# Homework
# Applied Logistic Regression

## WEEK 5

**Exercise 1:**

Use the hyponatremia.dta dataset to complete the following

a. Assess the association between hyponatremia (dichotomous variable **nas135**) and sex (variable **female**) by making a 2 by 2 table. Calculate the odds ratio of hyponatremia of a female compared to a male. Compute the 95% confidence interval for this odds ratio. Interpret the findings.

b. Perform a logistic regression analysis with Stata using **nas135** as dependent variable and **female** as the only independent variable. Use the Likelihood Ratio test to assess the significance of the model. Is the model with **female** a better model than the naïve model? Use the Stata's built-in statistical functions to obtain p-values (type *help* functions)

c. What is the naïve model? What is the probability of hyponatremia that this model predict?

d. Run a logistic regression analyses with no independent variables. Transform the coefficient obtained from this model into a probability.

e. Using the model with **female** as independent variable, compute the estimated probability of hyponatremia per males and females. Write down the equation for the logit.

f. Use the Wald test to assess the significance of the coefficient for **female**.

g. Fit a model with **runtime** as the only independent variable. Assess the significance of the model.

h. Calculate the probability of hyponatremia of a runner who takes 4 hours (240 minutes) to complete the marathon.

i. Fit a model with **female** and **runtime** as independent variables. Assess the significance of the model. Which null hypothesis is tested?