

Offensive Production in Nippon Professional Baseball from 2014–2019

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Summary:

In this study, I created and analyzed 68,869 data values from 592 NPB position players over the course of the 2014 – 2019 seasons in order to assess, statistically, the importance of weighted Runs Above Average (wRAA) and winning games in the NPB. We found a direct correlation between a team's winning percentage in each season from 2014 – 2019 and their ability to have high weighted Runs Above Average. Therefore, we searched for and used statistical regression to gauge factors that could contribute to or correlate with wRAA. While traditional baseball theory indicated height was an indicator of future potential, we found that weight and body mass index were more relevant to offense in the form of wRAA. I discovered the ages in which a player's individual wRAA started to decline – ranging from 30 to 34 years old. While age is a statistic commonly used to address all players, we believed that years of experience would be a more accurate estimator, given that players enter NPB from ages 18 up to 30 depending on whether they came from High School, University, Industrial League, Independent League, or International Leagues. After creating these new variables and research that has yet to be conducted outside of this paper, to our best knowledge, we found that top offensive performers started to produce high wRAA after 4-6 years of experience for High School players and 3-5 years of experience for University Players. We also constructed data to debunk the theory that players from high school or universities should be and are productive in their first (rookie) year in NPB. Entry Level was further analyzed by showing that average wRAA for International players was the highest among all categories, with those coming from Independent Leagues and Industrial Leagues were, based on precedent, likely to have less wRAA upside compared to those coming from High School, University, and International Leagues. In addition, we found that a batter's ability to hit the ball at high velocities, indicated by Hard Hit Rate, was a major indicator of wRAA, and that higher wRAA performers had a tendency to hit the ball towards their pull side (left side for right-handers and right side for left-handers).