Classroom Voting Questions: Elementary Statistics

Simple Linear Regression

1. What is the most common rationale for significance testing of simple linear regression?

   (a) to test if the intercept is significantly large

   (b) to test is the slope of the regression line is positive

   (c) to test if the slope of the regression line is negative

   (d) to test if the slope is different from zero

   (e) to appease an editor or reviewer when publishing the results

2. Which of the following does *not* result in more accurate estimates for β_1?

   (a) An increase in the sample size

   (b) An increase in the coefficient of determination

   (c) An increase in the variance of the observed x-values

   (d) An increase in the variance of the observed y-values

3. You have performed a linear regression with age as the predictor variable and hours per week spent online as the response variable. You have also constructed a 95% confidence interval for the mean number of hours spent online for 21-year olds. The confidence interval is $(18, 28)$. Which of the following could be a 95% prediction interval for the number of hours spent online for a randomly selected 21-year old?

   (a) $(20, 26)$

   (b) $(20, 30)$

   (c) $(14, 32)$

   (d) all of the above

   (e) two of the above

4. You have performed a linear regression with age as the predictor variable and hours per week spent online as the response variable. You have also constructed a 95% confidence interval for the mean number of hours spent online for 21-year olds. The confidence interval is $(18, 28)$. Which of the following could be a 90% prediction interval for the number of hours spent online for a randomly selected 21-year old?

(a) $(20, 26)$

(b) $(18, 28)$

(c) $(16, 30)$

(d) all of the above

(e) two of the above