
fa <- factanal(data, factors = 2, rotation = "varimax")
# Print the results
print(fa)
End of Code
```

Practice Multiple Choice Questions:

Q1. What is factor analysis?

A. A statistical technique used to identify the underlying structure of a set of variables

B. A type of exploratory data analysis

C. A method of reducing the number of variables in a dataset

D. All of the above

Answer: D. All of the above