**Statistical Analysis of the Postseason ERA vs Regular Season ERA**

Null Hypothesis: Ho: **μ**1 = **μ** 2

There is no difference in the mean ERA (Earned Run Average) from the postseason and the regular season.

Alt Hypothesis: Ha: **μ** 1 != **μ** 2

There is significant difference in the mean ERA in the postseason and the regular season.

**μ**1 represents the mean ERA in the postseason.

**μ** 2  represents the mean ERA during the regular season.

Since I am working with 2 small samples, I am performing a dependent two-tailed t-test for this research. We assume the population data to be approximately normally distributed.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Post ERA | Regular ERA |  |
| Mean | 1.62 | 2.90 |  |
| Standard deviation | 1.02 | 0.51 |  |
| n | 28 | 28 |  |
|  | |  | |
| Using alpha = 0.05 | |  | |
| df = degrees of freedom | | 27 | |
| t-critical | | 2.05 | |
| t statistic | | -6.47 | |
| r^2 | | .65 | |
| 95% confidence interval | | (-1.70,-0.88) | |

I calculated a t statistic of -6.47 which falls in the alpha = 0.05 critical range of +-2.05 so therefore, we reject the null hypothesis that the means of the ERA (Earned Run Average) are equal from the postseason and regular season. The means of the postseason ERA and regular season ERA are statistically significant. Sixty-five (65) percent of the variability in the Earned Run Average is due to the postseason vs the regular season. The 95% CI of (-1.70,-0.88) shows we are 95% confident that the difference in the means falls in this range. In other words, the postseason ERA is lower than the regular season ERA.

**Statistical Analysis of the Postseason Batting Average vs Regular Season Batting Average**

Null Hypothesis: Ho: **μ**1 = **μ** 2

There is no difference in the mean batting average from the postseason and the regular season.

Alt Hypothesis: Ha: **μ** 1 != **μ** 2

There is significant difference in the mean batting average in the postseason and the regular season.

**μ**1 represents the mean batting average in the postseason.

**μ** 2  represents the mean batting average during the regular season.

Since I am working with 2 small samples, I am performing a dependent two-tailed t-test for this research. We assume the population data to be approximately normally distributed.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Post Batting | Regular Batting |  |
| Mean | 0.338 | 0.281 |  |
| Standard deviation | 0.064 | 0.034 |  |
| n (sample size) | 35 | 35 |  |
|  | |  | |
| Using alpha = 0.05 | |  | |
| df = degrees of freedom | | 34 | |
| t-critical | | 2.032 | |
| t statistic | | 4.852 | |
| r^2 | | .505 | |
| 95% confidence interval | | (0.032, 0.079) | |

I calculated a t statistic of 4.852 which falls in the alpha = 0.05 critical range of +-2.032 so therefore, we reject the null hypothesis that the means of the batting average are equal from the postseason and regular season. The means of the postseason batting average and regular season batting average are statistically significant. Fifty-one (51) percent of the variability in the batting average is due to the postseason vs the regular season. The 95% CI of (0.032, 0.079) shows we are 95% confident that the difference in the means falls in this range. In other words, the postseason batting average is higher than the regular season batting average.

**Conclusions**

Since I have been a life-long baseball fan, I am not entirely surprised by the results. I have watched at least part of the many World Series since the 1980s. It’s amazing to see certain players literally step up and perform at a high level on the biggest stage. I especially love low scoring games and watching these incredible pitchers throw shutouts during prime-time when the lights are bright. So I somewhat expected these World Series MVP pitchers to have lower ERAs during the postseason than in the regular season. I just wasn’t sure if the numbers would tell me so but we saw the ERAs statistically & significantly lower.

On the other side of the plate, watching great hitters is also a treat. It is a known fact that hitting a baseball from a Major League pitcher is a very difficult task. So to be able to hit a high average during a postseason pressure-filled series is a great feat. Again, we saw these World Series MVP hitters have a higher batting average in the postseason than in the regular season.

I wanted to investigate further but I felt there were some limitations in the data in some areas that interested me. I am curious to learn more on other factors that may have contributed to these players postseason success. Did these players have a hard life? Did they overcome big obstacles in early life and playing baseball is not a big deal? Did they grow up in a single parent home or without parents? We always hear of some successful people in life that have overcome great odds to be successful. I know baseball executives have access to this information like this and many use this to help in drafting or trading for certain players.