Due date November 3, 2017.

1. A logistic regression model is fitted. It is found that $b_0 = -25$ and $b_1 = 0.20$.

   a) (10 pts.) Write the fitted equation.

   b) (10 pts.) For what value of X is the mean response equal to 0.50?

   c) (10 pts.) Find the ratio of the odds when X = 151 to that when X = 150.

2. A local health clinic sent fliers to its clients to encourage everyone, but especially older persons at high risk of complications to get a flu shot in time for protection against an expected flu <mark>epidemic.</mark> In a pilot follow-up study, 159 clients were randomly selected and asked whether they actually received a flu shot. A client who received a flu shot was coded $Y = 1$, and a client who did not receive a flu shot was coded $Y = 0$. In addition. data were collected on their age (X_1) and their health awareness. The latter data were combined into a health awareness index (X_2), for which higher values indicate greater awareness. Also included in the data was client gender, where males were coded $X_3 = 1$ and females were coded $X_3 = 0$. Data set is available on blackboard as `flushots.txt`

   a) (10 pts.) Fit separate simple logistic regression models for predicting Y against each individual predictor. Write the fitted equation for each one.

   b) (10 pts.) For each model find the probability that male clients aged 55 with a health awareness index of 60 will receive a flu shot.

   c) (10 pts.) Fit a multiple logistic regression model with predictors age and health index. Create a bubbleplot to show the probability that the client receives a flu shot.

   d) (10 pts.) Plot fitted equation and scatterplot for model with predictor age. Add a loess curve. Comment.

   e) (10 pts.) Plot fitted equation and scatterplot for model with predictor health index. Add a loess curve. Comment.

   f) (20 pts.) Plot fitted equation and scatterplot for model with predictor health index. Add 95% CI bands above and below the fitted equation.