

BIOS 600 · Quiz 12.1: Linear Regression

15 November 2011

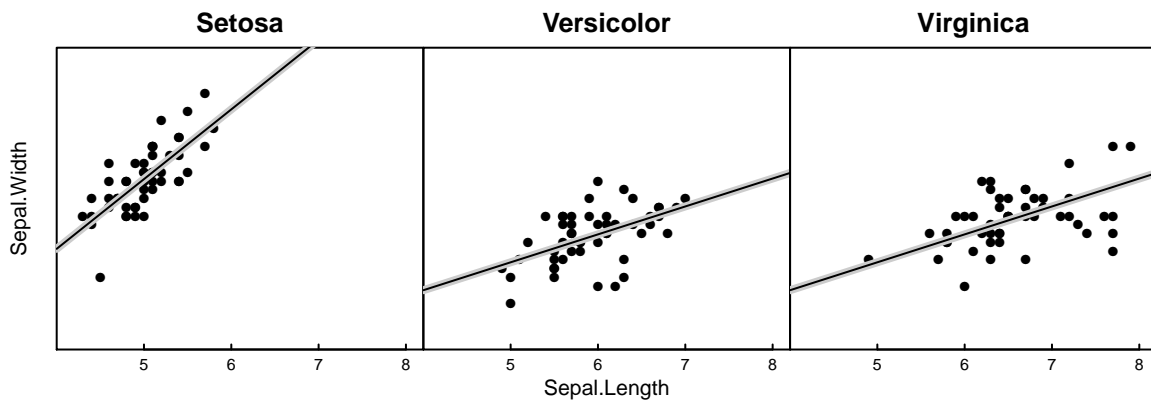
1. **Honor Pledge:** I have neither given nor received unauthorized aid on this assignment.
(Sign and print your name.)

2. The Anderson Iris dataset is well used in the statistics universe. The dataset includes 50 observations of sepal width, sepal length, petal width, and petal length from 3 different species of iris plants. (Total sample size is $50 \times 3 = 150$.) We use the data in the following quiz questions.

To predict sepal width with sepal length, we fit this linear regression model for each species:

$$\text{Width}_i = \beta_0 + \beta_1 \text{Length}_i + e_i \quad e_i \sim N(0, \sigma^2).$$

The estimates of each regression are reported below. Use the information to answer the following questions.



	Setosa				Versicolor				Verginica			
	β	SE	95% CI		β	SE	95% CI		β	SE	95% CI	
(Intercept)	-0.57	0.52	-1.62	0.48	0.87	0.44	-0.02	1.77	1.45	0.43	0.58	2.31
Sepal.Length	0.80	0.10	0.59	1.01	0.32	0.07	0.17	0.47	0.23	0.07	0.10	0.36

(a) For each species, calculate the predicted sepal width of an iris with sepal length equal to 6.

Setosa	Versicolor	Virginica

(b) For each β , perform the $\alpha = 0.05$ two-sided test of $H_0 : \beta_i = 0$. If you reject H_0 , mark the corresponding cell with an \times .

	Setosa	Versicolor	Virginica
β_0			
β_1			