**Week 7 Heart Rate Data Regression Analysis**

Student’s Name

Institution Affiliation

Course Name

Professor’s Name

Date

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**Scatter Plots**

**Resting**

Based on this scatter plot, the values are scattered closely and the trendline shows that there is a positive association between the values. This demonstrates a linear relationship, which further means that the points on the plot closely resemble the trendline or straight line. In general, any relationship is linear if the points increase by about the same rate as the other variables change by one unit.

**After Exercise**

Based on this scatter plot, the values are scattered closely and the trendline shows that there is a positive association between the values. This demonstrates a linear relationship, which further means that the points on the plot closely resemble the trendline or straight line. In general, any relationship is linear if the points increase by about the same rate as the other variables change by one unit.

**Resting vs. After Exercise**

Based on this scatter plot, there is a positive relationship between resting and after exercise variables. Values of both valuables are increasing or decreasing at the same time. In other words, as the values for one variable increases, those of the other variable also increases, and vice versa. It means that a linear relationship can be modelled out by a linear regression analysis between variables X and Y. Hence, the regression model is anticipated to be excellent.

**Regression Analysis**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| SUMMARY OUTPUT |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| *Regression Statistics* | |  |  |  |  |  |
| Multiple R | 0.722545095 |  |  |  |  |  |
| R Square | 0.522071414 |  |  |  |  |  |
| Adjusted R Square | 0.519657633 |  |  |  |  |  |
| Standard Error | 5.47415345 |  |  |  |  |  |
| Observations | 200 |  |  |  |  |  |
|  |  |  |  |  |  |  |
| ANOVA |  |  |  |  |  |  |
|  | *df* | *SS* | *MS* | *F* | *Significance F* |  |
| Regression | 1 | 6481.358 | 6481.358 | 216.2878368 | 1.40983E-33 |  |
| Residual | 198 | 5933.338 | 29.96636 |  |  |  |
| Total | 199 | 12414.7 |  |  |  |  |
|  |  |  |  |  |  |  |
|  | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* |
| Intercept | 8.972336475 | 4.825028 | 1.859541 | 0.064434001 | -0.542703597 | 18.48738 |
| After Exercise | 0.783939858 | 0.053305 | 14.70673 | 1.40983E-33 | 0.678821769 | 0.889058 |
|  |  |  |  |  |  |  |

From the regression analysis output, the correlation coefficient between resting and after exercise is 0.7225, which shows that these variables are correlated. An association between two variables is often regarded strong when this value is larger than 0.5. The larger it becomes or the more it approaches 1, the strong the relationship between the variables analyzed. The correlation analysis equally measures the direction of the relationship. Because the coefficient is positive, it similarly suggests that resting and after exercise variables are positively related.

The regression also provides a regression model in the form Y= C + Bx. In other words, After exercise (y) = 8.9723 + 0.7839 Resting (X). Therefore, the slope coefficient is 0.7839, which means that a unit increase in resting heart rate is increases after exercise by 0.7839 units. Also, the overall regression model is significant, indicating that resting heart rate is a better predictor of after exercise rate.