WHEATON COLLEGE WAR PROJECT 2023

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Abstract

In the modern era, Wins Above Replacement has become a popular tool to measure the performance of players at the Major League level. The stat aims to provide a single numerical value to represent all aspects of a player including their batting, fielding, baserunning, and pitching. In lower levels of baseball however, such as at the Division III level, these numbers are not available. This project aims to calculate the Wins Above Replacement of players on the Wheaton College baseball team for the 2023 season using Baseball Reference's formula for calculating WAR.

Methods

This project was calculated entirely inside of a google sheet, attached in my portfolio. This process has since been updated through the use of python as seen in my 2024 WAR Project. In this project however, all data was collected by copying down stats from each CCIW team's listed stats on their website as well as manually scrolling through the play-by-play of every game that was played by all nine CCIW teams. The general calculations for each section of WAR are explained below. Each of these sections uses different statistics to find how many Runs a player added or prevented above or below average. For a more extensive look into the formulas involved in Wins Above Replacement, visit Baseball Reference's page on the subject: https://www.baseball-reference.com/about/war_explained.shtml

Batting

Batting Runs Above Average are based on a player's wOBA. Weighted On Base Average (or wOBA) is found by assigning a value to each batting event, summing up all of the values that the player accumulates over all of the plate appearances that year and then dividing by the total plate appearances. Batting Runs Above Average is the difference between a player's wOBA and the conference average wOBA multiplied by the number of plate appearances that player had. From there we used park adjustments, which will be explained later, to find the final Batting Runs Above Average.

Baserunning

The process for finding Baserunning Runs Above Average begins with finding the percentage of time a player takes the extra base in every baserunning situation and comparing that with the conference average for each situation. We then take the difference in percentage for each situation and multiply those differences by the number of times that player was in that baserunning situation over the course of the season. Finally, we

multiply this number, which is the extra bases taken above average by that player, and multiply that value by 0.2, as each extra base leads to about 0.2 extra runs scored on average. We then do the same process, but finding outs made on the bases in each situation rather than extra bases taken. This value is then multiplied by -0.48 as each out on the bases leads to about 0.48 less runs being scored on average. We then took stolen bases above average and caught stealings above average, using the same method of finding the difference in SB% and CS% with the conference average and multiplying by the number of SB attempts for each, and multiplying by 0.25 and -0.5 respectively. We then sum all of these numbers to find the total Baserunning Runs Above Average.

Double Plays

We next find the number of Double Plays Grounded Into Above Average. This is evaluating when a player hits a ground ball to an infielder in a double play situation, how often does that play turn into a double play. In other words, how much more often they beat out a double play or forced the defender to only record one out due to their speed. This is the player's double plays divided by the number of double play situations that player hit into and compared to the conference average rate. We then multiply the difference between the players double play rate and the conference average rate by 0.44 which corresponds to the 0.44 more runs scored on average by not having the second out recorded on the play.

Fielding

Now we find the most complicated aspect for calculating WAR at the Division III level. At the MLB level, Defensive Runs Above Average is calculated using advanced defensive metrics such as Defensive Runs Saved or Total Zone Rating. We do not have access to these metrics for Division III players however, so we used Defensive Regression Analysis (or DRA). DRA was used in calculating Defensive Runs for Negro League players on Baseball Reference, and only requires the basic defensive stats such as Put Outs, Assists, Strikeouts, etc. We then used a regression analysis to find how many more plays a player made than the average player would have at his position based on who fielded each ball in play. The calculation is more complex, and I would recommend looking at the google sheet to view the entire process.

Positional Adjustment

Another small adjustment to a player's Runs Above Average is based on what position they played. For example, a catcher is not expected to produce as much offensively as a DH would be. Due to this, each position was assigned a value of runs added above or below average per inning and each player was given the number of runs corresponding to the innings they played at each position.

Replacement Runs

Wins Above Replacement adds another component of comparing a player's performance to the "replacement" level player rather than just the average player. As such a player is awarded a small number of runs per inning they played that equates to the difference between an average player and a replacement level player.

Pitching

Pitching Runs Prevented Above Average was split into two parts, starting pitching runs and relief pitching runs. The general formula was the same, finding how many runs a player was expected to allow against each specific team that they faced and comparing that with how many they actually allowed. Then taking that difference and comparing it to how many the average CCIW pitcher allowed above or below average. We also made an adjustment based on the quality of the defense that played behind each pitcher, as well as a park adjustment. The difference for relief pitchers was adding in a leverage index component.

Discussion

There is an argument that this data is too limited because I am only comparing these players to the conference averages of the CCIW rather than to the entirety of Division III. I would argue that there is a benefit to only comparing the performances to those within the same conference because each conference team plays a very similar schedule and plays in a similar climate. Trying to find the baserunning and fielding statistics for all of Division III baseball would have also been significantly more difficult. Another limitation of this project is the use of weights based on MLB run scoring data rather than CCIW data. While these should be similar enough to not create a large difference in the final totals, this will hopefully be updated soon. Using a RE24 matrix for the CCIW, as seen in that project in my portfolio, we can find the difference in expected runs for each batting event as well as taking the extra base, caught stealings, etc.

Findings

Overall, we found the total Wins Above Replacement for each player who appeared in a game for Wheaton College baseball in 2023. We chose to display the values in terms of Runs Above Replacement on the first tab of the google sheet because it better displays the difference in value between players. When WAR is used for MLB players, it is over a sample size of a 162 game season, but for CCIW teams the season is around 40 games. Due to the shorter season, the total WAR numbers were smaller and as such there was a less obvious difference in the quality of play based on the WAR numbers. By using Runs Above Average instead, we can better display the difference in quality as well as show a more basic understanding of how this player produced this many more runs for his team than a replacement would have. In general, a Win equates to about 15 runs, so you can divide the player's total Runs Above Replacement by 15 to find their WAR, or you could look at the Runs/Win tab on the google sheet. The top ten players in Runs Above Average for Wheaton College in 2023 were as follows:

1. Ben Weaver - 20.3 RAR
2. Matthias Haggerty - 14.6 RAR

3. Rutledge Feltel - 8.0 RAR
4. Kyle Wu - 7.3 RAR
5. Joe Klein - 5.7 RAR
6. Noah Yi - 5.0 RAR
7. Sean Smith - 4.4 RAR
8. Nate Barker - 3.3 RAR
9. Simeon Downing - 2.9 RAR
10. Caleb Vankerkoff - 2.7 RAR