

## **STA 3180 Statistical Modelling: Factor Analysis**

1. What is factor analysis and what are its main objectives?

Answer: Factor analysis is a statistical technique used to identify the underlying structure of a set of variables. Its main objectives are to reduce the number of variables in a dataset, identify relationships between variables, and explain the variance in the data.

2. What is the difference between principal component analysis and factor analysis?

Answer: Principal component analysis (PCA) is a type of factor analysis that is used to reduce the number of variables in a dataset by identifying linear combinations of variables that explain the most variance in the data. Factor analysis is a more general technique that can be used to identify non-linear relationships between variables and explain the variance in the data.

3. What is the purpose of the Kaiser-Meyer-Olkin (KMO) measure?

Answer: The Kaiser-Meyer-Olkin (KMO) measure is used to assess the suitability of a dataset for factor analysis. It measures the degree of correlation between the variables in the dataset and ranges from 0 to 1, with higher values indicating a better fit for factor analysis.

4. What is the difference between exploratory and confirmatory factor analysis?

Answer: Exploratory factor analysis is used to identify the underlying structure of a dataset and is typically used as an exploratory tool. Confirmatory factor analysis is used to test a pre-specified model of the underlying structure of a dataset and is typically used to confirm or reject a hypothesis.

5. What is the difference between common factor analysis and principal axis factoring?

Answer: Common factor analysis is a type of factor analysis that is used to identify the underlying structure of a dataset by extracting common factors from the variables. Principal axis factoring is a type of factor analysis that is used to identify the underlying structure of a dataset by extracting orthogonal factors from the variables.