Pitcher Analysis Report
MATH 3220
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Executive Summary

In this analysis we will compare a pitcher's statistics after a first pitch ball and after a first pitch strike. We want to find out if a first pitch strike versus a first pitch ball has much effect on the final outcome of an at bat. We will also want to compare these statistics between a group of elite pitchers and a group of weak pitchers. To do this, we will need to be able to find a database that contains the information needed from the 2012 MLB season. By using Baseball-Reference and FanGraphs, we can access all of the needed data. To compare this information, we will put all of the data into an Excel spreadsheet. It will be expected that pitchers will have more effective statistics after 0-1 versus after 1-0. The real question is how much better the statistics are after 0-1 than 1-0 and if elite pitchers have a different pattern than weak pitchers. After extracting the data into an Excel spreadsheet and comparing statistics, we find that pitchers are in fact much more effective after 0-1 than 1-0. The interesting thing we find out is that the difference in points between statistics for 0-1 and 1-0 for elite pitchers is nearly the same difference in points for the weak pitchers. It is important to note that limited research before the experiment was done as to prevent bias when analyzing the data.

Problem Description

The problem in this experiment is to find out how effective a pitcher is after a 0-1 count versus a 1-0 count. Not only do we want to find out how effective the

average pitcher is after these counts, but we also want to compare several different groups and their effectiveness after these counts. These groups include elite pitchers, weak pitchers, and all pitchers. The elite and weak pitchers are subgroups of all pitchers as well as of AL and NL pitchers.

Analysis Technique

To compare the statistics of 1-0 and 0-1 counts for pitchers in the MLB, we must first pull all data from pitchers that we will use. We are just going to compare qualifying starting pitchers. This means the pitcher must have at minimum 162.0 innings pitched. First, using FanGraphs and Baseball-Reference, we can sort the starting pitchers for each league (American and National) by qualified innings. Then we will take all of these pitchers and export them into an Excel spread sheet. We will also include season averages for each pitcher in the categories of ERA, FIP, and IP. Then using Baseball-Reference we will look up each pitchers' statistics after 1-0 and 0-1 pitches. By looking up after these pitch counts, it will tell us what the batter did in all possible outcomes after 1-0 and 0-1 counts. The categories for the hitters after these counts include: PA, BA, OBP, SLG, OPS, SO/BB. We will have 35 pitchers from the AL and 44 pitchers from the NL, therefore 79 pitchers in total. By getting all of this information we will be able to not only compare the stats for a pitcher after 1-0 and 0-1 counts, but we will also be able to compare them to season averages. Now that we have the data for all qualifying pitchers, we can start analyzing the data. First we will take three groups. The first group will be "elite" pitchers. We will take the top third pitchers from each league (determined by FIP). The next group will be "weak" pitchers. We will take the bottom third pitchers from each league

(determined by FIP). The third and final group will be all of the pitchers. Then we will compare these groups by taking the average of their statistics after 1-0 and 0-1 counts and compare them to each other. This will help show if there is a trend among the elite pitchers vs. a trend among all pitchers vs. a trend among weak pitchers.

Assumptions

When performing this experiment, there are a few assumptions we made to compare pitchers. Since we wanted only starting pitchers, we narrowed our pitching group down to only pitchers that had at least 162.0 innings pitched. This not only allowed us to view only starting pitchers, but by the MLB standards, for a pitcher to qualify for any awards, he must have thrown at least 162.0 innings. By taking only qualified pitchers, this allows us to eliminate any outlier pitchers who may have had bloated stats due to a low number of innings pitched.

Results

The results proved the hypothesis that batting statistics after 1-0 counts were higher than the average batting statistic and statistics after 0-1 counts were lower than the average statistics. While it is not surprising that we found that pitchers are much more effective after 0-1 counts than 1-0 counts or that elite pitchers were more effective after both counts than weak pitchers, there were some interesting discoveries. While elite pitchers were better after both counts, both elite and weak pitchers had a high difference in averages for all batting categories. After calculating the point difference in these categories, it was discovered that point difference after both counts was nearly the same in all categories for elite and weak

pitchers. For example, in On Base Percentage, batters facing elite pitchers after 1-0 had an average OBP of .34652 and after 0-1 had an OBP of .24404 whereas batters against weak pitchers had an OBP of .37916 after 1-0 and an OBP of .27668 after 0-1. While it is apparent that the elite pitchers held batters to a lower OBP in both 0-1 and 1-0, the total point difference of 1-0 and 0-1 is .10248. This point difference is the exact same for elite and weak pitchers. This shows that regardless of being an elite or weak pitcher, on average, the batter will have an OBP of approximately 102 points lower after starting out with an 0-1 count versus a 1-0 count.

Batting Field	OBP	OBP	OBP
Count	After 1-0	After 0-1	Difference (1-0) – (0-1)
Elite Pitchers	0.34652	0.24404	0.10248
Weak Pitchers	0.37916	0.27668	0.10248

Bibliography

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