1. The below scatterplots show the mean HPI of each club against clubs’ mean penalties and offense. In comparing the two plots, what do you expect from the model: ?

A graph with a line and a blue line

Description automatically generatedA graph with a line and dots

Description automatically generated

Given that the regression line in the club\_hpi against club\_penalties have a negative slope, I expect the coefficient for club\_penalties to be negative. Since the regression line in the club\_hpi against club\_offense plot has a positive slope, I expect club\_offense to have a positive coefficient.

1. Perform an ANOVA test to assess the overall fit of . Fill in the ANOVA table below and interpret the results. Check your work with R.

**H0:**

**Ha:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Source** | **d.f.** | **Sum of Squares** | **Mean Square** | **F** | **P-value** |
| **Model** |  |  |  |  |  |
| **Residual** |  |  |  |
| **Total** |  |  |

1. Calculate and interpret a 98% confidence interval for the mean HPI of a player with 30 total\_penalties. Check your work with R.
2. Calculate and interpret a 98% prediction interval for the HPI of a player with 30 total\_penalties. Check your work with R.

1. The below scatterplot shows total\_penalties against total\_offense with a regression line. Based on this plot what do you expect the correlation between total\_penalties and total\_offense to be?

A graph with a line and a line

Description automatically generated

1. Test the significance of the correlation between the total\_offense and the total\_penalties of a player. Provide an interpretation of the results. Check your work with R.

1. Could it be concluded that having more penalties increases the skill and success of a player in the form of HPI?