***E370, Spring 2016***

***Lab Activities week of 4/11/2016***

***Valued at 25 points***

Please follow the instructions given and show your work to obtain full credit. The data sets required for this activity can be found in Oncourse under Resources🡺Lab Manual Data or in Box at <https://iu.box.com/E370-Files>in the folder Lab Manual Data Files.

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1. The data file ***friends.xlsx*** contains data about the number of “friends” a sample of Myspace.com registered users have and other characteristics of those individuals visible to one’s friends on Myspace.com. Build a model that will allow you to predict the number of friends a Myspace.com user would have using all other variables. Estimate the model and answer the following questions. (14 points)
	1. Create a “Female” variable based on the Gender variable, where female=1 if the person is female and female=0 if the person is male. How many percentage of the sample is female? (1 point)
	2. Estimate a regression model for the number of friends using all other variables in the data (use “female” for gender). Write down the estimated regression equation using names of the variables as well as the associated values. (1 point)
	3. Interpret $R^{2}$. (2 points)
	4. Interpret the slope coefficient for “Numvideos”. (1 point)
	5. Interpret the slope coefficient for “Female”. (1 point)
	6. Test the slope coefficient for “Blogs” for significance at the 10% level based on the p-value. Write down the null and alternative hypotheses as well as the test results. (2 points)
	7. Test the slope coefficient for “Age” for significance at the 1% level based on the t-stat. Write down the null and alternative hypotheses as well as the test results. (2 points)
	8. What is the difference in number of friends that can be attributed to being in college or a college grad? (1 point)
	9. Peter is a single, 22-year old, heterosexual junior in college. Predict the number of friends he would have if he uses a picture of himself as identification, posts 8 blogs, 25 photos and 11 videos recently and the number of comments posted by other users is 56. (1 point)
	10. Suppose the purpose of estimating this regression was only for making predictions. What variables, if any, would you consider dropping? Explain. (2 points)
2. The output below is partial Regression output as calculated by Excel. The model estimated was Cockpit Noise (in dB) regressed on Airspeed (in knots) using a sample with 61 observations. Using what you know about regression hypothesis testing and confidence interval, fill in the shaded cells. Round values to three (3) significant digits after calculations are complete. Show your work. (10 points, 2 point per space)

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|  | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95.0%* | *Upper 95.0%* |
| Intercept | 64.229 |  | 55.907 | 0.000 |  |  |
| Airspeed (knots) | 0.077 | 0.003 |  |  | 0.071 | 0.083 |