

Suppression Statistic Writeup

The suppression statistic that I created is used to evaluate how well a pitcher can suppress exit velocity. The exit velocity statistic is four parts due to the hitter and one part due to the pitcher. The suppression statistic is used to quantify this singular part as a means to measure the quality of a pitch. For example when looking at all pitches pitched by Chris Sale, I found the average of all exit velocity entries was very low at around approximately 83 mph. I believe this is because when a hitter hits one of Chris Sale's pitches, he is not able to reach optimal exit velocity because Chris Sale is able to suppress exit velocity along with other factors. This prevents the hitter from reaching the sweet spot which is characterized as reaching a launch angle of 25 degrees and an exit velocity of 95+ mph.

My attempt to create a formula for suppression started with creating an expected exit velocity and comparing it to the actual exit velocity. Therefore if the pitcher achieved an exit velocity that was less than the expected, he was able to suppress the exit velocity. Calculating an expected velocity became much more challenging than initially expected as my first calculation was always slightly below the actual exit velocity. I realized this was because I was not considering air resistance or weather conditions which could affect the speed of the ball. My first equation was based on launch angle and distance the ball went. Since a ball traveling with resistance to reach distance x must travel at a faster rate than a ball traveling

with zero resistance to reach the same distance x , my expected EV was always less than the actual. My next calculation for expected velocity was to average a hitters exit velocity for all pitchers except for the one being evaluated. And then to used expected exit velocity - actual exit velocity which gave me a suppression value. If this value was positive then the pitcher suppressed the exit velocity otherwise he did not. If I had more time, I would have looked into calculating a probability for this stat using the conditional probability.

This statistic fills the need to better quantify pitchers based on their ability to control quality of contact, exit velocity and ultimately prevent the hitter from getting a hit. This statistic most closely relates to the aEV or against exit velocity which attempts to measure quality of pitches by summing up all exit velocities and dividing it by the number of batted ball events. The aEV statistic tries to rank which pitchers perform the best at limiting hard contact.

This suppression rate attempts to better quantify the quality of a pitch based on how well the pitcher suppresses exit velocity. While there are many statcast statistic to measure spin, speed, angle, etc. there is no statistic that evaluates quality of pitch by looking at pitcher/hitter interactions and comparing pitchers on a by hitter basis. If I were to continue my analysis, I would calculate the conditional probability and determine if there is any correlation with other pitching statistics.