# Stats 500 Homework 4

Online Submission to Canvas, Due date: 11:59pm, October 17, 2025

Consider the dataset `teengamb` that was analyzed in Homework 1 Question 1. Use "help("teengamb")" to see more descriptions about this data set. To predict gambling expenditure from all other available variables, we fit the following two linear regressions.

- response $Y_{\mathrm{org}}$ = teengamb\$gamble, and the predictors `sex, status, income` and `verbal`

- response $Y_{\mathrm{log}}$ = log(teengamb\$gamble+1), and the predictors `sex, status, income` and `verbal`

1. Perform regression diagnostics on these two models and **compare the answers to the following questions based on the two models.**

   - Check the existence of patterns in the residual against fitting values. Are the residuals centering at 0 in all areas of fitted values?
   - Check the constant variance assumption for the errors.

2. Now focus on the regression model with the response $Y_{\mathrm{log}}$ = log(teengamb\$gamble+1).

   - Check the normality assumption.
   - Check for outliers.

Display **only** those plots that are relevant to the questions. Present your diagnostics in a logical order.