Homework 6

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- Note: For each question, include R code and output *pertinent* to your answers.

1. Faraway Chapter 4. Exercise 2. Using the `teengamb` dataset from the `faraway` package, fit a linear regression model with `gamble` as the outcome and the other variables as the predictors.

A. Predict the amount that a male with average values (given these data) for `status`, `income`, and `verbal` would spend on gambling along with an appropriate 95% interval.

B. Repeat the prediction for a male with maximal values (for these data) of `status`, `income`, and `verbal`. Which interval is wider and why is this result expected?

C. Fit a model with `sqrt(gamble)` as the outcome but with the same predictors. Now predict the response and estimate the appropriate 95% interval for the individual in #A. Take care to give your answer on the original scale of the response (i.e., `gamble` not `sqrt(gamble)`.

D. Repeat the prediction for the model in #C for a female with `status=20`, `income=1`, `verbal=10`. Give your answer on the original scale of the response and comment on the credibility of the result.

E. Now, go back to #A. Consider how much males with average values (given these data) for `status`, `income`, and `verbal` would spend on gambling along with an appropriate 95% interval. How does this interval compare to the interval in #A? Explain whether this is expected and why.

2. Assess the following DAG. You want to get an unbiased estimate for the association between `HIV` and `Stroke`. What covariate(s) would you want to include in your model and why?