

Use the data at <http://asp.okstate.edu/baileynorwood/SeedsPPP/data/softball,2012.xlsx> to answer the following questions.

These data will be used to estimate the following regression to predict how far a 4213 student will hit a softball.

[Equation 1]  $\text{predicted distance} = a_0 + a_1(\text{male}) + a_2(\text{experience})$

(1) In the regression, which variable is the dependent variable?

(2) In the regression, which are the independent or explanatory variables?

(3) In the regression, which are the coefficients or parameters?

(4) Estimate the regression and indicate the coefficient values below.

[Equation 2]  $\text{predicted distance} = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} (\text{male}) + \underline{\hspace{1cm}} (\text{experience})$

(5) We will now select two students at random, one male and one female, and predict their hitting distance.

(5.a) [Equation 3:  $\text{male} = \underline{\hspace{1cm}}$  ,  $\text{experience} = \underline{\hspace{1cm}}$ ]

$\text{predicted distance} = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} (\underline{\hspace{1cm}}) + \underline{\hspace{1cm}} (\underline{\hspace{1cm}})$

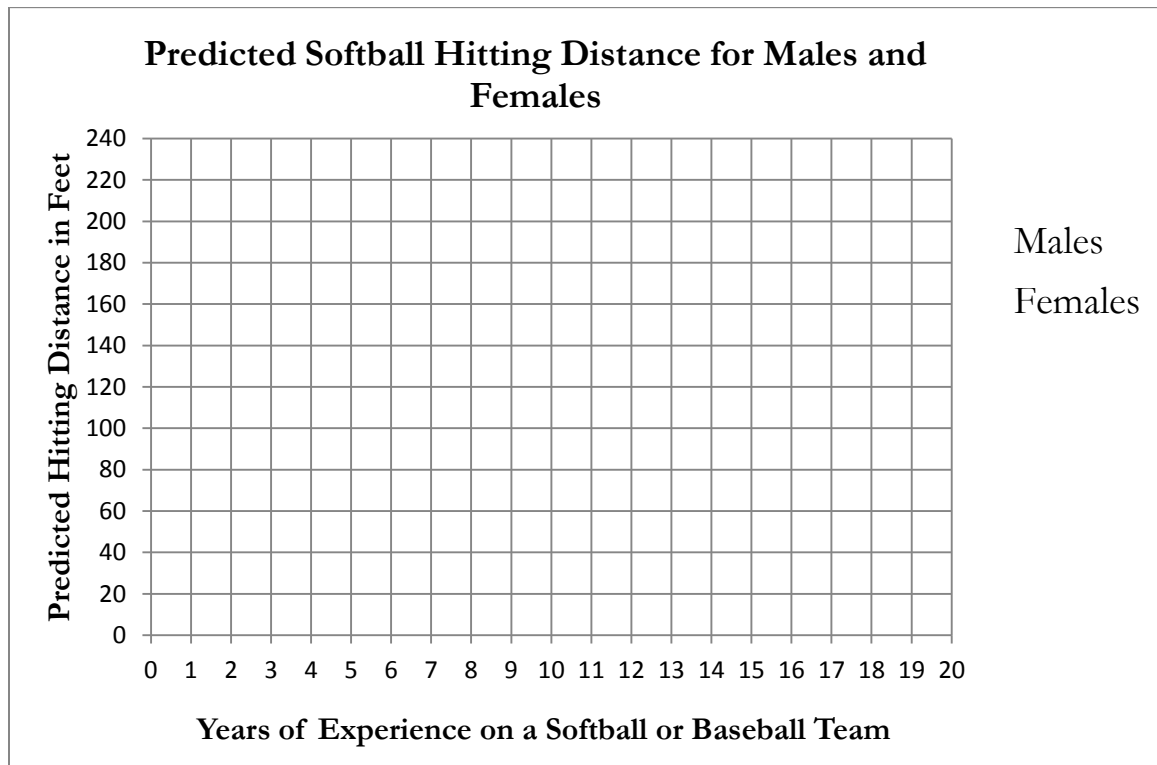
(5.b) [Equation 4:  $\text{male} = \underline{\hspace{1cm}}$  ,  $\text{experience} = \underline{\hspace{1cm}}$ ]

$\text{predicted distance} = \underline{\hspace{1cm}} + \underline{\hspace{1cm}} (\underline{\hspace{1cm}}) + \underline{\hspace{1cm}} (\underline{\hspace{1cm}})$

(6) What is the effect of the *male* variable on hitting distance? Take into account p-values.

(7) What is the effect of the *experience* variable on hitting distance? Take into account p-values.

(8) Use the regression to plot the relationship between experience and distance separately for males and females.



For the remaining questions use the basketball data at  
<http://seeds.okstate.edu/SeedsPPP/CN,4/Bball2013.xlsx>

(9) To estimate the relationship between *3-point*, *female*, *experience*, and *phone number* estimate the following regression.

$$\text{shots made} = a_0 + a_1(3\text{-point}) + a_2(\text{female}) + a_3(\text{experience}) + a_4(\text{phone number})$$

$$\text{shots made} = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} (3\text{-point}) + \\ \underline{\hspace{2cm}} (\text{female}) + \underline{\hspace{2cm}} (\text{experience}) + \underline{\hspace{2cm}} (\text{phone number})$$

(10) What is the effect of *3-point* on *shots made*? Take into account p-values.

(11) What is the effect of *female* on *shots made*? Take into account p-values.

(12) What is the effect of *experience* on *shots made*? Take into account p-values.

(13) What is the effect of *phone number* on *shots made*? Take into account p-values.

(14) In the graph below, plot the relationship between *experience* and *shots made* for a male, attempting a 3-point shot, whose last digit of their phone number is 3 (leave any variables that are statistically insignificant in the regression anyway).

