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STAT 1341

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HW6

1.

(b) The home-court advantage was 115.94 - 113.44 = 2.5.

(d) Based on the correlation and plot, they are not independent.

(e) Plugging into the calculator provided below, the value is 0.998 -> 1.00 rounded.

(h) The data does appear to be normal with a straight datapoint line and histogram normal distribution, but a little left skewed. Based on these two tests, I would pick the Shapiro-Wilk test for better results because the low p-value indicates potential deviations from a normal distribution, while the plot shows doesn't show more exact measurements with a normal distribution.

(j) The calculation results show a total of 0.689, while the actual proportion found in (i) shows 0.112. These two values are not very close, suggesting that the model may not be the best fit.

2.

(e) Based on the outputs of the low p-value from the Chiquare models, the home and away scores deviate from a Poisson distribution from the goodness of fit test. The p-values are 1.89e-35 and 4.04e-41.

(h) Based on this result, the 2-1 outcome suggests potential dependency between home and away scores for 0.0553 vs 0.0895 since they are quite close together.

3.

(d) The Pythagorean win percentage correlates very well with the actual winning percentages with a value of approximately 0.89, which shows a strong positive relationship between the win percentage and the actual winning percentage. From this, we

(e) The top team for overachieving is the Baltimore Ravens (2019). The Baltimore Ravens show a close win percentage of 0.83. Also, looking at the data shows us that the reason why the Baltimore Ravens may have a high close win percentage is based on a high offensive ability in a high extra point made rate, passing yards, and rushing performance. Additionally, the ability to minimize turnovers could have helped a lot.

(f) The worst team for underachieving is the Jacksonville Jaguars (2020). The Jacksonville Jaguars show a close percentage of 0.14. Also, looking at the data shows us that the reason why Jacksonville Jaguars may have a low close win percentage is based on the offensive performance. A few things include a low number of third-down conversions compared to attempts, a high quarterback sacked rate, and a low completion percentage.

(i) The MAE for both Pythagorean win percentages are close but the first method of close Pythagorean with win percentage is a bit smaller, which is the better model in this case even if they are almost the same. Additionally, the average improved prediction is approximately 0.00000272.