MIS 652-E: Multivariate Data Analysis I

School of Business at Stevens Institute of Technology

Fall 2017

Chapter 6: Logistic Regression Assignment

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Date: 10/17/2017

Q1) How would you differentiate among multiple discriminant analysis, regression analysis, logistic regression analysis, and analysis of variance?

Ans. The separating factor lies in the amount of free and ward factors and in the way in which these factors are measured. Note the going with definitions:
• Multiple Discriminant analysis (MDA) - the single ward (rule) variable is non-metric and the autonomous (indicator) factors are metric.
• Regression Analysis - both the single ward variable and the different autonomous factors are metric.
• Analysis of Variance (ANOVA) - the different ward factors are metric, and the single autonomous variable is non-met
•Logistic Regression Analysis – the single ward factors are non-metric and the different free factors are metric.

Q2) When would you employ logistic regression rather than discriminant analysis? What are the advantages and disadvantages of this decision?

Ans. Both discriminant analysis and logistic regression are legitimate when the dependent variable is absolute, and the independent factors are metric. Since a two-dependent variable either framework might be associated, yet just discriminant analysis is furnished for managing more than two get-togethers. Right when the basic suppositions of the two strategies are met, every give for all intents and purposes indistinguishable prescient and portrayal comes about and use near expressive measures. Logistic regression has the upside of being less affected than discriminant analysis when the fundamental doubts of commonness and comparable change are not met. It is like manner can suit non-metric sham coded factors as independent measures. Logistic regression is confined however to the expectation of only a two-pack dependent measure. As needs be, when more than two social occasions are

incorporated discriminant analysis is required. (Notwithstanding the actualities that note that there is a sort of logistic regression called polynomial logistic that can manage more than two social variables relationships.

Q3) How does logistic regression handle the relationship of the dependent and independent variables?

Ans. Logistic regression outlines a singular variate more like different regressions. It fluctuates from different regression in that it particularly predicts the probability of an event happening. To portray the probability, logistic regression expects the association between the independent and dependent factors resembles a S-shaped curve. At low levels of the variate, the probability approaches zero. As the variate extends the probability increments. Logistic regression uses a most likelihood strategy to fit the watched data to the bend.

Q4) What are the unique characteristics of interpretation in logistic regression?

Ans. Logistic regression is evaluated using a most extraordinary likelihood framework to fit the data to a logistic bend. It makes a variate that gives information about which factors clear up the dependent variable or social occasion investment. Logistic regression may be pleasing for some to unravel in that it takes after the more commonly watched regression analysis.

Q5) Explain the concept of odds and why it is used in predicting probability in a logistic regression procedure?

Ans. One of the basic issues in using any prescient model to assess probability is that is it difficult to "oblige" the anticipated regards to the fitting range. Probability regards should never be lower than zero or higher than one. Be that as it may, we may need for a straight-forward system for assessing the probability regards without using nonlinear estimation. The odds extent is a way to deal with express any probability regard in a metric regard which does not have inalienable upper and lower limits. The odds regard is fundamentally the extent of the probability of being in one of the social affairs isolated by the probability of being in the other get-together. Since we simply use logistic regression for two-store up conditions, we can just find out the odds extent knowing just a single of the probabilities (since the other probability is just 1 short that probability). The odds regard gives a favorable difference in probability regard into a casing more supportive for show estimation.

References:
Textbook: Multivariate Data Analysis
Book by Barry J. Babin, Hair, Rolph E Anderson, and William C. Black
PowerPoint: Prof. Thomas Brantle