Data Exercise 1 Answer

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Looking at my data set, *Leg_Act* ranged from – 5 to 32 while *terms* approximately ranged from 1 to 7. When I computed the regression of these two variables, the estimate of R-squared value was 0.0082. According to the regression result, estimates for parameters (α and β) were 13.57117 (the estimate of α) and –0.4781822 (the estimate of β) for each. Then I computed the residuals by generating a predicted value of the dependent variable according to the regression model, and then calculating the difference between the observed values of the dependent value (*Leg_Act*) and the predicted values (*p_Leg_Act*). The residuals ranged from about –17 to 18. The computed correlation coefficient between these two variables (*Leg_Act* and *p_Leg_Act*) was 0.0903, and the squared value of this correlation coefficient was 0.0081628. Comparing this value with the R-squared value mentioned above, 0.0082, they are very close to each other. Lastly, testing the null hypothesis that β = 0, which means that the independent variable cannot significantly explain the dependent variabsle, the p-value was 0.7048. This is way bigger than the significant level (0.05), so we can NOT reject the null hypothesis.

```
. regress Leg_Act terms

      Source |       SS           df       MS      Number of obs   =        20
-------------+----------------------------------   F(1, 18)        =      0.15
       Model |  12.5262774         1  12.5262774   Prob > F        =    0.7048
    Residual |  1522.02372        18  84.5568735   R-squared       =    0.0082
-------------+----------------------------------   Adj R-squared   =   -0.0469
       Total |     1534.55        19  80.7657895   Root MSE        =    9.1955

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     Leg_Act |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       terms |  -.4781022   1.242179    -0.38   0.705    -3.087823    2.131619
       _cons |   13.57117   4.921914     2.76   0.013     3.230611    23.91173
------------------------------------------------------------------------------
```

```
.  test _b[terms] = 0

 ( 1)  terms = 0

       F(  1,    18) =    0.15
            Prob > F =    0.7048

. * test the hypothesis if coefficient from the regression for 'terms' is zero : results (p-value) = 0.7048
```