DSCI 610: HW 10- Models for Categorical Responses

For this homework work with one of the data sets from the National Health Interview Survey (2019 data release). Identify one quantitative response, one binary response, and one multinomial response (response with more than two categories). Consider a set of relevant predictors. Your goal is to develop the best predictive model for the quantitative response, and the best classification algorithms for the binary and the multinomial responses. Next to evaluate predictive performances by computing test prediction error for the quantitative response and the misclassification errors for the categorical responses.

1. (15 pts) Develop the best predictive model for the quantitative response, binary response and the multinomial response. Note for the multinomial response, logistic regression is not an option. You may consider the LDA and the tree-based methods.
2. (5 pts) Report prediction error for the quantitative response and misclassification errors for the binary and multinomial response.