

STA 3180 Statistical Modelling: Logistic Regression

I. Introduction to Logistic Regression

A. Definition and Overview

1. Definition of logistic regression
2. Overview of the model

B. Assumptions

1. Linearity
2. Independence of errors
3. Normality of residuals
4. Homoscedasticity

C. Good Problem Solving Strategies

1. Understand the assumptions and how they affect the model
2. Identify the type of data and the appropriate model
3. Use the correct software to run the model
4. Interpret the results correctly

II. Estimation of Logistic Regression

A. Maximum Likelihood Estimation

1. Definition of maximum likelihood estimation
2. Steps in the estimation process
3. Good problem solving strategies
 - a. Understand the assumptions and how they affect the model
 - b. Identify the type of data and the appropriate model
 - c. Use the correct software to run the model
 - d. Interpret the results correctly

B. Bayesian Estimation

1. Definition of Bayesian estimation
2. Steps in the estimation process
3. Good problem solving strategies
 - a. Understand the assumptions and how they affect the model

- b. Identify the type of data and the appropriate model
- c. Use the correct software to run the model
- d. Interpret the results correctly

III. Model Evaluation

A. Goodness of Fit

- 1. Definition of goodness of fit
- 2. Steps in the evaluation process
- 3. Good problem solving strategies
 - a. Understand the assumptions and how they affect the model
 - b. Identify the type of data and the appropriate model
 - c. Use the correct software to run the model
 - d. Interpret the results correctly

B. Model Selection

- 1. Definition of model selection
- 2. Steps in the selection process
- 3. Good problem solving strategies
 - a. Understand the assumptions and how they affect the model
 - b. Identify the type of data and the appropriate model
 - c. Use the correct software to run the model
 - d. Interpret the results correctly
 - e. Compare different models and select the best one

IV. Conclusion

A. Summary of Logistic Regression

B. Good Problem Solving Strategies

- 1. Understand the assumptions and how they affect the model
- 2. Identify the type of data and the appropriate model
- 3. Use the correct software to run the model
- 4. Interpret the results correctly
- 5. Compare different models and select the best one