Line of Best Fit Assignment.

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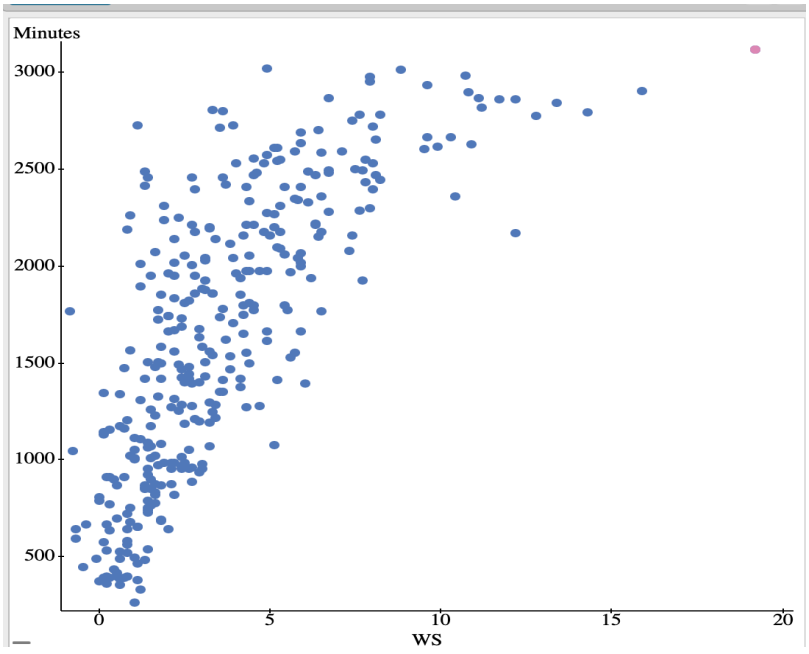
In this assignment I aim to explore the association between minutes played, and average win shares of players in the 2013-2014 NBA season. I will use win shares as the explanatory variable, and minutes as the response variable. I believe this dataset will showcase a symbiotic relationship between minutes and win share. I believe the more win shares on average, will result in a larger amount of minutes played.. I believe this because, if a team is playing a player for 30+ minutes a game on average (which is quite a high amount) This player must be contributing significantly, thus leading teams to win more games. The stat category known as win shares or abbreviated as WS, is a stat to measure a players overall effect on teams success. If a player is playing well, scoring more, playing successful defense, logging more minutes, and team is winning games a player will have a significant amount of win shares. For every one game a team wins, it is equal to 3 win shares to be divided out among the team. So for an amazing team like the Boston Celtics, who last year went 64-18, the team would have 192 win shares to divide throughout the team. This is hwy I believe this graph will showcase how a player with more minutes will have a larger amount of win shares.

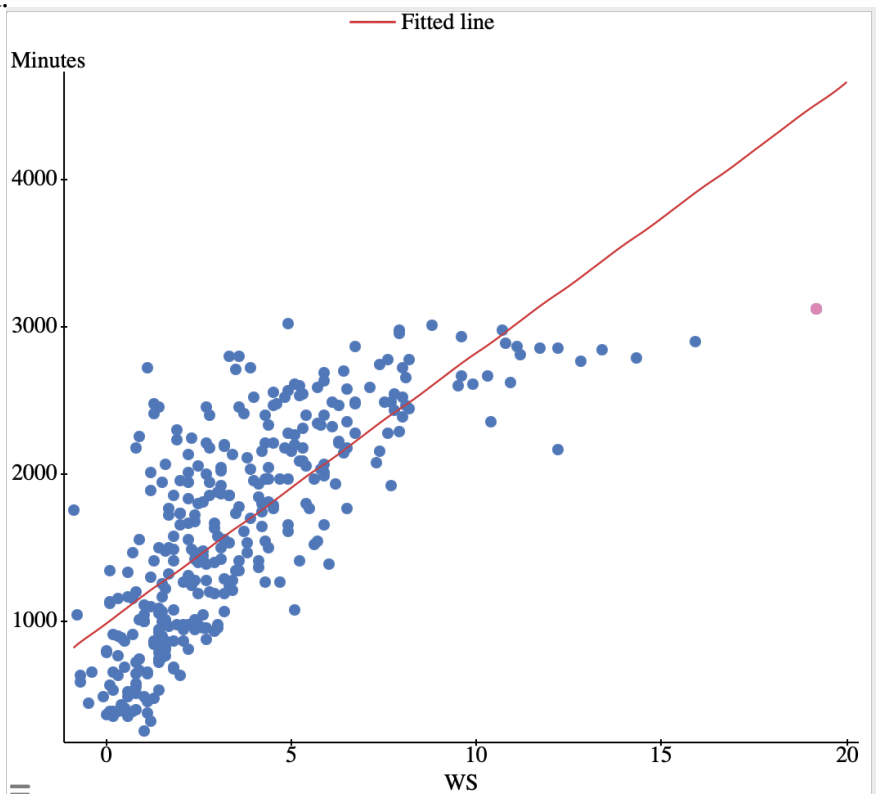


This scatter plot clearly showcases a strong linear correlation between Minutes and WS. While taking a look at the overall trends on the scatter plot, you can see a large cluster of points in the bottom left corner. This section has players who played a total of 0-1000 minutes in the season, and had a very low share of WS. Then we see more spread out results with players who played between 1500-2500 minutes in the season. These players have a stronger differential in WS, unlike that of players who played between 0-100 minutes in the season. Even with this, these players still showcase the expected pattern

of more minutes leading to a higher amount of WS. Of course, like most data sets, there are some outliers. Like SG Tony Wrotten, who despite playing a total of 1765 minutes had a negative WS total at -0.09. This is very likely due to the fact that Mr. Wrotten was playing for the 76ers, who won a total of 15 games that year, which is absolutely awful.

Simple linear regression results:
Dependent Variable: Minutes
Independent Variable: WS
Minutes = 986.79896 + 183.59533 WS
Sample size: 342
R (correlation coefficient) = 0.75219844
R-sq = 0.5658025
Estimate of error standard deviation: 482.39422

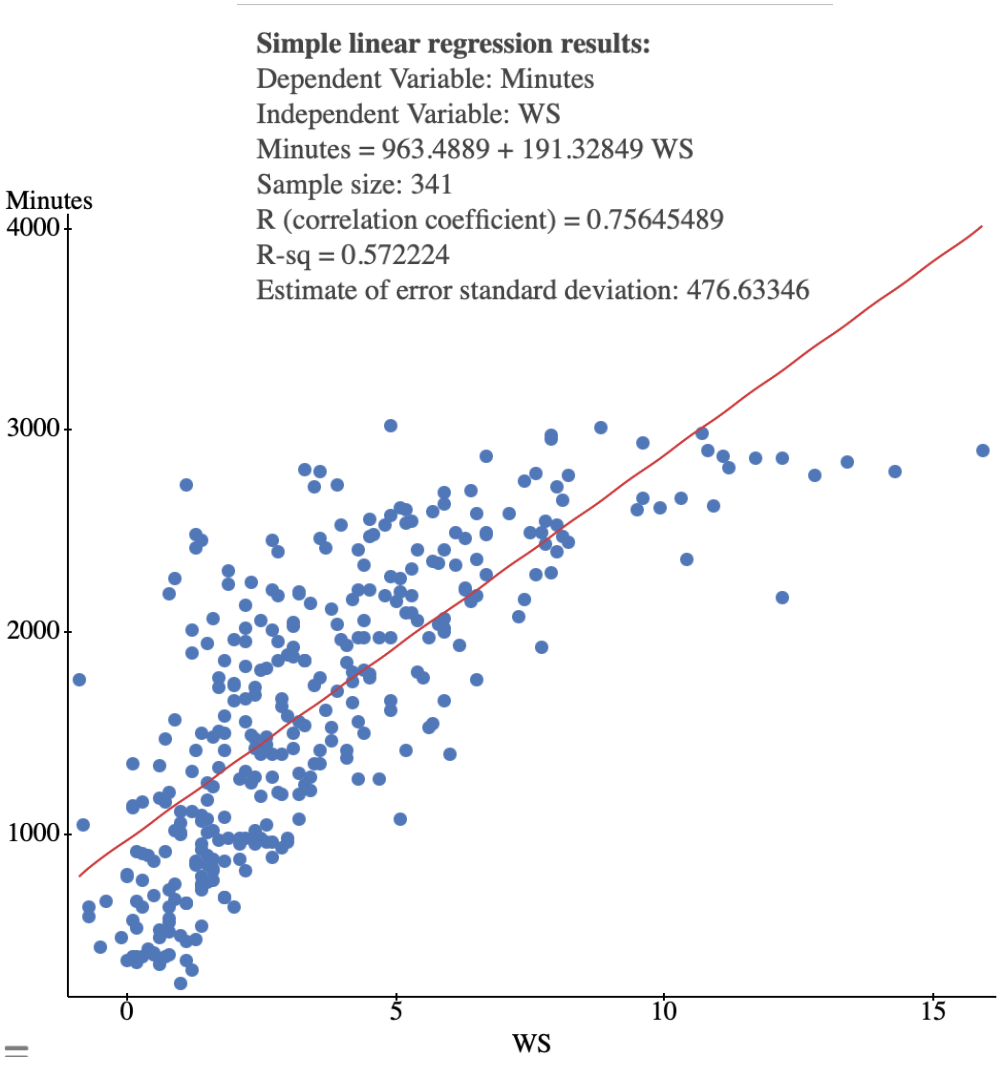
Our R value is = 0.752. Which supports my prediction that a higher amount of win shares leads to a larger amount of minutes. The line of best fit shows us that for every one WS, a player will have 183. 60 minutes played.



Looking at our line of best fit, you can see an obvious correlation between players with higher win shares, receiving a larger amount of minutes played. However, Kevin Durants fantastic season has him as our point with the highest residual. Durant had a total of 19.2 WS during the season.

19.2 x 183.59533 + 986.79896 = 4511.829

This means Durants expected amount of minutes played would be 4511.829 however, he only logged 3122 during the season. This is likely not any kind of error, but just more of a testament to how well Kevin Durant played that season compared to everyone else in the league.



After removing Kevin Durant from the data set, we can see that our stayed relatively similar only increasing to 0.7564. The line of best fit changed to Minutes = 963.4889 + 191.32849 WS. While removing the point did not bring any extreme change to our R value, it did bring a decent change to our line of best fit.

To conclude, these results support my hypothesis, that WS positively correlates with Minutes played. Future studies could look to combine even more data sets from different seasons to see if this trend is consistent throughout history and not just in this specific season. I believe addressing this would showcase a stronger relationship between these two variables.