Assignment #1: Linear Regression/Scatterplot

Charles Titus

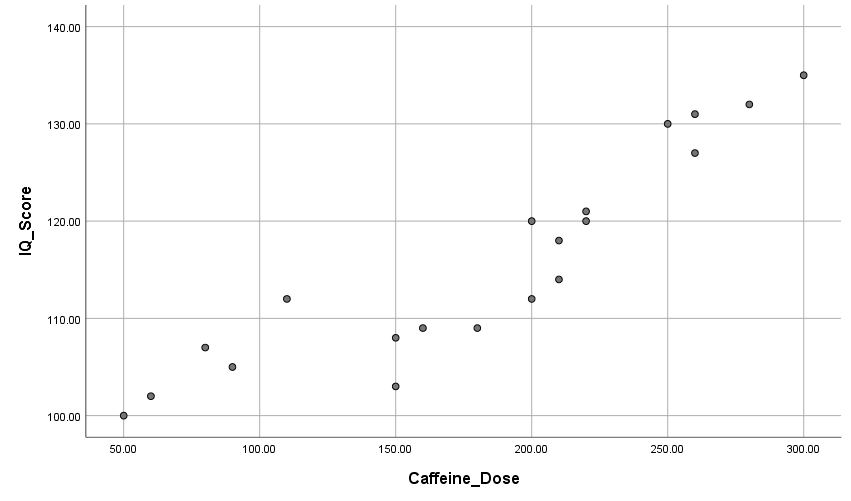
Grand Canyon University: LDR – 825

November 6, 2019

1. Open SPSS and complete the following:  
   Obtain an output with a simple linear regression and a scatterplot graph (as in the tutorial, with the values as seen below); highlight the model summary and coefficients table, and upload it into LC:
2. Obtain an output with a simple linear regression and a scatterplot graph (as in the tutorial) using the values as seen below.

**Caffeine Dose**      **IQ Score**  
           50                   100  
           60                   102  
           80                   107  
           90                   105  
         110                   112  
         150                   108  
         150                   103  
         160                   109  
         180                   109  
         200                   112  
         200                   120  
         210                   114  
         210                   118  
         220                   121  
         220                   120  
         250                   130  
         260                   127  
         260                   131  
         280                   132  
         300                   135

**Figure 1: Scatter-plot graph:**



**Regression Analysis**

**Table 1: Model Summary**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Model Summary** | | | | |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .917a | .840 | .831 | 4.46113 |
| a. Predictors: (Constant), Caffeine\_Dose | | | | |

**Table 2: Coefficients (a)**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Coefficientsa** | | | | | | |
| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | 91.308 | 2.705 |  | 33.761 | .000 |
| Caffeine\_Dose | .134 | .014 | .917 | 9.723 | .000 |
| a. Dependent Variable: IQ\_Score | | | | | | |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Table 3: Anova (Not Required per directions but included)**  **ANOVAa** | | | | | | |
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
| 1 | Regression | 1881.519 | 1 | 1881.519 | 94.541 | .000b |
| Residual | 358.231 | 18 | 19.902 |  |  |
| Total | 2239.750 | 19 |  |  |  |
| a. Dependent Variable: IQ\_Score | | | | | | |
| b. Predictors: (Constant), Caffeine\_Dose | | | | | | |

**Discussion of data:**

There are a couple of ways that the data that has been computed in the figure and the tables above can be analyzed. First, the scatter plot can be looked at and analyzed to determine that it actually indicates that there is indeed a significant positive linear trend between the y-variable which is IQ scores and the x-variable which is caffeine doses.

One can also look at the model summary and see that this can show us some important information about the data in question. For example, R is found to be .917 which can be rounded to .92. This .92 also shows that there is a very strong positive correlation between the variables in question. By looking at the R2 which is the Coefficient of determinant of the data. In the table we can see that the coefficient of determinant is .84 which can be looked at as 84% of dependent variable which is IQ scores can be explained by the independent variable which is the caffeine dose. By knowing this one can then determine that 16% that is remaining would be other factors that have an influence on the IQ scores.