

# Report on the Mini-Project on MLR

Due: 11:30 PM, Sunday, 10/1/23

This assignment focuses on bootstrapping the multiple regression model you identified in your last assignment (week #4). You are expected to use both bootstrap sampling methods to find the confidence intervals for regression coefficients.

Please follow what did in the lecture note to do a similar analysis using your data and summarize the bootstrap analysis results. The mini-project report combines the results you obtained last week with this week's bootstrap results.

The format of the report should have the following components using last and this week's work as building blocks.

- Introduction
  - rationale of the project - research questions
  - description of data - sampling?
  - sufficient information for addressing the research questions
- Data preparation and exploratory analysis
  - create new variables based on existing variables?
  - discretizing continuous variable? combining categories of categorical variables?
- Model building
  - starting with a full model and performing residual analysis
  - identifying violations and finding remedies
  - need model transformations like the Box-Cox procedure?
  - variable selection? -backward and forward selection, stepwise variable selection.
  - model selection using goodness-of-fit measures.
  - selection of the final model.
- Bootstrapping the final model
  - bootstrapping records
  - bootstrapping residuals of the final model obtained in the previous model
- Combining the results of the regular model and bootstrap results
  - Summarizing the results
  - Correct interpretations of the coefficients of the regression model.
  - Interpretation with caution if your response variable was transformed on a different scale.
- Summary and discussion
  - outline main findings
  - drawbacks and future improvements
  - recommendations on the applications of the model.